



**ICD 2021**  
VIRTUAL CONGRESS

**SAJCN**

**NISSA**

**IONA**  
International Confederation  
of Dietetic Associations

**ADSA**  
ASSOCIATION FOR DIETETICS  
IN SOUTH AFRICA

THE NUTRITION SOCIETY OF SOUTH AFRICA  
**NSSA**

# International Congress of Dietetics Abstract Book

[www.icd2021.com](http://www.icd2021.com)



**Congress Sponsors**



**Congress Exhibitors**



# ABSTRACTS

---

## ABSTRACT BOOK

International Congress of Dietetics  
1–3 September 2021

**PART 1: Oral Presentations**

**PART 2: Research Posters**

**SAJCN**  
South African Journal of Clinical Nutrition



The ABSTRACT BOOK is available at the website of  
**South African Journal of Clinical Nutrition**

[www.sajcn.co.za](http://www.sajcn.co.za)

Production by NISC (Pty) Ltd

---

# PART 1

## ABSTRACTS

# ORAL PRESENTATIONS



International Congress of Dietetics 2021, 1-3 September 2021

South African Journal of Clinical Nutrition 2021; 34(3)  
<https://doi.org/10.1080/16070658.2021.1968126>

## TABLE OF CONTENTS

- 80 A feasibility study investigating the practicalities and experiences of implementing a healthy diet skills programme in a faith-placed, foodbank setting ..... 15**  
Ms Alexandra Harper<sup>1</sup>, Dr Deborah Lycett<sup>1</sup>, Dr Anne Coufopoulos<sup>1</sup>, Dr Andy Turner<sup>1</sup>  
<sup>1</sup>Coventry University, Coventry, United Kingdom
- 658 A higher red blood cell arachidonic acid to eicosapentaenoic acid ratio during pregnancy is associated with a higher risk of premature birth in urban South Africa: the NuPED study ..... 15**  
Dr Elize Symington<sup>1,2</sup>, Prof Jeannine Baumgartner<sup>1,3</sup>, Dr Linda Malan<sup>1</sup>, Dr Lizelle Zandberg<sup>1</sup>, Prof Cornelius Smuts<sup>1</sup>  
<sup>1</sup>Department of Life & Consumer Science, Unisa, Roodepoort, South Africa, <sup>2</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>3</sup>Human Nutrition Laboratory, Institute of Food, Nutrition and Health, ETH Zurich, Zurich, Switzerland
- 205 A laboratory-based evaluation of tube blocking and microbial risks associated with one blended enteral feed recipe ..... 16**  
Dr Angela Madden<sup>1</sup>, Dr Simon Baines<sup>1</sup>, Ms Elise Chen<sup>1</sup>, Dr Shan Goh<sup>1</sup>, Ms Lee Jerome<sup>1</sup>, Ms Simone Roberts<sup>1</sup>, Ms Cara Sommariva-Nagle<sup>1</sup>, Ms Malgorzata Szycha<sup>1</sup>  
<sup>1</sup>University Of Hertfordshire, Hatfield, United Kingdom
- 187 A recipe for nutrition competent physicians at the Northern Ontario School of Medicine (NOSM) ..... 16**  
Mrs Lee Rysdale<sup>1</sup>, Ms Denise Raftis<sup>1</sup>  
<sup>1</sup>Northern Ontario School of Medicine, Sudbury, Canada
- 207 A systematic review and quantitative analysis of resting energy expenditure prediction equations in healthy overweight and obese children and adolescents ..... 17**  
Mrs Lucy Chima<sup>1</sup>, Dr Hilda Mulrooney<sup>2</sup>, Dr Janet Warren<sup>3</sup>, Dr Angela Madden<sup>1</sup>  
<sup>1</sup>University Of Hertfordshire, Hatfield, United Kingdom, <sup>2</sup>Kingston University, Kingston-upon-Thames, UK, <sup>3</sup>Firststop Nutrition, Lyford, UK
- 62 A systematic review of behaviour change techniques to improve gluten-free diet adherence in individuals with coeliac disease ..... 17**  
Dr Brian Power<sup>1</sup>, Mrs Dimitra Verra Power<sup>2</sup>, Mrs Ellen Ficenec<sup>3</sup>, Ms Marianna Rodriguez Y Villasenor<sup>1</sup>  
<sup>1</sup>Institute of Technology - Sligo, Ireland, <sup>2</sup>Central London Community Healthcare NHS Trust, London, United Kingdom, <sup>3</sup>The Private Dietitian, London, United Kingdom
- 378 Adherence to the World Cancer Research Fund/American Institute for Cancer Research recommendations is associated with a lower breast cancer risk in black South African women. .... 18**  
Ms Inarie Jacobs<sup>1</sup>, Dr Christine Taljaard-Krugell<sup>1</sup>, Prof Hester Vorster<sup>1</sup>, Dr Sabina Rinaldi<sup>2</sup>, Dr Inge Huybrecht<sup>2</sup>, Dr Isabelle Romieu<sup>3,4</sup>  
<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>2</sup>Section of Nutrition and Metabolism, International Agency for Research on Cancer, Lyon, France, <sup>3</sup>Centro de Investigación en Salud Poblacional, Instituto Nacional de Salud Pública, Cuernavaca, Mexico, <sup>4</sup>Hubert Department of Global Health, Emory University, Atlanta, United States of America
- 333 Admission morbidity characteristics, treatment outcomes and determinants of mortality of children aged 0-59 months with complicated severe acute malnutrition in 3 referral hospitals in Ghana - An observational study ..... 18**  
Miss Janet Carboo<sup>1</sup>, Ms Hannah Asare<sup>1</sup>, Mrs Cornelia Conradie<sup>1</sup>, Dr Robin Dolman<sup>1</sup>, Dr Martani Lombard<sup>1</sup>  
<sup>1</sup>North-West University, Potchefstroom, South Africa
- 261 Adult triathletes' attitude and perceptions towards the use of telenutrition ..... 19**  
Ms Karlien Duvenage
- 327 Agreement between measured height, and height predicted from published estimate equations, amongst adults in a South African hospitalised population ..... 19**  
Mrs Hanna Williamson<sup>1</sup>, Ms Mariette Nel<sup>1</sup>, Prof Corinna May Walsh<sup>1</sup>, Prof Louise van den Berg<sup>1</sup>  
<sup>1</sup>University of the Free State, Bloemfontein, South Africa

- 248 An examination of pregnant mothers' nutrition knowledge, dietary and physical activity practices in Trinidad ..... 20**  
Dr Isabella Francis-Granderson<sup>1</sup>  
*<sup>1</sup>The University Of The West Indies, St. Augustine Campus, Maracas, St. Joseph, Trinidad and Tobago*
- 352 Analysis of immediate vulnerability determinants towards achieving the right to food: a case study of women and children in the Umlazi township, Pietermaritzburg, South Africa ..... 20**  
Dr Annette Van Onselen<sup>1</sup>, Dr Bukaso Andy Mpiana<sup>2</sup>, Prof Unathi Kolanisi<sup>3</sup>  
*<sup>1</sup>Sefako Makgatho Health Sciences University, Pretoria, South Africa, <sup>2</sup>University of KwaZulu-Natal, Pietermaritzburg, South Africa, <sup>3</sup>Consumer Sciences, School of Science and Agriculture, University of Zululand, Richards Bay, South Africa*
- 308 Analyzing costs associated with human milk banks in South Africa ..... 21**  
Mr Gilbert Tshitauzi<sup>1</sup>, Ms Maude de Hoop<sup>1</sup>, Ms Rebone Ntsie<sup>1</sup>, Ms Lynn Moeng-Mahlangu<sup>1</sup>, Dr Yogan Pillay<sup>1</sup>  
*<sup>1</sup>National Department Of Health, Pretoria, South Africa*
- 654 Antenatal anaemia is associated with increased systolic blood pressure in late pregnancy among urban women in South Africa: the NuPED study ..... 21**  
Ms Caylin Goodchild<sup>1</sup>, Dr Elizabeth Symington<sup>1,2</sup>, Dr Jeannine Baumgartner<sup>1</sup>, Dr Lizelle Zandberg<sup>1</sup>, Dr Linda Malan<sup>1</sup>, Prof Marius Smuts<sup>1</sup>  
*<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>2</sup>Department of Life and Consumer Sciences, University of South Africa, Johannesburg, South Africa*
- 584 Anthropometric status and nutrient intake of in-school adolescents aged 10-19 years in Ekwulobia, Aguata Local Government Area, Anambra State, Nigeria ..... 22**  
Dr Ngozi Okoye<sup>1</sup>, Dr Chika Ndiokwelu<sup>2</sup>, Professor Ngozi Nnam<sup>3</sup>, Mr Aloysius Maduforo<sup>4</sup>  
*<sup>1</sup>Department Of Nutrition And Dietetics, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State, Nigeria, Nnewi, Nigeria, <sup>2</sup>Human Nutrition and Dietetics Unit, Department of Biochemistry, University of Calabar, Cross River State, Nigeria, Calabar, Nigeria, <sup>3</sup>Department of Nutrition and Dietetics, University of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria, <sup>4</sup>Department of Nutrition and Dietetics, University of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria*
- 255 Assessing malnutrition in long-term care: what is the best method?..... 22**  
Prof Heather Keller<sup>1</sup>, Vanessa Vucea<sup>1</sup>, Dr Susan Slaughter<sup>2</sup>, Dr Harriët Jager-Wittenaar<sup>3</sup>, Dr Christina Lengyel<sup>4</sup>, Dr Faith Ottery<sup>5</sup>, Dr. Natalie Carrier<sup>6</sup>  
*<sup>1</sup>Schlegel-university Of Waterloo Research Institute For Aging, Waterloo, Canada, <sup>2</sup>University of Alberta, <sup>3</sup>Hanze University of Applied Sciences, <sup>4</sup>University of Manitoba, , , <sup>5</sup>Ottery and Associates, <sup>6</sup>Universite de Moncton, ,*
- 408 Awareness and utilization of nutrition information on packaged food product labels among respondents in Nsukka, Enugu State, Nigeria..... 23**  
Ms Chioma Anidi<sup>1</sup>, Mr Cyril Anoshirike<sup>1</sup>, Prof Joy Nwamarah<sup>1</sup>, Ms Makua Chiam<sup>1</sup>  
*<sup>1</sup>University Of Nigeria, Nsukka, Nigeria*
- 292 Breakfast eating practices of New Zealand women with different BMI profiles ..... 23**  
Prof Rozanne Kruger<sup>1</sup>, Ms Elizabeth Cullen<sup>1,2</sup>, Dr Marilize Richter<sup>1</sup>, Prof Bernhard Breier<sup>1</sup>  
*<sup>1</sup>Massey University, Auckland, New Zealand, <sup>2</sup>Auckland District Health Board, Auckland, New Zealand*
- 271 Changes over ten-years in Body Mass Index and Physical Activity in black South African adults from the North West Province ..... 24**  
Ms Phumudzo Mamphwe<sup>1,2</sup>, Prof Herculina Salome Kruger<sup>2</sup>, Prof Sarah J Moss<sup>2</sup>  
*<sup>1</sup>University Of Pretoria, Pretoria, South Africa, <sup>2</sup>North-West University, Potchefstroom, South Africa*
- 683 Chemical and organoleptic characteristics of extruded cereal-legume based Ready-to-Use Therapeutic Foods (RUTFS) for management of Severe Acute Malnutrition (SAM) In Nigeria ..... 24**  
Professor Elizabeth Ngwu<sup>1</sup>, Mrs Rita Nwankwo<sup>2</sup>, Dr Chika Ndiokwelu<sup>3</sup>, Mr Aloysius Maduforo<sup>4</sup>  
*<sup>1</sup>Department of Nutrition and Dietetics, University of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria, <sup>2</sup>Department Of Nutrition And Dietetics, Federal Polytechnic, Mubi, Adamawa State, Nigeria, Mubi, Nigeria, <sup>3</sup>Human Nutrition and Dietetics Unit, Department of Biochemistry, University of Calabar, Nigeria, Calabar, Nigeria, <sup>4</sup>Department of Nutrition and Dietetics, University of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria*

- 730 Children are key informants about establishing healthy eating habits; using Participatory Action Research with primary school children ..... 25**  
Dr Suzanne Waddingham<sup>1</sup>  
<sup>1</sup>University of Tasmania, Hobart, Australia
- 509 Community-level interventions for improving access to food in low- and middle-income countries: a Cochrane review ..... 25**  
Mrs Solange Durao<sup>1</sup>, Dr Marianne Visser<sup>2</sup>, Dr Vundli Ramokolo<sup>4</sup>, Ms Julicristie Oliveira<sup>5</sup>, Dr Bey-Marrié Schmidt<sup>1</sup>, Ms Yusentha Balakrishna<sup>3</sup>, Ms Amanda Brand<sup>2</sup>, Dr Elizabeth Kristjansson<sup>6</sup>, Ms Anel Schoonees<sup>2</sup>  
<sup>1</sup>Cochrane South Africa, South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>Centre for Evidence-based Health Care, Division of Epidemiology and Biostatistics, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa, <sup>3</sup>Biostatistics Unit, South African Medical Research Council, Cape Town, South Africa, <sup>4</sup>Health Systems Research Unit, Cape Town, South Africa, <sup>5</sup>School of Applied Sciences, University of Campinas, Campinas, Brazil, <sup>6</sup>School of Psychology, Faculty of Social Sciences, University of Ottawa, Ottawa, Canada
- 734 Comparison of behavior change in the purchase of packaged food with warning labels according to the participants' education level ..... 26**  
Dr Samuel Durán<sup>1</sup>, Mrs Jessica Moya<sup>1</sup>, Mr Paulo Silva<sup>1</sup>  
<sup>1</sup>Universidad San Sebastián, Santiago, Chile
- 380 Consumption of unprocessed/minimally processed and ultra-processed foods and the association with breast cancer risk in black South African women: the SABC study ..... 26**  
Ms Inarie Jacobs<sup>1</sup>, Dr Christine Taljaard-Krugell<sup>1</sup>, Prof Hester, H Vorster<sup>1</sup>, Dr Sabina Rinaldi<sup>2</sup>, Dr Inge Huybrecht<sup>2</sup>, Dr Isabelle Romieu<sup>3, 4</sup>  
<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>2</sup>Section of Nutrition and Metabolism, International Agency for Research on Cancer, Lyon, France, <sup>3</sup>Centro de Investigación en Salud Poblacional, Instituto Nacional de Salud Pública, Cuernavaca, Mexico, <sup>4</sup>Hubert Department of Global Health, Emory University, Atlanta, United States of America
- 232 Current practices and challenges of registered dietitians in the nutritional management of children with Cerebral Palsy in South Africa ..... 27**  
Mrs Deborah Jacobson<sup>1</sup>, Ms Deborah Jacobson<sup>1</sup>, Ms Maritha Marais<sup>1</sup>  
<sup>1</sup>University Stellenbosch, Johannesburg, South Africa
- 604 Decolonising deliciousness: Food, diet modifications and disability ..... 27**  
Prof Mershen Pillay<sup>1,2,4</sup>, Mr Peter Lam<sup>2,3</sup>  
<sup>1</sup>University Of KwaZulu-Natal, Durban, South Africa, <sup>2</sup>International Dysphagia Diet Standardisation Initiative, International, International, <sup>3</sup>University of British Columbia, Vancouver, Canada, <sup>4</sup>Massey University, New Zealand
- 375 Developing practice placements for the future workforce: a collaborative London approach ..... 28**  
Mrs Annemarie Knight<sup>1</sup>, Sarah Illingworth<sup>2</sup>, Rashmi Soni<sup>3</sup>, Rachael Strauss<sup>4</sup>  
<sup>1</sup>King's College London, London, United Kingdom, <sup>2</sup>London Metropolitan University, London, United Kingdom, <sup>3</sup>Barts Health NHS Trust, London, United Kingdom, <sup>4</sup>Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom
- 668 Development of a competency framework in nutrition and dietetics: a rapid review ..... 28**  
Professor Geneviève Mercille<sup>1</sup>, Ms Caroline Drisdelle<sup>1</sup>, Mrs Chantal Bemeur<sup>1</sup>  
<sup>1</sup>Université De Montréal, Montréal, Canada
- 201 Development of a Diet Profiling Algorithm contributing to diet assessment and nutritional advice for use in digital nutrition tools and platforms ..... 29**  
Ms Marta Alonso-Bernaldez<sup>1</sup>, Ms Rocio Zamanillo<sup>2</sup>, Mr Andreu Palou-March<sup>1</sup>, Ms Mariona Palou<sup>1,2,3</sup>, Ms Francisca Serra<sup>1,2,3</sup>  
<sup>1</sup>Alimentomica S.L., Palma de Mallorca, Spain, <sup>2</sup>Laboratory of Molecular Biology, Nutrition and Biotechnology (Nutrigenomics), University of the Balearic Islands, Palma de Mallorca, Spain, <sup>3</sup>CIBER de Fisiopatología de la Obesidad y Nutrición (CIBEROBN) and Institut d'Investigació Sanitària Illes Balears (IdISBa), Palma de Mallorca, Spain
- 279 Development of food provision guidelines for early childhood development centres and places of safety ..... 29**  
Prof Annelie Gresse<sup>1</sup>, Ms Demi Anderson<sup>1</sup>, Ms Jessica De Beer<sup>1</sup>, Ms Megan Kloppers<sup>1</sup>, Ms Renee Nell<sup>1</sup>, Ms Jocelyn Verdoukas<sup>1</sup>, Ms Diana Walker<sup>1</sup>  
<sup>1</sup>Nelson Mandela University, Port Elizabeth, South Africa

- 272 Diet quality is associated with malnutrition and low calf circumference in Canadian long-term care residents ..... 30**  
Dr Natalie Carrier<sup>1</sup>, Dr Lita Villalon<sup>1</sup>, Dr Christina Lengyel<sup>2</sup>, Dr Susan Slaughter<sup>3</sup>, Dr Lisa Duizer<sup>4</sup>, Mrs Jill Morrison-Koechl<sup>5</sup>, Dr Heather Keller<sup>6</sup>  
<sup>1</sup>Université de Moncton, Moncton, Canada, <sup>2</sup>University of Manitoba, Winnipeg, Canada, <sup>3</sup>University of Alberta, Edmonton, Canada, <sup>4</sup>University of Guelph, Guelph, Canada, <sup>5</sup>University of Waterloo, Waterloo, Canada, <sup>6</sup>Nutrition and Aging Schlegel-University of Waterloo Research Institute for Aging, Waterloo, Canada
- 70 Dietetic education in Canada: Are we preparing practitioners to accelerate change? ..... 30**  
Dr Jennifer Brady<sup>1</sup>  
<sup>1</sup>Mount Saint Vincent University, Halifax, Canada
- 268 Dietetics and community pharmacy working together; improving nutritional care for patients prescribed oral nutritional supplements (ONS) ..... 31**  
Ms Lynsey Robinson<sup>1</sup>, Mrs Michele Rae<sup>1</sup>, Mr Alan Harrison<sup>1</sup>, Mr David Inglis<sup>1</sup>  
<sup>1</sup>NHS Greater Glasgow & Clyde, Glasgow, United Kingdom
- 211 Dietitian-led clinics in primary care: A scoping review ..... 31**  
Prof Mary Hickson<sup>1,2,3</sup>, Amanda Wanner<sup>1,2</sup>, Dr Jenny Child<sup>1</sup>, Dr Avril Collinson<sup>1,3</sup>  
<sup>1</sup>University of Plymouth, Plymouth, United Kingdom, <sup>2</sup>NIHR Applied Research Collaboration South West Peninsula, Plymouth, UK, <sup>3</sup>University of Plymouth Center for Innovations in Health and Social Care: A Joanna Briggs Institute Center of Excellence, Plymouth, UK
- 198 Discrepancy in the evaluation of explicit and implicit outcomes for patients at risk of malnutrition: A qualitative study ..... 32**  
Mrs Lina Al-Adili<sup>1</sup>  
<sup>1</sup>Uppsala University, Uppsala, Sweden
- 158 Does term-time employment protect students from food insecurity in UK Higher Education Institutions? .... 32**  
Dr Claire Blennerhassett<sup>1</sup>, Dr Marian Peacock, Dr Stephen Clayton<sup>1</sup>  
<sup>1</sup>Edge Hill University, Ormskirk, United Kingdom
- 246 Effect of incorporating genetic testing results into nutrition counselling and care on anthropometric outcomes: A subsection of the Evidence Analysis Center Systematic Reviews ..... 33**  
Dr Andrea Braakhuis<sup>1</sup>, Dr Asley Vargus<sup>2</sup>, Dr Amy Ellis<sup>3</sup>, Associate Professor Cathriona Monnard<sup>4</sup>, Dr Katie Robinson<sup>5</sup>, Dr Mary Rozga<sup>6</sup>  
<sup>1</sup>The University of Auckland, Faculty of Medical Health Science, Grafton, New Zealand, <sup>2</sup>National Institute of Health, Rockville, USA, <sup>3</sup>The University of Alabama, Tuscaloosa, USA, <sup>4</sup>University of Fribourg, Fribourg, Switzerland, <sup>5</sup>Abbott Nutrition, Columbus, USA, <sup>6</sup>Academy of Nutrition and Dietetics, Chicago, USA
- 389 Effect of Low-Fat Compared to Low-Carbohydrate Diet on Fasting Lipids and Metabolic Profile in Subjects with Multifactorial Chylomicronemia: A Randomized Crossover Study ..... 33**  
Mme Manon Fantino<sup>1</sup>, Mrs Martine Paquette<sup>1</sup>, Mrs Chantal Blais<sup>1</sup>, Mr Alexis Baass<sup>1</sup>, Mr Guillaume Paré<sup>2</sup>, Mrs Sophie Bernard<sup>1</sup>  
<sup>1</sup>Montreal Clinical Research Institute (IRCM), Montreal, Canada, <sup>2</sup>Departement of pathology and molecular medicine, McMaster University, Hamilton, Canada
- 351 Effectiveness of a diabetes nutrition education programme on clinical status and dietary behaviours in adults with type 2 diabetes in South Africa ..... 34**  
Dr Jane Muchiri<sup>1</sup>, Ms Gerda Gericke<sup>1</sup>, Prof. Paul Rheeder<sup>1</sup>  
<sup>1</sup>University of Pretoria, Pretoria, South Africa
- 104 Effectiveness of a very low carbohydrate ketogenic diet compared to a low carbohydrate and energy-restricted diet in overweight/obese type 2 diabetes patients ..... 34**  
Mrs Ellen Govers<sup>1,2</sup>, Mrs Wilma Bouwman<sup>4</sup>, Dr. Ir. Tommy Visscher<sup>3</sup>, Mrs Alie Lourens<sup>4</sup>, Mrs Anniek Otten<sup>5</sup>, Mrs Beatrijs Schuiling<sup>5</sup>  
<sup>1</sup>Netherlands Knowledge Centre of Obesity, Amsterdam, Netherlands, <sup>2</sup>ESDN Obesity of EFAD, Emmerich, Germany, <sup>3</sup>Windesheim University of Applied Sciences, Research group Healthy city, Zwolle, Netherlands, <sup>4</sup>Dieet zorg Friesland, Leeuwarden, Netherlands, <sup>5</sup>Hanzehogeschool HEI, department of nutrition and dietetics, Groningen, Netherlands

- 480 Effects of daily consumption of prune (dried plum) on bone biomarkers and bone mineral density in healthy men ..... 35**  
Prof Shirin Hooshmand<sup>1</sup>, Professor Mark Kern<sup>1</sup>, Mrs Danielle Gaffen<sup>1</sup>, Mr Jonnatan Fajardo<sup>1</sup>, Mrs. Ashley Eisner<sup>1</sup>  
<sup>1</sup>San Diego State University, San Diego, United States
- 656 Effects of total fat intake on bodyweight in children: a Cochrane systematic review ..... 35**  
Prof Celeste Naude<sup>1</sup>, Dr Marianne Visser<sup>1</sup>, Dr Kim Nguyen<sup>1</sup>, Ms Solange Durao<sup>2</sup>, Ms Anel Schoonees<sup>1</sup>  
<sup>1</sup>Centre For Evidence-based Health Care, Faculty Of Medicine And Health Sciences, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Cochrane South Africa, Medical Research Council of South Africa, Tygerberg, South Africa
- 356 Effects of vitamin D3 3000 iu oral spray supplementation and SNPs on obesity markers in overweight and obese, vitamin D deficient, Caucasians during weight loss: a randomized placebo-controlled trial ..... 36**  
Dr Konstantinos Xenos<sup>1,2</sup>, Maria Papasavva<sup>2</sup>, Athanasios Raptis<sup>2</sup>, Pr. Nikolaos Drakoulis<sup>2</sup>  
<sup>1</sup>Athens Euroclinic Hospital, Athens, Greece, <sup>2</sup>Research Group of Clinical Pharmacology and Pharmacogenomics, Faculty of Pharmacy, School of Health Sciences, National and Kapodistrian University of Athens, Athens, Greece
- 63 Evaluation of the supplementary feeding programme targeted at moderately malnourished children aged 6 to 59 months in Baringo County, Kenya ..... 36**  
Mrs Ronel Beukes<sup>1</sup>, Ms Irene Wairimu Kimani<sup>1</sup>, Dr Peninah Masibo<sup>2</sup>, Dr Stellamaris Muthoka<sup>3</sup>  
<sup>1</sup>Human Nutrition, Stellenbosch University, Durbanville, South Africa, <sup>2</sup>Human Nutrition, Moi University, , Kenya, <sup>3</sup>Human Nutrition, Egerton University, , Kenya
- 519 Exploring patient satisfaction with hospital foodservice – a Swedish study using the Acute Care Hospital Foodservice Patient Satisfaction Questionnaire ..... 37**  
Mrs Sofia Rapo<sup>1,2</sup>, Prof Ylva Mattsson Sydner<sup>3</sup>, Dr Ethel Kautto<sup>1</sup>, Prof Agneta Hörnell<sup>1</sup>  
<sup>1</sup>Dpt. of Food, Nutrition, and Culinary Science; Umeå University, Umeå, Sweden, <sup>2</sup>Umeå Center for Gender Studies; Umeå University, Umeå, Sweden, <sup>3</sup>Dpt. of Food Studies, Nutrition and Dietetics; Uppsala University, Uppsala, Sweden
- 362 Exploring the social ‘fabrics’ in dietetic education: influences on learning professionalism and professional identity ..... 37**  
Ms Janeane Dart<sup>1</sup>, Professor Susan Ash<sup>1</sup>, Associate Professor Louise McCall<sup>1</sup>, Professor Charlotte Rees<sup>1,2</sup>  
<sup>1</sup>Monash University, Melbourne, Australia, <sup>2</sup>Murdoch University, Perth, Australia
- 363 Exploring understandings of professionalism in dietetics education: a global perspective ..... 38**  
Ms Janeane Dart<sup>1</sup>, Professor Susan Ash<sup>1</sup>, Associate Professor Louise McCall<sup>1</sup>, Professor Charlotte Rees<sup>1,2</sup>  
<sup>1</sup>Monash University, Notting Hill, Australia, <sup>2</sup>Murdoch University, Perth, Australia
- 332 Factors affecting breastfeeding among factory workers in Maputsoe, Lesotho ..... 38**  
Dr Mamotsamai Ranneileng<sup>1</sup>  
<sup>1</sup>National University Of Lesotho, Roma, Lesotho
- 398 Factors associated with salt intake in healthy young adults in the United Kingdom: Taste preference and salt knowledge ..... 39**  
Mrs Nicole Lubasinski<sup>1</sup>, Ms Leta Pilic<sup>1</sup>, Ms Melis Berk<sup>1</sup>, Mr Yiannis Mavrommatis<sup>1</sup>  
<sup>1</sup>St Mary's University, Twickenham, London, United Kingdom
- 342 Feeding practices of infants from KwaMashu, KZN, South Africa ..... 39**  
Dr Nazeeia Sayed<sup>1</sup>, Prof Hettie C Schönfeldt<sup>2</sup>  
<sup>1</sup>School of Public Health, University of the Western Cape, Cape Town , South Africa, <sup>2</sup>Department of Animal & Wildlife Sciences, Institute of Food, Nutrition and Wellbeing, Faculty of Natural and Agricultural Sciences, University of Pretoria; Africa Research Universities Alliance (ARUA), Centre of Excellence for Food Security, University of Pretoria, Pretoria, South Africa
- 322 Fish supplementation and cognition in resource-limited elderly: A randomised controlled trial ..... 40**  
Dr Lizette Kuhn<sup>1</sup>, Prof Friedeburg Wenhold<sup>1</sup>, Prof Una MacIntyre<sup>1</sup>, Dr Carla Kotze<sup>1</sup>, Prof Piet Becker<sup>1</sup>  
<sup>1</sup>University Of Pretoria, Pretoria, South Africa
- 297 Food environment influence on health risk of adults In Limpopo, South Africa ..... 40**  
Prof Xikombiso Mbhenyane<sup>1</sup>, Ms Sefora Makuse<sup>2</sup>, Dr Lindelani Mushaphi<sup>3</sup>, Dr Ayuk Betrand Tambe<sup>1</sup>  
<sup>1</sup>Stellenbosch University, Cape Town, South Africa, <sup>2</sup>University of Limpopo, Mankweng, South Africa, <sup>3</sup>University of Venda, Thohoyandou, South Africa

- 245 Growing capacity for sustainable food systems within the profession of nutrition and dietetics: Initiatives from the Academy of Nutrition and Dietetics and its Foundation ..... 41**  
 Dr Marie Spiker<sup>1</sup>, Dr. Amy Knoblock-Hahn<sup>1</sup>, Dr. Katie Brown<sup>2</sup>, Mrs. Janice Giddens<sup>2</sup>, Mrs. Amanda Hege<sup>1</sup>, Dr. Kevin Sauer<sup>3</sup>, Mrs. Diane Enos<sup>4</sup>, Dr. Alison Steiber<sup>4</sup>  
<sup>1</sup>Academy Of Nutrition And Dietetics Foundation, Chicago, United States, <sup>2</sup>National Dairy Council, Rosemont, United States, <sup>3</sup>Kansas State University, Manhattan, United States, <sup>4</sup>Academy of Nutrition and Dietetics, Chicago, United States
- 76 Growing the business of whole grain in the Australian market: 6 year impact assessment..... 41**  
 Dr Sara Grafenauer<sup>1</sup>, Ms Felicity Curtain<sup>1</sup>  
<sup>1</sup>Grains & Legumes Nutrition Council, North Sydney, Australia
- 340 Guidelines on standard and therapeutic diets in hospital in France ..... 42**  
 Mr Ghislain Grodard-Humbert<sup>1</sup>, Mrs Marie France Vaillant<sup>2</sup>, Pr Pierre Dechelotte<sup>2</sup>, Pr Didier Quilliot<sup>2</sup>, Mr Experts Working Group<sup>1,2</sup>  
<sup>1</sup>AFDN French Nutritionist Dietitians Association, Paris, France, <sup>2</sup>SFNCM French Society of Clinical Nutrition and Metabolism, Paris, France
- 252 Hospital Acquired Malnutrition (HAM): incidence and contributors across five Australian public hospitals over 3½ years ..... 42**  
 Ms Talia Woodward<sup>1</sup>, Ms Christine Josephson<sup>2</sup>, Dr Lynda Ross<sup>1,3</sup>, Ms Jan Hill<sup>4</sup>, Ms Breanne Hoskings<sup>5</sup>, Ms Fiona Naumann<sup>6</sup>, Dr Rachel Stoney<sup>5</sup>, Dr Michelle Palmer<sup>2</sup>  
<sup>1</sup>Griffith University, Gold Coast, Australia, <sup>2</sup>Logan Hospital, Meadowbrook, Australia, <sup>3</sup>Queensland University of Technology, Kelvin Grove, Australia, <sup>4</sup>Princess Alexandra Hospital, Woolloongabba, Australia, <sup>5</sup>Redland Hospital, Cleveland, Australia, <sup>6</sup>Beautesert Hospital, Beautesert, Australia
- 557 How do the food choices of consumers measure up to the South African Food-based Dietary Guidelines?..... 43**  
 Mrs Hester Vermeulen<sup>1</sup>, Prof Hettie C Schönfeldt<sup>2-3</sup>  
<sup>1</sup>Bureau for Food and Agricultural Policy (BFAP), Pretoria, South Africa, <sup>2</sup>Africa Research Universities Alliance (ARUA), Centre of Excellence in Food Security, University of Pretoria, Pretoria, South Africa, <sup>3</sup>Department of Animal & Wildlife Sciences, Faculty of Natural and Agricultural Sciences, University of Pretoria, Pretoria, South Africa
- 455 Impact of complementary feeding intervention on the knowledge, attitude and intention of lactating mothers In Abakaliki L.G.A, Ebonyi State Nigeria ..... 43**  
 Mrs Linda Edafiohor<sup>1</sup>, Dr Chinonyelum Ezeonu<sup>2</sup>, Dr Uzoma Asiegbu<sup>2</sup>, Mr Gideon IHEME<sup>3</sup>  
<sup>1</sup>Federal Medical Centre, Asaba, Nigeria, <sup>2</sup>Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Nigeria, <sup>3</sup>Michael Okpara University of Agriculture, Umudike, Nigeria
- 748 Impact of COVID-19 pandemic lockdown on food commodity price differentials and consumers' purchasing behaviour In Nigeria ..... 44**  
 Mr Gideon IHEME<sup>1</sup>, Mr Adimchi Adile<sup>2</sup>, Mrs Ifeoma Egechizuorom<sup>3</sup>, Mr Oluwadamilare Kupoluyi<sup>4</sup>, Dr Obinna Ogbonna<sup>5</sup>, Mrs Linda Olah<sup>6</sup>, Mrs Hannah Enuke<sup>7</sup>, Mrs Hajara Idris<sup>8</sup>, Mrs Nwabumma Asouzu<sup>9</sup>, Mr Emmanuel Oyebamiji<sup>10</sup>  
<sup>1</sup>Michael Okpara University of Agriculture, Umudike, Nigeria, <sup>2</sup>Federal Teaching Hospital, Gombe, Nigeria, <sup>3</sup>Federal Medical Centre, Umuahia, Nigeria, <sup>4</sup>Federal Medical Centre, Abeokuta, Nigeria, <sup>5</sup>Obafemi Awolowo University Teaching Hospital, Ile-Ife, Nigeria, <sup>6</sup>Federal Medical Centre, Kastina, Nigeria, <sup>7</sup>Jos University Teaching Hospital, Jos, Nigeria, <sup>8</sup>University of Nigeria Teaching Hospital, Ituku-Ozalla, Nigeria, <sup>9</sup>Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Nigeria, <sup>10</sup>University College Hospital, Ibadan, Nigeria
- 287 Impact of individualised dietary advice on food choices, weight loss and blood pressure in a lifestyle intervention trial: the Healthtrack study ..... 44**  
 Prof Linda Tapsell<sup>1</sup>, Dr Elizabeth Neale<sup>1</sup>, Dr Rhoda Ndanuko<sup>2</sup>, Prof Karen Charlton<sup>1</sup>, Prof Marijka Batterham<sup>1</sup>  
<sup>1</sup>University Of Wollongong, Wollongong, Australia, <sup>2</sup>George Institute for Global Health, Sydney, Australia
- 684 Impact of lifestyle interventions on body weight in postpartum women: a systematic review and meta-analysis ..... 45**  
 Dr Sharleen O'Reilly<sup>1</sup>, Dr Siew Lim<sup>2</sup>, Associate Professor Lisa Moran<sup>2</sup>  
<sup>1</sup>UCD Institute Of Food And Health and UCD Perinatal Research Centre, Belfield, Ireland, <sup>2</sup>Monash Centre for Health Research and Implementation, Melbourne, Australia
- 747 Impact of the early covid-19-related restrictions on food security: the situation of Ghana ..... 45**  
 Mrs Eunice Berko Nartey<sup>1,2</sup>, Ms Alice Koryo-Dabrah<sup>1,2</sup>, Ms Sitsofe Tsagbey<sup>3</sup>, Dr Emmanuel Domfeh<sup>4</sup>  
<sup>1</sup>University of Health and Allied Sciences, Ho, Ghana, <sup>2</sup>University of Ghana, Accra, Ghana, <sup>3</sup>University of Sao Paulo, Sao Paulo, Brazil, <sup>4</sup>King's College London, London, United Kingdom

- 367 Implementation of a food service ambassador model in an Australian private hospital..... 46**  
Ms Claire Matthews<sup>1</sup>  
<sup>1</sup>Cabrini Health, Malvern, Australia
- 253 Implementing nutrition screening in medical and surgical patients; expanding the role of dietitians as change agents..... 46**  
Prof Heather Keller<sup>1</sup>, Jill Morrison-Koechl<sup>1</sup>, Dr Celia Laur<sup>2</sup>  
<sup>1</sup>Schlegel-university Of Waterloo Research Institute For Aging, Waterloo, Canada, <sup>2</sup>Women's College Hospital Institute for Health Systems Solutions and Virtual Care; Women's College Research Institute, ,
- 437 Inconsistent evidence for oral nutrition support interventions from systematic reviews: Why realist review methodology is needed..... 47**  
Dr Christine Baldwin<sup>2</sup>, Dr Elizabeth Weekes<sup>1</sup>  
<sup>1</sup>Guy's & St Thomas' NHS Foundation Trust, London, London, United Kingdom, <sup>2</sup>King's College London, London, United Kingdom
- 458 Indigenous food ingredients for complementary food formulations to combat infant malnutrition in Benin: a review ..... 47**  
Dr Flora Chadare<sup>1</sup>, Dr Ir Yann Eméric Madode<sup>2</sup>, Dr Ir Nadia Fanou-Fogny<sup>2</sup>, Dr Janvier M Kindosi<sup>3</sup>, Ir Juvencio O. Ayosso<sup>2</sup>, Dr Sewanou Honfo<sup>2</sup>, Prof Polycarpe Kayodé<sup>2</sup>, Dr Ir Anita Rachel Linnemann<sup>4</sup>, Prof Djidjoho Josphe Hounhouigan<sup>2</sup>  
<sup>1</sup>National University Of Agriculture, School of Food Science and Nutrition, Sakété, Benin, <sup>2</sup>University of Abomey-Calavi, Faculty of Agronomic Science, Abomey-Calavi, Benin, <sup>3</sup>University of Parakou, Faculty of Agronomy, Parakou, Benin, <sup>4</sup>Wageningen University, Wageningen, The Netherlands
- 247 Influence of the research involvement of dietetic internship directors on the experiences aligned with an accreditation required research competency in dietetic internship programs ..... 48**  
Dr Amanda Newell<sup>1</sup>, Dr Wendy Troxel<sup>2</sup>  
<sup>1</sup>Bradley University, Peoria, United States, <sup>2</sup>Kansas State University, Manhattan, United States
- 436 In-hospital growth of very low birth weight preterm infants: comparative effectiveness of two human milk fortifiers..... 48**  
Dr Johanna Kemp<sup>1</sup>, Prof Friede Wenhold<sup>1</sup>, Dr Firdose Nakwa<sup>2</sup>, Prof Piet Becker<sup>1</sup>  
<sup>1</sup>University of Pretoria, Pretoria, South Africa, <sup>2</sup>University of the Witwatersrand, Johannesburg, South Africa
- 148 Intake of protein, food sources and distribution among Māori and non-Māori octogenarians: life and living in advanced age: a cohort study in New Zealand ..... 49**  
Prof Carol Wham<sup>1</sup>, Ms Anishka Ram<sup>1</sup>, Mr Simon Moyes<sup>2</sup>, Dr Anna Rolleston<sup>2</sup>, Professor Ngaire Kerse<sup>2</sup>  
<sup>1</sup>College of Health, Massey University, Auckland, New Zealand, <sup>2</sup>School of Population Health, University of Auckland, Auckland, New Zealand
- 474 International Dietetics and Nutrition Outreach: Formation of the Global Member Interest Group of the Academy of Nutrition and Dietetics..... 49**  
Jen Brewer<sup>2</sup>, Dixie Havlak<sup>3</sup>, Sue Langren<sup>4</sup>, Laurie Sauerwein<sup>5</sup>  
<sup>1</sup>Loyola University Healthcare System, Maywood, United States, <sup>2</sup>Global MIG, Academy of Nutrition and Dietetics, Rochester, United States, <sup>3</sup>Global MIG, Academy of Nutrition and Dietetics, Olympia, USA, <sup>4</sup>Self-employed, Portland, United States, <sup>5</sup>Samaritan's Purse International Relief and Development, Redmond, United States
- 746 Introduction of a global, low-burden Diet Quality Questionnaire (DQ-Q) ..... 50**  
Dr. Anna Herforth<sup>1,3</sup>, Mr Chris Vogliano<sup>2</sup>, Laura Trijsburg<sup>3</sup>, Dr. Gina Kennedy<sup>2</sup>  
<sup>1</sup>Harvard University, , USA, <sup>2</sup>USAID Advancing Nutrition, Arlington, USA, <sup>3</sup>Wageningen University, , Netherlands
- 424 Job satisfaction and perception of workload among dietitians/nutritionists in South Africa ..... 50**  
Prof Louise Van Den Berg<sup>1</sup>, Ms Ermi (HC) Spies<sup>1</sup>, Ms Talitha Claassen<sup>1</sup>, Ms Sindi-marie de Beer<sup>1</sup>, Ms Jemima Meyer<sup>1</sup>, Ms Ingrid Strydom<sup>1</sup>  
<sup>1</sup>Department Of Nutrition And Dietetics, University Of The Free State, Bloemfontein, South Africa
- 394 Leaders wanted: A multicase study on leadership development of Canadian dietitians..... 51**  
Ms Billie Jane Hermosura<sup>1</sup>, Dr. Christine Suurtamm<sup>1</sup>, Dr. Ivy Lynn Bourgeault<sup>1</sup>  
<sup>1</sup>University Of Ottawa, Ottawa, Canada

- 594 Low omega-3 polyunsaturated fatty acid status prior to infection improve TB disease progression and lung pathology..... 51**  
Mrs Simoné King<sup>1</sup>, Mrs Arista Nienaber<sup>1</sup>, Mrs Robin Dolman<sup>1</sup>, Mr Mumin Ozturk<sup>2,3</sup>, Mr Frank Hayford<sup>1,5</sup>, Ms Lizelle Zandberg<sup>1</sup>, Mr Frank Brombacher<sup>2,3</sup>, Mr Suraj Parihar<sup>2,7</sup>, Mrs Renée Blaauw<sup>4</sup>, Mr Marius Smuts<sup>1</sup>, Mrs Linda Malan<sup>1</sup>  
<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>2</sup>Institute of Infectious Diseases and Molecular Medicine (IDM), Division of Immunology and South African Medical Research Council (SAMRC) Immunology of Infectious Diseases, University of Cape Town, Cape Town, South Africa, <sup>3</sup>International Centre for Genetic Engineering and Biotechnology (ICGEB), Cape Town Component, Cape Town, South Africa, <sup>4</sup>Division of Human Nutrition, Stellenbosch University, Stellenbosch, South Africa, <sup>5</sup>Department of Nutrition and Dietetics, University of Ghana, Accra, Ghana, <sup>6</sup>Laboratory of Infectious Disease Metabolomics, Centre for Human Metabolomics, North West University, South Africa, Potchefstroom, South Africa, <sup>7</sup>Centre of Infectious Diseases Research in Africa, University of Cape Town, Cape Town, South Africa
- 337 Malnutrition solutions that stick..... 52**  
Ms Danielle Cave<sup>1</sup>, Dr Karen Abbey<sup>1</sup>, Prof Sandra Capra<sup>1</sup>  
<sup>1</sup>School of Human Movement and Nutrition Sciences, Faculty of Health and Behavioural Sciences, The University Of Queensland, St Lucia, Australia
- 357 Maternity protection benefits for non-standard employees in low-and-middle-income countries and potential implications for breastfeeding practices: A scoping review..... 52**  
Mrs Catherine Pereira-Kotze<sup>1</sup>, Professor Diane Cooper<sup>1</sup>, Professor Mieke Faber<sup>1,2</sup>, Ms Alison Feeley<sup>3,4</sup>  
<sup>1</sup>University of the Western Cape (UWC), Bellville, South Africa, <sup>2</sup>South African Medical Research Council (SAMRC), Bellville, South Africa, <sup>3</sup>University of the Witwatersrand (Wits), , South Africa, <sup>4</sup>Public Health England, , United Kingdom
- 494 Measuring rural food environments for local action in Australia: How, what and why? ..... 53**  
Dr Penelope Love<sup>1</sup>, Dr Jillian Whelan<sup>2</sup>, Professor Colin Bell<sup>3</sup>, Ms Jane McCracken<sup>4</sup>  
<sup>1</sup>Deakin University, Institute For Physical Activity And Nutrition, Geelong, Australia, <sup>2</sup>Deakin University, Global Obesity Centre, Geelong, Australia, <sup>3</sup>Deakin University, School of Health and Social Development, Melbourne, Australia, <sup>4</sup>Northern Mallee Community Partnership, Mildura, Australia
- 521 Measuring the proximity and density of fast food outlets to schools in Johannesburg using Geographic Information Systems (GIS) ..... 53**  
Dr Bianca van der Westhuizen<sup>1</sup>, Dr Hema Kesa<sup>2</sup>, Mr Carel Greyling<sup>1</sup>  
<sup>1</sup>University Of South Africa (Unisa), Johannesburg, South Africa, <sup>2</sup>Univeristy of Johannesburg, Johannesburg, South Africa
- 720 Mobile health and narrative entertainment-education to promote exclusive breastfeeding in Western Cape, South Africa..... 54**  
Ms Nophiwe Job<sup>1</sup>, Mrs Lize Engelbrecht<sup>2</sup>, Ms Kira-Leigh Kuhnert<sup>1</sup>  
<sup>1</sup>Digital Medic, Stanford University, Cape Town, South Africa, <sup>2</sup>Somerset Hospital, Cape Town, South Africa
- 72 New Zealand’s food system is unsustainable: A survey of the divergent attitudes of agriculture, environment, and health sector professionals towards eating guidelines ..... 54**  
Ms Rebekah Jones<sup>1</sup>, Associate Professor Carol Wham<sup>1,2</sup>, Dr Barbara Burlingame<sup>3,4</sup>  
<sup>1</sup>Dietitians New Zealand, Auckland, New Zealand, <sup>2</sup>School of Sport, Exercise and Nutrition, Massey University , Auckland, New Zealand, <sup>3</sup>School of Health Sciences, Massey University, Wellington, New Zealand, <sup>4</sup>Frontiers Media SA, Lausanne, Switzerland
- 393 ourish Dialogue Dinners: A Novel Approach of Dietitians Connecting Local Food Systems Stakeholders to Identify Improvement Opportunities ..... 55**  
Dr Katie Brown<sup>1</sup>, Dr Diane Stadler<sup>2</sup>, Ms Janice Giddens<sup>1</sup>  
<sup>1</sup>National Dairy Council, Rosemont, United States, <sup>2</sup>Oregon Health & Science University, Portland, United States
- 267 Nutrient composition and percentage contribution of boarding secondary schools meals in Nsukka to recommended nutrient intake (RNI) of adolescents..... 55**  
Dr Adaobi Okafor<sup>1</sup>, Miss Peace Idahosa<sup>1</sup>, Miss Kelechi Nwaogu<sup>1</sup>  
<sup>1</sup>Department of Nutrition and Dietetics, University Of Nigeria, Nsukka, Nsukka, Nigeria
- 657 Nutrient composition, organoleptic attributes and microbial quality of corn-based breakfast cereals fortified with soya beans and bambaranut. .... 56**  
Mrs Florence Adeosun<sup>1</sup>, Mrs Esther Eduzor<sup>2</sup>, Mr Emmanuel Achir<sup>3</sup>  
<sup>1</sup>Department Of Nutrition And Dietetics, Federal Polytechnic Bauchi, Nigeria, Bauchi, Nigeria, <sup>2</sup>MEDA Nigeria WAY, Bauchi, Nigeria, <sup>3</sup>Flourish Foods and Nutrition Services, Bauchi, Nigeria, <sup>4</sup>Solmax Technologies, Bauchi, Nigeria

- 649 Nutrient profiling as a tool for regulating the marketing of foods to children: guidance for choosing a model** ..... 56  
Dr Mariaan Wicks<sup>1</sup>, Prof Edelweiss Wentzel-Viljoen<sup>1</sup>, Dr Hattie Wright<sup>2</sup>  
<sup>1</sup>North-west University, South Africa, Potchefstroom, South Africa, <sup>2</sup>University of the Sunshine Coast, Queensland, Australia
- 677 Nutrition research at the North-West University 1998-2018: Impact, scope and reach through evidence mapping** ..... 57  
Mrs Magdaleen Grundlingh<sup>1</sup>  
<sup>1</sup>North-West University, Potchefstroom, South Africa
- 200 Nutritional adequacy of food served and consumed compared to patient requirements and patient satisfaction with food service in three public hospitals in the Western Cape metro-pole, South Africa.** 57  
Mrs Marieke Theron<sup>1</sup>  
<sup>1</sup>University Of Cape Town, Cape Town, South Africa
- 745 Nutritional status of children attending early childhood development centres in Gauteng, North-West and Limpopo Province, South Africa** ..... 58  
Ms Suzan Mokone<sup>1</sup>, Dr Mashudu Manafe<sup>1</sup>, Dr Lindie Ncube<sup>1</sup>  
<sup>1</sup>Sefako Makgatho University of Health Sciences, Pretoria, South Africa
- 316 Nutritional status of patients receiving maintenance haemodialysis in Bloemfontein, South Africa** ..... 58  
Mrs HC (Ermi) Spies<sup>1</sup>, Prof VL Van der Berg<sup>1</sup>, Me MM Nel<sup>1</sup>  
<sup>1</sup>University Of The Free State, Bloemfontein, South Africa
- 744 Nutritional support for patients recovering from COVID-19. A consensus process with health and social care sector representatives**..... 59  
Prof Mary Hickson<sup>1</sup>, Dr Abigail Tronco Hernandez<sup>1</sup>, Professor Gary Frost<sup>3</sup>, Professor Jane Murphy<sup>2</sup>, Dr Elizabeth Weekes<sup>4</sup>, Dr Anna Julian<sup>5</sup>  
<sup>1</sup>University of Plymouth, Plymouth,, United Kingdom, <sup>2</sup>Bournemouth University, Bournemouth,, UK, <sup>3</sup>Imperial College London, London, UK, <sup>4</sup>University College London Hospitals NHS Foundation Trust, London, UK, <sup>5</sup>NHS Glasgow and Clyde, Glasgow, Scotland
- 636 Omega-3 fatty acid and iron supplementation alone, but not in combination, lower inflammation and anaemia of infection in Tuberculosis** ..... 59  
Dr Arista Nienaber<sup>1</sup>, Dr Jeannine Baumgartner<sup>1,2</sup>, Dr Robin Dolman<sup>1</sup>, Dr Mumin Ozturk<sup>3,4</sup>, Dr Lizelle Zandberg<sup>1</sup>, Mr Frank Hayford<sup>1,5</sup>, Prof Renee Blaauw<sup>6</sup>, Prof Frank Brombacher<sup>3,4</sup>, Prof Suraj Parihar<sup>3</sup>, Prof Cornelius Marius Smuts<sup>1</sup>, Prof Linda Malan<sup>1</sup>  
<sup>1</sup>Centre of Excellence for Nutrition, North-west University, Potchefstroom, South Africa, <sup>2</sup>ETH, Zurich, Switzerland, <sup>3</sup>University of Cape Town, Cape Town, South Africa, <sup>4</sup> International Centre for Genetic Engineering and Biotechnology (ICGEB), Cape Town, South Africa, <sup>5</sup>University of Ghana, Accra, Ghana, <sup>6</sup>Stellenbosch University, Stellenbosch, South Africa
- 531 Opinions of mothers attending a certain health center on facilitators to exclusively breastfeed for the first six months** ..... 60  
Mrs Nyabana Martha Maponya<sup>1</sup>, Prof Sogo France Matlala<sup>1</sup>  
<sup>1</sup>University Of Limpopo, Tzaneen, South Africa
- 750 Owning our influence: Global data on dietitians and consumer trust**..... 60  
Ms Sue Cloran<sup>2</sup>, Ms Erin Kappelhof<sup>1</sup>  
<sup>1</sup>Eat Well Global, Duivedrecht, Netherlands, <sup>2</sup>Eat Well Global, Ireland
- 547 Perspectives of employees and employers regarding breastfeeding support in the workplace** ..... 61  
Dr Lynette Daniels<sup>1</sup>, Prof Xikombiso Mbhenyane<sup>1</sup>, Prof Lisanne Du Plessis<sup>1</sup>  
<sup>1</sup>Stellenbosch University, Cape Town, South Africa
- 552 Pine bark (Pinus spp.) extract for treating chronic disorders: a Cochrane Systematic Review** ..... 61  
Mrs Nina Robertson<sup>1</sup>, Ms Anel Schoonees<sup>1</sup>, Mrs Janicke Visser<sup>1</sup>, Dr Janicke Visser<sup>1</sup>  
<sup>1</sup>Stellenbosch University, Cape Town, South Africa

- 716 Ponderal Index, maternal smoking, and adult body composition**.....62  
Dr Jessica Garay<sup>1</sup>, Dr Tiago Barreira<sup>1</sup>, Dr Qiu Wang<sup>1</sup>, Dr Tom Brutsaert<sup>1</sup>  
<sup>1</sup>Syracuse University, Syracuse, United States
- 251 Predictive validity of digitised screening algorithms to detect weight-for-age (WFA) growth faltering in under-five children as a risk factor for severe acute malnutrition (SAM)** ..... 62  
Mrs Sanja Nel<sup>1</sup>, Prof Friedeburg AM Wenhold<sup>1</sup>, Prof Ute D Feucht<sup>2</sup>, Prof Andre L Nel<sup>3</sup>, Prof Piet J Becker<sup>4</sup>  
<sup>1</sup>University Of Pretoria Department of Human Nutrition, Pretoria, South Africa, <sup>2</sup>University Of Pretoria Department of Paediatrics, Pretoria, South Africa, <sup>3</sup>University of Johannesburg Faculty of Engineering, Johannesburg, South Africa, <sup>4</sup>University Of Pretoria Faculty of Health Sciences Research Office, Pretoria, South Africa
- 631 Prevalence of hyperinsulinemia and insulin resistance: A cross-sectional study of adolescents and young adults in Mumbai, India** ..... 63  
Prof Jagmeet Madan<sup>1</sup>, Ms Panchali Moitra<sup>1</sup>, Ms Sharvari Desai<sup>1</sup>, Ms Sheryl Salis<sup>2</sup>, Dr. Rekha Battalwar<sup>1</sup>, Dr. Saumik Kalita<sup>3</sup>, Dr Ajay Phatak<sup>4</sup>, Dr. Shobha Udipi<sup>5</sup>, Dr. Rama Vaidya<sup>5</sup>, Dr Ashok Vaidya<sup>5</sup>  
<sup>1</sup>Sir Vithaldas Thackersey College Of Home Science (autonomous) Sndt Women's University, Mumbai. National President Ida., Mumbai, India, <sup>2</sup>NurtureHealthSolutions, Mumbai, India, <sup>3</sup>FamPhy., New Delhi, India, <sup>4</sup>CharutarArogyaMandal, Surat, India, <sup>5</sup>KasturbaHealthSociety,MedicalResearchCentre, Mumbai, India
- 697 Prevalence of malnutrition and food insecurity in women and children in rural Guatemala. A comparative study of two different communities**..... 63  
Mrs Jen Brewer<sup>3,7</sup>, Dr. Elizabeth Yakes Jimenez<sup>1,2</sup>, Gabriela Proano<sup>2</sup>, Stephen Alajajian<sup>2,3</sup>, Andrea Guzman<sup>3</sup>, Dr. Peter Rohloff<sup>3,4,5,6</sup>  
<sup>1</sup>University of New Mexico, Albuquerque, USA, <sup>2</sup>Academy of Nutrition and Dietetics, Chicago, USA, <sup>3</sup>Wuqu' Kawoq (Maya Health Alliance), Guatemala, <sup>4</sup>Harvard Medical School, Boston, USA, <sup>5</sup>Boston Children's Hospital, Boston, USA, <sup>6</sup>Brigham and Women's Hospital, Boston, USA, <sup>7</sup>Global Nutrition Consultant, Independent Contractor, Rochester, USA
- 577 Prevalence of malnutrition at cancer diagnosis in Paediatric Oncology Units in South Africa** ..... 64  
Ms Judy Schoeman<sup>1</sup>, Ms Ilde-Marie Kellerman<sup>2</sup>, Dr Karla Thomas<sup>3</sup>, Dr Barry Van Emmenes<sup>3</sup>, Dr Rema Matthew<sup>3</sup>, Dr Gita Naidu<sup>4</sup>, Dr Bianca Rowe<sup>4</sup>, Dr Jan Du Plessis<sup>5</sup>, Mrs Marienchen Herholdt<sup>6</sup>, Dr Elena J Ladas<sup>8</sup>, Prof Paul C Rogers<sup>9</sup>, Prof Mariana Kruger<sup>1</sup>  
<sup>1</sup>Department of Paediatrics & Child Health, Stellenbosch University, Stellenbosch, South Africa, <sup>2</sup>Division of Human Nutrition, Faculty of Medicine and Health Sciences, Stellenbosch University, Stellenbosch, South Africa, <sup>3</sup>Division of Paediatric Haematology and Oncology, Department of Paediatrics, Frere Hospital, East London, South Africa, <sup>4</sup>Faculty of Health Sciences, Division of Paediatric Haematology and Oncology, Department of Paediatrics and Child Health, University of the Witwatersrand, Chris Hani Baragwanath Academic Hospital, Johannesburg, South Africa, <sup>5</sup>Department of Paediatrics, Faculty of Health Science, Division of Paediatric Oncology and Haematology, Universitas Academic Hospital, Bloemfontein, South Africa, <sup>6</sup>Department of Human Nutrition, Universitas Academic Hospital, Bloemfontein, South Africa, <sup>7</sup>Paediatric Oncology Unit, Robert Mangaliso Sobukwe Hospital, Kimberley, South Africa, <sup>8</sup>Division of Pediatric Hematology/Oncology/Stem Cell Transplant, Columbia University Medical Center, New York City, United States of America, <sup>9</sup>Division of Pediatric Hematology & Oncology, University of British Columbia, Vancouver, Canada
- 237 Prevalence of nutritional-related symptoms in discharged previously ventilated adult ICU patients - The pilot Symptoms and Nutrition After Critical Care (SNACC) survey**..... 65  
Mrs Louise Albrich<sup>1,2</sup>, Prof Mary Hickson<sup>2</sup>  
<sup>1</sup>Yeovil District Hospital, Yeovil, United Kingdom, <sup>2</sup>University of Plymouth, Plymouth, United Kingdom
- 364 Price incentives within university food outlets and their impact on the purchasing behaviour of young adults.** ..... 65  
Dr Rajshri Roy<sup>1</sup>  
<sup>1</sup>University Of Auckland, Auckland, New Zealand
- 495 Provincial Dietary Intake Study (PDIS): Energy and macronutrient intake, as well as key food contributors, in a representative sample of 1–<10-year-old children in two economically active and urbanized provinces in South Africa.** ..... 66  
Prof Nelia Steyn<sup>1</sup>, Prof Johanna H Nel<sup>2</sup>, Ms Linda Drummond<sup>1</sup>, Ms Sonia Malczyk<sup>1</sup>, Prof Marjanne Senekal<sup>1</sup>  
<sup>1</sup>University Of Cape Town, Cape Town, South Africa, <sup>2</sup>University of Stellenbosch, Stellenbosch, South Africa

- 533 Provincial Dietary Intake Study (PDIS): Prevalence and sociodemographic determinants of the co-existence of stunting and overweight in the same child in 1-<10-year-old children from two provinces in South Africa**..... 66  
Ms Sonia Malczyk<sup>1</sup>, Mrs Johanna H. Nel<sup>2</sup>, Mrs Linda Drummond<sup>1</sup>, Mrs Nelia P. Steyn<sup>1</sup>, Dr Janetta Harbron<sup>1</sup>, Professor Marjanne Senekal<sup>1</sup>  
<sup>1</sup>University Of Cape Town, Cape Town, South Africa, <sup>2</sup>Stellenbosch University, Stellenbosch, South Africa
- 530 Provincial dietary intake study (PDIS): Prevalence and socio-demographic predictors of malnutrition in a representative sample of 1-<10-year-old children from two urbanized and economically active provinces in South Africa**..... 67  
Prof Marjanne Senekal<sup>1</sup>, Prof Johanna H Nel<sup>2</sup>, Ms Sonia Malczyk<sup>1</sup>, Ms Linda Drummond<sup>1</sup>, Dr Janetta Harbron<sup>1</sup>, Prof Nelia P Steyn<sup>1</sup>  
<sup>1</sup>University Of Cape Town, Cape Town, South Africa, <sup>2</sup>University of Stellenbosch, Stellenbosch, South Africa
- 540 Quality Aspects of Hospital Foodservice: A Scoping Review of articles published 2000-2020**..... 67  
PhD Student, RD Emma Wilandh<sup>1</sup>, Professor Ylva Mattsson Sydner<sup>1</sup>, Dr Malin Skinnars Josefsson<sup>1</sup>, Associate Professor Christine Persson Osowski<sup>2</sup>  
<sup>1</sup>Department of Food Studies, Nutrition and Dietetics, Uppsala universitet, Uppsala, Sweden, <sup>2</sup>School of Health, Care and Social Welfare, Mälardalen University, Västerås, Sweden
- 142 Quantification of aflatoxins and ochratoxin A in chicken tissue and eggs therein Cameroon and population dietary exposure**..... 68  
Mr Tatfo Keutchatang Fabrice De Paul<sup>1</sup>  
<sup>1</sup>University Of Yaoundé<sup>1</sup>, Yaoundé, Cameroon
- 111 Ready-to-use therapeutic food (RUTF) for home-based nutritional rehabilitation of severe acute malnutrition in children from six months to five years of age: a Cochrane review**..... 68  
Ms Anel Schoonees<sup>1</sup>, Dr Martani Lombard<sup>2</sup>, Dr Alfred Musekiwa<sup>1</sup>, Prof Etienne Nel<sup>3</sup>, Prof Jimmy Volmink<sup>1</sup>  
<sup>1</sup>Centre for Evidence-based Health Care, Division of Epidemiology and Biostatistics, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>3</sup>Department of Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa
- 595 Recreational running may improve inflammation resolution** ..... 69  
Prof Linda Malan<sup>1</sup>, Dr Lizelle Zandberg<sup>1</sup>, Dr Arista Nienaber<sup>1</sup>, Prof Lize Havemann-Nel<sup>1</sup>, Ms C Pienaar<sup>2,3</sup>, Ms C Botha-Ravyse<sup>3</sup>, Ms J Sauer<sup>3</sup>  
<sup>1</sup>North-west University - Centre of Excellence for Nutrition, Potchefstroom, South Africa, <sup>2</sup>Durban University of Technology, Durban, South Africa, <sup>3</sup>North-West University - Physical Activity, Sport and Recreation, Potchefstroom, South Africa
- 498 Reported health and macronutrient intake of pregnant women attending an antenatal clinic at Pelonomi Hospital in Bloemfontein, South Africa**..... 69  
Mrs Liska Robb<sup>1</sup>, Mrs Marizeth Jordaan<sup>1</sup>, Dr Jennifer Osei Ngounda<sup>1</sup>, Professor Gina Joubert<sup>1</sup>, Professor Corinna Walsh<sup>1</sup>  
<sup>1</sup>University Of The Free State, Bloemfontein, South Africa
- 150 Sarcopenia, Myosteatorsis, and Visceral Obesity are Widely Prevalent in Today's Patient and Associate with Adverse Outcomes - Especially in Male Patients**..... 70  
Dr Heidi Silver<sup>1</sup>, Mr. Timothy Olszewski<sup>1</sup>, Ms. Alex Rains<sup>1</sup>  
<sup>1</sup>Vanderbilt University Medical Center, Nashville, United States
- 300 Simultaneous monitoring of sodium reduction and iodine status required to ensure compatibility of the two public health interventions: Case study from South Africa** ..... 70  
Prof Karen Charlton<sup>1</sup>, Dr Paul Kowal<sup>2</sup>, Dr Barbara Corso<sup>3</sup>, Professor Alta Schutte<sup>4</sup>  
<sup>1</sup>University Of Wollongong, Wollongong , Australia, <sup>2</sup>World Health Organization, Geneva, Switzerland, <sup>3</sup>CNR, Neuroscience Institute, Padova, Italy , <sup>4</sup>North West University, Potchefstroom, South Africa
- 151 Skeletal muscle atrophy and ectopic fat infiltration of skeletal muscle are associated with glucose intolerance in adults with treated HIV** ..... 71  
Dr Heidi Silver<sup>1</sup>, Dr. John R Koethe<sup>1</sup>  
<sup>1</sup>Vanderbilt University Medical Center, Nashville, United States

- 629 Snacking pattern and its association with body composition in young adults of Mumbai, India ..... 71**  
Prof Jagmeet Madan<sup>1</sup>, Ms. Panchali Moitra<sup>1</sup>, Ms Sharvari Desai<sup>1</sup>, Ms Sheryl Salis<sup>2</sup>, Dr. Rekha Battalwar<sup>1</sup>, Dr. Saumik Kalita<sup>3</sup>,  
 Dr. Ajay Phatak<sup>4</sup>, Dr. Shobha Udipi<sup>5</sup>, Dr. Rama Vaidya<sup>5</sup>, Dr Ashok Vaidya<sup>5</sup>  
*<sup>1</sup>Sir Vithaldas Thackersey College Of Home Science (autonomous) Sndt Women's University, Mumbai, National President, Ida., Mumbai, India, <sup>2</sup>Nurture Health Solutions, Mumbai, India, <sup>3</sup>Family Physician, New Delhi, India, <sup>4</sup>CharterArogyaMandal, Surat, India, <sup>5</sup>KasturbaHealth Society, Medical Research Centre, Mumbai, India*
- 384 Socio-economic status and dietary intake of micronutrients in pregnant women in the urban Free State, South Africa ..... 72**  
Dr Jennifer Ngounda<sup>1</sup>, Mrs Marizeth Jordaan<sup>1</sup>, Mrs Liska Robb<sup>1</sup>, Ms Mariette Nel<sup>1</sup>, Prof Corinna Walsh<sup>1</sup>  
*<sup>1</sup>University of the Free State, Bloemfontein, South Africa*
- 620 Soybean-fiber-maize blend complementary food improves weight and reduces diarrhea-type stools in Malawian children aged 6-36 months. .... 72**  
Dr Edda Lungu<sup>1</sup>, Dr Douglas Archer<sup>1</sup>, Dr Bobbi Langkamp-Henken<sup>1</sup>, Ms Amanda Piano<sup>2</sup>, Dr Harry Sitren<sup>1</sup>, Dr Wendy Dahl<sup>1</sup>  
*<sup>1</sup>University Of Florida, Gainesville, United States, <sup>2</sup>Rosell Institute for Microbiome and Probiotics, Montreal, Canada*
- 274 Sub-regional quality improvement initiative: Team-based malnutrition screening as a standardized intervention in the post-hospital discharge follow-up program ..... 73**  
Mr Denis Tsang<sup>1,2,3</sup>  
*<sup>1</sup>Village Family Health Team, Toronto, Canada, <sup>2</sup>Taddle Creek Family Health Team, Toronto, Canada, <sup>3</sup>Mount Sinai Hospital Academic Family Health Team, Toronto, Canada*
- 100 The association between pre-pregnancy body mass index, perinatal depression and maternal vitamin D status: Findings from an Australian obstetric cohort study ..... 73**  
Dr Cathy Knight-Agarwal<sup>1</sup>  
*<sup>1</sup>University of Canberra, Bruce, Australia*
- 586 The association of HIV status and HAART with plasma clot characteristics in black South Africans ..... 74**  
Mr Shams Bakali<sup>1</sup>, Dr Zelda de Lange<sup>1</sup>, Prof. Marlien Pieters<sup>1</sup>  
*<sup>1</sup>North-West University, Potchefstroom, South Africa*
- 477 The effect of folate gene-nutrient interactions on small-for-gestational-age risk in the screening for pregnancy endpoints (SCOPE) cohort study ..... 74**  
Mrs Rhodi Bulloch<sup>1</sup>, Associate Professor Clare Wall<sup>1</sup>, Professor Lesley McCowan<sup>2</sup>, Mrs Rennae Taylor<sup>2</sup>, Professor Claire Roberts<sup>3</sup>, Associate Professor John Thompson<sup>2,4</sup>  
*<sup>1</sup>Discipline of Nutrition and Dietetics, The University Of Auckland, Auckland, New Zealand, <sup>2</sup>Department of Obstetrics and Gynaecology, The University of Auckland, Auckland, New Zealand, <sup>3</sup>Robinson Research Institute, University of Adelaide, Adelaide, Australia, <sup>4</sup>Department of Paediatrics, Child and Youth Health, The University of Auckland*
- 336 The effect of olive leaf extract supplementation on performance in active individuals; a randomised controlled cross-over trial..... 75**  
Mr Vaughan Somerville<sup>1</sup>, Dr Karen Bishop<sup>2</sup>, Dr Troy Merry<sup>1</sup>, Dr Andrea Braakhuis<sup>1</sup>  
*<sup>1</sup>Discipline of Nutrition, Faculty of Medical and Health Sciences, The University of Auckland, Auckland, New Zealand, <sup>2</sup>Auckland Cancer Society Research Centre, The University of Auckland, Auckland, New Zealand*
- 159 The Effects of macronutrient manipulation and gut training on ultrarunning race performance ..... 75**  
Dr Claire Blennerhassett<sup>1</sup>, Professor Lars McNaughton<sup>2</sup>, Dr Jamie Pugh<sup>4</sup>  
*<sup>1</sup>Faculty of Health, Social Care and Medicine, Edge Hill University, Ormskirk, United Kingdom, <sup>2</sup>Department of Sport and Physical Activity, Edge Hill University, Ormskirk, United Kingdom, <sup>3</sup>University of Johannesburg, , South Africa, <sup>4</sup>Research Institute for Sport and Exercise Sciences, Liverpool John Moores University, Liverpool, United Kingdom*
- 556 The importance of fostering public-private partnerships for an improved country-specific food composition database ..... 76**  
Mrs Joelaine Chetty<sup>1</sup>, Mrs Malory Jumat<sup>1</sup>, Dr Averalda Van Graan<sup>1</sup>  
*<sup>1</sup>South African Medical Research Council. Biostatistics Research Unit. South African Food Data System (SAFOODS), Cape Town, South Africa*

- 580 The inflammatory potential of the diet of rural and urban black South Africans ..... 76**  
Ms Maylene Ferreira<sup>1,2</sup>, Professor Marlien Pieters<sup>1,2</sup>, Doctor Tertia van Zyl<sup>1,2</sup>, Professor Edelweiss Wentzel-Viljoen<sup>1,2</sup>, Dr H  l  ne Toin  t Cronj  <sup>3</sup>  
<sup>1</sup>Center Of Excellence For Nutrition, Potchefstroom , South Africa, <sup>2</sup>Medical Research Council Unit for Hypertension and Cardiovascular Disease, Potchefstroom, South Africa, <sup>3</sup>Section of Epidemiology, Department of Public Health, University of Copenhagen, Denmark
- 415 The influence of different nutrition messages on intention to reduce unhealthy food consumption: a randomised crossover trial ..... 77**  
Ms Joyce Haddad<sup>1,2</sup>, Dr Gilly A Hendrie<sup>1</sup>, Dr Kacie Dickinson<sup>2</sup>, Professor Rebecca K Golley<sup>2</sup>  
<sup>1</sup>Commonwealth Scientific and Industrial Research Organisation (CSIRO), Adelaide, Australia, <sup>2</sup>Flinders University, Adelaide, Australia
- 428 The influence of taste on diet and obesity in African American students ..... 77**  
Dr Terezie Tolar-Peterson, Miss Nicole Reeder, Miss Pradtana Tapanee  
<sup>1</sup>Mississippi State University, Starkville, United States
- 461 The Partnership for Dietetic Education and Practice (PDEP) in Canada: Working together for success ... 78**  
Dr Gordon Zello<sup>1</sup>, MA, RD Corinne Eisenbraun<sup>2</sup>, PhD, RD, BEd, PHEc Isabelle Giroux<sup>3</sup>, MSc, RD Joanie Bouchard<sup>4</sup>  
<sup>1</sup>University Of Saskatchewan, Saskatoon, Canada, <sup>2</sup>Dietitians of Canada, Toronto, Canada, <sup>3</sup>University of Ottawa, Ottawa, Canada, <sup>4</sup>College of Dietitians of BC, Vancouver, Canada
- 551 The potential contribution of Bambara Groundnut, as a underutilised indigenous pulse, to nutrition and food security ..... 78**  
Mrs Zani Veldsman<sup>1</sup>, Professor Hettie Sch  nfeldt<sup>2</sup>, Dr Beulah Pretorius<sup>1</sup>  
<sup>1</sup>Department of Animal and Wildlife Sciences, Institute of Food Nutrition and Well-being, Faculty of Natural and Agricultural Sciences, University Of Pretoria, Pretoria, South Africa, <sup>2</sup>African Research University Alliance (ARUA) Centre of Excellence for Food Security, University of Pretoria, Pretoria, South Africa
- 559 The relationship between dietary patterns and blood pressure in the African-PREDICT study population 79**  
Mrs Thalia Schaap<sup>1</sup>, Professor Wayne Smith<sup>2</sup>, Dr Cristian Ricci<sup>1</sup>, Dr Tertia van Zyl<sup>1</sup>  
<sup>1</sup>North-West University, Centre Of Excellence for Nutrition, Potchefstroom, South Africa, <sup>2</sup>North-West University, Hypertension in Africa Research Team , Potchefstroom, South Africa
- 603 The relationship between homocysteine concentrations and cardiovascular measures including markers of haemostasis in South African adolescents ..... 79**  
Mrs Jacomina Du Plessis<sup>1</sup>, Prof Cornelie Nienaber-Rousseau<sup>1,3</sup>, Dr Leandi Lammertyn<sup>2,3</sup>, Prof Aletta E Schutte<sup>2,3,4</sup>, Prof Marlien Pieters<sup>1,3</sup>, Prof Herculina S Kruger<sup>1,3</sup>  
<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom,, South Africa, <sup>2</sup>Hypertension in Africa Research Team, North-West University, Potchefstroom,, South Africa, <sup>3</sup>Medical Research Council Unit for Hypertension and Cardiovascular Disease, North-West University, Potchefstroom,, South Africa, <sup>4</sup>School of Population Health , University of New South Wales; The George Institute for Global Health, Sydney,, Australia
- 355 The relationship between under-nutrition risk, sarcopenia, strength and function in community-dwelling older adults after hospital discharge..... 80**  
Prof Mary Hickson<sup>1,2</sup>, Dr Anna Julian<sup>2</sup>, Professor Gary Frost<sup>2</sup>  
<sup>1</sup>University of Plymouth, Plymouth, United Kingdom, <sup>2</sup>Imperial College London, London, UK
- 395 The statistical methods and software used in nutrition and dietetic research: A review of the published literature using text mining..... 80**  
Ms Alison Coenen<sup>1</sup>, Prof Marijka Batterham<sup>1</sup>, Prof Eleanor Beck<sup>1</sup>  
<sup>1</sup>University Of Wollongong, Wollongong, Australia
- 659 The use of the “FIGO Nutrition Checklist” in routine antenatal care: a pilot and acceptability study..... 81**  
Ms Sarah Louise Killeen<sup>1</sup>, Ms. Shauna L. Callaghan, Prof. Fionnuala M. McAuliffe  
<sup>1</sup>UCD Perinatal Research Centre, School of Medicine, University College Dublin, National Maternity Hospital, Dublin, Ireland, Dublin, Ireland
- 676 There is more to nutrition care than just nutrition: Communicational skills in nutrition care of cancer patients..... 81**  
Mrs Nanna Ruengkratok Lang<sup>1</sup>  
<sup>1</sup>Via University College, Department Of Nutrition And Health, Aarhus, Denmark

- 450 Thinking differently about critical thinking .....82**  
Dr Jason Riis<sup>1</sup>, Dr. Brandon McFadden<sup>2</sup>, Ms. Karen Collins<sup>3</sup>, Dr. Milton Stokes<sup>4</sup>  
<sup>1</sup>Behavioralize, LLC, Philadelphia, United States, <sup>2</sup>Center for Experimental and Applied Economics at the University of Delaware, Newark, United States, <sup>3</sup>American Institute for Cancer Research, Washington DC, United States, <sup>4</sup>Bayer Crop Science, St. Louis, United States
- 258 Two-fold higher odds of stunting and anaemia in urban HIV-infected compared to uninfected South African schoolchildren .....82**  
Mrs Charlene Goosen<sup>1</sup>, Ms Nadja Mikulic<sup>2</sup>, Dr Jeannine Baumgartner<sup>2</sup>, Prof Mark Cotton<sup>3</sup>, Dr Shaun Barnabas<sup>3</sup>, Prof Michael Zimmermann<sup>2</sup>, Prof Renée Blaauw<sup>1</sup>  
<sup>1</sup>Division of Human Nutrition, Department of Global Health, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Laboratory of Human Nutrition, Department of Health Sciences and Technology, ETH Zürich, Zürich, Switzerland, <sup>3</sup>Family Centre for Research with Ubuntu, Department of Paediatrics and Child Health, Stellenbosch University, Cape Town, South Africa
- 516 Use of social media platforms by manufacturers to market breast-milk substitutes in South Africa.....83**  
Mrs Catherine Pereira-Kotze<sup>1</sup>, Prof Tanya Doherty<sup>1,2</sup>, Prof Rina Swart<sup>1</sup>  
<sup>1</sup>University Of The Western Cape (UWC), Bellville, South Africa, <sup>2</sup>South African Medical Research Council (SAMRC), Bellville, South Africa
- 488 Variability of resting energy expenditure (REE) and its components of early, middle and late achievers of steady state (SS): A study of 6-9-year-old Southern African children. ....83**  
Mrs Adeline Pretorius<sup>1</sup>, Prof Piet Becker<sup>1</sup>, Prof Paola Wood<sup>1</sup>, Dr Heather Sedibe-Legodi<sup>1</sup>, Prof Friede Wenhold<sup>1</sup>  
<sup>1</sup>University Of Pretoria, Pretoria, South Africa
- 307 Very-low-carbohydrate-high-fat weight-loss diets and cardiovascular disease risk: a systematic review.....84**  
Dr Lynda Ross<sup>1,2,3</sup>, Ms Jane Musial<sup>3</sup>, Ms Robin Hay<sup>3</sup>, Ms Andrea Cawte<sup>1,3</sup>, Dr Angela Byrnes<sup>3</sup>  
<sup>1</sup>Queensland University Of Technology, Kelvin Grove, Australia, <sup>2</sup>Griffith University, Gold Coast , Australia, <sup>3</sup>Royal Brisbane and Women's Hospital, Herston , Australia
- 229 Weight stigma in perinatal care: Perspectives of women with high BMI and dietitians.....84**  
Ms Lindsey Mazur<sup>1</sup>  
<sup>1</sup>University Of Manitoba, Winnipeg, Canada
- 440 What is dietary counselling? The need for a consensus on the definitions of terms used to describe oral interventions used in the management of malnutrition .....85**  
Dr Elizabeth Weekes<sup>1</sup>, Prof Marian de van der Schueren<sup>2</sup>, Dr Christine Baldwin<sup>3</sup>  
<sup>1</sup>Guy's & St Thomas' NHS Foundation Trust, London, United Kingdom, <sup>2</sup>HAN University of Technology, Nijmegen, The Netherlands, <sup>3</sup>King's College London, , United Kingdom
- 427 Workplace cafeteria and other multicomponent interventions to promote healthy eating among adults: A systematic review .....85**  
Dr Ashika Naicker<sup>1</sup>  
<sup>1</sup>Durban University Of Technology, Ballito, South Africa

## 80 A feasibility study investigating the practicalities and experiences of implementing a healthy diet skills programme in a faith-placed, foodbank setting

Ms Alexandra Harper<sup>1</sup>, Dr Deborah Lycett<sup>1</sup>, Dr Anne Coufopoulos<sup>1</sup>, Dr Andy Turner<sup>1</sup>

<sup>1</sup>Coventry University, Coventry, United Kingdom

**Biography:** Alexandra Harper is studying a PhD at Coventry University and the research explores the identification and management of food insecurity in dietetic practice and UK Foodbanks. She is interested to see how the development of a brief intervention in clinical practice can help begin to address food insecurity. Alexandra has expertise in Foodbank interventions within the UK and clinical dietetics. Alexandra is the first Dietitian to work in a UK Foodbank. This has given Alexandra a unique experience into public health nutrition for a hard to reach group in an exciting area of evolving research.

Alexandra Harper works part time in academia and clinical practice. She is an hourly paid lecturer in Undergraduate Human Nutrition and Dietetics and MSc Public Health Nutrition at Coventry University and is a Dietitian in the NHS. These two job roles complement each other well. Alexandra is a member of the British Dietetics Association. She is a Fellow of the Association of Higher Education. She has published in the Journal of Human Nutrition and Dietetics and has also presented her research at national and international conferences.

**Introduction:** In the UK over the past decade foodbank use has rose exponentially. In 2014/15, 1,084,604 received 3 days emergency food. As part of the 'more than food' approach nutrition education interventions have evolved. The aims of the research were to test the feasibility of delivering a nutrition intervention for foodbank clients and measure change in nutrition knowledge, food choice and confidence of healthy eating and cooking.

**Methods:** A two-week nutrition education intervention (2 x 2hour sessions) was delivered by a dietitian. The intervention included an hour nutrition education and an hour cooking fresh vegetable soup. The participants of the study were predetermined as those attending the intervention. A study-specific questionnaire was completed pre and post intervention, to measure change in nutrition knowledge, food choice and confidence. Feasibility was measured through client's uptake and attendance rates.

**Results:** n=42. Only 2 participants (5%) did not complete the intervention. Attrition from recruitment of the intervention to attendance was high (42%). The mean age of the sampled population was 36.4 years ( $\pm 12$  s.d.) and 70% were female. More participants knew the recommendations for physical activity (55%) and recognised The Eatwell Guide (40%) after the intervention ( $P < 0.001$ ). Participants knew the recommendations for fruit and vegetable intake pre intervention but their intake was low; 2.4 portions/day. Many of the food choice statements assessed to support budgeting and shopping, the clients were already doing, for example buying value brands ( $> 0.285$ ). Confidence for all variables increased with statistical significance; an example was 'How confident do you feel in planning meals?' ( $P < 0.001$ ).

**Conclusion:** A dietitian working within a foodbank is a feasible and worthwhile asset and produced similar findings to other published research (2). A research recommendation is to deliver on the spot health promotion interventions. Improving confidence should be a key focus in interventions like this.

**Conflict of interest:** None

**Keywords:** Foodbank; nutrition intervention; food insecurity; dietitian; poverty

## 658 A higher red blood cell arachidonic acid to eicosapentaenoic acid ratio during pregnancy is associated with a higher risk of premature birth in urban South Africa: the NuPED study

Dr Elize Symington<sup>1,2</sup>, Prof Jeannine Baumgartner<sup>1,3</sup>, Dr Linda Malan<sup>1</sup>, Dr Lizelle Zandberg<sup>1</sup>, Prof Cornelius Smuts<sup>1</sup>

<sup>1</sup>Department of Life & Consumer Science, Unisa, Roodepoort, South Africa,

<sup>2</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa,

<sup>3</sup>Human Nutrition Laboratory, Institute of Food, Nutrition and Health, ETH Zurich, Zurich, Switzerland

**Biography:** Elize Symington, PhD, is a senior lecturer at the University of South Africa (UNISA), a Registered Dietitian and an International Level 1 Anthropometrist. She has experience in nutrition research specifically within maternal and child health as well as diet history methodology. She also has experience in curriculum development as well as training/education material development. Her PhD thesis focused on nutrition during pregnancy, more specifically the iron and omega-3 fatty acid status of pregnant women in Johannesburg and the resulting pregnancy and birth outcomes. She served as the study site co-ordinator for this prospective cohort study and was directly involved in recruitment and training of fieldworkers in dietary and anthropometric data collection. She was elected as chairperson of the Nutrition Society of South Africa for the period 2018-2020 and 2020-2022. She had successful funding applications to the National Research Foundation of South Africa and the Research Office of UNISA (Women-in-Research grant).

**Introduction:** Nutrient requirements increase during pregnancy and women are vulnerable to inadequate nutritional status during this period of rapid foetal development. Low omega-3 (n-3) polyunsaturated fatty acid (PUFA) intake and status have been associated with premature birth. The objectives of this study were to 1) assess dietary intake of long-chain PUFA (LCPUFA), and 2) determine associations between LCPUFA status throughout pregnancy and birth outcomes in women residing in urban Johannesburg. **Methods:** In this cohort study, generally healthy pregnant women were recruited from primary health-care clinics, Johannesburg (n=250). Venous blood was drawn at  $< 18$ ,  $\pm 22$  and  $\pm 36$  weeks of gestation. Dietary intake data were obtained at enrolment using a quantified food frequency questionnaire. Red blood cell (RBC) total phospholipid fatty acid composition was determined using gas chromatography mass spectrometry. Gestational period was calculated from first visit sonography data. Logistic regression models were used to determine associations between fatty acid status and gestational age, adjusting for confounders. **Results:** We found that dietary consumption of n-6 linoleic acid (LA) was high, while n-3  $\alpha$ -linolenic acid (ALA), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) intake were low compared to recommendations (Joint FAO/WHO Expert Consultation on Fats and Fatty Acids in Human Nutrition). The mean (IQR) LA:ALA intake ratio was 39:1 (28:1-51:1). RBC fatty acid composition changed significantly during pregnancy, however, DHA did not decrease in late pregnancy as expected. In fully adjusted regression models, a higher RBC arachidonic acid (AA) to EPA ratio was associated with an increased risk for premature birth (OR: 4.51, 95% CI: 1.29, 15.79,  $p = 0.018$ ). **Conclusion:** In this sample of urban pregnant women, n-6:n-3 dietary intake ratios were high. A higher RBC AA:EPA ratio was associated with an increased risk for premature delivery. These results may inform nutrition programmes for women during pregnancy to improve dietary intake of n-3 PUFA.

**Conflict of interest:** None

**Keywords:** pregnancy; premature birth; polyunsaturated fatty acids; maternal fatty acid status

## 205 A laboratory-based evaluation of tube blocking and microbial risks associated with one blended enteral feed recipe

Dr Angela Madden<sup>1</sup>, Dr Simon Baines<sup>1</sup>, Ms Elise Chen<sup>1</sup>, Dr Shan Goh<sup>1</sup>, Ms Lee Jerome<sup>1</sup>, Ms Simone Roberts<sup>1</sup>, Ms Cara Sommariva-Nagle<sup>1</sup>, Ms Malgorzata Szychta<sup>1</sup>

<sup>1</sup>University Of Hertfordshire, Hatfield, United Kingdom

**Biography:** Angela Madden graduated from the University of Surrey UK and worked as a clinical dietitian in the NHS at the Hammersmith Hospital and Royal Free Hospital in London, specialising in nutritional management of liver disease. After completing her PhD at University College London, she became a lecturer at London Metropolitan University and moved to the University of Hertfordshire in 2006 to lead the first undergraduate dietetic programme in the East of England. Her current role at Hertfordshire includes teaching, research and research supervision with a particular focus on student-staff collaborative investigations.

**Introduction:** Concerns associated with blended enteral feeds include risk of blocked tubes and microbial contamination but evidence is limited. This lab-based investigation aimed to examine these risks in a blended feed providing a nutritionally adequate intake for a hypothetical patient.

**Methods:** One blended feed recipe was made using three different methods (professional, jug and stick blenders) and three storage procedures. Feed samples were syringed via 10, 12 and 14 French enteral feeding tubes and blockages and time taken recorded. Feed samples were diluted, plated on agars, incubated and bacterial colony forming units (CFU) counted. After storage at -80°C, identification was undertaken using 16S rRNA PCR sequencing.

**Results:** Two blockages occurred during 27 administrations of feed made using a professional blender but were resolved with water flush. No blockages occurred with the 14 French tube and administration was quicker with wider tubes ( $P < 0.00001$ ). There was no significant difference between total bacterial CFU of feeds prepared using different methods ( $P = 0.771$ ) or stored differently. The genus of bacteria identified included *Enterococcus*, *Bacillus*, lactose-fermenting *Enterobacteriaceae*, *Pseudomonas* and *Staphylococcus*. Pathogens, such as *Clostridium* spp., *Salmonella* spp. and *Vibrio* spp., were not identified by phenotypic tests used. Sequencing identified *E. coli*, *Shigella* species, *Streptococcus lutetiensis* and *Staphylococcus epidermidis*.

**Conclusions:** This evaluation found no risk of tube blockages when a blended feed made using three methods was delivered via a 14 French tube. There is concern about bacterial contamination although this was not influenced by the methods of preparation or storage used in this study.

This presentation has potential benefit to the audience by sharing new data relevant to this clinical area which currently has very limited evidence.

**Conflict of interest:** None

**Keywords:** Blended feeds; enteral feeds; microbial risk; tube blockage

## 187 A recipe for nutrition competent physicians at the Northern Ontario School of Medicine (NOSM)

Mrs Lee Rysdale<sup>1</sup>, Ms Denise Raftis<sup>1</sup>

<sup>1</sup>Northern Ontario School of Medicine, Sudbury, Canada

**Biography:** Lee Rysdale, MEd, RD has over 30 years of experience in clinical, public health, and education settings. She is an Associate Professor at the Northern Ontario School of Medicine (NOSM) which includes the Northern Ontario Dietetic Internship Program (NODIP) and oversees the academic, research and evaluation curriculum. Lee will share their work to demonstrate the need for formally integrated nutrition curriculum including culinary medicine labs in the NOSM undergraduate medical program. These efforts have been shared at international and national medical education conferences as an innovative and interprofessional model that also promotes the role of the dietitian in medical training.

**Introduction:** Culinary Medicine Labs (CMLs) formally integrate lifestyle approaches into medical school curricula to increase nutrition competence of graduates and encourage healthy habits, which can translate to improved patient care and health outcomes. A multi-prong approach was used to develop integrated and tailored CMLs, and to advocate for enhanced nutrition curriculum at NOSM.

**Methods:** In 2017-2019, 16 CMLs were piloted on NOSM's two campuses (Sudbury, n=9 and Thunder Bay, n=7). Each session was facilitated by two registered dietitians (RDs) and two dietetic interns with up to 12 Year 1 and 2 medical students. Individual evaluations assessed learning and confidence related to nutrition, food skills, and nutrition competence as future physicians. An environmental scan was conducted (February 2019); key search terms related to nutrition, undergraduate medical education, and RDs' roles in gastrointestinal (GI) and neurological disorders, cardiovascular disease, diabetes, and bone health. Results were appraised using an adapted tool from the National Collaborating Centre for Methods and Tools. Year 1 CML curriculum content was updated in spring 2019. An expanded pilot of 22 CMLs (11 on each campus) in 2019-20 will include Year 2 curriculum development, ongoing student evaluation, and RD facilitator feedback.

**Results:** Targeted implementation and evaluation with an environmental scan supported development of an evidenced-based CML curriculum. The CMLs demonstrated improved nutrition knowledge and confidence of future physicians, and planned behavior change. A nutrition curriculum workgroup was established in fall 2019 with a mandate and timeframe to consider the nutrition content throughout the undergraduate medical curriculum including the CML model. A report with recommendations will be prepared for fall 2020.

**Conclusions:** Interprofessional nutrition education, led by RDs, should be an essential component of medical education. Nutrition competent physicians are more likely to consult RDs, refer patients, and understand and value the RD role in health care.

**Conflict of interest:** None

**Keywords:** medical nutrition education; interprofessional education

## 207 A systematic review and quantitative analysis of resting energy expenditure prediction equations in healthy overweight and obese children and adolescents

Mrs Lucy Chima<sup>1</sup>, Dr Hilda Mulrooney<sup>2</sup>, Dr Janet Warren<sup>3</sup>, Dr Angela Madden<sup>1</sup>

<sup>1</sup>University Of Hertfordshire, Hatfield, United Kingdom, <sup>2</sup>Kingston University, Kingston-upon-Thames, UK, <sup>3</sup>Firststop Nutrition, Lyford, UK

**Biography:** Angela Madden graduated from the University of Surrey UK and worked as a clinical dietitian in the NHS at the Hammersmith Hospital and Royal Free Hospital in London, specialising in nutritional management of liver disease. After completing her PhD at University College London, she became a lecturer at London Metropolitan University and moved to the University of Hertfordshire in 2006 to lead the first undergraduate dietetic programme in the East of England. Her current role at Hertfordshire includes teaching, research and research supervision with a particular focus on student-staff collaborative investigations.

**Introduction:** Resting energy expenditure (REE) estimates are often needed in young people and can be predicted using prediction equations based on body weight. However, these equations may perform poorly in obesity and overweight (OO). The aim of this systematic review was to identify equations based on simple anthropometric and demographic variables which provide the most accurate and precise estimates of REE in healthy OO young people.

**Methods:** Systematic searches for relevant studies in healthy OO young people aged ≤18 years were undertaken using PubMed, Scopus, Cinahl, OpenGrey and Cochrane Library (completed January 2018). Search terms included metabolism, calorimetry, obesity and prediction equation. Data extraction, study appraisal and synthesis followed PRISMA guidelines.

**Results:** From 390 screened titles, 13 studies met inclusion criteria. The most accurate REE predictions (least biased) were provided by Schofield equations (+0.8% [3-18 years]; 0% [11-18 years]; +1.1% [3-10 years]). The most precise REE estimations (percentage of predictions ±10% of measured) for 11-18 years were provided by Mifflin equations (62%), and for 7-18 years by the equations of Schmelzle (57%), Henry (56%) and Harris Benedict (54%). The precision of Schofield predictions was 43% in both age groups. No data were available on accuracy for those <3 years or on precision for those <7 years.

**Conclusions:** No single equation provided accurate and precise REE estimations in this population. Schofield equations provided the most accurate REE predictions so are useful for groups. Mifflin equations provided the most precise estimates for individuals aged 11-18 but tended to underestimate REE.

This presentation has potential benefit to audience members who are working with overweight or obese young people and need to estimate the energy requirements of these young people.

**Conflict of interest:** None

**Keywords:** Energy expenditure; obesity; prediction equations; children and adolescents; systematic review

## 62 A systematic review of behaviour change techniques to improve gluten-free diet adherence in individuals with coeliac disease

Dr Brian Power<sup>1</sup>, Mrs Dimitra Verra Power<sup>2</sup>, Mrs Ellen Ficenec<sup>3</sup>, Ms Marianna Rodriguez Y Villasenor<sup>1</sup>

<sup>1</sup>Institute of Technology - Sligo, Ireland, <sup>2</sup>Central London Community Healthcare NHS Trust, London, United Kingdom, <sup>3</sup>The Private Dietitian, London, United Kingdom

**Biography:** Originally from Kilkenny in Ireland, Brian currently works at UCL in as a lecturer in Nutrition at University College London and as an honorary senior dietitian at University College London Hospitals NHS Foundation Trust (UCLH). He is a registered dietitian with the Health and Care Professions Council, and has experience working as a clinical dietitian in hospitals in Ireland, London and the Midlands, England.

At the British Dietetic Association (BDA) he is a Director of the BDA Council. He also currently sits on the European Federation of the Associations of Dietitians (EFAD) Research and Evidence Based Practice Committee.

Brian's research interests include: understanding and changing eating and physical activity behaviours; development, implementation and evaluation of behaviour change interventions; clinical trials and evidence synthesis.

Brian uses both qualitative and quantitative methodologies in his empirical work. His work is characterised by an interdisciplinary focus (e.g. health services research, dietetics, public health and health psychology).

**Introduction:** Despite being the mainstay of treatment for coeliac disease, gluten-free diet adherence among the coeliac disease population is sub-optimal. Non-adherence to a gluten-free diet is characterised by many complications such as iron deficiency and increased health care costs. Our understanding of how to improve adherence among coeliac disease patients is limited. This problem represents a lost opportunity to reduce morbidity and mortality associated with non-adherence. The present research aimed to critically appraise and synthesise the best available evidence on the effectiveness of behaviour change techniques to enhance coeliac disease patients' adherence to a gluten-free diet.

**Materials and methods:** A systematic review of studies examining the use of behaviour change techniques to promote gluten-free diet adherence in the coeliac disease population was undertaken. Eligible studies included randomised controlled trials that reported the effects of behavioural interventions on dietary adherence in coeliac disease patients. The electronic databases Medline, EMBASE, CINAHL, PsycINFO and the Cochrane Library were searched. Behaviour change techniques included in interventions and associated with changes in gluten free adherence were coded according to a behaviour change technique taxonomy.

**Results:** Six interventions reported gluten-free diet adherence findings. Seven behaviour change techniques were used across the interventions. Two behaviour change techniques demonstrated effectiveness in promoting coeliac disease patients' adherence to a gluten free diet: self-monitoring of behaviour and feedback on behaviour.

**Conclusions:** It is recommended that future interventions to enhance coeliac disease patients' adherence to a gluten-free diet should consider including self-monitoring of behaviour and feedback on behaviour. Inclusion of these approaches are anticipated to markedly improve this important clinical and public health issue.

**Conflict of interest:** None

**Keywords:** Behaviour therapy; coeliac disease; gluten-free

### 378 Adherence to the World Cancer Research Fund/American Institute for Cancer Research recommendations is associated with a lower breast cancer risk in black South African women.

*Ms Inarie Jacobs<sup>1</sup>, Dr Christine Taljaard-Krugell<sup>1</sup>, Prof Hester Vorster<sup>1</sup>, Dr Sabina Rinaldi<sup>2</sup>, Dr Inge Huybrecht<sup>2</sup>, Dr Isabelle Romieu<sup>3,4</sup>*

<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>2</sup>Section of Nutrition and Metabolism, International Agency for Research on Cancer, Lyon, France, <sup>3</sup>Centro de Investigación en Salud Poblacional, Instituto Nacional de Salud Pública, Cuernavaca, Mexico, <sup>4</sup>Hubert Department of Global Health, Emory University, Atlanta, United States of America

**Biography:** Registered dietitian in South Africa. Was previously employed at Bambisana hospital, Lusikisiki in the Eastern Cape as a community service dietitian. Holds a Masters degree in dietetics and is currently a full time PhD student at the North-West University, Potchefstroom Campus.

**Introduction:** Around 40% of all cancers, including breast cancer (BrCa), can be prevented by following a healthy lifestyle. This study aimed to investigate whether adhering to the World Cancer Research Fund (WCRF)/American Institute for Cancer Research (AICR) cancer prevention recommendations reduces BrCa risk in this population.

**Methods:** This study population included 396 cases and 396 population-based controls from the South African Breast Cancer study, matched on age (26 to 88 years) and demographic settings. Dietary intake, habitual physical activity and anthropometric measurements were assessed by using validated questionnaires. Adherence to the WCRF/AICR recommendations was measured by creating a score from 8 of the 10 WCRF/AICR recommendations regarding BMI, physical activity and dietary intake. The score ranged from 0 (lowest adherence) to 8 (highest adherence). Odds ratios and 95% confidence intervals were estimated using conditional and unconditional logistic regression models to analyse the overall WCRF/AICR score and single components thereof.

**Results:** After adjusting for confounders, higher adherence to the overall WCRF/AICR cancer prevention score (>4) showed a significant inverse trend with BrCa risk overall (OR= 0.62 95% CI:0.47; 0.99), in postmenopausal women (OR=0.61 95% CI: 0.40; 0.98) and per 1-point increase overall in oestrogen positive receptor (OR=0.82 95% CI: 0.70; 0.99). When single adherence recommendations to the WCRF/AICR score were investigated, higher fresh fruit and vegetable consumption (>400g/week) showed a significant inverse association with BrCa risk overall (OR=0.57 95% CI: 0.40; 0.83), in postmenopausal women (OR=0.62 95% CI: 0.41; 0.94) and oestrogen positive receptor (OR=0.56 95% CI: 0.37; 0.85). Higher limitation of fast foods (<525kJ/100g) showed a significant inverse association with BrCa risk.

**Conclusion:** Higher adherence to the overall WCRF/AICR prevention guidelines may result in a reduced BrCa and should be encouraged. Increasing consumption of fruits and vegetables and decreased consumption of fast foods could play a significant role.

**Conflict of interest:** None

**Keywords:** Breast cancer prevention; WCRF/AICR recommendations; black women; South Africa

### 333 Admission morbidity characteristics, treatment outcomes and determinants of mortality of children aged 0-59 months with complicated severe acute malnutrition in 3 referral hospitals in Ghana - An observational study

*Miss Janet Carboo<sup>1</sup>, Ms Hannah Asare<sup>1</sup>, Mrs Cornelia Conradie<sup>1</sup>, Dr Robin Dolman<sup>1</sup>, Dr Martani Lombard<sup>1</sup>*

<sup>1</sup>North-West University, Potchefstroom, South Africa

**Biography:** Janet Carboo is a registered dietitian and a member of the Ghana Dietetics Association. She has extensive research experience in the field of community nutrition interventions and severe acute malnutrition in children under-five. She is currently pursuing her PhD studies in Dietetics at the Centre of Excellence for Nutrition, North-West University and working on a vitamin D clinical trial in children with complicated severe acute malnutrition.

**Introduction:** The lives of millions of young children across Africa are threatened by complicated severe acute malnutrition (SAM). Although WHO has guidelines to treat SAM and reduce related mortality, there is limited evidence of the association between admission characteristics, treatment and the risk of mortality. This study aimed at investigating the association between admission morbidity characteristics, treatment outcomes (length of hospital stay (LOS), weight gain, time to death) and determinants of mortality in children diagnosed with complicated SAM.

**Methods:** An observational study was conducted. Data from the medical records of children aged 0-59 months, admitted and treated for complicated SAM between January 2013 and June 2018 at three referral hospitals in Ghana was extracted. Data was analysed using SAS version 9.4. General linear models and logistic regression were used to determine the association between admission morbidity characteristics and mortality.

**Results:** 594 records were included. Discharge, death and abscond rates were 80.0%, 16.5% and 3.0% respectively. The mean LOS was 11.0±1.8 days with a 6.2 g/kg/day weight gain. Severe pallor, dermatitis and HIV positive status were associated with longer LOS, 2.3 (p=0.01), 4.5 (p<0.01) and 4.8 (p=0.01) more days spent in hospital respectively. Average time to death was 5.2±3.0 days, with children <6 months dying earlier at 2.4 days (CI: 1.2-4.7, p=0.02) compared to 5.5 days in the 6-59-month group. Shock, convulsion, dermatitis, HIV positive status and severe pallor were associated with 6.8 (CI: 2.7-17.1, p<0.01), 3.8 (CI: 1.7-8.2, p<0.01), 2.9 (CI:1.7-4.7, p<0.01), 2.4 (CI: 1.2-4.9, p<0.01) and 2.2 (CI: 1.3-3.6, p<0.01) times increased risk of mortality.

**Conclusion:** The high death rate of 16.5% seen in this study is beyond the internationally accepted minimum of <10% necessitates early, effective implementation of strategies that identify and treat children at highest risk of death to reduce SAM deaths in hospitals.

**Conflict of interest:** All authors of this study have no conflict of interest to declare

**Keywords:** Severe acute malnutrition; medical complications; infants and children; mortality; treatment outcomes

## 261 Adult triathletes' attitude and perceptions towards the use of telenutrition

*Ms Karlien Duvenage*

**Biography:** Karlien Duvenage is a registered dietitian who qualified from Stellenbosch University. Working mostly in private practice she has gained extensive experience in sports, clinical and community nutrition. In 2019, Karlien graduated with a Masters of Science in General Psychology from the University of Roehampton London. This work was submitted as part of her research project.

**Introduction:** The use of technology to offer remote nutrition counselling by registered dietitians/nutritionists (RDs), namely telenutrition, has become increasingly prevalent. Although preliminary evidence has shown telenutrition to be effective and well-accepted, there are many unknowns, especially in sports nutrition. This study was designed to investigate triathletes' attitudes and perceptions toward the use of telenutrition and to see if age and technology skill level influenced these attitudes and perceptions.

**Methods:** An 18-item anonymous electronic survey was distributed via email to 857 adult triathletes by the International Triathlete Union and posted on social media sites, including Facebook and Twitter. The questionnaire investigated participant demographics, experience with technology, and consulting with an RD, attitude and perceptions towards telenutrition and perceived barriers. Questions were adapted with permission from a previously published 'Telenutrition Attitude Questionnaire' and a validated 'Attitude toward Telemedicine in Psychiatry and Psychotherapy Questionnaire'. Independent samples t-tests were used to compare attitude and perception answers between participants born before and after 1980. Pearson correlations were used to evaluate relationships between attitude related items and technology skill level.

**Results:** Of the 57 triathletes that completed the survey, 25 were born after 1980 (classified as 'digital natives'). Sixty-five percent (n=37) indicated a preference to telenutrition over in-person consultations. Triathletes born after 1980 were statistically more likely to choose telenutrition over in-person counselling ( $p=0.037$ ) and more likely to consider telenutrition in the future ( $p<0.001$ ) than those born before. The triathletes' technology skill level did not influence attitudes and perceptions towards telenutrition and no barriers were perceived as significant.

**Conclusion:** The majority of triathletes that responded to the survey had an overall positive attitude and perception towards telenutrition, with those born after 1980 more likely to utilise this method of service. Therefore, there is potential for the use of telenutrition in specific groups within the triathlete population.

**Conflict of interest:** None

**Keywords:** telenutrition; telehealth; sports nutrition; triathletes; technology

## 327 Agreement between measured height, and height predicted from published estimate equations, amongst adults in a South African hospitalised population

*Mrs Hanna Williamson<sup>1</sup>, Ms Mariette Nel<sup>1</sup>, Prof Corinna May Walsh<sup>1</sup>, Prof Louise van den Berg<sup>1</sup>*

<sup>1</sup>University of the Free State, Bloemfontein, South Africa

**Biography:** Hanna Williamson is a clinical dietitian in private practice. She mostly consults surgical and ICU patients, but also has an interest in patients with diabetes. She completed her BSc and MSc in Dietetics at the University of the Free State. She is also a part-time junior lecturer at the University of the Free State. She is passionate about nutrition and serves on the ADSA Free State branch committee as chairperson.

**Objectives:** To assess the agreement between measured (reference) height and height predicted from published equations derived from measurement of body segments, in a South African government hospital setting.

**Design:** Descriptive cross-sectional study

**Setting:** Medical, surgical, pulmonary, orthopaedic, cardiovascular and general wards at Pelonomi, Universitas and National Hospitals, Bloemfontein.

**Subjects:** All admitted patients, 20-50 years, who gave written informed consent, could stand upright and unassisted, and were without medical conditions or treatments affecting height between November 2016 and December 2017 (n=141).

**Outcome measures:** Reference height, recumbent height, arm span, demi span, ulna length, knee height, tibia length, fibula length, and foot length were measured according to standardised techniques. Self-reported height and height noted in the medical files, were recorded. Height, predicted by 12 published equations, were compared with reference height by 95% confidence intervals (CI) and Bland-Altman analysis.

**Results:** Only six (4.3%) participants could self-report their height, and only 16 (11.3%) had height recorded in their medical files. The median reference height of the sample (38.3% female; median age 38.8 years, IQR: 10.1 years) was 165.5 cm (males: 169.3 cm; females: 158.4 cm). Only a set of equations based on knee-height and standardised on a large US population of adults <65 years, estimated height without statistically significant deviance from the reference height.

**Conclusions:** Most standardised equations tested on South African hospitalised adults resulted in height estimations that were statistically significantly different from reference height. Equations standardised on other populations may not be suitable for the South African population due to differences in genetic and environmental factors.

**Conflict of interest:** None

**Keywords:** predicted height; predictive equations; hospitalised patients; South Africa

## 248 An examination of pregnant mothers' nutrition knowledge, dietary and physical activity practices in Trinidad

Dr Isabella Francis-Granderson<sup>1</sup>

<sup>1</sup>The University Of The West Indies, St. Augustine Campus, Maracas, St. Joseph, Trinidad and Tobago

**Biography:** Isabella Francis-Granderson is a Lecturer in the Human Ecology Degree programme, and former Coordinator of the Diploma, Institutional Community Dietetics and Nutrition, (Dietetic Internship) programme, Department of Agricultural Economics and Extension, Faculty of Food and Agriculture, the UWI, Augustine Campus. She holds a BSc (Nutrition & Dietetics) Howard University, Washington DC, MPH (Public Health), UWI, Mona, Jamaica, PhD (Agricultural Extension), and a Postgraduate Diploma in University Teaching and Learning, at the UWI, St. Augustine Campus. Her research interest has led her to conduct research in food security, elderly nutrition, childhood nutrition, cancer, diabetes, food product development, and food safety. The UWI Principal Investigator, CIFSRF CARICOM Food Security project "Linking Agriculture and Nutrition to Improve Health Outcomes." Coauthor of the monograph: "Time For Counting Calories." She has published chapters in books and articles in academic journals.

**Introduction:** Nutrition and physical activity during pregnancy is a major concern in both developed and developing countries. It is crucial for mothers to eat a well-balanced diet and exercise regularly to produce healthy babies. However, the purpose of this study was to examine pregnant women nutrition knowledge, dietary habits and physical activity practices.

**Methods:** A convenience sampling approach was used to recruit pregnant women attending two private Birthing Clinics in North Trinidad. Mothers were asked to complete a face-to-face interview and a structured questionnaire after informed consent. The instrument contained questions about nutrition knowledge, dietary habits and physical activity. Observed nutrition knowledge and dietary practices were ranked as poor = 0 -3, fair = 4 -7, and good = 8-11. Data were analyzed using SPSS version 24 for descriptive statistics and frequencies.

**Results:** A total of 195 mothers completed the survey. The average age was 29.3 ± 6.7 years (16 to 45 years), and the number of pregnancies ranged from 1 to 5 times. 45.7% of the respondents were of African descent and 42.1% were of mixed race. Education attainment was (74.7%) tertiary and (33.2%) secondary school. The mothers (70.1%) indicated they were married or involved in a common-law relationship and employed (79.6%) with a household income of less than \$10,000. With regards to their nutrition knowledge and physical activity, few obtained good nutrition scores, while most parents indicated exercising at least 5 days/week for 15 -30 minutes. Frequent foods consumed weekly included whole-grain cereals 2-4 times, nuts, seeds, poultry and other meats at least once per day and fish 1-3 times per month.

**Conclusion:** The study showed that the majority of mothers were engaged in moderate physical activity and few had good nutrition knowledge.

**Conflict of interest:** None

**Keywords:** Pregnant women; nutrition knowledge; dietary habits; physical activity; trinidad

## 352 Analysis of immediate vulnerability determinants towards achieving the right to food: a case study of women and children in the Umlazi township, Pietermaritzburg, South Africa

Dr Annette Van Onselen<sup>1</sup>, Dr Bukaso Andy Mpiana<sup>2</sup>, Prof Unathi Kolanis<sup>3</sup>

<sup>1</sup>Sefako Makgatho Health Sciences University, Pretoria, South Africa, <sup>2</sup>University of KwaZulu-Natal, Pietermaritzburg, South Africa, <sup>3</sup>Consumer Sciences, School of Science and Agriculture, University of Zululand, Richards Bay, South Africa

**Biography:** I have more than 25 years' experience. I have mainly functioned in managerial positions, training, specializing in developing necessary structures. I have gained some of my knowledge and experience in the South African National Defence Force (SANDF) as well as the private sector. During my time at the SANDF, I served in an Assistant Director position. During this tenure, I was responsible for the implementation of Health Programs for the entire Free State region.

For the past fifteen years, I have been functioning as a consultant research dietician for the Central University of Technology of the Free State, lectured at the University of KwaZulu-Natal, Pietermaritzburg, and am currently employed as Senior Lecturer at Sefako Makgatho Health Sciences University, South Africa. I have obtained extensive experience in research, nutritional health, and community projects. My passion for health and wellbeing of communities/individuals and my ability to interpret policy into practical solutions is my passion. I have obtained the following qualifications:

- A National Diploma in Food Service from Tshwane Technicon.
- A BSc Degree in Dietetics from the University of the Free State (UFS).
- An MSc degree in Dietetics from UFS.
- A PhD degree in Dietetics from UFS

**Introduction:** The right to food and adequate nutrition continues to be a topical global agenda, the Millennium Developmental Goals (MDGs) 2015 and the Sustainable Developmental Goals (SDGs) carry through the vision of eradicating hunger and malnutrition. The Convention on the Rights of the Child (CRC) protects the child's right to food in the context of the right to life, right to health, right to nutrition and to an adequate standard of living.

**Aim:** The aim of this study was to investigate the association between health status of children, mothers, and household food security. Method: A cross-sectional, descriptive study was conducted and 120 women and 120 children were selected through stratified sampling.

**Results:** The most frequent height-for-age index (z-score < -3) of children's stunting was statistically and significantly associated with respiratory infection (p=0.001), diarrhea (p=0.001), fever (p=0.001), household dietary diversity scores (correlation coefficient r = 0.227 and p=0.006). and low intake of protein food items such as meat and poultry (p=0.020). Poor child growth positively correlated with a low birth weight of the child (r=0.288). In addition, the height-for-age and the weight-for-height index were statistically and significantly associated with exclusive breastfeeding. On the other hand, the HIV status of the mother had a strong association with Tuberculosis status (p = 0.001).

**Conclusion:** The main finding of this study was that the stunting in childhood was strongly associated with the persisting childhood diseases, mother's feeding practices, low birth weight of the child and poor household dietary diversity. Thus, there is a need for effective policy and interventions that take in account human rights approach to address malnutrition.

**Conflict of interest:** None

**Keywords:** Stunting, human rights, dietary diversity

## 308 Analyzing costs associated with human milk banks in South Africa

Mr Gilbert Tshitauzi<sup>1</sup>, Ms Maude de Hoop<sup>1</sup>, Ms Rebone Ntsie<sup>1</sup>, Ms Lynn Moeng-Mahlangu<sup>1</sup>, Dr Yogan Pillay<sup>1</sup>

<sup>1</sup>National Department Of Health, Pretoria, South Africa

### Biography:

- Holds a Bachelor degree in Nutrition from former University of the North (currently known as University of Limpopo); a Masters degree in Nutrition (Nutritional Sciences) from the University of Stellenbosch; a Postgraduate Diploma in Health Economics from the University of Cape Town; and MSc in Health Economics through the University of Aberdeen (UK).
- Has worked in a hospital in Limpopo as a dietician for several years and moved to the National Department of Health.
- Has been involved in the development of various policies and guidelines on nutrition related interventions.
- Served in the HPCSA Board for Dietetics and Nutrition from 2010 to 2015
- Committee member of the Nutrition Society of South Africa

**Background:** It is well known that donor human milk provided through human milk banks is associated with better health outcomes including reduced risk of conditions such as necrotizing enterocolitis and lower incidence of late onset sepsis compared to breastmilk substitutes. Human milk banking is a labour-intensive operation which involves recruitment, collection, processing and distribution of donor human milk. Therefore, costs associated with management and implementation of human milk banking should be understood to ensure that donor human milk is safe and adheres to the highest quality standards.

**Objectives:** to investigate the costs involved in implementing the current human milk bank model and envisaged costs for scaling up in South Africa. **Methods:** Cross-sectional costing study with a sample of six human milk banks, two provinces, one human milk bank depot and a national office where data was collected. A costing pathway was outlined to achieve the most accurate estimate of human milk bank model costs, with categorization of direct and indirect costs.

**Results:** The annual costs incurred by the human milk bank model was R3 507 053, with 22.5% of the costs attributed to national, provincial at 7.7%, human milk bank at 66.8% and human milk depot at 2.9%. Costs across human milk banks ranged from R262 254 to R719 401 which varied according to the size of the bank. Staff costs was the major cost driver at 66.6% in human milk banks. Programme management accounted for more time (44.25%), followed by donor recruitment and donor human milk collection (12.40%).

**Conclusion:** The average costs obtained through the study for the various levels of the model will enable managers to plan and allocate financial resources better in order to scale-up human milk banking in South Africa. Cost estimated could be used in future to conduct full economic evaluation on human milk banking.

**Conflict of interest:** None

**Keywords:** human milk bank; cost analysis; donor human milk

## 654 Antenatal anaemia is associated with increased systolic blood pressure in late pregnancy among urban women in South Africa: the NuPED study

Ms Caylin Goodchild<sup>1</sup>, Dr Elizabeth Symington<sup>1,2</sup>, Dr Jeannine Baumgartner<sup>1</sup>, Dr Lizelle Zandberg<sup>1</sup>, Dr Linda Malan<sup>1</sup>, Prof Marius Smuts<sup>1</sup>

<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>2</sup>Department of Life and Consumer Sciences, University of South Africa, Johannesburg, South Africa

**Biography:** Caylin Goodchild completed her Masters in Dietetics in 2016 at the Centre of Excellence for Nutrition, at the North-West University. She then went on to work in the public sector at a hospital in Mpumalanga for her community service year. Thereafter, Caylin moved to Johannesburg and opened her practice as a dietitian, where she is currently based full-time. She is also enrolled for her PhD on a part-time basis at the North-West University. Furthermore, Caylin serves as a member of the executive committee for the Association for Dietetics in South Africa for the term 2019 to 2021.

**Background:** Antenatal anaemia is a risk factor for adverse birth outcomes. Half of anaemia cases are attributed to iron deficiency. However, the relationships between antenatal iron status and birth outcomes are less clear. Our aim was to assess the association between iron status during pregnancy and blood pressure, fasted glucose and glucose tolerance in pregnancy in urban women receiving routine iron supplementation in South Africa.

**Methodology:** In this prospective study, 250 pregnant women ( $\leq 18$  weeks of gestation) attending antenatal care facilities were recruited. We measured biomarkers of iron status at  $< 18$ , 22 and 36 weeks of gestation, plus blood pressure at 36 weeks of gestation, as well as fasting glucose and glucose tolerance mid-pregnancy. Associations between iron status and blood pressure, fasting glucose and glucose tolerance were determined using multivariable regression models adjusted for confounders.

**Results:** The women had a mean BMI of  $27.2 \pm 5.9$  kg/m<sup>2</sup>, with mid-pregnancy means for ferritin, haemoglobin and sTfR of  $48.1 \pm 62.1$   $\mu$ g/L,  $11.1 \pm 1.5$  g/dL and  $7.9 \pm 5.6$  mg/L respectively. Mean systolic blood pressure (SBP) and diastolic blood pressure (DBP) at late-pregnancy was  $108 \pm 10.5$  and  $69 \pm 8.2$  mmHg, respectively. Preliminary results showed that no associations were found between iron status (based on ferritin and sTfR) and fasting glucose, glucose tolerance or blood pressure using crude and adjusted regression models. However, in the fully adjusted model, anaemia (Hb  $< 10.5$  g/dL) at 22 weeks of gestation was associated with a 4.9 mmHg higher SBP ( $\beta = 4.85$ ; 95% CI: 1.69, 8.01;  $p = 0.003$ ). When using the higher WHO Hb cut-off for anaemia (Hb  $< 11$ g/dL), the association with SBP held, but with a smaller effect ( $\beta = 3.21$ ; 95% CI: 0.20, 6.2;  $p = 0.037$ ).

**Conclusion:** Anaemia at 22 weeks gestation was associated with higher blood pressure at late pregnancy. It may deem necessary to further investigate the diagnostic cut-off for anaemia as well as contributing factors to anaemia.

**Conflict of interest:** None

**Keywords:** iron status; iron supplementation; high blood pressure; pregnancy; glucose tolerance

## 584 Anthropometric status and nutrient intake of in-school adolescents aged 10-19 years in Ekwulobia, Aguata Local Government Area, Anambra State, Nigeria

Dr Ngozi Okoye<sup>1</sup>, Dr Chika Ndiokwelu<sup>2</sup>, Professor Ngozi Nnam<sup>3</sup>, Mr Aloysius Maduforo<sup>4</sup>

<sup>1</sup>Department Of Nutrition And Dietetics, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State, Nigeria,, Nnewi, Nigeria, <sup>2</sup>Human Nutrition and Dietetics Unit, Department of Biochemistry, University of Calabar, Cross River State, Nigeria, Calabar, Nigeria, <sup>3</sup>Department of Nutrition and Dietetics, University of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria, <sup>4</sup>Department of Nutrition and Dietetics, University of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria

**Biography:** She is a registered Dietitian and working in a teaching hospital. She holds a doctorate degree in Human Nutrition

**Background:** The anthropometric status and nutrient intake of in-school adolescents in Ekwulobia Anambra State, Nigeria was assessed.

**Methods:** Cross-sectional study design using multistage sampling technique was used to select 623 respondents. Sixty-four (10%) of the adolescents were sampled as sub-sample for 3-day weighed food intake study. Validated questionnaire was elicited information on the socio-economic background, household characteristics, food frequency pattern and preference profile of micronutrient rich foods. Appropriate anthropometric tools was used for anthropometric measurements. Height-for-age and body mass index for age were compared with World Health Organization growth standard. The results were compared with standard daily recommended energy and nutrient intakes (NI). Data were analyzed using descriptive and inferential. Independent sample t-test was used to compare the mean difference between ages and sexes of the adolescents. Chi square was used for significance relationship on anthropometric indices of both sexes and age.

**Results:** The results showed that more (60.03%) girls were enrolled in the schools than boys (39.97%). Greatest number (50.72%) of the parents/guardians had secondary school education. Thinness was seen more in boys (29.31%) than girls (12.83%). There was significant ( $p < 0.01$ ) difference in the anthropometric indices by sex. Stunting was observed in 40.27% (10-12 years), 34.77% (13 to 15 years) and 32.21% (16 to 19 years) of the subjects. Generally, boys (45.78%) were more stunted than girls (25.93%). Up to 31.73% of the boys and 39.57% of the girls were normal for height-for-age. About 41.37% boys and 42.25% girls had normal body mass index. All the age groups met 100% of their energy intake except for the age group 16 to 19 years (86.88%).

**Conclusion:** Malnutrition is still prevalent in developing countries as evidenced by stunting and thinness. It is recommended that the adolescents and their parents are educated on the importance of good nutrition and micronutrient rich foods.

**Conflict of interest:** None declared

**Keywords:** Anthropometric status; nutrient intake; in-school; adolescents

## 255 Assessing malnutrition in long-term care: what is the best method?

Prof Heather Keller<sup>1</sup>, Vanessa Vucea<sup>1</sup>, Dr Susan Slaughter<sup>2</sup>, Dr Harriët Jager-Wittenaar<sup>3</sup>, Dr Christina Lengyel<sup>4</sup>, Dr Faith Ottery<sup>5</sup>, Dr. Natalie Carrier<sup>6</sup>

<sup>1</sup>Schlegel-university Of Waterloo Research Institute For Aging, Waterloo, Canada, <sup>2</sup>University of Alberta, <sup>3</sup>Hanze University of Applied Sciences, <sup>4</sup>University of Manitoba, , <sup>5</sup>Ottery and Associates, <sup>6</sup>Universite de Moncton, ,

**Biography:** Heather Keller is the lead researcher for the Making the Most of Mealtimes research program. She is an expert in geriatric nutrition, covering all sectors of healthcare. As the Schlegel-Research Chair in Nutrition and Aging, research and knowledge translation are focused on improving practice.

**Introduction:** The ideal tool for determination of malnutrition risk or malnutrition in long-term care (LTC) homes has yet to be determined, restricting research on its prevalence and effective treatments. Objective: This study compares prevalence, association with resident risk factors, and sensitivity (SE) and specificity (SP) of four malnutrition/risk tools, to determine a potentially preferred tool for use in LTC.

**Methods:** This secondary analysis of the Making the Most of Mealtimes study involved 638 residents from 32 LTC homes in Canada. Health records were reviewed for resident characteristics, and standardized assessments were completed by the research team. SE and SP of four malnutrition/risk tools were determined by comparing the tools to each other, as there was no single tool considered as the gold-standard criterion. This comparison included the Mini-Nutritional Assessment Short Form (MNA-SF); Patient-Generated Subjective Global Assessment (PG-SGA) Global Category Rating, the Pt-Global webtool; and the interRAI Long Term Care Facility undernutrition trigger. Bivariate analyses were used to compare malnutrition/risk categorization with resident characteristics.

**Results:** Prevalence was highest with MNA-SF (53.7%) and lowest with InterRAI (28.9%); while the PG-SGA Global Category Rating (44%) was higher than the Pt-Global webtool (33.4%). Tools were consistently associated with resident covariates with few exceptions (e.g., malnourished lower energy and protein intake; more eating challenges). InterRAI was the only tool associated with sex (females increased risk;  $\chi^2 = 5.78$   $p = 0.02$ ). The PG-SGA Global Category Rating demonstrated the best SE and SP when compared to all other tools (e.g., compared to Pt-Global webtool; SE=82%, SP=75%). MNA-SF was highly sensitive (>80%), but had poor specificity (<70%), while InterRAI had high specificity (>80%) and low sensitivity (< 70%) for all comparisons.

**Conclusions:** PG-SGA Global Category Rating demonstrated the best sensitivity and specificity when compared to all other tools. Further work to determine predictive validity in the LTC population is required.

**Conflict of interest:** None

**Keywords:** long term care, malnutrition, tools, sensitivity, specificity

## 408 Awareness and utilization of nutrition information on packaged food product labels among respondents in Nsukka, Enugu State, Nigeria.

Ms Chioma Anidi<sup>1</sup>, Mr Cyril Anoshirike<sup>1</sup>, Prof Joy Nwamara<sup>1</sup>, Ms Makua Chiama<sup>1</sup>

<sup>1</sup>University Of Nigeria, Nsukka, Nigeria

**Biography:** Chioma Anidi is a graduate of Human Nutrition and Dietetics from Micheal Okpara University of Agriculture, Umudike, Abia State, Nigeria. She is also a registered Dietitian with the Dietitians Association of Nigeria. She is currently a postgraduate student and a dietetic Instructor at the University of Nigeria. Her areas of Interest include Clinical Nutrition and Public Health Nutrition.

Chioma is an advocate for healthy eating which she does through her social media page, and community outreach. She enjoys reading, listening to music and travelling. She is currently carrying out a research on the Prevalence of Diet Related Non-Communicable Diseases in Enugu State, Nigeria. She has also published in National Journals.

**Introduction:** Packaged food products now comprise a significant portion of the human diet increasing the dietary content of added sugar, saturated/trans-fat and energy density and inadvertently increasing the prevalence of diet related Non-Communicable diseases. Nutrition information are meant to guide consumers in making healthier food choices, but the awareness and utilization of the Nutrition information depends on some consumer characteristics which this study intends to unravel.

**Objective:** To assess awareness and utilization of Nutrition information on food product labels among respondents in Nsukka, Enugu state, Nigeria.

**Methods:** A cross-sectional study design was adopted; 439 (buyers and sellers) adult respondents 20- 69 years were randomly selected from 5 markets in Nsukka. A structured questionnaire was used to elicit information on the awareness and utilization of nutrition information on packaged food labels. Descriptive and Inferential statistical analysis was done using SPSS, version 22, with significant level adjusted to  $p < 0.05$ .

**Results:** About two-third (79.9%) of the respondents purchased packaged food products. Most (66.2%) of the respondents were aware of nutrition information, half (50%) of which were young adults. Only 41.7% understood the nutrition information. The major information respondents checked before purchase were brand name (46.5%), NAFDAC number (40%), and appearance (23.4%). Only 9.0% checked nutrition information before purchasing packaged food products. Factors that influenced reading of nutrition information were time (21.5%), price (40.3%), lack of knowledge (23.4%) and health state (19.4%).

**Conclusion:** There was a reasonable level of awareness but poor utilization of Nutrition information among the respondents due to inability to understand Nutrition information, cost of product as well as time constraints.

**Conflict of interest:** None

**Keywords:** Nutrition information, label, awareness, utilization

## 292 Breakfast eating practices of New Zealand women with different BMI profiles

Prof Rozanne Kruger<sup>1</sup>, Ms Elizabeth Cullen<sup>1,2</sup>, Dr Marilize Richter<sup>1</sup>, Prof Bernhard Breier<sup>1</sup>

<sup>1</sup>Massey University, Auckland, New Zealand, <sup>2</sup>Auckland District Health Board, Auckland, New Zealand

**Biography:** Associate Professor Rozanne Kruger is the Discipline leader in Nutrition and Dietetics at Massey University in New Zealand. She was instrumental in developing the MSc (Nutrition and Dietetics) programme at Massey University in 2012, establishing a programme with a strong research focus. She is passionate about developing dietary assessment strategies, exploring dietary diversity and eating behaviour, and applying this in clinical dietetics, body composition and metabolic health research. Rozanne is a named investigator of an NZ HRC funded study investigating the gut microbiome in NZ women, and a new NZ HRC funded study on novel dietary assessment strategies.

**Introduction:** Obesity and related diseases are major health issues in New Zealand. Breakfast skipping has been associated with higher BMI, poor appetite control, low diet quality, and hyperglycaemia.

**Objective:** To describe and compare reported versus observed breakfast consumption between obese and normal weight New Zealand European women aged 18-45 years.

**Methods:** In a cross-sectional study, healthy women (n=75 normal BMI, n=82 obese BMI) completed a 5-day food record, an observed ad libitum buffet breakfast assessment and body composition measurements. Nutrient intake, breakfast eating behaviour (food choices, pace of eating) and meal skipping data were assessed. Differences between methods of breakfast recording were examined by paired-samples t-tests, and differences between BMI groups by independent samples t-tests. Logistic regression was performed to explore predictors of obesity.

**Results:** More normal (n=69; 84.1%) than obese (n=56; 74.6%) BMI women consumed breakfast daily. Obese BMI women consumed more energy at the observed (1915±868 kJ) versus recorded breakfast (1431±690kJ,  $p < 0.001$ ). Neither BMI group met one third of estimated energy requirements at either breakfast occasion. Carbohydrate consumption was lower than the recommendations (AMDR:45-65%) for the recorded breakfast (40.7% and 42.6% respectively) for normal versus obese BMI groups, whereas total fat consumption was higher (36.5% and 35.9% respectively) than the recommendations (AMDR:20-35%). Protein consumption was lower than the recommendations (AMDR:15-25%) only for the observed breakfast in both BMI groups (13.0% and 14.0%). The greatest energy contribution at the observed breakfast were from discretionary foods (fats, cake and biscuits for obese BMI women; sweetened cereals, nuts and seeds for normal BMI women). Faster eating pace and consuming energy-dense foods significantly increased the likelihood of being obese BMI ( $b=3.11$ ,  $p=0.016$ ;  $b=1.35$ ,  $p=0.042$ ), respectively.

**Conclusion:** Regular breakfast, eating at a slower pace, including nutrient-dense whole grains, fruit and low-fat dairy and minimising discretionary foods, may reduce the likelihood of being obese.

**Conflict of interest:** None

**Keywords:** Breakfast, skipping, obesity, energy-intake, eating-pace

## 271 Changes over ten-years in Body Mass Index and Physical Activity in black South African adults from the North West Province

Ms Phumudzo Mamphwe<sup>1,2</sup>, Prof Herculina Salome Kruger<sup>2</sup>, Prof Sarah J Moss<sup>2</sup>

<sup>1</sup>University Of Pretoria, Pretoria, South Africa, <sup>2</sup>North-West University, Potchefstroom, South Africa

**Biography:** Phumudzo registered Nutritionist with a Masters of Science Degree in Nutrition from North-West University. Currently lecturing at the University of Pretoria and enrolled for a PhD in Nutrition at the same University.

**Specialty:** Research methodology, community nutrition and body composition.

Phumudzo started as a National Research Foundation intern at the Centre of Excellence for Nutrition and saw an opportunity to study masters full time and grabbed it after her internship. Prof HS Kruger who played a major role in her carrier development mentored her. Prof Kruger is such an inspiration and she inspires Phumudzo. After completing her MSc, She then join the University of Pretoria as a New Generation of Academics Programme appointee. Her current research focuses on Infant and mother Nutrition in a HIV exposed community.

**Intorduction:** Most countries are faced with nutrition-related challenges. One in three people are affected by under nutrition or overweight and obesity. The rising overweight and obesity epidemic is a concern in most parts of the world especially in adults. The obesity prevalence is while physical activity (PA) is decreasing in the same countries. Strategies are in place to combat overweight and obesity But the prevalence keep increasing. AN increase in PA may reduce the growing prevalence. In order to attain the Sustainable development goal (SDG) (goal three: good health and well-being) this study aimed to determine the changes in Body Mass Index (BMI) and PA over 10 years period in people living without Human Immunodeficiency Virus (HIV) in the rural and urban areas of the North West Province, South Africa.

**Aims anf Methods:** The aim of this longitudinally study was to determine the changes in BMI and PA over 10 years. Participants were selected from four communities in the PURE-SA leg using stratified random sampling in 2005. In 2010 and 2015 follow-up visits were made. Anthropometric measurements, demographic information and information concerning PA were gathered from participants. 1 428 participant's data was then available in 2005 and 774 participants remained after excluding people living with HIV.

**Results:** The combined overweight/obesity prevalence of both men ( $p=0.02$ ) and women ( $p<0.001$ ) increased significantly over time. PA decreased gradually in both men and women ( $p<0.0001$ ). When adjusting for potential confounders age and educational level was significantly associated with BMI.

**Conclusions:** This study shows that the prevalence of being overweight or obese among black South African adults is increasing, particularly in women in the North West Province. Moreover PA is declining in both men and women.

**Conflict of interest:** None

**Keywords:** Body Mass Index, overweight, oObesity, physical activity, Black

## 683 Chemical and organoleptic characteristics of extruded cereal-legume based Ready-to-Use Therapeutic Foods (RUTFS) for management of Severe Acute Malnutrition (SAM) In Nigeria

Professor Elizabeth Ngwu<sup>1</sup>, Mrs Rita Nwankwo<sup>2</sup>, Dr Chika Ndiokwelu<sup>3</sup>, Mr Aloysius Maduforo<sup>4</sup>

<sup>1</sup>Department of Nutrition and Dietetics, University of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria, <sup>2</sup>Department Of Nutrition And Dietetics, Federal Polytechnic, Mubi, Adamawa State, Nigeria, Mubi, Nigeria, <sup>3</sup>Human Nutrition and Dietetics Unit, Department of Biochemistry, University of Calabar, Nigeria, Calabar, Nigeria, <sup>4</sup>Department of Nutrition and Dietetics, University of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria

**Biography:** She is a Registered Dietitian-Nutritionist in Nigeria. She is presently a Lecturer in a Polytechnics. She is also a Ph.D student in University of Nigeria Nsukka.

**Introduction:** Management of SAM in Nigeria has out of stock of imported peanut milk based RUTFs as its major challenge.

**Objectives:** To formulate, produce and determine the cost, chemical and organoleptic characteristics of extruded cereal - legume based RUTFs for management of SAM in Nigeria.

**Methods:** Five test cereal - legume based RUTF blends were produced by extrusion cooking. Formulations were done using a modified linear programming tool to achieve the joint United Nations/World Health Organization (UN/WHO) protein and energy recommendations of RUTF. Proximate compositions were determined using standard methods. Organoleptic characteristics were determined using a nine point hedonic scale. Cost analyses of the products were done using the cost of production, current market prices of the ingredients and cost of imported peanut milk- based RUTFs in Nigeria. ANOVA was used to determine and separate the means at  $p$  - value (0.05%) of all the data collected.

**Results:** The formulated RUTFs met the recommendations for total energy of 520 - 550Kcal; protein 10 - 12 % and fat 45 - 60% of total energy of RUTF per 100g. All the samples had low moisture levels (0.10% - 0.32%). There was no significant ( $p>0.05$ ) difference in the cost of production of the samples per sachet of 100g. The cost of the test samples per sachet were significantly ( $p<0.05$ ) lower than the cost of the imported RUTFs in Nigeria. Acceptance levels of the RUTFs were comparable ( $p> 0.05$ ). Three of the formulated RUTFs were selected based on cost and general acceptability.

**Conclusion:** Extruded cereal- legume based RUTFs for SAM made from local staples met the WHO recommendations for energy, protein and fat for RUTF, cheaper than the peanut milk based imported RUTFs and generally acceptable.

**Conflict of interest:** None declared

**Keywords:** formulation; production; extruded cereal - legume based RUTF; SAM

## 730 Children are key informants about establishing healthy eating habits; using Participatory Action Research with primary school children

Dr Suzanne Waddingham<sup>1</sup>

<sup>1</sup>University of Tasmania, Hobart, Australia

**Biography:** Suzie is an Advanced Accredited Practising Dietitian with 18 years of experience in community and public health nutrition. During her professional doctorate, she spent 4 years lecturing for the School of Health Science, at the University of Tasmania. She also has a Masters in Public Health and recently completed a Sports Nutrition course. She is passionate about research, evaluation and strengthening disease prevention through establishing healthy habits early in life. In particular, she uses participatory approaches to understand the views of young people. She is currently a Research Fellow in the area of tobacco control with the Menzies Institute of Medical Research and a project manager with Dietitians Association of Australia to review the National Competency Standards.

**Introduction:** Eating habits established in young children persist into adulthood. In many countries, children are not eating according to local healthy eating guidelines despite numerous public health initiatives. There is a gap in knowledge about children's potential role in improving healthy eating. The study aimed to understand how children make food choices in a primary school setting, described by children.

**Methods:** Participatory Action Research was used, completing five action cycles, with a convenience sample of children in a non-government school in Tasmania (grade two - six). The canteen was used as a discussion point for children during data collection providing them with a familiar and current context. Data was collected through observation, filming and documentation by researchers during; an open class discussion, one day in the canteen, a day when specified meal was offered in the canteen and two Discovery Days (children worked in groups to design a healthy menu). Qualitative data was analysed using a conventional content analysis to establish concepts that represented factors that children considered when making food choices.

**Results:** Knowledge about healthy food did not appear to influence children's food choices, children used a range of concepts (pleasure, texture, social acceptability, versatility and eating context) collectively to make food choices. Using these concepts, a conceptual framework was developed to portray how consideration of children's criteria for making choices could be integrated with known evidence about making healthy options available in the school setting. This has the potential for making healthy food more desirable to children.

**Conclusion:** Children are key informants about concepts influencing their food choices. Designing programs which consider children's perceptions could shape what and how food is presented to children during school in the future. The framework developed shows how research outcomes can be simplified and used in the school setting to promote healthy eating.

**Conflict of interest:** None

**Keywords:** Children; school; qualitative; healthy; eating

## 509 Community-level interventions for improving access to food in low- and middle-income countries: a Cochrane review

Mrs Solange Durao<sup>1</sup>, Dr Marianne Visser<sup>2</sup>, Dr Vundli Ramokolo<sup>4</sup>, Ms Julicristie Oliveira<sup>5</sup>, Dr Bey-Marrié Schmidt<sup>1</sup>, Ms Yusenitha Balakrishna<sup>3</sup>, Ms Amanda Brand<sup>2</sup>, Dr Elizabeth Kristjansson<sup>6</sup>, Ms Anel Schoonees<sup>2</sup>

<sup>1</sup>Cochrane South Africa, South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>Centre for Evidence-based Health Care, Division of Epidemiology and Biostatistics, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa, <sup>3</sup>Biostatistics Unit, South African Medical Research Council, Cape Town, South Africa, <sup>4</sup>Health Systems Research Unit, Cape Town, South Africa, <sup>5</sup>School of Applied Sciences, University of Campinas, Campinas, Brazil, <sup>6</sup>School of Psychology, Faculty of Social Sciences, University of Ottawa, Ottawa, Canada

**Biography:** Solange Durão is a senior scientist at Cochrane South Africa, South African Medical Research Council, where she has been working since 2013. She is also co-director of Cochrane Nutrition.

Her background is in Dietetics and Public Health. Her interests and work involve research synthesis addressing public health nutrition issues, and building capacity to conduct and use systematic reviews. Solange completed her Masters in Public Health (specializing in epidemiology) at the University of Cape Town (2011) and her BSc Dietetics degree at the University of the Western Cape (2006).

Her research interests include public health nutrition, social determinants of health and promoting evidence-informed decision-making regarding nutrition-related policy and practice. Her research portfolio includes Cochrane reviews as well as evidence syntheses methods research and priority setting for relevant research in nutrition and for the African continent. She has been a member of the WHO guideline development group for nutrition actions.

Solange is also interested in capacity building activities to improve the conduct and use of systematic reviews in health-care decision-making Africa. As part of this she has been involved in facilitating workshops in the region about evidence-based health care and systematic reviews.

**Introduction:** Physical and economic access to food is crucial for food security, which could be addressed through community-level interventions. We conducted a Cochrane review to assess the effects of community-level interventions on access to food in low- and middle-income countries (LMICs).

**Methods:** We included randomized controlled trials and prospective controlled studies conducted in LMICs assessing community-level interventions addressing food access through improving buying power, food prices, infrastructure and transport, or social environment and support. We searched 16 databases (February 2020). We followed Cochrane methodology to conduct the review.

**Results:** We included 59 studies, mostly from Africa and Latin America. The findings were as follows:

Unconditional cash transfers improve food security and make little or no difference to cognitive function, may increase dietary diversity and reduce stunting. Evidence on the proportion of household expenditure on food and wasting is very uncertain.

Conditional cash transfers make little to no difference in the proportion of household expenditure on food and slightly improve cognitive function, probably slightly improve dietary diversity, and may make little to no difference to stunting or wasting.

Income generation strategies make little or no difference to stunting or wasting, may result in little to no difference to food security and may improve dietary diversity.

Food vouchers probably reduce stunting, may slightly improve dietary diversity and may result in little to no difference in wasting.

Food/nutrition subsidies may improve dietary diversity. The effect on the proportion of household expenditure on food is very uncertain.

Community grants probably make little to no difference to wasting and may make little or no difference to stunting. The

effects of village savings and loans on food security or dietary diversity are very uncertain.

**Conclusion:** This review provides a comprehensive evidence base evaluating a wide range of community-level interventions addressing food access in LMICs.

**Conflict of interest:** None.

**Keywords:** Food security; systematic review; cash transfers; access to food

\*\*\*\*\*

## 734 Comparison of behavior change in the purchase of packaged food with warning labels according to the participants' education level

*Dr Samuel Durán<sup>1</sup>, Mrs Jessica Moya<sup>1</sup>, Mr Paulo Silva<sup>1</sup>*

<sup>1</sup>Universidad San Sebastián, Santiago, Chile

**Biography:** Samuel Durán, nutritionist, master public Health, and PhD. nutrition and Food past president Chilean College Nutrition member directory Chilean Nutrition Society

**Background:** Chile currently has a high prevalence of overweight, obesity, and chronic diseases, which is the product of excessive caloric intake, especially of packaged foods, and low physical activity. In response to the above, the law 20606 "on the nutritional composition of food and its advertising" was created.

**Objective:** To describe the change in purchase behavior of the participants according to their level of education eight months after the implementation of the front-of-package excessive nutrient and calorie labeling law went into effect in June 2016.

**Design:** We conducted a descriptive, cross-sectional study, including a representative sample of the population. We evaluated 2,329 people. We interviewed participants by phone and asked their age, gender, and level of education. The stage of change was identified according to the purchase intention for each food (sugar-sweetened beverages, cookies, packaged snacks, cured meats and sausages, instant soups, chocolates, ice cream, breakfast cereals, and butter), using Prochaska's classic model and the model developed by the American College of Sports Medicine.

**Results:** Of the 2,329 people evaluated, 55.7% of participants had post-secondary education, 35.3% had secondary education, and 8.7% had primary education. Subjects with a higher level of education knew more about the law ( $p < 0.001$ ) and were mostly in action and maintenance stages for the option cookies ( $p = 0.034$ ) and sugar-sweetened beverages ( $p = 0.033$ ). In contrast, when making the same comparison using American College of Sports Medicine, there was only a difference in sweet snacks. Subjects with a higher level of education had the highest score in this item.

**Conclusions:** Subjects with a higher level of education were farther along the stage of change regarding the purchase intent of food with warning labels.

**Conflict of interest:** None

**Keywords:** foods; front-of-package; education level

## 380 Consumption of unprocessed/minimally processed and ultra-processed foods and the association with breast cancer risk in black South African women: the SABC study

*Ms Inarie Jacobs<sup>1</sup>, Dr Christine Taljaard-Krugell<sup>1</sup>, Prof Hester, H Vorster<sup>1</sup>, Dr Sabina Rinaldi<sup>2</sup>, Dr Inge Huybrecht<sup>2</sup>, Dr Isabelle Romieu<sup>3,4</sup>*

<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>2</sup>Section of Nutrition and Metabolism, International Agency for Research on Cancer, Lyon, France, <sup>3</sup>Centro de Investigación en Salud Poblacional, Instituto Nacional de Salud Pública, Cuernavaca, Mexico, <sup>4</sup>Hubert Department of Global Health, Emory University, Atlanta, United States of America

**Biography:** Registered dietitian in South Africa. Holds a Masters degree in dietetics and was formerly employed at Bambisana Hospital, Lusikisiki in the Eastern Cape as a community service dietitian. Currently a full time PhD student at the North-West University, Potchefstroom.

**Introduction:** Ultra-processed food consumption (UPF) is increasing while consumption of more wholesome and nutritious foods are decreasing. This study aimed to investigate the association between consumption of UPFs, wholesome foods and breast cancer (BrCa) risk in black South African women.

**Methods:** The study population included 396 BrCa cases and 396 population-based controls (287 premenopausal and 505 postmenopausal women) matched on age (22 to 88 years) and residence, participating in the South African Breast Cancer study. Dietary intake was assessed by using a validated quantified food frequency questionnaire from which 4 food groups according to the NOVA classification were formed (I. unprocessed/minimally processed foods; II. Culinary products; III. Processed foods and IV. UPFs). Conditional and unconditional logistic regression models were used to estimate odds ratios and 95% confidence intervals, comparing highest versus lowest median intakes/day and adjusting for potential confounding factors.

**Results:** Considering contributions to total energy intake/day, UPFs consumption contributed to 40.1 % in cases and 42.9% in controls while unprocessed/minimally processed foods contributed to 38.1% in cases and 34.1% in controls. Unprocessed/minimally processed food consumption (excluding red, organ and offal meat) showed an inverse association with BrCa risk overall (OR= 0.67 95% CI: 0.48; 0.92), in pre-and-postmenopausal women (OR=0.66 95% CI: 0.39; 1.12 and OR=0.59 95%CI: 0.40; 0.86, respectively) and in oestrogen and progesterone positive receptors (OR=0.63 95%CI: 0.44; 0.91 and OR=0.47 95% CI: 0.23; 0.98, respectively). No significant associations were observed with consumption of UPFs.

**Conclusion:** Consumption of whole foods in the unprocessed/minimally processed NOVA food group may decrease the risk of developing BrCa in this population, especially in postmenopausal women. High consumption of UPFs in this population is alarming since over consumption of these foods may contribute to obesity which is a known BrCa risk factor in postmenopausal women.

**Conflict of interest:** None

**Keywords:** NOVA, ultra-processed, minimally/unprocessed foods, breast cancer risk, South Africa

## 232 Current practices and challenges of registered dietitians in the nutritional management of children with Cerebral Palsy in South Africa

*Ms Deborah Jacobson<sup>1</sup>, Ms Deborah Jacobson<sup>1</sup>, Ms Maritha Marais<sup>1</sup>*

<sup>1</sup>University Stellenbosch, Johannesburg, South Africa

**Biography:** Deborah received her B.Sc. (Chem), B.Sc. (Hons.)(Chem), B.Sc. (Med)(Hons.) Dietetics degrees between 1988-1995 at University of Cape Town. She is currently enrolled to complete her Masters in Nutrition at University of Stellenbosch (Since 2016). From 1996-1997, she worked as a dietitian at Red Cross Childrens' Hospital, then was employed by Abbott Laboratories as a sales representative and as a product manager, managing infant nutritional products from 1997-2002. She has been in private practice since 2002 managing paediatric patients at Garden City Hospital (Out-patients, Paediatric ICU, Neonatal ICU and Paed ward). She was a part-time study co-ordinator (2005-2011) doing medical research in the Department of Haematology at Charlotte Maxeke hospital. She has worked as a consultant dietitian for Aspen nutritionals (2011-2012), helping with marketing material and training sales representatives. She was also employed on a part-time basis by Ogilvy advertising agency working on promotional material for Nestle infant feeding (2013-2016). She currently works with Woolworths as a 'My School facilitator' (since 2012) presenting talks to learners and their parents on healthy eating. Deborah has three teenage girls and spends much of her spare time outdoors and painting

**Introduction:** Cerebral Palsy (CP) describes a group of developmental disorders of movement and posture. Feeding difficulties and gastrointestinal problems are frequent and can be associated with undernutrition, growth failure, micronutrient deficiencies, osteopenia, and nutritional comorbidities. The European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) formulated a set of guidelines for monitoring nutritional status and determining nutritional requirements.

**Objectives:** To determine the practices of private and public sector South African (SA) registered dietitians (RD) regarding the nutritional management of children with CP as well as the challenges experienced.

**Methods:** A descriptive, cross sectional study with an analytical component was conducted. The instrument for data collection was an online self-administered questionnaire which was developed based on the ESPGHAN guidelines. Participant answers were scored to assess their management of children with CP.

**Results:** Ninety-three dietitians participated of which 78 had work experience with CP (40 public sector and 38 private practicing dietitians). Over two thirds (71.2%) had received training on the management of CP at university although the majority (67.7%) felt the training was inadequate. Based on the score they received, SA RDs managed children with CP significantly differently compared the the ESPGHAN guidelines ( $p < 0.001$ ) (60.7% interquartile range 52-67.9%,  $n = 78$ ). These differences were however not found between private and public sector dietitians. SA RDs need to improve regular follow up anthropometry with an emphasis on measuring triceps skinfold thickness. The most common challenges which affect dietitians' management of children with CP are the poor compliance by the caregivers ( $n = 72$ ; 92.2%), poor communication and networking between health care professionals ( $n = 60$ ; 77%) and difficulty to measure anthropometry ( $n = 51$ ; 65.4%).

**Conclusion:** Improved training of RDs in the management of children with CP would enhance their competence and help them overcome challenges to optimize the health and development of children with CP.

**Conflict of interest:** None

**Keywords:** cerebral palsy, nutritional management, challenges

## 604 Decolonising deliciousness: Food, diet modifications and disability

*Prof Mershen Pillay<sup>1,2,4</sup>, Mr Peter Lam<sup>2,3</sup>*

<sup>1</sup>University Of KwaZulu-Natal, Durban, South Africa, <sup>2</sup>International Dysphagia Diet Standardisation Initiative, International, International, <sup>3</sup>University of British Columbia, Vancouver, Canada, <sup>4</sup>Massey University, New Zealand

**Biography:** Mershen Pillay, a South African audiologist and speech therapist is currently a programme leader (senior lecturer) at Massey University and an honorary A/prof at UKZN. Mershen started THRIVE - Tackling Hunger via Research & Innovation in Vulnerable Environments to connect persons with disabilities to their food sovereignty by decolonising dysphagia research and practice. His research considers indigenous foods, flavour/taste and sensory aspects like food acoustic parameters.

Peter Lam is the co-chair of the International Dysphagia Diet Standardisation Initiative working with a multidisciplinary team of professionals from around the world to develop and promote the use of standardised terminology for texture modified diets and thickened liquids. Peter is a Registered Dietitian and a Credentialed Food Service Executive in Vancouver, British Columbia, Canada. He is an appointed clinical instructor at the University of British Columbia and a past national president of the Canadian Association of Foodservice Professionals. Peter co-authored the Dietitians of Canada – Dysphagia Online Course and the Knowledge and Skills paper for Dietitians in Dysphagia Practice. He was the chairman of the board of the College of Dietitians of British Columbia and chair of the Dysphagia Assessment and Treatment Network of the Dietitians of Canada.

**Introduction:** Malnutrition and aspiration/choking risks and, frequently, death are common consequences of an inability to swallow (dysphagia). This globally affects 590m+ people with strokes, HIV, head injuries, mental illnesses, cerebral palsy, cancer, etc. A well-established method for effective dysphagia management is diet textural modifications. However, taste/deliciousness is minimized by a colonising health care focus on nutrition/aspiration safety. The International Dysphagia Diet Standardisation Initiative (IDDSI) was developed for global consumption but is mainly used in high-income countries. For people with disabilities at the lower end of the socio-economic scale, food insecurity (sovereignty) intersects with this minimisation of deliciousness. Within a decolonisation framework, we ask: How may we consider 'deliciousness' when modifying diets for people with disabilities in low-income contexts?

**Methods:** A qualitative, descriptive review of current IDDSI practices is considered via a resource constrained context (rural Zululand, South Africa).

**Results:** IDDSI is via an inter-professional education project called Tackling Hunger via Research and Innovation in Vulnerable Environments (THRIVE). This focussed:

- food production, e.g. indigenous garden boxes with pharmacy farms.
- food preparation using low-cost foods (ePap, a fortified maize product) and laboratory tested methods like molecular gastronomy (e.g. aeration, dehydration, hydrocolloid spheres),
- diet textural measurement and classification using IDDSI, and
- community health/care workers management of eating, oral hygiene and risk assessment of malnutrition, aspiration/choking. Three processes are necessary for managing delicious and people with disabilities, viz.:
  - (i) critical, intersectoral collaborations, viz.: food manufacturers, community health (care) workers; professionals: dietitians, speech\_, physio\_, and occupational therapy; pharmacy, dentistry, medicine and nursing;
  - (ii) negotiating innovation between consumer\_, food and health sciences; and
  - (iii) humanising sustainable food sovereignty e.g., inclusion of community chefs/cooks and a poet, who centrally focus deliciousness.

**Conclusion:** Taste (or deliciousness) is central to diet textural modifications given that food is a cultural/social artefact and improves intake and nutrition.

**Conflict of interest:** Peter Lam is co-chair of IDDSI. Mershen Pillay is an member of the IDDSI board of executives

**Keywords:** dysphagia, diet modification, food security/sovereignty, taste

\*\*\*\*\*

## 375 Developing practice placements for the future workforce: a collaborative London approach

Mrs Annemarie Knight<sup>1</sup>, Sarah Illingworth<sup>2</sup>, Rashmi Soni<sup>3</sup>, Rachael Strauss<sup>4</sup>

<sup>1</sup>King's College London, London, United Kingdom, <sup>2</sup>London Metropolitan University, London, United Kingdom, <sup>3</sup>Barts Health NHS Trust, London, United Kingdom, <sup>4</sup>Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

**Biography:** Annemarie Knight is a Registered Dietitian with the Health and Care Professions Council in the UK. She is the Programme Director for Dietetics at King's College London, leading undergraduate and postgraduate pre-registration dietetic education. Her teaching interests include communication skills, foodservice and food and culture. She is a member of Higher Education Group of the British Dietetic Association and part of a working group reviewing the curriculum for the profession in the UK. Her research interests include dietetic practice, education and culture.

**Introduction:** Dietetic associations internationally have articulated the need for the profession to widen its scope and for graduates to have the skills required for growing and emerging areas of practice. Central to achieving this, is sufficient capacity of practice-based learning opportunities in a range of settings. The availability of practice placements continues to be a constraint to growth of the profession and remains a priority for development.

**Aim:** To develop a strategy for the development of high-quality practice placements that meet the needs of the future dietetic workforce in London.

**Methods:** A stakeholder group was established bringing together leaders from dietetic services in hospitals, community and public health settings and dietetic higher education programme teams. The group analysed the strengths and limitations of the current placement strategy with reference to policy and strategic documents from the Department of Health, other healthcare bodies and the British Dietetic Association. Consideration was also given to changing health and social care structures in the London area. Consensus was reached on priority areas for practice placement development including paediatrics, mental health and community services with the aims of diversifying the settings in which placements occur, addressing emerging workforce needs and generating additional placement capacity.

**Results:** The priorities identified and agreed were to develop new practice placements in paediatrics and community settings. A move to "place-based" model where placements are developed across a defined geography to align with local healthcare priorities and systems was agreed as a priority for piloting and evaluation. New models of supervision including a "long-arm" supervision approach were developed and implemented. Training was delivered to prepare students and educators for new placements and resources were developed to support placement development.

**Conclusion:** A collaborative approach to education can support the development of high quality practice based learning opportunities for the future dietetic workforce.

**Conflict of interest:** None

**Keywords:** practice education; dietetics education; workforce; public health; supervision

## 668 Development of a competency framework in nutrition and dietetics: a rapid review

Professor Geneviève Mercille<sup>1</sup>, Ms Caroline Drisdelle<sup>1</sup>, Mrs Chantal Bemeur<sup>1</sup>

<sup>1</sup>Université De Montréal, Montréal, Canada

**Biography:** I am an assistant professor in the Department of Nutrition at the Faculty of Medicine of University of Montreal since 2016, and a researcher within the TRANSNUT research group of this University. As a dietitian, I worked for a dozen years with the Aboriginal nations of Quebec, before embarking on a career in research. I completed my Ph.D. in Public Health in 2013, at University of Montreal. My two main research areas focus on interventions in food environments and local food systems, in order to make them more equitable and sustainable, as well as on food security and access to healthy foods for the most vulnerable populations. I am also a member of the new Food Policy Council in Montreal, a group formed in June 2018.

**Introduction:** The Université de Montréal's undergraduate program in nutrition has taken steps to adopt a competency-based educational approach. As part of this process, a specific competency framework needed to be developed according to Canadian accreditation standards. This review aimed to document the key trends shaping future nutrition and dietetics practice and the skills and knowledge required for present and future practitioners.

**Methods:** A rapid review methodology was followed for data synthesis published since 2017. Six electronic databases were searched, supplemented by a manual search of dietary association journals within countries with accredited training. AMSTAR and MMAT assessment tools were used for quality appraisal of included studies. Data analysis was performed using a literature map, built according to an ecological model that described four levels of influence : social trends; labour market and employment trends; to which we attached the seven core values of our program (rigour, integrity, reflexivity, professional engagement, innovation, inclusivity, social responsibility) and its six key competencies (professionalism, communication, collaboration, nutrition care, public health nutrition, management).

**Results:** Forty-three studies (11 systematic reviews and 32 primary studies) were included for analysis. Registered dietitians have an opportunity to meet social trends and workforce demands by incorporating sustainability, eHealth and nutrigenomics into their practice. Inclusion and social justice were identified as core values that must be fostered in students to ensure that they contribute, through their actions, to the well-being of marginalized populations. Professionalism, particularly leadership, emerged as a crucial competency required for future practitioners.

**Conclusion:** The multi-sectoral aspect of the profession requires the development of disciplinary and transversal skills that are gradually acquired throughout training. Nutrition and dietetic education programs must recognize and adapt to the new realities of the profession and the broader scope of practice.

**Conflict of interest:** None

**Keywords:** Rapid review; Workforce trends; Competency-based education; Professional competencies

## 201 Development of a Diet Profiling Algorithm contributing to diet assessment and nutritional advice for use in digital nutrition tools and platforms

Ms Marta Alonso-Bernáldez<sup>1</sup>, Ms Rocio Zamanillo<sup>2</sup>, Mr Andreu Palou-March<sup>1</sup>, Ms Mariona Palou<sup>1,2,3</sup>, Ms Francisca Serra<sup>1,2,3</sup>

<sup>1</sup>Alimentomica S.L., Palma de Mallorca, Spain, <sup>2</sup>Laboratory of Molecular Biology, Nutrition and Biotechnology (Nutrigenomics), University of the Balearic Islands, Palma de Mallorca, Spain, <sup>3</sup>CIBER de Fisiopatología de la Obesidad y Nutrición (CIBEROBN) and Institut d'Investigació Sanitària Illes Balears (IdISBa), Palma de Mallorca, Spain

**Biography:** Marta Alonso studied her BSc in Human Nutrition and Dietetics at the Autonomous University of Madrid, doing an Erasmus year at Northumbria University in Newcastle, UK. Subsequently, she studied a master's degree in Biomolecules and Cell Dynamics also in Madrid, and another one in Nutrigenomics and Personalized Nutrition at the University of the Balearic Islands, Spain. She has worked in several laboratories as an intern in different research fields, highlighting genetic diagnosis and gene expression. She is currently doing her PhD in Nutrigenomics and Personalized Nutrition at a small enterprise called Alimentomica, which is a technology-based company and first Spin-off of the University of the Balearic Islands.

Her research areas are perinatal nutrition, where leptin and microRNAs are two main targets in her studies, nutrigenomics and nutritional education. She has taken numerous courses in nutrigenetics and molecular genetics and has also experience lecturing at university. She was awarded the "Promising Dietitian-Nutritionist" prize by the association of Dietitians-Nutritionists of Madrid in 2016 and has been presenting her work in seminars ever since. She loves traveling and learning other cultures; thus she is extremely happy for this opportunity, as it is her first time presenting in an international congress.

**Introduction:** Implementation of dietary intake and diet quality (DQ) analysis in digital nutrition tools and platforms (DNTP) administered by dietitians will allow gaining efficiency in diet counselling.

**Objective:** To develop and test a diet-profiling algorithm (DPA) designed to rank DQ, suitable for implementation in DNTP.

**Methods:** DPA was developed considering the following parameters. Total Carbohydrate/Total Fibre ratio, % of energy from saturated fats and sodium as negative inputs, since their excess intake may lead to unhealthy events. Fiber and protein per body weight intake were assumed as positive items. The ratio Total Fat/Total Carbohydrate to evaluate macronutrient distribution and a food pattern analysis were introduced for dietary advice refinement. DPA gives a final score ranking DQ from 1 (best) to 4 (worst). Diets of a cohort of 59 lactating women were assessed through the DPA. Differences between DPA scores (DPAS) were analyzed using one-way ANOVA.

**Results:** Diets with increased energy and high fat intake at the expense of carbohydrate and protein intake obtained higher DPAS ( $p < 0.05$ ). Furthermore, women following diets with a lower intake of "negative nutrients" and a higher fiber intake obtained lower DPAS ( $p < 0.05$ ). Moreover, DPAS obtained by each diet were consistent with the food patterns analyzed, indicating that people obtaining worse scores tended to choose more palatable and less satiating foods or food products. Interestingly, a tendency to increase BMI was related to worse DPAS.

**Conclusion:** An easy diet-profiling algorithm, the DPA, based on food quality and composition, was developed. Testing DPA in a sample population has proven its utility as a dietetic tool to analyze DQ. We envisage that DPA can be easily implemented in DNTP, contributing to real-time dietary progress follow-up of patients leading to further dietary adjustment.

**Conflict of interest:** None.

**Acknowledgements:** The authors thank all the women who participated in the Nutrigen-11 study. MA-B is recipient of an 'Industrial Doctorate' contract (DI-16-08710) cofunded by the Ministerio de Economía, Industria y Competitividad of Spain.

**Keywords:** diet assessment; diet-profiling algorithm; healthy diet; diet quality

## 279 Development of food provision guidelines for early childhood development centres and places of safety

Prof Annelie Gresse<sup>1</sup>, Ms Demi Anderson<sup>1</sup>, Ms Jessica De Beer<sup>1</sup>, Ms Megan Kloppers<sup>1</sup>, Ms Renee Nell<sup>1</sup>, Ms Jocelyn Verdoukas<sup>1</sup>, Ms Diana Walker<sup>1</sup>

<sup>1</sup>Nelson Mandela University, Port Elizabeth, South Africa

**Biography:** Annelie Gresse is a registered dietitian and involved in higher education institutions and nutrition education for the last 35 years. At present her field of education is food service management. The topic of her DSc in Dietetics was on the management of diabetes mellitus in a population in transition. She is the Head of Department of Dietetics at Nelson Mandela University and involved in various research projects with undergraduates, masters and doctorate students.

**Introduction:** Early childhood development centres (ECDCs) and places of safety (POS) provide care for many children of whom the majority are vulnerable to nutritional deficiencies, inter alia, due the limited food budget that these institutions have. Dietitians in the public service, responsible for these institutions, are overburdened with responsibilities within the community and cannot always assist these institutions. Staff often have little training, knowledge and skills in nutrition, menu development and dietary guidelines. The aim of this study was to develop a manual with guidelines, simple, low cost menus, recipes and general information, in line with the guidelines of the Department of Health, to assist these institutions

**Methodology:** A mixed method descriptive case study design was followed. Structured interviews, audit forms and observations were used in a convenience sample of staff of 47 ECDCs in the low socio-economic areas and five POS in Nelson Mandela Bay, to determine the need and content of the planned manual. The data was then used to formulate the manual.

**Results:** The main problems found were that guidelines provided by the Department of Health are not known or used, 91 % of the institutions could not manage on the funds available, there was a lack of training and knowledge of hygiene and safety in food production and unhealthy meals (especially the lack of fruit, vegetables and dairy products and the provision of high fat, refined carbohydrate snacks) were provided. Two separate manuals, one with a nine day cycle menu for ECDCs and one with a 21 day cycle menu for POS were then developed and presented to these institutions.

**Conclusion:** Food providers at ECDCs and POS need more support and training. More research will also have to be done to determine whether support such as the manual that was developed, is used effectively.

**Conflict of interest:** None

**Keywords:** food provision; manual; children

## 272 Diet quality is associated with malnutrition and low calf circumference in Canadian long-term care residents

Dr Natalie Carrier<sup>1</sup>, Dr Lita Villalon<sup>1</sup>, Dr Christina Lengyel<sup>2</sup>, Dr Susan Slaughter<sup>3</sup>, Dr Lisa Duizer<sup>4</sup>, Mrs Jill Morrison-Koech<sup>5</sup>, Dr Heather Keller<sup>6</sup>

<sup>1</sup>Université de Moncton, Moncton, Canada, <sup>2</sup>University of Manitoba, Winnipeg, Canada, <sup>3</sup>University of Alberta, Edmonton, Canada, <sup>4</sup>University of Guelph, Guelph, Canada, <sup>5</sup>University of Waterloo, Waterloo, Canada, <sup>6</sup>Nutrition and Aging Schlegel-University of Waterloo Research Institute for Aging, Waterloo, Canada

**Biography:** Natalie Carrier is one of the co-principal researchers for the Making the Most of Mealtimes research program. Her expertise is in LTC residents' diet quality and nutritional status and foodservice related factors. Dr Carrier is a professor in nutrition at the Université de Moncton and her teaching area is in foodservices.

**Introduction:** Long-term care (LTC) residents are nutritionally vulnerable. Identifying specific dietary nutrients that are lacking could help target potential interventions.

**Objectives:** To determine diet quality of Canadian LTC residents and its association with malnutrition and low calf circumference (CC).

**Methods:** A cross-sectional study was undertaken in 32 LTC homes across four Canadian provinces. Nutrient adequacy ratios (NAR; % of Recommended Dietary Allowance [RDA]) were calculated for seventeen key nutrients and were averaged to obtain a mean adequacy ratio (MAR) describing overall diet quality. Malnutrition risk and malnutrition were assessed with the Mini Nutritional Assessment-Short Form (MNA-SF) and Patient-Generated Subjective Global Assessment (PG-SGA); CC was also determined. Linear and logistic regressions for these outcomes with diet quality as the predictor were conducted adjusting for covariates.

**Results:** The sample included 619 residents (86.8±7.8 years, 31.2% male). Mean energy intake was 1556.3±294.1 kcal/day and protein intake was 57.5±13.0 g/day. Mean MNA-SF score was 10.7±2.5 and 43.5% of residents had mild/moderate to severe malnutrition based on the PG-SGA and 32.6% had a CC of <31cm. Most micronutrients had a mean NAR≥0.70, except vitamins D (0.28) and E (0.34), folate (0.58), calcium (0.61) and magnesium (0.65). The MAR score (mean= 0.79±0.09) was significantly associated with malnutrition: MNA-SF scores [ $\beta$ =5.34, 95% confidence interval (CI) (2.81,7.85)] and PG-SGA [odds ratio (OR)=0.49, 95% CI (0.38,0.64)]. Those who had better diet quality were more likely to be well nourished or not at risk. Folate, iron, magnesium, selenium and vitamins B1 and B3 were associated with reduced risk of low CC, whereas vitamin E [OR=1.28; 95% CI (1.11, 1.49)] was associated with a greater risk of low CC.

**Conclusions:** Diet quality is associated with malnutrition and individual NAR with low CC. In addition to calories and protein, nutrient dense diets that promote adequate micronutrient intake are required in LTC.

**Conflict of interest:** None

**Keywords:** diet quality; LTC; malnutrition; calf circumference; eating assistance

## 70 Dietetic education in Canada: Are we preparing practitioners to accelerate change?

Dr Jennifer Brady<sup>1</sup>

<sup>1</sup>Mount Saint Vincent University, Halifax, Canada

**Biography:** Jennifer Brady is a Registered Dietitian and Assistant Professor at Mount Saint Vincent University. Her work draws on mixed and qualitative methods to explore critical perspectives of food, health, and nutrition.

**Introduction:** Education and training is the period during which future dietitians acquire the knowledge, skills, and confidence necessary for effective, ethical practice. This presentation reports on the results of a study that explores if and how Canadian dietitians perceive their education and training to prepare them with the knowledge, skill, and confidence to address social injustices that impact the health and everyday lives of their clients through practice and advocacy.

**Methods:** An online semi-quantitative survey was distributed to Canadian dietitians via email, social media, and online newsletters. The survey asked dietitians about their understanding of, attitudes towards, and engagement in social justice and advocacy. Descriptive statistical analysis and qualitative thematic analysis were used to analyze participant responses.

**Results:** The majority of respondents (n=264; 81.99%) felt that knowledge- and skill-based learning about social justice and advocacy should be a part of dietetic education and training. Reasons given by respondents for the importance of such learning include: client-centered care and reflexive practice; effecting change to the social and structural determinants of health; preventing dietitian burnout; and relevance of the profession. Yet, over half of respondents either strongly disagreed or disagreed that they were adequately prepared with the knowledge (n=186; 57.59%), skills (n=195; 60.19%), or confidence (n=196; 60.49%) to do so. Some questioned the practicality of adding social justice learning to already full programs, while others proposed infusing a social justice lens across dietetic education and practice areas.

**Conclusions:** Canadian dietitians are keen to address the social and structural injustice that impact their clients lives through their everyday practice and through advocacy. However, they largely feel unprepared to do so. Dietetic education and training must do more to prepare dietitians to address the social and structural roots of health inequities.

**Conflict of interest:** None

**Keywords:** education; training; social justice; health equity; advocacy

## 268 Dietetics and community pharmacy working together; improving nutritional care for patients prescribed oral nutritional supplements (ONS)

Ms Lynsey Robinson<sup>1</sup>, Mrs Michele Rae<sup>1</sup>, Mr Alan Harrison<sup>1</sup>, Mr David Inglis<sup>1</sup>

<sup>1</sup>NHS Greater Glasgow & Clyde, Glasgow, United Kingdom

**Biography:** Lynsey qualified as a registered dietitian in 2002 and has 17 years' experience across general community and prescribing support services in NHS Greater Glasgow & Clyde. Lynsey has a passion for quality improvement and as an 'Advanced Prescribing Support Dietitian' currently leads on initiatives that aim to improve the quality of patient care and oral nutritional supplement (ONS) prescribing. Lynsey has also held national roles for Scotland wide ONS improvement work as project manager of the 2016-18 Scottish ONS Short Life Working Group and as chair of the Scottish Dietetic Prescribing Support Group. Lynsey is currently studying for a Master's degree in Health Research.

**Introduction:** A pilot to support new ways of working for ONS prescribing, supply and monitoring was undertaken across 86 pharmacies in NHS Greater Glasgow & Clyde (NHSGGC) to improve the quality, clinical and cost effectiveness of patient care and ONS prescribing

**Methods:** New pathways of care underpinned by the British Dietetic Association's 'Process for Nutrition and Dietetic Practice' were developed and tested. These incorporated:

- Dietetic-led ONS prescribing without the need for a medical prescription
- Longer term patient review and monitoring by community pharmacy based on dietetic instruction, including reduction / discontinuation of ONS or re-referral to dietetics where appropriate
- Care pathways were supported by new resources, staff training and governance arrangements. A multifaceted evaluation was undertaken after 1 year. This included patient and staff surveys and review and analysis of ONS prescribing information.

**Results:**

- 95% of patients satisfied with the overall quality of care
- Staff rated key aspects of the service between 7.1 – 8.2 out of 10 (1 = 'very poor' and 10 = 'excellent')
- Reduced inappropriate prescribing; ONS volume use reduced by 14%, including a reduction in ONS product waste
- 16% reduction in spend on ONS products
- Reduced demand on General Medical Services for ONS related work

**Conclusion:** The pilot unlocks potential for transformational change in dietetic practice and offers dietetic-led pathways of care that support sustainable health systems and reduce demand on General Medical Services as recommended by NHS Scotland. Continued service delivery and upscale to all areas in NHSGGC is recommended to ensure continued high quality patient care and clinically and cost effective ONS prescribing.

**Conflict of interest:** None

**Keywords:** Collaboration, quality-improvement, prescribing, clinical-effectiveness, cost-effectiveness

## 211 Dietitian-led clinics in primary care: A scoping review

Prof Mary Hickson<sup>1,2,3</sup>, Amanda Wanner<sup>1,2</sup>, Dr Jenny Child<sup>1</sup>, Dr Avril Collinson<sup>1,3</sup>

<sup>1</sup>University of Plymouth, Plymouth, United Kingdom, <sup>2</sup>NIHR Applied Research Collaboration South West Peninsula, Plymouth, UK, <sup>3</sup>University of Plymouth Center for Innovations in Health and Social Care: A Joanna Briggs Institute Center of Excellence, Plymouth, UK

**Biography:** Professor Mary Hickson's research includes sarcopenia and frailty, hospital nutritional care, nutrition in older people, and dietitians in primary care, as well as other aspects of dietetic professional practice.

Professor Hickson qualified as a dietitian in 1989 from the University of Surrey, UK. She then worked as a dietitian in a variety of clinical specialities in both the UK and Australia. She specialised in nutritional care of elderly people in 1993, working in elderly mental health, community services and acute medical care. In 2002 she was awarded a doctorate from Imperial College London, for work exploring ways to improve nutritional care on acute elderly medicine wards.

She went on to lead research in Therapy Services at one of the largest hospitals in London, with the aim to increase the research capacity in the allied health professions. She has continued to work nationally to promote clinical academic careers, sits on the NIHR pre-doctoral award panel, and is an NIHR Training Advocate for Dietetics.

In 2016 Mary took up a chair in dietetics at the University of Plymouth where she leads research within the Dietetics, Human Nutrition and Health research group, as well as contributing to teaching the undergraduate and post-graduate courses.

**Introduction:** Dietitians mainly work in acute hospital settings and there is little information on dietitians who work in primary care. We examined and mapped the existing evidence exploring or evaluating dietitian-led clinics in primary care.

**Methods:** We followed Joanna Briggs Institute review methodology; the protocol is published<sup>1</sup>. We included articles about dietitian-led clinics on any condition in primary care, and extracted information relating to effectiveness and costs. Published and unpublished studies were sought between 2008-2018 from MEDLINE, Embase, PsycINFO, CINAHL, AMED, British Nursing Index, Cochrane Library, Open Grey, ClinicalTrials.gov and EU Clinical Trials Register.

**Results:** 98 articles on dietetic-led treatment in primary care were retrieved; diagnoses included prediabetes, diabetes, cardiovascular disease, overweight, non-alcoholic fatty liver disease, hypertension, malnutrition, irritable bowel disease, coeliac disease, depression and anxiety, and paediatric allergy. Most evidence came from articles about conditions linked to lifestyle (68 articles, including 31/35 randomised controlled trials). There were surprisingly few articles on gastrointestinal disease (3). The evidence for effectiveness of dietetic-led treatment in primary care was mixed, but more articles showed positive results, in particular treating lifestyle linked disease. Information on cost was limited (27 articles) and suffered from weak methodology. Only eight studies included a planned cost analysis and these produced mixed results. Some showed significant cost benefits, whilst others showed little or none. Two studies reported the cost per quality adjusted life year (QALY) gained and showed highly cost effective interventions for CVD risk (\$1704-\$7889/QALY gained) and obesity (\$1668-\$4813/QALY gained).

**Conclusion:** Overall the review shows that data exists to support the effectiveness of dietetic-led primary care clinics in a wide range of diagnoses, but it is not conclusive. A meta-analysis may be possible for lifestyle linked disease. Cost data suggests possible savings, but requires further research. <sup>1</sup>Hickson et al. JBI Database of Systematic Reviews and Implementation Reports, doi:10.11124/JBISRIR-D-19-00025.

**Conflict of interest:** This review is funded by a project grant award to the University of Plymouth by the British Dietetic Association (BDA). Officers of the BDA had no role in the development of the protocol, design of the study, data collection and collation, nor interpretation and discussion of the data. Officers of the BDA did assist with identification of grey literature through their own knowledge and use of professional networks. This research was supported by the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care (CLAHRC) South West Peninsula, now recommissioned as NIHR Applied Research Collaboration (ARC) South West Peninsula. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health and Social Care. Authors MH and AC are members of the BDA

**Keywords:** Primary care; general practice; Dietitian-led; cost-effectiveness; scoping review

\*\*\*\*\*

## 198 Discrepancy in the evaluation of explicit and implicit outcomes for patients at risk of malnutrition: a qualitative study

*Mrs Lina Al-Adili*<sup>1</sup>

<sup>1</sup>Uppsala University, Uppsala, Sweden

**Biography:** Sheima Al-Adili is a Swedish registered dietitian and PhD student whose research mainly concerns the dietetic professional role. The main focus of her thesis is the monitoring and evaluation of nutrition interventions for patients at risk of malnutrition and the development of Patient Reported Outcome Measures (PROM) to evaluate nutrition interventions. She has been working as a registered dietitian since 2015 in primary healthcare in Sweden and started her PhD in 2018.

**Background:** Nutrition care plays a significant role in the prevention and treatment of malnutrition, although the challenge to establish the precise impact of a nutrition intervention on patient outcomes remains. Malnutrition can be associated with diverse underlying diseases and an increased risk of complications, which increases the difficulty of monitoring and evaluating the nutrition intervention.

**Objective:** To gain an understanding of dietitians' reflections concerning outcomes of interventions in patients at risk of malnutrition.

**Design:** Qualitative focus group research Participants/settings: Six semi-structured audio-recorded focus group discussions with registered dietitians from primary healthcare and hospitals (n=29) in Sweden were held at the dietitians' place of work or at the University.

**Analysis:** Focus group transcripts were analysed thematically to reveal patterns in the data and identify themes and subthemes.

**Results:** The dietitians described an approach to nutrition monitoring and evaluation of patients at risk of malnutrition that was categorised into three themes: 1) quantitative explicit outcomes, based on rigorous objective measures, 2) quantitative estimated outcomes, based on less rigorous estimates, 3) qualitative implicit outcomes, based on patients' subjective perceptions and experiences of their health that are difficult to measure.

**Conclusions:** Findings indicate the need for new strategies to promote systematic and comprehensive nutrition monitoring and evaluation.

**Conflict of interest:** None

**Keywords:** Risk of malnutrition, monitoring and evaluation, dietetic professionals, outcome, qualitative.

## 158 Does term-time employment protect students from food insecurity in UK Higher Education Institutions?

*Dr Claire Blennerhassett<sup>1</sup>, Dr Marian Peacock, Dr Stephen Clayton<sup>1</sup>*

<sup>1</sup>Edge Hill University, Ormskirk, United Kingdom

**Biography:** Dr Claire Blennerhassett is a dietitian, registered with the UK Health Care Professionals Council, since 2009. She has worked as a Community Dietitian in the UK National Health Service, supporting the dietary management of chronic diseases, and paediatric and adult weight management, including the bariatric surgery.

In 2014, Claire was employed as a research dietitian working at the University Hospital of South Manchester, where she was involved in two key research projects; B-Ahead 2 and PROCAS Lifestyle. These projects compared the efficacy of an intermittent energy-restricted diet to a traditional energy restricted diet in women receiving chemotherapy treatment for breast cancer and women of breast-screening age, respectively.

Claire is now employed as a lecturer at Edge Hill University (Lancashire, UK), where she also completed her PhD entitled 'Ultra-endurance athletes' food choices, nutrition knowledge and strategies to improve dietary intake and performance'. Claire's main research interest centres around eating behaviour and food choices of individuals and groups, including athletes, general population and those following specific diets e.g. vegan diet. In addition, Claire has an interest in food insecurity and sustainability.

**Background:** A shortfall between maintenance grants and living expenses appears to be responsible for a rise in term-time employment and higher rates of food insecurity (FI) in UK students. Both term-time employment and FI are associated with impaired academic performance and poor mental health. However, it is unclear whether working during term-time can protect students from FI. This study aimed to explore the relationship between term-time employment and FI.

**Methods:** A convenience sample of UK higher education students (n = 49) enrolled on health programmes consented to take part in this study. All volunteers completed an online-survey, which included questions about term-time work patterns and items from the Food Insecurity Experience Scale (FIES). The FIES included eight indicators of FI, ranging from mild to severe. Chi squared tests were completed to assess the relationship between term-time employment and FI.

**Results:** Most students (67.3%) were employed during term-time, with 16.3% working >20 hrs per week. Food insecurity was experienced by 59.2% of the sample. The most prevalent concern reported was 'limited variety' in the diet (40.8%) however, some students reported not eating, despite being hungry (26.5%) or going all day without eating (12.2%). The incidence of FI did not differ between employed and non-employed students  $\chi^2 (1, n = 49) = 0.36, p = 0.55, \phi = -0.13$  however, insecurity was more prevalent in students that resided in student accommodation, compared to those living at home,  $\chi^2 (1, n = 49) = 5.22, p = 0.022, \phi = 0.37$ .

**Conclusion:** Both term-time employment and FI are highly prevalent in UK University students and could present a double deficit for performance and mental health, especially for those living in student accommodation. This has prompted a follow-up study to explore students experience of FI and the support they require to meet their full potential.

**Conflict of interest:** None

**Keywords:** food poverty, insecurity, diet, nutrition

## 246 Effect of incorporating genetic testing results into nutrition counselling and care on anthropometric outcomes: A subsection of the Evidence Analysis Center Systematic Reviews

Dr Andrea Braakhuis<sup>1</sup>, Dr Asley Vargus<sup>2</sup>, Dr Amy Ellis<sup>3</sup>, Associate Professor Cathriona Monnard<sup>4</sup>, Dr Katie Robinson<sup>5</sup>, Dr Mary Rozga<sup>6</sup>

<sup>1</sup>The University of Auckland, Faculty of Medical Health Science, Grafton, New Zealand, <sup>2</sup>National Institute of Health, Rockville, USA, <sup>3</sup>The University of Alabama, Tuscaloosa, USA, <sup>4</sup>University of Fribourg, Fribourg, Switzerland, <sup>5</sup>Abbott Nutrition, Columbus, USA, <sup>6</sup>Academy of Nutrition and Dietetics, Chicago, USA

**Biography:** Dr Andrea Braakhuis joined the Academy of Nutrition and Dietetics working party for Nutritional Genomics mid-to-late 2018 with a dedicated group of dietetic and nutrition research professionals interested in investigating the efficacy of incorporating genetic information into the nutrition care of clients and patients. Presented will be a subsection of the systematic reviews conducted by the working party.

Andrea is the Academic Director of the Masters Dietetic programme at The University of Auckland, New Zealand, also a registered Dietitian with a research interest in the clinical application of nutritional bio-actives. Current publications include five or more systematic reviews in quality journals, and randomised control trials of nutrition interventions. Dr Braakhuis is a Principal Investigator leading a research programme exploring the interaction between protein sources, health and genetic-related outcomes. She has published close to 50 peer-reviewed papers on the efficacy of nutritional bio-actives.

**Introduction:** The use of genetic testing in nutrition counselling and care has generated excitement as the next major development in the toolbox of dietetic practice. However, the efficacy of using genetic testing in practice is unclear. The aim of this systematic review (SR) was to investigate the effect of incorporating results of genetic testing in nutrition counselling and care on anthropometric and body composition outcomes in adults and children.

**Methods:** A literature search of databases, including MEDLINE; Embase; PsycINFO; CINAHL; Web of Science; Cochrane Central Register of Controlled Trials and the Cochrane Database of Systematic Reviews, was conducted. Articles published from January 2008 to December 2018 that measured incorporating genetic testing results into nutrition care as the exposure, and measured anthropometrics or body composition as an outcome using a clinical trial design. Articles were screened for relevance, data was extracted and summarized, risk of bias was assessed and evidence was graded by a multidisciplinary team of researchers, practitioners and SR methodologists.

**Results:** A total of 6,699 articles were identified in the search and eight articles representing six unique trials investigating anthropometry or body composition in adults were included. There were no significant differences in weight, body mass index or waist circumference observed when results of genetic testing were incorporated into nutrition care compared to the intervention that did not incorporate genetic testing results (evidence quality: fair). However, percent body fat, but not lean mass, was decreased when individuals with non-fatty acid liver disease were given gene-specific dietary counselling based on nutrient-induced insulin output ratio (evidence quality: limited/weak).

**Conclusion:** The evidence reviewed does not suggest that incorporation of genetic testing results into nutrition counselling and care affects anthropometric outcomes. However, there were only 6 studies that met inclusion criteria indicating more high-quality trials are needed to confirm these findings.

**Conflict of interest:** None

**Keywords:** nutrigenomics; nutrition; counselling; dietetics; evidence

## 389 Effect of low-fat compared to low-carbohydrate diet on fasting lipids and metabolic profile in subjects with multifactorial chylomicronemia: A randomized crossover study

Mme Manon Fantino<sup>1</sup>, Mrs Martine Paquette<sup>1</sup>, Mrs Chantal Blais<sup>1</sup>, Mr Alexis Baass<sup>1</sup>, Mr Guillaume Paré<sup>2</sup>, Mrs Sophie Bernard<sup>1</sup>

<sup>1</sup>Montreal Clinical Research Institute (IRCM), Montreal, Canada, <sup>2</sup>Department of pathology and molecular medicine, McMaster University, Hamilton, Canada

**Biography:** After obtaining a dietetics degree (BTS) in France, I continued my studies at the University of Montreal and completed a Bachelor degree in Nutrition. In the course of my studies, I had the opportunity to intern in many hospital departments, working with various populations and providing clinical evaluations and nutritional interventions. I am currently working on my Master degree in Nutrition in Dr Sophie Bernard's laboratory at the Montreal Clinical Research Institute.

As a master student and nutritionist, my research interests focus on lipid metabolism, the impact of nutrition on cardiometabolic biomarkers and genetics. The objective of my master's thesis is to find an effective nutritional approach to reduce the risk of acute pancreatitis and cardiovascular disease in patients with multifactorial chylomicronemia. As there are currently no nutritional intervention studies being conducted on this population, this study will be the first and will help refine the current nutritional recommendations.

**Introduction:** Multifactorial chylomicronemia (MCM) is a complex disease characterized by triglyceride (TG) values  $\geq 10$  mmol/L. To develop this pathology, two conditions must be present: a genetic component and the presence of lifestyle-related risk factors. MCM is a serious health condition that greatly increases the risk of acute pancreatitis and can double the risk of cardiovascular disease. To date, no nutritional intervention studies have been carried out in this population. Therefore, the best dietary approach for these patients remains to be elucidated.

**Objectives:** The primary objective is to compare the effect of a low-carbohydrate (C) diet compared to a low-fat (F) diet on the TG concentrations of patients with MCM. The secondary objectives are twofold: (1) to compare the effect of each diet on other cardiometabolic parameters including lipid parameters, insulinemia, HOMA-IR and PCSK9 and (2) to compare all these parameters in a subgroup analysis according to the presence of a heterozygous mutation in the lipoprotein lipase (LPL) gene.

**Methods:** This randomized crossover study included 12 patients with MCM. Each subject must follow 2 isocaloric diets, low-C (C: 35%, F: 45%) and low-F (F: 20%, C: 60%), in a random order, for a duration of three weeks each. Each diet is separated by a 2-week washout period.

**Results:** We observed a greater decrease in TG levels ( $65\% \pm 17\%$ ) with the low-F diet compared to the low-C diet ( $46\% \pm 31\%$ ) ( $p=0.063$ ) in patients with a heterozygous LPL mutation. No significant difference was observed between low-C and low-F diets for the other groups.

**Conclusion:** This is the first nutritional intervention study conducted in patients with MCM. It will help define the best nutritional approach for the treatment of these patients, based on the existence of other factors such as a heterozygous LPL mutation.

**Conflict of interest:** None

**Keywords:** Hypertriglyceridemia, low-fat, low-carbohydrate, multifactorial chylomicronemia, diet

## 351 Effectiveness of a diabetes nutrition education programme on clinical status and dietary behaviours in adults with type 2 diabetes in South Africa

Dr Jane Muchiri<sup>1</sup>, Ms Gerda Gericke<sup>1</sup>, Prof. Paul Rheeder<sup>1</sup>

<sup>1</sup>University of Pretoria, Pretoria, South Africa

**Biography:** Dr Jane Muchiri ; Post-Doc (Pret), PhD dietetics (Pret), MSc. Nutrition & Dietetics (Flinders, Australia); Bsc. Agriculture & Home-Economics (Egerton, Kenya); Dip Agriculture & Home-economics (Egerton). I am currently a part-time Lecturer & Senior Researcher at the Department of Human Nutrition & School of Health Systems and Public Health respectively, University of Pretoria. In most of my working life I have been involved in training students in the areas of foods, nutrition and dietetics. I have a passion for seeing people improve their quality of life through engaging in healthy lifestyles. One way to achieve this is through training the young people. The young people by using the knowledge and skills accrued during their training can consequently influence their communities through diverse ways including being role models (living healthy lifestyles). My research interest is in diabetes prevention and management. I have been involved in nutrition education interventions for people with type 2 diabetes in both primary healthcare and tertiary healthcare setting.

**Aim:** To evaluate the effectiveness of an adapted nutrition education programme (NEP) on clinical and dietary parameters of type 2 diabetes (T2DM) patients.

**Setting:** Diabetes outpatient clinic (tertiary academic hospital).

**Method:** A NEP, adapted to meet the needs of the tertiary setting, was implemented among uncontrolled T2DM (HbA1c  $\geq$  8%) patients over 12 months, using a randomised controlled trial. T2DM adults (40-70 years) with  $\geq$ 1 diabetes duration and English eligible participated. The control group (n=38) and the intervention group (n=39) received the same education materials. The latter also received a workbook, 7-monthly group education sessions, 2-bimonthly follow-up sessions and a 15-minute individual session. The NEP aimed to improve HbA1c (primary outcome), lipid profile, BMI and blood pressure through improved dietary behaviours. Outcomes and changes in diabetes medication were measured at baseline, 6-months and 12-months using standard procedures and two-24hr diet recalls. Intention-to-treat analysis was conducted. Analysis of covariance (ANCOVA)/Rank ANCOVA compared the groups on measured outcomes (baseline, age and gender adjusted, (P<0.05)). [Ethical approval: Faculty of Health Sciences, Research Ethics Committee, University of Pretoria (no. 4/2016)].

**Results:** 62% of 77 participants completed the study. Differences in HbA1c were -0.53% (P=0.10) at 6 months and -0.02% (P=0.96) at 12 months in favour of the intervention group at six months. The intervention group in comparison with the control group had lower: i) systolic blood pressure at six (P=0.049) and 12 months (P=0.004), ii) diastolic pressure at 12 months (P=0.02), iii) and energy intake at six-months (P=0.042), and iv) increase in insulin units at six (P=0.04) and 12 months (P=0.009).

**Conclusions:** The NEP was not efficacious on HbA1c, despite clinically meaningful results in the short-term. Greater impact of the NEP appeared to be on blood pressure. Lower need for insulin up-titration indicates cost savings potential of the NEP.

**Conflict of interest:** None

**Keywords:** Type 2 diabetes, nutrition education programme, effectiveness, dietary behaviours, South Africa

## 104 Effectiveness of a very low carbohydrate ketogenic diet compared to a low carbohydrate and energy-restricted diet in overweight/obese type 2 diabetes patients

Mrs Ellen Govers<sup>1,2</sup>, Mrs Wilma Bouwman<sup>4</sup>, Dr. Ir. Tommy Visscher<sup>3</sup>, Mrs Alie Lourens<sup>4</sup>, Mrs Anniek Otten<sup>5</sup>, Mrs Beatrijs Schuilings<sup>5</sup>

<sup>1</sup>Netherlands Knowledge Centre of Obesity, Amsterdam, Netherlands, <sup>2</sup>ESDN Obesity of EFAD, Emmerich, Germany, <sup>3</sup>Windesheim University of Applied Sciences, Research group Healthy city, Zwolle, Netherlands, <sup>4</sup>Dieet zorg Friesland, Leeuwarden, Netherlands, <sup>5</sup>Hanzehogeschool HEI, department of nutrition and dietetics, Groningen, Netherlands

**Biography:** Ellen has been a primary care dietitian for over 25 years. Ellen is the chair of the Dutch obesity dietitians network [www.KDOO.nl](http://www.KDOO.nl); and chair of the ESDN Obesity of EFAD. She is specialized in obesity and its comorbidities: diabetes type 2, CVD and insulin resistance. She cooperates in multi-centre obesity research on the results of obesity management by dietitians. Ellen wrote four books on dietetics and nutrition (in the Dutch language).

She published several evidence based articles, e.g.

The Guideline on Insulin Resistance ( Govers E, et al. KDOO (2015) Guideline for the Management of Insulin Resistance. *Int J Endocrinol Metab Disord* 1(4): doi <http://dx.doi.org/10.16966/2380-548X.115>);

Insulin Treatment, Type 2 Diabetes and Obesity (*Curr Res Diabetes Obes J* 4(5): CRDOJ.MS.ID.555649 (2017));

Obesity and Insulin Resistance Are the Central Issues in Prevention of and Care for Comorbidities (*Healthcare* 2015, 3, 408-416; doi:10.3390/healthcare3020408).

The oral presentation is on the article: Govers E, Otten A, Schuilings B, Bouwman W, Lourens A, et al. (2019) Effectiveness of a Very Low Carbohydrate Ketogenic Diet

Compared to a Low Carbohydrate and Energy-Restricted Diet in Overweight/ Obese Type 2 Diabetes Patients. *Int J Endocrinol Metab Disord* 5(2): dx.doi.org/10.16966/2380-548X.158. Publication date: 06 Sep, 2019

**Background:** More than a million people in the Netherlands suffer from t2 diabetes mellitus; 80 percent is overweight or obese. Weight loss through diet is important. From preliminary results we concluded that the 6 x 6 diiet® (a VLCKD) was more effective in patients with t2 diabetes and overweight or obesity than other diets.

**Objective:** To prove its effectivity, we compared the 6 x 6 diiet® (6 x 6) to a moderate Low Carb Diet (LCD) and an Energy-Restricted Diabetes diet (ERD).

**Design:** A retrospective three-arm study in dietitian practices to reduce weight; HbA1C; and use of medication in overweight/ obese adults with t2 diabetes on 6 x 6 (VLCKD); a 50-100 grams/day LCD; an energy restricted diabetes diet at 3, 6 and 12 months.

**Results:** Data of 344 (n=110; 123; 111 in each study arm) patients from 16 practices were analyzed. More weight loss was seen in patients on 6 x 6, both at a 3, 6, and 12 months follow-up than on LCD or ERD (all p-values <0.05). A total of 34.5% of patients on 6 x 6 turned their HbA1c levels to a value <43 mmol/mol after 12-months follow-up which was a higher proportion than in the LCD study arm (p=0.14) and the ERD study arm (p<0.01). The percentage of patients that stopped or reduced their use of Metformin, SU derivatives or Insulin was larger in the 6 x 6 study arm than in the LCD ad ERD study arms, reaching statistical significance when comparing 6 x 6 with ERD.

**Conclusions:** 6 x 6 was more effective than LCD or ERD in overweight or obese patients with type 2 diabetes regarding weight loss, remission of t2 diabetes, HbA1c-levels, and the reduction of diabetes medication.

**Benefit to the audience:** evidence based new treatment for overweight/obese t2 diabetes patients

**Conflict of interest:** None

**Keywords:** weight loss, dietitian, low carbohydrate diet, t2 diabetes, primary care

## 480 Effects of daily consumption of prune (dried plum) on bone biomarkers and bone mineral density in healthy men

Prof Shirin Hooshmand<sup>1</sup>, Professor Mark Kern<sup>1</sup>, Mrs Danielle Gaffen<sup>1</sup>, Mr Jonnatan Fajardo<sup>1</sup>, Mrs. Ashley Eisner<sup>1</sup>

<sup>1</sup>San Diego State University, San Diego, United States

**Biography:** Shirin received her doctorate in Food and Nutrition at Florida State University. She completed her post-doctoral training working in the area of nutrition, bone and cartilage. Her current research interests include bone and calcium metabolism, osteoporosis and osteoarthritis, and functional foods. She has served as an ad hoc reviewer for the USDA's small business innovation research grants and as a reviewer for VA musculoskeletal rehabilitation grants. She is the Medical and Scientific Advisory Board member of American Bone Health. She has published 47 original articles in peer-reviewed journals and presented more than 90 abstracts at national and international symposia.

**Introduction:** Osteoporosis in men is an overlooked yet increasingly important clinical problem that, historically, has not received the same degree of awareness as with women. Although several studies of male animals have demonstrated bone protective effects of prune, no human study has evaluated the effect of prune on bone metabolism in men. For this purpose, we conducted a randomized controlled clinical study to test if daily inclusion of 100 g prune will positively influence serum markers of bone metabolism and bone mineral density in men.

**Methods:** Sixty-six men (50–79 years old) were randomly assigned to one of two treatment groups: 1) control (0 g prunes) or; 2) 100 g prunes. Blood samples were collected at baseline, and after 3-, 6-, and 12-months to assess biomarkers of bone turnover. Total body, hip, and lumbar bone mineral density (BMD) were evaluated at baseline and 12-months using dual-energy X-ray absorptiometry.

**Results:** Serum bone specific alkaline phosphatase (BAP) levels decreased significantly ( $p < 0.05$ ) at 6- and 12-months in the control group and decreased significantly at 12 months in the prune group. Prune consumption resulted in a time-dependent reduction in serum tartrate resistant acid phosphatase-5b (TRAP5b) levels, a marker of bone resorption, at 3-, 6-, and 12-month time intervals compared to baseline while there were no significant changes in serum TRAP5b levels for the control group. C-terminal collagen cross-links (CTX), another marker of bone resorption, decreased significantly at 3- and 6-months compared to baseline in the prune group. We did not observe any statistically significant changes in BMD at any site in the control group or 100 g/day prune group.

**Conclusions:** The results of the current study suggest that daily consumption of 100 g prune for 12 months has modest bone protective effects in men supporting observations in women and male rodents.

**Conflict of interest:** This study was funded by the California Prune Board; calcium and vitamin D supplements were generously donated by Shaklee Corp.

**Keywords:** Osteoporosis; dried plum; fruits; functional foods; elderly

## 656 Effects of total fat intake on bodyweight in children: a Cochrane systematic review

Prof Celeste Naude<sup>1</sup>, Dr Marianne Visser<sup>1</sup>, Dr Kim Nguyen<sup>1</sup>, Ms Solange Durao<sup>2</sup>, Ms Anel Schoonees<sup>1</sup>

<sup>1</sup>Centre For Evidence-based Health Care, Faculty Of Medicine And Health Sciences, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Cochrane South Africa, Medical Research Council of South Africa, Tygerberg, South Africa

**Biography:** Celeste is a Registered Dietitian (SA and UK), a Senior Researcher at the Centre for Evidence-based Health Care (CEBHC), Division of Biostatistics and Epidemiology, Faculty of Medicine and Health Sciences, Stellenbosch University, South Africa; and co-Director of Cochrane Nutrition. Her academic interests and experience includes evidence synthesis, knowledge translation and evidence-informed decision-making for improving nutrition, health and other sustainable development outcomes.

Celeste is a member of author teams preparing systematic reviews, meta-analyses, rigorous evidence appraisals, tailored evidence summaries, scoping reviews, and primary research. She is involved in African and international research networks via the Research, Evidence and Development Initiative (READ-It). As Co-Director of Cochrane Nutrition, activities support evidence-informed decision-making for nutrition policy and practice by advancing the preparation and use of high quality, globally relevant nutrition systematic reviews. Celeste is an Associate Editor of Cochrane Effective Practice and Organisation of Care (EPoC) and Nutrition Journal, a member of the WHO/Cochrane Working Group, Cochrane Fields Executive Committee, South Africa GRADE Network, and an invited member of the Chronic Disease Initiative for Africa, NutriRECS and Guideline Development Groups in the WHO Department of Nutrition for Health and Development. Nationally, she serves on the Ministerial Committee on Mortality and Morbidity in Children.

**Introduction:** As part of efforts to prevent childhood obesity, we need to understand the relationships between dietary fat intake and childhood body fatness.

**Objective:** To assess the effects and associations of total fat intake on weight and body fatness in children not aiming to lose weight.

**Methods:** We included randomised controlled trials (RCTs) in 2-18 year-olds not aiming to lose weight, with or without cardiovascular disease risk, comparing lower fat ( $\leq 30\%$  of total energy (TE)) versus modified fat intake ( $>30\%$ TE) or usual diets, and that assessed weight or body fatness after at least 6 months. We included prospective analytical cohort studies if they related baseline fat intake to weight after minimum 12 months follow-up.

**Results:** We included 24 studies (3 RCTs,  $n=1,054$  randomised; 21 cohorts,  $n=25,059$  completed). No meta-analyses were possible. One RCT found that dietary counselling to lower fat intake may make little or no difference to weight compared with usual diet at 12 months (mean difference (MD)  $-0.50$  kg, 95% confidence interval (CI)  $-1.78$  to  $0.78$ ;  $n=620$ ; low-certainty evidence) and 3 years (MD  $-0.60$  kg, 95%CI  $-2.39$  to  $1.19$ ;  $n=612$ ; low-certainty evidence), but probably slightly reduced total cholesterol and LDL-cholesterol at 12 months (moderate-quality evidence). Education delivered as a classroom curriculum probably decreased BMI in children at 17 months (MD  $-1.5$  kg/m<sup>2</sup>, 95%CI  $-2.45$  to  $-0.55$ ; 1 RCT;  $n=191$ ; moderate-certainty evidence), with smaller longer-term effects. Inclusion of hypercholesteraemic children in 2 trials raised concerns about applicability. Associations in cohort studies were inconsistent (mostly very-low certainty evidence).

**Conclusion:** We were unable to reach firm conclusions. Limited evidence from 3 RCTs examining lower fat versus modified fat intake or usual diet showed small reductions in BMI, total- and LDL-cholesterol at some time points with lower fat intake. Twenty-three studies were in high-income countries, likely limiting applicability in other settings.

**Conflict of interest:** None

**Keywords:** children; dietary counselling; total fat intake; bodyweight; body fatness

## 356 Effects of vitamin D3 3000 iu oral spray supplementation and SNPs on obesity markers in overweight and obese, vitamin D deficient, Caucasians during weight loss: a randomized placebo-controlled trial

Dr Konstantinos Xenos<sup>1,2</sup>, Maria Papisavva<sup>2</sup>, Athanasios Raptis<sup>2</sup>, Pr. Nikolaos Drakoulis<sup>2</sup>

<sup>1</sup>Athens Euroclinic Hospital, Athens, Greece, <sup>2</sup>Research Group of Clinical Pharmacology and Pharmacogenomics, Faculty of Pharmacy, School of Health Sciences, National and Kapodistrian University of Athens, Athens, Greece

**Biography:** Konstantinos Xenos is a registered dietitian in Greece and possesses a Master of Science in Nutritional Medicine from the University of Surrey.

He is a Doctor of Philosophy at the Pharmaceutical School of the University of Athens.

He is head of the nutrigenetics department of "Athens Euroclinic Hospital" and also he practises the profession of clinical dietitian and nutritionist, in his personal office.

He is vice president of Hellenic Nutrition Institute.

He has participated as speaker or lecturer in a lot of congresses and international scientific events, while from 1996 until today he has watched all the world congresses on nutrition, clinical dietetics and obesity that have been carried out.

The last decade he has presented many television programmes regarding health and nutrition, while he is editor of many magazines that deal with health, nutrition and diet.

**Introduction:** Vitamin D is a fat soluble vitamin, essential in multiple physiological functions. Studies suggest that vitamin D deficiency is associated with obesity and vice versa, low vitamin D levels might be an independent predictor of obesity. **Objectives:** To investigate the effect of vitamin D3 3000 IU oral spray supplementation on obesity markers during a personalized weight-loss diet, according to individual's genetic profile.

**Methods:** A randomized, double-blind, placebo-controlled trial was conducted among 125 overweight and obese Caucasian volunteers with vitamin D deficiency or insufficiency. Volunteers were randomly assigned to either oral vitamin D (Dlux 3000) supplement (intervention, n=76) or placebo (control, n=49), on a daily basis for 3 months following a weight loss diet. Fat mass, weight, BMI, RMR and serum 25(OH)D were monitored on baseline and each month. DNA samples were extracted from buccal swabs and genotyped for the rs2228570 (VDR), rs1544410 (VDR), rs731236 (VDR), rs1800544 (ADRA2A), rs1801252 (ADRB1), rs1042713 (ADRB2) and rs4994 (ADRB3) polymorphisms. Statistical analysis was performed using SPSS package (v.25).

**Results:** Significant improvement in vitamin D status and reduction in weight, BMI and fat percentage were observed in the intervention group (p<0.05). In the intervention group, carriers of the rs2228570 T allele showed greater vitamin D level improvement compared with the homozygous C allele (p=0.067). Furthermore, heterozygous (CT) for the rs731236 showed lesser weight loss (p=0.068) and for the rs1042713, a significant lower decline in fat percentage was observed for homozygous AA carriers compared with the heterozygous (p=0.051). In the control group, differences in weight loss (p=0.055) and BMI (p=0.045) were observed between rs1544410 AA and GG homozygous.

**Conclusion:** Vitamin D oral spray supplementation improved 25(OH)D levels and obesity markers in overweight and obese volunteers with vitamin D deficiency or insufficiency. Genetic polymorphisms seem to influence vitamin D supplementation response and obesity markers.

**Conflict of interest:** Konstantinos Xenos is the Scientific Manager of the X4NUTRITION the exclusive distributor of Dlux3000 in Greece

**Keywords:** Vitamin D obesity VDR ADR

## 63 Evaluation of the supplementary feeding programme targeted at moderately malnourished children aged 6 to 59 months in Baringo County, Kenya

Mrs Ronel Beukes<sup>1</sup>, Ms Irene Wairimu Kimani<sup>1</sup>, Dr Peninah Masibo<sup>2</sup>, Dr Stellamaris Muthoka<sup>3</sup>

<sup>1</sup>Human Nutrition, Stellenbosch University, Durbanville, South Africa, <sup>2</sup>Human Nutrition, Moi University, Kenya, <sup>3</sup>Human Nutrition, Egerton University, Kenya

**Biography:** Ronel Beukes is a Registered Dietitian at Stellenbosch University and works within the field of Community Nutrition. She lectures to undergraduate Dietetic students, does undergraduate academic supervision and post-graduate study supervision.

**Introduction:** The supplementary feeding programme (SFP) was implemented in Baringo (Kenya) in 2009 to alleviate malnutrition. Despite the SFP, Global acute malnutrition (GAM) rates deteriorated. This study evaluated the SFP implementation targeted at malnourished children.

**Methods:** A descriptive cross-sectional study design with random sampling of SFP-beneficiaries at health facilities aged 6 to 59 months was followed. Anthropometric measurements were done on participants and caregivers were interviewed on the day of data collection. Secondary data from health facility records was used to determine previous weight, Mid upper arm circumference (MUAC) and the implementation of the SFP at facility level.

**Results:** A total of 407 beneficiary-caregiver pairs were included. Most of the participants (63%; n=255) received ready-to-use supplementary feeds (RUSF), of which 92%(n=236) received the rightful fortnight ration (14X92g RUSF sachets) during the distribution preceding the study. GAM rates decreased from 82%(n=333) to 66%(n=270) within two weeks after admission. Rations ran out within five to nine days for 33%(n=135) of the participants, mainly because of sharing with non-SFP-registered household members 66%(n=88). Nutritional counselling was previously given to 82%(n=333) of caregivers. Inadequate food access (24%;n=80), poor access to health care services (18%;n=61) and cultural factors (12%;n=41) limited the implementation of the counselling. More than half of excusers (57%;n=98) at one month before data collection exceeded the recommended maximum length of stay in the programme(84 days). Frequent stock-outs of SFP commodities at health facilities, were documented.

**Conclusion:** The programme stakeholders should address the basic causes of malnutrition (short stock and correct implementation of the policy) at facility level. To address the underlying causes (household food insecurity, sharing of RUSF, poor access to health care services and cultural factors) limiting the success of the programme at household level, SFP beneficiaries-households should be linked to food-assistance programmes.

**Conflict of interest:** None

**Keywords:** Supplementary feeding programme; malnutrition; food insecurity; anthropometry; children

## 519 Exploring patient satisfaction with hospital foodservice – a Swedish study using the Acute Care Hospital Foodservice Patient Satisfaction Questionnaire

Mrs Sofia Rapo<sup>1,2</sup>, Prof Ylva Mattsson Sydner<sup>3</sup>, Dr Ethel Kautto<sup>1</sup>, Prof Agneta Hörnell<sup>1</sup>

<sup>1</sup>Dpt. of Food, Nutrition, and Culinary Science; Umeå University, Umeå, Sweden, <sup>2</sup>Umeå Center for Gender Studies; Umeå University, Umeå, Sweden, <sup>3</sup>Dpt. of Food Studies, Nutrition and Dietetics; Uppsala University, Uppsala, Sweden

**Biography:** Sofia Rapo is a PhD candidate at the department of Food, Nutrition and Culinary Science at Umeå University, Sweden. Her research is affiliated with the Graduate School of Gender Studies at Umeå University. The working title of her thesis is "Challenges and opportunities in hospital foodservice from a gender perspective".

Sofia is supervised by Dr. Ethel Kautto and Prof. Agneta Hörnell.

**Aim:** The aim of this study was to explore patient satisfaction with hospital foodservice in the Swedish setting, using a validated instrument, adding this context to the existing body of research.

**Methods:** The study was carried out at three publicly financed hospitals. The hospitals employed a cyclic menu and a conventional cook-serve foodservice system with a centralized tray assembly and hot-trolley distribution to the wards for service. Patient satisfaction was explored using a translated version of the validated Acute Care Hospital Foodservice Patient Satisfaction Questionnaire. Differences between groups were tested with Mann-Whitney U-test and Kruskal Wallis test with a set significance level of  $p < 0.05$ .

**Results:** questionnaires from 439 patients were included in the analysis. The majority (80%) reported an overall satisfaction of "good" or "very good". Questions related to Staff and Service received mostly the highest possible ratings, while questions related to Food Quality and Meal Size had slightly lower ratings and higher variation. Comparisons between groups showed that differences were small even when statistically significant. Low appetite and a long hospital stay had an adverse effect on overall satisfaction and food quality related questions. Men and younger patients reported more often being hungry after and between meals.

**Conclusions:** Hospital foodservice faces the challenge of fitting one solution to multiple patient needs and wants. Monitoring patient satisfaction is crucial to ensure that foodservice operations remain informed and evidence based. However, patient satisfaction is a complex measure and reflexivity is required when interpreting empirical results.

**Conflict of interest:** None.

**Keywords:** ACHFPSQ, hospital food service, patient satisfaction

## 362 Exploring the social 'fabrics' in dietetic education: influences on learning professionalism and professional identity

Ms Janeane Dart<sup>1</sup>, Professor Susan Ash<sup>1</sup>, Associate Professor Louise McCall<sup>1</sup>, Professor Charlotte Rees<sup>1,2</sup>

<sup>1</sup>Monash University, Melbourne, Australia, <sup>2</sup>Murdoch University, Perth, Australia

**Biography:** Janeane is a Senior Lecturer and Advanced Accredited Practicing Dietitian and has over 25 years' experience working as a Dietitian within Australia and the UK. Janeane followed her passion for student education into the higher education sector, and has been in academic roles for 15 years in Australia and the UK.

Janeane teaches across the undergraduate and postgraduate programs in Dietetics and Nutrition Science at Monash University in Melbourne. Her teaching areas of special interest are client centred practice, food and culture, gastroenterology, personal development and professionalism.

She has led an integrated approach to teaching and assessing professionalism at Monash. Janeane is currently a PhD candidate, researching teaching, learning and assessing professionalism in dietetic education in Australia and New Zealand.

**Introduction:** Little is known about how professionalism is embodied within dietetics. As with other healthcare students, dietetic students learn professionalism across formal, informal and hidden curricula of dietetic programs in university and workplace settings. Intentional and incidental socialisation into the profession is often situated within the hidden curriculum and is influenced by culture and context. Professional socialisation, identity and culture in dietetics education are areas where scant research exists. The current research explores insights into culture, socialisation and identity formation in dietetics education across Australia and New Zealand (NZ) from diverse participant perspectives.

**Methods:** Constructionist qualitative inquiry employing semi-structured individual and group interviews was conducted. Maximum variation sampling occurred and included academics ( $n=51$ ), practitioners ( $n=28$ ) and dietetics students ( $n=21$ ) from seventeen accredited dietetics education programs and their placement networks across Australia and New Zealand. All participants involved bring unique perspectives about, and experiences of, professionalism relevant to their context and setting. Framework analysis is the key thematic data analysis approach.

**Results:** We present findings related to learning, becoming and being professional in relation to dietetics culture, professional identities and socialisation. Dissonance exists across the data, with examples of hierarchy, power and distance influencing professional identity formation and socialisation into the profession. Evidence also exists of strong social 'fabrics' for learning professionalism where cultures are supportive, collaborative, challenging and engaged in critical feedback. Findings support linkages between the places and the people where professionalism is learnt. Opportunity exists for practitioners and educators to reflect critically on dietetic culture and socialisation approaches at both local and broader levels, plus the powerful influences that has on the future of the profession.

**Conclusion:** This research provides opportunity for expanding current discourses into the culture within dietetics education. There is evidence and impetus to create a stronger social fabrics to support professionalisation in dietetics education.

**Conflict of interest:** None

**Keywords:** Keywords: Professionalism, professional identity, dietetics, education

### 363 Exploring understandings of professionalism in dietetics education: a global perspective

Ms Janeane Dart<sup>1</sup>, Professor Susan Ash<sup>1</sup>, Associate Professor Louise McCall<sup>1</sup>, Professor Charlotte Rees<sup>1,2</sup>

<sup>1</sup>Monash University, Notting Hill, Australia, <sup>2</sup>Murdoch University, Perth, Australia

**Biography:** Janeane is a Senior Lecturer and Advanced APD and has over 25 years' experience working as a Dietitian within Australia and the UK. Janeane followed her passion for student education into the higher education sector, and has been in academic roles for over a decade in Australia and the UK.

Janeane teaches across the undergraduate and postgraduate programs in Dietetics and Nutrition Science at Monash University in Melbourne. Her teaching and research areas of special interest are client centred practice, food and culture, gastroenterology, assessment, personal development and professionalism.

She has led an integrated approach to teaching and assessing professionalism at Monash. Janeane is currently a PhD candidate, researching teaching, learning and assessing professionalism in dietetic education in Australia and New Zealand.

**Introduction:** The professionalism of dietitians is central to safe, ethical healthcare and forms part of the trust the public places in the profession. Lapses in professionalism can have serious consequences and outcomes. While teaching, learning, and assessing professionalism are important components of nutrition and dietetics education, scant peer-reviewed published research exists related to professionalism in nutrition and dietetics. Developing shared understandings of professionalism supports progress in curriculum planning and design, teaching, learning and assessment of students, and the ongoing professional development of dietitians.

**Methods:** This paper includes a synthesis of a published critical systematic literature review in dietetics (incorporating a targeted and systematic search of national and international dietetics competency standards), and subsequent empirical research exploring understandings of professionalism in nutrition and dietetics with a diverse participant group (n=100) in Australia and New Zealand. Constructionist qualitative inquiry is the framework utilised in this research. The methods employed include semi-structured individual and group interviews. Framework analysis was used and an inductive, interpretivist approach applied.

**Results:** Seven studies and six national and international sets of competency standards were included in the literature review and four major themes conceptualising a definition of professionalism for nutrition and dietetics were identified: 1) personal attributes; 2) interpersonal communication; 3) approach to practice; and 4) commitment to lifelong learning. Findings from the subsequent empirical research identified 23 sub themes related to understandings of professionalism within dietetics. The syntheses of these findings together provides rich insights into cultural, personal, social, curriculum and structural factors related to professionalism in dietetics education.

**Conclusion:** Professionalism is dynamic, complex, multidimensional and varies across contexts, cultures and settings. Exploring and building shared understandings of professionalism in nutrition and dietetics supports progress in the modern healthcare environment and assists in education and practice.

**Conflict of interest:** None

**Keywords:** Professionalism, dietetics, education

### 332 Factors affecting breastfeeding among factory workers in Maputsoe, Lesotho

Dr Mamotsamai Ranneileng<sup>1</sup>

<sup>1</sup>National University Of Lesotho, Roma, Lesotho

**Biography:** A specialist in nutrition and health promotion which I am very passionate about. A 59 years old woman born and raised in Lesotho. Studied at the National University of Lesotho, National University of Ireland -Galway and University of the Free State. Worked with NGOs working in sexual reproductive health. Been a lecturer since 1997 at Lesotho college of Education and National university of Lesotho since 2001. Have co-published two papers, supervises undergraduate and masters students research projects.

**Introduction:** In recognition of the health benefits of breast milk which assures optimum nutrition in the first 1000 days of a baby's life, the World Health Organization recommends exclusive breastfeeding for six months. Lesotho has adopted this global strategy; however, there are many challenges preventing the full realization of these guidelines among factory workers in Lesotho. The study assessed factors affecting breastfeeding and supportive environments among factory workers women of reproductive age and their managers in Maputsoe, Lesotho.

**Methods:** A descriptive cross-sectional study in which data was collected using a semi-structured questionnaire designed and administered to randomly selected participants from randomly selected 10 factories to assess knowledge, practices and supportive environments regarding breastfeeding. Results were analyzed using SPSS.

**Results:** Participants had high knowledge of breastfeeding as the essential type of baby feeding (98%). However, 44% confused their actual practices with the World Health Organization recommended exclusive breastfeeding period by mix feeding their babies sugar water, sorghum soft porridge, formula, other food stuffs and food supplements from random producers. Thirty four percent exclusively breastfed their babies for the two weeks granted maternity leave. A few exceptions took one month leave (20%). Respondents (96%) knew that it was mandatory for HIV+ mothers to exclusively breastfeed, or stop breastfeeding once complementary feeding was introduced. However, 54% reported exclusive breastfeeding was required only of the HIV+ mothers, 44% reported it was essential for everybody. Women were well informed about their maternity leave rights. Almost everyone was a breadwinner for their nuclear as well as extended families.

**Conclusion:** The high knowledge of 6 months exclusive breastfeeding recommendations by WHO among factory workers in Maputsoe did not translate to practice due to barriers associated with un-conducive work conditions, poverty and lack of family social support.

**Conflict of interest:** None

**Keywords:** Exclusive breastfeeding, knowledge, practices, supportive environments

## 398 Factors associated with salt intake in healthy young adults in the United Kingdom: Taste preference and salt knowledge

Mrs Nicole Lubasinski<sup>1</sup>, Ms Leta Pilic<sup>1</sup>, Ms Melis Berk<sup>1</sup>, Mr Yiannis Mavrommatis<sup>1</sup>

<sup>1</sup>St Mary's University, Twickenham, London, United Kingdom

**Biography:** Past president of ADSA, currently living and working in the UK. Recently completed her Masters in Nutrition and Genetics with distinction (this abstract stems from her dissertation). Currently working in the NHS as a specialist paediatric dietitian.

**Introduction:** Excessive salt intake is associated with an increased risk of hypertension and cardiovascular disease. Habitual dietary salt intake may be determined by taste preference and, in health-conscious populations, by salt specific nutritional knowledge. It is suggested that preference for salty taste may drive salt intake in young adults however, research exploring salt knowledge in this context is scarce. Therefore, the aim was to investigate the associations between taste preference, self-reported salt habit, salt specific nutritional knowledge and intake in young and healthy adults.

**Methods:** Salt intake of 96 participants aged 18 – 35 years was determined using two 24-hour diet recalls. Visual analogue scale scores for saltiness and pleasantness ratings of tomato soup determined salt taste preference. Salt concentrations in soup reflected salt content in commonly used foods, ranging from low to high. Participants scoring the soups with lower salt concentrations as more pleasant were classified as having a lower salt taste preference while those rating the higher salt concentrations as more pleasant as having high salt taste preference. Salt knowledge was assessed using a validated salt knowledge questionnaire. Self-reported salt habit was established with participants reporting to “eat salty”, “eat in moderation” and “not eating salty food”.

**Results:** Salt habit was significantly associated with salt intake ( $p < 0.001$ ) and preference ( $p = 0.003$ ), with those reporting to eat salty, having a higher actual salt intake and a higher salt taste preference. There was no interaction between salt knowledge and preference on salt intake ( $p = 0.422$ ). Knowledge did not differ between three levels of salt habit ( $p = 0.837$ ) nor participants with low vs. high salt intake ( $p = 0.779$ ).

**Conclusion:** These results suggest that preference for salty taste may be a more important determinant of salt intake in young adults than salt knowledge. This information highlights the need for considering personal taste preferences when tackling this behavior.

**Conflict of interest:** Yiannis Mavrommatis (MSc Nutrition and Genetics programme director) works for NELL Health as a scientific advisor

**Keywords:** salt intake; salt knowledge; salt preference

## 342 Feeding practices of infants from KwaMashu, KZN, South Africa

Dr Nazeeya Sayed<sup>1</sup>, Prof Hettie C Schönfeldt<sup>2</sup>

<sup>1</sup>School of Public Health, University of the Western Cape, Cape Town, South Africa, <sup>2</sup>Department of Animal & Wildlife Sciences, Institute of Food, Nutrition and Wellbeing, Faculty of Natural and Agricultural Sciences, University of Pretoria; Africa Research Universities Alliance (ARUA), Centre of Excellence for Food Security, University of Pretoria, Pretoria, South Africa

**Biography:** Dr Nazeeya Sayed is a Post-doctoral Research Fellow at the University of the Western Cape. She has over 20 years work experience in food composition data compilation, teaching, public health nutrition and supporting the food industry in their product formulation, communication strategy and claims development. She is passionate about promoting infant nutrition and sustainable diets.

**Introduction:** Poor infant feeding practices in South Africa persist despite policies and regulations. The objective of this study was to determine the feeding practices of 6-11 month-olds attending the well-baby clinic at the KwaMashu community health centre.

**Methods:** Mothers and caregivers were interviewed by trained interviewers. Details on sociodemographic characteristics and infant feeding were collected. OPTIFOODS software was used to assess the nutrient adequacy of the diet. Focus group discussions were held to understand the influences on complementary feeding.

**Results:** 134 interviews were completed. 80.6% had ever breastfed, with 63.5% reporting breastfeeding initiation in the first hour. 25.4% reported exclusively breastfeeding to 6 months. Almost a third of infants had started solid foods before 3 months of age. Cereals were the main first foods given, with 56.7% preparing foods at home and 43.3% using commercial foods. 36.6% of mothers were breastfeeding, 47.0% formula feeding and 16.4% were mixed feeding. Soft maize meal porridge and commercial infant cereals were the most popular foods eaten daily. Close to two-thirds of infants had at least one meat food group item and just over two-thirds of infants had eggs in the past 7 days. It was concerning that just over half were receiving biscuits, two-thirds chips, and a third sweets/chocolates. According to the best diets modelled by OPTIFOODS, it appears that infants would be able to achieve recommended intakes of energy, protein, and 8 of the 11 micronutrients, as long as breastfeeding continued. Iron, zinc, and calcium were nutrients of concern. From the focus group discussions, it emerged that mothers faced immense societal pressure to introduce foods earlier than 6 months.

**Conclusion:** Along with efforts to improve food security and breastfeeding, targeted micronutrient supplementation may be needed for optimal growth and development of infants. Grandmothers should be included in efforts to improve infant feeding.

**Conflict of interest:** None

**Keywords:** breastfeeding; complementary feeding; IYCF; OPTIFOODS; South Africa

## 322 Fish supplementation and cognition in resource-limited elderly: A randomised controlled trial

Dr Lizette Kuhn<sup>1</sup>, Prof Friedeburg Wenhold<sup>1</sup>, Prof Una MacIntyre<sup>1</sup>, Dr Carla Kotze<sup>1</sup>, Prof Piet Becker<sup>1</sup>

<sup>1</sup>University Of Pretoria, Pretoria, South Africa

**Biography:** Registered dietician, Lizette Kühn, enjoys working with people and has a passion for nutrition. She has a masters degree in dietetics which she obtained from the University of Pretoria in 2011. Being a dietician in private practice she consults in all the general dietary related health problems. Her special fields of interest are: gerontology and neurological conditions especially dementia. She was privileged to be involved with elderly and dementia care for more than ten years by being the consulting dietician for GERATEC (Gerontological Research Training Education and Caring) in Gauteng. The focus of her work was to promote care for the elderly by doing individual consultations, presenting workshops and acting as area manager. She is full time employed in private practice in Menlopark, Pretoria. She spends most of her time on her PhD project (nutrition and cognition), consulting on the anti-inflammatory diet and seeing patients at a diabetic clinic.

She liaises with the media quite often. She has also published in the South African Journal of Clinical Nutrition and presented at congresses including the Africa Congress for Alzheimers (2013), the CARITAS International Care Congress (2015) and the Alzheimer South Africa Gauteng 10th Seminar (2019).

**Introduction:** High prevalence and impact of dementia call for preventative measures, including diet. Omega 3 fatty acids may influence cardiovascular health and inflammation which increase dementia risk, and may have similar pathology as neurodegenerative dementias. Research, particularly randomised controlled trials following a food-based approach of omega fatty acid intake in low/middle income countries, is lacking.

**Objective:** To determine the effect of supplementing diets of independently living, resource-limited elderly for 12 weeks with fish versus non-fish foods on cognition.

**Methods:** In a randomised controlled trial the usual diet of independently living elderly in a resource-limited retirement centre in urban South Africa was enhanced with context-appropriate foods i.e. canned baked beans, canola oil and peanut butter mimicking elements of the Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diet. Additionally, the intervention group received canned pilchards and fish spread (equivalent to a calculated daily intake of 2.2g omega 3 fatty acids) weekly compared to canned meatballs and texturised soya (meat substitute) for the control group. Cognition was measured before and after intervention with the Cognitive Abilities Screening Instrument (CASI). Data were analysed by non-parametric ANCOVA with and without bootstrap imputations.

**Results:** Sixty five (74% female, mean age: 72 ±7 years) elderly participated. There was a significant difference (P=0.036) in the CASI score between the intervention and control group at post intervention when the model was fitted with imputation and controlled for baseline scores.

**Conclusion:** Fish intake in the context of the MIND diet may exert a positive effect on cognition. More research on exact dietary intake is needed.

**Conflict of interest:** None

**Keywords:** Fish; cognition; Omega 3 fatty acids; elderly; resource-limited

## 297 Food environment influence on health risk of adults in Limpopo, South Africa

Prof Xikombiso Mbhenyane<sup>1</sup>, Ms Sefora Makuse<sup>2</sup>, Dr Lindelani Mushaphi<sup>3</sup>, Dr Ayuk Betrand Tambe<sup>1</sup>

<sup>1</sup>Stellenbosch University, Cape Town, South Africa, <sup>2</sup>University of Limpopo, Mankweng, South Africa, <sup>3</sup>University of Venda, Thohoyandou, South Africa

**Biography:** Prof Mbhenyane is Dietitian, a Professor, Head and Research Chair in Food Environments, Nutrition and Health in the Division Human Nutrition at the Faculty of Medicine and Health Sciences, Stellenbosch University, and. She served from 2011 – 2014, as a nutrition research expert on a Board of Trustees of the Institute of International Tropical Agriculture, a member of the Consortium of International Agricultural Research Centres.

She is a C3 NRF rated scientist in South Africa and her involvement in human nutrition research has been at various levels: conducting research and supervision of master's and doctoral research, of whom more than 20 masters/doctoral have successfully been mentored. Her research area of interest is indigenous foods, nutrition and prevention of disease; food and nutrition security; child and maternal nutrition. She has published in peer reviewed journals and has presented or contributed to more than 80 papers at national and international conferences.

**Introduction:** South Africa experiences nutrition transition resulting in multiple burden of diseases. The aim is to assess health risk and nutritional status of households in rural communities.

**Methods:** The research design was a cross-sectional survey which employed mixed and multi stage sampling approach. The health risk indicators were collected through screening and self reporting using a questionnaire. Dietary diversity was measured using the 24 hour recall and 17 item scale. The project received ethical clearance from Stellenbosch University (N16/06/083).

**Results:** The total sample was 448. The Body Mass Index was average 27.3 kg/m<sup>2</sup> (±8.3), and classification revealed that 25.1% overweight, 20.9% obese and 6.0% were severely obese. Random glucose mean was 5.3 mmol (±2.4) with 3.3% having levels above 10 mmol. Cholesterol mean was 4.4 mmol (±1.0). For blood pressure (mm/Hg), 23% elevated, 16.1% stage 1, 13.2% stage 2 and 2% High Blood Pressure crisis stage. Glucose levels were positively correlated to high blood pressure (p = 0.002). The majority 74.7% had low dietary diversity score (4 – 7), with the most consumed food item group being starch and cereal; spices and condiments; other vegetables (onion, tomato); oils and fats; and sweets.

**Conclusion:** Results show that more than half were either overweight or obese while more than half had higher blood pressure levels. Dietary diversification reveals poor fruit and vegetable consumption and a diet high in starch intake. The adults had poor dietary patterns accompanied by health risk indicators.

**Conflict of interest:** None

**Keywords:** food environment; health risk; rural communities

## 245 Growing capacity for sustainable food systems within the profession of nutrition and dietetics: Initiatives from the Academy of Nutrition and Dietetics and its Foundation

Dr Marie Spiker<sup>1</sup>, Dr. Amy Knoblock-Hahn<sup>1</sup>, Dr. Katie Brown<sup>2</sup>, Mrs. Janice Giddens<sup>2</sup>, Mrs. Amanda Hege<sup>1</sup>, Dr. Kevin Sauer<sup>3</sup>, Mrs. Diane Enos<sup>4</sup>, Dr. Alison Steiber<sup>4</sup>

<sup>1</sup>Academy Of Nutrition And Dietetics Foundation, Chicago, United States,

<sup>2</sup>National Dairy Council, Rosemont, United States, <sup>3</sup>Kansas State University,

Manhattan, United States, <sup>4</sup>Academy of Nutrition and Dietetics, Chicago,

United States

**Biography:** Marie Spiker is the Healthy and Sustainable Food Systems Fellow at the Academy of Nutrition and Dietetics Foundation. In this role, she oversees the Foundation's Future of Food initiative and works to build the capacity of nutrition and dietetics professionals to contribute to sustainable food and water systems through education, research, practice, and policy.

Marie received her PhD and MSPH in human nutrition from the Johns Hopkins Bloomberg School of Public Health. She completed dietetics training through the graduate coordinated program at the Johns Hopkins Bloomberg School of Public Health. She also holds a BS in public health and a BA in medical anthropology from the University of Washington.

Marie has multidisciplinary training in food systems, including training as a CLF-Lerner Fellow at the Johns Hopkins Center for a Livable Future, working as a Senior Analyst on the Systems Science Core at the Global Obesity Prevention Center at Johns Hopkins, and participating in the Borlaug Summer Institute on Global Food Security. Marie has conducted research on urban agriculture in Baltimore, food loss and waste in the United States, and vegetable supply chains and post-harvest loss in India.

**Introduction:** Understanding food and water systems is critically important for the practice of nutrition and dietetics. This is especially true as growing populations, rising per capita demand for nutrient-rich foods, and climate change pose mounting challenges for meeting global nutrition targets and the Sustainable Development Goals. Identifying avenues for nutrition and dietetics professionals to contribute to sustainable food systems as part of multisectoral teams can accelerate progress in this area.

**Methods:** A framework for action was developed from a roundtable meeting and subsequent stakeholder input. The Academy of Nutrition and Dietetics Foundation convened a roundtable meeting with participants representing expertise in clinical nutrition, food service, community nutrition, agriculture, food supply chains, environmental science, economics, racial equity, and food policy. Activities led by a trained facilitator were used to help participants generate a preliminary framework for action, which was revised over a ten-month period based on two rounds of feedback from roundtable participants and input from key stakeholders within and beyond the profession.

**Results:** The framework for action identified five "entry points" through which nutrition and dietetics professionals can leverage their unique skills to contribute to sustainable food systems: shaping and delivering dietary guidance; improving food and nutrition security and water security; aligning food production and nutrition; optimizing supply chains and food environments; and reducing waste of food, water, and other resources. Each entry point can be scaled to address issues at the individual, community, institutional, and population levels and throughout global settings. Examples are provided for how coordinated efforts in education, research, practice, and policy can scale up the potential impact of the profession.

**Conclusion:** Nutrition and dietetics professionals bring a unique skillset to a wide array of settings throughout the food system, and they are well positioned to collaborate with other sectors to accelerate progress towards sustainable food systems.

**Conflict of interest:** The roundtable meeting and associated travel costs were funded through an educational grant from National Dairy Council. MS performed this work as part of an Academy of Nutrition and Dietetics Foundation Fellowship funded through an educational grant from National Dairy Council, and AH held a contract role with the Academy of Nutrition and Dietetics Foundation that was funded through an educational grant from National Dairy Council.

**Keywords:** sustainable food systems; nutrition; dietetics; workforce capacity

\*\*\*\*\*

## 76 Growing the business of whole grain in the Australian market: 6 year impact assessment

Dr Sara Grafenauer<sup>1</sup>, Ms Felicity Curtain<sup>1</sup>

<sup>1</sup>Grains & Legumes Nutrition Council, North Sydney, Australia

**Biography:** General Manager, Grains & Legumes Nutrition Council, a not-for-profit charity focused on promoting grains and legumes in Australia. A PhD qualified Accredited Practising Dietitian (AdvAPD) and author. PhD Research focused on dietary patterns and dietary change in weight loss. Honorary Fellow at the University of Wollongong.

**Introduction:** The Australia New Zealand Food Standards Code does not regulate the use of on-pack claims describing the amount of whole grain in foods. In July 2013, The Grains & Legumes Nutrition Council (GLNC) established a voluntary Code of Practice for Whole Grain Ingredient Content Claims (the Code) providing guidance for whole grain content claims, with cut-off values & suggested wording  $\geq 8$ grams,  $\geq 16$ g and  $\geq 24$ g per manufacturer serve (contains; high and very high in whole grain). The aim was to report on the uptake of the Code by manufacturers, changes in numbers of whole grain products and claims on-pack since 2013 and 2016.

**Methods:** An Impact Assessment of the Code was undertaken in August 2019, comparing current registered manufacturers ("users") and their products to the total number of products in the market deemed eligible for registration through GLNC grain food product audits since 2013. Reporting focused on breakfast cereals; bread products; crispbreads, crackers, rice/corn cakes; rice, pasta, noodles, couscous, other grains (e.g. quinoa, buckwheat, freekeh), and grain-based snack bars.

**Results:** As of June 30 2019, there were 33 Registered Users and 655 Registered Products in Australia and New Zealand representing 43% of eligible manufacturers and 65% of eligible whole grain foods. Three-quarters (74% and 76%) of eligible breakfast cereals and bread products were registered with the Code in 2019, followed by 62% of grain-based snack bars, whereas only 37% and 34% of crispbread, crackers, rice/corn cakes, and rice, pasta, noodles, couscous and other grains were registered. Since the last impact assessment in 2016 there has been a 28% increase in the number of whole grain foods making claims on-pack – including registered and unregistered products.

**Conclusion:** Since 2013, uptake of the Code claims by industry has been strong, which has led to clearer, consistent on-pack communication regarding whole grain content.

**Conflict of interest:** FC and SG are employed by GLNC, a not-for-profit and registered charity.

**Keywords:** Whole grain, claims, food regulation

## 340 Guidelines on standard and therapeutic diets in hospital in France

Mr Ghislain Grodard-Humbert<sup>1</sup>, Mrs Marie France Vaillant<sup>2</sup>, Pr Pierre Dechelotte<sup>2</sup>, Pr Didier Quilliot<sup>2</sup>, Mr Experts Working Group<sup>1,2</sup>

<sup>1</sup>AFDN French Nutritionist Dietitians Association, Paris, France, <sup>2</sup>SFNCM French Society of Clinical Nutrition and Metabolism, Paris, France

**Biography:** I am a registered Dietitian Nutritionist. I work in Besançon's hospital to twelve years ago. I have professional experience in clinical and research nutrition in oncologic patients. I am specialized in ethics and artificial nutrition support (enteral tube feeding and parenteral nutrition).

Since September 2020, I am a PhD student in medical ethics at Paris-Est University.

**Aim/Objectives:** Hospital food supply is subject to multiple constraints (meal production, organization, health safety, environmental respect) that influence the meal tray offered to the patient. Multiple diets can add complexity and contribute to non-consumption of the meal and increase malnutrition. Providing evidence based guidelines regarding food and diets in hospital is a major challenge.

**Methods:** These guidelines were developed using the Delphi method, as recommended by the HAS (French Authority of Health), based on a formal consensus of experts and led by a group of practitioners from SFNCM (French Society of Clinical Nutrition and Metabolism) and dietitians from AFDN (French Nutritionist Dietitians Association). The working group consisted of 14 dietitians and 5 nutritionist physicians. After scientific review, he proposed 22 recommendations. They were submitted online for an initial rating (score from 0 to 9) to 50 national experts. After this evaluation, the working group added a 23rd recommendation. A second online evaluation was proposed to validate it this last one as well as those with a rating of less than 7 in the first round. Then, a 3rd evaluation was proposed for the 5 recommendations with a score <7.

**Results:** The 23 recommendations were considered appropriate and validated by a panel of 50 national experts, following 3 rounds of consultation, modifications and arguments. Recommendations aim to define in adults:

- 1/vocabulary related to food and diets in hospitals,
- 2/quantitative and qualitative food supply,
- 3/nutritional prescription,
- 4/diet patterns and patient adaptations,
- 5/limiting restrictions to reduce unnecessary diets and without scientific evidence (e.g. low sodium, low fiber diet),
- 6/emphasizing the place of enriched and adapted diet for at risk and malnourished patients.

**Conclusion:** These guidelines should enable catering services and health-care teams, to rationalise hospital food supply and therapeutic food prescriptions, in order to improve quality and meet individual needs and patient tastes.

**Conflict of interest:** None

**Keywords:** Food; Therapeutic diet; Prescription; Hospital

## 252 Hospital Acquired Malnutrition (HAM): incidence and contributors across five Australian public hospitals over 3½ years

Ms Talia Woodward<sup>1</sup>, Ms Christine Josephson<sup>2</sup>, Dr Lynda Ross<sup>1,3</sup>, Ms Jan Hill<sup>4</sup>, Ms Breanne Hoskings<sup>5</sup>, Ms Fiona Naumann<sup>6</sup>, Dr Rachel Stoney<sup>5</sup>, Dr Michelle Palmer<sup>2</sup>

<sup>1</sup>Griffith University, Gold Coast, Australia, <sup>2</sup>Logan Hospital, Meadowbrook, Australia, <sup>3</sup>Queensland University of Technology, Kelvin Grove, Australia, <sup>4</sup>Princess Alexandra Hospital, Woolloongabba, Australia, <sup>5</sup>Redland Hospital, Cleveland, Australia, <sup>6</sup>Beautesert Hospital, Beautesert, Australia

**Biography:** Dr Lynda Ross is an Advanced Accredited Practising Dietitian in Queensland, Australia. She has held the position of Senior Lecturer at Queensland University of Technology in Brisbane since August 2019. Previously she held a similar position as Senior Lecturer at Griffith University on the Gold Coast for 5 years. The research she will talk about today was conducted as a Griffith University Honours student project in collaboration with Logan Hospital and nearby hospitals that make up Metro South Hospitals and Health Services south of Brisbane.

**Introduction:** Malnutrition is prevalent in hospitals, but little is known about the incidence of Hospital Acquired Malnutrition (HAM) and the reasons why patients become malnourished during the hospital stay. This study examined patient data from five Australian public hospitals collected over 3½ years. The aim was to assess the incidence and describe the characteristics of patients who developed HAM.

**Methods:** A retrospective cohort study design was used. Eligible patients were adults (aged ≥ 18 years) with a length of stay (LOS) > 14 days in a Metro South Health hospital in Queensland between July 2015 and January 2019. Demographic and clinical data were sourced from hospital databases and patient's medical records. The incidence of HAM was determined by dietitians who reviewed the medical records of patients clinically coded with malnutrition. Univariate and logistic regression analyses were used to determine patient descriptors associated with those who developed HAM, compared with those not malnourished or those malnourished on admission.

**Results:** A total of 17,717 patients were eligible (45 % female, 63 ± 20 years, LOS 24 (15 – 606) days). Overall malnutrition prevalence in long-stay patients was 18 %, with HAM incidence of 1 %. Patients with HAM had an approximately 26 day longer LOS than patients who were malnourished on admission or not malnourished (p < 0.001). Longer LOS; inter-hospital transfer; or being diagnosed with a cognitive impairment, pressure injury or fall while in hospital were associated with HAM (OR 1.006 - 3.6, p < 0.05).

**Conclusions:** Incidence of HAM across five Australian public hospitals was low. Patients with HAM may have an increased likelihood of being long-stay patients, transferring between hospitals, developing a cognitive impairment, pressure injury or fall during admission.

**Conflict of interest:** None

**Keywords:** Malnutrition, Hospital, Acute, Incidence, Long-stay

## 557 How do the food choices of consumers measure up to the South African Food-based Dietary Guidelines?

Mrs Hester Vermeulen<sup>1</sup>, Prof Hettie C Schönfeldt<sup>2,3</sup>

<sup>1</sup>Bureau for Food and Agricultural Policy (BFAP), Pretoria, South Africa, <sup>2</sup>Africa Research Universities Alliance (ARUA), Centre of Excellence in Food Security, University of Pretoria, Pretoria, South Africa, <sup>3</sup>Department of Animal & Wildlife Sciences, Faculty of Natural and Agricultural Sciences, University of Pretoria, Pretoria, South Africa

**Biography:** Hester Vermeulen is an agricultural economist and consumer analyst at the Bureau for Food and Agricultural Policy (BFAP) and has been involved with the consumer analysis division of BFAP for the past 20 years. She is currently conducting her PhD in nutrition at the University of Pretoria, working in the multi-disciplinary context of nutrition and agricultural economics to investigate food affordability and the cost of healthy eating in the South African context. Her career path has built upon a combination of an educational background combining training in food science with agricultural- and consumer economics, to specialise in consumer food- and nutrition economics. Fields of interest include aspects such socio-economic consumer dynamics, consumer behaviour and food choices, consumer trends, food consumption patterns, food affordability, food security and nutrition economics.

**Introduction:** In South Africa the double burden of child under-nutrition, combined with the rising prevalence of overweight, implies a need to regularly monitor the food intake consumers in the absence of regularly updated nationally representative food intake data.

**Objective:** To measure whether the per capita food intake of South African consumers (in terms of the various food groups) adhere to the South African Food-based Dietary Guidelines (SA FBDG) – at the national average and socio-economically disaggregated levels.

**Methods:** The average per capita (edible portion) consumption of the various food groups were estimated from national aggregate statistics on commodity quantities allocated for human consumption, as well as socio-economically disaggregated household-level food expenditure data (Statistics South Africa (Stats SA)). The methodology considered numerous variables such as non-edible components, lean meat carcass shares, raw-to-cooked conversion factors, single serving unit (SSU) quantity definitions, population figures and official Stats SA monitored food retail prices.

**Results:** Inadequate per capita consumption (2018) was found for fruit / vegetables ( $\pm 51\%$  below 'ideal' levels), legumes ( $\pm 81\%$  below), as well as animal source food, including liquid dairy ( $\pm 47\%$  below), lean meat, fish and eggs ( $\pm 26\%$  below) – with inadequate intake generally more severe among less affluent households. Excessive consumption of starch-rich foods (basic staples (+2.2%) as well as processed options), sugar ( $\pm 447\%$  above 'ideal' intake levels) and fats / oils ( $\pm 28\%$  above). The paper also presents detailed analysis of consumption trends over time and socio-economically disaggregated food intake patterns.

**Conclusion:** The paper proposed a methodology to deliver regularly updated and cost-effective estimates of food intake in South Africa - from a national average and socio-economically disaggregated perspective. This could be a valuable foundation for the formulation of timely policy actions and the evaluation of current policy interventions to combat the nutritional and sustainability challenges in South Africa.

**Conflict of interest:** None

**Keywords:** South Africa, consumer, food intake, South African Food-based Dietary Guidelines, adherence

## 455 Impact of complementary feeding intervention on the knowledge, attitude and intention of lactating mothers in Abakaliki L.G.A, Ebonyi State Nigeria

Mrs Linda Edafighor<sup>1</sup>, Dr Chinonyelum Ezeonu<sup>2</sup>, Dr Uzoma Asiegbu<sup>2</sup>, Mr Gideon Iheme<sup>3</sup>

<sup>1</sup>Federal Medical Centre, Asaba, Nigeria, <sup>2</sup>Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Nigeria, <sup>3</sup>Michael Okpara University of Agriculture, Umudike, Nigeria

**Introduction:** The low nutrient density and poor dietary quality of home-made complementary foods in Nigeria demand appropriate interventions targeted towards improving maternal infant and young child feeding practices.

**Objectives:** To assess the impact of the complementary feeding intervention on the complementary feeding knowledge, attitude and intention of lactating mothers in Abakaliki. L.G.A, Ebonyi State Nigeria

**Methodology:** A quasi-experimental design was conducted amongst 100 eligible respondents, selected using simple random sampling technique. The respondents were subjected to a 7 hour intervention which comprised detailed IYCF centered nutrition education and hands-on-practical demonstration on formulation of varieties of indigenous complementary foods such as sweet potato flossis, rice/soy mix, sweet potato juice and tiger-nut milk. Paired t-test was used to investigate the impact of the intervention on the knowledge and perception. Focus group discussions were used to identify their intended child feeding practices.

**Results:** Results revealed that the mean knowledge score of the respondents on infant and young child feeding mildly but significantly ( $t = 0.18; 0.04$ ) increased from  $13.71 + 3.67$  to  $15.79 + 3.97$  out of a possible 20 marks. Also, mean perception score increased from  $16.86 + 4.36$  to  $17.21 + 2.96$  out of a possible score of 22 after the intervention. Findings from focus group discussion revealed that the mothers identified and intended to correct their wrong child feeding practices like forceful feeding, offering processed drinks to infants, early switching of breast during feeding. Pap was reported as the common local complementary food the participants could formulate prior to the intervention. The mothers attested that they were furnished with the right knowledge and skills for enrichment, processing and formulation of new and existing varieties of complementary foods and drinks.

**Conflict of interest:** None

**Keywords:** Knowledge, perception, intention, complementary feeding, Abakaliki Nigeri

## 748 Impact of COVID-19 pandemic lockdown on food commodity price differentials and consumers' purchasing behaviour In Nigeria

Mr Gideon Iheme<sup>1</sup>, Mr Adimchi Adile<sup>2</sup>, Mrs Ifeoma Egechizuorom<sup>3</sup>, Mr Oluwadamilare Kupoluyi<sup>4</sup>, Dr Obinna Ogbonna<sup>5</sup>, Mrs Linda Olah<sup>6</sup>, Mrs Hannah Enuka<sup>7</sup>, Mrs Hajara Idris<sup>8</sup>, Mrs Nwabumma Asouzu<sup>9</sup>, Mr Emmanuel Oyebamiji<sup>10</sup>

<sup>1</sup>Michael Okpara University of Agriculture, Umudike, Nigeria, <sup>2</sup>Federal Teaching Hospital, Gombe, Nigeria, <sup>3</sup>Federal Medical Centre, Umuahia, Nigeria, <sup>4</sup>Federal Medical Centre, Abeokuta, Nigeria, <sup>5</sup>Obafemi Awolowo University Teaching Hospital, Ile-Ife, Nigeria, <sup>6</sup>Federal Medical Centre, Kastina, Nigeria, <sup>7</sup>Jos University Teaching Hospital, Jos, Nigeria, <sup>8</sup>University of Nigeria Teaching Hospital, Ituku-Ozalla, Nigeria, <sup>9</sup>Alex Ekwueme Federal University Teaching Hospital, Abakaliki, Nigeria, <sup>10</sup>University College Hospital, Ibadan, Nigeria

**Biography:** Gideon is a young, dynamic and result-oriented Registered Dietitian Nutritionist committed to demonstrating his professional skills/experiences to contribute to organizational advancement, global food/nutrition system improvement and reduction in the burden of nutrition-related diseases.

He is a lecturer of the Department of Human Nutrition and Dietetics with research interests in public health, international nutrition and food systems. He has several papers published in local and international journals.

**Background and Objectives:** One of the notable effects of the COVID-19 pandemic, along with the associated lockdowns is the alteration of spending patterns of consumers owing to the level of food price inflation. This study was designed to evaluate the covid-19 influenced changes in food commodity prices and estimate its impact on consumers' behaviour.

**Methods:** The study design captured eight states across various geographical zones in Nigeria. The methodology consists of primary data collection of food price differentials from traders in 11 urban markets and the corresponding consumers purchasing behaviours. September 2019, May-June, 2020 and March 2021 were designated as the pre-covid-19 lockdown (PrCL), the peak of nationwide lockdown (PNL) and post covid-19 lockdown (PoCL) reference points.

**Results:** Results revealed a significant increase in price of staple foods at the peak of national lockdown (PNL) and post-covid-19 lockdown in Nigeria (Rice -1.8-2.2kg; PrCL = \$2.10-3.67; PNL = \$2.62-4.72; PoCL = \$2.62-6.56; Wheat -1.1-1.9kg; PrCL = \$0.71-1.84; PNL = \$0.79-2.62; PoCL = \$0.92-3.94; Maize - 1.3-1.9kg; PrCL = \$0.39-1.44; PNL = \$0.52-1.97; PoCL = \$0.60-2.76; Garri - 1.35-1.5kg; PrCL = \$0.92-1.84; PNL = \$0.92-2.36; PoCL = \$0.92-2.89; Yam -0.9-3kg; PrCL = \$1.97-3.94; PNL = \$1.97-5.25; PoCL = \$1.97-5.25; Beans -1.2-2kg; PrCL = \$0.66-2.10; PNL = \$1.05-2.49; PoCL = \$1.44-2.49; Groundnut -1.2-1.6kg; PrCL = \$0.79-2.36; PNL = \$0.92-2.36; PoCL = \$1.44-2.36; common leafy vegetables - 0.2-0.4kg; PrCL = \$0.13-0.31; PNL = \$0.13-0.59; PoCL = \$0.24-0.52; common non-leafy vegetables - 0.2-1kg; PrCL = \$0.13-0.79; PNL = \$0.26-2.10; PoCL = \$0.26-2.10; Mackerel and Scumbia fish - 0.36-1kg; PrCL = \$0.79-3.67; PNL = \$1.57-3.67; PoCL = \$1.31-3.94; Beef -1kg; PrCL = \$2.62-4.20; PNL = \$2.62-6.30; PoCL = \$2.49-5.25; A crate of egg -2.8-3.2kg; PrCL = \$1.57-2.62; PNL = \$2.62-3.94; PoCL = \$3.15-3.94). About half of the consumers acknowledged the impact of these covid-19 influenced food price inflation on their purchasing behaviour which led to the adoption of several coping measures.

**Conclusion:** Efforts should be made by government, food producers, distributors and all stakeholders to cushion the long-standing ripple effect of covid-19 pandemic lockdown on food prices and purchasing behaviour.

**Conflict of interest:** None

**Keywords:** Covid-19; Lockdown, Food price, Consumers, Nigeria

## 287 Impact of individualised dietary advice on food choices, weight loss and blood pressure in a lifestyle intervention trial: the Healthtrack study

Prof Linda Tapsell<sup>1</sup>, Dr Elizabeth Neale<sup>1</sup>, Dr Rhoda Ndanuko<sup>2</sup>, Prof Karen Charlton<sup>1</sup>, Prof Marijka Batterham<sup>1</sup>

<sup>1</sup>University Of Wollongong, Wollongong, Australia, <sup>2</sup>George Institute for Global Health, Sydney, Australia

**Biography:** Professor Tapsell is from the School of Medicine and the Illawarra Health and Medical Research Institute, University of Wollongong, Australia. She holds a BSc in Biochemistry and Pharmacology, post graduate qualifications in Dietetics and in Medical Education, and a PhD in Public Health and Nutrition. She is a Fellow of both the Dietitians Association and Nutrition Society of Australia, and holds an Order of Australia award for significant service to health science specializing in diet and nutrition. For over 25 years Professor Tapsell lead substantial research on the effects of diet on health while educating and mentoring a generation of dietitians. She has served as Director of the Australian Research Council Key Centre for Smart Foods and the National Centre of Excellence in Functional Foods, and contributed continuously to national and international expert committees in food and nutrition. Professor Tapsell is a keen writer in the scientific literature on issues relating to food, nutrition and health.

**Introduction:** Healthy dietary patterns are key factors in reducing chronic disease risk, but these are characterised by individual foods. In lifestyle interventions, dietitians can target specific shifts in food choice to optimise effects for individuals. This report aims to demonstrate the impact of this advice on weight loss, blood pressure and food choices in a free living lifestyle intervention.

**Methods:** Reports from secondary analyses on data from the 3 mo intensive phase of a 12 month randomised controlled lifestyle intervention trial were collated. The control group were advised by a practice nurse using materials from Australian Dietary Guidelines and the two experimental groups were advised by an Accredited Practising Dietitian, manipulating the types and amounts of foods based on usual eating patterns. To enhance change, one experimental group also received a healthy food supplement, 30g walnuts/d.

**Results:** In a completers analysis (n=293), the experimental groups lost more weight than the controls. This was significant for the supplemented group, (P=0.012), who also consumed less energy from 'discretionary' foods/ beverages (P=0.022) and more from fruit (P=0.043)[1]. In the sample with complete BP data (n=211), the experimental groups showed a 3-4mmHg greater reduction in blood pressure. In the supplemented group the SBP reduction was associated with increased urinary K ( $\beta$ =-0.101; P=0.044), decreased Na:K ratio ( $\beta$ =2.446, P=0.037) and increased consumption of seed and nut products and dishes ( $\beta$ =-0.108, P=0.034) after controlling for age, sex, medication, physical activity, weight loss and smoking [2].

**Conclusions:** Individualised advice by a dietitian can address multiple nutritional pathways reflecting extensive knowledge of food composition and the relationships between food consumption and health. This report shows dietetic advice can have a greater impact on dietary change and its metabolic consequences, and this was enhanced with healthy food supplements.

[1] Neale Food Nutr Res 2017;61:016863

[2] Ndanuko EJCEN 2018;72:894-903.

**Conflict of interest:** the study was funded by the Illawarra Health and Medical Research Institute, with supplementary support from the California Walnut Commission

**Keywords:** individualised; diet; lifestyle; intervention; dietitian

## 684 Impact of lifestyle interventions on body weight in postpartum women: a systematic review and meta-analysis

Dr Sharleen O'Reilly<sup>1</sup>, Dr Siew Lim<sup>2</sup>, Associate Professor Lisa Moran<sup>2</sup>

<sup>1</sup>UCD Institute Of Food And Health and UCD Perinatal Research Centre, Belfield, Ireland, <sup>2</sup>Monash Centre for Health Research and Implementation, Melbourne, Australia

**Biography:** Sharleen O'Reilly (BSc, PhD, RD) is an Irish registered dietitian who works at the interface of research, teaching and practice in public health nutrition. Sharleen is the current Irish Nutrition and Dietetic

Institute 'Research Dietitian of the Year'. She graduated from Trinity College Dublin with a degree in Human Nutrition and Dietetics and her PhD. She worked as a dietitian in Ireland and the UK before moving to Australia where she was a Senior Lecturer at Deakin University. Sharleen has held two prestigious Australian Fellowships (National Health and Medical Research Council's Translating Research Into Practice Fellowship and Australia Awards- Endeavour Executive Fellowship) and held Advanced Accredited Practising Dietitian (AdvAPD) status (<1% Australian dietitians hold). She also holds teaching excellence awards from her time in Australia.

Her current research interests lie in research translation and how chronic disease prevention and management can be better implemented in the real world. She has attracted >7M Euro research funding over the past 10 years. She is the Programme Director for the BSc Human Nutrition. In addition, Sharleen holds an Adjunct Professor position at the Public Health Foundation of India and Adjunct Senior Clinical Lecturer at Deakin University.

**Introduction:** The efficacy in postpartum weight management interventions has not translated into improved population outcomes. This systematic review and meta-analysis assess the Penetration, Implementation, Participation, and Effectiveness (PIPE) of lifestyle interventions in postpartum women.

**Methods:** MEDLINE, EMBASE and other databases were searched up to 3rd May 2019 for randomised controlled trials (RCTs) involving diet, exercise or behavioural interventions for postpartum women (<2years after birth). Cochrane Risk of Bias tool (2.0) appraised study quality and PIPE Impact Metric analysis was applied to trials. The Monash Health Learning Health System (LHS) framework assessed trial progress towards implementation. **Results:** Thirty-six trials (49 publications) were included (n=5315 women, 18-36 years). A single study provided sufficient information to calculate population penetration rate (2.5%). All studies provided some implementation information, but over half had low programme fidelity (no intervention manual/structured curriculum, checklist or quality assurance measures reported). Participation rate was varied (9 trials, 1-86%). Effectiveness showed -2.33kg pooled mean difference (MD) (95% confidence interval (CI) -3.10, -1.56) in body weight change (25 trials, 1945 participants), BMI (MD -1.03 kg/m<sup>2</sup> [95% CI -1.43, -0.63], 18 trials, 967 participants) and physical activity (standardized MD 0.57 [95% CI 0.31, 0.82], 24 trials, 2138 participants) with no change in energy intake (MD -0.52 [95% CI -1.06, 0.03], 12 trials, 1119 participants). Fidelity or participation rate did not explain heterogeneity in weight loss effectiveness. Step 3 of the LHS framework was furthest reached by trials.

**Conclusions:** The low penetration and participation rates of trials are likely to translate to very low population impact and postpartum lifestyle interventions are halted at the evidence-generation phase. Both findings highlight the inadequacy of conventional RCTs in developing complex, yet implementable interventions. It is now vital to focus on pragmatic trials that translate the substantive clinical research investment into real-world, implementable solutions for postpartum weight management.

**Conflict of interest:** None

**Keywords:** postpartum women; weight management; systematic review; evaluation; lifestyle modification

## 747 Impact of the early covid-19-related restrictions on food security: the situation of Ghana

Mrs Eunice Berko Nartey<sup>1,2</sup>, Ms Alice Koryo-Dabrah<sup>1,2</sup>, Ms Sitsofe Tsaqbey<sup>3</sup>, Dr Emmanuel Domfeh<sup>4</sup>

<sup>1</sup>University of Health and Allied Sciences, Ho, Ghana, <sup>2</sup>University of Ghana, Accra, Ghana, <sup>3</sup>University of Sao Paulo, Sao Paulo, Brazil, <sup>4</sup>King's College London, London, United Kingdom

**Biography:** Eunice Berko Nartey serves as a lecturer and researcher at the University of Health and Allied Sciences, Ho. Eunice is also a Licensed Dietitian and Nutritionist. For her love of knowledge is currently pursuing her Ph.D. in Nutrition at the University of Ghana. She is the co-author of *The Ghanaian Woman's Guide to Feeding Babies and Toddlers*. She is a result-oriented and dynamic person who looks for opportunities to make a positive difference wherever she finds herself. She looks for new experiences that will help improve the total well-being of the very needy in our society no matter the person's crib or creed. She believes in being the change she wants to see in society and the world.

**Background:** The novel coronavirus pandemic is estimated to affect millions of lives, especially those living in sub-Saharan Africa. The subsequent restrictions by the government of Ghana were expected to disrupt livelihoods with dire consequences on especially food security.

**Objective:** This was to assess the impact of the COVID-19 restrictions on household food security in Ghana.

**Methodology:** Participants were recruited by convenience sampling technique, during the mandatory restriction and partial lockdown period in Ghana using a web-based validated questionnaire. The Self-Administered Food Insecurity Module Scale was used to measure the household food security landscape during the first three months (March 30 – April 20, 2020) of the period. Socio-demographics and perceived individual nutritional status were also recorded. Logistic regression models were used to describe, explore, and predict risk factors correlated with food insecurity.

**Results:** A total of 375 participants from all regions of Ghana responded to the survey. The level of food security was significantly associated with employment status (p-value=0.007), household size (p-value = 0.002), income (p-value = 0.0001) and gender (p-value = 0.034). Given the same income and household size, the odd of a male being insecure is 69% higher than a female. An increase in income level by a minimum wage for a fixed household size within the same gender decreases the odds of being food insecure by 6.7%. On the other hand, a unit increase in the household size for a given income within a specific gender group increases the odds of being food insecure by 17.6%.

**Conclusion:** The Covid-19 pandemic and its subsequent restrictions had a significant impact on food security. Proactive future strategies to address food insecurity during a crisis to support individuals and households at higher risks should be guided not only by the income but also by gender, household size, and employment status.

**Conflict of interest:** None

**Keywords:** COVID-19, food-security, malnutrition, pandemic, coronavirus

## 367 Implementation of a food service ambassador model in an Australian private hospital

*Ms Claire Matthews<sup>1</sup>*

<sup>1</sup>Cabrini Health, Malvern, Australia

**Biography:** Claire Matthews is the sole Food Service Dietitian at Cabrini Health, a private healthcare organisation in Victoria, Australia. She has been working closely with the Food Services department across the five Cabrini campuses for the past four years. Her role involves menu development and review, managing Delegate the electronic menu management system, allergy identification and documentation, university student supervision and policy development. Claire is interested in continuing to grow her research skills and is aiming to publish the results from the pictorial menu project for which she received a \$15,000 quality improvement grant from the Cabrini Foundation.

**Introduction:** High quality food service can be used as a promotional tool for private hospitals to increase their clientele and reputation. Improved customer service in the hospital environment increases patient satisfaction, but it's unclear whether an ambassador model (increased patient contact time with a consistent food service staff member (FSSM)) is linked to an increase in patient's food service satisfaction. Aim: To decrease the number of individual FSSM a patient has contact with; to increase patient contact time with a consistent FSSM; and determine the change in food service satisfaction pre and post implementation of this model.

**Methods:** Work flows were used to determine the difference in patient contact time by FSSM and the number of individual FSSM a patient has contact with. Food service satisfaction was measured using the validated Acute Care Hospital Foodservice Patient Satisfaction Questionnaire (ACHFPSQ) Survey tool. Baseline patient food service satisfaction results collected prior to model implementation in 2018 (n=67), were compared to the 2019 ambassador ward surveys (n=50). A change in 0.50 is considered practically significant.

**Results:** Pre-implementation, patients would see up to 14 different FSSM. Post-implementation this decreased to five FSSM. Total patient contact minutes decreased from 65 to 40 minutes but patient contact minutes per staff member increased from 4.6 pre-implementation to 8 post-implementation. In the domain of staff/service issues, satisfaction fell 0.05 points in 2019.

**Conclusion:** Patient contact time with a consistent staff member increased by 3.4 minutes but the overall amount of time spent reduced by 25 minutes. This suggests increased efficiency due to a consistent FSSM and restructure of work flows. The decline in satisfaction with staff/service issues was not practically significant and was consistent with a decrease in satisfaction across non-ambassador wards (-0.02). Nil negative outcomes occurred due to the insignificant reduction in patient satisfaction with the staff/service.

**Conflict of interest:** None

**Keywords:** Hospital food service; food service staff; patient satisfaction; ambassador model

## 253 Implementing nutrition screening in medical and surgical patients; expanding the role of dietitians as change agents.

*Prof Heather Keller<sup>1</sup>, Jill Morrison-Koechl<sup>1</sup>, Dr Celia Laur<sup>2</sup>*

<sup>1</sup>Schlegel-university Of Waterloo Research Institute For Aging, Waterloo, Canada, <sup>2</sup>Women's College Hospital Institute for Health Systems Solutions and Virtual Care; Women's College Research Institute, ,

**Biography:** Heather Keller is the lead for the More-2-Eat study and the development of the Integrated Nutrition Pathway for Acute Care. Improving nutrition care practices in all health care sectors is a focus of her research program as Schlegel-University of Waterloo Research Chair in Nutrition & Aging.

Dietitians in hospital are typically involved in individualized care. Yet, the prevention, detection and treatment of malnutrition in this complex setting requires a multidisciplinary approach. Introducing and improving care practice among the health care team necessitates skills in quality improvement and change management. Dietitian champions in 10 Canadian hospitals have implemented nutrition screening in 17 units; 4 sites were involved in phase 1 of a participatory action research implementation study and 6 sites were added three years later (phase 2). The objective of this study is to describe the success of these dietitian champions with implementing and sustaining nutrition risk screening and the strategies used to make change.

**Methods:** Using knowledge translation and behaviour change frameworks, dietitian champions were mentored to implement nutrition screening at admission for medical and surgical patients. Chart audits using a standardized extraction form completed every 2 months on all current in-patients, were used to track implementation progress. Dietitians used audit results in a standardized reporting template to provide feedback in graphical form to teams. Monthly mentoring calls were used to discuss challenges and opportunities for uptake of screening.

**Results:** One year into phase 2 implementation, 3290 patient charts were audited for nutrition screening. Mean age of patients was 72±17 years. Screening rates increased in all sites: phase 1 units increased from 67% to 85% while phase 2 units increased from 22% to 70%. Dietitians co-mentored each other with the external facilitators as part of a community of practice. They used key behaviour change strategies including: education, incentives, audit and feedback, and environmental restructuring to improve screening rates.

**Conclusions:** Dietitians as champions can effect unit and organizational change in nutrition care practices. Providing key supports of extraction forms, report templates and mentoring on change management is needed to support dietitian champions in this role.

**Conflict of interest:** None

**Keywords:** screening, quality improvement, malnutrition, hospital

## 437 Inconsistent evidence for oral nutrition support interventions from systematic reviews: Why realist review methodology is needed.

Dr Christine Baldwin<sup>1</sup>, Dr Elizabeth Weekes<sup>2</sup>

<sup>1</sup>Guy's & St Thomas' NHS Foundation Trust, London, London, United Kingdom,

<sup>2</sup>King's College London, London, United Kingdom

**Biography:** Dr Christine Baldwin graduated from The University of London and has worked as a dietician for more than 20 years, accumulating considerable experience in both clinical practice and research into the management of malnutrition. Since 2007, she has worked as a Lecturer in Nutrition & Dietetics at King's College London.

Dr Baldwin's research interests are in the use of oral nutritional support interventions in the management of weight loss in acute and chronic illness and the patient experience of dietetic care as well as issues related to delivery of dietetic services. Christine also completed a Diploma in systematic reviews methodology in 1998. Since that time, she has worked on several systematic reviews of nutritional interventions in the management of nutritionally vulnerable patients, including two published in the Cochrane library.

**Introduction:** Food-based interventions given with or without oral nutritional supplements (ONS) are the mainstay of treatment for patients with illness-related malnutrition. Evidence is needed to support decisions on patient management and to guide policy. A systematic review of 45 randomised controlled trials (RCTs) (n=3186) published in 2011 found limited evidence for benefits to nutritional outcomes and no effect on clinical outcomes. The aim of this systematic review was to update searches and synthesise evidence for dietary advice with or without ONS on nutritional, clinical, functional and patient-related outcomes.

**Methods:** Comprehensive searching of 9 electronic databases and supplementary sources. Eligible studies were RCTs of (i) dietary advice (ii) dietary advice plus ONS if required, (iii) dietary advice plus ONS and (iv) dietary advice compared with ONS, in nutritionally vulnerable patients across all healthcare settings. Trial eligibility, risk of bias and data extraction were completed in duplicate. Data were grouped according to intervention and synthesised using meta-analysis.

**Results:** 94 studies (n=10,284) were included. All were at risk of bias for one or more elements. There was no difference in mortality between groups. Findings for other outcomes were inconsistent with high heterogeneity. The quality of evidence was low for 28/30 analyses.

**Conclusion:** This is the third substantial update of this review which synthesises a large amount of data but provides no meaningful conclusions for practice. The aetiology of malnutrition is complex and it is likely that the success of dietary management will vary according to factors such as disease background, healthcare setting, intensity and duration of the intervention. Meta-analysis of studies to produce an average estimate fails to consider underpinning mechanisms. Realist synthesis captures the influence of context and can suggest generative mechanisms that might explain which interventions work for whom and in which circumstances with the potential to suggest innovation of practice.

**Conflict of interest:** None

**Keywords:** systematic review, realist review, malnutrition, dietary intervention, oral nutritional support

## 458 Indigenous food ingredients for complementary food formulations to combat infant malnutrition in Benin: a review

Dr Flora Chadare<sup>1</sup>, Dr Ir Yann Eméric Madode<sup>2</sup>, Dr Ir Nadia Fanou-Fogny<sup>2</sup>, Dr Janvier M Kindosi<sup>3</sup>, Ir Juvencio O. Ayosso<sup>2</sup>, Dr Sewanou Honfo<sup>2</sup>, Prof Polycarpe Kayodé<sup>2</sup>, Dr Ir Anita Rachel Linnemann<sup>4</sup>, Prof Djidjoho Josphe Hounhouigan<sup>2</sup>

<sup>1</sup>National University Of Agriculture, School of Food Science and Nutrition, Sakété, Benin, <sup>2</sup>University of Abomey-Calavi, Faculty of Agronomic Science, Abomey-Calavi, Benin, <sup>3</sup>University of Parakou, Faculty of Agronomy, Parakou, Benin, <sup>4</sup>Wageningen University, Wageningen, The Netherlands

**Biography:** Dr. Ir. Flora Chadare is a senior lecturer in food science and Nutrition from Benin. She completed an agronomical engineer degree from University of Abomey-Calavi (Benin), a double master in food technology and nutrition and her PhD on quality of baobab food products. With her expertise in Nutrition oriented food science and technology, she has interest to product development with a focus on the valorization of local foods and of Non Timber Forest Products for better nutrition and livelihoods, through process and product development, optimisation of traditional process and product, sanitary quality of foods. Among others, food to food fortification is one of her main research focus to ensure a better use of functional foods and nutraceuticals for food and nutrition security

This paper reviews indigenous Beninese food resources as potential ingredients for complementary infant foodswith the aim to develop affordable formulations for low-income households in each agro-ecological zone of the country. Potential ingredients were selected on their documented nutritional value. The selected foods encompass 347 food resources, namely 297 plant products from home gardens or collected from natural vegetation and 50 animals, either domesticated or from the wild. The compiled data reveal that the distribution of the available food resources was unbalanced between agro-ecological zones. Only a few animal ingredients are obtainable in northern Benin. Most resources are seasonal, but their availability may be extended. A high variation was observed in energy and nutrient contents. Antinutritional factors were identified in some resources, but processing techniques were reported to reduce their presence in meals. In general, ingredients from local tree foods (*Adansonia digitata*, *Parkia biglobosa*) were adequate as sources of nutrients for complementary infant foods. Based on this review, local foods for the development of complementary food formulas for Beninese infants and children may be selected for each agro-ecological zone. The approach used is exemplary for other sub-Saharan African countries in need of complementary infant foods.

**Conflict of interest:** None

**Keywords:** local food resource; infant food; standards; nutritional value; Benin

## 247 Influence of the research involvement of dietetic internship directors on the experiences aligned with an accreditation required research competency in dietetic internship programs

Dr Amanda Newell<sup>1</sup>, Dr Wendy Troxel<sup>2</sup>

<sup>1</sup>Bradley University, Peoria, United States, <sup>2</sup>Kansas State University, Manhattan, United States

**Biography:** Amanda M.B. Newell, Ph.D., RDN, LDN is an Assistant Professor and the Dietetic Internship Director in the Family and Consumer Sciences Department at Bradley University. Dr. Newell teaches courses for undergraduate and graduate dietetic students including Nutrition, Nutrition Assessment and Counseling, Lifecycle Nutrition, Advanced Medical Nutrition Therapy, and Nutrition and Wellness. She serves on a variety of committees including an Internationalization committee and an Intercollegiate Athletics committee. She is also involved with the Central Illinois Academy of Nutrition and Dietetics, most recently serving as the Public Policy Chairperson. Over the past ten years, she has mentored numerous research projects for undergraduate and graduate dietetic students. Her current research focuses on the research involvement of dietetic educators.

**Introduction:** As an evidence-based and practitioner-driven profession, research is considered to be the foundation of dietetics. Additionally, the theory of experiential learning suggests that educators involved with curricular decisions must have meaningful experiences to ensure accreditation competencies are met. The purpose of this study was to assess the types of experiences dietetic internship (DI) directors align with an accreditation required research competency and to determine if there are differences between their research involvement and the research experiences aligned with the competency.

**Methods:** This study utilized a cross-sectional, survey design, which included the Research Involvement Questionnaire (RIQ) (Whelan et al., 2013). Participants were DI directors who managed ACEND accredited programs (n = 90) who identified experiences in their program which aligned with the research competency. An independent samples t-test was run to compare participants' overall research involvement to the research experiences aligned with the research competency in their DI program.

**Results:** A statistically significant difference was found between the overall RIQ scores of participants and five experiences aligned with the research competency. Specifically, these included requiring ethics tutorials (t(88) = -2.57, p = 0.01); IRB protocols (t(88) = -2.17, p = 0.03); research questions/hypothesis (t(85.45) = -3.77, p = 0.00); research protocol designs (t(88) = -2.10, p = 0.04); and research project presentations (t(88) = -2.59, p = 0.01). Additional experiences were not found to be statistically significant; however, mean RIQ was higher for every experience that participants aligned with the research competency.

**Conclusion:** The findings suggest that DI directors with higher research involvement scores were more likely to align research experiences that focused on steps involved with primary research to meet the research competency in their DI program. Research is critical to advance the profession of dietetics and DI directors seem to play a role in this important endeavor.

**Conflict of interest:** None

**Keywords:** dietetic education; dietetic internship directors; research competency; research involvement

## 436 In-hospital growth of very low birth weight preterm infants: comparative effectiveness of two human milk fortifiers

Dr Johanna Kemp<sup>1</sup>, Prof Friede Wenhold<sup>1</sup>, Dr Firdose Nakwa<sup>2</sup>, Prof Piet Becker<sup>1</sup>

<sup>1</sup>University of Pretoria, Pretoria, South Africa, <sup>2</sup>University of the Witwatersrand, Johannesburg, South Africa

**Biography:** Johanna (Hannelie) Kemp qualified as a dietitian in the early 90's and have worked as a clinical dietitian in several hospitals, including Steve Biko Academic Hospital (Pretoria) and St Mary's Hospital (London, UK). She has also been involved in dietetic student training as a part time lecturer at the University of Pretoria (UP). She is currently employed as a sessional dietitian at Chris Hani Baragwanath Academic Hospital where she is working in the neonatal units. Her interest is in Paediatric nutrition, specifically nutrition of preterm infants and she is currently finalizing her PhD study on human milk fortification at the Department of Human Nutrition, UP.

**Introduction:** In-hospital growth of very low birth weight (VLBW) preterm infants receiving fortified human milk in low/middle income countries is under-researched, despite high prevalence of prematurity. The protein content of the only available fortifier in South Africa was increased in 2017. The Original fortifier (OF) and the Reformulated fortifier (RF) provided similar energy. This study aimed to compare in-hospital growth of VLBW preterm infants receiving human milk fortified with these two formulations in a tertiary South African hospital.

**Methods:** Intake of VLBW infants receiving exclusively human milk was calculated using published composition of preterm and mature milk (Cormack, 2016) plus one of two fortifiers (OF: 0.2g protein, 3.5kcal/g powder or RF: 0.4g protein, 4.4kcal/g powder). Weight, length and head circumference (HC) were measured at start and end of fortification. Change in Z-scores (Fenton, 2013) for weight, length and HC was calculated as primary outcomes. Additionally weight gain velocity (g/kg/d) (Patel, 2009) and gain in length and HC (cm/wk) were calculated.

**Results:** 58 Infants (52% female; gestational age: 30±2wk; birth weight: 1215±187g) received OF (2016 to 2017) and 59 infants (56% female; gestational age: 29±2wk; birth weight 1202±167g) received RF (2017 to 2018). Fortification started on day 18 of life and lasted for 15 days. Protein intake with RF (3.7±0.4g/kg/d) was significantly higher (P<0.001) than with OF (3.4±0.2g/kg/d). Protein-to-energy ratio of RF (2.6±0.2) was significantly higher (P<0.001) than OF (2.3±0.1g/100kcal). In both groups Z-scores of all growth indices dropped, with no significant differences between the two groups. Weight gain was 14.5±4.3g/kg/d with the OF and 15.1±4.7g/kg/d with the RF but difference was not significant. Length and HC gains (cm/wk) were similar between OF and RF.

**Conclusion:** In-hospital growth was similar between groups, even though calculated protein intake and protein-to-energy ratio were significantly higher in RF group.

**Conflict of interest:** None

**Keywords:** prematurity; growth; human milk; fortification

## 148 Intake of protein, food sources and distribution among Māori and non-Māori octogenarians: life and living in advanced age: A cohort study in New Zealand

Prof Carol Wham<sup>1</sup>, Ms Anishka Ram<sup>1</sup>, Mr Simon Moyes<sup>2</sup>, Dr Anna Rolleston<sup>2</sup>, Professor Ngaire Kerse<sup>2</sup>

<sup>1</sup>College of Health, Massey University, Auckland, New Zealand, <sup>2</sup>School of Population Health, University of Auckland, Auckland, New Zealand

**Biography:** Carol Wham is a Professor of Public Health Nutrition at Massey University, Auckland, New Zealand. She is an experienced dietitian and an Associate Editor of 'Nutrition and Dietetics' journal of the Dietitians Association of Australia. In 2017 Carol received the prestigious Dietitians New Zealand Award of Excellence in the category of Outstanding Achievement in Dietetics.

Carol has undertaken a sustained programme of research focused on improving the nutritional health of older people. Her particular interest is the interrelationship between nutrition status and health outcomes in the ageing population. She has been an investigator in two longitudinal studies of ageing; Life and Living to Advanced Age: a Cohort Study in New Zealand and within the New Zealand Health, Work and Retirement Study. She has examined malnutrition risk across community, hospital and residential care settings and leads the ENRICH study which seeks to Evaluate Nutrition Risk and Intervene to encourage Healthy eating.

**Introduction:** Protein intake and its food sources is important to prevent age related loss of muscle mass and strength. An even protein intake distribution throughout the day has been suggested as necessary to stimulate muscle protein synthesis. This study examined the prevalence and determinants of inadequate protein intake, primary food sources and mealtime distribution of protein in Māori and non-Māori of advanced age.

**Methods:** Dietary intake was assessed in 214 Māori and 360 non-Māori octogenarians with a repeat 24-hour multiple pass recall. Adequate protein intake was determined using estimated average requirement (EAR) cut-off points of  $\leq 0.75$ g/kg for women and  $\leq 0.86$ g/kg for men. Percentage contribution of the primary food groups to protein intake were assessed. Protein intake distribution was determined for the three main meals. A logistic regression model was built to predict meeting the EAR for protein intake per adjusted body weight per day.

**Results:** Total median (IQR) protein intake for women was 0.87 (0.68-1.12) g/kg and for men was 0.97 (0.78-1.21) g/kg. A third of both women (30.9%) and men (33.3%) did not meet the EAR for protein. The main food group contributors to protein were beef/veal, fish/seafood, milk, bread and differed by gender and ethnicity. For women and men respectively protein distribution (g/meal) was lowest at breakfast (10.1g and 13.0g), followed by lunch (14.5 and 17.8g) and dinner (23.3 and 34.2). Being a woman and having depressive symptoms were associated with consuming less total protein. Controlling for all other variables the odds of meeting the EAR for protein was higher in participants who had their own teeth or partial dentures ( $P=0.036$ ).

**Conclusion:** Among advanced age Māori and non-Māori, these findings highlight the prevalence of low protein intake, uneven mealtime protein distribution and importance of dentition for adequate protein intake.

**Conflict of interest:** None

**Keywords:** Protein; octogenarian; cohort study; New Zealand

## 474 International Dietetics and Nutrition Outreach: Formation of the Global Member Interest Group of the Academy of Nutrition and Dietetics

Jen Brewer<sup>2</sup>, Dixie Havlak<sup>3</sup>, Sue Langren<sup>4</sup>, Laurie Sauerwein<sup>5</sup>

<sup>1</sup>Loyola University Healthcare System, Maywood, United States, <sup>2</sup>Global MIG, Academy of Nutrition and Dietetics, Rochester, United States, <sup>3</sup>Global MIG, Academy of Nutrition and Dietetics, Olympia, USA, <sup>4</sup>Self-employed, Portland, United States, <sup>5</sup>Samaritan's Purse International Relief and Development, Redmond, United States

**Biography:** Jen Brewer MA, RDN received her dietetics degree from Brigham Young University, and her masters from Saint Mary's University. She works as a global nutrition consultant and focuses much of her work in Guatemala, Mozambique, and Sudan where she works with various organizations to fight malnutrition and mental stunting in children. In 2017 she partnered with Dixie Havlak to found the Global Member Interest Group (GMIG), a subset of the Academy of Nutrition and Dietetics. Their aim was to set up an organization for dietitians working on global nutrition issues to network, share resources and information, and promote the use of dietitians in international projects. Jen recently finished a two-year research project in conjunction with the Academy of Nutrition and Dietetics, Maya Health Alliance, and Cultiva International to study the effects of family gardens in diversifying the diets in women and children in rural Guatemalan communities. She is currently working on family systems projects through Care For Life that helps families incorporate gardens, learn self-reliance principles, and instill hope for their future.

**Introduction:** Global outreach would benefit from increased ability to connect dietitians and nutritionists with one another so collaboration, not duplication, occurs. There is a need for a formal group to share and locate international information and opportunities in an organized manner.

**Methods:** A Global Member Interest Group (MIG) was created within the Registered Dietitian Nutritionists (RDN) membership of the Academy of Nutrition and Dietetics (Academy) over two years (2017-2019). A founding group of RDN's with experience in international nutrition wrote by-laws, policies, & procedures to meet the Academy's criteria. Initial networking occurred at the 2018 Academy Food & Nutrition Conference & Expo (FNCE) meeting. All Academy members were informed about the Global MIG with the 2019-2020 dues notice; joining was an additional \$15(USD) annually.

**Results:** The Global MIG provides newsletters, annual meeting sessions, and networking. Initial membership benefits were an e-newsletter, an ongoing list of international volunteer opportunities for RDN's and students, a resource library of education materials; list serves and forums to facilitate engagement and share experiences/needs; the ability to find other like minded dietitian mentors and collaborators, and a forum for questions and queries to enhance global sharing. Additional benefits added since its inception include a Spanish resource library, sponsored webinars and sessions at the annual conference with topics of relevance to global humanitarian dietitians, and mini-grants for overseas engagement. Membership has grown to over 350 members. Future plans include networking with the international community, Associate Membership in the group, and making our website with Talent Pool and Resource Library more accessible to appropriate health organizations.

**Conclusion:** The formation of a Global MIG within the Academy has provided an organized forum for international collaboration and exchange on humanitarian nutrition issues both within and beyond the Academy.

**Conflict of interest:** None

**Keywords:** global; nutrition; training; volunteer; education

## 746 Introduction of a global, low-burden Diet Quality Questionnaire (DQ-Q)

Dr. Anna Herforth<sup>1,3</sup>, Mr Chris Vogliano<sup>2</sup>, Laura Trijsburg<sup>3</sup>, Dr. Gina Kennedy<sup>2</sup>

<sup>1</sup>Harvard University, USA, <sup>2</sup>USAID Advancing Nutrition, Arlington, USA, <sup>3</sup>Wageningen University, Netherlands

**Biography:** Chris Vogliano MS, RD is a Technical Advisor of Food Systems with the United States Agency for International Development - Advancing Nutrition (USAID AN), where he is currently working on adapting the first ever global diet quality monitoring system, in partnership with Harvard University and Gallup World Polls. Chris has worked to promote equity and sustainability across the food system, including designing policies and program interventions to improve food security for low income populations, to consulting with Fortune 500 brands on sustainability initiatives. He is also working with the United Nations Food and Agriculture Organization (UN FAO) to redevelop the Solomon Islands' National Food Based Dietary Guidelines, informed by his original research findings. Chris has given over 80 academic presentations both domestically and internationally, published numerous peer-reviewed research publications, and has served as research fellows for The Academy of Nutrition and Dietetics and Bioversity International. During his free time, Chris enjoys hiking, biking, and anything that allows him to spend time in nature.

**Introduction:** Diet quality is an essential factor for addressing all forms of malnutrition in all countries. However, there is a dearth of low-burden tools to rapidly measure diet quality on a national or regional level. The Diet Quality Questionnaire (DQ-Q) is a country-adapted tool that identifies sentinel food items for a standard set of 29 food groups. The DQ-Q was designed to quickly measure the diet quality of a population (~5 minutes) by assessing food group consumption frequency. Here we present results on the adaptation and validation of the DQ-Q.

**Methods:** A team of nutrition experts adapted the DQ-Q through a series of country-specific key informant interviews to identify the most commonly consumed and culturally relevant foods, grouped into one of 29 food groups. After, researchers aimed to validate the DQ-Q by collecting dietary intake data using the DQ-Q, followed by one 24-hour multi-pass dietary recall (24hr MPR) in three geographically and culturally unique countries among women aged 17-50: Ethiopia (n=485), Vietnam (n=200), and Solomon Islands (n=110). Results from the DQ-Q and 24hr MPR were translated into a validated nutrient adequacy indicator (minimum dietary diversity for women [MDD-W]) for comparison and validation.

**Results:** The adaptation process revealed important cultural nuances within each country, confirming that country-level adaptation is required. There was no significant difference in MDD-W between the DQ-Q tool and the 24hr MPR among all three study populations (Ethiopia,  $p < 0.0001$ ; Vietnam,  $p = 0.17$ ; Solomon Islands,  $p = 0.14$ ).

**Conclusion:** The DQ-Q is a suitable tool to gather valid national or regional food group consumption data in geographically and culturally diverse populations. The DQ-Q tool standardizes the adaptation process and significantly reduces the time and expertise required to collect population-level diet quality data, when compared to a 24hr MPR.

**Conflict of interest:** None

**Keywords:** Diet quality; global health; diet diversity; diet tool

## 424 Job satisfaction and perception of workload among dietitians/nutritionists in South Africa

Prof Louise Van Den Berg<sup>1</sup>, Ms Ermi (HC) Spies<sup>1</sup>, Ms Talitha Claassen<sup>1</sup>, Ms Sindi-marie de Beer<sup>1</sup>, Ms Jemima Meyer<sup>1</sup>, Ms Ingrid Strydom<sup>1</sup>

<sup>1</sup>Department Of Nutrition And Dietetics, University Of The Free State, Bloemfontein, South Africa

**Biography:** HoD Department of Nutrition and Dietetics, University of the Free State

**Introduction:** Job satisfaction is the extent to which employees feel positive due to their jobs, while workload is the overall cognitive effort invested while performing a task. This study aimed to determine job satisfaction and perception of workload amongst South African dietitians/nutritionists registered with the HPCSA.

**Methodology:** In a descriptive observational study, an online questionnaire was made available via social media and professional platforms to measure socio-demographics, job satisfaction (38-items; 9 categories) and perception of workload (6-item-NASA-TLX tool).

**Results:** Of the 259 respondents, registered with the HPCSA (median age 32 years; IQR: 27-39 years), 92.3% were female, 95.7% were dietitians and 2.4% nutritionists. The median time practicing the profession was 8 years (IQR: 3-15 years); 17.8% had a Master's, and 4.5% a PhD/Doctoral degree. Among the 232 (96.3%) employed in the field of dietetics/nutrition (44.8% in public hospitals; 33.6% in private practice), the median job satisfaction score indicated that they were "slightly satisfied" (61.0%; IQR: 54.4%-69.7%) and the mean workload score, that they were "moderately overworked" (61.7%; IQR: 50.0-70.0%). Job satisfaction were significantly higher among older participants than younger participants ( $p = .001$ ). Participants were least satisfied with their salaries, promotion opportunities, work environment and availability of resources, and most satisfied with the nature of their work, their knowledge and skills development opportunities and their role in the multidisciplinary team.

**Conclusion:** Despite being overall very positive about their vocation, South African dietitians/nutritionists experienced only slight job satisfaction, mostly related to salary and promotion issues, and lack of resources in the work environment and were slightly overworked.

**Conflict of interest:** None

**Keywords:** dietitians; nutritionists; job satisfaction, workload, dietitian-to-patient ratio

## 394 Leaders wanted: A multicase study on leadership development of Canadian dietitians

Ms Billie Jane Hermosura<sup>1</sup>, Dr. Christine Suurtamm<sup>1</sup>, Dr. Ivy Lynn Bourgeault<sup>1</sup>

<sup>1</sup>University Of Ottawa, Ottawa, Canada

**Biography:** Billie Jane Hermosura is a dietitian, project management consultant and PhD candidate at the University of Ottawa, Canada. She combines her passion for health, adult learning and project management through her work as a consultant and researcher. Her research currently focuses on investigating the relationship between competency-based education and health workforce planning.

Before starting her PhD, Billie Jane worked as a project manager and program evaluation specialist for provincial and regional health authorities in British Columbia. She continues to operate her own nutrition private practice Nutrition Intel and lead projects in healthcare and higher education.

Billie Jane earned a Master of Applied Science from the University of Guelph and a Master of Adult Education from St. Francis Xavier University, and earned a Diploma in Sports Nutrition from the International Olympic Committee.

**Introduction:** Within Canada, leadership is recognized as an emergent competency domain for dietitians. Moreover, leadership within the health sector continues to be recognized as a key factor to improving healthcare systems. However, without a clear understanding of the different leadership domains resident in health professions, it can be challenging to both develop curricula and appropriately assess leadership skills in dietetic trainees and dietitians.

**Objectives:** To understand the various ways in which dietitians develop and use leadership skills effectively in a highly gendered and complex healthcare system.

**Method:** A multicase study was carried out among 35 dietitians across Canada. Participants were purposively sampled to represent a range of practice settings and stages within dietetic careers, and participated in a 90-minute one-to-one interview. Audio recordings of the interviews were transcribed verbatim. Transcripts were thematically coded and analyzed using NVivo 12. Intra- and intercase study comparisons as well as a Sex and Gender-Based Analysis Plus were conducted. The coded themes were aligned with the five leadership domains of the LEADS Leadership in a Caring Environment framework: Lead Self, Engage Others, Achieve Results, Develop Coalitions, and Systems Transformation.

**Results:** Dietitians reported on the ways in which they consider themselves leaders in their respective workplaces and opportunities they pursued to further develop their leadership skills. Themes related to resilience, mentorship, accomplishing goals, collaboration, and health system transformation emerged, which align with the LEADS framework. Additionally, themes related to gender and diversity were identified that support the ongoing leadership dialogue.

**Conclusions:** The LEADS framework is useful in understanding different ways in which dietitians use their leadership skills, however, there are limitations to its inclusion when considering complexities of leadership in a highly gendered health system. It is essential to understand health providers' experiences in the health workforce to develop relevant health professions curricula and assessment tools.

**Conflict of interest:** None.

**Keywords:** Health professions education; health systems; leadership

## 594 Low omega-3 polyunsaturated fatty acid status prior to infection improve TB disease progression and lung pathology

Mrs Simoné King<sup>1</sup>, Mrs Arista Nienaber<sup>1</sup>, Mrs Robin Dolman<sup>1</sup>, Mr Mumin Ozturk<sup>2,3</sup>, Mr Frank Hayford<sup>1,5</sup>, Ms Lizelle Zandberg<sup>1</sup>, Mr Frank Brombacher<sup>2,3</sup>, Mr Suraj Parihar<sup>2,7</sup>, Mrs Renée Blaauw<sup>4</sup>, Mr Marius Smuts<sup>1</sup>, Mrs Linda Malan<sup>1</sup>

<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>2</sup>Institute of Infectious Diseases and Molecular Medicine (IDM), Division of Immunology and South African Medical Research Council (SAMRC) Immunology of Infectious Diseases, University of Cape Town, Cape Town, South Africa, <sup>3</sup>International Centre for Genetic Engineering and Biotechnology (ICGEB), Cape Town Component, Cape Town, South Africa, <sup>4</sup>Division of Human Nutrition, Stellenbosch University, Stellenbosch, South Africa, <sup>5</sup>Department of Nutrition and Dietetics, University of Ghana, Accra, Ghana, <sup>6</sup>Laboratory of Infectious Disease Metabolomics, Centre for Human Metabolomics, North West University, South Africa, Potchefstroom, South Africa, <sup>7</sup>Centre of Infectious Diseases Research in Africa, University of Cape Town, Cape Town, South Africa

**Biography:** Simoné obtained a Bachelor of Science Degree in Dietetics cum laude from North-west University in Potchefstroom campus in 2015. During her internship year at Potchefstroom and Klerksdorp- Tsepong hospital complex she gained working experience in various diseases. She then completed a year of community service at Dr. George Mukhari Academic hospital, where she gained valuable experience in outpatient clinics, pediatrics, and internal wards.

During 2017 she worked in various private practice settings assisting patients in their nutrition journey. Simoné is also a certified NBI (Neethling Brain Instruments) practitioner since 2017. During the NBI training, she gained insight into her patient's style of thinking and in turn, supporting them to develop their own understanding and helping them to make use of their whole brain in problem-solving, specifically their eating habits.

In 2018, she had the opportunity to continue with her master's degree in Dietetics full-time, focussing on tuberculosis and omega-3 fatty acids. Wanting to gain more work experience in other areas of the dietetics field, she is currently practicing as an in-hospital food service dietitian in Pretoria.

**Introduction:** Mycobacterium tuberculosis (Mtb) is highly successful in survival within its host. Mtb causes an immune response that is defensive but also harmful to the host's lung tissue, because of perpetuating inflammation. Non-resolving inflammation in TB persists and can occur in both latent and active TB. Omega-3 fatty acids have anti-inflammatory and inflammation-resolving activity due to their conversion to lipid mediators and influence on inflammatory cytokines.

**Objectives:** To compare the effects of a low n-3 PUFA status with a sufficient n-3 PUFA status on disease progression and lung inflammation and pathology in Mycobacterium tuberculosis (H37Rv)-infected C3HeB/FeJ mice

**Methods:** Uninfected mice (n=10) were conditioned on either n-3 PUFA sufficient (n-3FAS) or deficient (n-3FAD) diets for six weeks prior to and continued following TB infection for four weeks until euthanasia. Lung bacterial load, lung- and spleen-weight indexes (as proxy for inflammation) and lung histology (free alveolar space), cytokines and lipid mediators were assessed.

**Results:** The sufficient group (n-3FAS) displayed higher bacterial loads (p=0.095) with higher spleen-weight indexes (p=0.041), less free alveolar space (p<0.001), but higher pro-inflammatory lung cytokine concentrations (Interleukin -1 $\beta$ , p = 0.007; Interleukin-6, p=0.003; Interferon-gamma, p<0.001). The n-3FAS group also had a more pro-resolving lipid mediator profile compared to the n-3FAD group (a trend for higher prostaglandin (PG) E<sub>3</sub>, (p=0.068) and protectin D1, (p=0.087); higher 18-hydroxyeicosapentaenoic acid, (p=0.006) and 17-hydroxydocosahexaenoic acid, (p=0.028); and lower PGE<sub>2</sub>, (p=0.032).

**Conclusions:** A low n-3 PUFA status before infection with Mtb reduce disease progression and lung pathology in mice.

**Conflict of interest:** None

**Keywords:** Lung inflammation, mouse model, omega-3 (n-3) polyunsaturated fatty acid (PUFA) status, tuberculosis (TB)

### 337 Malnutrition solutions that stick

Ms Danielle Cave<sup>1</sup>, Dr Karen Abbey<sup>1</sup>, Prof Sandra Capra<sup>1</sup>

<sup>1</sup>School of Human Movement and Nutrition Sciences, Faculty of Health and Behavioural Sciences, The University Of Queensland, St Lucia, Australia

**Biography:** Danielle Cave is an Accredited Practising Dietitian and PhD Candidate at The University of Queensland, under the supervision of Prof Sandra Capra and Dr Karen Abbey. Danielle holds a Master of Dietetics Studies from the University of Queensland and a Bachelor of Nutrition Science from Queensland University of Technology. Her research interests are nutrition for older adults, particularly those living in aged care homes. Danielle's doctorate research focuses on exploring the sustainability of food fortification strategies within the foodservice systems of aged care homes.

**Introduction:** Treating malnutrition in hospitals and aged care homes has not always been successful. Oral nutrition supplements (ONS) are frequently commenced, but poorly consumed. Food fortification is a food-first nutrition support strategy and is an alternative to ONS. It is preferred in long-term care for those who are malnourished or at risk of malnutrition. However, potential barriers to the sustainability of food fortification strategies include choosing expensive or laborious ingredients. Searching internationally published works has only revealed 2 intervention studies that measured the ingredient costs associated with food fortification, but both failed to measure comprehensive costs. The aim of this study was to develop models for the cost of on-site food fortification, including the cost of staff time to make and deliver menu items.

**Method:** A proof of concept study was conducted and costs associated with on-site food fortification were calculated, including costs of ingredients and staff time. Costs were calculated from preparation time required (minutes per serve) using average staff salaries and ingredient costs per serve, to get total cost per serve.

**Results:** Results found that on-site food fortification was less expensive than equivalent pre-made 1kcal/mL ONS. On-site food fortification using milk powder cost on average AUD \$0.65 (AUD \$0.47-\$1.00) and using a neutral supplement powder cost on average AUD \$0.75 per serve (AUD \$0.59-\$1.10), whilst equivalent ONS cost AUD \$2.00 per serve.

**Conclusion:** Dietitian-nutritionists need to promote low cost and easy to use ingredients as part of a food-first nutrition support strategy for those at risk of malnutrition. Accurate costing and simplicity of use, as well as consumption are of importance in the sustainability of any nutrition support strategy. Returning to a "food-first" approach holds promise in terms of continuance of the intervention, as well as managing taste fatigue. It is therefore one malnutrition solution that should stick.

**Conflict of interest:** Danielle Cave is supported by an Australian Government Research Training Program (RTP) Scholarship. This research received some support from the School of Human Movement and Nutrition Sciences at the University of Queensland and Trisco Foods Pty Ltd.

**Keywords:** Nutrition support; food-first; food fortification; foodservice; malnutrition

### 357 Maternity protection benefits for non-standard employees in low-and-middle-income countries and potential implications for breastfeeding practices: A scoping review

Mrs Catherine Pereira-Kotze<sup>1</sup>, Professor Diane Cooper<sup>1</sup>, Professor Mieke Faber<sup>1,2</sup>, Ms Alison Feeley<sup>3,4</sup>

<sup>1</sup>University of the Western Cape (UWC), Bellville, South Africa, <sup>2</sup>South African Medical Research Council (SAMRC), Bellville, South Africa, <sup>3</sup>University of the Witwatersrand (Wits), South Africa, <sup>4</sup>Public Health England, United Kingdom

**Biography:** Catherine (Katie) Pereira-Kotze is a Registered Dietitian and has been working in the field of public health nutrition for 16 years. She started her career in the government sector, where she worked as a Community Dietitian then Integrated Nutrition Programme Manager in the Mitchell's Plain/Klipfontein Sub-districts of the Western Cape. She then worked for JB Consultancy on the global ARCH (Assessment and Research for Child Feeding) project, amongst others. Katie completed the 10-day African Nutrition Leadership Programme (ANLP) in 2015. She has been in academia since 2015, doing some contract work at Sefako Makgatho University, North-West University and then UNISA and then held a permanent lecturer position at the University of the Western Cape from 2016-2019. Katie completed her dietetics training at the University of Cape Town, has a Masters in Nutrition, Human Rights and Governance through Stellenbosch University and is now working on her PhD in Public Health full time through UWC (Title: "Understanding the components of comprehensive maternity protection available and accessible to non-standard employees, in the Western Cape: domestic workers as a case study.") This presentation will share information from the first objective of the study.

**Introduction:** Women who receive comprehensive maternity protection are able to breastfeed their infants for longer, which provides many benefits to the infant, mother and society. However, women working in the informal sector or as non-standard employees (NSEs) often do not receive adequate maternity protection. The aim of this scoping review was to determine the current research conducted on maternity protection benefits available and accessible to non-standard employees in LMIC and any potential implications for breastfeeding practices.

**Methods:** The Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) was used to conduct the scoping review. Nine databases were searched using a list of search terms developed from the research aim. Two independent reviewers reviewed all documents identified in comparison to the eligibility criteria and made decisions on the final documents to be included in the review. Data was then extracted from the selected articles and synthesized to form a summary of available evidence. Ethical approval was obtained from the University of the Western Cape's Senate Research Committee and Ethics Committee [Reference Number: BM20/5/7].

**Results:** Limited research has been conducted on the availability and accessibility of all aspects of comprehensive maternity protection, specifically for NSEs in LMIC or in SA. It is difficult for NSEs to access most labour rights, including maternity protection benefits for women.

**Conclusion:** Primary research is needed to describe the availability and accessibility of maternity protection benefits to NSEs in LMICs and SA. An in-depth investigation should be conducted to determine barriers and facilitators of access to comprehensive maternity protection in order for all women to be able to access the maternity benefits that they have a right to claim.

**Conflict of interest:** None

**Keywords:** Comprehensive maternity protection; non-standard employees (NSEs); policy; low and middle income countries (LMIC); breastfeeding.

## 494 Measuring rural food environments for local action in Australia: How, what and why?

Dr Penelope Love<sup>1</sup>, Dr Jillian Whelan<sup>2</sup>, Professor Colin Bell<sup>3</sup>, Ms Jane McCracken<sup>4</sup>

<sup>1</sup>Deakin University, Institute For Physical Activity And Nutrition, Geelong, Australia, <sup>2</sup>Deakin University, Global Obesity Centre, Geelong, Australia, <sup>3</sup>Deakin University, School of Health and Social Development, Melbourne, Australia, <sup>4</sup>Northern Mallee Community Partnership, Mildura, Australia

**Biography:** Dr Love's career as a community and public health nutritionist spans two decades, and two countries. An early interest into the impacts gained through a population-wide approach of environmental and policy changes led to her PhD research developing country-specific food-based dietary guidelines for South Africans. Her career has included a focus on nutrition in the early years, Indigenous nutrition, healthy lifestyles, and food security. Dr Love re-joined academia in 2013 delivering a national knowledge translation and exchange platform to build capacity and a community of practice to support obesity prevention efforts across Australia. Within IPAN (2016-), Dr Love's research investigates elements of intervention implementation and sustainability for the early prevention of childhood obesity.

**Introduction:** In rural and disadvantaged communities, it is harder to access affordable and nutritious food, affecting both food insecurity and the health of rural residents. The perception that healthy foods are expensive also contributes to poor dietary choices. Providing an accessible, available, affordable healthy food supply is an equitable way to improve the nutritional quality of the diet for a community. However, the availability of local food supply data for small rural towns are rarely available to inform relevant local actions.

**Methods:** This study included: 1) a systematic review to examine the applicability of rural food environment measurement tools for rural Australia; and 2) a food environment audit of a rural Australian community (approx. 7000 km<sup>2</sup>; n=7000; 10 towns) using tools identified as most appropriate, namely, Nutrition Environment Measurement (NEMS-S and NEMS-R) and Healthy Diets ASAP tools.

**Results:** A census audit was conducted using ground truthing. All retail food outlets were surveyed (2 service stations; 11 food service outlets; 37 food stores). The four most populous towns had supermarkets; remaining towns had one general store each. Seven towns had café/take-away outlets, and all towns had at least one hotel/pub. The mean NEMS-S score was 21/54 points (39%) and mean NEMS-R score was 3/23 points (13%); indicative of limited healthier options at relatively higher prices. For all towns the current unhealthy diet was more expensive than the recommended healthy diet, with 59.5% of the current food budget spent on discretionary items. Affordability of the healthy diet accounted for 30–32% of disposable income.

**Conclusion:** It was difficult to buy healthy food beyond the main supermarkets. Residents demonstrated strong loyalty to local food outlets, providing opportunities for local action within existing infrastructure. While purchasing a healthy diet is less expensive than current dietary patterns, affordability is a challenge for rural communities.

**Conflict of interest:** None

**Keywords:** rural; regional; food environments; measurement tools; food security

## 521 Measuring the proximity and density of fast food outlets to schools in Johannesburg using Geographic Information Systems (GIS)

Dr Bianca van der Westhuizen<sup>1</sup>, Dr Hema Kesa<sup>2</sup>, Mr Carel Greyling<sup>1</sup>

<sup>1</sup>University Of South Africa (Unisa), Johannesburg, South Africa, <sup>2</sup>Univeristy of Johannesburg, Johannesburg, South Africa

**Biography:** Bianca is a senior Lecturer in Nutrition at the Department of Life and consumer sciences, Unisa. She completed her Ph.D. in Nutrition at the Centre of Excellence for Nutrition (CEN), North West University. Currently she is conducting research in public health nutrition focusing on the obesogenic environment of South Africa and how that affects the non-communicable disease profile, and specifically obesity, of South Africa. She is exploring geographical information systems as a tool to map out the food environment. Other research interest includes knowledge translation and how to bridge the gap between research and decision makers in terms of public health nutrition related problems.

**Introduction:** The prevalence of obesity is on a steady increase, both globally and in South Africa. The retail food environment (RFE) is considered a driver for obesity because of the possibility to transform environments from obesogenic to leptogenic. The aim of the research was to measure the density and proximity of specifically fast food outlets (FFO) to schools within Johannesburg, South Africa.

**Methods:** Geo-coding methods was used to generate FFO within Johannesburg. The top 20 fast food franchises in South Africa (according to the number of franchise) were mapped. Data with regards to the schools were obtained from the Department of Basic education. Kernell-density analysis were conducted to establish the density of FFO in Johannesburg by means of heat maps. Proximity metrics analysis were further conducted to determine the proximity of an FFO to a school. The analyses were done by means of ArcGIS pro<sup>®</sup> program. Visual analyses were also done by observing the heat-maps (Kernell-density analysis) of FFO.

**Results:** According to visual heat map analyses, a higher density of FFO were observed in lower-income regions within Johannesburg. With regards to FFO's proximities to schools, 45% of schools were within a 2km radius of a FFO and 35% within a 1km radius of a FFO. Once again, the visual heat map analyses indicated that most of the schools, with close proximity to the FFO, were located in low-income regions.

**Conclusion:** GIS is a resourceful tool for visualizing and analyzing the food environment. This research could lead to greater understandings of the links between the food environment and obesity, and improved translation of research evidence into practice, especially in the lower-income regions. Policy makers needs to address the structural drivers of obesogenic environments. This research therefore contributes towards this goal.

**Conflict of interest:** None

**Keywords:** Food environment; obesity; South Africa; geographic information systems; fast food outlets

## 720 Mobile health and narrative entertainment-education to promote exclusive breastfeeding in Western Cape, South Africa

Ms Nophiwe Job<sup>1</sup>, Mrs Liesel Engelbrecht<sup>2</sup>, Ms Kira-Leigh Kuhnert<sup>1</sup>

<sup>1</sup>Digital Medic, Stanford University, Cape Town, South Africa, <sup>2</sup>Somerset Hospital, Cape Town, South Africa

**Biography:** Nophiwe Job is the Digital MEdIC Study Research Analyst. She is a Nutritionist by profession, having obtained her Masters degree in Human Nutrition from the University of KwaZulu-Natal and currently registered as a PhD candidate in Human Nutrition with the University of Cape Town. She previously worked as a Nutritionist overseeing the implementation of the Integrated Nutrition Programme (INP) by the Department of Health in the rural sub-district of Umvoti in the KwaZulu-Natal province, South Africa. Before joining Digital MEdIC, she was a PhD Research trainee at the Human Sciences Research Council of South Africa in their Population Health, Health Systems and Innovation (PHHSI) unit.

**Introduction:** Mobile-health and narrative entertainment-education (EE) are recognized strategies for prosocial behavior topics including health. Story-based EE empowers audiences to reaffirm and recontextualize the topics to reflect their own realities.

**Objectives:** To understand the experiences of breastfeeding counsellors and dietetics interns using digital breastfeeding content (videos) on tablet devices and whether the intervention was well-adopted and integrated into their workload and routine in the short-term.

**Methods:** Qualitative study using focus group discussions conducted among a conveniently selected sample of breastfeeding counsellors (N=6) and 4th year dietetics students (N=9) working in breastfeeding promotion across 10 primary health care facilities in the Southern/Western District of the Western Cape. We provided tablets, preloaded with 14 infant and young child feeding videos (100% breastfed course). The videos provide messages on breastfeeding benefits, challenges and best practices in a story-based format that is available in Afrikaans, isiXhosa and English. We encouraged the counsellors to use the tablet as a tool to assist them in their contact with mothers and caregivers.

**Results:** The groups' overall experience of the intervention was positive. The video content was used regularly in counselling sessions and actively watched the with the caregivers. Showing the videos diffused the initial apprehension and awkwardness from clients and encouraged discussions. They were found to bridge the language barrier between client and counsellor and reported to be relatable, positive and understandable particularly when watched in native languages. A bigger screen (e.g. TV) with higher volume was more desirable for engaging with big groups as use of tablet was mainly among small groups (max 12 participants) and 1:1 sessions. Deterring factors included the initial fear of using technology and the need to ensure that devices were fully charged daily. Overall, EE seemed well adopted and integrated in to the counsellors' work routine in the short term.

**Conflict of interest:** None

**Keywords:** exclusive breastfeeding; entertainment-education; storytelling; mobile-health

## 72 New Zealand's food system is unsustainable: A survey of the divergent attitudes of agriculture, environment, and health sector professionals towards eating guidelines

Ms Rebekah Jones<sup>1</sup>, Associate Professor Carol Wham<sup>1,2</sup>, Dr Barbara Burlingame<sup>3,4</sup>

<sup>1</sup>Dietitians New Zealand, Auckland, New Zealand, <sup>2</sup>School of Sport, Exercise and Nutrition, Massey University, Auckland, New Zealand, <sup>3</sup>School of Health Sciences, Massey University, Wellington, New Zealand, <sup>4</sup>Frontiers Media SA, Lausanne, Switzerland

**Biography:** Rebekah Jones is a New Zealand Registered Dietitian as well as a researcher, author and advocate for sustainable diets. She is currently working as a both a Renal and medical (inpatient) dietitian at Awhina Waitemata District Health Board, Auckland, New Zealand. She is the lead author of "Sustainable Diets and Food-based Dietary Guidelines" in the book *Sustainable Diets: Linking Nutrition and Food Systems* as well as her most recent original research publication "New Zealand's Food System Is Unsustainable: A Survey of the Divergent Attitudes of Agriculture, Environment, and Health Sector Professionals Towards Eating Guidelines" in the journal *Frontiers in Nutrition*. Member of the Dietitians New Zealand (DNZ), DNZ Professional Development Committee and member and speaker of Nutrition Society of New Zealand. Rebekah also has a Bachelor of Science in Zoology from Otago University (2013).

**Background:** The inclusion of sustainability characteristics in dietary guidelines may accelerate change in achieving sustainable diets. This is the first study aimed to evaluate the agreement among sectoral professionals of including sustainability characteristics within New Zealand's (NZ) eating and activity guidelines (EAGs).

**Methods:** Agriculture, environment, and health sector professionals completed an online survey to establish agreement with sustainability characteristics and statements. Opinion and attitude questions were completed using a 5-item Likert scale. One-way ANOVA analyses were conducted to compare the level of agreement and differences in means of the sectors. Post-hoc tests were used to determine sectoral differences.

**Results:** 298 (65% female) respondents completed the survey from the agriculture (37%), environment (22%), and health (41%) sectors. Two-thirds (63%) of respondents disagreed that NZ's current food system is sustainable; health (77%) and environment (78%) respondents had greater disagreement than those from agriculture (35%;  $P = 0.00$ ). 77% of respondents agreed sustainability characteristics should be included in guidelines; health (90%) and environment (84%) respondents had greater agreement than from agriculture (58%;  $P = 0.00$ ). Five sustainability characteristics received high levels of agreement (>90%) for inclusion: dietary diversity, sustainable seafood, limit processed foods, reduced food waste, and sustainable lifestyle behaviours. Agreement for eight sustainability characteristics was highest among the health and environment sectors vs. the agricultural sector ( $P < 0.05$ ). "To consume recommended serves of dairy products" received a relatively low level of agreement from all three sectors. 61.5% of all respondents disagreed with the inclusion of "organic food produce." Negative associations were observed between agreement levels and respondents' opinions of the sustainability of NZ's current food system and familiarity with the EAGs.

**Conclusion:** Professionals from the agriculture, environment, and health sectors largely support the inclusion of sustainability characteristics in NZ's EAGs. However, multi-sectoral approach will be required to address areas of divergence.

**Conflict of interest:** None

**Keywords:** Sustainability; FBDG; NZ; agreement; sector

## 393 Nourish Dialogue Dinners: A Novel Approach of Dietitians Connecting Local Food Systems Stakeholders to Identify Improvement Opportunities

Dr Katie Brown<sup>1</sup>, Dr Diane Stadler<sup>2</sup>, Ms Janice Giddens<sup>1</sup>

<sup>1</sup>National Dairy Council, Rosemont, United States, <sup>2</sup>Oregon Health & Science University, Portland, United States

**Biography:** Katie Brown is Senior Vice President, Sustainable Nutrition at National Dairy Council. She has a passion for connecting agriculture, food, nutrition and health to elevate sustainable nutrition as relevant, meaningful and actionable. She leads scientific, regulatory and nutrition affairs, and thought leader outreach and education and serves as a subject matter expert in healthy and sustainable food systems.

Dr. Brown is a registered dietitian nutritionist and has Bachelor's and Master's degrees in Dietetics and Nutrition and a Doctorate degree in Education. Prior to joining NDC, she served as the Global Nutrition Strategy Officer for the Academy of Nutrition and Dietetics Foundation. In this role she was responsible for strategic planning, leading public education initiatives and community-based nutrition research initiatives.

Dr. Brown has been an author on numerous manuscripts published in peer-reviewed journals and has spoken at many national and international professional conferences on topics ranging from sustainable food systems, dairy nutrition, food and nutrition security and effective nutrition education.

**Introduction:** Prominent reports and experts are calling for sweeping changes to the food system, impacting agriculture, food environments and the dietary guidance given to ensure human and planetary health. For effective change, we must assimilate input from diverse stakeholders, including those who are involved in the daily operations of the local food system. Dietitians with expertise in agriculture, food and health are uniquely positioned to convene diverse stakeholders across the food system.

**Objective:** Conduct a series of dietitian-hosted dinners and guided discussions with leaders and practitioners representing diverse areas of the food system and through qualitative and quantitative analysis of the discussion notes, synthesize themes, issues and opportunities for collaboration and improvement.

**Methods:** Traditional Jeffersonian-style dinners for 8-12 participants were organized in 24 cities across the United States. Invitees included stakeholders in the supply chain (farmers, processors, distributors), those impacting food environments (retailers, schools, hospitals, food banks), and those providing dietary guidance (physicians, dietitians, fitness professionals, culinary experts). At the dinners, dietitian-hosts posed 6 questions to prompt discussion about how each participants' work contributes to improved nutrition, health outcomes or sustainable food systems; challenges faced in supporting sustainable food systems; ways their profession is evolving; and ideas for collaboration. Dinner discussion notes were quantitatively processed by a custom-built machine learning tool to identify recurring topics and distribution within different disciplines of the local food system.

**Results:** There were a total of 19 main topic areas identified along with actionable opportunities for improvement of the local food system. Innovative approaches and cross-domain collaborative projects were also identified.

**Conclusion:** The Nourish Dialogue Dinners represent a successful dietitian-led approach to convene stakeholders across the food system. Learnings from the dialogues revealed integration points and collaboration opportunities to improve local food systems. Dietitians are well-positioned for accelerating progress in promoting healthy, sustainable food systems.

**Conflict of interest:** Two authors are employees of National Dairy Council (United States)

**Keywords:** food systems, sustainable diets, agriculture

## 267 Nutrient composition and percentage contribution of boarding secondary schools meals in Nsukka to recommended nutrient intake (RNI) of adolescents

Dr Adaobi Okafor<sup>1</sup>, Miss Peace Idahosa<sup>1</sup>, Miss Kelechi Nwaogu<sup>1</sup>

<sup>1</sup>Department of Nutrition and Dietetics, University Of Nigeria, Nsukka, Nsukka, Nigeria

**Biography:** Dr. Adaobi MaryAnn Okafor is a lecturer and a researcher who is affiliated with the Department of Nutrition and Dietetics, University of Nigeria, Nsukka (UNN). She holds a Ph.D degree in Community and Public Health Nutrition (2016) and a B.Sc. degree in Nutrition and Dietetics (2005) with 11 years working experience. She is a Dietitian Nutritionist and belongs to the following professional bodies: Association of Nigerian Dietitians (AND) and Nutrition Society of Nigeria (NSN). She has attended Nutrition and Dietetics conferences and has publications in reputable journals.

**Introduction:** The quality and quantity of meals served students in boarding secondary schools in Nigeria is a thing of concern. **Objective:** To evaluate the nutrient composition of portion sizes of boarding secondary school meals in Nsukka, south-eastern Nigeria and their percentage contribution to the recommended nutrient intake (RNI) of adolescents.

**Methods:** Food samples (20g) were collected for three days from each of the five boarding secondary schools in Nsukka. These were put in air tight plastic containers and stored in a deep freezer in the Department of Nutrition and Dietetics, University of Nigeria, Nsukka. A total of 45 samples were obtained (15 breakfast; 15 lunch and 15 supper). Similar samples were homogenised and all the food samples were chemically analysed for protein, fats, carbohydrate, iron, vitamin A, zinc and vitamin C contents using standard procedures. Portion size of each dish was obtained and the percentage contributions of these meals to the RNI of adolescents were determined. Results were presented in means  $\pm$  standard deviation and percentages. Duncans' new multiple range test was used to separate and compare means.  $P < 0.05$  was considered as statistically significant.

**Results:** Portion size of the school meals contained protein (2.04 – 36.27g), calcium (130.14– 1238.89 mg), zinc (1.46 – 4.70 mg), iron (2.68– 27.67mg), vitamin A (25.40 – 141.86 RE) and vitamin C (2.59 – 29.46 mg). The portion sized meals in the schools contributed 26.26 - 40.64% protein, 36.23 – 52.52% calcium, 32.22 – 38.47% zinc and 31.14 – 100.00% iron of adolescents' daily requirements.

**Conclusion:** The school meals did not meet the daily RNI of adolescents for protein, iron, calcium and vitamin C.

**Conflict of interest:** None

**Keywords:** adolescents, school meals, portion size, recommended nutrient intake, nutrient composition

## 657 Nutrient composition, organoleptic attributes and microbial quality of corn-based breakfast cereals fortified with soya beans and bambaranut.

Mrs Florence Adeosun<sup>1</sup>, Mrs Esther Eduzor<sup>2</sup>, Mr Emmanuel Achii<sup>3</sup>

<sup>1</sup>Department Of Nutrition And Dietetics, Federal Polytechnic Bauchi, Nigeria, Bauchi, Nigeria, <sup>2</sup>MEDA Nigeria WAY, Bauchi, Nigeria, <sup>3</sup>Flourish Foods and Nutrition Services, Bauchi, Nigeria, <sup>4</sup>Solmax Technologies, Bauchi, Nigeria

**Biography:** Florence F. Adeosun holds Master degree in Nutrition and Dietetics from University of Nigeria, Nsukka Enugu State. She is a registered dietitian and a Principal lecturer in the Department of Nutrition and Dietetics, Federal Polytechnic Bauchi, Bauchi state North-East Nigeria. Her community nutrition researches focused on nutritional assessment of under-five, adolescents, pregnant women and geriatrics. More specifically, her work examines formulation, production, nutritional and biological evaluation of diets used as instant complementary foods, healthy snacks and low glycemic diets for prevention and management of diabetes. She has several academic journal articles and conference papers to her credit.

**Introduction:** Corn, specifically white corn, is the staple grain in Northern Nigeria and production of corn-based breakfast cereals fortified with legumes such as soya beans and bambara nut could serve as nutrient-densed food for adequate breakfast consumption among different age groups. This study aimed to improve the nutrients composition and overall acceptability of corn-based breakfast cereals using highly nutritious, cheap but less consumed legumes.

**Methods:** Flour blends of corn (C), soya bean (S) and bambara nut (B) were used for the formulation and processing of three samples (60C:10S:20B=CSB; 60C:20S:20B=SBC; 70C:10S:20B=BSC) of corn-based breakfast cereals which were mixed with water and roasted at 280°C with continuous stirring till dried products were obtained. The nutritive qualities and microflora were analyzed while organoleptic attributes were assessed through panelists. Data obtained were subjected to both descriptive and inferential statistics. **Results:** Sample CSB was low in fat (6.25%), carbohydrate (71.34%), calorie (386.37Kcal), moisture (3.04%) and high in fibre (5.08%). The protein (11.60%) and ash (3.37%) contents of sample SBC were the highest among the three samples. Sample BSC had the best aroma, taste and general consumer acceptability scores among the three samples. Microbiological evaluation for the breakfast cereals showed that sample BSC had the least total viable count (1.10 x 10<sup>3</sup> Cfu/ml).

**Conclusion:** In conclusion, improved nutrients, high consumer acceptability and safe quality had been observed in corn-based breakfast cereals fortified with soya beans and bambara nut to provide healthy breakfast for diverse age groups and increase the consumption of locally available but less utilized legumes

**Conflict of interest:** None

**Keywords:** breakfast, corn, soya beans, legumes, nutrients

## 649 Nutrient profiling as a tool for regulating the marketing of foods to children: guidance for choosing a model

Dr Mariaan Wicks<sup>1</sup>, Prof Edelweiss Wentzel-Viljoen<sup>1</sup>, Dr Hattie Wright<sup>2</sup>

<sup>1</sup>North-west University, South Africa, Potchefstroom, South Africa, <sup>2</sup>University of the Sunshine Coast, Queensland, Australia

**Biography:** Mariaan Wicks is a registered dietitian. She is currently working as a senior lecturer at the North-West University, South Africa. Mariaan is passionate about the role of nutrition in obesity and non-communicable disease prevention strategies. Her key interest areas include nutrient profiling and food labeling. She plays a key role in the work-integrated learning modules of the BSc dietetics degree of the North-West University.

**Introduction:** Nutrient profiling (NP) models are used to assess the healthfulness of foods with the aim of preventing disease and promoting health. Internationally, NP has proliferated specifically in the context of regulating the marketing of foods to children. Many questions regarding the ideal model for regulating the marketing of foods to children remain.

**Aim:** To critically evaluate current NP models and provide recommendations for choosing a model.

**Methods:** Six NP models, currently suggested for marketing regulations, were identified. A representative food database of 120 food items was developed to test each of the NP models. Each food item was classified according to each of the six models. Dietitians ranked the healthfulness of the same 120 foods. Lastly, the scientific evidence supporting the absolute exclusion criteria used by the NP models were evaluated.

**Results:** The percentage of foods allowed by the models ranged from 7% to 47%, whereas dietitians allowed 24% of the foods for marketing to children. The NP models and dietitians generally agreed on the foods that should not be allowed for marketing to children, but little agreement was found on the foods that should be allowed for marketing to children. The majority of pairwise comparisons between the NP models and dietitians yielded  $\kappa$  statistics >0.6, indicating substantial agreement. An almost perfect pairwise agreement was found between dietitians and the WHO Regional Office for Europe model.

**Conclusion:** Policy makers and key stakeholders planning to use a NP model for marketing regulations to children should consider the current dietary patterns and burden of malnutrition in the country. These considerations can provide guidance for deciding on the type of foods that should be allowed for marketing to children, once this has been decided a NP model can be selected and adapted with the guidance of nutrition experts.

**Conflict of interest:** None

**Keywords:** Nutrient profiling, food marketing regulations, children, obesity prevention

## 677 Nutrition research at the North-West University 1998-2018: Impact, scope and reach through evidence mapping

*Mrs Magdaleen Grundlingh<sup>1</sup>*

<sup>1</sup>North-West University, Potchefstroom, South Africa

**Biography:** Post-graduate Dietetic student interested in research on research especially for the purpose of supporting alleviation of nutrition related public health problems.

**Introduction:** Universities, and post-graduate research, contribute towards the nutrition evidence base which could potentially inform public health nutrition related policies. Barriers to evidence-utilisation by policy-makers require innovation in research data presentation, like evidence mapping. This study aims to determine the scope, evaluate the impact, and assess the reach of the North-West University's post-graduate nutrition student research between 1998-2018 in the context of the World Health Organisation (WHO) and the South African nutrition-related documents presenting the finding in interactive online evidence maps.

**Methods:** The nutrition landscape was determined by the WHO and South African government nutrition-related documents and themes were retrieved from the WHO. Student research scope was determined by matching the Nutrition and Dietetic post-graduate student publications to the themes. Reach was determined by citation analysis in South African government and scientific communities, nationally or international. Impact was determined by relative citation counts, normalised to corresponding publications in sub-field and publication year and corrected for time since publication and self-citation. Evidence mapping methodologies were adapted to present findings.

**Results:** Student publication performance often exceeded world averages. Post-graduate students disseminated 58.88% of degrees in journal article format and corresponded to WHO and South African nutrition-related documents in scope. 89.3% impacted the scientific community, and 32.2% reached world average impacts. Impact and reach on the government could not be determined due to limited citation of source documents. The resulting evidence maps and explanatory videos were presented online ([http://bit.ly/2nUDs9m\\_CEN1EM](http://bit.ly/2nUDs9m_CEN1EM)).

**Conclusion:** Despite student research potential to contribute to public health evidence, barriers to evidence-utilisation persist. Evidence mapping offers a means to overcome some barriers by visually presenting existing evidence and evidence impact to stakeholders and decision-makers. Evidence mapping methodologies can be adapted to stakeholder needs and be implemented in other applied fields.

**Conflict of interest:** None

**Keywords:** Evidence-mapping; Scientometrics; public-health-nutrition; nutrition-policies; evidence-utilisation.

## 200 Nutritional adequacy of food served and consumed compared to patient requirements and patient satisfaction with food service in three public hospitals in the Western Cape metro-pole, South Africa.

*Mrs Marieke Theron<sup>1</sup>*

<sup>1</sup>University Of Cape Town, Cape Town, South Africa

**Biography:** Marieke has been a registered dietitian since 2002, worked at UCT as a lecturer since 2013 and received a merit award for her teaching and research at UCT in 2018.

Marieke has worked in various capacities such as a private practicing dietitian, marketing of functional foods, telephonic patient counselling and Chief Dietitian at Pollsmoor correctional service facility.

She completed her MSc (med) in dietetics in 2018, where she investigated the nutritional status and associated factors of juveniles at entry to Pollsmoor correctional service facility.

Marieke specializes in large scale facility catering and management, which is a part of dietetics called 'food-service management'.

**Introduction:** Fifty-four percent of patients are at risk of malnutrition in South African hospitals. Under-nutrition in hospitalised patients leads to 50% longer length of stay (LOS), which increases costs and the use of scarce resources. Our aim was to determine: 1) the energy and nutritional quality of meals served and consumed compared to patients' needs; 2) To assess patients' satisfaction with food served to investigate food-service aspects that affect energy/protein intake for intervention planning.

**Methods:** An observational cross-sectional study was conducted in 3 public hospitals in Cape Town metro-pole: central- (945 bed), large district- (372 bed) and medium district hospital (172 bed). In-patients admitted to the medical or surgical wards, aged 18-79, on a normal hospital diet (not therapeutic diets) were recruited by convenience sampling method. Weight, height and energy/protein requirements were determined and the Acute Care Hospital Food-service Patient Satisfaction Questionnaire was administered. Food was weighed before and after consumption and nutrient software used to calculate energy, macro- and micro-nutrient intake per patient per day.

**Results:** A total of 128 patients (males=71) participated. Total protein served did not meet patient requirements in any hospital, while energy served was only sufficient for females in the large district hospital. Consumed energy and protein was significantly below requirements in all hospitals ( $p < 0.002$ ). Calcium, potassium, chloride, vitamin D and K fell below 40% of the EAR/AI in all hospitals. Food quality ( $r=0.38, p=0.039$ ) and staff/service issues ( $r=0.39, p=0.35$ ) correlated significantly with protein intake, while appetite ( $r=0.42, p=0.006$ ;  $r=0.41, p=0.008$ ) and LOS ( $r=-0.46, p=0.002$ ;  $r=-0.42, p=0.008$ ) significantly correlated with energy and protein intake respectively.

**Conclusion:** Interventions should target amount, type and quality of food served to improve energy/protein intake, while training of staff to improve service has the potential to improve nutritional intake of patients.

**Conflict of interest:** None

**Keywords:** hospital nutrition; patient satisfaction; food; South Africa; adults

## 745 Nutritional status of children attending early childhood development centres in Gauteng, North-West and Limpopo Province, South Africa

Ms Suzan Mokone<sup>1</sup>, Dr Mashudu Manafe<sup>1</sup>, Dr Lindie Ncube<sup>1</sup>

<sup>1</sup>Sefako Makgatho University of Health Sciences, Pretoria, South Africa

**Biography:** I am Suzan Mokone, lecturer at Sefako Makgatho University of Health Science, I have Masters degree in Nutrition and currently I am at the final stage of completing PhD degree. I am lecturing community nutrition, communication and supervising undergraduate and postgraduate research module. I have passion for community engagement activities as well as poverty alleviation projects. I have certificates in Fundamentals and Designing of Digital Teaching & Learning.

**Introduction:** Nutritional status of children is the useful indicator for health status and a worldwide public health issue. The preschool period is the critical stage of active development, as well as growth of physical, social and mental wellbeing of children. The purpose of the study was to determine the nutritional status of preschool children.

**Methods:** A Randomised Controlled Trial was used to assess the nutritional status of 872 children attending preschool in Soshanguve, Moretele and Makhuduthamaga areas. The variables collected were age, sex, weight, height, mid upper arm circumference. Gender and age specific BMI and WHO MUAC cut-offs point were used to determine the nutritional status.

**Results:** Study sample consisted of a total of 872 preschool children, of which 422 (48%) were males and 450 (52%) were females. The prevalence of overweight, obesity and undernutrition were 10.4%, 3.4% and 3.3% respectively. Children between 3-5 years aged groups were overweight ( $p < 0.01$ ) as compared to the younger (2 years) age group. 3.9% were at risk of malnutrition with 0.8% had moderate acute malnutrition and only 0.4% had severe acute malnutrition.

**Conclusion:** In this study, over nutrition was more prevalent as compared to undernutrition, overweight and obesity in children can be prevented. There is a need for nutritional intervention which promotes healthy lifestyle in the preschools.

**Conflict of interest:** None

**Keywords:** weight, height, body mass index.

## 316 Nutritional status of patients receiving maintenance haemodialysis in Bloemfontein, South Africa

Mrs HC (Ermi) Spies<sup>1</sup>, Prof VL Van der Berg<sup>1</sup>, Me MM Nel<sup>1</sup>

<sup>1</sup>University Of The Free State, Bloemfontein, South Africa

**Biography:** Mrs Ermi (HC) Spies studied B.Sc Dietetics at the University of the Free State (UFS) from 2000-2004 and after that completed her community service year in the Eastern Free State. She is a practicing registered dietitian since 2006. She worked in the government sector for 4 years and since then part-time in private practice. She has been involved in student training part-time at the UFS since 2008 and is subsequently appointed in 2018 as a permanent lecturer at the UFS

**Introduction:** Identifying poor nutritional status in patients on maintenance haemodialysis (MHD) may be challenging in Sub-Saharan Africa as several protein-energy-malnutrition markers need to be interpreted in combination.

**Methods:** A cross-sectional study was conducted in 2017 with 75 participants in five MHD-units in Bloemfontein to assess nutritional status, based on anthropometry (directly measured), biochemistry (most recent obtained from the patient files) and dietary intake (recorded during a structured interview as typical intake over 24hr-recall on non-dialysis days).

**Results:** Median age was 50.5 years (IQR: 18.6 years) (70.7% male). Only four participants were underweight (BMI  $< 18.5 \text{ kg/m}^2$ ), while 23.0% were overweight (BMI  $> 25.0 \text{ kg/m}^2$ ) and 33.0% obese (BMI  $> 30.0 \text{ kg/m}^2$ ); 66.2% ( $n=49$ ) had a waist to height ratio (WHtR)  $> 0.5$ , indicating central obesity. Overall, 56.0% had arm muscle areas (AMA)  $< 15$ th percentile, despite the fact that, of them, 57.0% ( $n=24$ ) had a normal BMI ( $> 18.5 \text{ kg/m}^2 - 24.9 \text{ kg/m}^2$ ) and 31.0% ( $n=13$ ) were overweight ( $> 25.0 \text{ kg/m}^2$ ). Moreover, 49.3% ( $n=37$ ) had decreased serum albumin levels ( $< 35.0 \text{ g/L}$ ); however C-reactive protein levels were not available. Serum cholesterol was only available for 15 participants, of which 53.3% ( $n=8$ ) presented with hypocholesterolemia ( $< 3.8 \text{ mmol/L}$ ). Total dietary protein (TDP) intake was low ( $< 1.2 \text{ g/kg}$ ) in 48.6% ( $n=36$ ), while 40.0% ( $n=30$ ) had inadequate intakes of high biological value (HBV) protein ( $< 50\%$  of TDP). Of the 40.0% ( $n=30$ ) that were wasted (AMA  $< 5$ th percentile), 43.3% ( $n=13$ ) had inadequate intakes of HBV protein. Inadequate intakes of HBV protein was significantly associated with lower total income per person per month (95% CI [R4 416.70; R19 000.00]), as well as lower percentage of income available for food (95% CI [7.58%; 27.0%]).

**Conclusion:** In this population receiving MHD poor nutritional status, marked by low muscle mass, was masked by a high BMI and android obesity. Inadequate dietary intakes of HBV protein was significantly linked to lack of financial resources.

**Conflict of interest:** None

**Keywords:** Maintenance haemodialysis; nutritional status; body mass index; muscle mass; dietary protein intake

## 744 Nutritional support for patients recovering from COVID-19. A consensus process with health and social care sector representatives.

Prof Mary Hickson<sup>1</sup>, Dr Abigail Tronco Hernandez<sup>1</sup>, Professor Gary Frost<sup>2</sup>, Professor Jane Murphy<sup>2</sup>, Dr Elizabeth Weekes<sup>4</sup>, Dr Anna Julian<sup>5</sup>

<sup>1</sup>University of Plymouth, Plymouth,, United Kingdom, <sup>2</sup>Bournemouth University, Bournemouth,, UK, <sup>3</sup>Imperial College London, London, UK,

<sup>4</sup>University College London Hospitals NHS Foundation Trust, London, UK,

<sup>5</sup>NHS Glasgow and Clyde, Glasgow, Scotland

**Biography:** Professor Mary Hickson's research includes sarcopenia and frailty, hospital nutritional care, nutrition in older people, and dietitians in primary care, as well as other aspects of dietetic professional practice.

Professor Hickson qualified as a dietitian in 1989 from the University of Surrey, UK. She specialised in nutritional care of elderly people, working in elderly mental health, community services and acute medical care. In 2002 she was awarded a doctorate from Imperial College London, for work exploring ways to improve nutritional care on acute elderly medicine wards.

In 2016 Mary took up a chair in dietetics at the University of Plymouth where she leads research within the Dietetics, Human Nutrition and Health research group, as well as contributing to teaching the undergraduate and post-graduate courses.

She supervises PhD and masters students studying a range of topics including: nutritional care at the acute and community interface, nutritional care in dementia, nitric oxide and health, malnutrition and food provision in hospital and dietetic care in paediatric allergies, as well as work to explore the future dietetic workforce. Her most recent work is about Covid-19 and Nutrition.

**Background:** COVID-19 infection presents with highly variable symptoms that can affect nutritional status. Therefore, diet plays a role in the treatment and recovery from COVID-19. For patients with long-COVID recovery may take months or years, which has a major impact on patients' everyday life and puts pressure on health and social care services. The aim was to map out the support available and guide decision-making in the nutrition and dietary aspects of care for adult patients recovering from COVID-19.

**Methods:** Due to lockdown restrictions we adapted Nominal Group Technique to collect data from two virtual expert panels of patients and healthcare professionals. Information for silent generation was e-mailed to participants ahead of Zoom meetings; a whiteboard functionality replaced a flip chart, and Mentimeter was used for anonymous voting and ranking of ideas. We held a total of six meetings, collected votes from each panel and thematically analysed final discussions held among both panels.

**Results:** Professionals spoke about a lack of awareness and resources to address dietary issues. Patients felt that optimal nutritional intake would be an important part of recovery, but struggled to identify reliable sources of information. Healthcare professionals were not able to provide the information they desired. Both groups recognised that support for nutritional care may need to be provided by non-professionals. There is a need to identify and train these people. Both groups stated that improvements were necessary in health services for people with long-COVID in relation to nutrition and that since COVID-19 presents with highly variable symptoms and severity, a highly flexible and adaptable resource would be needed.

**Conclusion:** We have developed a virtual knowledge hub to provide appraised and updated information mapping out nutritional support for COVID-19 recovery. This demonstrates a strategic approach to address the current crisis and future problems from a nutritional perspective.

**Conflict of interest:** The General Education Trust of the British Dietetic Association provided a grant to support this project.

**Keywords:** COVID-19; nutrition; diet; long-Covid

## 636 Omega-3 fatty acid and iron supplementation alone, but not in combination, lower inflammation and anaemia of infection in Tuberculosis

Dr Arista Nienaber<sup>1</sup>, Dr Jeannine Baumgartner<sup>1,2</sup>, Dr Robin Dolman<sup>1</sup>, Dr Mumin Ozturk<sup>3,4</sup>, Dr Lizelle Zandberg<sup>1</sup>, Mr Frank Hayford<sup>1,5</sup>, Prof Renee Blaauw<sup>6</sup>, Prof Frank Brombacher<sup>3,4</sup>, Prof Suraj Parihar<sup>3</sup>, Prof Cornelius Marius Smuts<sup>1</sup>, Prof Linda Malan<sup>1</sup>

<sup>1</sup>Centre of Excellence for Nutrition, North-west University, Potchefstroom, South Africa, <sup>2</sup>ETH, Zurich, Switzerland, <sup>3</sup>University of Cape Town, Cape Town, South Africa, <sup>4</sup>International Centre for Genetic Engineering and Biotechnology (ICGEB), Cape Town, South Africa, <sup>5</sup>University of Ghana, Accra, Ghana, <sup>6</sup>Stellenbosch University, Stellenbosch, South Africa

**Biography:** Arista Nienaber is a registered dietitian and senior lecturer at the Centre of Excellence for Nutrition of the North-West University, South Africa. She has a special interest in therapeutic nutrition, specifically, immunonutrition and sports nutrition. Her research focuses on nutrition and inflammation or immune function. Her PhD investigated the immune-modulatory effects of omega-3 polyunsaturated fatty acids and iron in tuberculosis.

Excessive non-resolving inflammation is characteristic of tuberculosis (TB), leading to lung tissue destruction. Anaemia is a common complication of TB, caused mainly by inflammation that impairs iron absorption and utilization, and is linked to poor clinical outcomes. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) provide inflammation-resolving properties, whereas iron supplementation in TB may have limited efficacy and enhance bacterial growth. We aimed to investigate the effects of iron and EPA/DHA supplementation, alone and in combination, on inflammation, anaemia, iron status markers, and clinical outcomes in Mycobacterium tuberculosis (Mtb)-infected C3HeB/FeJ mice. Using a 2x2 design, mice were randomly allocated to the AIN-93 purified diet without (control) or with supplemental iron (Fe) or EPA/DHA, or Fe+EPA/DHA, 1 week post-infection for 3 weeks. Mice supplemented with iron or EPA/DHA alone had lower sTfR (both P=0.045), ferritin (P=0.040 and P=0.06), and hepcidin (P=0.070 and P=0.047) than controls, but these lowering effects were attenuated in Fe+EPA/DHA mice. EPA/DHA supplementation promoted an inflammation-resolving lung lipid mediator profile and significantly lowered plasma IL-1 $\beta$  and TNF- $\alpha$ , lung IL-1 $\alpha$  and IFN- $\gamma$ . Iron supplementation significantly lowered lung IL-1 $\alpha$  and IL-1 $\beta$ , plasma IL-1 $\beta$ , TNF- $\alpha$ , and IL-6. We observed antagonistic Fe+EPA/DHA interactions for lung IL-1 $\alpha$  (P=0.001), IL-1 $\beta$  (P=0.003), and IFN- $\gamma$  (P=0.016) as the lowering effects of iron and EPA/DHA alone were attenuated in the Fe+EPA/DHA group. There were Fe+EPA/DHA interactions to attenuate the effect of iron for higher lung immune cell counts. Furthermore, mice supplemented with EPA/DHA alone had significantly lower bacterial loads than controls, but this effect was attenuated in Fe+EPA/DHA mice, whilst iron supplementation resulted in lower body weight gain (P<0.001). Therefore, EPA/DHA and iron supplementation individually, lowered systemic and lung inflammation and mitigated anaemia of infection, but not when combined. EPA/DHA also enhanced bactericidal effects and could support inflammation resolution and anaemia management in TB.

**Conflict of interest:** None

**Keywords:** inflammation; iron; omega-3 fatty acids, tuberculosis

## 531 Opinions of mothers attending a certain health center on facilitators to exclusively breastfeed for the first six months

Mrs Nyabana Martha Maponya<sup>1</sup>, Prof Sogo France Matlala<sup>1</sup>

<sup>1</sup>University Of Limpopo, Tzaneen, South Africa

**Biography:** Mrs Maponya is a Professional nurse and an Operations Manager of a community health center in Limpopo province of South Africa. She holds a Postgraduate Diploma in Public Health and has submitted a mini-dissertation for a Master of Public Health (MPH) degree

**Introduction:** Starting breastfeeding during the first hour after birth and continuing to breastfeed exclusively for the first six months improves nutrition and unlock the potentials of infants and young children. Exclusive breastfeeding is a nutrition indicator on the District Health Information System and is checked monthly to assess exclusive breastfeeding. At this specific health center, health education about benefits of exclusive breastfeeding is given to mothers during antenatal and postnatal care but exclusive breastfeeding remains low. The study explored mothers' opinions of reasons for successes and failures to breastfeed exclusively for six months.

**Methods:** This qualitative study took place in Greater Tzaneen sub-district of Limpopo Province in South Africa. Semi-structured interviews were conducted in the local languages. Eight conveniently sampled mothers participated due to saturation of data. Interviews were audio recorded, transcribed verbatim and analysed thematically.

**Results:** Three themes and nine sub-themes emerged. They included knowledge on exclusive breastfeeding, supportive environment and socio-cultural influences. Some mothers showed knowledge, could relate the health education they received and were able to give recommendation to support exclusive breastfeeding. They mentioned support from family, friends and health services as enablers for exclusive breastfeeding while some sociocultural believes encouraged mixed feeding.

**Conclusion:** Monitoring of exclusive breastfeeding is important. Appropriate health education to mothers and sociocultural support facilitate exclusive breastfeeding which improves nutrition and unlock the potentials of infants and young children.

**Conflict of interest:** None

**Keywords:** Exclusive breastfeeding; social support; nutrition

## 750 Owning our influence: Global data on dietitians and consumer trust

Ms Sue Cloran<sup>2</sup>, Ms Erin Kappelhof<sup>1</sup>

<sup>1</sup>Eat Well Global, Duivedrecht, Netherlands, <sup>2</sup>Eat Well Global, Ireland

**Biography:** Erin Boyd Kappelhof is a registered dietitian nutritionist and Co-CEO of Eat Well Global, a specialized consulting company on a mission to empower global change agents in food and nutrition. Her passion is working in the dynamic intersection between industry, communications and global health to drive impact. Before joining Eat Well Global in 2013, Erin worked for Unilever, Ahold and Weber Shandwick Worldwide. Prior to that, she served as a research assistant for Shape Up Somerville, a childhood obesity prevention intervention initiative through Tufts University and she worked in the department of Nutrition at the Harvard School of Public Health. Erin is an alum and board member of the European Nutrition Leadership Platform, and an active member of the Academy of Nutrition and Dietetics and the International Affiliate of the Academy of Nutrition and Dietetics, where she has held several leadership positions, including Strategic Communications Chair and President. Erin studied communications at Boston College, and earned master's degrees in nutrition communication and in public health from Tufts University. Erin lives in Amsterdam with husband and three young boys.

**Introduction:** As experts in the translation of nutrition science into consumer language, dietitians are all too familiar with the many sources of information their patients and clients turn to. But how trusted are credentialed experts and how much influence do they have on consumer decision making? Eat Well Global set out to determine just that in the recent survey: The Consumer Voice: Global Insights on Food, Nutrition, Trust and Influence.

**Methods:** In late 2020, more than 8,000 consumers in 13 countries were surveyed to better understand the relationship between consumers in various countries and their access to information about nutrition and healthy eating, including which sources they find to be the most credible and influential. The survey also studied current perceptions of foods, specifically as they relate to sustainability.

**Results:** Although there is no such thing as a 'global consumer' the survey findings illustrated that nutrition experts, such as dietitians and nutritionists, play a critical role for consumers around the world. They are the most trusted and frequently consulted health professionals for information on nutrition and healthy eating. Dietitians and nutritionists have the highest impact on food purchasing decisions, with 77% of participants declaring that their advice impacts which foods to buy. General practitioners and medical specialists were also rated as highly credible, with their level of influence varying according to health or nutrition topics.

**Conclusion:** With a rise in interest and concern with nutrition and health, especially resulting from the global COVID-19 pandemic, consumers are increasingly seeking trusted sources of information. This evidence can be used by the public and private sectors to illustrate the importance of investing in dietitians to drive positive consumer behavior in health and nutrition.

**Conflict of interest:** Through her work at Eat Well Global, Erin supports a broad range of clients throughout the private and public sectors.

**Keywords:** food, nutrition, trust, influence, impact

## 547 Perspectives of employees and employers regarding breastfeeding support in the workplace

*Dr Lynette Daniels<sup>1</sup>, Prof Xikombiso Mbhenyane<sup>1</sup>, Prof Lisanne Du Plessis<sup>1</sup>*

<sup>1</sup>Stellenbosch University, Cape Town, South Africa

**Biography:** I am Lynette Daniels, a lecturer in public health nutrition from Stellenbosch University, Faculty of Medicine and Health Sciences, Department of Global Health, in the Division of Human Nutrition. My research interest is in the field of infant and young child nutrition with a specific focus on breastfeeding support and promotion. I am an enrolled PhD student. My PhD study topic is: Support for exclusive breastfeeding in the workplace: Development of a practice model for designated workplaces in the Breede Valley Sub-district, Western Cape Province, South Africa.

**Introduction:** Globally, mothers have identified employment as one of the leading barriers to exclusive and continued breastfeeding. With more women entering the workforce, there is a need for extended support to mothers in the workplace to enable them to sustain their breastfeeding practices. The study aimed to explore the experiences and perceptions of employees' and employers' regarding breastfeeding support in designated workplaces (employs more than 50 employees) in the Breede Valley sub-district, Western Cape Province, South Africa.

**Methods:** Data was collected at nine purposively selected designated workplaces, three from retail, public and manufacturer sector. Eight in-depth interviews with human resource managers and/or company managers, seven focus group discussions (FGDs) with employees and three managers FGDs were conducted.

**Results:** Employees' viewed their workplaces as unsupportive in terms of providing breastfeeding time and space and negative attitudes from co-workers and supervisors. The provision of the legislated breastfeeding break time was mostly absent. Challenges raised by managers related to the lack of space and infrastructure and finance to create the space and resources. The majority of managers voiced that they value a supportive workplace environment. This was in conflict with employees mentioning challenges relating to the employer not caring and being unsympathetic. The reasons for the lack of support was the fact that workplaces focus on work, time, targets and production and that breastfeeding is not a priority.

**Conclusions:** There is an urgent need to create advocacy regarding the benefits of workplace breastfeeding support and women's breastfeeding rights.

**Conflict of interest:** None

**Keywords:** breastfeeding; workplace; support; perspectives

## 552 Pine bark (*Pinus spp.*) extract for treating chronic disorders: a Cochrane Systematic Review

*Mrs Nina Robertson<sup>1</sup>, Ms Anel Schoonees<sup>1</sup>, Mrs Janicke Visser<sup>1</sup>, Dr Janicke Visser<sup>1</sup>*

<sup>1</sup>Stellenbosch University, Cape Town, South Africa

**Biography:** Graduated with BSc Dietetics from Stellenbosch University in 2014 and MSc in Therapeutic Nutrition in 2020. Worked in Port Elizabeth as a dietitian from 2015 to 2017. Locumed for Tygerberg hospital in 2018 and worked as a lecturing assistant for Nelson Mandela University in 2019. In 2020 I worked as a junior researcher for the Centre for Evidence Based Health Care at Stellenbosch University.

**Introduction:** Pine bark extract, an antioxidant containing proanthocyanidin, is marketed as a supplement that can help treat a wide range of chronic conditions.

**Objectives:** To assess the efficacy and safety of pine bark extract supplements that are intended for the treatment of chronic disorders.

**Methods:** This is an update and expansion of a previously published Cochrane review (2012). Trials assessing pine bark extract supplements in adults or children for any chronic disorder were included. We searched CENTRAL, MEDLINE and EMBASE (until 30 September 2019) as well as three trial registries. In addition, we contacted the manufacturers of pine bark extract supplements and hand-searched reference lists of included studies.

**Results:** We included 27 trials of which 22 had parallel-group and five had cross-over designs. A total of 1641 participants received pine bark extract supplements across ten different chronic disorders. These included asthma (two studies; N=86), attention deficit hyperactivity disorder (one study; N=61), cardiovascular disease and risk factors (seven studies; N=338), chronic venous insufficiency (two studies; N=60), diabetes mellitus (six studies; N=339), erectile dysfunction (three studies; N=277), female sexual dysfunction (one study; N=83), osteoarthritis (three studies; N=293), osteopenia (one study; N=44) and traumatic brain injury (one study; N=60). Two studies were conducted exclusively in children; the others recruited adults. Across included studies, the intervention lasted between four weeks and six months. Placebo was the control in 24 studies. Overall risk of bias was low for four, high for one and unclear for 22 studies. Results varied, ranging across conditions from favouring pine bark extract supplements, to no effect, to favouring placebo. Hospitalisation of one participant occurred in two studies and seven studies reported non-serious adverse events.

**Conclusion:** Conclusions regarding the efficacy or safety of pine bark extract supplements for chronic disorders are constrained by methodological and practical limitations of included trials.

**Conflict of interest:** None

**Keywords:** Pine bark extract supplements; antioxidant; chronic disorders

## 716 Ponderal Index, maternal smoking, and adult body composition

Dr Jessica Garay<sup>1</sup>, Dr Tiago Barreira<sup>1</sup>, Dr Qiu Wang<sup>1</sup>, Dr Tom Brutsaert<sup>1</sup>

<sup>1</sup>Syracuse University, Syracuse, United States

**Biography:** Jessica Garay Redmond is a Registered Dietitian Nutritionist and Assistant Professor of Nutrition and Food Studies at Syracuse University, where she teaches courses in Sports Nutrition, Dietary Supplements, and Research Methods. She earned a Bachelor's Degree in Nutritional Sciences from Cornell University, a Master's Degree in Exercise Science from George Washington University, and a Ph.D. in Science Education from Syracuse University. Her research interests center on the short- and long-term effects of adolescent and adult health behaviors, with a focus on dietary patterns (including dietary supplement use) and physical activity. Currently, Jessica is conducting research studies among female athletes and pregnant women. Outside of academia, Jessica has worked in the nutrition field in community, clinic, and fitness settings. Jessica is also involved with the New York State Academy of Nutrition and Dietetics, currently serving as the Public Policy Coordinator, a role that includes work with both state and federal advocacy efforts.

**Introduction:** Stress exposure during pregnancy can lead to a fetal response causing intra-uterine growth restriction and a lifelong preference for fat over lean body mass. Epidemiologic studies show that older adults who experienced fetal programming (FP) have higher body fat than healthy peers. Past research also suggests the role of maternal smoking on obesity risk in children and adolescents. The current study examined whether maternal smoking influences the relationship between birth size and adult body composition.

**Methods:** Participants (N = 101, 78% female) were singletons born to term (37 – 42 weeks gestation) and currently between the ages of 18 – 40 years. Self-reported birth weight (BW) and birth length (BL) were used to determine Ponderal Index (PI):  $[(BW (g) * 100) / BL (cm)^3]$ . Maternal smoking status and gestational age were also self-reported (N = 99). Body composition was determined using bioelectrical impedance analysis (Tanita Corp.). Linear regression analysis was used to evaluate the relationship between PI and body fat, accounting for sex, gestational age, and maternal smoking.

**Results:** Average PI was  $2.6 \pm 0.5$  g/cm<sup>3</sup>, and maternal smoking was reported by 6% of participants. PI was a significant predictor of body fat ( $p = 0.033$ ), accounting for sex and gestational age. In the fully adjusted model, PI remained significantly inversely associated with body fat ( $p = 0.047$ ). In addition, body fat was significantly higher among participants who reported maternal smoking ( $p = 0.009$ ). Among female participants (N = 77), PI ( $p = 0.015$ ) and maternal smoking ( $p < 0.001$ ) combined to explain 23% of the variation in body fat.

**Conclusion:** In the current study, adult body fat was inversely associated with birth size (represented by PI). Maternal smoking was also a significant predictor, particularly among females. These results are in line with prior studies. Future research should consider the mechanism underlying these relationships.

**Conflict of interest:** None

**Keywords:** Fetal programming; birth weight; body fat

## 251 Predictive validity of digitised screening algorithms to detect weight-for-age (WFA) growth faltering in under-five children as a risk factor for severe acute malnutrition (SAM)

Mrs Sanja Nel<sup>1</sup>, Prof Friedeburg AM Wenhold<sup>1</sup>, Prof Ute D Feucht<sup>2</sup>, Prof Andre L Nel<sup>3</sup>, Prof Piet J Becker<sup>4</sup>

<sup>1</sup>University Of Pretoria Department of Human Nutrition, Pretoria, South Africa,

<sup>2</sup>University Of Pretoria Department of Paediatrics, Pretoria, South Africa,

<sup>3</sup>University of Johannesburg Faculty of Engineering, Johannesburg, South Africa,

<sup>4</sup>University Of Pretoria Faculty of Health Sciences Research Office, Pretoria, South Africa

**Biography:** Sanja Nel is a registered dietitian and South African Certified Lactation Consultant. She obtained her Bachelors in Dietetics from the University of Pretoria in 2009, and after completing her community service, spent five years working in Evander District Hospital in Mpumalanga. During this time, she developed a passion for paediatric nutrition, and completed an additional qualification in lactation management. She completed her master's degree at the University of Pretoria in 2019, with research focusing on the digitisation of routine growth monitoring as a means to improve growth promotion and prevent childhood malnutrition.

**Introduction:** South African children remain at unacceptably high risk of SAM. Growth faltering, often a forerunner to SAM, is currently inadequately identified during routine growth monitoring. Digitisation of growth monitoring could potentially improve detection of growth faltering, allowing for earlier intervention and prevention of SAM.

**Aim:** To determine the predictive validity of WFA growth assessment by an artificial neural network (ANN) as a predictor of SAM risk in under-five children, compared to other indicators of SAM risk.

**Methods:** Children (<5 years) with SAM (n=63) and without SAM (n=122) were recruited at health facilities in Tshwane District, Gauteng Province, South Africa, excluding children born preterm. Three indicators of SAM risk were assessed, using WFA growth prior to SAM diagnosis or at last clinic visit: (1) The ANN classified WFA growth pattern as "at risk" or "not at risk" of SAM, (2) a logistic regression-derived predictive equation (cross-validated using the study sample), and (3) changes in weight (stagnation/decrease) or z-scores (decreases of >0, >0.33, >0.50 and >0.67 z-scores). Diagnostic accuracy testing was performed for all risk indicators, with SAM risk classification as the exposure and the diagnosis of SAM as the outcome.

**Results:** The ANN performed best, with sensitivity 73.0% (95%CI: 60.3;83.4%), specificity 86.1% (95%CI: 78.6;91.7%) and ROC area 0.795 (95%CI: 0.732;0.859). The predictive equation had comparable sensitivity (73.0%, 95%CI: 60.3;83.4%), but lower specificity (50.8%, 95%CI: 41.6;60.0%) and ROC area (0.619, 95%CI: 0.548;0.690). Indicators based on changes in weight or z-scores produced ROC areas ranging from 0.634 to 0.677.

**Conclusion:** The ANN had the best predictive validity, but requires further refinement to improve its performance, in addition to needing validation in preterm infants. Careful consideration of potential benefits and costs to the healthcare system should precede inclusion of the ANN in digital growth monitoring.

**Conflict of interest:** None

**Keywords:** Severe acute malnutrition (SAM); growth faltering; child growth; e-health; machine learning

## 631 Prevalence of hyperinsulinemia and insulin resistance: A cross-sectional study of adolescents and young adults in Mumbai, India.

Prof Jagmeet Madan<sup>1</sup>, Ms Panchali Moitra<sup>1</sup>, Ms Sharvari Desai<sup>1</sup>, Ms Sheryl Salis<sup>2</sup>, Dr. Rekha Battalwar<sup>1</sup>, Dr. Saumik Kalita<sup>3</sup>, Dr Ajay Phatak<sup>4</sup>, Dr. Shobha Udipi<sup>5</sup>, Dr. Rama Vaidya<sup>5</sup>, Dr Ashok Vaidya<sup>5</sup>

<sup>1</sup>Sir Vithaldas Thackersey College Of Home Science (autonomous) Sndt Women's University, Mumbai. National President Ida., Mumbai, India, <sup>2</sup>NurtureHealthSolutions, Mumbai, India, <sup>3</sup>FamPhy., New Delhi, India, <sup>4</sup>CharutarArogyaMandal, Surat, India, <sup>5</sup>KasturbaHealthSociety, Medical Research Centre, Mumbai, India

**Biography:** Dr Jagmeet Madan is an eminent Nutritionist, National President, Indian Dietetic Association (2019-2021), Principal and Professor- Department of Food Nutrition and Dietetics at Sir Vithaldas Thackersey College of Home Science (Autonomous), SNDT Women's University, Mumbai. She is a gold medalist and recipient of 'Young Scientist Award' and 'Dr Ramanathan Award' by the Nutrition Society of India, National Institute of Nutrition, Hyderabad. She is a recipient of the prestigious International Research Grant award - PNPG Grant (Pediatric Nutrition Practice Group - 2017) from American Academy of Nutrition and Dietetics, USA. She was awarded "Founder's Best Teacher Award 2017" by the SNDT Women's University, Mumbai.

She is a lead Principal Investigator of the International Research Project on Prediabetes in Adolescents and Young Adults in India and Food Based Intervention approved by USDA (2017-2018); Urban Nutrition Gap Study in Mumbai (2015 - 2018); Project MARG (2008 -2010) A Multi-centric Pan India Project on School Going Children (Government and Private Schools) in collaboration with Diabetes Foundation of India and World Diabetes Foundation; TANITA HEALTH LINK Project with Ministry of Japan (2014-2015).

She has more than 50 publications in International and National Peer reviewed Journals and Books.

dr.jagmeetmadan@gmail.com; idanationalpresident@gmail.com; svt@sndt.ac.in;

**Background:** Asian Indians in general have greater insulin resistance than Caucasians hence, are at greater risk of Diabetes. It is imperative that high risk population is identified at an earlier age.

**Objectives:** The present community -based, cross-sectional study assessed the prevalence of hyperinsulinemia and insulin resistance in urban adolescents and young adults.

**Methodology:** The study population comprised 1313 young adults, aged 16-25 years recruited from eleven study sites. Fasting glucose and insulin, post glucose challenged blood glucose and insulin were measured. Insulin resistance (IR) was calculated by HOMA-IR and FG:FI ratio. Sociodemographic characteristics, anthropometry, clinical profile and family history were recorded.

**Results:** Among 1313 participants, 855(65.1%) were normoglycemic, 3(0.3%) had diabetes and 55(4.2%) had prediabetes as per ADA criteria of either impaired fasting glucose (IFG) or impaired glucose tolerance (IGT) or both. Among the remaining, 98(7.5%) had elevated fasting insulin ( $\geq 15$  mIU/ml), 373(28.45) had higher than normal post-glucose insulin ( $\geq 80$  mIU/ml) and 60(4.6%) had FG:FI ratio  $< 4.5$ . A higher percentage of participants with prediabetes (58.1%) and with insulin resistance (44.8%) had BMI  $> 23$  kg/m<sup>2</sup>, compared to 29.9% of the normoglycemic participants. Twenty five percent with prediabetes and 21.2 % with insulin resistance had waist circumference above the sex specific cut-offs compared to 9% having normoglycemia. Further, 29.1% of prediabetics had waist to height ratio  $> 0.5$  compared to 16.2% of those with normoglycemia. 16.4% of participants with prediabetes, 11% insulin resistant had FG:FI ratio  $< 4.5$ , compared to 0.7% normoglycemic participants.

**Conclusions:** High prevalence of insulin resistance and hyperinsulinemia among adolescents and young adults highlights the need to intervene at an early age to prevent diabetes.

**Conflict of interest:** None

**Keywords:** central adiposity; India; insulin resistance; young adults; pre diabetes; diabetes

## 697 Prevalence of malnutrition and food insecurity in women and children in rural Guatemala. A comparative study of two different communities.

Mrs Jen Brewer<sup>3,7</sup>, Dr. Elizabeth Yakes Jimenez<sup>1,2</sup>, Gabriela Proano<sup>2</sup>, Stephen Alajajian<sup>2,3</sup>, Andrea Guzman<sup>3</sup>, Dr. Peter Rohloff<sup>4,5,6</sup>

<sup>1</sup>University of New Mexico, Albuquerque, USA, <sup>2</sup>Academy of Nutrition and Dietetics, Chicago, USA, <sup>3</sup>Wuqu' Kawoq (Maya Health Alliance), Guatemala, <sup>4</sup>Harvard Medical School, Boston, USA, <sup>5</sup>Boston Children's Hospital, Boston, USA, <sup>6</sup>Brigham and Women's Hospital, Boston, USA, <sup>7</sup>Global Nutrition Consultant, Independent Contractor, Rochester, USA

**Biography:** Jen Brewer received her dietetics degree in 1999 and has been working as a dietitian in various capacities ever since. She has focused her work in the community setting and got a Master's Degree with an emphasis on school and community gardens to fight malnutrition in 2015. She helps classrooms set up hydroponic gardens where they can incorporate agriculture into their everyday lessons. In 2014 Jen started working in Global Nutrition and travels to Guatemala often, working with various organization to fight malnutrition and mental stunting in children. Jen is currently working on research projects in conjunction with the Academy of Nutrition and Dietetics, Maya Health Alliance, and Cultiva International to study the effects of family gardens in diversifying the diets in women and children in rural Guatemalan communities. She is currently the co-chair and founder of the Global Member Interest Group of the Academy. Jen lives in Rochester, MN with her husband, 7 kids, dog and cat.

**Introduction:** Rural Guatemala has a high prevalence of childhood stunting. A better understanding of the food security and nutrition situation is needed to more adequately address this problem. This study aimed to describe the food security and dietary characteristics of households with stunted Mayan children in two socioeconomically distinct communities.

**Methods:** The study was conducted as part of a pre-implementation evaluation for a home gardening intervention. In communities A and B, respectively, 70 and 64 households children between 6-24 months of age with a height-for-age Z-score below -2.5 were recruited. Data was collected through paper surveys administered during home visits. Food insecurity was measured by the Food Insecurity Experience Scale (FAO). Child and maternal diet quality were assessed using the Infant and Young Child Feeding Indicators (WHO) and Minimum Dietary Diversity in Women (MDD-W) (FAO), respectively.

**Results:** The two communities differed significantly in terms of maternal education (5.9 vs. 3.1 years in communities A and B, respectively;  $p < 0.01$ ), probability of extreme poverty (28.6% vs. 48.9%;  $p < 0.019$ ), minimum child dietary diversity (54.2% vs. 75.0% met the standard) ( $p = 0.02$ ), minimum acceptable diet (48.6% vs. 68.8%;  $p = 0.037$ ) and crop species count (6.7 vs. 8.0 species;  $p = 0.037$ ). In communities A and B, respectively, 61.4% and 68.8% of women met minimum dietary diversity, and the average probability of households being moderately or severely food insecure was 49.2% in community A and 35.6% in community B.

**Conclusions:** Food insecurity is common in both communities. Many women and children met diet quality standards, suggesting the need for multi-faceted interventions for stunting that address more than diet alone. Some child diet quality indicators were worse in the more socioeconomically developed community. This discrepancy could reflect industrialized food with poor dietary quality phasing out traditional diets.

**Conflict of interest:** None

**Keywords:** food insecurity, malnutrition, indigenous, Guatemala

## 577 Prevalence of malnutrition at cancer diagnosis in Paediatric Oncology Units in South Africa

Ms Judy Schoeman<sup>1</sup>, Ms Ilde-Marie Kellerman<sup>2</sup>, Dr Karla Thomas<sup>3</sup>, Dr Barry Van Emmenes<sup>3</sup>, Dr Rema Matthew<sup>3</sup>, Dr Gita Naidu<sup>4</sup>, Dr Bianca Rowe<sup>4</sup>, Dr Jan Du Plessis<sup>5</sup>, Mrs Marienchen Herholdt<sup>6</sup>, Dr Elena J Ladass<sup>8</sup>, Prof Paul C Rogers<sup>9</sup>, Prof Mariana Kruger<sup>1</sup>

<sup>1</sup>Department of Paediatrics & Child Health, Stellenbosch University, Stellenbosch, South Africa, <sup>2</sup>Division of Human Nutrition, Faculty of Medicine and Health Sciences, Stellenbosch University, Stellenbosch, South Africa, <sup>3</sup>Division of Paediatric Haematology and Oncology, Department of Paediatrics, Frere Hospital, East London, South Africa, <sup>4</sup>Faculty of Health Sciences, Division of Paediatric Haematology and Oncology, Department of Paediatrics and Child Health, University of the Witwatersrand, Chris Hani Baragwanath Academic Hospital, Johannesburg, South Africa, <sup>5</sup>Department of Paediatrics, Faculty of Health Science, Division of Paediatric Oncology and Haematology, Universitas Academic Hospital, Bloemfontein, South Africa, <sup>6</sup>Department of Human Nutrition, Universitas Academic Hospital, Bloemfontein, South Africa, <sup>7</sup>Paediatric Oncology Unit, Robert Mangaliso Sobukwe Hospital, Kimberley, South Africa, <sup>8</sup>Division of Pediatric Hematology/Oncology/Stem Cell Transplant, Columbia University Medical Center, New York City, United States of America, <sup>9</sup>Division of Pediatric Hematology & Oncology, University of British Columbia, Vancouver, Canada

**Biography:** Judy started her Dietetic career 23 years ago at Kalafong Hospital in Pretoria and this is her 19th year as part of the Paediatric Oncology team. She is currently a Chief Dietician at the Pediatric Oncology Unit, Steve Biko Academic Hospital & University of Pretoria

She obtained part-time the BCompt (Accounting) degree at UNISA, MSc Dietetics (The effect of the nutritional status of paediatric patients with cancer on disease outcome) at the University of the Free State, a Diploma in Counselling at UNISA & is enrolled for PhD at Stellenbosch University. She's author /co-author of several oral/poster presentations at national and international congresses and peer-reviewed articles, as well as a chapter on 'Nutritional assessment & intervention' (in paediatric oncology). She is part of the SIOP-PODC nutrition working group and Regional Clinical Research Manager for Africa, IIPAN (International Initiative for Pediatrics and Nutrition) (IIPAN) that focuses on improving nutrition in paediatric oncology in developing countries.

Her hobbies are arts, crafts & reading. Love travelling, mountains, national parks & her cats!. She focuses on the nutritional care and management of paediatric cancer patients, to find ways to improve their quality of life and life expectancy. She believes that every day spent in the company of children with cancer is a privilege and each hug returned an honour.

**Introduction:** In Africa, 55%- 60% of children diagnosed with cancer are classified as malnourished based on body mass index (BMI) with prevalence increasing to 74% when mid-upper arm circumference (MUAC) is included. MUAC is more sensitive in assessment of nutritional status in children with cancer. This study aims to determine prevalence of malnutrition of children at cancer diagnosis, the sensitivity and specificity of MUAC as single screening measure of malnutrition.

**Methods:** All children diagnosed with cancer between 3 months and 15 years were measured for height/ length, weight, BMI and MUAC within 72h after diagnosis between October 2018 and September 2020 at five Paediatric Oncology Units in South Africa. Z-scores for height-for-age (H/A), weight-for-age (W/A), BMI-for-age (BMI/A) were determined with WHO AntroPlus 2007, MUAC with MUAC growth charts (<5 years WHO 2007; >5 years Mramba 2017). Two standard deviations (<-2SD) below normal was used to classify malnutrition. SPSS version 25 was used for frequencies and correlations.

**Results:** This is an interim analysis with 283 newly diagnosed children assessed at diagnosis, with M:F ratio of nearly 1:1 (51,6% (n=146) boys, 48,4% (n=137) girls). The median age was 5.1 years (range 0.3 to 15.3 years; mean 5.4 years). More than half (56.2%) were diagnosed with solid tumor and 43.8% leukaemia/ lymphoma. Malnutrition were present in 22.5% (n=62) of children with MUAC, while 12.9% (n=36) wasted ( $\leq$ -2BMI/A); 14.3% (n=40) stunted ( $\leq$ -2H/A) and 8.7% (n=19/219) underweight ( $\leq$ -2

W/A). Sensitivity of MAUC to determine malnutrition was high with WAZ (84,8%), BAZ (84.2%),HAZ (77.4%) but specificity BAZ (70.6%), WAZ (61.1%) and HAZ (22.5%).

**Conclusions:** Compared to other African countries, fewer children with cancer were malnourished at diagnosis. MUAC indicated a higher percentage, potentially due to its independence of large tumour burden, and can be useful as a single screening measure of acute malnutrition in childhood cancer at diagnosis.

**Conflict of interest:** None

**Keywords:** paediatric oncology; nutritional status; malnutrition; mid upper arm circumference

## 237 Prevalence of nutritional-related symptoms in discharged previously ventilated adult ICU patients - The pilot Symptoms and Nutrition After Critical Care (SNACC) survey.

Mrs Louise Albrich<sup>1,2</sup>, Prof Mary Hickson<sup>2</sup>

<sup>1</sup>Yeovil District Hospital, Yeovil, United Kingdom, <sup>2</sup>University of Plymouth, Plymouth, United Kingdom

**Biography:** Louise is a BSc Dietetics graduate of Stellenbosch University and currently works as an advanced dietitian in nutrition support and critical care in Somerset, England. Over the past number of years, since embarking and completing her NIHR funded masters in Clinical Research, she has pursued a keen interest in the post-ICU recovery phase. Her involvement in critical care and research networks have since offered the opportunity to participate in and facilitate collaborative projects to translate post-ICU research into practice. Today she would like to share with you the data from the 'Symptoms and Nutrition After Critical Care (SNACC)' pilot survey which she conducted with Professor Mary Hickson from the University of Plymouth.

**Introduction:** The prevalence of nutrition-related symptoms after intensive care unit (ICU) discharge is unknown. We therefore aimed to explore the prevalence of gastrointestinal, physical and psychological symptoms post ICU, and associations with length of stay (LOS) and time since discharge.

**Methods:** We invited patients discharged from 17 UK ICUs and via the patient charity ICUsteps, who had at least 2 days ventilation, to complete a survey.

**Results:** There was a 43% response rate (n=74). 69% of participants were 51-80 years old, 60% had  $\geq 7$  days ventilation, median ICU-LOS was 14 days (IQR=8-25), and hospital-LOS 33 days (IQR=19-56). Participants reported a median of 13 symptoms (IQR=10-17) at a median 86 days (IQR=43-178) post-ICU. Being 'not hungry' was the most prevalent gut symptom (62%) and was associated with longer ICU stays (>4 days) (96% versus 79%;  $p=0.047$ , Fisher's exact). 'Early satiety' was reported by 59% and was more likely with longer hospital-LOS (>14 days) (91%, versus 63%,  $p=0.018$ , Fisher's exact). Having 'lost muscle' was reported by 87% and 'weight gain but not muscle' (57%) was more likely if >6 months post ICU-discharge (33.3% versus 5%;  $p=0.013$ , Fisher's exact). Other symptoms occurring in >40% of respondents were poor appetite (50%), taste changes (49%), not enjoying eating (45%), low energy levels (81%), feeling weak (74%), feeling drowsy or sleepy (70%), weight loss (66%), shortness of breath (49%), pain (43%), low mood (57%), difficulty sleeping (54%), and anxiety (46%).

**Conclusion:** Nutrition related symptoms are wide ranging and common in this cohort of previously ventilated patients post ICU. Symptoms usually last several months, although can persist for over 6 months. LOS seems an important associated factor. Recognition that such symptoms are prevalent and potentially linked to LOS is important in order to improve patient services post ICU and provide appropriate nutritional support.

**Conflict of interest:** This MSc in Clinical Research project was funded by the NIHR as part of the HEE/NIHR Integrated Clinical Academic Pathway for non-medical healthcare professions.

**Keywords:** critical care; nutrition; oral intake; recovery; symptoms

## 364 Price incentives within university food outlets and their impact on the purchasing behaviour of young adults.

Dr Rajshri Roy<sup>1</sup>

<sup>1</sup>University Of Auckland, Auckland, New Zealand

**Biography:** Dr Rajshri Roy is a New Zealand Registered and an Australian Accredited Practising Dietitian with over 7 years' experience. She has worked in Australia, as a clinical dietitian in both the food allergy & food intolerance settings. Rajshri has completed her PhD research at the Charles Perkins Centre at the University of Sydney. Her research expertise is in the area of population nutrition and community dietetics looking at point-of-purchase, lifestyle interventions and behaviour change in young adults. Specialising in research, public health nutrition and clinical dietetics, she has been working as a lecturer in the University of Auckland for the past 3 years, teaching in the Master of Health Sciences in Nutrition and Dietetics programme, conducting research in the area of nutrition and dietetics and providing service to the university through healthy eating education. Rajshri is passionate about researching how health-related behaviours are determined by inter-related personal and environmental factors. Rajshri's proposed session will contribute to food systems research as it provides an in-depth understanding of: the nature of organisational food environments that young adults are exposed to; the contribution of the food environment to overall diets; and how and why the food environment impacts on dietary choices.

**Introduction:** The university food environments that young adults (18-35 years) are exposed to influence their purchase behaviours. A price incentive called 'Budgie Meal' allows staff/students to purchase a meal for \$6.50 from an urban university's food outlets. This study aimed to: (1) analyse the purchase determinants of and barriers to food purchasing among university young adults, (2) determine if price incentivised meals are associated with higher purchase volumes, and if so, (3) improve the nutritional content of these meals.

**Method:** A cross-sectional point-of-purchase survey (n=250) was conducted to assess the food purchase determinants and barriers of staff/students. Chi-square and two-way ANOVA were used to analyse the survey. The itemised sales of 'Budgie Meals' across three years (2017, 2018 and 2019); were collected and analysed using ANOVA. The 'Budgie Meals' were nutritionally analysed using FoodWorks 10 and the National Healthy Food and Drink Policy.

**Result:** Price was the leading determinant of food purchases among respondents (74.6%). There is a statistically significant interaction between age and whether they were staff/students on interest in 'Budgie Meals' ( $P=0.012$ ). Lack of healthy options was considered a barrier by 62.3% of respondents. Females were significantly more interested in healthier 'Budgie Meals' than males ( $P=0.002$ ). The 'Budgie Meal' is a top-selling item at each food outlet across all three years. Most of the 'Budgie Meals' fall into the 'amber' category containing moderate amounts of saturated fat, added sugar and/or sodium.

**Conclusion:** Price and health are leading determinants of food purchasing behaviours among university young adults. 'Budgie Meals' are consistently the top-selling item at each food outlet. Recommendations such as the addition of vegetables, substitution of refined carbohydrates for whole grains, and reduction in energy-dense ingredients e.g. cream to improve the nutritional quality of these top-selling, price incentivised 'Budgie Meals' are being made to the retailers.

**Conflict of interest:** None

**Keywords:** point-of-purchase; young adults; universities; food environment; purchasing behaviour

## 495 Provincial Dietary Intake Study (PDIS): Energy and macronutrient intake, as well as key food contributors, in a representative sample of 1–<10-year-old children in two economically active and urbanized provinces in South Africa.

Prof Nelia Steyn<sup>1</sup>, Prof Johanna H Nel<sup>2</sup>, Ms Linda Drummond<sup>1</sup>, Ms Sonia Malczyk<sup>1</sup>, Prof Marjanne Senekal<sup>1</sup>

<sup>1</sup>University Of Cape Town, Cape Town, South Africa, <sup>2</sup>University of Stellenbosch, Stellenbosch, South Africa

**Biography:** Professor Nelia Steyn has an MPH from the University of Cape Town and a PhD from the University of Stellenbosch. Her three main areas of research are related to (i) the field of chronic diseases of lifestyle, particularly type 2 diabetes, obesity and other issues relating to a healthy lifestyle and (ii) dietary methodology, particularly as it relates to dietary surveys and (iii) food security in southern Africa, including the double burden of malnutrition. She also has extensive teaching and community related nutrition experience after working for the Department of Health for 10 years and for 10 years as Head and Professor of the Department of Human Nutrition at the University of the Limpopo. She was also employed by the MRC for 10 years and the HSRC for 5 years actively studying the nutritional aspects of non-communicable diseases. She has in the past served as a council member of the Nutrition Society and on the Board of Dietitians of the HPCSA. To date she has more than 140 peer reviewed publications and is an NRF rated scientist. She was the PI on the provincially representative dietary survey in children in the Western Cape Province and in Gauteng in 2018.

**Introduction:** As childhood malnutrition poses a threat to a child's growth and health in later life, dietary adequacy and quality of food choices need to be monitored over time. The last national food consumption survey in South African children took place more than 20 years ago. The aim of this study was to determine energy and macronutrient intakes and key food contributors in a representative sample of 1–<10-year-old children in two South African provinces.

**Methods:** A multistage stratified cluster random sampling design was applied. Fieldworkers interviewed caregivers (1–<5-year-olds) or the child with the caregiver present (6–<10-year-olds) to obtain dietary data using a multiple-pass 24-hour recall (N=1326). Two additional 24-hour recalls were completed among a sub-sample of 146 to adjust the 24-h recall data of the total sample using the National Cancer Institute Method.

**Results:** More than two thirds of 3–<6 and 6–<10-year-olds had an energy intake below the estimated energy requirement; this was a third for 1–<3-year-olds (key contributors: maize porridge, salty snacks, potatoes/sweet potatoes). Percentage carbohydrate (key contributors: maize porridge, sugar, white bread) and protein intake (key contributors: chicken, maize porridge) was within or above recommended ranges for most children. Percentage total fat intake (key contributors: salty snacks, chicken, margarine) was <AMDR for more than 75%, poly-unsaturated fat intake equivalent to saturated fat intake and trans-fat intake <1% in each age group. Sugar intake (key contributors: granulated sugar, candy, sweetened beverages) was >10% of energy intake for half of the children in each group. Fibre intake was <AI for the majority of children.

**Conclusions:** Inadequate energy intake and poor quality carbohydrate choices may be a concern, while protein, total fat and quality of fat seem to be more aligned with recommendations.

**Conflict of interest:** The authors declare no conflict of interest. The funders (International Life Sciences Institute) had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

**Keywords:** Children; dietary intake; energy; macronutrients

## 533 Provincial Dietary Intake Study (PDIS): Prevalence and sociodemographic determinants of the co-existence of stunting and overweight in the same child in 1–<10-year-old children from two provinces in South Africa

Ms Sonia Malczyk<sup>1</sup>, Mrs Johanna H. Nel<sup>2</sup>, Mrs Linda Drummond<sup>1</sup>, Mrs Nelia P. Steyn<sup>1</sup>, Dr Janetta Harbron<sup>1</sup>, Professor Marjanne Senekal<sup>1</sup>

<sup>1</sup>University Of Cape Town, Cape Town, South Africa, <sup>2</sup>Stellenbosch University, Stellenbosch, South Africa

**Biography:** Sonia Malczyk holds a Bachelor of Science degree in Biopsychology from the University of Victoria, Canada and a Bachelor of Medical Sciences (Honours) from the University of Cape Town. She is also currently completing her Masters in Medical Sciences: Nutrition, through the University of Cape Town, with a research focus on the effects of dietary intake on chronic low-grade inflammation.

Sonia is presently in the process of registering with the College of Dietitians in Canada, but her passion for nutrition was truly ignited from her studies and internships in Cape Town. She has been involved in several nutrition research projects with UCT since completing her Honours degree and hopes to continue her focus on improving nutrition in sub-Saharan Africa for the foreseeable future. Most recently, Sonia has joined a South African team of researchers working with a consortium of 14 international research and advocacy organisations on the European Commission's CO-CREATE project. The focus of this project is to tackle adolescent overweight and obesity; the initiative involves young people as a key component in designing policies and advocating practices they believe will improve adolescent health.

**Introduction:** Recently, researchers have pointed out that stunting and overweight are not necessarily mutually exclusive, but that these conditions may co-exist in the same child (being stunted & overweight). This phenomenon may reflect a new layer of malnutrition that is linked to rapid nutrition transitions occurring in low to middle income countries (LMIC). The objective of this study was to determine the prevalence and socio-demographic predictors of stunting & overweight in two urbanized and economically active provinces (Gauteng N = 733, Western Cape N = 593) in South Africa.

**Methods:** A multistage stratified cluster random sampling design was applied. Fieldworkers visited homes, measured children aged 1–<10-years old (N = 1326) and administered a questionnaire (mother/primary caregiver).

**Results:** Stunting & overweight in the same child was present in 5.7% ,<5 year olds (HAZ <-2SD and BAZ >2SD) and 1.7% in 5–<10-year olds (HAZ <-2SD and BAZ >1SD). The 1 year olds were significantly more likely to be stunted & overweight at 19.2%, with the prevalence decreasing to 5.8% in two-year olds, 1.7% in three-year olds and 0.1% in four-year olds. The protective effect of being older in terms of having being stunted & overweight was also evident from the multivariate regression analysis. The prevalence in these two provinces is in the middle of the range of 0.3% to 10.9% reported for LMIC. A possible explanation for this dual burden of malnutrition in the same individual is that poor early nutrition could result in preferential accumulation of fat versus lean mass fostering a 'thrifty phenotype' with increased efficiency of fat storage.

**Conclusion:** Interventions should be sensitive to the different forms of malnutrition as intervention needs may differ; for example, interventions that target only stunting, especially those that promote 'catch-up' growth, may unintentionally contribute to overweight/obesity risk.

**Conflict of interest:** The authors declare no conflict of interest. The funders, ILSI SA, had no role in the study design; the collection, analyses, or interpretation of data; writing of the manuscript, or the decision to publish the results.

**Keywords:** malnutrition; stunting; overweight; children; low-to-middle income country

## 530 Provincial dietary intake study (PDIS): Prevalence and socio-demographic predictors of malnutrition in a representative sample of 1- <10-year-old children from two urbanized and economically active provinces in South Africa

*Prof Marjanne Senekal<sup>1</sup>, Prof Johanna H Nel<sup>2</sup>, Ms Sonia Malczyk<sup>1</sup>, Ms Linda Drummond<sup>1</sup>, Dr Janetta Harbron<sup>1</sup>, Prof Nelia P Steyn<sup>1</sup>*

<sup>1</sup>University Of Cape Town, Cape Town, South Africa, <sup>2</sup>University of Stellenbosch, Stellenbosch, South Africa

**Biography:** Marjanne Senekal [RD (SA), PhD] is a registered dietitian and Professor in the Discipline of Human Nutrition, University of Cape Town. She holds M in Nutrition and PhD in Dietetics. Over the past 40 years she has been actively involved in teaching, research supervision; and publication of research papers (more than 40, mostly in international journals), a dietary assessment and education manual, a weight management manual for female students and chapters in textbooks. She has presented numerous papers at national and international conferences, of which many were invited presentations. Her core research areas over the years have focused on the prevention and management of obesity (including nutrigenetic and anti-inflammatory aspects) in different population and age groups, as well as dietary intake methodology. She is currently involved in a number of research collaborations, both within UCT, the country and with international groups and she has a NRF C2 rating. Career highlights include being an elected member of the Professional Board for Dietetics and Nutrition for a five year period; being a member of the National Obesity Task Team for the development of an Obesity Prevention Strategy for South Africa; being a director of the International Society of Nutrigenetics/Nutrigenomics.

**Introduction:** Many countries in sub-Saharan Africa, including South Africa, have both a high prevalence of stunting in children and of overweight and obesity in children and adults, also referred to as the double burden of malnutrition. The objective of this study was to determine the prevalence and socio-demographic predictors of malnutrition in two urbanized and economically active provinces (Gauteng N = 733, Western Cape N = 593) in South Africa.

**Methods:** A multistage stratified cluster random sampling design was applied. Fieldworkers visited homes, measured children aged 1- <10-years old (N = 1326) and administered a questionnaire (mother/primary caregiver). Results: In under-5 year old children (N = 674) 21.6% were stunted [height-for-age z-score < -2 SD], 5.6 % underweight [weight-for-age z-score < -2 SD], 10.3% overweight (body mass index-for-age z-score) (BAZ) > +2 SD ≤ +3 SD] and 7.0% obese (BAZ > +3 SD). In 5- <10-year olds (N = 626) 6.7% were stunted, 6.8% underweight, 13.4% overweight and 6.8% obese. Multiple logistic regression analyses identified having a mother with a post-grade 12 qualification (OR = 0.34) and having an obese mother (OR 0.46) as protectors of stunting, and being in the under-five age group (OR = 3.73) as a risk factor for stunting. Being in the under-five age group was also a risk factor for a BAZ > 1 (at risk of overweight/overweight/obese) (OR= 2.39), while being in the third wealth quintile was protective (OR= 0.62).

**Conclusion:** Results indicate that stunting and overweight/obesity are still present at concerning levels. \the under two years of age were consistently the most vulnerable to experience stunting, being at risk of overweight or being overweight or obese. Given how critical the first 1000 days is for future growth and development our results emphasize that this age group should remain a key target population for nutrition intervention.

**Conflict of interest:** The authors declare no conflict of interest. The funders (International Life Sciences Institute) had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

**Keywords:** children malnutrition; stunting; overweight; obesity

## 540 Quality Aspects of Hospital Foodservice: A Scoping Review of articles published 2000-2020

*PhD Student, RD Emma Wilandh<sup>1</sup>, Professor Ylva Mattsson Sydner<sup>1</sup>, Dr Malin Skinnars Josefsson<sup>1</sup>, Associate Professor Christine Persson Osowski<sup>2</sup>*

<sup>1</sup>Department of Food Studies, Nutrition and Dietetics, Uppsala universitet, Uppsala, Sweden, <sup>2</sup>School of Health, Care and Social Welfare, Mälardalen University, Västerås, Sweden

**Biography:** Emma Wilandh, PhD Student, RD, the Department of Food Studies, Nutrition and Dietetics at Uppsala University, Sweden. She is an experienced clinical dietitian from several different hospital units and wards mainly targeting disease-related malnutrition in patients with cancer. Her doctoral studies focuses on steering and organisation of hospital food services, with a special interest in implementation research.

**Introduction:** The quality of hospital food service is an important element of food service management and thereby a key feature in patient care. Quality is multidimensional and in food service organisation and practice, quality can be related to several aspects such as menu planning, procurement, production, distribution, service and the meal itself. The aim of the present study is to identify and analyse aspects of quality and quality improvements regarding hospital food services.

**Methods:** Scoping reviews are often used within healthcare research to identify and synthesize relevant literature within a field, usually covering broad topics. In the present study, searches were conducted in four databases, including CINAHL, PubMed, Web of Science, and Scopus, with search terms in different combinations: hospital, food service, catering service, meal service, dietary service, nutrition service, menu planning, quality, quality improvement, quality assurance, quality management, organizational, quality assessment, quality of healthcare, evaluation, mealtime quality index, policy and inpatient. Articles that were published 2000-2020 were included.

**Results:** Literature searches showed that a majority of the publications focused on aspects related to the meal itself, such as patient satisfaction and meal experience, nutritional quality and meal quality assessment tools. Quality aspects in relation to menu planning, procurement, production, distribution and service were rare. Although, some studies focusing on food service systems as well as hospital menu interventions were found.

**Conclusion:** To the best of our knowledge, there are no previous scoping reviews on this topic. Thereby this review may serve as a knowledge base in food service management for quality improvement and development of best practice. However, more research is needed in order to in depth understand how the multidimensional quality aspects are used and in what way they are linked.

**Conflict of interest:** None

**Keywords:** hospital; quality; food service; best practice; scoping review

## 142 Quantification of aflatoxins and ochratoxin A in chicken tissue and eggs therein Cameroon and population dietary exposure

Mr Tatfo Keutchatang Fabrice De Paul<sup>1</sup>

<sup>1</sup>University Of Yaoundé<sup>1</sup>, Yaoundé, Cameroon

**Biography:** TATFO KEUTCHATANG Fabrice De PAUL is a PH D. student at the University of Yaoundé 1, Cameroon, Departement of Biochemistry, option Food Science and Nutrition. I have an experience on chicken production and on risk assessment concerning chicken farmers and chicken products consumers.

**Introduction:** Chicken meat is white flesh and is an important source of high quality protein and other nutrients in the same way as eggs. However, chicken production can be threatened with fungi and their metabolites that can end up in the final products consumed by humans. Consumption of chicken meat and eggs contaminated with mycotoxins could have impact on human health.

**Objective:** The aim of this study was to assess the level of some mycotoxins in chicken tissues and eggs from modern poultry farms of three regions of Cameroon in order to evaluate the dietary exposure of the population to the consumption of chicken products.

**Methodology:** Information on the amounts of chicken and eggs consumed were collected, households were questioned and market-ready broilers and fresh layer eggs were randomly sampled in selected chicken farms. Aflatoxins and ochratoxin A were analyzed using ELISA technics.

**Results:** Broiler liver was more contaminated with AFB1 ( $0.9 \pm 0.1 \mu\text{g}/\text{kg}$ ) and OTA ( $1.7 \pm 0.3 \mu\text{g}/\text{kg}$ ). Layer egg was also contaminated with AFB1 ( $0.9 \pm 0.1 \mu\text{g}/\text{kg}$ ) and OTA ( $1.7 \pm 0.3 \mu\text{g}/\text{kg}$ ). Children were more exposed to AFB1 and OTA through consumption of chicken with daily intakes of  $10.3 \mu\text{g}/\text{kg bw}/\text{day}$  and  $11.3 \mu\text{g}/\text{kg bw}/\text{day}$ , respectively. The associated margin of exposures (MOEs) were estimated at 2.6 (AFB1) and 1.9 (OTA).

**Conclusion:** AFB1 and OTA occurred in chicken and eggs consumed by the population leading to their high daily intakes. Therefore, efficient methods to provide the safeguard for the consumers against their toxic effects and to keep the public health should be approached. In addition, the methods should be developed to provide healthy diet for the chicken during farming to ensure food and sanitary safety.

**Conflict of interest:** None

**Keywords:** mycotoxins; chicken; eggs; dietary exposure

## 111 Ready-to-use therapeutic food (RUTF) for home-based nutritional rehabilitation of severe acute malnutrition in children from six months to five years of age: a Cochrane review

Ms Anel Schoonees<sup>1</sup>, Dr Martani Lombard<sup>2</sup>, Dr Alfred Musekiwa<sup>1</sup>, Prof Etienne Nel<sup>3</sup>, Prof Jimmy Volmink<sup>1</sup>

<sup>1</sup>Centre for Evidence-based Health Care, Division of Epidemiology and Biostatistics, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>3</sup>Department of Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa

**Biography:** Anel Schoonees is a full time researcher at the Centre for Evidence-based Health Care, Stellenbosch University (South Africa), and is a member of Cochrane Nutrition's coordination team. She has a background in Food Science and in Dietetics, and holds Master's degrees in Nutrition and in Clinical Epidemiology. Anel conducts systematic reviews and is involved in other research activities, including priority-setting for reviews; teaches systematic reviews and evidence-based health care to undergraduate and postgraduate students, as well as to healthcare professionals and other decision-makers; and is involved in knowledge translation activities to promote the uptake of evidence from systematic reviews by stakeholders.

**Introduction:** RUTF, a nutrient-dense feed, facilitates the home-based rehabilitation of children with severe acute malnutrition (SAM).

**Objective:** To assess the effects of home-based RUTF during rehabilitation of children with SAM aged between six months and five years.

**Methods:** We conducted a Cochrane systematic review (search October 2018) of randomised controlled trials where children with SAM were treated at home with RUTF compared to alternative dietary approaches (Comparison 1), or different RUTF regimens (Comparison 2) and formulations compared to each other (Comparison 3). Primary outcomes were recovery, relapse and mortality.

**Results:** We included 15 trials (n=7976) with varying risk of bias. In Comparison 1, seven studies compared standard RUTF (meeting WHO recommendations) with an alternative dietary approach. RUTF probably improves recovery (RR1.33; 95%CI 1.16-1.54; moderate-quality evidence), and may increase weight gain slightly (MD1.12 g/kg/day, 95%CI 0.27-1.96; low-quality evidence). The effects on relapse (RR0.55, 95%CI 0.30-1.01; very low-quality evidence) and mortality (RR1.05, 95%CI 0.51-2.16; very low-quality evidence) are unknown. For Comparison 2, RUTF meeting total daily nutritional requirements versus as a supplement to the usual diet may improve recovery (RR1.41, 95%CI 1.19-1.68; low-quality evidence) and may reduce relapse (RR0.11, 95%CI 0.01-0.85; low-quality evidence), but effects are unknown for mortality and weight gain. In Comparison 3, standard RUTF decreases relapse (RR0.84, 95%CI 0.72-0.98; high-quality evidence). For recovery, it made little or no difference whether standard or alternative formulation RUTF was used (RR1.03, 95%CI 0.99-1.08; high-quality evidence) and may make little or no difference to mortality and weight gain.

**Conclusion:** Standard RUTF is probably effective for home-based nutritional rehabilitation of children with SAM. Well-designed, adequately powered, pragmatic RCTs with standardised outcome measures, stratified by HIV status, and that include diarrhoea as an outcome, are needed.

**Conflict of interest:** None

**Keywords:** severe acute malnutrition; children; home-based treatment; RUTF

## 595 Recreational running may improve inflammation resolution

Prof Linda Malan<sup>1</sup>, Dr Lizelle Zandberg<sup>1</sup>, Dr Arista Nienaber<sup>1</sup>, Prof Lize Havemann-Nel<sup>1</sup>, Ms C Pienaar<sup>2,3</sup>, Ms C Botha-Ravyse<sup>3</sup>, Ms J Sauer<sup>3</sup>

<sup>1</sup>North-west University - Centre of Excellence for Nutrition, Potchefstroom, South Africa, <sup>2</sup>Durban University of Technology, Durban, South Africa, <sup>3</sup>North-West University - Physical Activity, Sport and Recreation, Potchefstroom, South Africa

**Biography:** Linda Malan is a Senior Lecturer at the Centre of Excellence for Nutrition at the North-West University, Potchefstroom, South Africa. Her research focuses on nutrition and immune function, particularly fatty acids and micronutrients in association with infectious morbidity and non-communicable inflammatory diseases. She concentrates on the biochemical underlying mechanisms of nutrition, and particularly on inflammation and the resolution thereof.

**Background:** Lipid mediators are produced from polyunsaturated fatty acids upon inflammatory stimuli. The response shifts from being pro-inflammatory to inflammation resolving in a time-dependent manner and may differ between recreational runners and non-runners.

**Objective:** To compare the plasma lipid mediator response to unaccustomed resistance exercise in recreational runners and healthy non-runners.

**Study design:** This was a pre- and post-test cross-sectional study on 18-35 year-old male recreational runners (n=18) and non-runners (n=18). One repetition maximum strength (1 RM) was assessed on the smith rack squat, 45° leg press and seated knee extension machine. One week later, participants performed three sets of 8–10 repetitions of these exercises at 80% 1 RM. Blood samples were collected before, immediately after and 1, 2, 24 and 72 hours after exercise. A three-day dietary record was also administered.

**Results:** The arachidonic acid (AA)-derived lipoxygenase (LOX)-mediated pro-inflammatory lipid mediator 5-hydroxyeicosatetraenoic acid (5-HETE) of runners responded later and with less intensity than the non-runners (p= 0.016). The eicosapentaenoic acid (EPA)-derived inflammation (pro-) resolving lipid mediators, 12- and 18-hydroxyeicoapentaenoic acid (12- and 15-HEPE), were lower in the runners than the non-runners after exercise over time (p = 0.059 and p = 0.085, respectively). The docosahexaenoic acid (DHA)-derived pro-resolving lipid mediator, 17-hydroxy-DHA (17-HDHA) peaked at 24 hours after exercise in runners, but stayed constant in non-runners, resulting in a trend for 17-HDHA to be higher in runners over time (p = 0.089). All models were corrected for BMI, oxidative stress and linoleic and Vit C intake, except 12- and 15-HEPE which were corrected for BMI and oxidative stress.

**Conclusion:** This study showed that pro-inflammatory and inflammation resolving lipid mediators respond differently in runners and non-runners. Furthermore, recreational running may lead to adaptation to improved resolution of inflammation, independent from adaptation to oxidative stress.

**Conflict of interest:** None

**Keywords:** Inflammation resolution; recreational running

## 498 Reported health and macronutrient intake of pregnant women attending an antenatal clinic at Pelonomi Hospital in Bloemfontein, South Africa

Mrs Liska Robb<sup>1</sup>, Mrs Marizeth Jordaan<sup>1</sup>, Dr Jennifer Osei Ngounda<sup>1</sup>, Professor Gina Joubert<sup>1</sup>, Professor Corinna Walsh<sup>1</sup>

<sup>1</sup>University Of The Free State, Bloemfontein, South Africa

**Biography:** Liska obtained her degree in BSc Dietetics at the University of the Free State (UFS) in 2009, and obtained her MSc Dietetics in 2013 at the same institution. After completing her community service year in Botshabelo, she was employed at the UFS first as a junior lecturer, and is now a lecturer. Liska is busy with her PhD in Dietetics focusing on nutrient intake in pregnancy.

**Introduction:** Appropriate nutrient intake and good health in pregnant women is vital for optimal foetal development and the reduction of complications.

**Methods:** In this cross-sectional study data were collected from 682 2nd and 3rd trimester pregnant women attending an antenatal clinic in Bloemfontein, South Africa. Data related to sociodemography, reported health and dietary intake were obtained during a structured interview. Dietary intake was assessed using a quantitative food frequency questionnaire.

**Results:** Median age and stage of pregnancy was 31.8 years and 32.0 weeks respectively. The most common self-reported medical diagnoses during pregnancy were hypertension (23.0%), sexually transmitted diseases (18.5%), vaginal infection (15.5%), diabetes (4.6%) and human immunodeficiency virus (4.1%). Many women experienced appetite loss (60.7%) and 17.2% indicated that they had experienced weight loss during the pregnancy. Median daily energy intake was 8616.9kJ [interquartile range 6827.0kJ to 10894.2kJ]. Median total daily protein and fat intakes were 64.5g and 63.6g respectively. Median daily intake of linoleic acid was 15.9g [AI: 13g], while median alpha-linolenic acid intake was 0.3g [AI: 1.3g]. Median daily added sugar intake was 42.1g, and median fibre intake was 24.8g [AI: 28g]. Median daily available carbohydrate intake was 288.0g [EAR: 135g]. Alcohol was consumed by 8.9% of women and 6.2% of women used tobacco during their pregnancy.

**Conclusion:** A high percentage of participants had medical conditions and symptoms that may increase the risk of morbidity and mortality in both the pregnant women and foetus. These require close monitoring and nutrition intervention. Median alpha-linolenic acid intake was below the recommendation, with low intakes being associated with possible adverse effects. Almost one in ten women consumed alcohol – a well-known teratogen with potentially long-term negative health consequences.

**Conflict of interest:** None

**Keywords:** Macronutrients; health; pregnant; women; antenatal

## 150 Sarcopenia, Myosteatosis, and Visceral Obesity are Widely Prevalent in Today's Patient and Associate with Adverse Outcomes - Especially in Male Patients

Dr Heidi Silver<sup>1</sup>, Mr. Timothy Olszewski<sup>1</sup>, Ms. Alex Rains<sup>1</sup>

<sup>1</sup>Vanderbilt University Medical Center, Nashville, United States

**Biography:** Dr. Heidi J. Silver is a Research Professor at Vanderbilt University Medical Center and a Health Scientist with the Department of Veterans Affairs Tennessee Valley Healthcare System. Dr. Silver's many years of clinical nutrition practice uniquely inform her research and its' clinical applications. Her expertise in clinical nutrition, metabolism, energy balance, and body composition informed creation of the Vanderbilt Diet, Body Composition, and Human Metabolism Core Lab. In that Core Lab, Dr. Silver employs a team of dietitians, dietetic technicians, nurses, and exercise physiologists who are actively involved in translational research. Currently, Dr. Silver's research targets studying how changes in dietary energy and macronutrient intake and changes in body composition influence inflammation, insulin resistance, dyslipidemia, and risk for chronic diseases like obesity, type 2 diabetes, and cardiovascular disease. Dr. Silver has published over 40 research articles and has presented about 85 lectures, as well as several webinars for dietitians on nutrition and diet assessment methods, identifying and diagnosing malnutrition, and how to implement medical nutrition therapy in hospital and long-term care settings. More recently Dr. Silver's research has been the basis for national and international presentations on the role of nutrition and diet in insulin resistance, obesity and diabetes.

**Introduction:** Use of imaging tools such as computed tomography (CT) and dual energy x-ray absorptiometry (DXA) have enabled identification of sarcopenia (low muscle mass) and myosteatosis (low muscle density). These insidious conditions have been associated with adverse health care outcomes and mortality, primarily in older patients or those with malignancies. With most patient populations now being overweight or obese, we hypothesized that sarcopenia and myosteatosis are widely prevalent in many of today's adult patient populations, regardless of age, sex, or BMI. The aim of this study was to determine the prevalence of sarcopenia and myosteatosis in a variety of acute and long-term care settings.

**Methods:** A total of 3000 adults aged 18-95 years had abdominal CT scans available at Vanderbilt University Medical Center for quantification of skeletal muscle area and density, along with visceral and subcutaneous fat areas. Sex and BMI specific cut-points were used to identify the prevalence of sarcopenia and myosteatosis.

**Results:** Sarcopenia and/or myosteatosis were highly prevalent in general medicine, general surgery, ambulatory care, and long-term care patients. Sarcopenia, myosteatosis, and visceral obesity were more prevalent in male than female patients - in all age groups and BMI categories. Regression modeling showed 43% of the variability in skeletal muscle mass and skeletal muscle density (reflecting ectopic fat infiltration) was accounted for by sex, age, and BMI ( $P_s < 0.001$ ). Males with sarcopenia and/or myosteatosis had more complications, longer hospital stays, were more likely to be discharged to long-term care, and were at increased risk for hospital readmissions.

**Conclusion:** This study provides evidence that harmful morphometric phenotypes, such as sarcopenia, myosteatosis, and/or visceral obesity, are widely prevalent in today's patients, regardless of age or BMI. Assessment of morphometric phenotype can identify high risk patients and generate intervention strategies to improve muscle health and health outcomes.

**Conflict of interest:** None

**Keywords:** sarcopenia; myosteatosis; imaging; visceral obesity

## 300 Simultaneous monitoring of sodium reduction and iodine status required to ensure compatibility of the two public health interventions: Case study from South Africa

Prof Karen Charlton<sup>1</sup>, Dr Paul Kowal<sup>2</sup>, Dr Barbara Corso<sup>3</sup>, Professor Alta Schutte<sup>4</sup>

<sup>1</sup>University Of Wollongong, Wollongong, Australia, <sup>2</sup>World Health Organization, Geneva, Switzerland, <sup>3</sup>CNR, Neuroscience Institute, Padova, Italy, <sup>4</sup>North West University, Potchefstroom, South Africa

**Biography:** Professor Karen Charlton, is an Advanced Accredited Practising Dietitian (Dietitians Association of Australia) and Registered Public Health Nutritionist (Nutrition Society of Australia) who teaches on the nutrition and Dietetics programme at the University of Wollongong in Australia. Her research expertise is in nutrition and chronic diseases of lifestyle across the lifespan, including diet and blood pressure. Karen's PhD work in the early to mid 2000s informed South Africa's salt legislation. Karen is interested in the role of food and dietary patterns on health outcomes, particularly in the context of healthy ageing including physical and cognitive functioning. Karen spent many years in Africa, and has a keen interest in training nutrition professionals from low-middle income countries. She has published over 180 articles in scientific journals and co-authored 8 book chapters.

**Introduction:** Global targets for noncommunicable disease reduction recommend consumption of <5 g salt/day. In 2016, South Africa introduced legislation on maximum salt levels in processed foods in an attempt to meet this recommendation. South Africa has had a well functioning salt iodisation fortification programme since 1995, but the impact of salt reduction strategies on iodine intake is unknown.

**Objective:** To assess the association between iodine status and salt intake of South Africans following mandatory salt reduction legislation.

**Methods:** A nested cohort design within WHO's 2017 Study on global AGEing and adult health Wave 3 (n=1501) including individuals from households across South Africa. Randomly selected adults (n=593) provided complete 24-hour urine samples for sodium and iodine concentration analyses. Median 24-hour urinary iodine excretion (UIE) was compared by salt intakes <5g/day, 5-9g/day and >9g/day.

**Results:** Median age of participants was 60 (15)y, with 29% men and 64.1% from urban locations. Median daily sodium excretion was equivalent to 6.2 (5.3)g salt/day; 37% had urinary sodium excretion values within the desirable range (<5g salt/ day), 37% had high values (5-9g salt/day) and 26% had very high values (>9g salt/day). Median UIE was 112 (IQR 139) µg/L. UIE differed across salt intake categories ( $p=0.001$ ) and was positively correlated with estimated salt intake ( $r= 0.349$ ;  $P<0.0001$ ). Participants with salt intakes <5g/day were were not meeting the Estimated Average Requirement for iodine intake (95µg/day) (median 87 (95) µg/day).

**Conclusion:** In a nationally representative sample of South African adults, the association between population iodine status (UIE) and salt intake, estimated using 24-hour urinary sodium excretion, indicate that low salt intakes may compromise adequacy of iodine intakes in a country with mandatory iodisation of table salt. The iodine status of populations undergoing salt reduction strategies needs to be closely monitored to prevent re-emergence of iodine deficiency.

**Conflict of interest:** Funding received from Bloomberg Philanthropies and administered by Centers for Disease Control, USA

**Keywords:** salt; iodine; policy; urinary; monitoring

## 151 Skeletal muscle atrophy and ectopic fat infiltration of skeletal muscle are associated with glucose intolerance in adults with treated HIV

Dr Heidi Silver<sup>1</sup>, Dr. John R Koethe<sup>2</sup>

<sup>1</sup>Vanderbilt University Medical Center, Nashville, United States

**Biography:** Dr. Heidi J. Silver is a Research Professor at Vanderbilt University Medical Center and a Health Scientist with the Department of Veterans Affairs Tennessee Valley Healthcare System. Dr. Silver's many years of clinical nutrition practice uniquely inform her research and its' clinical applications. Her expertise in clinical nutrition, metabolism, energy balance, and body composition informed creation of the Vanderbilt Diet, Body Composition, and Human Metabolism Core Lab. In that Core Lab, Dr. Silver employs a team of dietitians, dietetic technicians, nurses, and exercise physiologists who are actively involved in translational research. Currently, Dr. Silver's research targets studying how changes in dietary energy and macronutrient intake and changes in body composition influence inflammation, insulin resistance, dyslipidemia, and risk for chronic diseases like obesity, type 2 diabetes, and cardiovascular disease. Dr. Silver has published over 40 research articles and has presented about 85 lectures, as well as several webinars for dietitians on nutrition and diet assessment methods, identifying and diagnosing malnutrition, and how to implement medical nutrition therapy in hospital and long-term care settings. More recently Dr. Silver's research has been the basis for national and international presentations on the role of nutrition and diet in insulin resistance, obesity and diabetes.

**Introduction:** The success of antiretroviral therapy (ART) treatment for HIV infection has changed the demographics and clinical phenotype of people living with HIV. While living longer, many treated HIV+ adults are becoming overweight and have a two-fold greater risk for type 2 diabetes than adults without HIV. While much research on HIV and metabolic disease has focused on the interaction between obesity and ectopic fat accumulation in the liver (non-alcoholic fatty liver disease), recent evidence highlights the major role of ectopic fat accumulation in skeletal muscle, the primary site of glucose uptake, on the pathogenesis of insulin resistance and type 2 diabetes. We hypothesized that blood glucose levels in adults with treated HIV is robustly associated with ectopic fat infiltration of skeletal muscle (i.e., myosteatosis).

**Methods:** A cohort of 110 HIV+ adults (67% male) who were on long-term ART were categorized as nondiabetic, prediabetic or diabetic based on fasting glucose levels. Their mean age was 45.8 ± 11.6 years and mean BMI was 33.0 ± 6.3 kg/m<sup>2</sup>. Abdominal CT images were analyzed using an automated version of Slice-O-Matic software (Tomovision, Montreal, CA) to quantify skeletal muscle area, skeletal muscle density (lower density reflecting greater myosteatosis), and visceral and subcutaneous fat areas.

**Results:** Low skeletal muscle for height (sarcopenia) was present in 9% of HIV+ nondiabetics, 12.5% of prediabetics and 16% of diabetics. Low skeletal muscle density (myosteatosis) was present in 3% of HIV+ nondiabetics, 8.3% of prediabetics, and 28% of diabetics. The decline in skeletal muscle density was linearly associated with increasing glucose intolerance (F = 4.59, P = 0.01).

**Conclusion:** Sarcopenia and myosteatosis are prevalent in HIV+, especially in HIV+ diabetics. Future studies should determine effects of ectopic fat on skeletal muscle insulin sensitivity and whether therapeutic targeting of skeletal muscle fat would reduce diabetes risk in treated HIV.

**Conflict of interest:** None

**Keywords:** HIV; obesity; diabetes; ectopic fat

## 629 Snacking pattern and its association with body composition in young adults of Mumbai, India

Prof Jagmeet Madan<sup>1</sup>, Ms. Panchali Moitra<sup>1</sup>, Ms Sharvari Desai<sup>1</sup>, Ms Sheryl Salis<sup>2</sup>, Dr. Rekha Battalwar<sup>1</sup>, Dr. Saumik Kalita<sup>3</sup>, Dr. Ajay Phatak<sup>4</sup>, Dr. Shobha Udipi<sup>5</sup>, Dr. Rama Vaidya<sup>5</sup>, Dr Ashok Vaidya<sup>5</sup>

<sup>1</sup>Sir Vithaldas Thackersey College Of Home Science (autonomous) Sndt

Women's University, Mumbai, National President, Ida, Mumbai, India,

<sup>2</sup>Nurture Health Solutions, Mumbai, India, <sup>3</sup>Family Physician, New

Delhi, India, <sup>4</sup>CharterArogyaMandal, Surat, India, <sup>5</sup>KasturbaHealth

Society, Medical Research Centre, Mumbai, India

**Biography:** Dr Jagmeet Madan is an eminent Nutritionist, National President, Indian Dietetic Association (2019-2021), Principal and Professor- Department of Food Nutrition and Dietetics at Sir Vithaldas Thackersey College of Home Science (Autonomous), SNTD Women's University, Mumbai. She is a gold medalist and recipient of 'Young Scientist Award' and 'Dr Ramanathan Award' by the Nutrition Society of India, National Institute of Nutrition, Hyderabad. She is a recipient of the prestigious International Research Grant award - PNPG Grant (Pediatric Nutrition Practice Group – 2017) from American Academy of Nutrition and Dietetics, USA. She was awarded "Founder's Best Teacher Award 2017" by the SNTD Women's University, Mumbai.

She is a lead Principal Investigator of the International Research Project on Prediabetes in Adolescents and Young Adults in India and Food Based Intervention approved by USDA (2017-2018); Urban Nutrition Gap Study in Mumbai (2015 - 2018); Project MARG (2008 -2010) A Multi-centric Pan India Project on School Going Children (Government and Private Schools) in collaboration with Diabetes Foundation of India and World Diabetes Foundation; TANITA HEALTH LINK Project with Ministry of Japan (2014-2015).

She has more than 50 publications in International and National Peer reviewed Journals and Books.

dr.jagmeetmadan@gmail.com; idanationalpresident@gmail.com; svt@sndt.ac.in;

**Introduction:** Snacking patterns in adolescents and young adults can be a significant contributory factor towards early onset of obesity and other non-communicable diseases. A cross-sectional study was conducted to explore snacking pattern and its association with body composition in young adults residing in Mumbai, India.

**Methodology:** A total of 1310 young adults, aged 16-25 years were recruited from eleven study sites in Mumbai city. Anthropometry indices and body composition were measured. The snacking pattern and perception about snacking was collected through a structured snacking questionnaire by trained surveyors.

**Results:** The study sample comprised of 457 male and 853 female participants with a mean (SD) age of 19.41(1.8) years. 906(69.2%) were having snacks and most of them 814(89.9%) reported consuming them in the evening. A staggering 779(59.4%) reported skipping meals. Snacking (74% vs 60%, P<0.001) as well as skipping meals (66.4 vs 46.6%, p<0.001) was more prevalent in girls. 323(24.7%) perceived snack as a substitute to main meals. A higher body fat and visceral fat was observed among those who snacked in between meals. Majority reported snacking to be more likely while watching television [1030(78.6%)] and in the middle of night [513(39.2%)]. Most participants identified high fat, salt sugar (HFSS) foods as unhealthy but did not consider packed juices and highly processed foods as unhealthy. HFSS foods were consumed by 1169(89%) and ultra-processed foods were consumed by 461(35%) participants regularly (more than thrice a week). However, body composition was not associated with regular consumption of HFSS/ultra-processed foods in this study.

**Conclusion:** Unhealthy snacking pattern, skipping meals and snacking in between meals was observed among young adults. User friendly food labelling, availability of healthy foods in small portions at reasonable price needs to be promoted.

**Conflict of interest:** None

**Keywords:** Snacking; body composition; young adults; non communicable disease; India.

## 384 Socio-economic status and dietary intake of micronutrients in pregnant women in the urban Free State, South Africa

Dr Jennifer Ngounda<sup>1</sup>, Mrs Marizeth Jordaan<sup>1</sup>, Mrs Liska Robb<sup>1</sup>, Ms Mariette Nel<sup>1</sup>, Prof Corinna Walsh<sup>1</sup>

<sup>1</sup>University of the Free State, Bloemfontein, South Africa

**Biography:** Dr Jennifer Osei Ngounda is currently a Post-Doctoral research fellow at the Nutrition and Dietetics department of the University of The Free State, Bloemfontein. Dr Osei Ngounda graduated with a PhD in Nutrition from the North-West University (Potchefstroom) in 2016. Her PhD research focused on iodine nutrition in infants and lactating mothers in South Africa. Findings from her research suggested that breastfed infants had adequate iodine status, due to sufficient iodine content in breastmilk. Additionally, infants on complementary foods had adequate status due to iodine in commercial infant cereals. Lactating mothers also had adequate iodine intake, however, better monitoring of the iodine content in table salt is required. Currently Dr Osei Ngounda is involved in research focused on nutritional status of pregnant women and the impact on the offspring. She has expanded on her PhD work to explore on maternal iodine nutrition during pregnancy and the impact on the offspring.

**Introduction:** Poverty and micronutrient deficiencies during pregnancy may have detrimental effects on both the mother and the growing foetus. Inadequate supply of nutrients such as iron, folic acid, iodine and zinc can lead to undesirable pregnancy outcomes such as low birth weight, still birth, congenital abnormalities and premature deliveries.

**Objective:** To assess the socio-economic status and dietary intake of micronutrients in pregnant women. **Methods:** In a cross-sectional design, a standardised quantified food frequency questionnaire (QFFQ) was used to determine dietary intake. Dietary intake of micronutrients were compared with Estimated Average Requirements (EARs). Socio-demographic information was obtained using a questionnaire.

**Results:** In total, 682 pregnant women were included in the analysis. Dietary data was available for 681 women. Median age was 31 (range 18-46) years. More than half of participants were unemployed (52.5%), however 55.0% had partners with full-time employment. The monthly income in most households (66.0%) ranged between R100-R5000 and only 29.6% had a monthly income more than R5000. Wages and salaries from formal employment (60.9%) and pension/state grants (61.7%) were the main sources of income. Electricity was used for cooking by 87.5% of participants, and almost all had stoves (97.5%). The majority had access to refrigeration to store food (83.9%) and all households had access to tap water. Median micronutrient intakes included: iron (16 mg), folic acid (410 µg), calcium (471 mg), B12 (3.6 mg), B6 (3.4 mg), zinc (12.6 mg), vitamin A (1023 µg) and vitamin C (52 mg). Most participants had dietary intakes of iron (82.7%), folic acid (71.8%), calcium (88.4%) and vitamin C (63.6%) below the EAR.

**Conclusion:** A large percentage of participants were at risk for micronutrient deficiencies due to low dietary intakes. Nutrient deficiencies may lead to detrimental pregnancy outcomes and thus interventions to improve the quality of the diet should be prioritised.

**Conflict of interest:** None

**Keywords:** Pregnancy; micronutrient deficiencies; dietary intake; QFFQ

## 620 Soybean-fiber-maize blend complementary food improves weight and reduces diarrhea-type stools in Malawian children aged 6-36 months.

Dr Edda Lungu<sup>1</sup>, Dr Douglas Archer<sup>1</sup>, Dr Bobbi Langkamp-Henken<sup>1</sup>, Ms Amanda Piano<sup>2</sup>, Dr Harry Sitren<sup>1</sup>, Dr Wendy Dahl<sup>1</sup>

<sup>1</sup>University Of Florida, Gainesville, United States, <sup>2</sup>Rosell Institute for Microbiome and Probiotics, Montreal, Canada

**Biography:** Edda Lungu received her BSc degree in Agriculture majoring in Food Science and Nutrition from the University of Malawi, Bunda College. In 2011, she was awarded a scholarship by USAID Initiative for Long Term Training and Capacity Building (ULTCB) program to pursue a Master of Science in Food Science at Michigan State University. In 2015, she received a USAID Borlaug Higher Education for Agricultural Research and Development (BHEARD) scholarship to complete her doctoral work in Nutritional Sciences at the University of Florida and was awarded her PhD in 2019. Her dissertation research explored the feasibility and health effects of a higher fiber complementary food in young children in rural Malawi.

**Introduction:** Poor quality complementary foods and high rates of diarrhea contribute to undernutrition in young children. **Objective:** To determine the effect of a soybean-soy hull fiber-maize (SFM) complementary food on growth, stool frequency, stool form and microbiota in Malawian children.

**Methods:** In a parallel, single-blind study, children 6-36 months were randomized to receive SFM (n=69) or maize-only (MO)(n=10) complementary foods for 6 months. Dietary intake (24-h recall) was assessed at baseline, 3 and 6 months. Anthropometrics were measured monthly using recommended WHO methods, and stool form (Modified Bristol Stool Form Scale for Children) and stool frequency were assessed weekly. Fecal microbes associated with health were quantified using Real-Time PCR.

**Results:** SFM was well accepted by mothers/children. At 3 months, energy (521±15; 327±60 kcal/d), protein (16±4; 8±1 g/d) and fiber (14.6±5.2; 7.6±1.4 g/d) from complementary foods were higher for SFM vs. MO (p<0.01). At 6 months, fiber remained higher (13.7±3.8; 8.4±4.5 g/d, p< 0.01) with a trend for protein (14±4; 9±6 g/d, p=0.05) but not energy (489±148; 418±268, kcal/d p=0.6). Weight-for-height and BMI-for-age Z-scores (p<0.01) were higher for SFM (p<0.01). No differences were seen for height-for-age, mean arm muscle circumference or weight-for-age. Stool frequency at baseline (2±1/d) was unchanged with interventions. Compared to months 1-3, there were fewer diarrhea-type stools during months 4-6 for SFM (p<0.001), while no improvements were seen for MO. At 6 months, Akkermansia muciniphila was enriched with SFM (p<0.05), Faecalibacterium prausnitzii (p=0.07) and total Bifidobacterium (p=0.06) showed trends for enrichment, but not total Roseburia (p=0.7) compared to MO.

**Conclusion:** SFM complementary food improved weight-for height and BMI-for-age Z-scores and reduced diarrhea-type stools in children with a concurrent enrichment in Akkermansia muciniphila, a species involved in maintaining intestinal integrity. Feeding a blend of soybean, soy hulls and maize provides a feasible means of improving wellness in Malawian children.

**Conflict of interest:** None

**Keywords:** complementary food; stool form; soy hull fiber; Z-score; microbiota

## 274 Sub-regional quality improvement initiative: Team-based malnutrition screening as a standardized intervention in the post-hospital discharge follow-up program

Mr Denis Tsang<sup>1,2,3</sup>

<sup>1</sup>Village Family Health Team, Toronto, Canada, <sup>2</sup>Taddle Creek Family Health Team, Toronto, Canada, <sup>3</sup>Mount Sinai Hospital Academic Family Health Team, Toronto, Canada

**Biography:** Denis Tsang is a Registered Dietitian, Certified Diabetes Educator and Quality Improvement Decision Support Specialist supporting multiple primary health care providers (HCPs) across the Greater Toronto Area (GTA). In addition to his clinical practice, he has dedicated his career to facilitating the Health System Transformation in Ontario. Denis is passionate about improving the health outcome of Ontarians through evidence-based clinical practice, data-driven decision-making, integrated and coordinated patient care and more.

Currently, Denis is one of the councillors in Electoral District 3 of the College of Dietitians of Ontario. He has served as the Acting Chair of Dietitians of Canada Ontario Family Health Teams Network and the Lead of Diabetes Community of Practice at the Association of Family Health Teams of Ontario (AFHTO). Denis was recently awarded the Member Recognition Award (Leadership) by Dietitians of Canada and the Preceptor Award of Excellence by Brescia University College.

Denis holds a Bachelor of Applied Science degree in Nutrition and Food, a Master of Science degree in Human Health and Nutritional Science and a Master of Applied Nutrition degree in Dietetics.

**Introduction:** 34% seniors are at nutritional risk and 45% of adults were identified as malnourished upon hospital admission across Canada. Early detection of malnutrition in team-based family practice can make a difference to health outcomes. Transitions from hospital care to primary care can increase patients' vulnerability to adverse events. Timely follow-up post-discharge has been linked with reduced rates of readmission, emergency department use, and mortality. By incorporating dietetic best practice in malnutrition screening into a provincial quality improvement (QI) initiative in Ontario, Registered Dietitians (RDs) in primary care can demonstrate the values of medical nutrition therapy in the transformation of Ontario's Healthcare System.

**Objective:** 1) To assess the feasibility of incorporating team-based malnutrition screening into the post-discharge follow-up process 2) To collect baseline data on rates of malnutrition screening, positive screen, and positive screen referred to RDs.

**Methods:** Under the leadership of Executive Directors, QI Committees and QI Specialist, 3 family health teams in the Mid-West Toronto Sub-Region formed a partnership to pilot the incorporation of SCREEN-III, a validated screening instrument, into their post-discharge follow-up process. Questionnaire was translated into the electronic medical record (EMR) system. Process map was developed to guide a standardized workflow. Process and outcome measures were collectively determined and defined for performance monitoring and evaluation. Findings were used to inform shared decision making and quality improvement.

**Results:** Between April and November in 2020, malnutrition screening was implemented. Positive feedback were received from clinicians. Over the 6-month period, 76-94% of discharge was followed-up within 7 days. Of those, 9-21% was screened. About 5-17% of patients were at nutritional risk. Less than 20% of positive screen was referred to RDs.

**Conclusion:** Malnutrition screening using validated screening instrument was feasible in post-discharge follow-up in primary care. Patients at nutritional risk were sub-optimally referred to RDs. Future change ideas are warranted to increase the uptake in malnutrition screening.

**Conflict of interest:** None

**Keywords:** Malnutrition; screening; hospital discharge; quality improvement; team-based primary care

## 100 The association between pre-pregnancy body mass index, perinatal depression and maternal vitamin D status: Findings from an Australian obstetric cohort study

Dr Cathy Knight-Agarwal<sup>1</sup>

<sup>1</sup>University of Canberra, Bruce, Australia

**Biography:** Dr. Cathy Knight-Agarwal is a Clinical Assistant Professor with the Faculty of Health at the University of Canberra, Australia and is an Advanced Accredited Practising Dietitian. She holds qualifications in Applied Science (at Bachelor and Masters level, UWS), Nutrition and Dietetics (Masters, USyd) and Maternal weight management (PhD, UC). From 2001, she worked for over a decade as a clinical Dietitian, both in Australia and the UK, in the areas of paediatric nutrition, critical care, mental health, dietetic education and diabetes management. She has published her research in a number of peer review journals and presented at both national and international conferences. She regularly provides research and teaching expertise to countries in the South Pacific mainly in the area of maternal and paediatric nutrition.

**Introduction:** Globally, in 2014 it was estimated that there were 38.9 million overweight pregnant women of which 14.6 million were obese. Vitamin D acts as a unique neuro-steroid hormone which is required for normal brain development, homeostasis and function. On average 10-20% of women experience depression during pregnancy, and approximately 1 in 7 experience depression within the first year after giving birth. Maternal obesity is a notable risk factor for vulnerability to vitamin D deficiency, which, in turn, may lead to a predisposition for depression. Therefore, we sought to examine the relationship between pre-pregnancy Body Mass Index, perinatal depression risk and maternal vitamin D status.

**Methods:** A retrospective cohort study from 2013 to 2017 was undertaken involving 16,528 birth events in the Australian Capital Territory. Multivariate binary logistic regression was conducted using the forced entry method. Mediation between all variables was also tested.

**Results:** Adjusted logistic regression models found that high maternal pre-pregnancy BMI was associated with increased odds of developing perinatal depression (AOR 1.381; 95% CI, 1.381-1.155) as well as increased odds of being vitamin D deficient (AOR 1.950; 95% CI; 1.735-2.191). In comparison to women with low perinatal depression risk, women with high perinatal depression risk had increased odds of being vitamin D deficient (AOR 1.357; 95% CI, 1.624-1.1134). High maternal pre-pregnancy BMI was no longer a significant predictor of perinatal depression after including the mediator (vitamin D) in the logistic regression model, consistent with full mediation,  $R^2 = 0.124$  (Homer-Lemeshow), 0.020 (Cox-Snell), 0.051 (Nagelkerke), Model X2 (9) = 162.211,  $p=0.001$ .

**Conclusion:** In line with current Australian recommendations, women with high pre-pregnancy BMI should be screened for both perinatal depression and vitamin D deficiency, with referral to relevant support services when indicated.

**Conflict of interest:** None

**Keywords:** maternal obesity; maternal vitamin D status; perinatal depression.

## 586 The association of HIV status and HAART with plasma clot characteristics in black South Africans

Mr Shams Bakali<sup>1</sup>, Dr Zelda de Lange<sup>1</sup>, Prof. Marlien Pieters<sup>1</sup>

<sup>1</sup>North-West University, Potchefstroom, South Africa

**Biography:** Shams Bakali is a Malawian nutritionist, aged 25, who is currently pursuing his Master's degree in Nutrition at the North-West University's Centre of Excellence for Nutrition (CEN). He is a holder of BSc. Nutrition (with credit) obtained from the Lilongwe University Agriculture and Natural Resources (LUANAR), Bunda campus in Malawi. He has always dreamed of becoming one of Africa's excellent researchers and he is striving hard to reach the goal. In the first year after completing his BSc, he was fortunate to be involved in a Malawi college of medicine study that was investigating the effect of egg consumption among children in reducing stunting. The focus of his research has so far been clots, which plays a role in cardiovascular complications, which are currently on the rise in Africa and beyond. He has completed Good clinical practice (GCP) and has obtained ethics training (TRREE). He is currently completing his research under the supervision of Dr. Zelda De Lange and Prof. Marlien Pieters from the CEN.

**Introduction:** Positive HIV status and antiretroviral therapy (ART) are both associated with increased cardiovascular disease risk. Altered clot properties have been proposed as a potential mechanism, although only a limited number of studies describing this exist, with no prospective data available.

**Aim:** To investigate the prospective association of HIV status and ART respectively, with fibrinogen concentration and plasma clot properties in 151 HIV+ and 176, gender, age and BMI-matched HIV- African participants from the South African arm of the Prospective Urban and Rural Epidemiology study.

**Methods:** Of the 151 HIV+ participants, 81 remained ART untreated over a 5-year period, while 70 commenced with ART. Total fibrinogen and a splice-variant,  $\gamma'$  fibrinogen, as well as fibrin clot properties obtained with turbidimetry, were cross-sectionally compared at baseline between HIV+ and HIV- participants, and prospectively between the HIV- participants, the untreated HIV+ and the HIV+ ART-treated participants, following ethical approval. Analyses were adjusted for known cardiovascular risk markers.

**Results:** In fully adjusted generalised linear models, HIV+ participants had lower total ( $p=0.013$ ), but higher  $\gamma'$  fibrinogen ( $p=0.05$ ). Their plasma clots were less dense ( $p=0.001$ ) but took longer to lyse (break down) ( $p=0.003$ ) than the HIV- participants. Clot lysis time increased significantly over the 5-year period in the HIV- ( $p<0.0001$ ) and HIV+ ART-treated ( $p<0.0001$ ), but not in the HIV+ treatment-naïve ( $p=0.08$ ) participants. PAI-1 also increased significantly in the HIV+ ART-treated participants ( $p<0.0001$ ), but not in the other two groups.

**Conclusion:** HIV+ participants had higher levels of a pro-thrombotic fibrinogen splice variant in conjunction with clots that took longer to lyse. Prospectively, over the five-year period, HIV-infection demonstrated a tendency to delay the age-associated progression to more prothrombotic clot properties, but ART treatment partly neutralised this "protective effect."

**Conflict of interest:** None

**Keywords:** HIV, anti-retroviral therapy, fibrinogen, fibrin clot structure, African

## 477 The effect of folate gene-nutrient interactions on small-for-gestational-age risk in the screening for pregnancy endpoints (SCOPE) cohort study

Mrs Rhodi Bulloch<sup>1</sup>, Associate Professor Clare Wall<sup>1</sup>, Professor Lesley McCowan<sup>2</sup>, Mrs Rennae Taylor<sup>2</sup>, Professor Claire Roberts<sup>3</sup>, Associate Professor John Thompson<sup>2,4</sup>

<sup>1</sup>Discipline of Nutrition and Dietetics, The University Of Auckland, Auckland, New Zealand, <sup>2</sup>Department of Obstetrics and Gynaecology, The University of Auckland, Auckland, New Zealand, <sup>3</sup>Robinson Research Institute, University of Adelaide, Adelaide, Australia, <sup>4</sup>Department of Paediatrics, Child and Youth Health, The University of Auckland

**Biography:** Rhodi Bulloch is a New Zealand and South African registered dietitian completing her PhD research in maternal folic acid supplementation and pregnancy outcomes, at The University of Auckland, New Zealand. Rhodi has experience working in public health, clinical dietetics, food regulations and academia.

**Introduction:** Small-for-gestational-age (SGA) is associated with significant perinatal morbidity and mortality. Previous research indicates that both maternal genotype and nutritional intake influence SGA risk. Our aim was to investigate gene-nutrient interactions between maternal single nucleotide polymorphisms (SNPs) of the one-carbon metabolic pathway and folic acid supplement (FAS) use, and their association with SGA risk.

**Methods:** We analysed data from New Zealand participants of the SCOPE prospective cohort study. Ethical approval was obtained and participants provided informed consent. 1870 nulliparous women with singleton pregnancy were recruited (2004 to 2009) and genotyped for MTHFR677 (rs1801133), MTHFR1298 (rs1801131), MTHFD1 1958 (rs2236225), MTR2756 (rs1805087), MTRR66 (rs1801394) and TCN2 776 (rs1801198). Data on FAS use (15 weeks' gestation) (yes/no) was collected via face-to-face interview. Participants were followed prospectively; birth outcome data collected within 72 hours of delivery. SGA was defined as <10th customised birthweight centile.

**Results:** 73% of participants were using FAS at 15 weeks' gestation. SGA prevalence was 10.1%. Analysis showed a significant SNP-FAS interaction for MTHFR1298 ( $p=0.020$ ), MTHFR677 ( $p=0.019$ ) and TCN2 776 ( $p=0.017$ ) in relation to SGA. MTHFR1298 variant (CC) genotype non-FAS users had an increased likelihood [Odds Ratio (OR)=2.91 (95% Confidence Interval (CI)=1.52, 5.60] of SGA compared with wild-type (AA) FAS users. MTHFR677 variant allele carriers (CT+TT) non-FAS users had an increased likelihood [OR=1.87 (95% CI=1.21, 2.88)] compared to wild-type (CC) FAS users. TCN2 776 GG (variant) non-FAS users had an increased likelihood [OR=2.16 (95% CI=(1.26, 3.71)] compared with wild type homozygote + heterozygote (CC+CG) FAS users. No significant interactions were observed for MTHFD1 1958, MTR2756 or MTRR66.

**Conclusion:** Significant gene-nutrient interaction effects in relation to SGA were observed for three SNPs. FAS showed an overall pattern of attenuating differences in SGA risk seen between genotype groups in FAS non-users, highlighting the importance of supporting FAS use in women with these polymorphisms.

**Conflict of interest:** None

**Keywords:** Folic acid; small-for-gestational-age; genetic polymorphisms; pregnancy; supplementation

### 336 The effect of olive leaf extract supplementation on performance in active individuals; a randomised controlled cross-over trial

Mr Vaughan Somerville<sup>1</sup>, Dr Karen Bishop<sup>2</sup>, Dr Troy Merry<sup>1</sup>, Dr Andrea Braakhuis<sup>1</sup>

<sup>1</sup>Discipline of Nutrition, Faculty of Medical and Health Sciences, The University of Auckland, Auckland, New Zealand, <sup>2</sup>Auckland Cancer Society Research Centre, The University of Auckland, Auckland, New Zealand

**Biography:** Mr. Somerville is a PhD Candidate in his final year at the University of Auckland, investigating the effects of polyphenols on immunity and performance in athletes. Mr. Somerville has an interest in using novel phenolic products to protect athletes against illness and to improve athletic performance. This passion had led him to publish a series of meta-analyses on different products as well as conduct randomised controlled trials to investigate novel products and their effect.

**Introduction:** Athletes are looking for novel and natural supplements that may improve athletic performance. Polyphenols are one such supplement that have been established to improve performance. Olive leaf extract (OLE), is an over-the-counter supplement containing two predominate polyphenols, oleuropein and hydroxytyrosol (HT). HT supplementation has been reported to improve endurance capacity with exercise in rats, while oleuropein supplementation has been reported to potentially induce mitochondrial biogenesis via the up-regulation of PGC-1 $\alpha$ . These results however have only been seen in animal or in vitro models. In addition, both oleuropein and HT are well-established to improve flow-mediated dilatation and endothelial function in humans, as well as reduce blood pressure, which has been shown to aid performance. The aim of this randomised controlled trial (RCT) was to investigate the effect of OLE supplementation to improve performance in an active cohort.

**Methods:** Fifteen active (>4 hours of exercise per week) 18-35 year olds were recruited to a 12-week cross-over double-blind RCT. Participants were allocated to either a daily placebo or OLE (containing 96mg oleuropein) tablet, for the first four weeks, before a subsequent four-week wash-out. Participants were then placed on the alternative treatment for the last four-week block. Participants were required to complete the validated bronco shuttle test before and after each four-week intervention block, complete a daily log measuring well-being, illness and training load (TRIMP score), and six 24-hour recalls.

**Results:** There was a non-significant decrease in performance on OLE supplementation compared with control (-1.43%; 95%CI (-4.75-1.88%) p-value > 0.05) and no significant differences between individual shuttle times. In addition, there were no significant differences in TRIMP score, sleep, well-being or compliance between the two groups.

**Conclusion:** OLE supplementation for 28 days had no significant effect on performance as measured by the validated bronco shuttle test.

**Conflict of interest:** None

**Keywords:** polyphenols; sport; performance; exercise; nutrition

### 159 The Effects of macronutrient manipulation and gut training on ultrarunning race performance

Dr Claire Blennerhassett<sup>1</sup>, Professor Lars McNaughton<sup>2</sup>, Dr Jamie Pugh<sup>4</sup>

<sup>1</sup>Faculty of Health, Social Care and Medicine, Edge Hill University, Ormskirk, United Kingdom, <sup>2</sup>Department of Sport and Physical Activity, Edge Hill University, Ormskirk, United Kingdom, <sup>3</sup>University of Johannesburg, , South Africa, <sup>4</sup>Research Institute for Sport and Exercise Sciences, Liverpool John Moores University, Liverpool, United Kingdom

**Biography:** Dr Claire Blennerhassett is a dietitian, registered with the UK Health Care Professionals Council, since 2009. She has worked as a Community Dietitian in the UK National Health Service, supporting the dietary management of chronic diseases, and paediatric and adult weight management, including the bariatric surgery.

In 2014, Claire was employed as a research dietitian working at the University Hospital of South Manchester, where she was involved in two key research projects; B-Ahead 2 and PROCAS Lifestyle. These projects compared the efficacy of an intermittent energy-restricted diet to a traditional energy restricted diet in women receiving chemotherapy treatment for breast cancer and women of breast-screening age, respectively.

Claire is now employed as a lecturer at Edge Hill University (Lancashire, UK), where she also completed her PhD entitled 'Ultra-endurance athletes' food choices, nutrition knowledge and strategies to improve dietary intake and performance'. Claire's main research interest centres around eating behaviour and food choices of individuals and groups, including athletes, general population and those following specific diets e.g. vegan diet. In addition, Claire has an interest in food insecurity and sustainability.

**Background:** Ultrarunners typically fail to ingest carbohydrate at the recommended rate during a race. In some cases, this is due to gastrointestinal symptoms (GIS). As such, multicomponent nutrition strategies are needed to minimise the risk of GIS and maximise fuel availability. This study aimed to compare the effectiveness of two multicomponent nutrition strategies during a 56 km race.

**Methods:** Seventeen experienced distance runners matched for performance and body composition, were allocated to diets of either high fat, low carbohydrate (CHO) + gut training (HFLC+GT) or low fat, high carbohydrate + gut training (LFHC+GT). Both groups initially followed the GT protocol (4 weeks), prior to being allocated to one of the diet groups (7 days). The diet intervention was followed by CHO loading for 48 h before the race. Nutritional intake and GIS were measured before (baseline) and after the multicomponent intervention. Gut damage was measured by intestinal-fatty acid binding protein (IFABP) immediately pre and postrace.

**Results:** There was no difference in performance between the HFLC+GT and the LFHC+GT groups (353.6 $\pm$ 42.8 min and 354.1 $\pm$ 54.3 min, respectively; p = 0.984, d = 0.10). Carbohydrate was consumed at a rate of 55.8 $\pm$ 33.8 and 55.9 $\pm$ 26.0 g.hr<sup>-1</sup> (HFLC+GT and LFHC+GT, respectively). There was no difference in GIS incidence between groups at baseline or during the race (p = 0.711, r = 0.39 and p = 0.236, r = 0.33, respectively). There were also no differences in gut damage between baseline and the race (MD 112.0 pg.ml<sup>-1</sup>, p = 0.877, r = -0.39).

**Conclusion:** Despite successful implementation of this multicomponent intervention the incidence of GIS was high, and the CHO intake was below the 90 g.hr<sup>-1</sup> recommended for ultra-endurance events. The similarity in performance time between groups indicates that the HFLC and LFHC diets were equally effective.

**Conflict of interest:** None

**Keywords:** gut training, high fat, ultramarathon

## 556 The importance of fostering public-private partnerships for an improved country-specific food composition database

Mrs Joelaine Chetty<sup>1</sup>, Mrs Malory Jumat<sup>1</sup>, Dr Averalda Van Graan<sup>1</sup>

<sup>1</sup>South African Medical Research Council. Biostatistics Research Unit. South African Food Data System (SAFOODS), Cape Town, South Africa

**Biography:** Joelaine Chetty completed her undergraduate, BSc Dietetics (Hons) degree in 1998 at the University of the Western Cape, her Masters of Public Health (MPH) degree at the University of Cape Town in 2013. Kicked off her Nutrition/Dietetics career in Gauteng as a Community Dietitian for the Central Wits Regional Health Services. An interest in Food composition focus area was sparked and initiated at the South African Medical Research Council in 2000. A strong interest in the scarce skill of food compilation has seen her active in the field and committed in striving for a country-specific food composition database for South Africa. She has presented food composition related research nationally and internationally over her 12 year food composition field. She serves as a Transformation Forum representative for the South African Medical Research Council and is an active member of the Health Professionals Council of South Africa and Association for Dietetics of South Africa. Joelaine Chetty is a Military spouse, a mother of two teenagers and cares for her visually impaired Father.

**Introduction:** Public private partnerships (PPP) require special nurturing within the South African food composition arena for public health nutrition benefits. Food composition databases reflect foods consumed within the food system and rely heavily on food industry to provide factual, dated and analysed information of food products. The South African Food Data System (SAFOODS), is a compilation department, highly dependent on PPP.

**Objective :** To identify the valuable annual contributions made by PPP and impact of data sharing for improved country-specific food database statistics

**Method:** Retrospective nutrient data reports extracted from food composition reference databases, for period, 2016 to 2019. Chemically analysed data source contributions provided by industry, per food group has been reviewed. Food groups targeted include infant, paediatric feeds and foods; soups and seasonings and milk groups. Contribution of local data recorded per food group and total overall contribution to data source evaluated for impact.

**Results:** Three food groups updated over review period with full PPP support. Data reported for contributions of 14 companies. Infant food group is currently the only group within database, of South African information solely, with total industry collaboration (n=8); a marked 257% increase in total foods within group between 2016 and previous editions. Within milk group, new data sourced, amounted to 37% increase in South African foods. Soups and seasonings added 46% (n=35) new data to latest update. PPP shifted South African reference data source total contribution, from 37% to 46%, during 4year national outreach.

**Conclusion:** Fostering a symbiotic PPP will result in a positive impact on food consumption surveys, where branded food items are included within SAFOODS dataset. This will enhance reporting accuracy of dietary intake studies within the country. Further and future engagement with food industry contacts, will be encouraged to maximize a database with analysed nutrient values for South Africa.

**Conflict of interest:** None

**Keywords:** food composition; public-private partnerships; chemical analysis; country-specific; south africa

## 580 The inflammatory potential of the diet of rural and urban black South Africans

Ms Maylene Ferreira<sup>1,2</sup>, Professor Marlien Pieters<sup>1,2</sup>, Doctor Tertia van Zyl<sup>1,2</sup>, Professor Edelweiss Wentzel-Viljoen<sup>1,2</sup>, Dr H el ene Toin et Cronj e<sup>3</sup>

<sup>1</sup>Center Of Excellence For Nutrition, Potchefstroom , South Africa, <sup>2</sup>Medical Research Council Unit for Hypertension and Cardiovascular Disease, Potchefstroom, South Africa, <sup>3</sup>Section of Epidemiology, Department of Public Health, University of Copenhagen, Denmark

**Biography:** I am currently employed as a clinical Dietician with special interest in cardiovascular and renal disease. I enjoy researching blood coagulation (haemostasis) within the non-communicable disease working group of the North West University's research unit. Academic achievements have always been my motivation and challenging myself to new, unfamiliar opportunities is what I constantly strive for. I plan on using my current research as a foundation to a PhD research project. In 2018, I received my B.Sc. Dietetics degree with distinction and graduated third in my class and in 2021 I received my MSc Dietetics degree with distinction. I look forward to utilizing the knowledge I have gained to provide better care to patients and to inspire change.

**Introduction and aim:** Diet is considered a strong modulator of chronic inflammation. Consequently, dietary indices have been developed to reflect the overall anti/pro-inflammatory potential of the total diet instead of focusing on individual nutrients only. These indices have been successfully used to demonstrate the relationship between anti/pro-inflammatory diets and a variety of cardiovascular diseases and cancers. The inflammatory potential of diets regularly consumed by Black South African has, however, not yet been investigated.

**Methods:** The dietary inflammatory potential of approximately 2000 apparently healthy Black South Africans older than 35 years was calculated using a literature-based energy-adjusted dietary inflammatory index (E-DII) developed by Herbert and colleagues: the E-DII controls for energy intake. Men and women from a rural and urban community (~1000 each) in the North West province, who participated in the Prospective Urban and Rural Epidemiology (PURE) study, were included following ethical approval. The E-DII was cross-sectionally associated with demographic and biochemical data, including inflammatory markers.

**Results:** Thirty-seven of the 45 foods and nutrients included in the original E-DII were consumed by the PURE participants. Their E-DII ranged from -3.8 to +5.0, with the theoretical score range being -7.67 to +6.67. Urban women consumed the most anti-inflammatory diet (0.25 ± 0.14) and rural men the most pro-inflammatory diet (0.70 ± 0.66). Age decreased across E-DII quartiles whereas the number of alcohol consumers (p<0.001) and tobacco users (p=0.001) increased. Most biochemical variables did not differ across E-DII quartiles. Only fasting glucose and liver enzymes increased over E-DII quartiles.

**Conclusion:** On average, the participants consumed a more pro-inflammatory diet with a limited overall pro/anti-inflammatory range. Rural men consumed the most pro-inflammatory and older individuals a more anti-inflammatory diet. The lack of variety within the PURE population's diet likely contributed to a lack of association between the E-DII and inflammatory markers.

**Conflict of interest:** None

**Keywords:** Dietary Inflammatory Index (DII); inflammation; African diet; rural-urban

## 415 The influence of different nutrition messages on intention to reduce unhealthy food consumption: a randomised crossover trial

*Ms Joyce Haddad*<sup>1,2</sup>, *Dr Gilly A Hendrie*<sup>1</sup>, *Dr Kacie Dickinson*<sup>2</sup>, *Professor Rebecca K Golley*<sup>2</sup>

<sup>1</sup>Commonwealth Scientific and Industrial Research Organisation (CSIRO), Adelaide, Australia, <sup>2</sup>Flinders University, Adelaide, Australia

**Biography:** Joyce Haddad is a Lebanese-Australian Accredited Practising Dietitian and PhD candidate from Flinders University in South Australia. Joyce has been awarded a scholarship from Flinders University, the CSIRO, Healthy Developments Adelaide and the Commonwealth Program to conduct research into the impact of tailored nutrition communication on unhealthy food intake. Joyce has broad experience in clinical practice and public health, including work experience at the World Health Organization in Geneva from February to July 2020, at the height of the COVID-19 pandemic. Joyce enjoys communicating evidence based nutrition across her social media channels "A Dietitian's Mission". Outside of nutrition, Joyce is a personal trainer and group fitness instructor, and enjoys running trails and climbing mountains.

**Introduction:** Message framing is a communication strategy used to promote health behaviour. The effectiveness of message framing on changing dietary behaviour requires further investigation. This study aimed to explore differences in individuals' reported intention to reduce unhealthy food consumption following exposure to theoretically framed nutrition messages.

**Methods:** In a cross-over design, Australian adults received four nutrition messages: framed as positive, negative, majority- and minority-norm, in a random order. Intention to reduce unhealthy food consumption was reported after each message exposure (across 3 items on a scale of 1-100), separated by washout activities to minimise carryover effect. Socio-demographic, usual dietary intake and behavioural characteristics were also reported. Friedman-tests and Wilcoxon signed rank-tests assessed significance of intention score differences. Associations between message frames and intention scores were determined using  $\chi^2$  tests with Bonferroni adjusted  $\alpha$ -levels per test ( $p < 0.05$ ).

**Results:** Analyses were conducted on 1319 subjects, of which 80% were female, with a mean  $\pm$  SD age of 49  $\pm$  16 years. Statistically significant differences were found between intention scores  $\chi^2(3, n=1319)=94.224, p < .001$ . Inspection of the median values showed differences in intention scores from the positive- (Md=89) and negative-framed message (Md=88), to both social-norm messages (Md=87). Post-hoc analyses revealed differences in intention scores between the positive- and negative-framed messages ( $p < .05$ ), positive- and majority-norm messages ( $p < .001$ ), positive- and minority-norm messages ( $p < .001$ ), negative- and majority-norm messages ( $p < .001$ ), and negative- and minority-norm ( $p < .001$ ), with small effect sizes ( $r=0.1$ ).

**Conclusion:** Findings suggest that positive-framed messages had slightly greater influence on intention to reduce unhealthy food consumption compared to negative-framed and social-norm messages. Researchers, clinical dietitians, and public health campaigns can motivate individuals to improve dietary habits by communicating positive outcomes associated with healthier eating. Future studies are needed to determine the impact of nutrition message framing on changing food consumption patterns.

**Conflict of interest:** The first author declares: the presented work had financial support from Flinders University through a research scholarship, and from CSIRO, Healthy Development Adelaide and the Commonwealth Scholarships Program through top-up scholarships. Kacie Dickinson receives funding from the Foundation for High Blood Pressure Research. The authors had no financial relationships with any organisations that might have an interest in the presented work; there are no other relationships or activities that could appear to have influenced the presented work.

**Keywords:** Nutrition, message, communication, diet quality

## 428 The influence of taste on diet and obesity in African American students

*Dr Terezie Tolar-Peterson*, *Miss Nicole Reeder*, *Miss Pradtana Tapanee*

<sup>1</sup>Mississippi State University, Starkville, United States

**Biography:** Dr. Terezie Tolar-Peterson (Mosby) is a specialist in human nutrition with national and international experience. She received her Bachelor's Degree in Nutrition and Preventive Medicine from the 3rd Medical School of Charles University in Prague, Czech Republic. Her Master's Degree in Clinical Nutrition and Doctorate in Adult Education were obtained from The University of Memphis, Memphis, TN. Dr. Mosby has a broad working experience that includes clinical experience, teaching, research, and community work. Her clinical experience consists of working as a Registered Dietitian and Nutritionist at St. Jude Children's Research Hospital. In 2015 she joined Mississippi State University as Dietetic Internship Director and Professor of Nutrition. Her research interest is in the area of pediatric oncology nutrition and personalized nutrition, especially in how genetic factors, together with environmental factors, can predispose us to health or disease. Dr. Mosby is a Fellow of the Academy of Nutrition and Dietetics.

**Introduction:** Health disparity is a severe concern in the USA and Mississippi. The obesity prevalence for blacks (43.2%) is higher than whites (30.2%). To address health disparity, we need to understand the dietary habits of this population, including predictors of those nutritional habits.

**Methods:** Analysis included 511 participants between the ages of 20-45 years, 76.1% Caucasian, 23.9% African Americans. We used Saliva samples and Applied Biosystem's Sample-to-SNP Kit for DNA and Single Nucleotide Polymorphism (SNP) analysis and a bioelectrical impedance analyzer to assess body composition.

**Results:** The distribution for rs17492553 genotypes were TT (n=105), CT (n=244), and CC (n=162). Individuals who were homozygous TT had a different intake in carbohydrate, non-whole grain, fruit, total sugar, added sugar, fructose, glucose, maltose, sucrose, and glycemic load than CT and CC individuals ( $p$ -value $<0.05$ ). There was also an association between SNP variation and ethnicity ( $p$ -value $<0.001$ , chi-square). African American consumed significantly more energy ( $p$ -value=0.006), carbohydrates ( $57.58 \pm 12.53\%$  vs  $48.60 \pm 8.83\%$ ,  $p < 0.001$ ); less fiber ( $13.70 \pm 8.64$  g vs  $15.93 \pm 9.5$  g,  $p=0.024$ ), more fruit ( $2.37 \pm 3.17$  servings/day vs  $1.25 \pm 1.64$  servings/day) and more added sugar. Caucasian consumed more protein ( $14.73 \pm 3.59\%$  vs  $11.78 \pm 4.08\%$ ,  $p < 0.001$ ), vegetable ( $1.53 \pm 1.18$  servings/day vs  $1.27 \pm 0.85$  servings per day,  $p=0.028$ ), and fat ( $p=0.007$ ). Body fat percentage was associated with reported race for women ( $p < 0.001$ ), but not men ( $p = 0.246$ ). African American women had the highest mean body fat percentage (32.62%) compared to a mean body fat percentage of 26.99% for Caucasian women.

**Conclusion:** There are genetic differences in taste receptors, and the probability of each genotype varies by race. Obesity research needs to elucidate racial differences in weight status, diet, and genetic polymorphisms to design targeted obesity interventions at both the individual and population levels.

**Conflict of interest:** None

**Keywords:** diet, taste genes, body composition, race

## 461 The Partnership for Dietetic Education and Practice (PDEP) in Canada: Working together for success

*Dr Gordon Zello<sup>1</sup>, MA, RD Corinne Eisenbraun<sup>2</sup>, PhD, RD, BEd, PHEc  
Isabelle Giroux<sup>3</sup>, MSc, RD Joanie Bouchard<sup>4</sup>*

<sup>1</sup>University Of Saskatchewan, Saskatoon, Canada, <sup>2</sup>Dietitians of Canada, Toronto, Canada, <sup>3</sup>University of Ottawa, Ottawa, Canada, <sup>4</sup>College of Dietitians of BC, Vancouver, Canada

**Biography:** Gordon Zello, PhD is a professor of nutrition at the University of Saskatchewan, Canada, and has been involved in the undergraduate and graduate education of dietetic students for over 20 years. Gord has been involved in the Partnership for Dietetic Education and Practice (PDEP) since its formation in 2009, and served on the Working Group on the Future of PDEP. Over the last four years, Gord has been a member of the Steering Committee of PDEP representing the educator sector. He conducts interdisciplinary research in basic and applied research. Gord's research includes collaborations with kinesiology, pharmacy, agriculture, medicine and public health. He also conducts international work in Ethiopia and Bangladesh. Gord has published over 100 journal papers and has been privileged to present at various multidisciplinary conferences.

**Introduction:** The Partnership for Dietetic Education and Practice (PDEP) was formed in 2009 to bring the dietetics profession, education and regulatory sectors together to work on priority issues to advance the education and practice where their mandates intersect. The tasks were to create a common vision for the education and the practice to inform future joint initiatives; to develop, monitor and maintain the currency of the integrated competencies; and to implement the Accreditation Standards through collaborative structures and processes.

**Methods:** The PDEP Steering Committee (SC) consists of 3 representatives from each sector and costs for PDEP are shared equally by the 3 sectors. The SC is responsible for ensuring cost-effective partnership: planning, priority-setting and monitoring; project management, financial management, communications and general stewardship. In 2018, an external consultant reviewed the governance and operating principles of PDEP, as well as, the development and achievements of PDEP since its formation. Success was defined as completion of the tasks and maintaining effective and efficient partnership operations.

**Results:** PDEP has defined a governance structure with detailed policies. PDEP has completed an analysis of job tasks undertaken by dietitians in all areas of practice; developed Integrated Competencies for Dietetic Education and Practice (ICDEP); established national dietetics education Accreditation Standards; and agreed to a revitalized partnership paradigm for enhanced communication and governance. PDEP has also committed to periodically reviewing the structure, work accomplished and value of the partnership.

**Conclusions:** The partnership model has been effective in discerning commonalities between sectors resulting in enriched ICDEP and operative accreditation standards, as well and having a better understanding of the role and priorities of each partner. Further, the success of PDEP is evident by the acceptance of the partner groups and stakeholders in the consultation approaches used for all programmatic and project work, focusing on consensus building and collaboration.

**Conflict of interest:** None

**Keywords:** governance; stewardship; visioning; accreditation; competencies

## 551 The potential contribution of Bambara Groundnut, as a underutilised indigenous pulse, to nutrition and food security

*Mrs Zani Veldsman<sup>1</sup>, Professor Hettie Schönfeldt<sup>2</sup>, Dr Beulah Pretorius<sup>1</sup>*

<sup>1</sup>Department of Animal and Wildlife Sciences, Institute of Food Nutrition and Well-being, Faculty of Natural and Agricultural Sciences, University Of Pretoria, Pretoria, South Africa, <sup>2</sup>African Research University Alliance (ARUA) Centre of Excellence for Food Security, University of Pretoria, Pretoria, South Africa

**Biography:** Zani Veldsman is a PhD candidate in Human Nutrition at the University of Pretoria. Her research interest lies in the evaluation of underutilised foods and the impact thereof on dietary diversity.

**Introduction:** Bambara groundnut (BGN) is an underutilised, indigenous crop in sub-Saharan Africa. As an underutilised crop, the nutritional contribution it can make is not well researched and documented from a food and nutrition security perspective.

**Objective:** To determine the nutritional composition of BGN, in comparison with other pulses and legumes in the South African diet.

**Method:** Nutritional analysis, including proximate analysis, minerals, fatty acid and amino acid profiles of BGN from three different regions in the Mpumalanga (MP) province of South Africa, was done and compared with other pulses and legumes in the diet.

**Results:** The nutritional evaluation of BGN seeds from MP shows a variation of 6 – 9% in protein content between cultivars, containing all essential amino acids and fat content ranging from 1.5 – 3%, with a high proportion of unsaturated fatty acids. A carbohydrate content of 18 - 22% and trace amounts of iron and zinc. In comparison with other pulses and legumes, BGN compares well in terms of protein content, amino acid profile, polyunsaturated fatty acid content and zinc levels.

**Conclusion:** The high concentration of essential amino acids, unsaturated fatty acids, and carbohydrates of BGN indicates that this local legume is a nutrient-dense food that has the potential to improve nutritional and food security.

**Conflict of interest:** None

**Keywords:** Bambara groundnut, indigenous, food security, nutrition security, pulses

## 559 The relationship between dietary patterns and blood pressure in the African-PREDICT study population

Mrs Thalia Schaap<sup>1</sup>, Professor Wayne Smith<sup>2</sup>, Dr Cristian Ricci<sup>1</sup>, Dr Tertius van Zyl<sup>1</sup>

<sup>1</sup>North-West University, Centre Of Excellence for Nutrition, Potchefstroom, South Africa, <sup>2</sup>North-West University, Hypertension in Africa Research Team, Potchefstroom, South Africa

**Biography:** Thalia Schaap is a registered dietitian in South Africa that obtained her BSc. Dietetics degree from the North-West University in 2013 and is currently in the process of completing her Master's Degree through the North-West University. She has gained excellent clinical experience in a variety of areas within the hospital setting such as working with pregnant and breastfeeding mothers, premature infants and paediatric, nutritional management of medical and surgical conditions, managing chronic diseases of lifestyle and working closely with the food service unit. She is currently working in a government hospital in Gauteng and has been working there for more than five years. Thalia enjoys working with and managing patients with chronic diseases of lifestyle but has a special interest in paediatric dietetics.

**Introduction:** Dietary patterns (DP) can be used to investigate the relationship between diet and the development of disease conditions. The study aimed to investigate the relationship between dietary patterns and blood pressure among the African-PREDICT study population.

**Methods:** A total of 1153 young (18 to 30 years old), apparently healthy black and white men and women from the North West province were included in this cross-sectional study. Dietary data collection included three 24-hour recalls by means of the 5-step multiple-pass method, two on non-consecutive week days and one on a weekend day. Principle component analysis using 17 food groups were used to derive DP. A generalised linear model (GLM) adjusted for co-variables were used to determine the relationship between DP and blood pressure (clinic SBP and DBP, 24-h ambulatory blood pressure measurement (ABPM)-SBP and DBP) separately for each ethnicity. Ethical approval for the study was obtained from the HREC of NWU Potchefstroom campus (NWU-00439-19-51).

**Results:** A total of six DP were derived from the 17 food groups. A significant direct relationship ( $p=0.027$ ) between the sugary drinks and savoury snack DP and clinic DBP were found in the black participants. Among the white participants a significant direct relationship ( $P=0.032$ ) was found between the bread, fats and oils DP and ABPM-SBP. The fruits, legumes, nuts and seeds DP had a significant inverse relationship with both clinic DBP and ABPM-DBP ( $p=0.012$  and  $p=0.044$ ).

**Conclusion:** The intake of a DP containing fruits, legumes, nuts and seeds have a protective relationship with DBP. The other two DP containing fats, sugar and salt show a relationship that can increase the risk for developing hypertension. The findings supports the guidelines of the SAFBDG as part of a healthy lifestyle to include fruits, vegetables and legumes and to reduce the intake of fat, sugar and salt.

**Conflict of interest:** None

**Keywords:** dietary patterns; blood pressure; young adults

## 603 The relationship between homocysteine concentrations and cardiovascular measures including markers of haemostasis in South African adolescents

Mrs Jacomina Du Plessis<sup>1</sup>, Prof Cornelia Nienaber-Rousseau<sup>1,3</sup>, Dr Leandi Lammertyn<sup>2,3</sup>, Prof Aletta E Schutte<sup>2,3,4</sup>, Prof Marlien Pieters<sup>1,3</sup>, Prof Herculina S Kruger<sup>1,3</sup>

<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom,, South Africa, <sup>2</sup>Hypertension in Africa Research Team, North-West University, Potchefstroom,, South Africa, <sup>3</sup>Medical Research Council Unit for Hypertension and Cardiovascular Disease, North-West University, Potchefstroom,, South Africa, <sup>4</sup>School of Population Health, University of New South Wales; The George Institute for Global Health, Sydney, Australia

**Biography:** Mrs. Jacomina Du Plessis (née Van Schalkwyk), is a Dietitian and third year PhD student at the Centre of Excellence for Nutrition, North-West University (NWU) Potchefstroom. She obtained her B.Sc degree in Dietetics at the NWU in 2015 and worked as a Community Service Dietitian (2016) and private practicing Dietitian (2017), while completing her M.Sc in Dietetics part-time at the NWU. Her field of interest is homocysteine, cardiovascular and haemostatic risk factors, diet and nutrigenetics and her PhD thesis is titled "Homocysteine, genetic variants and dietary predictors' association with cardiovascular structure and function in black South African adults and adolescents". She is a scholarship holder of the Bongani Mayosi National Health Scholars Program at the South African Medical Research Council and enjoys helping out as a research assistant and writing centre consultant in her free time.

**Background:** Homocysteine (Hcy) is a known modifiable risk factor for cardiovascular disease (CVD). We investigated the associations between Hcy and cardiovascular health in South African adolescents, many already burdened with overweight, stunting, early vascular aging and hypertension, to improve the pathophysiological understanding of CVD prevention, development, management and treatment through Hcy-related pathways.

**Methods:** During the Physical Activity in Youth study, circulating Hcy concentrations of 172 South African adolescents (105 girls, ages 13 to <18 years) were measured. Anthropometric and cardiovascular factors were included and cross-sectionally analyzed through partial Spearman correlations and general linear models (GLMs).

**Results:** Hcy correlated positively with body weight ( $P = 0.03$ ) and muscle mass ( $P = 0.01$ ), but negatively with fibrinogen concentrations ( $P = 0.001$ ). GLMs with post hoc tests revealed that fibrinogen concentrations decreased across Hcy tertiles with differences between the first and middle ( $P < 0.001$ ) and first and last tertiles ( $P < 0.01$ ). Systolic and diastolic blood pressure (BP) produced approximating U-shaped curves, with differences between the middle and upper tertiles (all  $P < 0.02$ ). Forty percent of the adolescents had elevated BP, of whom 37% fell in the lowest and 38% in the highest Hcy tertiles. Hcy differed between sexes (boys having higher Hcy), but not between sub-groups based on puberty, weight, stunting, smoking or alcohol consumption. All analyses were adjusted for age, body mass index and sex.

**Conclusion:** Adolescence is a critical window for optimising health and well-being. Both high and low Hcy could be early contributing risk factors to cardiovascular health. The associations between Hcy and BP suggest that dietary and lifestyle manipulation, to achieve the optimal range of Hcy, may be beneficial in preventing Hcy-related hypertension in adulthood. The inverse relationship between Hcy and fibrinogen remains to be clarified, but could be due to the detrimental effects of hypohomocysteinemia.

**Conflict of interest:** None

**Keywords:** blood pressure; fibrinogen; hyperhomocysteinemia; hypohomocysteinemia

## 355 The relationship between under-nutrition risk, sarcopenia, strength and function in community-dwelling older adults after hospital discharge

Prof Mary Hickson<sup>1,2</sup>, Dr Anna Julian<sup>2</sup>, Professor Gary Frost<sup>2</sup>

<sup>1</sup>University of Plymouth, Plymouth, United Kingdom, <sup>2</sup>Imperial College London, London, UK

**Biography:** Professor Mary Hickson's research includes sarcopenia and frailty, hospital nutritional care, nutrition in older people, and dietitians in primary care, as well as other aspects of dietetic professional practice.

Professor Hickson qualified as a dietitian in 1989 from the University of Surrey, UK. She then worked as a dietitian in a variety of clinical specialities in both the UK and Australia. She specialised in nutritional care of elderly people in 1993, working in elderly mental health, community services and acute medical care. In 2002 she was awarded a doctorate from Imperial College London, for work exploring ways to improve nutritional care on acute elderly medicine wards.

She went on to lead research in Therapy Services at one of the largest hospitals in London, with the aim to increase the research capacity in the allied health professions. She has continued to work nationally to promote clinical academic careers, sits on the NIHR pre-doctoral award panel, and is an NIHR Training Advocate for Dietetics.

In 2016 Mary took up a chair in dietetics at the University of Plymouth where she leads research within the Dietetics, Human Nutrition and Health research group, as well as contributing to teaching the undergraduate and post-graduate courses.

**Introduction:** Maintaining physical function is an important aspect of recovery following illness. We present data illustrating the relationship between under-nutrition risk and sarcopenia, strength, and function in older adults post hospital admission.

**Method:** A longitudinal cohort of community-dwelling older adults were categorised as at-risk or low-risk of under-nutrition at hospital discharge. Measurements were taken of handgrip strength (HGS) using dynamometry; sarcopenia risk using SARC-F score; ability to accomplish activities of daily living (ADL) using modified Townsend scale. They were followed up at 3, 6 and 12 months. Comparisons between those at-risk and low-risk were made using Student's t-test or Mann Whitney U-test.

**Results:** At baseline (n=171) sarcopenia score was higher in the 'at-risk' group (symptomatic (median score=5 (IQR: 2,7)) compared to low-risk (healthy (3 (1,6))). Over time both group's scores deteriorated. In the at-risk group higher ADL scores (37 (21, 58) vs 23.5 (5, 48) p=0.004) indicated worse function at baseline. This difference was maintained over time. However, there were differences in each group's recovery trajectory. Both groups deteriorated up to 6 months but this was greatest in the at-risk group (8 point ADL score increase vs 4 in low-risk). Both groups then stabilised between 6 to 12 months, but the at-risk group remained with worse ADL score. HGS was lower in the at-risk group at baseline (15.8kg (6.8) vs 20.8kg (8.6) p<0.001) and throughout the 12 months, but did not deteriorate over time.

**Conclusion:** Sarcopenia risk, strength and function were all worse in people at risk of under-nutrition at hospital discharge. Regardless of nutritional status, older individuals are on a downward trajectory after hospitalisation. There is a more rapid deterioration in at-risk participants but these losses apparently stabilise between 6-12 months. Strength did not improve with time although it did not deteriorate in the same way as functional indicators.

**Conflict of interest:** None

**Keywords:** Under-nutrition; older adults; sarcopenia; function; strength;

## 395 The statistical methods and software used in nutrition and dietetic research: A review of the published literature using text mining.

Ms Alison Coenen<sup>1</sup>, Prof Marijka Batterham<sup>1</sup>, Prof Eleanor Beck<sup>1</sup>

<sup>1</sup>University Of Wollongong, Wollongong, Australia

**Biography:** Alison holds a Bachelor of Science (Nutrition) and a Master of Nutrition and Dietetics from the University of Wollongong, Australia. Prior to completing her Master's degree in 2019, Alison spent two years working in medical research environments at the University of Sydney's Charles Perkins Centre and The George Institute for Global Health. This research experience provided her with an insight into the central role statistics has in producing, analysing and drawing inferences from research data. However, like many dietitians, she did not feel adequately equipped with the skills required to understand and interpret many statistical methods she encountered. In 2019, Alison completed a research project that focused on identifying the most commonly used statistical methods in nutrition and dietetic research, and hence those that dietitians need to understand when critiquing the underpinning scientific literature. Alison hopes that the findings of this project will be used to guide education and training for dietitians in statistics.

**Introduction:** Dietitians must be statistically literate to effectively interpret the scientific literature underpinning the discipline. Despite this, no study has been published that objectively identifies common statistical methods and software packages used in nutrition and dietetic literature. This study aimed to identify statistical methods and software frequently used in nutrition and dietetic research, with a view to informing further education requirements for dietitians.

**Methods:** A text mining approach using the bag-of-words model was applied to a random sample of articles obtained from all journals in the 'Nutrition and Dietetics' subject category within the SCImago Journal & Country Rank portal in 2018. A list of 229 statistical terms and 19 statistical software packages was developed to define the search terms of interest. Statistical information from the methods section of included articles was extracted into Microsoft Excel (2016) for data cleaning. Statistical analyses were conducted in R (Version 3.6.0) and Microsoft Excel (2016).

**Results:** A total of 757 journal articles were included. Numerical descriptive statistics were the most common statistical method group, appearing in 83.2% of articles (n=630). This was followed by specific hypothesis tests (68.8%, n=521), general hypothesis concepts (58.4%, n=442), regression (44.4%, n=336) and ANOVA (30.8%, n=233). Classical statistical techniques appeared frequently, with the chi-square test being the most common inferential test encountered, while advanced statistical methods were infrequent. SPSS was the most common statistical software package, reported in 41.7% of included articles.

**Conclusions:** These findings provide useful information for educators to evaluate current statistics curricula and develop short courses for continuing education. They may also act as a starting point for dietitians to educate themselves on typical statistical methods they may encounter when reviewing evidence to support life long learning.

**Conflict of interest:** None

**Keywords:** Statistical methods; statistical software; text mining; dietetic education; evidence-based practice

## 659 The use of the “FIGO Nutrition Checklist” in routine antenatal care: a pilot and acceptability study

Ms Sarah Louise Killeen<sup>1</sup>, Ms. Shauna L. Callaghan, Prof. Fionnuala M. McAuliffe

<sup>1</sup>UCD Perinatal Research Centre, School of Medicine, University College Dublin, National Maternity Hospital, Dublin, Ireland, Dublin, Ireland

**Biography:** Sarah Louise is a Registered Dietitian and member of the Irish Nutrition and Dietetic Institute. Sarah Louise is currently in her second year of her PhD with the UCD Perinatal Research Centre and is working on numerous projects in the area of maternal nutrition and maternal obesity. Sarah Louise is fortunate to work alongside her supervisor Prof. Fionnuala McAuliffe and other members of the International Federation of Gynaecology and Obstetrics (FIGO) pregnancy and non-communicable disease committee on key projects which aim to advance the nutritional care of pregnant women internationally. Her work on the FIGO Nutrition Checklist is part of the wider Pregnancy and Obesity Nutrition Initiative of FIGO which encourages use of the FIGO Nutrition Checklist with every woman, as part of routine maternal health services.

**Introduction:** Obstetricians and midwives, who are at the front-line of maternity services, are uniquely positioned to advance population health through nutrition interventions during pregnancy. The “FIGO Nutrition Checklist”, is a brief questionnaire designed to support conversations about nutrition between healthcare professionals and women during pregnancy. The aim of this study is to pilot the use of the “FIGO Nutrition Checklist” in the outpatient department of a busy Irish maternity hospital.

**Methods:** Ethical approval was obtained from the hospital. Women of any age or gestation were recruited from the antenatal department. With informed consent, participants were asked to complete the “FIGO Nutrition Checklist” in the waiting room, prior to meeting their healthcare professional. Completed checklists were collected from participants after their appointments and the acceptability of the checklist was assessed through a questionnaire.

**Results:** Preliminary results for 74 women are presented. The average age was 32.73 ± 4.17 years and median gestation was 27 weeks (IQR 18.5,36). Almost half of participants (46.5%) reported two or more undesirable dietary practices, the most common of which was fish intake less than once to twice a week (40.3%). Women reported excessive consumption of confectionery or sugar-sweetened beverages (38.4%) and inadequate intakes of dairy (8.2%), fruit and vegetables (20.5%), whole-grains (36.6%) and meat or poultry (8.2%) were reported. In this group, 100% found the checklist easy to complete and 98.5% reported completion did not take too much time. In addition, 72.8% of participants would recommend the use of the checklist for other women during pregnancy.

**Conclusion:** The “FIGO Nutrition Checklist” is an acceptable tool for women to reflect on their diet during pregnancy and it may capture nutritional issues which may otherwise go unnoticed. Use of the “FIGO Nutrition Checklist” should be further investigated, including the acceptability of the checklist to healthcare professionals.

**Conflict of interest:** None

**Keywords:** Maternal nutrition; service delivery; innovation; dietary assessment; antenatal

## 676 There is more to nutrition care than just nutrition: Communicational skills in nutrition care of cancer patients

Mrs Nanna Ruengkratok Lang<sup>1</sup>

<sup>1</sup>Via University College, Department Of Nutrition And Health, Aarhus, Denmark

**Biography:** Nanna Ruengkratok Lang is a qualified psychologist, PhD, and Senior Lecturer in the Department of Nutrition and Health, VIA University College, Denmark, where she for the past decade has taught psychology, health education, and communication to dietetics students. One of her areas of interest is the link between theory and practice, and for many years, she has facilitated dietetics students’ learning experiences during practice placement and on campus where students get the opportunity to train their counselling skills with real clients. In recent years, she has done research in the interface between Motivational Interviewing and the Nutrition Care Process, and as part of her PhD studies, she has conducted research in the significance of communicational and psychological aspects of nutrition care to cancer patients.

**Introduction:** Many cancer patients suffer from malnutrition and weight loss in which case some are offered dietary counselling. But how do the dietitian talk about sensitive matters such as critical nutrition, weight loss and the risk of dying? The objective of this research project was to explore how a dialogic and person-centred approach can facilitate the nutrition care process in cancer care.

**Methods:** 16 individual and two group dietary counselling sessions were video-recorded and 18 interviews conducted (n=29; 20 patients, 9 relatives) to gain insight into the communicative aspects of the nutrition care process and how cancer patients and relatives experience dietary counselling. The interviews followed a qualitative semi-structured dialogic interview guide. Data was digitally recorded, transcribed, and analysed using a pragmatic analysis of language approach. From September 2016–June 2018, two dietitians and a researcher met repeatedly in a research circle, working with extracts from the data, their counselling skills, and developing a dialogic conversational structure.

**Results:** The following themes characterises communicative qualities in dietary counselling: A) Clear speech: transparency in explaining and metacommunicating (what to address, why important, how to handle). B) Person-centred guidance: including the cancer patient to the extent the patient can handle it and offering information and options adjusted to the individual. C) Relational attention: paying attention to building rapport with the patient, and being oriented towards how the patient is doing physically and mentally. Furthermore, the project points to video-recordings of dietary counselling sessions and interviews with patients and relatives as facilitating in developing communicational dietetic counselling skills.

**Conclusion:** A dialogic and person-centred communication approach can facilitate the nutrition care of cancer patients in that it helps dietitians gain insight into the patient’s perspective, and explain nutritional challenges transparently as well as it helps patients better understand the critical importance of nutrition and take action.

**Conflict of interest:** None

**Keywords:** dietetics; person-centred care; communication; action research; cancer

## 450 Thinking differently about critical thinking

Dr Jason Riis<sup>1</sup>, Dr. Brandon McFadden<sup>2</sup>, Ms. Karen Collins<sup>3</sup>, Dr. Milton Stokes<sup>4</sup>

<sup>1</sup>Behaviorize, LLC, Philadelphia, United States, <sup>2</sup>Center for Experimental and Applied Economics at the University of Delaware, Newark, United States, <sup>3</sup>American Institute for Cancer Research, Washington DC, United States, <sup>4</sup>Bayer Crop Science, St. Louis, United States

**Biography:** Jason Riis is the founder of the behavioral science consultancy, Behaviorize, which applies behavioral science to drive growth for companies in food and health industries. He has consulted extensively for large companies, start-ups, and non-profit industry groups.

From 2013-2018 he was a full-time faculty member in the Marketing Department at the Wharton School, University of Pennsylvania. He maintains an appointment at Wharton as a Senior Research Fellow in the Behavior Change for Good Initiative, an interdisciplinary team of scientists and practitioners who aim to improve lives by creating enduring behavior change.

From 2008-2013 Dr. Riis was a full time faculty member at Harvard Business School. He received post-doctoral training at Princeton University's Center for Health and Wellbeing, and he completed his Ph.D. in Cognitive Psychology at the University of Michigan.

Dr. Riis has published in leading marketing and health journals including *Journal of Consumer Research*, *Journal of Marketing Research*, *Management Science*, *American Journal of Preventive Medicine*, *American Journal of Public Health*, *Health Affairs*, and *JAMA Cardiology*.

**Introduction:** Failures in critical thinking about nutrition are pervasive among consumers, often leading to the pursuit of unnecessarily complicated diets instead of actual dietary improvement.

**Methods:** This project's objective was to test two hypotheses: First, Registered Dietitians (RDs) underweight the role of human nature as a key cause of critical thinking failure. Second, RDs place disproportionate weight on remedying the critical thinking problem of the "need for better information", rather than two other problems emphasized by behavioral scientists: need for better reasoning and need for better self-reflection.

**Results:** We surveyed 893 RD-readers of *Today's Dietitian*, a professional periodical.

To test hypothesis 1, we asked respondents to select (among 4 options) the most important cause of critical thinking failure.

To test hypothesis 2, we asked respondents to rate which of three tactics was the most important way to prevent and correct critical thinking failures.

**Results:** Only 3% of surveyed RDs believed that "human nature" was the most important cause of critical thinking failure, while 59% believed "the media" to be the most important ( $z=15.2$ ,  $p<.001$ ).

Sixty-eight percent of respondents chose the tactic that pertained to better information, while only 21% and 12% chose the tactic that pertained to better reasoning or better humble self-reflection, respectively ( $z=21.6$ ,  $p<.001$ ).

While there may be no objectively correct answer to either question, the field of behavioral science has identified many aspects of human nature which would limit critical thinking in any media environment. And those limitations often pertain to reasoning and self-reflection, the tactical areas that RDs did not prioritize.

**Conclusion:** Awareness of the degree to which critical thinking failures are part of human nature may help RDs expect and manage such failures more systematically. It may also encourage wider use of tactics to improve reasoning and self-reflection. Examples of such tactics will be presented during the presentation.

**Conflict of interest:** Jason Riis serves as consultant and spokesperson for Ajinomoto, Bayer Crop Science, FMC, Produce for Better Health, Texas Beef Council, and WW (Weight Watchers).

**Keywords:** critical thinking; media; communication; consumer behavior; education

## 258 Two-fold higher odds of stunting and anaemia in urban HIV-infected compared to uninfected South African schoolchildren

Mrs Charlene Goosen<sup>1</sup>, Ms Nadja Mikulic<sup>2</sup>, Dr Jeannine Baumgartner<sup>2</sup>, Prof Mark Cotton<sup>3</sup>, Dr Shaun Barnabas<sup>3</sup>, Prof Michael Zimmermann<sup>2</sup>, Prof Renée Blaauw<sup>1</sup>

<sup>1</sup>Division of Human Nutrition, Department of Global Health, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Laboratory of Human Nutrition, Department of Health Sciences and Technology, ETH Zürich, Zürich, Switzerland, <sup>3</sup>Family Centre for Research with Ubuntu, Department of Paediatrics and Child Health, Stellenbosch University, Cape Town, South Africa

**Biography:** Charlene Goosen is a Dietitian by training and PhD candidate at Stellenbosch University. Her prior research focused on early infant feeding practices in resource-poor settings, especially the factors that promote and impede exclusive breastfeeding practices during the first six months of life. Her current research is in the field of paediatric HIV co-morbidities and nutrition, and focuses on nutritional status, fractional iron absorption, and the effect of oral iron supplementation on the gut microbiome. Her PhD is nested within a clinical trial investigating a novel iron isotope to define iron needs and improve iron nutrition in HIV-infected and uninfected children. Charlene previously coordinated the Provincial Prevention of Mother-to-Child Transmission of HIV (PMTCT) Programme for the Western Cape Government's Department of Health. She also headed the development of the training material for the Paediatric and Adolescent HIV and TB Management Blended Learning Short Course during her time at the South to South Programme for Comprehensive Family HIV Care and Treatment at Stellenbosch University. She was one of 12 PhD students from Sub-Saharan African countries who received a L'Oréal-UNESCO For Women in Science Sub-Saharan Africa Fellowship in 2018.

**Introduction:** Over the last two decades, national nutritional surveys collectively illustrate a persistent high prevalence of stunting and anaemia among South African children. Prevalence rates are seldom stratified by HIV status, a chronic condition often complicated by anaemia or malnutrition. The aim of this study was to compare the prevalence of stunting and anaemia by HIV status in schoolchildren from Cape Town, South Africa.

**Methods:** We recruited 8 to 13-year-old HIV-infected and HIV-uninfected children from similar resource-limited settings. In a cross-sectional analysis, we assessed height and haemoglobin (Hb) to determine the prevalence of stunting [height-for-age Z-score (HAZ) <-2SD] and anaemia (Hb <11.5 or <12 g/dL according to age). We assessed associations between HIV status and categorical outcome variables in binary logistic regression models adjusting for age.

**Results:** We included 293 children, 50% (n=147) males and 49% (n=144) HIV infected. Median (IQR) age was 11.1 years (9.6–12.2). In the HIV-infected and uninfected children, mean (SD) HAZ were -1.3 (1.0) and -0.6 (1.0), respectively, and median (IQR) Hb were 12.1 g/dL (11.6–12.9) and 12.5 g/dL (12.0–13.2), respectively. Prevalence rates (95% CI) of stunting were 25.7% (18.8–33.6) and 11.4% (6.8–17.6), and of anaemia were 28.5% (21.3–36.6) and 14.1% (8.9–20.7), in the HIV-infected and uninfected children, respectively. HIV infection was significantly associated with an increased prevalence of stunting [odds ratio (OR)=2.3, 95% CI, 1.2–4.5, P=0.009] and anaemia (OR=2.4, 95% CI, 1.3–4.4, P=0.004).

**Conclusion:** The HIV-infected children had two-fold higher odds of being stunted or anaemic compared to their HIV-uninfected counterparts. Long-term implications include impaired school performance and work force capability, and increased risk of all-cause mortality in HIV-infected individuals. Early and continuous malnutrition and anaemia monitoring are vital to ensure timely intervention to abate co-morbidities and support the long-term health outcomes of HIV-infected children.

**Conflict of interest:** None

**Keywords:** stunting, anaemia, HIV, children, prevalence

## 516 Use of social media platforms by manufacturers to market breast-milk substitutes in South Africa.

Mrs Catherine Pereira-Kotze<sup>1</sup>, Prof Tanya Doherty<sup>1,2</sup>, Prof Rina Swart<sup>1</sup>

<sup>1</sup>University Of The Western Cape (UWC), Bellville, South Africa, <sup>2</sup>South African Medical Research Council (SAMRC), Bellville, South Africa

**Biography:** Catherine Pereira-Kotze is a Registered Dietitian and has been working in the field of public health nutrition for 16 years, first in the government sector, then research consultancy and then academia. Catherine is working on her PhD in Public Health through UWC. She has been actively involved in the protection, promotion and support of breastfeeding, particularly in creating advocacy around the South African R991 Regulations Relating to Foodstuffs for Infants and Young Children (2012), as well as being involved in global research project to document marketing practices by breastmilk substitute manufacturers.

**Introduction:** In South Africa (SA), exclusive breastfeeding remains rare, with breast-milk substitutes (BMS) commonly being used in ways that are detrimental to infant and young child nutrition (IYCN), health, and survival. The use of internet, digital and mobile platforms has increased, including in low-and-middle-income countries, like SA and these platforms are avenues for BMS marketing. South Africa has national legislation (Regulation R991) to enforce the International Code of Marketing of Breastmilk Substitutes. This paper aims to provide pertinent examples of how BMS manufacturers in SA use social media to market their products thus violating national regulations.

**Methods:** A digital (and social media) ethnography approach was used to study BMS organisations' activity on Facebook and Instagram. Purposively selected examples of social media posts observed (from 2015-2019) were included, and content analysed in terms of national legislation. Ethics approval was not required, since the information is available in the public domain and did not include human participants.

**Results:** Several examples of BMS social media marketing are presented and interpreted according to provisions of national regulations that they violate. BMS manufacturers have found ways on social media to market their products in a media space that is complex to regulate, and where it is difficult to enforce national regulations.

**Conclusions:** It is necessary to engage with stakeholders, notably social media companies, to alert them to relevant regulations applicable to their platforms. Monitoring the marketing of products for infants and young children by national governments needs to include online and digital platforms especially social media.

**Conflict of interest:** The first author received support from the DSI/NRF Center of Excellence in Food Security UID 91490; reviews by co-authors were conducted during time of employment indicated by affiliation of authors.

**Keywords:** Social media; marketing; breastmilk substitutes; legislation; infant and young child feeding.

## 488 Variability of resting energy expenditure (REE) and its components of early, middle and late achievers of steady state (SS): A study of 6-9-year-old Southern African children.

Mrs Adeline Pretorius<sup>1</sup>, Prof Piet Becker<sup>1</sup>, Prof Paola Wood<sup>1</sup>, Dr Heather Sedibe-Legodi<sup>1</sup>, Prof Friede Wenhold<sup>1</sup>

<sup>1</sup>University Of Pretoria, Pretoria, South Africa

**Biography:** Adeline Pretorius is a registered dietitian and a nutrition lecturer at the Department of Consumer and Food Sciences at the University of Pretoria. She completed her master's degree in nutrition at Stellenbosch University and is currently enrolled for a PhD in Dietetics at the University of Pretoria. She has been working as a dietitian for the past 20 years in a variety of clinical and managerial positions in South Africa and the United Kingdom. In 2014, she entered the academic field as a lecturer, lecturing Nutritional Science, Human Nutrition, Food Service Management and other nutrition-related subjects to undergraduate and post-graduate students at the University of Pretoria.

Her master's degree entailed focus group discussions to assess the consumer's comprehension of the preliminary South African paediatric food-based dietary guidelines. Her current research focusses on resting energy expenditure of different populations. She was part of the research team awarded the prize for the best poster presentation for originality and contribution to the nutritional science at the 27th Biennial Congress of the Nutrition Society of South Africa in September 2018. With her PhD studies, she has extended this research to factors influencing resting energy expenditure and physical activity of children of various populations.

**Introduction:** Standardised and evidence-based protocols for measuring REE of young children using indirect calorimetry (IC) are lacking, despite the need for locally relevant REE data and known, time-related practical challenges.

**Objective:** In a cross-sectional study of REE of a diverse group of 6-9-year-old children, this sub-study aimed to determine variability of REE-associated measurements after achievement of SS.

**Methods:** REE of 120 healthy children (mean age 7.92±0.79yrs; 69[58%] girls) was measured via IC (Quark metabolic cart, Cosmed) with a ventilated hood after an overnight fast and 12-hour abstinence from exercise. Measurements, including a rest period, continued for 15-20 minutes. Participants were categorised according to time when SS (machine-generated: variation <10% in minute ventilation, VO<sub>2</sub> and VCO<sub>2</sub>; <5% in respiratory quotient [RQ = VO<sub>2</sub>/VCO<sub>2</sub>]) was achieved: early achievers <5min, middle achievers ≥5 and <10min, and late achievers ≥10min. Readings before achieving SS were eliminated. The intra-individual percentage coefficient of variation (%CV = standard deviation/mean\*100) of the mean VO<sub>2</sub>(ml/min), VCO<sub>2</sub>(ml/min), REE(kcal/day) and RQ was determined for each category for the remaining period of assessment.

**Results:** Nineteen (16%) participants (10[53%] girls) did not achieve SS. For 13(11%), data were insufficient or implausible. Mean (min;max) time to reach SS: 5.7min (0.0;16.2). Of the remaining 88 (50[57%] girls), 47(53%) were early, 29(33%) middle and 12(14%) late achievers of SS. The following means (±SD) %CV of early, middle and late achievers were respectively obtained: VO<sub>2</sub>: 2%(±2), 3%(±2) and 2%(±2); VCO<sub>2</sub>: 3%(±3), 3%(±2) and 1%(±2), REE: 2%(±2), 3%(±2) and 2%(±1); RQ: 2%(±2), 1%(±1) and 1%(±1).

**Conclusion:** Among children achieving SS, most achieved this within 5 minutes. Once SS was achieved, the variability of all REE components remained below 3% for all subsequent measurements. Since this is well below the recommendations of <5-10% for adults, a shortened IC protocol can be considered for 6-9-year old children.

**Conflict of interest:** The project is funded by the South African Sugar Association

**Keywords:** IC, measurement, children, SS, REE

## 307 Very-low-carbohydrate-high-fat weight-loss diets and cardiovascular disease risk: a systematic review

Dr Lynda Ross<sup>1,2,3</sup>, Ms Jane Musial<sup>3</sup>, Ms Robin Hay<sup>3</sup>, Ms Andrea Cawte<sup>1,3</sup>, Dr Angela Byrnes<sup>3</sup>

<sup>1</sup>Queensland University Of Technology, Kelvin Grove, Australia, <sup>2</sup>Griffith University, Gold Coast, Australia, <sup>3</sup>Royal Brisbane and Women's Hospital, Herston, Australia

**Biography:** Dr Lynda Ross is an Advanced Accredited Practising Dietitian in Queensland, Australia. She has held the position of Senior Lecturer at Queensland University of Technology in Brisbane since August 2019. Previously she held a similar position as Senior Lecturer at Griffith University on the Gold Coast for 5 years. Lynda's research focuses on dietary intervention strategies for the treatment of chronic disease and risk. The research she will talk about today is a systematic review conducted in collaboration with dietitians at the Royal Brisbane and Women's Hospital in Brisbane, Australia.

**Introduction:** Very-low-carbohydrate-high-fat diets (VLCHF) are becoming increasingly popular for weight-loss. Concerns exist regarding long-term adherence and CVD-risk-related-high-fat intakes. This systematic review examined weight-loss, adherence and CVD-risk factors in adults consuming VLCHF diets.

**Methods:** Online database Embase, Cinahl, Ovid Medline, Cochrane were searched for randomised controlled trials of  $\geq 3$  months duration that met pre-defined dietary intakes: VLCHF  $\leq 25\%$ E carbohydrate (CHO);  $>35\%$ E fat; low fat diet (LF)  $\geq 45\%$ E carbohydrate;  $\leq 30\%$ E fat. Retrieval included 1941 articles. After exclusions 217 full-text articles were examined and a further 209 excluded. Examples of exclusions were: dietary targets outside the pre-defined intakes for review (32 studies); pre-defined intakes not met at any time-point (17); intakes/adherence not reported (15).

**Results:** Eight studies were included from USA (4), Australia (3), Sweden (1). Participants ( $n = 1217$  commenced;  $n = 922$  completed) were overweight/obese adults. Diets were isocaloric, moderately-energy-restricted, intensive interventions with ongoing support from dietitians and closely monitored to end of intervention. Four studies reported non-adherence to pre-defined intakes over time. Average saturated fat (SFA) intakes were: VLCHF 11-21%E; LF 5-11%E. All groups achieved similar weight-loss,  $p < 0.05$ . LDL-C reduction favoured LF groups,  $p < 0.05$ ; triglyceride (TG) reduction and increased HDL-C favoured VLCHF groups,  $p < 0.05$ . Blood pressure significantly improved in both groups.

**Conclusions:** VLCHF are as effective as LF diets for weight-loss to 12-months. However, adherence is likely poor without intensive support and monitoring. SFA intakes and LDL-C levels should be monitored to ensure they are within recommended ranges. Longer term studies are required to confirm the level of CVD risk.

**Conflict of interest:** None

**Keywords:** Carbohydrate, weight-loss, cardiovascular, systematic, review

## 229 Weight stigma in perinatal care: Perspectives of women with high BMI and dietitians

Ms Lindsey Mazur<sup>1</sup>

<sup>1</sup>University Of Manitoba, Winnipeg, Canada

**Biography:** Lindsey Mazur is a dietitian and Masters candidate. She has worked in women's health, specializing in and advocating for weight-inclusive approaches, eating disorders prevention as well as reducing weight stigma. For her advocacy and professional work, Lindsey was named Future Leader of Manitoba in 2014. In 2016, she founded Manitobans Against Weight Stigma to increase awareness of weight stigma and to advocate to amend the (Provincial) Manitoba Human Rights Code to include "physical size and weight" as a protected characteristic. She also joined Dr. Jill Andrew's national #SizeismSUCKS in Canada, creating an online petition to end sizeism for Manitoba. Lindsey has contributed to the Practice-Based Evidence in Nutrition (PEN)\*: The Global Resource for Nutrition Practice and has been interviewed for local and national media on the above topics. She was recently awarded the Women's Health Research Foundation of Canada award for her qualitative research project on perinatal weight stigma in dietetics.

**Introduction:** Women with high BMI in perinatal care, have been denied fertility treatment and are assumed to be unfit to mother. Research on women with high BMI in perinatal care centers around the doctor-patient relationship, where the dietitian-patient relationship is largely unexplored. This presentation will provide background on the sensitive issue of weight stigma, in the vulnerable population of women with high BMI in the perinatal period and how this relates to the dietitian context.

**Methods:** Using a critical social theory framework, semi-structured interviews were used to explore experiences of weight stigma in perinatal dietetic care from the perspective of women with high BMI and dietitians. A total of 10 women with high BMI and 10 dietitians were interviewed ( $n=20$ ).

**Results:** Women with high BMI describe a range of experiences with dietitians from positive to negative. Negative experiences include feeling dietitians are not tailoring recommendations to their lives, and more pressure to make changes due to their weight status (weight stigma). Positive experiences reveal the opposite. Dietitian experiences include 'disillusionment', whereby they feel they were not given the tools in their education to help people in real-world contexts, e.g. Resistance to "evidence-based guidelines" and 'disconnect' between how dietitians are trained to how they practice.

**Conclusion:** Results reveal women with high BMI experience weight stigma, and/or empowering experiences with dietitians. Dietitian experiences reveal overall frustration with evidence-based guidelines in the perinatal period and a disconnect between their dietetic training and their current dietetic practice. This presentation will conclude with suggestions for dietitians on how to best support women with high BMI in the perinatal period to achieve optimal nutrition/health status through weight inclusive practice, while minimizing risk of weight stigma.

**Conflict of interest:** Honorarium from Practice-Based Evidence in Nutrition (PEN)\* for writing content regarding weight stigma.

**Keywords:** infertility, prenatal, postnatal, weight, stigma

## 440 What is dietary counselling? The need for a consensus on the definitions of terms used to describe oral interventions used in the management of malnutrition

Dr Elizabeth Weekes<sup>1</sup>, Prof Marian de van der Schueren<sup>2</sup>, Dr Christine Baldwin<sup>3</sup>

<sup>1</sup>Guy's & St Thomas' NHS Foundation Trust, London, United Kingdom, <sup>2</sup>HAN University of Technology, Nijmegen, The Netherlands, <sup>3</sup>King's College London, , United Kingdom

**Biography:** Dr Liz Weekes is a dietitian with 25 years clinical and research experience in the detection and management of disease-related malnutrition. Having worked predominantly in the acute setting during her early career, her PhD studies focused on the identification, assessment and management of nutritionally vulnerable community-based individuals with chronic obstructive pulmonary disease. More recently Dr Weekes has extended her studies to include evaluating both hospital and community-based initiatives designed to improve the nutritional care of elderly people, and undertaking systematic reviews. Dr Weekes has a particular interest in patient-centred outcomes, such as quality of life and activities of daily living, and the health economic analysis of nutritional interventions. These interests are reflected in her current research where she is leading a large, observational study designed to explore the impact of malnutrition on older people in the community. Dr Weekes is a Cochrane-trained systematic reviewer and, together with Dr Christine Baldwin, has completed two Cochrane reviews. She has extensive experience of guideline development and recently led the guideline group on the estimation of nutritional requirements for the Parenteral and Enteral Nutrition Group of the British Dietetic Association.

**Introduction:** Many different terms are used to describe oral nutritional interventions provided by practitioners (usually dietitians) to people who are malnourished or at risk of malnutrition which is problematic for the translation of successful interventions into clinical practice. This study aimed to explore the variation in apparently similar interventions included in a Cochrane Review of dietary counselling, with or without the provision of oral nutritional supplements (ONS).

**Methods:** Comprehensive searching of 9 electronic databases and supplementary sources. Eligible studies were RCTs of (i) dietary advice (ii) dietary advice plus ONS if required, (iii) dietary advice plus ONS and (iv) dietary advice compared with ONS, in nutritionally vulnerable patients across all healthcare settings. Data were extracted on who delivered the intervention, whether it was individualised and plans for monitoring and follow-up.

**Results:** There was no consistency across the 94 included studies in description of interventions. Dietitians delivered the intervention in 65/94 (69%) studies, but little information was provided on their grade, experience and training. The majority of studies were in outpatients or community settings and duration of intervention in 55/94 (59%) of studies was for 3 months or less. Interventions were described as individualised in 63/94 (67%) studies and monitoring and follow-up was described in 79/94 (84%). Few studies described the care process (assessment, estimation of requirements, nutrition care plan, tailoring), resources provided (written, online) and the mode of delivery.

**Conclusion:** Whilst inconsistency in description of apparently similar oral interventions exists it is impossible to fully evaluate which are most effective in practice. Consensus on the definitions for different types of oral nutritional interventions has the potential to provide guidance for clinical practice, assist systematic reviewers to fully evaluate the impact of different interventions on patient-centred and clinical outcomes and could inform decisions made by policy-makers and funders of clinical services.

**Conflict of interest:** None

**Keywords:** malnutrition; oral nutritional interventions; systematic review; dietary counselling

## 427 Workplace cafeteria and other multicomponent interventions to promote healthy eating among adults: A systematic review

Dr Ashika Naicker<sup>1</sup>

<sup>1</sup>Durban University Of Technology, Ballito, South Africa

**Biography:** Dr Ashika Naicker is a senior lecturer at Durban University of Technology and a part time post doctoral fellow at Harvard University, Department of Nutrition. Is engaged in the India Works lifestyle intervention study and the South African pioneer worksite lifestyle intervention study.

**Introduction:** The objective of this review is to evaluate evidence for the effectiveness of workplace cafeteria and other supporting multicomponent interventions to promote healthy eating and reductions in health risks among adults.

**Methods:** We conducted an electronic search in EMBASE, CINAHL, EconLit, Ovid, Cochrane, Web of Science and PubMed for English-language articles published from 1985 to July 2019. Studies were original articles reporting the results of workplace cafeteria interventions to promote healthy eating and reduction in health risks. Outcomes were classified as changes in fruit and vegetable intake, changes in health risk indicators, changes in dietary intake, and changes in food sales. Interventions were categorized as interventions targeting food quality or quantity, interventions targeting price, interventions targeting food choice at point of purchase, interventions targeting improved supply, interventions targeting client's information, education or motivation and interventions targeting organization policies. Results were presented in a narrative summary.

**Results:** A total of 55 studies out of 6,285 articles were identified for this review. Several studies used multi-component interventions and the most featured interventions included interventions targeting food quality or quantity, interventions targeting client's information, education or motivation and interventions targeting food choice at point of purchase. There is evidence that workplace cafeteria and other supporting multicomponent interventions resulted in higher intake of fruit and vegetables, improved dietary intake and improved health outcomes.

**Conclusion:** The findings of this systematic review have the potential to inform intervention mapping of future cafeteria-based and other supporting multicomponent workplace health interventions.

**Conflict of interest:** None

**Keywords:** Cafeteria; workplace; environmental intervention

## INDEX

### A...

Abbey, Karen	337	Anidi, Chioma	408
Achir, Emmanuel	657	Anoshirike, Cyril	408
Adeosun, Florence	657	Archer, Douglas	620
Adile, Adimchi	748	Asare, Hannah	333
Alajajian, Stephen	697	Ash, Susan	362, 363
Al-Aladili, Lina	198	Asiegbu, Uzoma	455
Albrich, Louise	237	Asouzu, Nwabumma	748
Alonso-Bernáldez, Marta	201	Ayosso, Juvencio O.	458
Anderson, Demi	279		

### B...

Baass, Alexis	389	Blaauw, Renee	636
Baines, Simon	205	Blaauw, Renée	258
Bakali, Shams	586	Blaauw, Renée	594
Balakrishna, Yusentha	509	Blais, Chantal	389
Baldwin, Christine	437, 440	Blennerhassett, Claire	158, 159
Barnabas, Shaun	258	Botha-Ravyse, C	595
Barreira, Tiago	716	Bouchard, Joanie	461
Battalwar, Rekha	631, 629	Bourgeault, Ivy Lynn	394
Batterham, Marijka	287, 395	Bouwman, Wilma	104
Baumgartner, Jeannine	658, 636, 258	Braakhuis, Andrea	246, 336
Baumgartner, Jeannine	654	Brady, Jennifer	70
Beck, Eleanor	395	Brand, Amanda	509
Becker, Piet	322, 436, 488	Breier, Bernhard	292
Becker, Piet J	251	Brewer, Jen	474, 697
Bell, Colin	494	Brombacher, Frank	594, 636
Bemeur, Chantal	668	Brown, Katie	245, 393
Berk, Melis	398	Brutsaert, Tom	716
Bernard, Sophie	389	Bulloch, Rhodi	477
Beukes, Ronel	63	Burlingame, Barbara	72
Bishop, Karen	336	Byrnes, Angela	307

### C...

Callaghan, Shauna L.	659	Charlton, Karen	287, 300
Capra, Sandra	337	Chen, Elise	205
Carboo, Janet	333	Chetty, Joelaine	556
Carrier, Natalie	255, 272	Chiama, Makua	408
Cave, Danielle	337	Child, Jenny	211
Cawte, Andrea	307	Chima, Lucy	207
Chadare, Flora	458	Claassen, Talitha	424

Clayton, Stephen	158	Corso, Barbara	300
Cloran, Sue	750	Cotton, Mark	258
Coenen, Alison	395	Coufopoulos, Anne	80
Collins, Karen	450	Cronjé, Héléne Toinét	580
Collinson, Avril	211	Cullen, Elizabeth	292
Conradie, Cornelia	333	Curtain, Felicity	76
Cooper, Diane	357		
<b>D...</b>			
Dahl, Wendy	620	Drakoulis, Nikolaos	356
Daniels, Lynette	547	Drisdelle, Caroline	668
Dart, Janeane	362, 363	Drummond, Linda	495, 533
De Beer, Jessica	279	Drummond, Linda	530
Dechelotte, Pierre	340	Du Plessis, Jacomina	603
Desai, Sharvari	629	Du Plessis, Jan	577
Desai, Sharvari	631	Du Plessis, Lisanne	547
Dickinson, Kacie	415	Duizer, Lisa	272
Doherty, Tanya	516	Durán, Samuel	734
Dolman, Robin	333, 636	Durao, Solange	509, 656
Dolman, Robin	594	Duvenage, Karlien	261
Domfeh, Emmanuel	747		
<b>d...</b>			
de Beer, Sindi-marie	424	de Lange, Zelda	586
de Hoop, Maude	308	de van der Schueren, Marian	440
<b>E...</b>			
Edafioghor, Linda	455	Ellis, Amy	246
Eduzor, Esther	657	Engelbrecht, Liezel	720
Egechizuorom, Ifeoma	748	Enos, Diane	245
Eisenbraun, Corinne	461	Enuka, Hannah	748
Eisner, Ashley	480	Ezeonu, Chinonyelum	455
<b>F...</b>			
Faber, Mieke	357	Ferreira, Maylene	580
Fabrice De Paul, Tatfo Keutchatang	142	Feucht, Ute D	251
Fajardo, Jonnatan	480	Ficenec, Ellen	62
Fanou-Fogny, Nadia	458	Francis-Granderson, Isabella	248
Fantino, Manon	389	Frost, Gary	744
Feeley, Alison	357	Frost, Gary	355
<b>G...</b>			
Gaffen, Danielle	480	Giroux, Isabelle	461
Garay, Jessica	716	Goh, Shan	205
Gericke, Gerda	351	Golley, Rebecca K	415
Giddens, Janice	245, 393	Goodchild, Caylin	654

Goosen, Charlene	258	Greyling, Carel	521
Govers, Ellen	104	Grodard-Humbert, Ghislain	340
Grafenauer, Sara	76	Grundlingh, Magdaleen	677
Gresse, Annelie	279	Guzman, Andrea	697
<b>H...</b>			
Haddad, Joyce	415	Herforth, Anna	746
Harbron, Janetta	530	Herholdt, Marienchen	577
Harbron, Janetta	533	Hermosura, Billie Jane	394
Harper, Alexandra	80	Hickson, Mary	211, 744, 237, 355
Harrison, Alan	268	Hill, Jan	252
Havemann-Nel, Lize	595	Honfo, Sewanou	458
Havlak, Dixie	474	Hooshmand, Shirin	480
Hay, Robin	307	Hörnell, Agneta	519
Hayford, Frank	594, 636	Hoskings, Breanne	252
Hege, Amanda	245	Hounhouigan, Djidjoho Jospheh	458
Hendrie, Gilly A	415	Huybrecht, Inge	378, 380
<b>I...</b>			
Idahosa, Peace	267	Illingworth, Sarah	375
Idris, Hajara	748	Inglis, David	268
Iheme, Gideon	455, 748		
<b>J...</b>			
Jacobs, Inarie	378, 380	Jordaan, Marizeth	498, 384
Jacobson, Deborah	232	Josephson, Christine	252
Jager-Wittenaar, Harriët	255	Joubert, Gina	498
Jerome, Lee	205	Julian, Anna	744, 355
Job, Nophiwe	720	Jumat, Malory	556
Jones, Rebekah	72		
<b>K...</b>			
Kalita, Saumik	631, 629	Knight-Agarwal, Cathy	100
Kappelhof, Erin	750	Knoblock-Hahn, Amy	245
Kautto, Ethel	519	Koethe, John R	151
Kayodé, Polycarpe	458	Kolanisi, Unathi	352
Keller, Heather	255, 272, 253	Koryo-Dabrah, Alice	747
Kellerman, Ilde-Marie	577	Kotze, Carla	322
Kemp, Johanna	436	Kowal, Paul	300
Kennedy, Gina	746	Kristjansson, Elizabeth	509
Kern, Mark	480	Kruger, Herculina S	603
Kerse, Ngaire	148	Kruger, Herculina Salome	271
Kesa, Hema	521	Kruger, Mariana	577
Killeen, Sarah Louise	659	Kruger, Rozanne	292
Kindosi, Janvier M	458	Kuhn, Lizette	322
King, Simoné	594	Kuhnert, Kira-Leigh	720
Kloppers, Megan	279	Kupoluyi, Oluwadamilare	748
Knight, Annemarie	375		

**L...**

Ladas, Elena J	577	Lim, Siew	684
Lam, Peter	604	Linnemann, Anita Rachel	458
Lammertyn, Leandi	603	Lombard, Martani	333, 111
Lang, Nanna Ruengkratok	676	Lourens, Alie	104
Langkamp-Henken, Bobbi	620	Love, Penelope	494
Langren, Sue	474	Lubasinski, Nicole	398
Laur, Celia	253	Lungu, Edda	620
Lengyel, Christina	255, 272	Lycett, Deborah	80

**M...**

MacIntyre, Una	322	McCracken, Jane	494
Madan, Jagmeet	631, 629	McFadden, Brandon	450
Madden, Angela	205, 207	McNaughton, Lars	159
Madode, Yann Eméric	458	Mercille, Geneviève	668
Madufo, Aloysius	584, 683	Merry, Troy	336
Makuse, Sefora	297	Meyer, Jemima	424
Malan, Linda	658, 654, 594, 636, 595	Mikulic, Nadja	258
Malczyk, Sonia	495	Moeng-Mahlangu, Lynn	308
Malczyk, Sonia	533, 530	Moitra, Panchali	631, 629
Mamphwe, Phumudzo	271	Mokone, Suzan	745
Manafe, Mashudu	745	Monnard, Cathriona	246
Maponya, Nyabana Martha	531	Moran, Lisa	684
Marais, Maritha	232	Morrison-Koechl, Jill	272
Masibo, Peninah	63	Morrison-Koechl, Jill	253
Matlala, Sogo France	531	Moss, Sarah J	271
Matthew, Rema	577	Moya, Jessica	734
Matthews, Claire	367	Moyes, Simon	148
Mattsson Sydner, Ylva	519, 540	Mpiana, Bukaso Andy	352
Mavrommatis, Yiannis	398	Muchiri, Jane	351
Mazur, Lindsey	229	Mulrooney, Hilda	207
Mbhenyane, Xikombiso	297	Murphy, Jane	744
Mbhenyane, Xikombiso	547	Musekiwa, Alfred	111
McAuliffe, Fionnuala M.	659	Mushaphi, Lindelani	297
McCall, Louise	362, 363	Musial, Jane	307
McCowan, Lesley	477	Muthoka, Stellamaris	63

**N...**

Naicker, Ashika	427	Ncube, Lindie	745
Naidu, Gita	577	Ndanuko, Rhoda	287
Nakwa, Firdose	436	Ndiokwelu, Chika	584, 683
Nartey, Eunice Berko	747	Neale, Elizabeth	287
Naude, Celeste	656	Nel, Andre L	251

Naumann, Fiona	252	Nel, Etienne	111
Nel, Johanna H	495, 530	Nguyen, Kim	656
Nel, Johanna H.	533	Ngwu, Elizabeth	683
Nel, Mariette	384	Nienaber, Arista	594, 636, 595
Nel, Mariette	327	Nienaber-Rousseau, Cornelia	603
Nel, MM	316	Nnam, Ngozi	584
Nel, Sanja	251	Ntsie, Rebone	308
Nell, Renee	279	Nwamarah, Joy	408
Newell, Amanda	247	Nwankwo, Rita	683
Ngounda, Jennifer	384	Nwaogu, Kelechi	267
<b>O...</b>			
Ogbonna, Obinna	748	O'Reilly, Sharleen	684
Okafor, Adaobi	267	Osei Ngounda, Jennifer	498
Okoye, Ngozi	584	Otten, Anniek	104
Olah, Linda	748	Ottery, Faith	255
Oliveira, Julicristie	509	Oyebamiji, Emmanuel	748
Olszewski, Timothy	150	Ozturk, Mumin	594, 636
<b>P</b>			
Palmer, Michelle	252	Pienaar, C	595
Palou, Mariona	201	Pieters, Marlien	586, 603
Palou-March, Andreu	201	Pieters, Marlien	580
Papasavva, Maria	356	Pilic, Leta	398
Paquette, Martine	389	Pillay, Mershen	604
Paré, Guillaume	389	Pillay, Yogan	308
Parihar, Suraj	594, 636	Power, Brian	62
Peacock, Marian	158	Pretorius, Adeline	488
Pereira-Kotze, Catherine	357, 516	Pretorius, Beulah	551
Persson Osowski, Christine	540	Proano, Gabriela	697
Phatak, Ajay	631, 629	Pugh, Jamie	159
Piano, Amanda	620		
<b>Q...</b>			
Quilliot, Didier	340		
<b>R...</b>			
Rae, Michele	268	Reeder, Nicole	428
Raftis, Denise	187	Rees, Charlotte	362, 363
Rains, Alex	150	Rheeder, Paul	351
Ram, Anishka	148	Ricci, Cristian	559
Ramokolo, Vundli	509	Richter, Marilize	292
Ranneileng, Mamotsamai	332	Riis, Jason	450
Rapo, Sofia	519	Rinaldi, Sabina	378, 380
Raptis, Athanasios	356	Robb, Liska	498

Roberts, Claire	477	Rolleston, Anna	148
Roberts, Simone	205	Romieu, Isabelle	378, 380
Robertson, Nina	552	Ross, Lynda	252, 307
Robinson, Lynsey	268	Rowe, Bianca	577
Robinson, Katie	246	Roy, Rajshri	364
Rodriguez Y Villasenor, Marianna	62	Rozga, Mary	246
Rogers, Paul C	577	Rysdale, Lee	187
Rohloff, Peter	697		

## S...

Salis, Sheryl	631, 629	Smuts, Cornelius	658
Sauer, J	595	Smuts, Cornelius Marius	636
Sauer, Kevin	245	Smuts, Marius	654, 594
Sauerwein, Laurie	474	Somerville, Vaughan	336
Sayed, Nazeaia	342	Sommariva-Nagle, Cara	205
Schaap, Thalia	559	Soni, Rashmi	375
Schmidt, Bey-Marrié	509	Spies, Ermi (HC)	424
Schoeman, Judy	577	Spies, HC (Ermi)	316
Schönfeldt, Hettie	551	Spiker, Marie	245
Schönfeldt, Hettie C	342, 557	Stadler, Diane	393
Schoonees, Anel	656, 552, 111	Steiber, Alison	245
Schoonees, Anel	509	Steyn, Nelia	495
Schuiling, Beatrijs	104	Steyn, Nelia P	530
Schutte, Aletta E	603	Steyn, Nelia P.	533
Schutte, Alta	300	Stokes, Milton	450
Sedibe-Legodi, Heather	488	Stoney, Rachel	252
Senekal, Marjanne	495, 533, 530	Strauss, Rachael	375
Serra, Francisca	201	Strydom, Ingrid	424
Silva, Paulo	734	Suurtamm, Christine	394
Silver, Heidi	150, 151	Swart, Rina	516
Sitren, Harry	620	Symington, Elizabeth	654
Skinnars Josefsson, Malin	540	Symington, Elize	658
Slaughter, Susan	255, 272	Szychta, Malgorzata	205
Smith, Wayne	559		

## T...

Taljaard-Krugell, Christine	378, 380	Tolar-Peterson, Terezie	428
Tambe, Ayuk Bertrand	297	Trijsburg, Laura	746
Tapanee, Pradtana	428	Tronco Hernandez, Abigail	744
Tapsell, Linda	287	Troxel, Wendy	247
Taylor, Rennae	477	Tsagbey, Sitsofe	747
Theron, Marieke	200	Tsang, Denis	274
Thomas, Karla	577	Tshitauzi, Gilbert	308
Thompson, John	477	Turner, Andy	80

**U...**

Udipi, Shobha 631, 629

**V...**

Vaidya, Ashok 631, 629

Vaidya, Rama 631, 629

Vaillant, Marie France 340

Van Den Berg, Louise 424

Van der Berg, VL 316

Van Emmenes, Barry 577

Van Graan, Averalda 556

Van Onselen, Annette 352

Vargus, Asley 246

Veldsman, Zani 551

Verdoukas, Jocelyn 279

Vermeulen, Hester 557

Verra Power, Dimitra 62

Villalon, Lita 272

Visscher, Tommy 104

Visser, Janicke 552

Visser, Marianne 509, 656

Vogliano, Chris 746

Volmink, Jimmy 111

Vorster, Hester 378

Vorster, Hester, H 380

Vucea, Vanessa 255

**V...**

van den Berg, Louise 327

van der Westhuizen, Bianca 521

van Zyl, Tertia 580, 559

**W...**

Waddingham, Suzanne 730

Wairimu Kimani, Irene 63

Walker, Diana 279

Wall, Clare 477

Walsh, Corinna 498, 384

Walsh, Corinna May 327

Wang, Qiu 716

Wanner, Amanda 211

Warren, Janet 207

Weekes, Elizabeth 437, 744, 440

Wenhold, Friede 436, 488

Wenhold, Friedeburg 322

Wenhold, Friedeburg AM 251

Wentzel-Viljoen, Edelweiss 649

Wentzel-Viljoen, Edelweiss 580

Wham, Carol 148, 72

Whelan, Jillian 494

Wicks, Mariaan 649

Wilandh, Emma 540

Williamson, Hanna 327

Wood, Paola 488

Woodward, Talia 252

Working Group, Experts 340

Wright, Hattie 649

**X...**

Xenos, Konstantinos 356

**Y...**

Yakes Jimenez, Elizabeth 697

**Z...**

Zamanillo, Rocio 201

Zandberg, Lizelle 658, 654, 594, 636, 595

Zello, Gordon 461

Zimmermann, Michael 258

# PART 2

ABSTRACTS

# RESEARCH POSTERS



International Congress of Dietetics 2021, 1-3 September 2021

South African Journal of Clinical Nutrition 2021; 34(3)  
<https://doi.org/10.1080/16070658.2021.1968126>

## TABLE OF CONTENTS

- 126[R]** ...So how would you describe it? Identifying drivers of sweet potato consumption in Louisiana ..... 110  
Dr Elizabeth Gollub<sup>1</sup>, Ms. Praja Adhikari<sup>1</sup>  
*<sup>1</sup>Louisiana State University Agricultural Center, School of Nutrition and Food Sciences, Baton Rouge, United States*
- 682[R]** "Apple sugar" as sucrose substitute in a Brazilian traditional dessert (brigadeiro) ..... 110  
Gabriela Cruz<sup>1</sup>, Gloria de Santa Rita<sup>1</sup>, Juliana Pimentel<sup>1</sup>, Leticia Oliveira<sup>1</sup>, Leticia Carneiro<sup>1</sup>, Dr Raquel Braz Assuncao Botelho<sup>1</sup>, Prof Renata Puppim Zandonadi<sup>1</sup>  
*<sup>1</sup>University Of Brasilia, Brasilia, Brazil*
- 82[R]** A feasibility study of a brief intervention for food insecurity in dietetic practice..... 111  
Ms Alexandra Harper<sup>1</sup>, Dr Deborah Lycett<sup>1</sup>, Dr Anne Coufopoulos<sup>1</sup>, Dr Andy Turner<sup>1</sup>  
*<sup>1</sup>Coventry University, Coventry, United Kingdom*
- 583[R]** A five year review of food composition activities within the South African Food Data System/SAFOODS.... 111  
Dr Averalda Van Graan<sup>1</sup>, Ms Joelaine Chetty<sup>1</sup>, Ms Malory Jumat<sup>1</sup>  
*<sup>1</sup>South African Medical Research Council, SAFOODS, Biostatistics Unit, Bellville, Cape Town, South Africa*
- 241[R]** A high fat, high sugar diet alters molecular patterns in the adipose of Wistar rats: an epigenetic study... 112  
Ms Amsha Viraragavan<sup>1,2</sup>, Dr Tarryn Willmer<sup>2</sup>, Dr Rabia Johnson<sup>2,3</sup>, Prof Albertus Basson<sup>1</sup>, Dr Carmen Pheiffer<sup>2,3</sup>  
*<sup>1</sup>Department of Biochemistry and Microbiology, University of Zululand, Kwa-Dlangezwa, South Africa, <sup>2</sup>Biomedical Research and Innovation Platform, South African Medical Research Council, Cape Town, South Africa, <sup>3</sup>Division of Medical Physiology, Stellenbosch University, Cape Town, South Africa*
- 171[R]** A phenomenological study of the dietitians role working with older people care homes in England... 112  
Ms Vittoria Romano<sup>1</sup>, Dr Catherine Minns Lowe<sup>1</sup>  
*<sup>1</sup>University Of Hertfordshire, Hatfield, United Kingdom*
- 344[R]** A pilot study of the use of indigenous foods by populations for non-communicable diseases management in South Africa ..... 113  
Dr Alex Dimitri Tchuenchieu Kamgain<sup>1</sup>, Dr Hema Kesa<sup>1</sup>  
*<sup>1</sup>University Of Johannesburg, Johannesburg, South Africa, <sup>2</sup>Centre for Food and Nutrition Research, IMPM, Yaoundé, Cameroon*
- 358[R]** A qualitative analysis of perceptions of various stakeholders on combining nutrition-sensitive agricultural interventions with the taxation on sugar-sweetened beverages to improve overall health and nutrition in South Africa ..... 113  
Ms Tayla Ashton Kaltenbrun<sup>1</sup>, Professor Lisanne Monica Du Plessis<sup>1</sup>, Professor Scott Drimie<sup>1</sup>  
*<sup>1</sup>University of Stellenbosch, Stellenbosch, South Africa*
- 50[R]** A qualitative study reflecting the experiences of nursing and midwifery students regarding nutrition education..... 114  
Dr Julie Abayomi<sup>1</sup>, Miss Hannah Baxter<sup>2</sup>, Dr Katie Lane<sup>2</sup>, Mrs Jane Rooney<sup>2</sup>, Dr Carolyn Lees<sup>2</sup>  
*<sup>1</sup>Edgehill University, Ormskirk, United Kingdom, <sup>2</sup>Liverpool John Moores University, Liverpool, UK*
- 470[R]** Adipogenic virus Adenovirus-36 seroprevalence and obesity in adults in northeast Mexico. .... 114  
Dr Elizabeth Solis Perez<sup>1</sup>, Master Susana Romo Tello<sup>1</sup>, Dr Manuel Lopez Cabanillas-Lomeli<sup>1</sup>, Dr Ernesto Torres Lopez<sup>2</sup>  
*<sup>1</sup>Facultad de Salud Pública y Nutrición-UANL, Monterrey, Mexico, <sup>2</sup>Facultad de Medicina-UANL, Monterrey, México*
- 188[R]** Advancing indigenous cultural competency in dietetics: The Northern Ontario Dietetic Internship Program (NODIP) Experience at the Northern Ontario School of Medicine (NOSM) ..... 115  
Mrs Lee Rysdale<sup>1</sup>, Ms Denise Raftis<sup>1</sup>  
*<sup>1</sup>Northern Ontario School of Medicine, Sudbury, Canada*

- 435[R]** **Agreement of predictive equations and measured resting energy expenditure in children with cancer....** 115  
Ms Ilde-Marié Kellerman<sup>1</sup>, Professor Mariana Kruger<sup>2</sup>, Ms Judy Schoeman<sup>2</sup>, Professor Reneé Blaauw<sup>1</sup>  
<sup>1</sup>Division of Human Nutrition, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Department of Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa
- 517[R]** **Agricultural and nutritional education interventions for reducing aflatoxin exposure to improve infant and child growth in low- and middle-income countries: A Cochrane systematic review .....** 116  
Dr Marianne Visser<sup>1</sup>, Ms Anel Schoonees<sup>1</sup>, Dr Chibundu N Ezekiel<sup>2</sup>, Dr Nicola Randall<sup>3</sup>, Dr Celeste Naude<sup>1</sup>  
<sup>1</sup>Centre for Evidence-based Health Care, Division of Epidemiology and Biostatistics, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Department of Microbiology, Babcock University, Ilishan Remo, Nigeria, <sup>3</sup>Centre for Evidence Based Agriculture, Crop and Environmental Sciences, Harper Adams University, Newport, UK
- 725[R]** **An exploration of the experiences of allied health professionals use of digital health in clinical practice in NHS Scotland.....** 116  
Mrs Michele Rae, Dr Yvonne Robb, Dr Karen Roome  
<sup>1</sup>NHS Greater Glasgow and Clyde, Glasgow, United Kingdom, <sup>2</sup>Glasgow Caledonian University, Glasgow, United Kingdom
- 515[R]** **An observational study of the implementation of the National School Nutrition Programme in three secondary schools in Tshwane. ....** 117  
Mrs Maricia Van Deventer<sup>1</sup>, Dr Carmen Muller<sup>1</sup>, Dr Beulah Pretorius<sup>1</sup>, Prof Hettie Schönfeldt<sup>1</sup>  
<sup>1</sup>Department of Animal and Wildlife Sciences, University Of Pretoria, Pretoria, South Africa
- 165[R]** **Anthropometric parameters and pulmonary function: evaluation of body composition in cystic fibrosis... 117**  
Dr Francis Hollander-Kraaijeveld<sup>1,5</sup>, MSc Yael Lindeman<sup>2</sup>, Dr. PhD Nicole de Roos<sup>2</sup>, MSc Marcella Burghard<sup>3,5</sup>, Dr. MD PhD Ed van de Graaf<sup>4,5</sup>, Prof. dr. MD PhD Harry Heijerman<sup>4,5</sup>  
<sup>1</sup>Division of Internal Medicine and Dermatology, Department of Dietetics, University Medical Center Utrecht, , The Netherlands, <sup>2</sup>Division of Human Nutrition and Health, Wageningen University & Research, , The Netherlands, <sup>3</sup>Department of Rehabilitation, Nursing Science and Sports, University Medical Center Utrecht, , The Netherlands, <sup>4</sup>Division Heart and Lung, Department of Pulmonology, University Medical Center Utrecht, , The Netherlands, <sup>5</sup>Cystic Fibrosis Center Utrecht, University Medical Center Utrecht, , The Netherlands
- 137[R]** **Anthropometric status of Human Immunodeficiency Virus (HIV) infected mothers and their breastfed children.....** 118  
Mrs Bianca Tromp<sup>1,2</sup>, Dr Ronette Lategan-Potgieter<sup>2,3</sup>, Mrs Riette Nel<sup>2</sup>  
<sup>1</sup>Heart and Stroke Foundation, Cape Town, South Africa, <sup>2</sup>University of the Free State, Bloemfontein, South Africa, <sup>3</sup>Stetson University, Stetson, United States of America
- 449[R]** **Anti-glycation effect of cinnamon stem-bark water extract on major types of glucose and fructose derived advanced glycation end-products .....** 118  
Ms Oluwaseyefunmi Iyabo Adeniran<sup>1</sup>, Prof M. Alfred Mogale<sup>1</sup>  
<sup>1</sup>Sefako Makgatho Health Sciences University (SMU), Pretoria, South Africa
- 446[R]** **Are food gardens the foundation of food security in schools? .....** 119  
Dr Hema Kesa<sup>1</sup>  
<sup>1</sup>University Of Johannesburg, Johannesburg, South Africa
- 512[R]** **Assessment of dietary patterns, anthropometric and biochemical indices of diabetic patients attending a tertiary health facility in Nigeria .....** 119  
Prof Olivia Afam-Anene<sup>1</sup>  
<sup>1</sup>Imo State University Owerri Nigeria, Owerri, Nigeria
- 360[R]** **Associations between reported health, lifestyle and birth outcomes of pregnant women attending the antenatal clinic at Pelonomi Hospital, Bloemfontein .....** 120  
Dr Marizeth Jordaan<sup>1</sup>, Mrs Liska Robb<sup>1</sup>, Prof Gina Joubert<sup>1</sup>, Dr Jennifer Osei Ngounda<sup>1</sup>, Prof Corinna Walsh<sup>1</sup>  
<sup>1</sup>University Of The Free State, Bloemfontein, South Africa
- 670[R]** **Attitude of food handlers and sanitary control: the case of community restaurants in Brazil.....** 120  
Dr Raquel Braz Assuncao Botelho<sup>1</sup>, MS Thayze Quirino<sup>1</sup>, Dr Veronica Ginani<sup>1</sup>, dr Izabel Rodrigues da Silva<sup>1</sup>, dr Rita Akutsu<sup>1</sup>, dr Renata Zandonadi<sup>1</sup>  
<sup>1</sup>University Of Brasilia, Brasilia, Brazil

- 121[R]** **Barriers to a healthy lifestyle in prehospital emergency medical care staff in Port Elizabeth, South Africa .....121**  
Prof Annelie Gresse<sup>1</sup>, Mr Philipp Bölke<sup>1</sup>, Ms Rohini Jaga<sup>1</sup>, Ms Rachel Aucamp<sup>1</sup>, Ms Emma Slabbert<sup>1</sup>, Ms Castyn Winfield<sup>1</sup>  
<sup>1</sup>Nelson Mandela University, Port Elizabeth, South Africa
- 622[R]** **Bibliographic analysis of scientific research on breastfeeding practices in Mauritius: Review of articles from 2008 to 2018..... 121**  
Ms Yovane Veerapen<sup>1</sup>  
<sup>1</sup>Nutrismart Consultancy Ltd, Mahebourg, Mauritius
- 511[R]** **Breakfast and lunchbox foods provided to foundation phase learners in Bloemfontein, South Africa ..... 122**  
 Dr Elmine du Toit<sup>1</sup>, Dr Elmine du Toit<sup>1</sup>, Dr Ronette Lategan-Potgieter<sup>2</sup>, Mr Cornel van Rooyen<sup>3</sup>  
<sup>1</sup>Department of Nutrition and Dietetics, University of the Free State, Bloemfontein, South Africa, <sup>2</sup>Department of Health Sciences, Stetson University, Deland, United States of America, <sup>3</sup>Department of Biostatistics, University of the Free State, Bloemfontein, South Africa
- 285[R]** **Canadian 25-year history project: Preferred topics and formats ..... 122**  
Prof Paula Brauer<sup>1</sup>, Ms Linda Dietrich<sup>2</sup>, Prof Janis Randall Simpson<sup>1</sup>, Ms Marlene Wyatt<sup>3</sup>  
<sup>1</sup>University of Guelph, Guelph, Canada, <sup>2</sup>retired, Haliburton, Canada, <sup>3</sup>Consultant, London, Canada
- 305[R]** **Career trajectory of recent dietetic graduates in Canada..... 123**  
Mrs Corinne Eisenbraun<sup>1</sup>, Ms Susan Caswell<sup>2</sup>, Dr Jessica Lieffers<sup>3</sup>, Ms Jennifer Buccino<sup>4</sup>, Dr. Rhona Hanning<sup>5</sup>, Ms Jennifer Wojcik<sup>6</sup>  
<sup>1</sup>Dietitians of Canada (until October 2020), Winnipeg, Canada, <sup>2</sup>PhD Candidate, School of Public Health Systems, University of Waterloo, Waterloo, Canada, <sup>3</sup>Assistant Professor, College of Pharmacy and Nutrition, University of Saskatchewan, Saskatoon, Canada, <sup>4</sup>Dietitians of Canada, Toronto, Canada, <sup>5</sup>Professor, School of Public Health & Health Systems, Faculty of Applied Health Sciences, University of Waterloo, Waterloo, Canada, <sup>6</sup>Dietitians of Canada, Winnipeg, Canada
- 295[R]** **Caregiver's reported experiences of and perceptions on child growth monitoring and promotion through the South African Department of Health's Road to Health booklet, in Grahamstown, Eastern Cape (2012-2014) ..... 123**  
Ms Zitandile Mfono<sup>1,2</sup>, Dr Anna Voce<sup>2</sup>  
<sup>1</sup>Department of Dietetics, Nelson Mandela University, Port Elizabeth, South Africa, <sup>2</sup>Discipline Public Health Medicine, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa
- 101[R]** **Caregivers' knowledge and practice of recommended infant and young child feeding guidelines in Eastern Region, Ghana..... 124**  
Mrs Harriet Adu-Amoah<sup>1,2,3</sup>, Prof Richmond Aryeetey<sup>3</sup>  
<sup>1</sup>FOCOS Orthopedic Hospital, Accra, Ghana, <sup>2</sup>Ghana Dietetic Association, Accra, Ghana, <sup>3</sup>University of Ghana School of Public Health, Accra, Ghana
- 674[R]** **Chemical composition of jam made from cashew (*Anacardium occidentale*), pineapple (*Ananas comosus*), Orange (*Citrus sinensis*) and tomato fruit (*Solanum Lycopersicum*) ..... 124**  
Mr Cyril Anoshirike<sup>1</sup>, Miss Chinonye Okoye<sup>1</sup>, Prof Nne Ola Onuoha<sup>1</sup>  
<sup>1</sup>University Of Nigeria, Nsukka, Nsukka/ Enugu, Nigeria
- 347[R]** **Children and women vulnerability to the right to food in the Umlazi township, KwaZulu-Natal, South Africa ..... 125**  
Dr Annette Van Onselen<sup>1</sup>, Dr Bukasa Andy Mpiana<sup>2</sup>, Prof Unathi Kolanisi<sup>3</sup>  
<sup>1</sup>Sefako Makgatho Health Sciences University, Pretoria, South Africa, <sup>2</sup>PhD candidate, SAEES, University of KwaZulu-Natal, Pietermaritzburg, South Africa, <sup>3</sup>Consumer Sciences, School of Science and Agriculture, University of Zululand, Richards Bay, South Africa
- 125[R]** **Clinical registered dietitian nutritionists identified a reduction in the number of defining characteristics for prevalent nutrition diagnoses in an acute care setting: A content validation study ..... 125**  
Dr Nancy Hakeel-Smith<sup>1</sup>, Dr Paula Ritter-Gooder<sup>2</sup>  
<sup>1</sup>Bryan Health, Lincoln, United States, <sup>2</sup>University of Nebraska-Lincoln, Lincoln, United States
- 22[R]** **Code of ethics and civility pledge: respect for values..... 126**  
Ms Mary Russell<sup>1</sup>  
<sup>1</sup>Academy Of Nutrition And Dietetics, Chicago, United States

- 21[R]** Comparison of dietary and plasma phospholipid fatty acids between normal weight and overweight black South Africans according to metabolic health: The PURE study ..... 126  
 Dr Alice Ojwang<sup>1,2</sup>, Prof. Cornelius Smuts<sup>1</sup>, Dr. Manja Zec<sup>1,3</sup>, Prof. Edelweiss Wentzel-Viljoen<sup>1</sup>, Prof. Iolanthé Kruger<sup>4</sup>, Prof. Herculina Kruger<sup>1,5</sup>  
<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>2</sup>Technical University of Kenya, Nairobi, Kenya, <sup>3</sup>Centre of Excellence in Nutrition and Metabolism, Institute for Medical Research, University of Belgrade, Belgrade, Serbia, <sup>4</sup>Africa Unit for Transdisciplinary Health Research, North-West University, Potchefstroom, South Africa, <sup>5</sup>MRC Extra Mural Unit: Hypertension and CVD, North-West University, Potchefstroom, South Africa
- 114[R]** Comparison of Mid-Upper Arm Circumference and Screening Tool for Risk of Impaired Nutritional Status and Growth in malnutrition risk assessment of paediatric in-patients..... 127  
 Mr Eric Komla Anku<sup>3</sup>, Dr Joana Ainuson-Quampah<sup>2</sup>, Mrs Harriet Adu-Amoah<sup>1</sup>  
<sup>1</sup>FOCOS Orthopaedic Hospital, Accra, Ghana, <sup>2</sup>University of Ghana, Accra, Ghana, <sup>3</sup>Cape Coast Teaching Hospital, Ghana
- 514[R]** Cost of the diet is associated with dietary diversity and nutrient adequacy and children aged 12 to 24 months..... 127  
 Ms Tshavhuyo Audry Mulabisano<sup>1</sup>, Dr Marinel Rothman<sup>3</sup>, Mrs Ria Laubscher<sup>1</sup>, Prof Cornelius M. Smuts<sup>2</sup>, Prof Mieke Faber<sup>1,2</sup>  
<sup>1</sup>South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>North-West University, Potchefstroom, South Africa, <sup>3</sup>University of Pretoria, Pretoria, South Africa
- 124[R]** Cultivating healthier eating behaviors among Haitian women farmers by combining nutrition education with introduction of Asian spinach..... 128  
 Dr Elizabeth Gollub<sup>1</sup>, Dr. David Diehl<sup>2</sup>, Ms. Anne Gilot<sup>3</sup>, Dr. Thanos Gentimis<sup>4</sup>  
<sup>1</sup>Louisiana State University Agricultural Center, School of Nutrition and Food Sciences, Baton Rouge, United States, <sup>2</sup>University of Florida, Institute of Food and Agricultural Sciences, Department of Family, Youth and Community Sciences, Gainesville, United States, <sup>3</sup>University of Florida, Institute of Food and Agricultural Sciences, AREA Project, Gainesville, United States, <sup>4</sup>Louisiana State University Agricultural Center, Experimental Statistics, Baton Rouge, United States
- 71[R]** Cultural food security: What is it and what do dietitians need to know? ..... 128  
 Dr Jennifer Brady<sup>1</sup>  
<sup>1</sup>Mount Saint Vincent University, Halifax, Canada
- 197[R]** Cultural tool for weight control..... 129  
 Mrs Patricia Thompson<sup>1</sup>  
<sup>1</sup>CANDi, Port of Spain, Caribbean, <sup>2</sup>Jamaica Island Nutrition Network, Kingston, Jamaica
- 407[R]** Demonstrated assumptions about individuals identified as dietitians based on appearance, and impacts on patients' trust ..... 129  
 Mrs Majeedah Belding<sup>1,3</sup>, Mr Gerry Kasten<sup>2</sup>  
<sup>1</sup>Acadia University, Wolfville, Canada, <sup>2</sup>University of British Columbia, Vancouver, Canada, <sup>3</sup>Stirling University, ,
- 710[R]** Determination of sodium, potassium, calcium and magnesium contents of restaurant vended lunch meals on KNUST campus ..... 130  
 Mr Collins Afriyie Appiah<sup>1</sup>, Ms Priscilla Adjei<sup>1</sup>, Mr Brown Mendel<sup>1</sup>  
<sup>1</sup>Department Of Biochemistry And Biotechnology, College Of Science, Kwame Nkrumah University Of Science And Technology, Kumasi, Ghana
- 627[R]** Determining utilisation of the Road to Health Booklet(RTHB) to assess nutrition status of children 6-60 months old in Mangaung Metropolitan Municipality Clinics, Free State Province..... 130  
 Ms Patience Legoale<sup>1</sup>  
<sup>1</sup>Free State Department Of Health, Bloemfontein, South Africa
- 689[R]** Developing a parent caregiver support package to strengthen the 1st 1000 days Initiative in the Western Cape province..... 131  
 Dr Hilary Goeman, Dr Elmarie Malek, Ms Elizabeth Pegram  
<sup>1</sup>Western Cape Government: Health, Cape Town, South Africa

- 182[R] Developing a standardized language to document diagnostic and treatment data ..... 131**  
 Mrs Sytske Runia<sup>1,2</sup>, Mrs Willy Visser<sup>2,3</sup>, Dr Yvonne Heerkens<sup>2,4,5</sup>  
*<sup>1</sup>Department of Dietetics, University Medical Center Utrecht, Utrecht, the Netherlands, <sup>2</sup>Member Expert Group, Dutch Association of Dietitians, Houten, the Netherlands, <sup>3</sup>Department of Dietetics, Leiden University Medical Center, Leiden, the Netherlands, <sup>4</sup>Department Occupation & Health, HAN University of Applied Sciences, Nijmegen, the Netherlands, <sup>5</sup>Dutch Institute of Allied Health Care, Amersfoort, the Netherlands*
- 478[R] Development and preliminary validation of a brief household food insecurity screening tool for paediatric health services in Australia ..... 132**  
 Prof Danielle Gallegos<sup>1</sup>, Ms Aria Kerz<sup>1</sup>, Dr Kristie Bell<sup>2</sup>, Dr Melinda White<sup>2</sup>, Ms Amy Thompson<sup>3</sup>, Ms Michelle Suter<sup>3</sup>, Dr Rebecca McKechnie<sup>1</sup>  
*<sup>1</sup>Queensland University Of Technology, Kelvin Grove, Australia, <sup>2</sup>Children's Hospital Queensland, South Brisbane, Australia, <sup>3</sup>Caboolture Hospital, Caboolture, Australia*
- 486[R] Development and validation of the “Dietary Pattern Calculator” (DPC) for personalized assessment and feedback ..... 132**  
 Dr Mahsa Jessri<sup>1,2,3,4</sup>, Ms Adelia Jacobs<sup>4</sup>, Alena (Praneet) Ng<sup>5</sup>, Carol Bennett<sup>1,6</sup>, Dr Dierdre Hennessey<sup>2</sup>, Dr Amy Hsu<sup>1,2,3,7</sup>, Dr Douglas Manuel<sup>1,2,3,6,7,8</sup>  
*<sup>1</sup>Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Canada, <sup>2</sup>Health Analysis Division, Statistics Canada, Government of Canada, Ottawa, Canada, <sup>3</sup>School of Epidemiology and Public Health, University of Ottawa, Ottawa, Canada, <sup>4</sup>Food, Nutrition and Health Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, Canada, <sup>5</sup>Department of Nutritional Sciences, Faculty of Medicine, University of Toronto, Toronto, Canada, <sup>6</sup>Institute for Clinical Evaluative Sciences, Ottawa, Canada, <sup>7</sup>C.T. Lamont Primary Health Care Research Centre Program, Bruyère Research Institute, Ottawa, Canada, <sup>8</sup>Department of Family Medicine, University of Ottawa, Ottawa, Canada*
- 284[R] Development of a dietary care map for metabolic syndrome treatment ..... 133**  
 Prof Paula Brauer<sup>1</sup>, Ms Dawna Royall<sup>1</sup>, Ms Rupinder Dhaliwal<sup>2</sup>  
*<sup>1</sup>University of Guelph, Guelph, Canada, <sup>2</sup>Metabolic Syndrome Canada, Kingston, Canada*
- 508[R] Development of a sustainability index for potato products in relation to other staple foods ..... 133**  
 Prof Hettie Schönfeldt<sup>1</sup>, Dr Beulah Pretorius<sup>1</sup>, Dr Carmen Muller<sup>1</sup>  
*<sup>1</sup>University Of Pretoria, Pretoria, South Africa*
- 614[R] Dietary diversity and its association with weight status and food choices of females at risk of diabetes in resource poor communities ..... 134**  
 Ms Samukelisiwe Madlala<sup>1</sup>, Dr Jillian Hill<sup>1</sup>, Prof Ernesta Kunneke<sup>2</sup>, Dr. Nasheeta Peer<sup>1</sup>, Prof Andre Kengne<sup>1</sup>, Prof Mieke Faber<sup>1</sup>  
*<sup>1</sup>Non-Communicable Diseases Research Unit, South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>Department of Dietetics and Nutrition, University of the Western Cape, Cape Town, South Africa*
- 591[R] Dietary habits and prevalent hypertension in HIV infected South Africans in Cape Town ..... 134**  
 Dr Kim Nguyen<sup>1</sup>, Dr Nasheeta Peer<sup>1</sup>, Dr Mieke Faber<sup>1</sup>, Prof. Andre P Kengne<sup>1</sup>  
*<sup>1</sup>Non-Communicable Diseases Research Unit, South African Medical Research Council, Cape Town, South Africa*
- 220[R] Dietary Intake, Nutrition Status and School Performance of Pupils 8-14 years, in Bungoma County, Kenya ..... 135**  
 Ms Rhoda Musungu<sup>1</sup>, Prof. Asenath Sigot<sup>2</sup>, Dr. Jane Situma<sup>3</sup>  
*<sup>1</sup>Masinde Muliro University Of Science And Technology, Kakamega, Kenya, <sup>2</sup>Masinde Muliro University of Science and Technology, Kakamega, Kenya, <sup>3</sup>Masinde Muliro University of Science and Technology, Kakamega, Kenya*
- 383[R] Dietary patterns and progression of kidney failure and mortality in adults with chronic kidney disease: A narrative systematic review ..... 135**  
 Mrs Jacomie Nel<sup>1</sup>, Dr Martani Lombard<sup>1</sup>, Dr Robin Dolman<sup>1</sup>  
*<sup>1</sup>North West University (NWU), Potchefstroom, South Africa*
- 460[R] Dietetic practice in the scope of obesity management for bariatric surgery recipients in Saudi Arabia .... 136**  
 Dr Elham Aljaaly<sup>1</sup>  
*<sup>1</sup>King Abdulaziz University, Faculty of Applied Medical Sciences, Jeddah, Saudi Arabia*
- 457[R] Dietitians address health equity and inclusion in special olympics: A global picture ..... 136**  
 Ms Alice Lenihan<sup>1</sup>, Ms Diane Beukers<sup>2</sup>  
*<sup>1</sup>Special Olympics International, Raleigh, United States, <sup>2</sup>Special Olympics Belgium, Brussels, Belgium*

- 181[R]** Documenting diagnostic and treatment data in Electronic Dietetic Care Records; a quantitative systematic assessment ..... 137  
Mrs Sytske Runia<sup>1</sup>, Mrs Maaike Somer<sup>1</sup>, Mrs Marleen de Bruin<sup>1</sup>  
<sup>1</sup>Department of Dietetics, University Medical Center Utrecht, Utrecht, Netherlands
- 381[R]** Effect of fruit and vegetable intake on the progression of kidney failure in adults with chronic kidney disease: A systematic review ..... 137  
Mrs Jacomie Nel<sup>1</sup>, Dr Martani Lombard<sup>1</sup>, Dr Robin Dolman<sup>1</sup>  
<sup>1</sup>North West University (NWU), Potchefstroom, South Africa
- 17[R]** Effect of graded levels of Moringa oleifera leaves on type 2 diabetic subjects..... 138  
Dr Ifeoma Afiaenyi<sup>1</sup>  
<sup>1</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria
- 513[R]** Effect of malted-rice amazake on the gut environment of the elderly ..... 138  
Ms Miki Doi<sup>1</sup>, Dr. Rikako Inoue<sup>1</sup>, Prof. Makoto Ayabe<sup>2</sup>, Prof. Satoko Hiramatsu<sup>1</sup>, Dr. Aki Ogawa<sup>3</sup>, Ms. Yasmin Syauki A.<sup>1</sup>, Ms. Suzumi Kageyama<sup>1</sup>, Prof. Kazuko Sumiyoshi<sup>4</sup>, Prof. Yasuyuki Irie<sup>1</sup>  
<sup>1</sup>Department of Nutritional Science, Faculty of Health and Welfare Science, Okayama Prefectural University, Soja, Japan, <sup>2</sup>Department of Human Information Engineering, Faculty of Computer Science and Systems Engineering, Okayama Prefectural University, Soja, Japan, <sup>3</sup>Department of Clinical Nutrition and Dietetics, Faculty of Clinical Nutrition and Dietetics, Konan Women's University, Kobe, Japan, <sup>4</sup> Department of Nursing Science, Faculty of Health and Welfare Science, Okayama Prefectural University, Okayama, Soja, Japan
- 286[R]** Effective interventions for increasing dried bean consumption: Consensus results ..... 139  
Prof Paula Brauer<sup>1</sup>, Ms Roya Daneshmand<sup>1</sup>, Prof Sunghwan Yi<sup>1</sup>, Prof Jess Haines<sup>1</sup>, Prof Lisa Duizer<sup>1</sup>, Dr Michelle Edwards<sup>1</sup>, Prof Manickavasagan Annamalai<sup>1</sup>  
<sup>1</sup>University of Guelph, Guelph, Canada
- 587[R]** Effectiveness of the nutrition intervention by using transtheoretical model for inpatients with obesity ..... 139  
Ms Hsiao-chun Lin<sup>1</sup>, Ms Yu-Ru Lin<sup>1</sup>, Ms Kang-Wei Lee<sup>1</sup>, Dr Chung-Mei Ouyang<sup>1</sup>  
<sup>1</sup>National Taiwan University Hospital Hsin-chu Branch, Hsinchu City, Taiwan
- 505[R]** Effects of Nutrition Education on anthropometric and bio chemical indices of adolescents in secondary schools in Owerri North Local Government Area, Imo State, Nigeria ..... 140  
Prof Olivia Afam-Anene<sup>1</sup>  
<sup>1</sup>Imo State University Owerri Nigeria, Owerri, Nigeria
- 280[R]** Effects of physical exercise on body composition and malnutrition risk in patients after surgery for esophageal cancer participating in the Physical ExeRcise Following Esophageal Cancer Treatment (PERFECT) study ..... 140  
Mrs Elles Steenhagen<sup>1</sup>, MSc Anouk Hiensch<sup>2</sup>, MD, PhD Jonna K. van Vulpen<sup>3</sup>, MD, PhD Jelle P. Ruurda<sup>4</sup>, MD, PhD Richard P.R. Groenendijk<sup>5</sup>, MD, PhD Donald L. van der Peet<sup>6</sup>, MD, PhD Camiel Rosman<sup>7</sup>, MD, PhD Bas P.L. Wijnhoven<sup>8</sup>, MD, PhD Mark van Berge-Henegouwen<sup>9</sup>, MD, PhD Hanneke W.M. van Laarhoven<sup>10</sup>, MD, PhD Richard van Hillegersberg<sup>4</sup>, MD, PhD Peter D. Siersema<sup>11</sup>, PhD Anne M. May<sup>2</sup>  
<sup>1</sup>Department of Dietetics, University Medical Center Utrecht, Utrecht, The Netherlands, <sup>2</sup>Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, The Netherlands, <sup>3</sup>Department of Radiation Oncology, University Medical Center Utrecht, Utrecht, The Netherlands, <sup>4</sup>Department of Surgery, University Medical Center Utrecht, Utrecht, The Netherlands, <sup>5</sup>Department of Surgery, IJsselland Hospital, Capelle a/d IJssel, The Netherlands, <sup>6</sup>Department of Surgery, Amsterdam University Medical Center VUmc, Amsterdam, The Netherlands, <sup>7</sup>Department of Surgery, Radboud University Medical Center, Nijmegen, The Netherlands, <sup>8</sup>Department of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands, <sup>9</sup>Department of Surgery, Amsterdam University Medical Center AMC, Amsterdam, The Netherlands, <sup>10</sup>Department of Medical Oncology, Amsterdam University Medical Center AMC, Amsterdam, The Netherlands, <sup>11</sup>Department of Gastroenterology and Hepatology, Radboud University Medical Center, Nijmegen, The Netherlands
- 120[R]** Effects of raw and boiled garlic extract on body weight, fasting blood glucose and lipid profile of alloxan induced adult male wistar rats ..... 141  
Ms Ogechukwu Umeakuka<sup>1</sup>, Ms Ogechukwu Umeakuka<sup>1</sup>, Ms Joy Obi<sup>1</sup>  
<sup>1</sup>University Of Nigeria, Nsukka, Nigeria, Enugu State, Nigeria

- 619[R]** **Effects of supplementing iron and n-3 fatty acid deficient female rats with iron and n-3 fatty acids, alone and combined, during pregnancy and lactation on bone mineral density in offspring.....** 141  
Ms Estelle Strydom<sup>1</sup>, Dr Lizelle Zandberg<sup>1</sup>, Prof Salome, Herculina Kruger<sup>1</sup>, Prof Cornelius, Marius Smuts<sup>1</sup>, Dr Jeannine Baumgartner<sup>1,2</sup>  
<sup>1</sup>Centre of Excellence for Nutrition, North-west University, Potchefstroom, South Africa, <sup>2</sup>Laboratory of Human Nutrition, Institute of Food, Zurich, Switzerland
- 438[R]** **Energy and macronutrient content of breast milk from South African mothers of preterm infants: an exploratory study.....** 142  
Dr Johanna Kemp<sup>1</sup>, Prof Friede Wenhold<sup>1</sup>, Dr Firdose Nakwa<sup>2</sup>, Prof Piet Becker<sup>1</sup>  
<sup>1</sup>University of Pretoria, Pretoria, South Africa, <sup>2</sup>University of the Witwatersrand, Johannesburg, South Africa
- 735 R]** **Enhancing mineral bioaccessibility in an african cereal-based porridge using a food-based approach: a potential sustainable strategy to alleviate essential mineral deficiency in Africa .....** 142  
Dr Oluyimika Y. Adetola<sup>1</sup>, Prof John R.N. Taylor<sup>1</sup>  
<sup>1</sup>Department of Consumer and Food Sciences and Institute for Food, Nutrition and Well-being, University of Pretoria, Pretoria, South Africa
- 273[R]** **Enteral nutrition in ICU: the use of dietetic outcomes to improve adequacy.....** 143  
Mrs Rowan Clemente<sup>1</sup>, Miss Kaylee Allan<sup>1</sup>, Dr Stephen Taylor<sup>1</sup>, Miss Frances Greer<sup>1</sup>, Miss Claire Downer<sup>1</sup>, Miss Danielle Milne<sup>1</sup>, Ms Natalie Dumont<sup>1</sup>  
<sup>1</sup>North Bristol NHS Trust, Bristol, United Kingdom
- 575[R]** **Evaluation of diet quality markers in vegans compared to other types of vegetarians in Brazil.....** 143  
Msc Shila Minari Hargreaves<sup>1</sup>, Prof Renata Puppini Zandonadi<sup>1</sup>, Prof Eduardo Yoshio Nakano<sup>1</sup>, Prof Raquel Botelho<sup>1</sup>, Prof Wilma Maria Coelho Araújo<sup>1</sup>  
<sup>1</sup>University Of Brasilia, Brasilia, Brazil
- 176[R]** **Evaluation of Nutritional and anti-nutritional compositions in leaves of *Ginkgo biloba* (Maiden Hair) tree found in Nigeria .....** 144  
Mr Onyeka Nwosu<sup>1</sup>  
<sup>1</sup>National Biosafety Management Agency, Abuja, Nigeria
- 439[R]** **Evaluation of reporting quality of oral nutrition support interventions in randomised controlled trials..** 144  
Ms Christine Marmada<sup>1</sup>, Dr Elizabeth Weekes<sup>2</sup>, Dr Christine Baldwin<sup>1</sup>  
<sup>1</sup>King's College London, London, United Kingdom, <sup>2</sup>Guy's & St Thomas' NHS Foundation Trust, London,,
- 194[R]** **Exploring the factors that contribute to high levels of stunting in under-five children in a highly productive agricultural region: A case of Ntchisi District in Central Malawi. ....** 145  
Mrs Whitney Mphangwe Kondowe<sup>1</sup>  
<sup>1</sup>Ministry Of Agriculture, Irrigation And Water Development-malawi, Balaka, Malawi
- 212[R]** **Factors affecting the feeding practices of mothers with infants in a high socioeconomic area in Johannesburg .....** 145  
Mrs Annica Madeleen Rust<sup>1</sup>, Dr Lucia Meko<sup>1</sup>, Me Mariette Nel<sup>1</sup>  
<sup>1</sup>University of the Free State, Bloemfontein, South Africa
- 487 R]** **Food and nutrition education within Australian primary schools: A cross-curriculum gap.....** 146  
Dr Penelope Love<sup>1</sup>, Dr Alison Booth<sup>1</sup>, Dr Claire Margerison<sup>1</sup>, Professor Caryl Nowson<sup>1</sup>, Dr Carley Grimes<sup>1</sup>  
<sup>1</sup>Deakin University, Institute For Physical Activity And Nutrition, Melbourne, Australia
- 469[R]** **Fructose, obesity and non-alcoholic fatty liver disease in schoolage children of 6 to 9 years old.....** 146  
Dr Elizabeth Solis Perez<sup>1</sup>, Master Raquel Gonzalez Garza<sup>1</sup>, Dr Laura Elia Martinez Garza<sup>2</sup>, Dr Jesus Zacarias Villarreal Perez<sup>3</sup>, Dr Hugo Leonid Gallardo Blanco<sup>2</sup>, Nutrition Specialist Maria Alejandra Sanchez Peña<sup>1</sup>  
<sup>1</sup>Facultad de Salud Pública y Nutrición-UANL, Monterrey, Mexico, <sup>2</sup>Genetics Department-Hospital Universitario "José Eleuterio González", Monterrey, México, <sup>3</sup>Endocrinology Service-Hospital Universitario "José Eleuterio González", Monterrey, México

- 560[R]** **Gearing up our sodium data: A national food database approach for updating sodium, following policy call in South Africa** ..... 147  
Mrs Joeline Chetty<sup>1</sup>, Mrs Malory Jumat<sup>1</sup>, Dr Averalda Van Graan<sup>1</sup>  
<sup>1</sup>South African Medical Research Council. Biostatistics Research Unit. South African Food Data System (SAFOODS), Cape Town, South Africa
- 526[R]** **General practitioners' preferences for the delivery, content and structure of a malnutrition education tool: an exploratory study.** ..... 147  
Prof Clare Corish<sup>1,2,11</sup>, Dr Ciara Reynolds<sup>1,2</sup>, Dr Patricia Dominguez Castro<sup>1,2</sup>, Dr Sharon Kennelly<sup>3</sup>, Dr Barbara Clyne<sup>4</sup>, Professor Gerard Bury<sup>5</sup>, Dr David Hanlon<sup>6</sup>, Dr Catriona Bradley<sup>7</sup>, Ms Karen Finnigan<sup>8</sup>, Ms Sarah Clarke<sup>8</sup>, Professor Michael Barry<sup>8</sup>, Dr Laura McCullagh<sup>9</sup>, Dr Celine Murrin<sup>1,2</sup>, Dr Carla Perrotta<sup>1,2</sup>, Ms Katherine Loayza Villaroel<sup>1,2</sup>, Dr Eileen Gibney<sup>2,10</sup>  
<sup>1</sup>School of Public Health, Physiotherapy and Sports Science, University College Dublin, Dublin,, Ireland, <sup>2</sup>UCD Institute of Food and Health, University College Dublin, Dublin,, Ireland, <sup>3</sup>National Primary Care Division, Community Funded Schemes Service Improvement, Mountmellick Primary Care Building, Laois,, Ireland, <sup>4</sup>HRB Centre for Primary Care Research, Department of General Practice, Royal College of Surgeons in Ireland, Dublin,, Ireland, <sup>5</sup>School of Medicine, University College Dublin, Dublin,, Ireland, <sup>6</sup>Health Service Executive, Clinical Strategy and Programmes Division, Integrated Care Programmes, Dr Steevens Hospital, Dublin,, Ireland, <sup>7</sup>Royal College of Surgeons in Ireland, Dublin,, Ireland, <sup>8</sup>Department of Pharmacology and Therapeutics, Trinity Centre for Health Sciences, St James's Hospital, Dublin,, Ireland, <sup>9</sup>National Centre for Pharmacoeconomics, St James's Hospital, Dublin, , Ireland, <sup>10</sup>School of Agriculture and Food Science, University College Dublin, Dublin,, Ireland, <sup>11</sup>National Nutrition Surveillance Centre, University College Dublin, Dublin,, Ireland
- 596[R]** **Glycaemic response and sensory evaluation of biscuits produced from African yam bean and tiger nut composite flour** ..... 148  
Ms Chioma Anidi<sup>1</sup>, Ms Chioma Anidi<sup>1</sup>, Ms Chidimma Ugwu<sup>1</sup>, Mr Aloysius Maduforo<sup>1</sup>  
<sup>1</sup>University Of Nigeria Nsukka, Enugu, Nigeria
- 699[R]** **Glycaemic response and sensory evaluation of four banana varieties in Enugu State** ..... 148  
Mr Aloysius Maduforo<sup>1</sup>, Mrs Appolonia Obiloma<sup>2</sup>, Ms Dorcas Ogbuabo<sup>3</sup>, Professor Elizabeth Ngwu<sup>4</sup>, Dr Chika Ndiokwelu<sup>5</sup>, Mrs Clementina Okoro<sup>6</sup>, Ms Josephine Okorie<sup>7</sup>  
<sup>1</sup>Department of Nutrition and Dietetics, Faculty of Agriculture, University of Nigeria, Nsukka, Nsukka, Nigeria, <sup>2</sup>Department of Nutrition and Dietetics, Imo State Polytechnics Umuagwo Owerri, Imo State, Nigeria, Umuagwo, Nigeria, <sup>3</sup>Department of Nutrition and Dietetics, Faculty of Agriculture, University of Nigeria, Nsukka, Nsukka, Nigeria, <sup>4</sup>Department of Nutrition and Dietetics, Faculty of Agriculture, University of Nigeria, Nsukka, Nsukka, Nigeria, <sup>5</sup>Human Nutrition and Dietetics Unit, Department of Biochemistry, University of Calabar, Nigeria, Calabar, Nigeria, <sup>6</sup>Department of Nutrition and Dietetics, Faculty of Agriculture, University of Nigeria, Nsukka, Nsukka, Nigeria, <sup>7</sup>Department of Hospitality Management, School of General and Liberal Studies, Niger State Polytechnics Zungeru, Campus, Bida, Niger State, Nigeria., Bida, Nigeria
- 326[R]** **Growing-up milks: Sugar content, nutrient profiles and nutrient content claims.** ..... 149  
Mrs Anzelle Mulder<sup>1</sup>, Ms Jane Badham<sup>1</sup>, Mrs Lara Sweet<sup>1</sup>, Mrs Elizabeth Zehner<sup>2</sup>, Dr Alissa Pries<sup>2</sup>  
<sup>1</sup>JB Consultancy, Johannesburg, South Africa, <sup>2</sup>Helen Keller International, Washington, USA
- 534[R]** **Gruels Formulated From African Yambean, Walnut and Maize Improved the Body Mass and Biochemical Parameters of Hiv-Infected Adults** ..... 149  
Dr Peace Ani<sup>1</sup>, Dr. Justina Okoli<sup>2</sup>, Dr. Peace Ani<sup>1</sup>  
<sup>1</sup>Department of Nutrition and Dietetics, University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>2</sup>Department of Nutrition and Dietetics, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria
- 24[R]** **How entrepreneurship is affecting dietetic and nutrition practices? The ICDA members' perspective: responses from the 2018-2019 Trends Survey.** ..... 150  
Dr Judith Rodriguez<sup>1</sup>, Ms. Alana Marrero Gonzalez<sup>1</sup>  
<sup>1</sup>University Of North Florida, Jacksonville, United States
- 262[R]** **How Nutrition in Integrative and Functional Medicine Standards can impact practice** ..... 150  
Dr Sudha Raj<sup>1</sup>, MPH RD CCN LD Diana Noland, Mrs Monique Richard<sup>3</sup>  
<sup>1</sup>Syracuse University, Syracuse, United States, <sup>2</sup>Sequoia Family Medicine, Burbank, United States, <sup>3</sup>Nutrition-in-Sight, Johnson City, United States
- 269[R]** **How to save a small fortune! Improving the quality, clinical and cost effectiveness of oral nutritional supplement (ONS) prescribing in NHS Scotland** ..... 151  
Ms Lynsey Robinson<sup>1</sup>, Miss Janie Gordon<sup>2</sup>, Mrs Margaret Ryan<sup>1</sup>, Mrs Alpana Mair<sup>3</sup>  
<sup>1</sup>NHS Greater Glasgow & Clyde, Glasgow, United Kingdom, <sup>2</sup>NHS Fife, Fife, United Kingdom, <sup>3</sup>Effective Prescribing & Therapeutics, Scottish Government, Edinburgh, United Kingdom

- 645[R]** Hydration status and the prevalence of the indications of urinary tract infections amongst day shift nurses, practicing at a private hospital in Durban, KZN, SA. .... 151  
Ms Kerryn Lowe<sup>1</sup>, Dr Chara Biggs<sup>1</sup>  
<sup>1</sup>UKZN, Pietermaritzburg, South Africa
- 219[R]** Identifying participants who improve and sustain change after an adult food literacy program ..... 152  
Dr Andrea Begley<sup>1</sup>, Dr Ellen Paynter<sup>1</sup>, Lucy Butcher<sup>2</sup>, Vanessa Bobongie<sup>2</sup>, Professor Satvinder Dhaliwal<sup>1</sup>  
<sup>1</sup>Curtin University, Perth, Australia, <sup>2</sup>Foodbank WA, Perth, Australia
- 422[R]** Identifying and treating malnutrition in the community – are we making every contact count? ..... 152  
Ms Massar Dabbous<sup>1</sup>, Dr Christine Baldwin<sup>1</sup>, Dr Christine Elizabeth Weekes<sup>2</sup>  
<sup>1</sup>King's College London, London, United Kingdom, <sup>2</sup>Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom
- 306[R]** Identifying factors relating to meal preparation difficulties encountered by older individuals – a cross-sectional study ..... 153  
Mrs Gaëlle Soriano<sup>1</sup>  
<sup>1</sup>Chu Toulouse, Toulouse, France
- 471[R]** Identifying potential barriers to food intake in a rural Canadian hospital ..... 153  
Ms Lauren Enwright<sup>1</sup>  
<sup>1</sup>Middlesex Hospital Alliance-Four Counties Hospital Services, Newbury, Canada
- 23[R]** Impact of the type and duration of dialysis on the nutritional status of adults with end-stage renal disease ..... 154  
Ms Anchen Martens<sup>1</sup>, Ms Gerda Gericke  
<sup>1</sup>University of Pretoria, Pretoria, South Africa
- 136[R]** Implementation of the Prevention of Mother-to-Child Transmission(PMTCT) Program in the Northern Cape, South Africa..... 154  
Mrs Bianca Tromp<sup>1,2</sup>, Dr Ronette Lategan-Potgieter<sup>2,3</sup>, Mrs Riette Nel<sup>2</sup>  
<sup>1</sup>Heart and Stroke Foundation, Cape Town, South Africa, <sup>2</sup>University of the Free State, Bloemfontein, South Africa, <sup>3</sup>Stetson University, Stetson, United States of America
- 206[R]** Improved prediction equations for estimating height in adults from ethnically diverse backgrounds..... 155  
Dr Angela Madden<sup>1</sup>, Dr Alla Mashanova<sup>1</sup>, Dr Farzad Amirabdollahian<sup>2</sup>, Ms Sandeep Ghuman<sup>1</sup>, Ms Munibah Makda<sup>2</sup>, Dr Avril Collinson<sup>3</sup>, Ms Frances Dean<sup>3</sup>, Ms Malgorzata Hirsza<sup>4</sup>, Dr Susan Lennie<sup>5</sup>, Dr Maria Maynard<sup>4</sup>, Dr Brian Power<sup>6</sup>  
<sup>1</sup>University Of Hertfordshire, Hatfield, United Kingdom, <sup>2</sup>Liverpool Hope University, Liverpool, UK, <sup>3</sup>University of Plymouth, Plymouth, UK, <sup>4</sup>Leeds Beckett University, Leeds, UK, <sup>5</sup>Newcastle University, Newcastle, UK, <sup>6</sup>University College London, London, UK
- 662[R]** Improving dietary diversity of children aged 6 to 59 months through developing easy to understand and disseminate nutrition information, education and communication materials..... 155  
Mr Innocent Sanga<sup>1</sup>, Mrs Neema Nkotagu<sup>2</sup>  
<sup>1</sup>Sokoine University Of Agriculture, Morogoro, Tanzania, United Republic of, <sup>2</sup>The Centre for Counselling, Nutrition and Health Care (COUNSENUH), Dar Es Saalam, Tanzania, United Republic of
- 485[R]** Infant feeding practices: knowledge, attitude and beliefs of male staff employed at the University of Limpopo, MEDUNSA campus ..... 156  
Mrs Chinwe Maryfrancis Omeh<sup>1</sup>, Dr. Lindiwe Ncube<sup>1</sup>, Dr. Masudu Manafe<sup>1</sup>  
<sup>1</sup>Department of Human Nutrition and Dietetics, Sefako Makgatho Health Science University, Pretoria, South Africa
- 236[R]** Infant formula feeding practices of mothers in a high socioeconomic area in Johannesburg ..... 156  
Mrs Annica Madeleen Rust<sup>1</sup>, Dr Lucia Meko<sup>1</sup>, Me Mariette Nel<sup>1</sup>  
<sup>1</sup>University of the Free State, Bloemfontein, South Africa

- 270[R]** **Informing the design and delivery of a lifestyle program for women with polycystic ovary syndrome: a mixed-methods investigation on patients' perspectives.....** 157  
Dr Stephanie Pirotta<sup>1</sup>, Dr Anju Joham<sup>1,2</sup>, Associate Professor Lisa Moran<sup>1</sup>, Dr Siew Lim<sup>1</sup>, Professor Helen Skouteris<sup>1,3</sup>  
<sup>1</sup>Monash Centre for Health Research and Implementation, Monash University, Clayton, Australia, <sup>2</sup>Department of Diabetes, Monash Health, Clayton, Australia, <sup>3</sup>Warwick University, Coventry, UK
- 742[R]** **Initial evaluation of Break-up with Salt: Virtual nutrition education for hypertension management....** 157  
 Ms. Helena Salgado, Dr Elizabeth Gollub<sup>1</sup>  
<sup>1</sup>LSU AgCenter, Baton Rouge, United States
- 11[R]** **International Confederation of Dietetic Associations (ICDA) member country dietitian-nutritionist practice trends 2018-2019.....** 158  
Dr Judith Rodriguez<sup>1</sup>, Ms Carole Middleton<sup>2</sup>  
<sup>1</sup>University Of North Florida and ICDA Director, Jacksonville, United States, <sup>2</sup>ICDA Board, Director an U.K. ICDA Representative, , U.K.
- 726[R]** **Interprofessional education and dietetic interns: Successes & challenges from the faculty perspective....** 158  
Ms Amy Nickerson<sup>1</sup>, Prof MV Palumbo<sup>1</sup>  
<sup>1</sup>University Of Vermont, Burlington, United States
- 593[R]** **Investigating calculated energy implications with adjusting the energy conversion factor for total dietary fibre in the SAFOODS database.....** 159  
Dr Averalda Van Graan<sup>1</sup>, Ms Joelaine Chetty<sup>1</sup>, Ms Malory Jumat<sup>1</sup>  
<sup>1</sup>South African Medical Research Council, SAFOODS, Biostatistics Unit, Bellville, Cape Town, South Africa
- 59[R]** **Knowledge, attitude and dietary practices of adult diabetic clients attending the diabetic clinic at a tertiary teaching hospital in Calabar, Nigeria .....** 159  
 Dr Chika Ndiokwelu<sup>2</sup>, Mr Aloysius Maduforo<sup>1</sup>, Ms Stephanie Inyang<sup>2</sup>, Professor Henrietta Ene-Obong<sup>2</sup>  
<sup>1</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>2</sup>University of Calabar, Calabar, Nigeria
- 621[R]** **Leadership of Brazilian dietitians .....** 160  
Dr Raquel Braz Assuncao Botelho<sup>1</sup>, dr Rita Akutsu<sup>1</sup>, MS Mayara Vidigal<sup>1</sup>, dr Renata Zandonadi<sup>1</sup>  
<sup>1</sup>University Of Brasilia, Brasilia, Brazil
- 172[R]** **Linking the sensory taste properties of sweet baked biscuits to consumers' emotions: A cross-cultural study .....** 160  
Prof Annchen Mielmann<sup>1</sup>, Dr Thomas Brunner<sup>2</sup>  
<sup>1</sup>School of Physiology, Nutrition and Consumer Sciences, North-West University, Potchefstroom, South Africa, <sup>2</sup>Food Industry and Consumption, Berner Fachhochschule, Hochschule für Agrar-, Forst- und Lebensmittelwissenschaften HAFL, Bern, Switzerland
- 244[R]** **Louisiana Team Nutrition: influencing healthier eating among public school students.....** 161  
Dr Elizabeth Gollub<sup>1</sup>, Ms. Praja Adhikari<sup>1</sup>  
<sup>1</sup>LSU AgCenter, School of Nutrition and Food Sciences, Baton Rouge, United States
- 349[R]** **Love, joy and necessity – contrasting aspects of food and meals in adolescents and young adults with cancer undergoing high-emetogenic chemotherapy .....** 161  
Ms Marie Ernst Christensen<sup>1,2,3</sup>, PhD, MScN. Pia Riis Olsen<sup>4</sup>, Consultant, MD, PhD Hanne Krogh Rose<sup>4</sup>, PhD, MScN. Annelise Norlyk<sup>1</sup>, PhD, MScN. Anita Haahr<sup>2</sup>  
<sup>1</sup>Research Unit for Nursing and Health Care, Department of Public Health, Aarhus University, Aarhus, Denmark, <sup>2</sup>Research Centre for Health and Welfare Technology, VIA University College, Aarhus N., Denmark, <sup>3</sup>Nutrition and Health Department, VIA University College, Aarhus N., Denmark, <sup>4</sup>Department of Oncology, Aarhus University Hospital, Aarhus, Denmark
- 309[R]** **Market nutrient and consumer demand gap analysis of diets of children (6-23 months) in Kotido, Lamwo and Kisoro districts, Uganda .....** 162  
Ms Esther Joanita Naluguza<sup>1</sup>  
<sup>1</sup>Abt. Associates, KAMPALA, Uganda

- 254[R]** **Measuring team member mealtime experience in residential care.....** 162  
Prof Heather Keller<sup>1</sup>, Jill Morrison-Koechl<sup>1</sup>, Vanessa Vucea<sup>1</sup>  
<sup>1</sup>Schlegel-university Of Waterloo Research Institute For Aging, Waterloo, Canada
- 259[R]** **Media training for success: be an effective nutrition ambassador .....** 163  
 Dr Sylvia Klinger<sup>1</sup>  
<sup>1</sup>Hispanic Food Communications, Hinsdale, United States
- 140[R]** **Nurses' perceptions regarding the prevalence, screening and causes of malnutrition in adult hospitalised patients in Nelson Mandela Bay, South Africa .....** 163  
Ms Esmarie Van Tonder<sup>1</sup>, Ms Amber Kelly<sup>1</sup>  
<sup>1</sup>Nelson Mandela University, Port Elizabeth, South Africa
- 632[R]** **Nutrient and energy composition per portion size of commonly consumed mango varieties in Enugu state .....** 164  
Ms Chiamaka Chukwu<sup>1</sup>, Prof Elizabeth Ngwu<sup>2</sup>, Dr Justina Chikwendu<sup>2</sup>, Dr Chika Ndiokwelu<sup>3</sup>, Mr Aloysius Maduforo<sup>2</sup>, Mrs Clementina Okoro<sup>2,4</sup>, Mrs Chinyere Okwara<sup>1,2</sup>, Mrs Appolonia Obiloma<sup>5</sup>  
<sup>1</sup>Department of Nutrition and Dietetics, University Of Nigeria Teaching Hospital, Ituku-ozalla, Enugu State, Nigeria, Ituku/Ozalla, Nigeria, <sup>2</sup>Department of Nutrition and Dietetics, University of Nigeria Nsukka, Nsukka, Nigeria, <sup>3</sup>Human Nutrition and Dietetics Unit, Department of Biochemistry, University of Calabar, Calabar, Nigeria, <sup>4</sup>Nutrition Section, Federal Capital Territory Primary Health Care Board, Abuja, Nigeria, <sup>5</sup>Department of Nutrition and Dietetics, Imo State Polytechnics Umuagwo, Umuagwo, Nigeria
- 132[R]** **Nutrient intake from university cafeteria lunches: A comparison between students who are health-conscious and those who are not.....** 164  
Dr Makiko Nakade<sup>1,2</sup>, Yuka Nakamura<sup>1</sup>, Natsumi Iwaki<sup>1</sup>  
<sup>1</sup>University Of Hyogo, Himeji-city, Japan, <sup>2</sup>Research Institute for Food and Nutritional Sciences, Himeji-city, Japan
- 518[R]** **Nutrient intakes of first and third year female dietetics students at the University of Pretoria, Gauteng....** 165  
Mrs Nikki Lee Verwey<sup>1</sup>, Prof Friede Wenhold<sup>1</sup>, Ms Joyce Jordaan<sup>2</sup>  
<sup>1</sup>Department of Human Nutrition, University of Pretoria, Pretoria, South Africa, <sup>2</sup>Department of Statistics, University of Pretoria, Pretoria, South Africa
- 571 R]** **Nutrition Education: Development and implementation .....** 165  
Dr Mamotsamai Ranneileng<sup>1</sup>  
<sup>1</sup>National University Of Lesotho, Roma, Lesotho
- 4[R]** **Nutrition risk and validation of a HIV disease-specific nutrition screening tool in Ghana.....** 166  
 Dr Lauri Wright<sup>1</sup>  
<sup>1</sup>University Of North Florida, Jacksonville, United States
- 660[R]** **Nutrition risk screening tool in a low-resource setting: Identifying malnutrition in Lao PDR.....** 166  
Mrs Joanna Cummings<sup>1,2</sup>, Ms. Hannah Wilson<sup>1</sup>, Ms. Slackchay Rasprasith<sup>2</sup>, Dr. Diane Stadler<sup>1</sup>  
<sup>1</sup>Oregon Health & Science University, Portland, United States, <sup>2</sup>Lao Clinical Nutrition Education and Research, Vientiane Capital, Lao PDR
- 99[R]** **Nutritional intake and meal composition of patients consuming texture modified diets and thickened fluids: A systematic review and meta-analysis .....** 167  
 Ms Xiaojing Wu<sup>1</sup>, Dr Andrea Braakhuis<sup>1</sup>, Dr Anna Miles<sup>2</sup>  
<sup>1</sup>University of Auckland, Auckland, New Zealand, <sup>2</sup>University of Auckland, Auckland, New Zealand
- 374[R]** **Nutritional knowledge and practices among cataract patients attending Sabatia Eye Hospital, Kenya ....** 167  
Ms Enid Keseko<sup>1</sup>, Dr. Jane Situma<sup>1</sup>, Prof. Asenath Sigot<sup>1</sup>  
<sup>1</sup>Masinde Muliro University of Science and Technology, Department of Nutritional Sciences, Kakamega, Kenya
- 218[R]** **Nutritional management practices for patients admitted for alcohol withdrawal: a five year retrospective audit.....** 168  
Mr Cameron McLean<sup>1,2</sup>, Senior Professor Linda Tapsell Tapsell<sup>1</sup>, Dr Sara Grafenauer<sup>1</sup>, Dr Anne-Therese McMahon<sup>1</sup>  
<sup>1</sup>University Of Wollongong, Wollongong, Australia, <sup>2</sup>St George Hospital, Kogarah, Australia

- 311[R]** OSCE and simulation-based education: implications for improving clinical education and assessing learners' competencies in a Saudi dietetic program..... 168  
Dr Elham Aljaaly<sup>1</sup>  
<sup>1</sup>King Abdulaziz University, Faculty of Applied Medical Sciences, Jeddah, Saudi Arabia
- 178[R]** Patient satisfaction with a home enteral nutrition service..... 169  
Mr Nicholas van Veenendaal<sup>1</sup>, Ms Lina Breik<sup>1</sup>  
<sup>1</sup>Eastern Health, Box Hill, Australia
- 239[R]** Patient-reported nutritional-related symptoms, eating and nutritional advice post-ICU in previously ventilated adult patients - The pilot Symptoms and Nutrition After Critical Care (SNACC) survey..... 169  
Mrs Louise Albrich<sup>1,2</sup>, Prof Mary Hickson<sup>2</sup>  
<sup>1</sup>Yeovil District Hospital, Yeovil, United Kingdom, <sup>2</sup>University of Plymouth, Plymouth, United Kingdom
- 572[R]** Pattern of alcohol consumption and its relationship with health and nutritional status of adults in rural Nigeria communities..... 170  
Dr Peace Ani<sup>1</sup>, Prof. Elizabeth Ngwu<sup>1</sup>, Prof. Vivienne Ibeanu<sup>1</sup>  
<sup>1</sup>Department of Nutrition and Dietetics, University Of Nigeria, Nsukka, Nigeria
- 709[R]** Perceptions and Issues of Transportation for African American Custodial Grandmothers in an Urban Metropolitan Southern City: A Spectrum of Experiences, Access and Potential Policy Implications ..... 170  
Dr Kellie Mayfield<sup>1</sup>, Dr. Deb Whitley<sup>1</sup>, Dr. Susan Kelley<sup>1</sup>  
<sup>1</sup>Georgia State University, Atlanta, United States
- 324[R]** Perceptions of South African Nutrition Professionals of Avocados: Findings of the South Africa Avocado Growers' Association (SAAGA) Consumer Survey ..... 171  
Mrs Monique Piderit<sup>1</sup>  
<sup>1</sup>South African Avocado Growers' Association, Johannesburg, South Africa
- 110[R]** Pilot study of qualitative food intake, by a mobile app compared to a 24h recall, of 12 to 14 years adolescents with obesity and percentage of processed food ..... 171  
Mrs Sylvie Borloz<sup>1</sup>  
<sup>1</sup>SVDE ASDD Swiss Dietetic Association, Aigle, Switzerland, <sup>2</sup>Lausanne University Hospital, Lausanne, Switzerland
- 567[R]** Plant-based dietary patterns in relation to CVD risk in Africa: systematic review ..... 172  
Ms Tatum Lopes<sup>1,2</sup>, Prof Annalise E. Zemlin<sup>2</sup>, Prof Rajiv T. Erasmus<sup>3</sup>, Prof Mieke Faber<sup>1</sup>, Prof Andre P. Kengne<sup>1,4</sup>  
<sup>1</sup>Non-Communicable Diseases Research Unit, South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>Division of Chemical Pathology, Department of Pathology, Faculty of Medicine and Health Sciences, University of Stellenbosch and National Health Laboratory Service (NHLS), Tygerberg Hospital, Cape Town, South Africa, <sup>3</sup>Division of Chemical Pathology, Department of Pathology, Faculty of Medicine and Health Sciences, University of Stellenbosch, Tygerberg Hospital, Cape Town, South Africa, <sup>4</sup>Department of Medicine, University of Cape Town, Cape Town, South Africa
- 149[R]** Poorly controlled glycemia and beta cell function are associated with higher energy expenditure, but lower fat oxidation, in adults with obesity and type 2 diabetes ..... 172  
Dr Heidi Silver<sup>1</sup>, Mr. John Del Castillo<sup>2</sup>, Ms. Katie Friese<sup>1</sup>, Ms. Dianna Olson<sup>1</sup>  
<sup>1</sup>Vanderbilt University Medical Center, Nashville, United States, <sup>2</sup>University of Mississippi Medical Center, Jackson, United States
- 524[R]** Predictors of fat free mass from anthropometric measures and handgrip strength in 6-9 year old children in Pretoria (South Africa). ..... 173  
Ms Lauren Morgan Walsh<sup>1</sup>, Doctor Zelda White<sup>1</sup>, Professor Piet Becker<sup>2</sup>  
<sup>1</sup>Department Human Nutrition, Faculty of Health Sciences, University of Pretoria, Pretoria, Private Bag X223, Arcadia <sup>0007</sup>, South Africa, <sup>2</sup>Faculty of Health Sciences, University of Pretoria, Pretoria, Private Bag X223, Arcadia <sup>0007</sup>, South Africa
- 339[R]** Premenstrual syndrome associated with adiposity and lifestyle among young women..... 173  
Mrs Harshada Thakur<sup>1</sup>, Dr Priyanka Pareek<sup>2</sup>, Dr Suhas Otiv<sup>3</sup>  
<sup>1</sup>Symbiosis School of Biological Sciences, Symbiosis International (Deemed University), Pune, India, <sup>2</sup>MGM School of Biomedical Sciences, MGMIHS, Navi Mumbai, India, <sup>3</sup>King Edward Memorial Hospital and Research Centre, Pune, India

- 643[R]** **Prevalence of Mercury aka ‘Sekete’ consumption during pregnancy** ..... 174  
Dr Rose Kokui Dufe Turkson<sup>1</sup>, Ms Pont’so Khoabane<sup>1</sup>  
<sup>1</sup>National University Of Lesotho, Maseru, Lesotho
- 749R]** **Prevalence of obesity and central adiposity in HIV-positive kidney transplant candidates and recipients from HIV-positive donors**..... 174  
Dr Claire Juliet Martin<sup>1</sup>, Prof Demetre Labadarios<sup>2</sup>, Mrs Zarina Ebrahim<sup>2</sup>, Professor Elmi Muller<sup>3</sup>, Professor Frederick Veldman<sup>4</sup>, Professor Susanna Maria Kassier<sup>5</sup>  
<sup>1</sup>University of Pretoria, Pretoria, South Africa, <sup>2</sup>Stellenbosch University, Cape Town, South Africa, <sup>3</sup>University of Cape Town, Cape Town, South Africa, <sup>4</sup>Sefako Makgatho Health Sciences University, Pretoria, South Africa, <sup>5</sup>University of KwaZulu-Natal, Pietermaritzburg, South Africa
- 696[R]** **Prevalence of obesity and hypertension among health professionals in Nsukka Local Government Enugu State** ..... 175  
Ms Chinonye Ugwu<sup>1</sup>, Dr Justina Chikwendu<sup>2</sup>, Mr Aloysius Maduforo<sup>3</sup>  
<sup>1</sup>Department Of Nutrition And Dietetics, University Of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria, <sup>2</sup>Department Of Nutrition And Dietetics, University Of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria, <sup>3</sup>Department Of Nutrition And Dietetics, University Of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria
- 0[R]** **Prevalence of overweight and obesity in Chronic Kidney Disease stage 3-5 attending a Predialysis clinic in Cape Town, South Africa**..... 175  
Mrs Zarina Ebrahim<sup>1</sup>, Prof Renee Blaauw<sup>1</sup>, Mrs Tonya Esterhuizen<sup>3</sup>, Prof Rafique Moosa<sup>2</sup>  
<sup>1</sup>Stellenbosch University Department of Human Nutrition, Cape Town, South Africa, <sup>2</sup>Stellenbosch University Department of Internal Medicine, Cape Town, South Africa, <sup>3</sup>Stellenbosch University Department of Biostatistics, Cape Town, South Africa
- 93[R]** **Printed tray table messaging enhances meal delivery service** ..... 176  
Dr Angela Vivanti<sup>1,2</sup>, Mr Jordan Lambi<sup>1</sup>, Mr Scott Prichard<sup>2</sup>, Ms Karen Slater<sup>2</sup>, Ms Jan Hill<sup>2</sup>, Mr Noel Matson<sup>2</sup>  
<sup>1</sup>School of Human Movement and Nutrition Studies, University of Queensland, Brisbane, Australia, <sup>2</sup>Princess Alexandra Hospital, Brisbane, Australia
- 468R]** **Prunes reduce the postprandial insulin response necessary to similarly regulate glucose in comparison to a refined snack food** ..... 176  
Dr Mark Kern<sup>1</sup>, Ms. Brittany South<sup>1</sup>, Ms. Stephanie Nelson<sup>1</sup>, Ms. Alexandra Zawilski<sup>1</sup>, Dr. Shirin Hooshmand<sup>1</sup>  
<sup>1</sup>San Diego State University, San Diego, United States
- 663[R]** **Public health workforce planning to address the nutrition-related burden in South Africa**..... 177  
Dr Hilary Goeman<sup>1</sup>, Prof Elizabeth Swart, Prof Roger Hughes  
<sup>1</sup>Western Cape Government: Health, Cape Town, South Africa
- 441[R]** **Questioning the university restaurants for students in France : Norms, practices and sourcing**..... 177  
Dr Virginie Masdoua<sup>1</sup>, Dietitian Pavaud Brigitte<sup>2</sup>, Dr Laurent Caroline<sup>3</sup>  
<sup>1</sup>Associate Professor, University of Montpellier, France, <sup>2</sup>Liberal Dietitian , Aix-Marseille, France, <sup>3</sup>Lecturer, University of Montpellier , France
- 522[R]** **Retention and yield of beef and lamb retail cuts** ..... 178  
Dr Beulah Pretorius<sup>1</sup>, Prof Hettie Schönfeldt<sup>1</sup>  
<sup>1</sup>Department of Animal and Wildlife Sciences, University Of Pretoria, Pretoria, South Africa
- 690[R]** **Risk factor profile for non-communicable diseases: findings of a STEPS survey among the support staff at University of Pretoria, South Africa**..... 178  
Ms Sithabile Mathunjwa<sup>1</sup>, Dr Modiehi Legodi<sup>1</sup>  
<sup>1</sup>University Of Pretoria, Pretoria, South Africa
- 298[R]** **Self-efficacy, lifestyle practices and cardiovascular diseases (CVD)s risk factors among elderly in Ibadan, Nigeria** ..... 179  
Mrs Oluwaseun Akinmoladun<sup>1,2</sup>, Mrs Abidemi Femi<sup>3</sup>, Dr (Mrs) Cebisa Nesamvuni<sup>2</sup>  
<sup>1</sup>Wesley University, Ondo, Nigeria, Ondo, Nigeria, <sup>2</sup>University of Venda, Thohoyandou, South Africa, <sup>3</sup>Department of Food Science and Technology, School of Agriculture and Agricultural Technology, Federal University of Technology, Minna, Nigeria

- 418[R]** **Self-reported non-communicable disease profile and dietary diversity of a deep rural community in KwaZulu-Natal, South Africa** ..... 179  
 Ms Jandri Barnard<sup>1</sup>, Dr Susanna Kassier<sup>1</sup>  
<sup>1</sup>University Of Kwazulu-natal, Pietermaritzburg, South Africa
- 225[R]** **Socio-economic status, supplement intake and dietary quality of pregnant women in Igbo-Eze South Local Government area, Enugu State, Nigeria**..... 180  
 Miss Chidinma Ezeh<sup>1</sup>, Professor Joy Nwamarah<sup>2</sup>, Dr Justina Chikwendu<sup>3</sup>, Mrs Clementina Okoro<sup>4</sup>, Mr Aloysius Maduforo<sup>5</sup>  
<sup>1</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>2</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>3</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>4</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>5</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria
- 353[R]** **Supporting breastfeeding at work among provincial government employees: evidence from a Southern context** ..... 180  
 Ms Prudence Bongekile Mabaso<sup>1</sup>, Dr Ameeta Jaga<sup>1</sup>, Prof Tanya Doherty<sup>2</sup>  
<sup>1</sup>University Of Cape Town, Cape Town, South Africa, <sup>2</sup>South African Medical Research Council, Cape Town, South Africa
- 86[R]** **Taxation of sugar-sweetened beverages in South Africa: Perspectives of consumers** ..... 181  
 Dr Nelene Koen<sup>1</sup>, Ms Aziwe Boo<sup>1</sup>, Ms Anika Botha<sup>1</sup>, Ms Mandisa Mzila<sup>1</sup>, Ms Santi Turner<sup>1</sup>, Ms Jancke Van Dyk<sup>1</sup>, Mrs Zarina Ebrahim<sup>1</sup>, Prof Daan Nel<sup>2</sup>, Mrs Yolande Smit<sup>1</sup>  
<sup>1</sup>Division of Human Nutrition, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Centre for Statistical Consultation, Stellenbosch University, Stellenbosch, South Africa
- 743[R]** **The association between COVID-19-related employment challenges and students' dietary intake in the United States** ..... 181  
 Ms Gugulethu Moyo<sup>1</sup>, Mr Temitope Ibiyemi<sup>1</sup>, Ms Hyunjung Lee<sup>1</sup>, Ms Li-Ling Peng<sup>1</sup>, Dr Wilna Oldewage-Theron  
<sup>1</sup>Texas Tech University, Lubbock, United States
- 405[R]** **The association between substitution of dietary saturated fat and changes in serum cholesterol levels in healthy post-menopausal women** ..... 182  
 Ms Sandra Losper<sup>1</sup>, Professor Yvonne van der Schouw<sup>2</sup>, Ivonne Sluijs<sup>2</sup>  
<sup>1</sup>University Medical Center Utrecht, Utrecht, Netherlands, <sup>2</sup> Department of Epidemiology Julius Center Research Program Cardiovascular Epidemiology, Utrecht, Netherlands
- 216[R]** **The associations between lifestyle factors and subjective health among community-dwelling Japanese adults.** ..... 182  
 Ms Eri Imai<sup>1</sup>, Ms Sae Aya Tanaka<sup>1</sup>, Ms Aya Kito<sup>1</sup>, Ms Sayu Muraki<sup>1</sup>  
<sup>1</sup>The University Of Shiga Prefecture, Hikone, Japan
- 106[R]** **The concept of adherence to treatment and its applications in the field of nutrition and dietetics: a narrative review** ..... 183  
 Mrs Evelina Liljeberg<sup>1,2</sup>, Dr Agneta Andersson<sup>1</sup>, Professor Margaretha Nydahl<sup>1</sup>  
<sup>1</sup>Department of Food Studies, Nutrition and Dietetics, Uppsala University, Uppsala, Sweden, <sup>2</sup>Function Area Clinical Nutrition, Karolinska University Hospital, Stockholm, Sweden
- 490[R]** **The correlates of sedentary behavior among adults in Africa: A systematic review**..... 183  
 Mr Chad Africa<sup>1</sup>, Dr Cindy George<sup>1</sup>, Dr Jillian Hill<sup>1</sup>  
<sup>1</sup>Non-Communicable Disease Research Unit, South African Medical Research Council, Cape Town, South Africa
- 719[R]** **The development and evaluation of a web-based mobile application as a dairy intake screener for South African adults**..... 184  
 Mrs Monique Piderit<sup>1</sup>, Prof Friede Wenhold<sup>1</sup>  
<sup>1</sup>University of Pretoria, Pretoria, South Africa
- 223[R]** **The effect of aspalathin on intestinal barrier, immune function and inflammation in diabetic db/db mice ....** 184  
 Dr Sylvia Riedel<sup>1,2</sup>, Ms Chelsi Fortuin<sup>2</sup>, Ms Rizwaana Suleman<sup>4</sup>, Dr Phwayinkosi Dladla<sup>1</sup>, Dr Rabia Johnson<sup>1,2</sup>, Prof Johan Louw<sup>1,3</sup>, Prof Christo Muller<sup>1,2,3</sup>  
<sup>1</sup>Biomedical Research and Innovation Platform, South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>Division of Medical Physiology, Stellenbosch University, Cape Town, South Africa, <sup>3</sup>Department of Biochemistry and Microbiology, University of Zululand, KwaDlangezwa, South Africa, <sup>4</sup>African Cancer Institute, Stellenbosch University, Cape Town, South Africa

<b>484[R]</b>	<b>The effect of Growing Up Milk – Lite (GUMLi), cow’s milk and protein intake at 2 years on IGF-1 concentrations: the GUMLi randomised controlled trial .....</b>	<b>185</b>
	<u>Dr Amy Lovell</u> <sup>1</sup> , Professor Cameron Grant <sup>1</sup> , Associate Professor Clare Wall <sup>1</sup>	
	<i><sup>1</sup>The University Of Auckland, Auckland, New Zealand</i>	
<b>698[R]</b>	<b>The food safety perspective of Food truck: the Brazilian Federal District scenario .....</b>	<b>185</b>
	Dr Ligia Auad <sup>1</sup> , <u>Dr Veronica Ginani</u> <sup>1</sup> , dr Renata Zandonadi <sup>1</sup> , Dr Elke Stedfeldt <sup>2</sup> , <u>Dr Raquel Braz Assuncao Botelho</u> <sup>1</sup>	
	<i><sup>1</sup>University Of Brasilia, Brasilia, Brazil, <sup>2</sup>Federal university of Sao Paulo, Santos, Brazil</i>	
<b>202[R]</b>	<b>The impact of dietitians in the multi-disciplinary primary care team in the UK .....</b>	<b>186</b>
	<u>Dr Avril Collinson</u> <sup>1</sup> , Dr Jenny Child <sup>1</sup> , Professor Mary Hickson <sup>1</sup>	
	<i><sup>1</sup>University of Plymouth, Plymouth, United Kingdom</i>	
<b>669[R]</b>	<b>The impact of size at birth on dietary intake patterns among healthy young adults.....</b>	<b>186</b>
	Ms Rebecca Garofano <sup>1</sup> , Dr. Tiago V. Barreria <sup>1</sup> , Dr. Qiu Wang <sup>1</sup> , Dr. Tom D. Brutsaert <sup>1</sup> , <u>Dr. Jessica Garay</u> <sup>1</sup>	
	<i><sup>1</sup>Syracuse University, Syracuse, United States</i>	
<b>510[R]</b>	<b>The necessity of nutrient data on processed meat in African diets .....</b>	<b>187</b>
	<u>Prof Hettie Schönfeldt</u> <sup>1</sup> , Dr Beulah Pretorius <sup>1</sup>	
	<i><sup>1</sup>University Of Pretoria, Pretoria, South Africa</i>	
<b>675[R]</b>	<b>The nurturing care profile of early childhood development centres in the Breede Valley, Western Cape ....</b>	<b>187</b>
	<u>Ms Tayla Saaiman</u> <sup>1</sup> , Ms Darian Kayser <sup>1</sup> , Prof Lisanne M du Plessis <sup>1</sup>	
	<i><sup>1</sup>Stellenbosch University, Stellenbosch, South Africa</i>	
<b>447[R]</b>	<b>The Nutrition For Cirrhosis Guide : Assessing its potential beneficial effects on patients with chronic liver disease .....</b>	<b>188</b>
	<u>Mrs Chantal Bemeur</u> <sup>1,2</sup> , Mrs Mélanie Tremblay <sup>1</sup> , Centre de Recherche de l’Université de Montréal Geneviève Huard <sup>3</sup> , Mr Christopher F Rose <sup>1,2</sup> , Mrs Chantal Bemeur <sup>1,2</sup>	
	<i><sup>1</sup>Centre de Recherche du Centre Hospitalier de l’Université de Montréal, Montreal, Canada, <sup>2</sup>Département de nutrition, Université de Montréal, Montreal, Canada, <sup>3</sup>Centre Hospitalier de l’Université de Montréal, Montreal, Canada, <sup>4</sup>Département de Médecine, Université de Montréal, Montreal, Canada</i>	
<b>431[R]</b>	<b>The relationship between under-nutrition risk, and quality-of-life in community-dwelling older adults after hospital discharge.....</b>	<b>188</b>
	<u>Dr Anna Julian</u> <sup>1</sup> , Professor Gary Frost <sup>1</sup> , Professor Mary Hickson <sup>1,2</sup>	
	<i><sup>1</sup>Section for Nutrition Research, Department of Medicine, Imperial College London, London, United Kingdom, <sup>2</sup>Institute of Health and community, University of Plymouth, Plymouth, United Kingdom</i>	
<b>432[R]</b>	<b>The relationship between under-nutrition risk, sarcopenia, strength and function in community-dwelling older adults after hospital discharge.....</b>	<b>189</b>
	<u>Dr Anna Julian</u> <sup>1</sup> , Professor Gary Frost <sup>1</sup> , Professor Mary Hickson <sup>1,2</sup>	
	<i><sup>1</sup>Section for Nutrition Research, Department of Medicine, Imperial College London, London, United Kingdom, <sup>2</sup>Institute of Health and Community, University of Plymouth, Plymouth, United Kingdom</i>	
<b>230[R]</b>	<b>The social and ethical responsibility of cultural humility.....</b>	<b>189</b>
	<u>Ms Teresa Turner</u> <sup>1,2</sup> , Ms Krista Latortue <sup>1</sup>	
	<i><sup>1</sup>Family Food, LLC, Philadelphia, United States, <sup>2</sup>Army Child and Youth Services, Fort George G. Meade, United States</i>	
<b>90[R]</b>	<b>The taxation of sugar-sweetened beverages in South Africa: The perspectives of key role-players in the City of Cape Town, Western Cape, South Africa.....</b>	<b>190</b>
	<u>Mrs Yolande Smit</u> <sup>1</sup> , Ms Barbara Cronjè <sup>1</sup> , Ms Sabeeha Abdullah <sup>1</sup> , Ms Jessica Nathan <sup>1</sup> , Ms Alexa Theron <sup>1</sup> , Mrs Zarina Ebrahim <sup>1</sup> , Prof Daan Nel <sup>2</sup> , Dr Nelene Koen <sup>1</sup>	
	<i><sup>1</sup>Faculty of Medicine and Health Sciences, Department Global Health, Division Human Nutrition, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Centre for Statistical Consultation, Stellenbosch University, Cape Town, South Africa</i>	

- 102[R]** **The use of arm span as a substitute for height in calculating Body Mass Index for spine deformity patients.....** 190  
Mrs Harriet Adu-Amoah<sup>1,2</sup>  
<sup>1</sup>Focos Orthopedic Hospital, Accra, Ghana, <sup>2</sup>Ghana Dietetic Association, Accra, Ghana
- 443[R]** **Top food sources of energy and nutrients of public health concern in lower income children aged 9-11....** 191  
 Dr Lynn Brann<sup>1</sup>  
<sup>1</sup>Syracuse University, Syracuse, United States
- 345[R]** **Towards increasing the physical activity behaviours of people at risk for diabetes in low-resourced communities in Cape Town.....** 191  
Dr Jillian Hill<sup>1</sup>, Ms Camille Lavigne Delville<sup>2</sup>, Ms Anne-Marie Aurousseau<sup>2</sup>, Mrs Deborah Jonathan<sup>1</sup>, Prof Andre Pascal Kengne<sup>1</sup>  
<sup>1</sup>South African Medical Research Council, CAPE TOWN, South Africa, <sup>2</sup>University of Bordeaux, Bordeaux, France
- 318[R]** **'Treading the risky edges': The feasibility and utility of established frameworks for interpreting and addressing recurring issues in professional practice during dietetic training .....** 192  
Ms Gillie Bonner<sup>1</sup>, Ms Isobel Bandurek<sup>2</sup>, Ms Clare Cremin<sup>1</sup>, Mrs Annemarie Knight<sup>1</sup>, Dr Alastair Duncan<sup>1</sup>, Ms Janeane Dart<sup>3</sup>  
<sup>1</sup>King's College London, London, United Kingdom, <sup>2</sup>World Cancer Research Fund, London, UK, <sup>3</sup>Monash University, Melbourne, Australia
- 361[R]** **Underlying, non-modifiable and intermediate risk factors for the development of Gestational Diabetes Mellitus, in Cape Town: A case-control study .....** 192  
Mrs Elzie Koech<sup>1</sup>, Mrs Sharmilah Booley<sup>1</sup>, Dr Janetta Harbon<sup>1</sup>, Mr Tawanda Chivese<sup>2</sup>, Prof Naomi Levitt<sup>3</sup>  
<sup>1</sup>Division of Human Nutrition, Department of Human Biology, Faculty of Health Sciences, University of Cape Town, Cape Town, South Africa, <sup>2</sup>Department of population medicine, College of medicine, Qatar University, Qatar, <sup>3</sup>Chronic Disease Initiative for Africa, Department of Medicine, Faculty of Medicine and Health Sciences, University of Cape Town, Cape Town, South Africa
- 386[R]** **Update of Canadian competencies for dietetic education and practice .....** 193  
Mrs Corinne Eisenbraun<sup>1</sup>, Dr David Cane<sup>2</sup>, Dr Doris Gillis<sup>3</sup>, Dr Bryna Shatenstein<sup>4</sup>, Ms Jaki Thornhill<sup>5</sup>, Ms Helen Toews<sup>6</sup>  
<sup>1</sup>Dietitians of Canada (until October 2020), Winnipeg, Canada, <sup>2</sup>Owner & Principal Consultant, Catalysis Consulting, Kamloops, Canada, <sup>3</sup>Senior Research Professor, Department of Human Nutrition, St Francis Xavier University, Antigonish, Canada, <sup>4</sup>Adjunct professor, Département de nutrition, Faculté de médecine, Université de Montréal, Montréal, Canada, <sup>5</sup>Professional Practice Leader, Clinical Nutrition, Providence Health Care, Vancouver, Canada, <sup>6</sup>Dietetic Education Coordinator, Brescia University College, Hamilton Health Sciences, Hamilton, Canada
- 359[R]** **Use of a mobile health application in wellness: an assessment of needs, perceptions, usability and efficacy in changing dietary choices in a university student population .....** 193  
Ms Cecile Slazus<sup>1</sup>, Mrs Zarina Ebrahim, Dr Nelene Koen  
<sup>1</sup>Stellenbosch University Division of Human Nutrition, Tygerberg, South Africa
- 108[R]** **Using mealtime routines as early intervention for infants and toddlers with visual impairment to enhance development of feeding skills and dietary intake in the United States.....** 194  
Prof Alena Clark<sup>1</sup>, Prof Jamie Erskine<sup>1</sup>  
<sup>1</sup>University of Northern Colorado, Greeley, United States
- 147[R]** **Water versus fluid intake from beverages and food predicts the hydration status of hospitalised older adults .....** 194  
Prof Carol Wham<sup>1</sup>, Ms Alexander Smithers<sup>1</sup>, Dr Rozanne Kruger<sup>1</sup>, Dr Hajar Mazarey<sup>1</sup>, Dr Marilize Richter<sup>1</sup>  
<sup>1</sup>Massey University, Auckland, New Zealand
- 452[R]** **What practical support do nutritionally at-risk older people receive in the community?.....** 195  
Dr Elizabeth Weekes<sup>1</sup>, Prof Mary Hickson<sup>2</sup>, Prof Peter Emery<sup>3</sup>  
<sup>1</sup>Guy's & St Thomas' NHS Foundation Trust, London, London, United Kingdom, <sup>2</sup>Plymouth University, Plymouth, United Kingdom, <sup>3</sup>King's College London, United Kingdom

## 126[R] ...So how would you describe it? Identifying drivers of sweet potato consumption in Louisiana

Dr Elizabeth Gollub<sup>1</sup>, Ms. Praja Adhikari<sup>1</sup>

<sup>1</sup>Louisiana State University Agricultural Center, School of Nutrition and Food Sciences, Baton Rouge, United States

**Biography:** Dr. Elizabeth Gollub, an Assistant Professor in the School of Nutrition and Food Sciences, LSU AgCenter, works closely with individuals, communities, and organizations to develop, implement, and assess innovative approaches to creating healthier environments, changing social norms, and diminishing health disparities. Through community nutrition programs and evaluation research, Dr. Gollub focuses on strategies aimed at routinizing healthier eating and physical activity behaviors while exploring the impact on health and quality of life.

Dr. Elizabeth Gollub earned her PhD in Nutrition and Dietetics from Florida International University's National Resource Center on Nutrition, Physical Activity, and Aging. She holds a Master of Public Health degree from the University of North Carolina, Chapel Hill, she is a Registered Dietitian with a Certificate of Training in Adult Weight Management and she is a Certified Health Coach.

**Introduction:** Sweet potato is a highly nutritious root vegetable, increasingly accessible throughout much of the world, and readily available in Louisiana; yet, it is not routinely consumed.

**Objectives:** To help identify drivers of sweet potato consumption among Louisiana's adults; to inform strategies to promote routine sweet potato consumption as part of a healthful diet.

**Methods:** First, a brief, preliminary survey targeting Louisiana's adult consumers was developed to collect data on general perceptions and descriptors associated with sweet potatoes. This was implemented in-person, using a convenience sample of shoppers at eight grocery stores in three regions. Preliminary data informed development of the second, more specific survey to characterize drivers of sweet potato consumption. Phase-two was implemented on-line, using a statewide LSU AgCenter database of adult volunteers.

**Results:** As a group, the valid preliminary survey sample (n=217) was 30% male, 70% female; 70% white, 22% black, 8% Asian or Hispanic; young adult to senior. Among respondents, 39% regarded sweet potato as an "everyday food"; 56% considered it a "special occasion food". Most respondents (90%) had tasted sweet potato. Those who liked the taste (90%) also liked the health benefits, color, versatility, cooking ease, shelf-life, affordability or all these qualities. The second survey sample (n=652 unduplicated responses) was demographically similar. Here, 32% of respondents ate sweet potato at least once a week. "Taste" (92%) was the primary reason, supported by "texture" (55%) and "smell" (50%). "Healthy" (80%) was the secondary reason, supported by "vitamins" > "fiber" > "fresh" > "superfood". That sweet potatoes are "satisfying" (58%), "affordable" (50%), "colorful" (44%), and "family members like them" (35%) appeared to be influencing factors.

**Conclusion:** Taste and Health are primary drivers of sweet potato consumption among this survey population. The terms "satisfying", "affordable", and "acceptable to family members" can also be used advantageously to encourage consumption.

**Conflict of Interest:** None

**Keywords:** Sweet potato, perceptions, descriptors, promotion

## 682[R] "Apple sugar" as sucrose substitute in a Brazilian traditional dessert (brigadeiro)

Gabriela Cruz<sup>1</sup>, Gloria de Santa Rita<sup>1</sup>, Juliana Pimentel<sup>1</sup>, Leticia Oliveira<sup>1</sup>, Leticia Carneiro<sup>1</sup>, Dr Raquel Braz Assuncao Botelho<sup>1</sup>, Prof Renata Puppim Zandonadi<sup>1</sup>

<sup>1</sup>University Of Brasilia, Brasilia, Brazil

**Biography:** Professor Renata Puppim Zandonadi - Dietitian graduated from the University of Brasilia, Master's degree in Human Nutrition from the University of Brasilia and Ph.D. in Health Sciences from the University of Brasilia. She is currently Associate Professor at the University of Brasilia. Has experience in Nutrition, focusing on Nutrition, acting on the following subjects: Low-income population, Food security, Gluten-related disorders.

**Introduction:** The change in the population diet resulting from globalization is marked by high consumption of food rich in sucrose, mainly in celebrations. This consumption can influence the increased prevalence of some chronic diseases, such as overweight, diabetes, and others. Following the World Health Organization's agreement with the Food Industries to reduce the sugar content in foods, the aim of this study was to develop a sugar-free "brigadeiro" (a Brazilian traditional dessert) due to its high consumption in celebrations in Brazil.

**Methods:** The study was performed using the "apple sugar" as substitute of sucrose. We performed sensorial test with the 9-point hedonic scale (50 tasters). The nutritional composition was obtained by the Brazilian food composition table.

**Results:** Apple sugar was made from apple cooking, and beating. The apple puree was dehydrated and powdered to obtain "apple sugar". To replace the condensed milk used in the "brigadeiro's formulation, we used milk powder, dates and apple sugar. Therefore we added the cocoa and cooked to obtain the "brigadeiro" mass. Apple sugar also substituted sucrose in the "brigadeiro" topping. The acceptability test showed that the ratings for taste and color attributes were 96%, texture 94% and odor 92%. Chemical composition analysis showed a reduced carbohydrate content of 58.8% compared to the original preparation, with six times more fiber and 73% more calcium.

**Conclusions:** Sucrose of a traditional Brazilian sweet was replaced by the use of "apple sugar" with acceptability above 90% and improvements in the nutritional profile. This proposed modification is a promising possibility for using in other sweet preparations in order to reduce sugar consumption by the population.

**Conflict of Interest:** None

**Keywords:** apple, sugar, sucrose, brigadeiro, health.

## 82[R] A feasibility study of a brief intervention for food insecurity in dietetic practice

Ms Alexandra Harper<sup>1</sup>, Dr Deborah Lycett<sup>1</sup>, Dr Anne Coufopoulos<sup>1</sup>, Dr Andy Turner<sup>1</sup>

<sup>1</sup>Coventry University, Coventry, United Kingdom

**Biography:** Alexandra Harper is studying a PhD at Coventry University and the research explores the identification and management of food insecurity in dietetic practice and UK Foodbanks. She is interested to see how the development of a brief intervention in clinical practice can help begin to address food insecurity. Alexandra has expertise in Foodbank interventions within the UK and clinical dietetics. Alexandra is the first Dietitian to work in a UK Foodbank. This has given Alexandra a unique experience into public health nutrition for a hard to reach group in an exciting area of evolving research.

Alexandra Harper works part time in academia and clinical practice. She is an hourly paid lecturer in Undergraduate Human Nutrition and Dietetics and MSc Public Health Nutrition at Coventry University and is a Dietitian in the NHS. These two job roles complement each other well. Alexandra is a member of the British Dietetics Association. She is a Fellow of the Association of Higher Education. She has published in the *Journal of Human Nutrition and Dietetics* and has also presented her research at national and international conferences.

**Introduction:** 1 in 10 people within the UK are food insecure. Food insecurity is not having physical access to enough nutritious food to eat well for good health. Food insecurity can lead to negative health and wellbeing outcomes; for example, faltering growth and behavioural problems in children. There is little investigation of screening for food insecurity in dietitian led clinics, and no trial to test this has been conducted in the UK. The aims of the research are to test the feasibility and acceptability of implementing a brief intervention for food insecurity in dietetic practice and to explore the experiences of administering the intervention from a dietitian and client perspective.

**Methods:** A feasibility study with mixed methods design. All clients attending clinic where the brief intervention is being tested will be invited to participate utilising purposive sampling. The dietitian will screen for food insecurity using a US validated 2-item screening tool that uses the first two questions from the 18-item US Household Food Security Survey. If food insecurity is detected, the dietitian will advise why acting on food insecurity is important for health, wellbeing and the clinical outcomes of treatment. They will then act on this information by providing advice using study resources and refer on to a local foodbank if appropriate.

**Results:** Feasibility will be measured by the number of completed brief interventions and the number of clients identified. A semi-structured interview will be completed with the clients via telephone and a focus group will be completed with the dietitians to assess the acceptability of the brief intervention, exploring the opportunities and barriers.

**Conclusion:** If successful, trial results could make the case for brief interventions of food insecurity to be implemented in practice as part of making every contact count a Public Health intervention.

**Conflict of Interest:** None

**Keywords:** Foodbank; brief Intervention; food Insecurity; dietitian; poverty

## 583[R] A five year review of food composition activities within the South African Food Data System / SAFOODS

Dr Averalda Van Graan<sup>1</sup>, Ms Joelaine Chetty<sup>1</sup>, Ms Malory Jumat<sup>1</sup>

<sup>1</sup>South African Medical Research Council, SAFOODS, Biostatistics Unit, Bellville, Cape Town, South Africa

**Biography:** Averalda van Graan is currently employed at the South African Medical Research Council in the capacity as the Research Manager of the South African Food Data System, a position which she has held for the past 5 years. She in addition holds an Extra ordinary appointment at the University of Stellenbosch. Averalda has joined the SAMRC after 13 years in Academia, with appointments at the North West University and Western Cape University as Academic program manager, and Program leader. She is currently a member of the Executive Council of the Nutrition Society of South Africa.

**Introduction:** A food composition database is essential for country specific nutrition practice and research. However, for a national food composition database to remain relevant, maintenance and updating becomes a necessity. It is challenging especially in a rapid and ever changing nutrition landscape with many key drivers including changing regulations, food products and technological advancements, more so, amidst a climate of pressured resources. The objective was to prioritize and implement a strategy to review and update the database.

**Methods:** A process of reviewing all the food groups needing attention commenced. Borrowed food items, food groups affected by changing regulations, pressing changes on technological platforms, client appeals and capacity building were prioritized over the five year period.

**Results:** The first priority was to update all borrowed USDA values, followed by a project updating the food composition and food quantities within the Baby food group. This project culminated in a first data quality assurance process as described by FAO, while technological advancements guided to prioritise the development an updated dietary analyses program. Subsequent priorities included updates in the Milk and Meat food groups in addition to specific nutrient focuses including Salt and Added sugar in accordance to changes within regulatory frameworks. Proposed changes in the Fortificant regulation culminated in a research project which determined the nutritional composition of wheat flour and bread, while a funded capacity development project resulted in a Food Composition Database for Malawi. Outcomes of composition activities culminated in 1 Food composition table, 1 Food quantities manual; 10 oral and 17 poster presentations; a Web-based Foodfinder program; a Wheat and bread composition report, and a new Malawian Food composition publication.

**Conclusion:** Updating and maintaining a relevant and trustworthy food composition table is essential and it involves balancing various demands with prioritized, targeted efforts, amidst finite resources.

**Conflict of Interest:** None

**Keywords:** SAFOODS, food composition, food quantities

## 241[R] A high fat, high sugar diet alters molecular patterns in the adipose of Wistar rats: an epigenetic study

Ms Amsha Viraragavan<sup>1,2</sup>, Dr Tarryn Willmer<sup>2</sup>, Dr Rabia Johnson<sup>2,3</sup>, Prof Albertus Basson<sup>1</sup>, Dr Carmen Pfeiffer<sup>2,3</sup>

<sup>1</sup>Department of Biochemistry and Microbiology, University of Zululand, Kwa-Dlangezwa, South Africa, <sup>2</sup>Biomedical Research and Innovation Platform, South African Medical Research Council, Cape Town, South Africa, <sup>3</sup>Division of Medical Physiology, Stellenbosch University, Cape Town, South Africa

**Biography:** Amsha Viraragavan is a PhD candidate registered at the University of Zululand and is based at the Biomedical Research and Innovation Platform of the South African Medical Research Council. During her Master's, Amsha investigated the safety and efficacy of various green rooibos extracts for their bioactivity using cell culture models, earning her a distinction. Amsha has co-authored one publication, and has written a scientific communication for Science Today, titled "Fat rats and rooibos". Amsha was selected to attend the Grand Challenges Annual meeting in Berlin last October and has recently presented her PhD work at the Physiology Society of Southern Africa, in East London this August. Currently, Miss Viraragavan is investigating the epigenetic changes that occur in adipose tissue during diet-induced obesity, and further explores how these aberrant modifications may be ameliorated by an unfermented, green rooibos extract. Results emanating from this project may give rise to possible epigenetic biomarkers that may aid early detection, disease prevention and treatment. Furthermore, determining the effect of rooibos in modulating dysregulated epigenetic and genetic patterns is important for its development as a nutraceutical, which will alleviate the stress on our health system and increase the life expectancy of the South African population.

**Introduction:** Consumption of a high fat, high sugar (HFHS) diet is a major driver fueling the current obesity epidemic. Excess lipid accumulation in visceral adipose tissue (VAT) is linked to metabolic dysfunction, while lipid storage in subcutaneous adipose tissue (SAT) is perceived to be protective. However, the underlying molecular mechanisms are not yet fully elucidated.

**Objectives:** To investigate whether a HFHS diet induces altered molecular patterns in VAT and SAT of male Wistar rats.

**Materials and Methods:** Weanlings were fed either a HFHS (n = 10) or a standard rodent (STD, n = 10) diet for three months, whereafter VAT and SAT were collected, and gene expression analyzed using the rat RT2 Profiler fatty acid metabolism PCR array. Global and gene-specific DNA methylation was quantified using the Imprint ELISA or pyrosequencing, respectively.

**Results:** Body mass (567.50 ± 8.81 vs 474.00 ± 10.53, p ≤ 0.0001) and VAT mass (12.50 ± 1.47 vs 3.85 ± 0.29, p ≤ 0.0001) were significantly higher in HFHS-fed rats compared to those on a STD diet. Two fatty acid transporters Slc27a3, and Fabp5, were differentially expressed in VAT and SAT, and consuming a HFHS diet resulted in higher Slc27a3 expression in VAT (8.71-fold, p = 0.02) and lower expression in SAT (-5.17-fold, p = 0.04). Global DNA hypomethylation was observed in VAT (25.29 ± 11.34 vs 74.42 ± 1.53, p = 0.03) and SAT (29.84 ± 20.31 vs 64.21 ± 16.82, p = 0.21) of HFHS rats compared to those on a STD diet, while pyrosequencing demonstrated that a HFHS diet induced lower methylation of CpG 5 in the promoter of Slc27a3 in VAT.

**Conclusion:** Dysregulated gene expression and DNA methylation of fatty acid transporters in VAT and SAT provides insight into the mechanisms that underlie functional differences between VAT and SAT during diet-induced obesity.

**Conflict of Interest:** None

**Keywords:** High fat high sugar diet; visceral adipose tissue; subcutaneous adipose tissue; Wistar rat; epigenetics

## 171[R] A phenomenological study of the dietitians role working with older people care homes in England

Ms Vittoria Romano<sup>1</sup>, Dr Catherine Minns Lowe<sup>1</sup>

<sup>1</sup>University Of Hertfordshire, Hatfield, United Kingdom

**Biography:** Vittoria Romano is a Registered Dietitian based in England. Vittoria successfully gained her Dietetics Degree from Leeds Metropolitan University and in 2019 a Masters Degree in Dietetics (Advanced Practice) from the University of Hertfordshire.

Vittoria has been working for 10 years as a community dietitian serving the population of Luton, Bedfordshire, Hertfordshire and Central London. Vittoria has specialised in the care of older people and nutritional prescribing support. Since 2015 she has been leading a team of dietitians and dietetic assistant practitioners to deliver an education and training programme to care homes, as well as collaborating with a multitude of health and social care agencies to influence and encourage the integration of dietetics in local service redesign initiatives.

Vittoria has been supported by her employers; Essex Partnership University Trust and Cambridgeshire Community Services NHS Trust to complete her MSc which has taken her onto a Fellowship Programme with NHS England and NHS Improvement working with the national Allied Health Professions (AHP) Team to raise the profile and improve opportunities for AHPs (including dietitians).

Vittoria is a member of the British Dietetic Association (BDA) and their specialist groups; Older Peoples Specialist Group (currently the Chair), Prescribing Support Sub-Group (where she was the Secretary 2015-2019) and PENG.

**Introduction:** The provision of appropriate nutritional care in care homes is a priority for health services in England. There is limited evidence demonstrating the role of dietitians within older people care homes, which may limit opportunities for the profession. This study aims to explore the experiences of dietitians working with care homes for older people in England.

**Methods:** A phenomenological qualitative approach was followed using semi-structured face-to-face or telephone interviews. Purposive sampling of criterion and snowball sampling was used and six participants were recruited. Interviews were audio-recorded and transcribed verbatim. A reflexive diary was completed and data analysis used interpretative phenomenological analysis as a guide. Constant comparison, code-recode audits alongside supervisory support and peer review occurred throughout the study. Ethical approval was gained from the University of Hertfordshire: aHSK/PGT/UH/03341(1).

**Results:** Two key themes each with two sub-themes were identified: 1. Collaboration with multi-disciplinary professionals: using support strategies (including pathway/nutritional standards implementation, training/education and individual dietetic assessments of residents) and delivering value (by benefitting more residents, demonstrating unique dietetic skills, providing nutritional prescription savings and meeting multi-disciplinary professional's nutritional knowledge gap). 2. Communication with multi-disciplinary professionals: understanding of role and nutritional care. Dietitians believed they play a key role in supporting care homes with nutritional care. Dietitians identified themselves as experts and leaders in nutritional care who work with a variety of multi-disciplinary professionals.

**Conclusion:** This is the first qualitative study exploring dietitians' roles working with older people care homes in England. It highlights the importance of a consistent approach to managing nutrition in care homes and the need for dietitians to share nutrition outcome data due to the limited evidence-base available. Further research is needed to identify dietetic service provision to care homes nationally and agree a defined role in collaboration with the British Dietetic Association (BDA).

**Conflict of Interest:** None

**Keywords:** Care homes; older people; nutrition; dietitian

### 344[R] A pilot study of the use of indigenous foods by populations for non-communicable diseases management in South Africa

Dr Alex Dimitri Tchuenchieu Kamgain<sup>1</sup>, Dr Hema Kesa<sup>2</sup>

<sup>1</sup>University Of Johannesburg, Johannesburg, South Africa, <sup>2</sup>Centre for Food and Nutrition Research, IMPM, Yaoundé, Cameroon

**Biography:** Dr Alex Dimitri TCHUENCHIEU KAMGAIN obtained a PhD degree in Biochemistry specialty Microbiology in 2017 at the University of Yaoundé I, Cameroon. He is working since as Researcher at the Centre for Food and Nutrition Research, IMPM in Cameroon. His field of expertise is Food Biochemistry, Food Microbiology and Food Safety. Being an EFFICIENT Research Leader who also share at part-time laboratory results with populations in order to impact their lives is a challenge for him. He is now carrying out a Postdoc at the Food Evolution Research Laboratory of the University of Johannesburg (South Africa) where he study local indigenous foods and their potential use for Non-communicable diseases management.

**Introduction:** South Africa has been reported by the World Health Organization as one of the countries most concerned by non-communicable diseases (NCD), mainly diabetes, cancer, cardiovascular diseases and chronic respiratory diseases. They were involved in 51% of all total death in 2016 in the country. The consumption of indigenous foods (IFs) is generally recommended for prevention or control due to their nutritional and health properties.

**Aims:** This study aimed at assessing the awareness of the population about these values of the South African IFs and factors determining the current consumption level, firstly focusing on the Black population of the Gauteng Region which is the most populated and highly urbanised region of the country.

**Methods:** A quantitative survey was carried out with 235 participants aged of 18 years old or above, living in the region since at least 2 years. Information on their knowledge, consumption and use of indigenous grains, vegetables and fruits for medicinal reasons (especially NCDs) were collected.

**Results and conclusion:** The results showed that the overall variety of indigenous food crops that are known and consumed is dominated by sorghum, pearl millet, cowpeas, amadumbe and marula (at least 25% of the population). The consumption for medicinal reasons appeared to be very low (averagely 2.89%), sorghum being the most consumed for that purpose, especially for diabetes (3.4%). Age, gender, educational level, income and living areas (dominated by urban and peri-urban areas) had no significant impact on both consumption and knowledge of IFs. However, persons living with people suffering from NCD significantly known more about. Inclusion of these crops in eating habits shall be encouraged. There is an important need of promoting their nutritional and health values to population.

**Conflict of Interest:** None

**Keywords:** Black population; indigenous foods; health properties; non-communicable diseases; Gauteng Region

### 358[R] A qualitative analysis of perceptions of various stakeholders on combining nutrition-sensitive agricultural interventions with the taxation on sugar-sweetened beverages to improve overall health and nutrition in South Africa

Ms Tayla Ashton Kaltenbrun<sup>1</sup>, Professor Lisanne Monica Du Plessis<sup>1</sup>, Professor Scott Drimie<sup>1</sup>

<sup>1</sup>University of Stellenbosch, Stellenbosch, South Africa

**Biography:** Tayla Ashton Kaltenbrun is a registered dietitian who has been working within the public, clinical sector at Tembisa Provincial Tertiary Hospital since graduating from the University of Pretoria in 2016. Tayla started pursuing her masters degree from the University of Stellenbosch at the start of 2018. She chose to do a coursework-based, masters in public health nutrition where she gained insight into food security, nutrition policy and the sustainable development goals. Her original research focuses on agriculture for nutrition policies in a South African setting. Tayla has also completed a Nutrigenomics course through CTG Education and has experience in medico-legal cases and reports.

**Introduction:** South Africa has numerous nutrition-specific and nutrition-sensitive policies in place to aid in combating malnutrition. However, these policies are often unrelated and have poor intersectoral collaboration. The tax on sugar-sweetened beverages (SSBs) in South Africa was introduced as a mechanism to combat the increase in obesity and non-communicable diseases (NCDs). This study set out to explore the potential for including a subsection on agriculture for nutrition within the current fiscal policy, as an opportunity to reap the possible benefits that a combined policy approach could have on improving the overall health and nutrition in South Africa.

**Methods:** Semi-structured, in-depth interviews were conducted with each participant to collect data. Participants were subject matter experts, managers or senior managers with experience or knowledge regarding the taxation on SSBs and agriculture for nutrition policies. The interviews were audio-recorded, transcribed intelligent verbatim, and cross-checked against the audio-recordings by the principal researcher. The ATLAS.ti 8 software was used to navigate the data and assist with thematic analysis.

**Results:** Perceptions of combining SSB taxation with agriculture policies to improve food and nutrition security were positive. More than half (63%) of participants found it to be an innovative idea in theory but questioned the feasibility of combining policies. Participants highlighted education as an essential element for successfully changing behaviour to ensure a positive impact of the combined policy approach. Participants believed that before government could scale up nutrition-sensitive agricultural interventions, basic services would first need to run optimally.

**Conclusion:** Overall, perceptions with regard to combining the taxation on SSBs with nutrition-sensitive agricultural policies to improve overall health and nutrition in South Africa were positive. Although participants questioned the feasibility of combining these policies, it was viewed as a way to combat alleged collateral damage linked to the tax, with a specific focus on developing small-scale farmers.

**Conflict of Interest:** None

**Keywords:** Sugar-sweetened beverages; double burden of malnutrition; small-scale farmers; nutrition-sensitive agricultural policies

## 50[R] A qualitative study reflecting the experiences of nursing and midwifery students regarding nutrition education

Dr Julie Abayomi<sup>1</sup>, Miss Hannah Baxter<sup>2</sup>, Dr Katie Lane<sup>2</sup>, Mrs Jane Rooney<sup>2</sup>, Dr Carolyn Lees<sup>2</sup>

<sup>1</sup>Edgehill University, Ormskirk, United Kingdom, <sup>2</sup>Liverpool John Moores University, Liverpool, UK

**Biography:** Dr. Julie Abayomi is a Reader in Dietetics & Associate Head of Applied Health & Social Care at Edgehill University. She worked as an NHS dietician for over 18 years, specialising in women's health for 12 years. Research interests include: overweight and underweight in pregnancy; diabetes and pregnancy; diabetes and breastfeeding and nutrition education for healthcare professionals. Research projects include 'Fit for Birth' - a longitudinal cohort study of pregnant women with obesity at Liverpool Women's Hospital; a qualitative study exploring the experiences of midwives in caring for pregnant women with obesity and a Patient and Public Involvement (PPI) project involving pregnancy women and their views on healthy eating/weight management services during pregnancy.

**Introduction:** It is expected that UK nurses and midwives can advise patients about healthy eating, yet they receive minimal training for this. The aim of this study was to determine the opinions of Under Graduate (UG) nursing and midwifery students regarding the content and delivery of nutrition education within their programme of study.

**Methods:** Using a patient and public involvement (PPI) approach, an UG student was recruited as a research assistant (RA) to help with the study. The RA approached student nurses and midwives and invited them to take part; those who agreed were interviewed individually (n=3) or via a focus group (n=3) and were audio recorded. Transcribed data were subjected to thematic analysis to identify common themes.

**Results:** Three themes were identified: 1) Acknowledging the need for UG nutrition education; 2) Recognition that good nutrition knowledge is required to fulfil the post-registration role; 3) The current limitations of nutrition education in nursing/midwifery programmes. Regarding theme 3, some students could not recall receiving any sessions about nutrition:

'We haven't had a lecture based on nutrition' (Level 6 Adult Nursing student). Others remembered receiving some nutrition education but not via an expert, hence content was vague and lacked depth:

'You should eat five fruit and veg everyday um limit your fat, your sugars, if you're going to have fat chose healthier fat - nuts and avocado things like that' (Level 4 Midwifery student).

Nursing/midwifery students identified that nutrition knowledge is a key skill for their future professional practice yet report that the current provision fails to meet their needs.

**Conclusion:** Nutrition education needs to be delivered by experts with in-depth knowledge; not only to enhance the ability of healthcare professionals to offer a patient-centered approach, but also to increase the profile of nutrition as a specialist aspect of patient care.

**Conflict of Interest:** None

**Keywords:** Nutrition education, nurses, midwives, nutrition knowledge

## 470[R] Adipogenic virus Adenovirus-36 seroprevalence and obesity in adults in northeast Mexico.

Dr Elizabeth Solís Perez<sup>1</sup>, Master Susana Romo Tello<sup>1</sup>, Dr Manuel Lopez Cabanillas-Lomeli<sup>1</sup>, Dr Ernesto Torres Lopez<sup>2</sup>

<sup>1</sup>Facultad de Salud Pública y Nutrición-UANL, Monterrey, Mexico, <sup>2</sup>Facultad de Medicina-UANL, Monterrey, México

**Biography:** Graduated from the Bachelor of Nutrition and the Master of Public Health of the Facultad de Salud Pública y Nutrición, where she has been a teacher for 35 years. She obtained a PhD with emphasis on Nutrition at the Texas Woman's University. In 1994, she was the Director of the Facultad de Salud Pública y Nutrición (FaSPyN). She was a member of the State Scientific Technical Committee for Healthy Eating and Physical Activity of 2009-2015, from which she created and actively collaborated in the State Intersectoral Program for Health to Learn, the Law for the Prevention of Overweight and Obesity, coordinating the State Health and Nutrition Survey, strategic alliances with the food and beverage industry, and the State Strategy for the Prevention of Overweight, Obesity and Diabetes promoted by the Federal government of Mexico. She is currently Director of the UANL Business Incubation and Technology Transfer Center, Full-time Professor of FaSPyN and responsible for the Childhood Obesity Program in the Academic Body of Nutrition Obesity and Related Diseases. Dr. Solís is a certified nutritionist by the Mexican College of Nutritionists and is part of the Board of Directors of the International Confederation of Nutrition and Dietetics 2016-2020

**Introduction:** Adenovirus-36 (Ad-36) is related to obesity risk by inducing adipogenesis in animal models, it increases the accumulation of lipids in adipocytes and lowering of serum cholesterol. The reported worldwide seroprevalence in adults with obesity is up to 30%. In Mexico, seroprevalence to Ad-36 and its association with obesity in adults have not been reported.

**Objective:** Determine the seroprevalence to Ad-36 and its association with obesity and serum cholesterol.

**Methods:** Sample of 253 volunteers (18 to 70 years old), residents of Northeast Mexico. Anthropometry (weight, height, waist circumference (WC) and hip circumference (HC)) was measured. Body composition was evaluated by dual X-ray absorptiometry (Dxa). To determine antibodies anti Ad-36 in serum, an Enzyme-Linked Immunosorbent Assay (ELISA) was used. Data were analyzed with SPSS software version 22.0

**Results:** Total seroprevalence Ad-36 was 32.8% (n = 253). When classifying the seropositive (n = 83) according to the body mass index (BMI), seroprevalence in the normal weight group was 18.1%, while in the overweight and obesity group it was 5.9% and 8.6% respectively. Seropositivity was associated with waist circumference (OR = 1,930, P = 0.017).

**Conclusion:** Seroprevalence to Ad-36 was not associated with obesity or with serum cholesterol, it was only associated with WC, confirming the importance of this anthropometric indicator in the nutritional field. Adeno

**Conflict of Interest:** None

**Keywords:** Adenovirus-36, obesity, waist circumference

## 188[R] Advancing indigenous cultural competency in dietetics: The Northern Ontario Dietetic Internship Program (NODIP) Experience at the Northern Ontario School of Medicine (NOSM)

Mrs Lee Rysdale<sup>1</sup>, Ms Denise Raftis<sup>1</sup>

<sup>1</sup>Northern Ontario School of Medicine, Sudbury, Canada

**Biography:** Lee Rysdale, MEd, RD has over 30 years of experience in clinical, public health and education settings. She is an Associate Professor at the Northern Ontario School of Medicine (NOSM) which includes the Northern Ontario Dietetic Internship Program (NODIP) and oversees the academic, research and evaluation curriculum. Lee will share their work in integrating Indigenous health and cultural competency into the training and practices of dietitians including numerous Indigenous focused projects and the implementation and ongoing evaluation of food/nutrition competencies in Indigenous health and culture. To date, more than 10% of their graduates are working in Indigenous health across Canada.

**Introduction:** The Canadian Truth and Reconciliation Commission Calls to Action advocates for cultural competency training of all healthcare professionals. Yet there is a gap in the dietetics profession and for non-Indigenous Registered Dietitians (RDs) it is a barrier to effective practice. With almost half (40%) of Ontario's Indigenous population residing in Northern Ontario, NODIP aims to enhance cultural self-efficacy of practicum graduates.

**Methods:** As a mandatory component of NODIP, cultural curriculum includes self-directed and facilitated learning activities and intentional, focused placements. Building on five core generic competencies developed and validated for allied health learners in 2013, additional food and nutrition domains were validated in 2016 with a national sample of Canadian RDs (n=120) who work in and/or have an interest in Indigenous health along with national consultations to inform curriculum across Canadian dietetic internships. Based on these competencies, self-directed learning resources have been developed, are annually evaluated and refined with collated intern and RD preceptor feedback, placement and final program evaluations, and, in consultation with the Indigenous Affairs Unit at NOSM.

**Results:** Eleven draft competencies were focused to four generic competencies for all interns and three food/nutrition competencies for those completing a focused Indigenous placement. Over 25 Intern/RD pairs have implemented and evaluated the associated learning activities during focused placements which account for approximately 8% of overall annual placements (average 104/year). Annual refinements and enhancements include an online learning guide using Qualtrics® with increased learner interactivity and feedback, and improved tracking. To date 18 of 24 (75%) Interns have completed the module and received a certificate.

**Conclusions:** An enhanced cultural curriculum including focused placements leads to an increased awareness and understanding of Indigenous cultures and the determinants of health, higher self-confidence and greater empathy. To date, more than 10% of NODIP graduates are working in Indigenous health across Canada.

**Conflict of Interest:** None

**Keywords:** cultural competency; Indigenous; food/nutrition

## 435[R] Agreement of predictive equations and measured resting energy expenditure in children with cancer.

Ms Ilde-Marié Kellerman<sup>1</sup>, Professor Mariana Kruger<sup>2</sup>, Ms Judy Schoeman<sup>2</sup>, Professor Renéé Blaauw<sup>1</sup>

<sup>1</sup>Division of Human Nutrition, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Department of Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa

**Biography:** Ilde Kellerman is a registered dietician working at Tygerberg Academic Hospital. She graduated cum laude from Stellenbosch University in 2007 and has since worked in the government sector in the provinces of Mpumalanga and the Western Cape, living out her passion for clinical nutrition.

She has enjoyed a variety of experience in both adult and paediatric nutrition, with special interest in paediatric oncology and feeding the critically ill patient. In addition to being involved in the training of final year dietetic students from Stellenbosch University she is in the process of completing her Masters degree at her alma mater.

**Introduction:** Provision of adequate energy and protein requirements in the paediatric oncology population is key to prevent malnutrition and its detrimental effect on event free survival. There is no consensus regarding the estimation of energy expenditure in this setting. This study aimed to determine whether existing predictive equations used as standard of care in paediatric nutrition, can accurately predict the resting energy expenditure (REE) of newly diagnosed children with cancer.

**Methods:** REE was measured at diagnosis utilising the validated InbodyS10 Bioelectrical Impedance Analysis (BIA) mobile unit and compared to three predictive equations (Schofield 1985, WHO 1985 and the RDA 1989). Agreement and accuracy of these equations were tested by determining bias and agreement rates, which was graphically displayed using the Bland Altman plot. Statistical significance was 5%.

**Results:** Forty-three newly diagnosed children with median age 4 years (range 0.3 - 15 years) were measured at diagnosis prior to initiation of chemotherapy. Significant differences were found between REE (mean±SD) as determined by BIA 719.53±206.29kcal/day, WHO 1985 889.75±323.31kcal/day, Schofield 1985 899.62±336.10kcal/day and RDA 1647.67±481.06kcal/day (p<0.001). Overestimation of REE by 23.6% (WHO 1985), 25.0% (Schofield 1985), and 129.0% (RDA 1989) were noted. Significant proportionate bias was described in all three equations (p<0.001), with the WHO 1985 equation (-170.2±149.0kcal/day) lower than both the Schofield 1985 (-180.1±145.7kcal/day) and RDA (-928.1±324.8kcal/day) equations.

**Conclusions:** Existing predictive energy equations (Schofield 1985, WHO 1985 and the RDA 1989) are inaccurate in predicting resting energy expenditure in newly diagnosed children with cancer by overestimating measured energy requirements between 23.6 – 129%.

**Conflict of Interest:** None

**Keywords:** paediatric oncology; resting energy expenditure; predictive equations; paediatric nutrition

## 517[R] Agricultural and nutritional education interventions for reducing aflatoxin exposure to improve infant and child growth in low- and middle-income countries: A Cochrane systematic review

Dr Marianne Visser<sup>1</sup>, Ms Anel Schoonees<sup>1</sup>, Dr Chibundu N Ezekiel<sup>2</sup>, Dr Nicola Randall<sup>3</sup>, Dr Celeste Naude<sup>1</sup>

<sup>1</sup>Centre for Evidence-based Health Care, Division of Epidemiology and Biostatistics, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Department of Microbiology, Babcock University, Ilishan Remo, Nigeria, <sup>3</sup>Centre for Evidence Based Agriculture, Crop and Environmental Sciences, Harper Adams University, Newport, UK

**Biography:** Marianne Visser is currently a Senior Researcher at the Centre for Evidence Based Health Care, Stellenbosch University, South Africa, and a member of Cochrane Nutrition's coordination team. She is an established researcher who has shown insight into the nutritional challenges faced by LMICs, and has demonstrated her skills by conducting high-priority nutrition systematic reviews and other methodological research related to public health nutrition.

**Introduction:** Observational studies suggest that dietary exposure to aflatoxins during pregnancy and early childhood may be associated with poor linear growth in young children from low- and middle-income countries (LMICs).

**Methods:** We included trials of agricultural and nutritional education interventions to reduce aflatoxin intake in infants, children, pregnant and lactating women, at household- or community-level in LMICs. Primary outcomes were pre- or postnatal linear growth. Secondary outcomes included other growth measures, morbidity and adverse effects. In August 2019 we conducted a comprehensive search in 11 electronic databases to identify all relevant published and unpublished studies. We used Cochrane methods for study selection, data extraction, risk of bias assessment, and data analysis, and to assess the certainty of the evidence.

**Results:** Three trials, conducted in households with pregnant or lactating women and children aged < 59 months (1168 mother-child pairs) and women of child-bearing age (N=231), from rural subsistence maize-farming communities in Africa, were eligible for inclusion. One cluster randomized trial in Tanzania, at unclear risk of bias overall, provided outcome data, while the second trial did not report any relevant outcomes, and unpublished growth data for the third was unavailable. Evidence from this trial suggested that the mean weight-for-age z score (WAZ) of infants from farmer households who received agricultural education, aimed at changing their postharvest practices, improved by 0.57 after 6 months, compared to infants from households where farmers received routine agricultural services (1 RCT, 249 participants, MD 0.57 WAZ 95%CI 0.16 to 0.98, very low certainty evidence). However, the certainty of the evidence suggests that the true effect may be substantially different.

**Conclusion:** This review identified important evidence gaps regarding the effects of agricultural and nutritional education interventions on growth outcomes of infants and children from households or communities in LMICs at risk of aflatoxin exposure.

**Conflict of Interest:** None

**Keywords:** aflatoxin; child growth; weight-for-age

## 725[R] An exploration of the experiences of allied health professionals use of digital health in clinical practice in NHS Scotland

Mrs Michele Rae, Dr Yvonne Robb, Dr Karen Roome

<sup>1</sup>NHS Greater Glasgow and Clyde, Glasgow, United Kingdom, <sup>2</sup>Glasgow Caledonian University, Glasgow, United Kingdom

**Biography:** Michele Rae, is a professional doctorate student at Glasgow Caledonian University and dietetic manager in the largest NHS board in Scotland. Michele qualified as a Dietitian in 1992 and held a variety of clinical roles before moving into her current professional leadership role. Michele is passionate about the contribution of digital health within clinical practice. Michele was honoured in 2006 with a British Dietetic Association Fellowship (FBDA).

**Introduction:** The aim of this research is to critically explore the experiences of the use of digital health in Allied Health Professionals (AHP) practice in the National Health Service (NHS) Scotland. The Scottish Government (SG) believe digital health has the potential to transform the delivery of health and care, giving real choice of how people access healthcare using digital health and new ways of working across Scotland. The Digital Health and Care Strategy for Scotland published in 2018 was designed to support transformational change and support new ways of working. However to date there has been minimal published enquiry of AHP experiences of the use of digital health in AHP clinical practice.

**Method:** This qualitative study is underpinned by the theoretical framework based on the philosophical hermeneutic of the German philosopher, Hans-Georg Gadamer using the 5 step research method developed by Fleming et al (2003). Understanding was gained through interviews with 15 registered and practicing AHPs working in 4 health boards across Scotland. The study has ethical approval from Glasgow Caledonian University and research and development approval from NHS Scotland (ref:GN19HS082).

**Results:** The themes emerging from the first analysis include 'rising to the challenge', and 'communication' were associated with the challenges and opportunities of using digital in practice. Two other themes 'Getting in the way and 'change and innovation' were associated factors to build and support new ways of working during a global pandemic to maintain clinical services.

**Conclusions:** The research provides insight into the experiences of AHPs use of digital health in clinical practice and offers recommendations for future practice.

**Conflict of Interest:** None

**Keywords:** digital health; allied health professional; practice; eHealth

## 515[R] An observational study of the implementation of the National School Nutrition Programme in three secondary schools in Tshwane.

Mrs Maricia Van Deventer<sup>1</sup>, Dr Carmen Muller<sup>1</sup>, Dr Beulah Pretorius<sup>1</sup>, Prof Hettie Schönfeldt<sup>1</sup>

<sup>1</sup>Department of Animal and Wildlife Sciences, University Of Pretoria, Pretoria, South Africa

**Biography:** Maricia van Deventer has recently completed her MSc Environmental Health where she investigated the occurrence of mycotoxins and prevalence of heavy metals in South African red meat. Maricia assists with sampling and sample preparation on all projects as she pays meticulous attention to detail. She has a positive work attitude and is willing to accept any challenge. Currently, she is involved in assessing the role of soy in the Nation School Nutrition Programme.

**Introduction:** The National School Nutrition Programme (NSNP) was implemented to enhance learning capacity and education of school going children by providing a daily nutritious meal. During the national review many factors that influence the success of the programme were reported. Most important observations from the learners were that the portion size of the meals was not always adequate and that some of the meals "lacked flavour".

**Methodology:** The goal of the project was to investigate the implementation of the NSNP at grass roots level. Semi-structured interviews was held with personnel involved in the implementation of the NSNP at three secondary schools in Tshwane to ensure different scenarios were investigated. The principal of the school, the NSNP coordinator and cooks were interviewed.

**Results:** All parties involved at the three different schools came to the conclusion that a formal dining hall would resolve many physical problems around the NSNP such as the disappearance of crockery and cutlery. They believe the children would also be less arrogant and more respectful towards the personnel. The schools do take it upon themselves to help the children and improve the meals, such as fundraisers to buy spices and flavourings. Schools also had the initiative to send extra or left-over food home for learners that ask and surpluses were distributed amongst poor learners at the end of each school term.

**Conclusion and Recommendations:** Each school faces different problems, ranging from the arrogance of the learners to unavailable facilities. However, each school handles the problems in their own way and the people responsible for the implementation do have the learner's best interest at heart.

**Conflict of Interest:** None

**Keywords:** National School Nutrition Programme

## 165[R] Anthropometric parameters and pulmonary function: evaluation of body composition in cystic fibrosis

Dr Francis Hollander-Kraaijeveld<sup>1,5</sup>, MSc Yael Lindeman<sup>2</sup>, Dr. PhD Nicole de Roos<sup>2</sup>, MSc Marcella Burghard<sup>3,5</sup>, Dr. MD PhD Ed van de Graaf<sup>4,5</sup>, Prof. dr. MD PhD Harry Heijerman<sup>4,5</sup>

<sup>1</sup>Division of Internal Medicine and Dermatology, Department of Dietetics, University Medical Center Utrecht, , The Netherlands, <sup>2</sup>Division of Human Nutrition and Health, Wageningen University & Research, , The Netherlands, <sup>3</sup>Department of Rehabilitation, Nursing Science and Sports, University Medical Center Utrecht, , The Netherlands, <sup>4</sup>Division Heart and Lung, Department of Pulmonology, University Medical Center Utrecht, , The Netherlands, <sup>5</sup>Cystic Fibrosis Center Utrecht, University Medical Center Utrecht, , The Netherlands

**Biography:** Francis Hollander-Kraaijeveld has been working as a dietitian in adult patient care at the University Medical Center Utrecht in the Netherlands since 1987. Besides patient care she is interested in evidence-based dietetics. She likes presenting nutritional issues related with cystic fibrosis (CF) and lung transplantation at ECFS conferences, ESOT and has been invited speaker at the Australasian CF conference in 2015. Her first publication was in the Journal of American Dietetic Association in April 2005. Since September 2017, different publications can be read on line by the Journal of the Academy of Nutrition and Dietetics, Nutrition in Clinical Practice, and the Journal of Cystic Fibrosis. In 2020, she has published an interesting study 'Non-fasting bioelectrical impedance analysis in cystic fibrosis: Implications for clinical practice and research'. She also participates in the Dutch Adult CF Dietician Specialist Group and is a representative on behalf of her professional group in the development of the new Quality Standard CF, recommendations on the treatment and guidance of people with CF in the Netherlands. Her PhD defense has been successfully at July 9 2020. She is very dedicated in dietetic care to her CF and lung transplant patients and wants to provide the best nutritional outcome for them.

**Introduction:** Nutritional status, assessed by body mass index (BMI), is associated with pulmonary function in cystic fibrosis (CF) patients. BMI may be too crude as it does not distinguish patients with differences in body composition. Therefore, we investigated whether the fat free mass index (FFMI), fat mass index (FMI), or phase angle have stronger associations with pulmonary function and better detect the risk for malnutrition than BMI.

**Methods:** Body composition was measured in 140 adult CF patients using whole-body single frequency bioelectrical impedance analysis (BIA, Body stat 500). Pulmonary function, assessed by spirometry, was expressed as Forced Expiratory Volume at 1 second percent predicted (FEV1%pred). Associations of body composition measures with pulmonary function, adjusted for age, gender and chronic Pseudomonas aeruginosa infection were investigated with Pearson's r and multiple linear regression.

**Results:** Weak positive significant associations with FEV1%pred were observed for BMI (r= 0.2, p=0.018), FFMI (r= 0.2, p=0.023) and phase angle (r= 0.3, p= 0.002). The association with FMI was not significant (r= 0.1, p=0.274). After adjusting for covariates, BMI, FFMI, FMI and phase angle were all similarly significant associated with FEV1%pred (p= <0.001). BMI showed the strongest association with FMI (r= 0.8, p=0.000). BMI detected 13 out of 140 patients at risk of malnutrition, whereas FFMI detected 25 patients.

**Conclusion:** Body composition measures are similarly associated with pulmonary function. BMI does not adequately detect patients at risk of malnutrition. Therefore, FFMI combined with BMI should assess nutritional status in adult CF patients with low and normal BMI.

**Conflict of Interest:** None

**Keywords:** body composition; body mass index; fat-free mass index; bio-electrical impedance analysis; anthropometric parameters

## 137[R] Anthropometric status of Human Immunodeficiency Virus (HIV) infected mothers and their breastfed children

Mrs Bianca Tromp<sup>1,2</sup>, Dr Ronette Lategan-Potgieter<sup>2,3</sup>, Mrs Riette NeP

<sup>1</sup>Heart and Stroke Foundation, Cape Town, South Africa, <sup>2</sup>University of the Free State, Bloemfontein, South Africa, <sup>3</sup>Stetson University, Stetson, United States of America

**Biography:** Bianca Tromp obtained her MSc in Dietetics from the University of the Free State with dissertation title: *The Implementation of the Prevention of Mother to Child Transmission policy in the Northern Cape, South Africa.* The study investigated the health of HIV infected mothers and their HIV exposed children in a rural setting where they were enrolled in the PMTCT antenatal and postnatal care system.

Bianca is an advocate for legislation and policies to improve public health especially with regards to mother and infant care in vulnerable communities.

Breastfeeding has proven to be effective in preventing stunting and wasting in HIV exposed children, partly because breast feeding decreases opportunistic infection risk in children. As breastfeeding poses a risk for MTCT, the PMTCT policy has been implemented by the South African DOH to reduce this risk.

**Objective:** To determine the effect of maternal nutritional status on the anthropometric status of HIV exposed, breastfed children.

**Method:** A sample of 100 mother-child-pairs that were included in the PMTCT programme at four clinics in the Northern Cape were included. Anthropometry of the mothers as well as the children were measured. Data on socio-economic status, HIV infection stage, PMTCT care, child feeding practices and mother-to-child transmission (MTCT) of HIV were collected.

**Results:** Weight-for-height Z-scores showed that 7% of the children were moderately malnourished and none were severely malnourished. Height-for-age classified 29% of the children as stunted. Six mothers were underweight, while 74 mothers were classified as overweight or obese. The mother's CD4 cell count, household income, marital status, employment status and education level showed no significant influence on her own or the child's weight status. HIV infected children's mothers were more likely to have a lower CD4 cell count ( $p = 0.03$ ) and more advanced HIV stage with an underweight Body Mass Index (BMI). These children were also more likely to have a lower weight-for-age Z-score. Children of underweight mothers had 4.5 times the risk of being underweight and 6.3 times the risk of moderate acute malnutrition than mothers with a BMI indicating normal or overweight. The mother's BMI had no significant effect on the height-for-age of the child.

**Conclusion:** The health and anthropometry of the mother does affect the weight status of her child and therefore measures to improve maternal health are an important aspect in the improvement of child health and mortality.

**Conflict of Interest:** The first author obtained a post-graduate student bursary from the Nestlé Nutrition Institute Africa, used to fund the operational costs of this study. The first author is employed by the Department of Health, Northern Cape Province, South Africa.

**Keywords:** HIV; Nutrition; PMTCT; Anthropometry; Breastfeeding

## 449[R] Anti-glycation effect of cinnamon stem-bark water extract on major types of glucose and fructose derived advanced glycation end-products

Ms Oluwaseyefunmi Iyabo Adeniran<sup>1</sup>, Prof M. Alfred Mogale<sup>1</sup>

<sup>1</sup>Sefako Makgatho Health Sciences University (SMU), Pretoria, South Africa

**Biography:** Oluwaseyefunmi Iyabo Adeniran holds a Masters' degree in Biochemistry from the University of Ilorin, Nigeria. For her Ph.D degree at the department of Biochemistry, Sefako Makgatho Health Sciences University (SMU) she researched on the so called Advanced Glycation End-products (AGEs). These products are formed at an accelerating rate in diabetes mellitus, and are implicated in the development and progression of vascular complications of this disease condition. She is investigating the effects of extracts of some selected medicinal plants with proven anti-diabetic properties. Her study has the potential to lead to the discovery of new and effective agents that not only lower blood glucose levels, but can also prevent or slow down the progression of these deliberating diabetic complications.

**Introduction:** Cinnamon stem-bark is used extensively as an anti-diabetic supplement. Advanced glycation end-products (AGEs) are linked to the vascular complications of late onset diabetes.

**Objectives:** To investigate the anti-glycation effect of cinnamon stem-bark water extract (CSBWet) on major types of AGEs derived from both glucose and fructose. Also, to compare the anti-glycation effect of CSBWet with that of aminoguanidine (AG), a standard inhibitor of AGEs.

**Methods:** Bovine serum albumin (BSA) was incubated with glucose or fructose in the presence and absence of CSBWet or AG at 37°C for 40 days. Fluorescent AGEs (FAGEs) and total immunogenic AGEs (TIAGEs) were measured using spectrofluorometry and enzyme-linked immunosorbent assay. The percentage anti-glycation activity was calculated. Comparison between groups was made by Student's t-test and analysis of variance for continuous variables.

**Results:** Cinnamon stem-bark water extract significantly inhibited the formation of both BSA-glucose and BSA-fructose-derived FAGEs and TIAGEs than AG ( $p < 0.001$ ). Low concentrations of 0.128 mg/ml and 0.134 mg/ml could inhibit the formation of glucose-derived FAGEs and fructose-derived FAGEs respectively by 50%. At concentration of 1 mg/ml CSBWet inhibited the formation of both glucose and fructose-derived TIAGEs by over 90%.

**Conclusions:** Cinnamon stem-bark water extract has the ability to prevent the formation of different types of AGEs. The anti-glycation effect is against both fluorescent and immunogenic AGEs derived from either glucose or fructose. The extract is a stronger inhibitor of these major types of AGEs than the standard inhibitor, aminoguanidine.

**Conflict of Interest:** None

**Keywords:** Cinnamon, Diabetes, Anti-glycation, advanced glycation end-products (AGEs), extract

## 446[R] Are food gardens the foundation of food security in schools?

*Dr Hema Kesa<sup>1</sup>*

<sup>1</sup>University Of Johannesburg, Johannesburg, South Africa

**Biography:** Director of the Food Evolution Research Laboratory (FERL) and Senior Lecturer at the School of Tourism and Hospitality (STH), in the College of Business and Economics at the University of Johannesburg. Research interests are in Food Security & Community Nutrition, and Food Service Management.

**Introduction:** Food gardens are a part of the agriculture and food production system in many developing countries. They are widely used as a remedy to alleviate hunger and malnutrition. The Food Gardens Programme is one of the pillars of the National School Nutrition Programme (NSNP) in South Africa. Its purpose is to develop skills in production of own food. Schools participating in NSNP are required to implement food production initiatives given available resources. Consequences of undernourishment in children include low school performance; low attendance and an increased risk of exiting school early. The purpose of the study was to determine whether food gardens are the foundation of food security in schools.

**Methods:** Government schools (n=19, grades 1-7) in Johannesburg were visited and interviewed. The participants included principals, NSNP co-ordinators and food handlers. Random and convenience sampling methods were used. A database was provided by the Department of Basic Education (DBE).

**Results and discussion:** Majority of the schools in Johannesburg feed between 100-150 learners per day. The reasons for an onsite garden was to assist the school feeding programme in preparing fresh and nutritious food daily. The school gardens grew fresh produce: root and leafy green vegetables and fruits. Majority of the schools have gardens which are utilized every day or seasonally to augment the meals, provide produce to communities and be of educational value in the school curriculum. 35% of the schools do not have gardens, but many do have the land for a garden to be established.

**Conclusion:** Food gardens in Johannesburg still needs to be explored further as some schools made use the produce, gave away or sold the produce to community members. Nutrition is multisectoral, strategies are needed to maximise the impact of agriculture in nutrition. Integrated agricultural-nutrition interventions play a pivotal role in food security.

**Conflict of Interest:** None

**Keywords:** School nutrition; food gardens; food security; sustainability

## 512[R] Assessment of dietary patterns, anthropometric and biochemical indices of diabetic patients attending a tertiary health facility in Nigeria

*Prof Olivia Afam-Anene<sup>1</sup>*

<sup>1</sup>Imo State University Owerri Nigeria, Owerri, Nigeria

**Biography:** Afam-Anene. O. C obtained her PhD in 2016 from Michael Okpara University of Agriculture. She is a professor of Community and Public Health Nutrition and a lecturer in the Department of Nutrition and Dietetics, Imo State University, Owerri. Her research interest are in community and public health nutrition, clinical nutrition, maternal and infant nutrition and experimental nutrition. She is a member of Nutrition Society of Nigeria (NSN) African Nutrition Society (ANS) British Nutrition Society (NS) and Dietetic Association of Nigeria (DAN). She has attended numerous conferences and workshops. She has supervised many undergraduate and post graduate students. She has over 50 publications in reputable Journals

**Introduction:** The study was aimed at assessing the dietary pattern, anthropometric and biochemical indices of type 2 diabetic patients attending clinic at the federal medical centre, Keffi, Nassarawa State, Nigeria.

**Methods:** Simple random sampling technique was used to select 106 diabetic patients (male 45 and female 61) that volunteered to be used for the study. A structured, validated and pre tested questionnaire was used to collect information on the demographic, socioeconomic status and feeding pattern of the respondents. Weight and height measurements, waist and hip measurements, PCV and haemoglobin were obtained using standard procedures. Data collected were analyzed using SPSS package version 20.

**Results:** Result revealed that the respondents had low consumption of bread (79.3%), nodules/spaghetti (84.9%), fruits (75.96%), high consumption of wheat (84.9%), rice (79.3%) and vegetables (60.4%). BMI status indicates that most (62.3%) of the respondents were overweight, 5.7% were underweight and 30.2% had normal BMI. Systolic and Diastolic blood showed that 25.5% and 23.6% of the respondents respectively had mild hypertension, while 5.7% and 8.2% had moderate hypertension. Respondents with good glycemic control were 56.6%. Haemoglobin and PCV revealed that (12.3% and 3.8%) (9.4% and 3.8%) of males and (16.0% and 8.5%) and (11.3% and 5.7%) of females were mildly and moderately anaemic respectively. Some of the subjects believe that diabetes implies serious restrictions in the standard of living and these assumptions affect their food/dietary consumption pattern.

**Conclusion:** Adequate diabetic self-care education and nutrition counseling should be encouraged for successful management of diabetes. Conflict of Interest: None

**Keywords:** Type 2 diabetes, dietary pattern, anthropometric, biochemical indices

**Conflict of Interest:** None

**Keywords:** Type 2 diabetes, Dietary Pattern

### 360[R] Associations between reported health, lifestyle and birth outcomes of pregnant women attending the antenatal clinic at Pelonomi Hospital, Bloemfontein

Dr Marizeth Jordaan<sup>1</sup>, Mrs Liska Robb<sup>1</sup>, Prof Gina Joubert<sup>1</sup>, Dr Jennifer Osei Ngounda<sup>1</sup>, Prof Corinna Walsh<sup>1</sup>

<sup>1</sup>University Of The Free State, Bloemfontein, South Africa

**Biography:** Marizeth has been part of the lecturing staff at the University of the Free State since 2012. She is mainly responsible for facilitating modules for first- and second-year dietetics students, but is also involved with some of the third- and fourth-year modules. Marizeth is also provides supervision for Master's students within the department. She is currently busy with her PhD in Dietetics at the University of the Free State.

**Introduction:** A healthy lifestyle and bodyweight contribute to pregnancy success. This study aimed to determine associations between reported health, lifestyle and birth outcomes of pregnant women attending a high risk antenatal clinic.

**Methods:** This quantitative, cohort analytical study included 331 mothers and 347 babies. Information on tobacco and alcohol use; social support; factors contributing to stress and medical history were obtained with a questionnaire. Method of delivery, gestational age, birth weight and length were obtained from the Road to Health Booklet of each neonate. Logistic regression with backward selection ( $p < 0.05$ ) was used to select significant independent reported health and lifestyle factors associated with overall poor birth outcome (prematurity or low length-for-age or low weight-for-length). Variables with a  $p$ -value  $< 0.15$  were considered for inclusion in the model.

**Results:** Significantly more full-term babies had mothers who could always talk to their husband or partner ( $p = 0.0364$ ). Significantly more premature babies had mothers who were hospitalised ( $p = 0.0169$ ), experienced diarrhoea for at least three days ( $p < 0.0001$ ) or loss of appetite ( $p = 0.0213$ ) during the current pregnancy. More premature babies had mothers who were underweight ( $p = 0.0052$ ). Women who were in real danger of being killed by criminals or who were diagnosed with or treated for high blood pressure during the current pregnancy had higher odds of experiencing overall poor birth outcome. Women who were normal weight, overweight or obese compared to their underweight counterparts had lower odds of experiencing overall poor birth outcome.

**Conclusion:** Significant associations between various reported health and lifestyle factors and birth outcomes were identified. Pregnant women should be educated on the risks of poor lifestyle choices during pregnancy and encouraged to use available support networks to help with stress management.

**Conflict of Interest Declaration:** None to declare.

**Conflict of Interest:** None

**Keywords:** Health and lifestyle, premature delivery, stunting, wasting, birth outcome

### 670[R] Attitude of food handlers and sanitary control: the case of community restaurants in Brazil

Dr Raquel Braz Assuncao Botelho<sup>1</sup>, MS Thayze Quirino<sup>1</sup>, Dr Veronica Ginani<sup>1</sup>, dr Izabel Rodrigues da Silva<sup>1</sup>, dr Rita Akutsu<sup>1</sup>, dr Renata Zandonadi<sup>1</sup>

<sup>1</sup>University Of Brasilia, Brasilia, Brazil

**Biography:** Dietitian, Professor and Coordinator at Food Hygiene Laboratory at University of Brasilia. She works in the Post Graduation Program of Public Health, as well as Human Nutrition.

**Introduction:** Planning effective strategies for food handlers training is one of the biggest challenges in the restaurant's scenario. Additionally, with the growing number of cases and outbreaks of Foodborne Diseases (FBD) in the world, there is a need to define approaches considering the complexity that involves the positioning of the food handler in relation to Good Hygiene Practices (GHP). Therefore, the objective of the present research was to evaluate the relationship between the food handlers' attitudes declared by themselves regarding GHP and the hygiene procedures and conditions observed at the CRs.

**Methods:** For the first proposal, the Attitude Change Scale for Food Handlers (ACSFH) was used. To evaluate the CRs conditions, a checklist based on the Brazilian regulation was applied. We used SPSS version 24.0 for statistical analysis. Cronbach values were used as parameters to show statistical reliability.

**Results:** All CR in the Federal District ( $n=14$ ) were assessed as well as all food handlers ( $n=206$ ) that work in them. No CRs complied with a minimum of 70% of the requirements about GHP. Food handlers were mainly between 30 to 39 years old, monthly family income lower than US\$ 500 and evenly distributed by gender. It was observed that they have good knowledge and attitude towards GHP, but they do not have protective behavior in relation to FBD according to the checklist applied. Food handlers with higher educational level presented less scores for the ACSFH, showing that formal education is not sufficient to specific areas such as GHP.

**Conclusions:** It is recommended that the sanitary control of these units must be more rigorous, and that training must be reviewed, since knowledge acquisition does not reflect the adoption of adequate practices and they are independent of restaurants facilities and structure.

**Conflict of Interest:** none

**Keywords:** food handler; Foodborne disease; Attitude; Restaurant

## 121[R] Barriers to a healthy lifestyle in prehospital emergency medical care staff in Port Elizabeth, South Africa

*Prof Annelie Gresse<sup>1</sup>, Mr Philipp Bölke<sup>1</sup>, Ms Rohini Jaga<sup>1</sup>, Ms Rachel Aucamp<sup>1</sup>, Ms Emma Slabbert<sup>1</sup>, Ms Castyn Winfield<sup>1</sup>*

<sup>1</sup>Nelson Mandela University, Port Elizabeth, South Africa

**Biography:** Annelie Gresse is a registered dietitian and involved in higher education institutions and nutrition education for the last 35 years. At present her field of education is food service management. The topic of her DSc in Dietetics was on the management of Diabetes Mellitus in a population in transition. She is the Head of Department of Dietetics and Nelson Mandela University and involved in various research projects with undergraduate, Masters and Doctorate students.

**Introduction:** There are few pre-hospital emergency medical care (PEMC) workers in South Africa and the job environment is demanding. This can cause stress and risky lifestyle behaviour, especially regarding the diet, which can lead to non-communicable diseases and influence job performance.

**Objectives:** To explore the factors that influence lifestyle risk behaviour among PEMC workers, with specific focus on dietary habits.

**Methods:** Convenience sampling was used to select 15 participants who took part in two focus group discussions in a cross-sectional qualitative pilot study. This study was part of a more comprehensive explorative investigation in which quantitative methods such as 24-hour dietary recalls, stress questionnaires and lifestyle risk behaviour questionnaires were used. Focus group discussions to investigate the dietary experiences of PEMC staff was conducted, transcribed, using the recordings taken during the focus groups, then verified and analysed afterwards in order to identify specific themes for an intervention.

**Results:** Irregular, unpredictable and long shifts, the cost and relative unavailability of healthy food and fatigue due to stress and the work environment emerged as important factors that contributed to poor diet and lifestyle risk behaviour. Peer pressure and support from fast food outlets also emerged as extenuating should also form part of the training of PEMC workers to equip them better for their jobs. Further research is necessary in order to factors that contribute to poor dietary habits. The results were confirmed by results from the other research methods.

**Conclusions:** Dietary interventions with emphasis on behaviour change should be available for all PEMC workers, as well as assistance to prevent and manage lifestyle risk behaviour. Nutrition plan specific interventions.

**Conflict of Interest:** None

**Keywords:** diet; lifestyle; emergency care workers

## 622[R] Bibliographic analysis of scientific research on breastfeeding practices in Mauritius: review of articles from 2008 to 2018.

*Ms Yovaneé Veerapen<sup>1</sup>*

<sup>1</sup>Nutrismart Consultancy Ltd, Mahebourg, Mauritius

**Biography:** Founder of NutriSmart. BSc Nutritional Sciences Sp. Dietetics, MBA

**Introduction:** Exclusive breastfeeding (EBF) practices are effective ways for reducing childhood morbidity and mortality. To increase the chance of having a healthy future generation, it is of great value to work toward achieving the World Health Organisation's Global Target of 50% EBF prevalence by 2015. To provide additional insight on the situation in Mauritius, we have analysed the collection peer-reviewed articles on breastfeeding practices in Mauritius that were published during the period 2008 - 2018.

**Materials and methods:** Using information from the different local institution responsible for research and development together with the support of few private non governmental organisations supporting breastfeeding, we identified peer reviewed studies on breastfeeding practices in Mauritius. The total number of articles in relation to breastfeeding practices that were published during the 10-year period is only 8. Most research focused on infant feeding practices and the emerging problem of overweight and obesity. The primary author of all the publications was located in an institution locally. All articles were published in English and all were cross-sectional observational studies.

**Conclusions:** Few peer reviewed research studies are published on exclusive breastfeeding in Mauritius. Statistics from a survey carried out in 2017 by the Mauritius Institute of Health had found that, among 480 mothers only 25% had breastfed their babies for the first six months. Compared to data from Ashmika et al. 2013, where only 17.9% of participants (N=500) had exclusively breastfed their infant for the first 6 months, a slight progress can be observed. In the same study, the mean duration of EBF was found to be 2.10 months with no further follow up research to trace the evolution. New approaches are needed to encourage and support more research to get to know the real problem behind the low mean duration of EBF and to promote further EBF.

**Conflict of Interest:** None

**Keywords:** Breastfeeding, infant feeding practices, research, Mauritius.

## 511[R] Breakfast and lunchbox foods provided to foundation phase learners in Bloemfontein, South Africa.

Dr Elmine du Toit<sup>1</sup>, Dr Elmine du Toit<sup>1</sup>, Dr Ronette Lategan-Potgieter<sup>2</sup>, Mr Cornel van Rooyen<sup>3</sup>

<sup>1</sup>Department of Nutrition and Dietetics, University of the Free State, Bloemfontein, South Africa, <sup>2</sup>Department of Health Sciences, Stetson University, Deland, United States of America, <sup>3</sup>Department of Biostatistics, University of the Free State, Bloemfontein, South Africa

**Biography:** Thea Hansen is a dietician with twelve years' experience in private practice, with a special interest in childhood nutrition. She completed her community service in Ladybrand in the Free State and also worked at Rustenburg provincial hospital for 3 years. She holds a Bachelor of Science in Dietetics degree from the University of Stellenbosch and a Masters degree in Dietetics from the University of the Free State. The focus of her Masters degree was on the knowledge, attitudes and practices of primary caregivers of foundation phase learners regarding breakfast and lunchboxes.

**Introduction:** Obesity remains a major health challenge globally. Southern Africa has the highest increase in the prevalence of obesity in children and adolescents, since 1975. Healthy food choices have the potential to lower the risk of overweight/obesity. This study assessed the foods caregivers provide to children for breakfast and school lunchboxes, to compare this to recommendations.

**Method:** Caregivers (N=1286) of learners aged 6 – 12 years, from independent and Quintile 5 public schools in Bloemfontein were included in a cross-sectional descriptive study. Self-reported questionnaires were used to assess the breakfast and lunchbox foods provided by caregivers.

**Results:** Most caregivers provided breakfast daily before school (n=1043, 81.68%) and a lunchbox to school (n=1224, 95.70%). Breakfast foods typically included dairy products (n=965, 75.04%), fruit (n=23.64%, 304), cereals and porridge with a high glycaemic index (GI) (n=386, 30.02%), brown/low GI bread (n=238, 18.51%) and cheese as a protein source (n=131, 10.19%). School lunchboxes included mostly white bread (n=370, 28.77%), cheese (n=149, 11.59%), savoury biscuits (n=97, 7.54%), fruit (n=431, 33.51%), vegetables (n=54, 4.2%), and crisps as a treat (n=177, 13.76%). Beverages in the lunchbox included mainly water (n=1000, 77.76%), fruit juice (n=745, 57.9%) and dairy (n=547, 42.6%). It is recommended that breakfast should include foods with a low glycaemic index (GI), including fibre rich carbohydrates, fruit, reduced-fat milk or milk products and lean meat and meat products. It is recommended that for a school lunchbox that vegetables and water are added. Meat and meat products may not be necessary.

**Conclusion:** Compared to recommendations for optimal child health and development, caregivers in this study were not providing optimal breakfast and lunchbox foods. Interventions to promote healthy foods for breakfast and in lunchboxes; as well as healthy eating practices for children should be developed and implemented at schools.

**Conflict of Interest:** None

**Keywords:** Breakfast, lunchbox, foundation phase learners, caregivers, recommendations

## 285[R] Canadian 25-year history project: Preferred topics and formats

Prof Paula Brauer<sup>1</sup>, Ms Linda Dietrich<sup>2</sup>, Prof Janis Randall Simpson<sup>1</sup>, Ms Marlene Wyatt<sup>3</sup>

<sup>1</sup>University of Guelph, Guelph, Canada, <sup>2</sup>retired, Haliburton, Canada, <sup>3</sup>Consultant, London, Canada

**Biography:** Paula Brauer PhD, RD, FDC was an academic at the University of Guelph working on obesity services in team-based primary care. Her career has focused on efforts to improve the effectiveness of dietetic services. She has been active in primary health care reform and as a member of the Canadian Task Force on Preventive Health Care 2010-15. A RD since 1975, she was a DC Board member, editor of the Journal, and Ryley-Jeffs award winner, the most prestigious award from Dietitians of Canada.

**Introduction:** The practice of dietetics in Canada has changed remarkably over the past 25 years. The last documented history was published in 1993 by Dietitians of Canada (DC). An update of the key issues within the profession, can inform current practice and advocacy to ensure dietitians remain at the forefront as a respected evidence-informed profession. The communication of history has itself also changed over time, as the power of the internet allows for more diverse ways of chronicling multiple dimensions of life.

**Methods:** Four senior RDs began work in Spring 2016. In Phase 1, an online survey was conducted, with follow-up interviews, to gauge overall interest, format preferences and topics. Survey data were analyzed for frequencies; and additional comments and interviews were content analyzed. Based on results, Phase 2 features completion of a web-based visual timeline. Three thesis students are completing detailed reviews of three specific topics, using document review and key informant phone interview methods. Funding and in-kind support for further development of Phase 3 topics is being sought.

**Results:** The Phase 1 survey yielded 359 responses, 319 in English, 40 in French; with 50% of respondents ≤38 years old. Fifty-one interviews were completed. A timeline (online) was preferred by 32%; followed by PowerPoint presentation by 18% and an online Book (pdf) by 15%. Among the 12 main topic areas, there were 34 subtopics of interest to more than 35% of respondents. Phase 2 is focusing on completion of an online timeline and reviews of long-term care, primary care, and education and accreditation, all areas of substantial change in Canada.

**Conclusion:** A survey and interviews confirmed that recent history is of interest to both older and younger RDs and is seen as relevant to planning for the future of the profession.

**Conflict of Interest:** None

**Keywords:** history; dietetics; internet; timeline; profession

## 305[R] Career trajectory of recent dietetic graduates in Canada

Mrs Corinne Eisenbraun<sup>1</sup>, Ms Susan Caswell<sup>2</sup>, Dr Jessica Lieffers<sup>3</sup>, Ms Jennifer Buccino<sup>4</sup>, Dr Rhona Hanning<sup>5</sup>, Ms Jennifer Wojcik<sup>6</sup>

<sup>1</sup>Dietitians of Canada (until October 2020), Winnipeg, Canada, <sup>2</sup>PhD Candidate, School of Public Health Systems, University of Waterloo, Waterloo, Canada, <sup>3</sup>Assistant Professor, College of Pharmacy and Nutrition, University of Saskatchewan, Saskatoon, Canada, <sup>4</sup>Dietitians of Canada, Toronto, Canada, <sup>5</sup>Professor, School of Public Health & Health Systems, Faculty of Applied Health Sciences, University of Waterloo, Waterloo, Canada, <sup>6</sup>Dietitians of Canada, Winnipeg, Canada

**Biography:** Corinne Eisenbraun was Senior Director, Education Policy and Programs for Dietitians of Canada until October 30, 2020. This project began under her leadership in early 2019. She was with DC for 25 years in various roles. Over the past 10 years, she worked with dietetic educators and dietetic regulators on matters related to entry-to-practice standards and accreditation through the Partnership for Dietetic Education and Practice. She was also been involved with workforce planning initiatives undertaken by DC since 2009. Corinne's other portfolio included the development and oversight of DC's Continuing Professional Education programs delivered in-person and by distance. She is a Fellow of Dietitians of Canada and has contributed to professional journal publications on subjects related to the Nutrition Care Process as delivered in Canada, simulations in education and other practice topics. She presently serves as a volunteer Board Director for the International Confederation of Dietetic Associations.

**Introduction:** Dietetic associations, education and training programs require information on career paths and satisfaction of graduates to support recruitment, program quality and continuing education. We surveyed graduates from all dietetic program in Canada from the previous five years.

**Methods:** A web-based survey, based on a 2019 pilot that had been pre-tested, pilot tested and implemented in two provinces, was revised to include COVID-related questions and French translation. It was available between August and October 2020. Respondents were recruited via all dietetics education programs, social media and Dietitians of Canada communications channels.

**Results:** Of 624 respondents, 77% had graduated since 2017. Routes to entering the profession included integrated degree and practicum (44%) or degree and stand-alone post-undergraduate practicum (37%). Master's degree and practicum made up 17%. Since completing training, 15% were pursuing/had pursued an additional university degree (most often in nutrition (50%) or public health (16%), and/or additional dietetics-related certifications (22%). While most (75%) had obtained employment as a dietitian in the year following training, 14% were unable to obtain a position. Only 15% of positions were full-time permanent and 27% full-time temporary. Twenty-six percent held more than 1 job within dietetics and 51% had non-dietetic employment. Job-search websites, past training or employment contacts and personal networks were considered effective search strategies. One-third relocated to find employment. Graduates worked in hospital or primary care (55%), public/community health (9%), long-term care (15%), private practice (7%) or other settings. After the first year, about half changed positions. Most felt their education/training had prepared them well for their current work except in the areas consulting, business or management. COVID-19 was identified as a challenge for 34% of those seeking employment and, for those who were employed, it impacted the service delivery of 44%.

**Conclusion:** Canadian dietetics graduates have varied, but successful early employment paths.

**Conflict of Interest:** None

**Keywords:** Dietetic Education and Training, Careers

## 295[R] Caregiver's reported experiences of and perceptions on child growth monitoring and promotion through the South African Department of Health's Road to Health booklet, in Grahamstown, Eastern Cape (2012-2014)

Ms Zitandile Mfono<sup>1,2</sup>, Dr Anna Voce<sup>2</sup>

<sup>1</sup>Department of Dietetics, Nelson Mandela University, Port Elizabeth, South Africa, <sup>2</sup>Discipline Public Health Medicine, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa

**Biography:** Zitandile Mfono is a registered dietitian, currently lecturing basic nutrition, life-cycle and lifestyle nutrition at the Nelson Mandela University, in Port Elizabeth. She holds a Master of Public Health from University of KwaZulu Natal, and her current field of interest and research is indigenous vegetables and lifestyle diseases. The abstract presented was part of her MPH study while she was working for the Department of Health, in Grahamstown, Eastern Cape.

**Background:** In 2010, the Road to Health booklet (RtHB) was introduced to Department of Health healthcare facilities, incorporating length-based indices for child growth and nutrition information for caregivers. This study describes caregiver's experiences and perceptions of growth monitoring and promotion (GMP) for children with the RtHB at PHC (primary healthcare) facilities around Grahamstown, South Africa.

**Methods:** This was an observational cross-sectional study. Caregivers of children aged 0-24 months across all seven PHC facilities in Grahamstown, were consecutively sampled (non-probability) from November 2012 to January 2014. Data was obtained from the child's RtHB and caregiver interviews.

**Results:** One hundred and sixty four (N=164) caregivers were recruited. The RtHBs of most children (89.0%) had a record of the weight of the child for the current PHC visit. The RtHBs of 18.1% of the eligible children had a recorded length in the past six months; 10.0% had a plotted length for age and 2.2% weight for length. Less than half (43.9%) of the caregivers reported receiving feedback of their child's growth. Only fifty-eight (35.4%) caregivers reported receiving nutrition information during their clinic visit.

**Conclusions:** Length-based indices were not routinely used at the PHC facilities. These need more time and resources for meaningful interpretation and interventions. Caregivers often were not engaged in discussions of their child's growth, although most were interested. Critical periods for nutrition counselling were often not detected and prioritised. Barriers to caregiver engagement and nutrition counselling at PHC facilities need to be explored.

**Conflict of Interest:** I have no known conflict of interest.

**Keywords:** child, caregivers, growth, nutrition, Road-to-Health-Booklet

## 101[R] Caregivers' knowledge and practice of recommended infant and young child feeding guidelines in Eastern Region, Ghana

Mrs Harriet Adu-Amoah<sup>1,2,3</sup>, Prof Richmond Aryeetey<sup>3</sup>

<sup>1</sup>FOCOS Orthopedic Hospital, Accra, Ghana, <sup>2</sup>Ghana Dietetic Association, Accra, Ghana, <sup>3</sup>University of Ghana School of Public Health, Accra, Ghana

**Biography:** Harriet Adu-Amoah is a registered dietitian at FOCOS Orthopedic hospital. Her primary role at the hospital is to oversee the diet therapy unit and food service unit in providing evidenced based and high standard of practice in nutrition and food safety. She holds a BSc. in Biological Sciences from the Kwame Nkrumah University of Science and Technology. Also an MPhil in Dietetics and Master of Public Health from University of Ghana. For the past five years she has worked with the department of Dietetics, University of Ghana as a preceptor. Her research interest is in maternal and child nutrition, adolescent health and nutrition in spine deformed patients.

**Introduction:** Poor knowledge and skills for feeding infants and young children can lead to inappropriate feeding practices which results in malnutrition. This study assessed knowledge and practice of recommended infant and young child feeding (IYCF) guidelines among caregivers with young children in the Eastern Region of Ghana.

**Method:** A descriptive cross-sectional survey of 345 caregivers with infants and young children was conducted in Nsawam Adoagyiri municipality. Caregivers were selected from a sample of child welfare clinic attendants. A pre-tested interviewer-administered questionnaire was used to collect data on socioeconomic characteristics and caregivers' knowledge and practice of recommended IYCF guidelines. A 24-hour dietary recall was used to assess dietary practices. Multivariate analysis was used to identify factors linked with IYCF guideline utilization.

**Results:** The mean age of the participants was 29.3 ( $\pm 6.75$ ) years. Overall knowledge of caregivers on recommended IYCF was poor (5.7%). Caregivers' family type ( $p=0.003$ ) was significantly associated with knowledge of recommended IYCF and caregivers' knowledge was also significantly associated with their utilization of the recommended IYCF ( $p<0.001$ ). The prevalence of timely initiation of breastfeeding was 50.3%, exclusive breastfeeding was 63.3% and continual breastfeeding after 1 year was 92.8%. Minimum dietary diversity was low (34.5%). Minimum meal frequency was low among infants 6 to 8 months (20.2%). Minimum acceptable diet was also low among infants 6 to 8 months old (4.5%). Overall caregivers' practice of recommended IYCF was poor (3.7%). Caregivers' practice of recommended IYCF was significantly associated with frequency of child welfare clinic attendance ( $p=0.02$ ).

**Conclusion:** Recommended IYCF knowledge and practice is suboptimal among caregivers in the Nsawam Adoagyiri municipal area. Strengthened education intervention based on formative research will be essential in improving knowledge and practice of IYCF among mothers and caregivers.

**Conflict of Interest:** None

**Keywords:** IYCF; Practices; Knowledge; Breastfeeding; Complementary Feeding

## 674[R] Chemical composition of jam made from cashew (*Anacardium occidentale*), pineapple (*Ananas comosus*), Orange (*Citrus sinensis*) and tomato fruit (*Solanum Lycopersicum*)

Mr Cyril Anoshirike<sup>1</sup>, Miss Chinonye Okoye<sup>1</sup>, Prof Nne Ola Onuoha<sup>1</sup>

<sup>1</sup>University Of Nigeria, Nsukka, Nsukka/ Enugu, Nigeria

**Biography:** Cyril Onyinyechukwu Anoshirike, was born on 19th February 1983, in Owerri North Local Government of Imo State, a citizen of the Federal Republic of Nigeria and a Christian. Cyril is a Lecturer of the department of Nutrition and Dietetics, Faculty of Agriculture, University of Nigeria Nsukka.

**Introduction:** Nutritional quality spread can be produced from fruits and vegetables with high perishable value thereby reducing post harvest losses and maximizing the utilization of the these products.

**Objective:** This study was carried out to determine the chemical composition of Jam made from Cashew (*Anacardium occidentale*), Pineapple (*Ananas comosus*), Orange (*Citrus sinensis*) and Tomato fruit (*Solanum lycopersicum*).

**Methodology:** The fresh Cashew, Pineapple, Orange and Tomato fruits were purchased from local market in Enugu state. The fruits were washed, sorted and processed into juices separately and then used for jams production using a standard procedure. The jams produced from Orange was coded "O", Pineapple "P", Cashew "Q" and Tomato "R", while the commercial jam (Apricot) was coded X. All the jams were subjected to chemical analysis using a standard method. Data obtained were analyzed using SPSS version 23. Statistical analysis was carried out using one-way ANOVA at significant level ( $P<0.05$ ).

**Result:** Sample R was highest in moisture (63.9%), crude fibre (0.29%) and sample Q has the highest ash (0.87%) and fat (36.77%), Sample O had the highest protein (5.96%) and Sample P with carbohydrate (67.83%). Sample R was highest in calcium (0.27%) and highest value of magnesium with sample Q (0.06%), sample P was the highest in Iron content (2.54mg/100g) and sample O with zinc content (1.16mg/100g). Sample R with highest vitamin A content (536.59mg/100g), sample Q has the highest vitamin C content (913.50mg/100g) and sample O has the highest vitamin B9 content (0.33mg/100g). Sample P was highest in both Tannin (0.18%) and flavonoid (3.52%). Sample R was the highest in phytate (0.01%) and Sample O was the highest in oxalate (0.12%).

**Conclusion:** The results revealed that these fruit jams contain limited amount of protein, rich in vitamins and minerals and with an appreciable amount of anti-nutrient contents.

**Conflict of Interest:** None

**Keywords:** chemical composition, fruit jam. fresh

## 347[R] Children and women vulnerability to the right to food in the Umlazi township, KwaZulu-Natal, South Africa

Dr Annette Van Onselen<sup>1</sup>, Dr Bukasa Andy Mpiana<sup>2</sup>, Prof Unathi Kolanisi<sup>3</sup>

<sup>1</sup>Sefako Makgatho Health Sciences University, Pretoria, South Africa, <sup>2</sup>PhD candidate, SAEES, University of KwaZulu-Natal, Pietermaritzburg, South Africa, <sup>3</sup>Consumer Sciences, School of Science and Agriculture, University of Zululand, Richards Bay, South Africa

**Biography:** I have more than 25 years' experience. During this time, I have mainly functioned in managerial positions, training and specializing in developing necessary structures. I have gained some knowledge and experience in the South African National Defence Force (SANDF) as well as private sector. I have been an Assistant Director a 10-year period where I gained extensive exposure to management functions and was responsible for the implementation of Health Programs for the entire Free State region.

For the past fifteen years I have been functioning as a consultant research dietitian for the Central University of Technology of the Free State, lectured at the University of KwaZulu-Natal, Pietermaritzburg, and am currently employed as Senior Lecturer at Sefako Makgatho Health Sciences University, South Africa. I have obtained extensive experience in research, nutritional health and community projects. My passion for health and wellbeing of communities/individuals and my ability to interpret policy into practical solutions is my passion. I have obtained the following qualifications:

- A National Diploma in Food Service from Tshwane Technicon.
- A BSc Degree in Dietetics from the University of the Free State (UFS).
- An MSc Degree in Dietetics from UFS.
- A PhD Degree in Dietetics from UFS

**Introduction:** The "right to food" is a fundamental human right firmly established in the Convention on the Rights of the Child (CRC). Non-realization of the right to food can be perceived as disrespectful towards vulnerable groups like children. The right to food has to be fulfilled and protected.

**Objectives:** The aim of this study was to assess caregivers' awareness of their right to food as a factor towards achieving food and nutrition security in Umlazi Township, KwaZulu-Natal.

**Method:** A cross-sectional descriptive study was carried out to assess women's and children's vulnerability to food and nutrition security. Stratified sampling was conducted in selected 120 women and 120 children.

**Results:** At the cut-off level of <-3 SD of Z-scores, 34% of children were severely underweight, 48.3% were severely stunted and 12.5% were severely wasted. Nearly a third (30.8%) of mothers were classified as being obese (class I). Children between 0–6 months who were exclusively breastfeeding were 20%. Interestingly, the prevalence of initiating breastfeeding was 92% with only 20% practicing exclusive breastfeeding. Overwhelmingly, 89.2% of mothers received a "child support grant", 5.8% "disability grant" and 0.8% received "pensioner's grant".

**Conclusion:** It could, therefore, be found that the socio-economic status of the mother compromises and exposes the child to food-nutrition insecurity. More so, this study highlights the importance of addressing obesity which contributes to the high burden to public health and could potentially endanger food security. Nutritional status, food security status and health status of women and children can be used as the outcome indicators of the right to food.

**Conflict of Interest:** None

**Keywords:** Obesity, food insecurity, human rights, breastfeeding

## 125[R] Clinical registered dietitian nutritionists identified a reduction in the number of defining characteristics for prevalent nutrition diagnoses in an acute care setting: A content validation study

Dr Nancy Hake-Smith<sup>1</sup>, Dr Paula Ritter-Gooder<sup>2</sup>

<sup>1</sup>Bryan Health, Lincoln, United States, <sup>2</sup>University of Nebraska-Lincoln, Lincoln, United States

**Biography:** Dr. Hake-Smith is Founding Clinical Nutrition Manager of the Advanced Clinical Nutrition Practice System at Bryan Health, Lincoln, Nebraska. She completed her Ph.D. in nutrition at the University of Nebraska-Lincoln where her research included development of an instrument to evaluate documentation of the nutrition care process and outcomes. She has more than twenty-five years of experience with designing, implementing, and evaluating advanced clinical systems, and providing education and clinical experiences, to support clinical nutrition practitioners' in their use and documentation of the nutrition care process (NCP)/standardized language and performing the nutrition-focused physical examination. Her vision is to design data sets for clinical nutrition practice and management and use information technology to capture the practitioner's role in the growing body of healthcare effectiveness research. She has conducted and published original research and presented nationally and internationally at the American Society for Nutrition, FNCE, and ICD on implementation of the NCP. She received the 2006 First Author Published Paper Award, American Dietetic Association, Research Dietetic Practice Group. She is a current member of the NCPT advisory workgroup, past chair of the Clinical Nutrition Management Dietetic Practice Group and past member of the AND NCP/Standardized Language Committee, Research Committee and CDR Appeals Panel.

**Introduction:** Content validation studies of nutrition diagnoses (ND) in acute care practice that identify critical characteristics for making an accurate ND are limited. Clinical registered dietitian nutritionists (CRDNs) at an American Mid-western acute health care system, identified frequently used ND (Nutrition Care Process Terminology) and content validated the defining characteristics. Validation of defining characteristics may reduce the number of characteristics required to make accurate diagnoses, essential for determining successful interventions that lead to positive patient outcomes.

**Methods:** A descriptive research design using a two-phase survey methodology was conducted among RDNs (n=7) with clinical experience and knowledge of ND. The first phase collected frequency of use of 84 diagnoses with a 4-point Likert scale instrument. Descriptive stats were used to identify prevalent ND. In the second phase, the content validity of the characteristics of the frequently used diagnoses was rated with a Nutrition Diagnoses Validation Instrument (NDVI) containing a 4-point Likert scale. Diagnostic content validity (DCV) scores using weighted means were calculated. Results: The CRDNs had 13.29±5.09 years of clinical experience and 12.57±5.26 years using NDs at the study site. Nineteen NDs were rated as used frequently. The DCV scores of 264 diagnostic characteristics for the 19 diagnoses ranged from 0.32 to 1.00 (DCV scores of ≥0.80 met criteria for critical characteristics). Twenty-four percent (n=64) of the characteristics had DCV scores of ≥ 0.80, with an average of 3.36 critical characteristics for each ND. Conclusion: CRDNs identified 19 ND as prevalent with an average of 3.36 critical characteristics for each ND. The reduced number of validated characteristics for the 19 ND is clinically useful for making an accurate diagnosis. Although the small sample size limits generalization of the findings, it contributes important information about the diagnoses descriptive in this area of practice.

**Conflict of Interest:** The authors have disclosed that they have no significant relationships with, or financial interest in, any commercial companies pertaining to this article.

**Keywords:** nutrition diagnoses; defining characteristics; content validity; accuracy

## 22[R] Code of ethics and civility pledge: respect for values

Ms Mary Russell<sup>1</sup>

<sup>1</sup>Academy Of Nutrition And Dietetics, Chicago, United States

**Biography:** Mary Russell is a lecturer at the Rosalind Franklin University of Medicine and Science. Previously, she was a medical science liaison at Baxter Healthcare Corporation, director of the department of clinical nutrition at the University of Chicago Medical Center and director of nutrition services at Duke University Hospital, where she also served for nearly 10 years as an adult nutrition support team dietitian clinician.

She is a former president of the Academy of Nutrition and Dietetics, a Fellow of the Academy of Nutrition and Dietetic, and a Fellow of the American Society for Parenteral and Enteral Nutrition.

She is a past member of the Academy House of Delegates and the Academy Foundation's Board; past chair of the Dietitians in Nutrition Support dietetic practice group; and past president of the North Carolina Dietetic Association. She has authored journal articles and book chapters, and has spoken nationally and internationally on nutrition support and on ethics.

She earned a bachelor of science in Medical Technology from Marquette University and master of science in Nutritional Sciences from the University of Wisconsin-Madison, both in the United States.

The Academy of Nutrition and Dietetics (Academy) and its credentialing agency, the Commission on Dietetic Registration (CDR), believe it is in the best interest of the profession and the public it serves to have a Code of Ethics in place that provides guidance to nutrition and dietetics practitioners in their professional practice and conduct.

Nutrition and dietetics practitioners have adopted a Code of Ethics (Code) to reflect the values and ethical principles guiding the profession. The Code sets forth commitments and obligations of the nutrition and dietetics practitioner to the public, the profession and all others to which they provide service. The current Code, comprised of 4 main principles and 32 accompanying standards, was approved by the Academy Board of Directors and CDR effective June 1, 2018.

In October 2017, the Academy's Food & Nutrition Magazine® launched the Pledge of Professional Civility campaign ([foodandnutrition.org/professionalcivility](http://foodandnutrition.org/professionalcivility)) to help foster camaraderie among our professional community and encourage constructive engagement among peers.

The Pledge complements the Academy's Code of Ethics by supporting the tenet that nutrition and dietetics practitioners demonstrate respect for the values, rights, knowledge and skills of colleagues and other professionals. This voluntary pledge is a public commitment to the civil treatment of professional peers. Members are encouraged to take the pledge and abide by its guiding principles:

- to treat peers with courtesy and respect;
- to support productive dialogue and positive engagement;
- to discourage public criticism and belittling of colleagues;
- to model professional conduct.

This presentation will define "ethics" and list the core values nutrition and dietetics practitioners must adhere to, review issues where practitioners will need to make ethical decisions, how to determine what is an ethics violation and how to report it, and explain the Pledge of Professional Civility.

**Conflict of Interest:** None

**Keywords:** Ethics; professional practice; professional conduct; core values; pledge of civility

## 21[R] Comparison of dietary and plasma phospholipid fatty acids between normal weight and overweight black South Africans according to metabolic health: The PURE study

Dr Alice Ojwang<sup>1,2</sup>, Prof. Cornelius Smuts<sup>1</sup>, Dr. Manja Zec<sup>1,3</sup>, Prof. Edelweiss Wentzel-Viljoen<sup>1</sup>, Prof. Iolanthe Kruger<sup>1</sup>, Prof. Herculina Kruger<sup>1,5</sup>

<sup>1</sup>Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, <sup>2</sup>Technical University of Kenya, Nairobi, Kenya, <sup>3</sup>Centre of Excellence in Nutrition and Metabolism, Institute for Medical Research, University of Belgrade, Belgrade, Serbia, <sup>4</sup>Africa Unit for Transdisciplinary Health Research, North-West University, Potchefstroom, South Africa, <sup>5</sup>MRC Extra Mural Unit: Hypertension and CVD, North-West University, Potchefstroom, South Africa

**Biography:** Kenyan born, Alice Achieng Ojwang is a Nutrition and health professional with a doctorate degree in Dietetics from Centre of Excellence for Nutrition, North-West University, South Africa.

During her profession straddling up to 20 years, as nutrition and dietetic consultant – She has been instrumental in shaping the direction of dietetics profession in Kenya. Dr. Ojwang worked closely with the private sector and Ministry of health. As a private practitioner, Dr. Ojwang set up the first, dietetic practice in Kenya and created awareness of obesity and its associated risk factors. With a Doctoral degree in dietetics, her areas of focus include dietetic related research and health education/promotion in obesity and metabolic syndrome, diet and its influence in women's economic empowerment, worksite wellness interventions, the economic burden of obesity and its related risk factors, impact of diet on health as well as prevention and management of chronic conditions. She continues to mentor young nutrition/dietetic professionals in Africa and share herself to grow professionally with her peers. Dr. Ojwang serves as a lifestyle activist to prevent chronic diseases and improve quality of life by creating awareness of diet and health. She is lecturer, at the Technical University of Kenya, Nairobi-Kenya.

**Background:** Information regarding circulating fatty acids (FA) in association with metabolic health in black Africans is scarce, while the usefulness of circulating FAs as biomarkers of dietary fat intake and predictors for medical conditions is advancing globally.

**Objective:** We compared the levels of eleven dietary and 26 plasma phospholipid FAs in metabolically healthy and unhealthy phenotypes in black South African adults.

**Methods:** Adults from the South African arm of the Prospective Urban and Rural Epidemiology study baseline (n=711) were categorised into four groups, namely normal weight without metabolic syndrome (MetS) (MHNW), normal weight with MetS (MUNW), metabolically healthy overweight/obese (MHO) and metabolically unhealthy overweight/obese (MUO). Dietary and plasma phospholipid FAs were measured by a quantitative food frequency questionnaire and gas chromatography-tandem mass spectrometry, respectively. We compared dietary FAs, plasma phospholipid FAs and estimated desaturase activity between the metabolic status groups using ANCOVA adjusted for age and energy intake.

**Results:** MetS was present in 35% of the participants. After adjustment for age and total energy intake, in comparison to the MHNW reference group, dietary saturated FAs (C14:0 to C18:0) and alpha-linolenic acid intakes were higher in both overweight/obese groups (MHO and MUO), while linoleic acid intakes were higher in the MUO group only. Plasma levels of most saturated FAs (C18:0 to C22:0) and PUFAs were higher, whereas selected MUFAs, palmitic acid and estimated desaturase activities were lower in the overweight/obese groups.

**Conclusions:** The overweight groups generally had higher fat intakes than normal weight groups, but lower plasma levels of de novo lipogenesis pathway FAs and estimated desaturase activities. Therefore, lower plasma levels of de novo lipogenesis pathway FAs and decreased estimated desaturase activities may be biomarkers of abnormal metabolic health in overweight/obese study participants.

**Conflict of Interest:** Authors declare no competing interests.

**Keywords:** Black Africans, dietary fatty acids, plasma phospholipid fatty acids, metabolically healthy and unhealthy phenotypes

## 114[R] Comparison of Mid-Upper Arm Circumference and Screening Tool for Risk of Impaired Nutritional Status and Growth in malnutrition risk assessment of paediatric in-patients

Mr Eric Komla Anku<sup>3</sup>, Dr Joana Ainuson-Quampah<sup>2</sup>, Mrs Harriet Adu-Amoah<sup>1</sup>

<sup>1</sup>FOCOS Orthopaedic Hospital, Accra, Ghana, <sup>2</sup>University of Ghana, Accra, Ghana, <sup>3</sup>Cape Coast Teaching Hospital, Ghana

**Biography:** Eric Komla Anku is a clinical dietitian at the Cape Coast Teaching Hospital in the Central Region of Ghana. He also has a background in public health.

His research interest includes malnutrition in the clinical setting and sarcopenia among hospitalised adults. As a data and R enthusiast, he hopes to be at the forefront of using clinical health data to improve healthcare in Ghana specifically in the area of clinical nutrition and public health. Eric aspires to become a research dietitian and a professor of clinical nutrition.

**Introduction:** Malnutrition, though a common phenomenon, is often undetected among hospitalized children leading to prolonged hospital stay and other medical complications. The study aimed at comparing the validity of the Screening Tool for Risk of Impaired Nutritional Status and Growth (STRONGkids) and Mid-Upper Arm Circumference (MUAC) in malnutrition risk assessment of paediatric in-patients.

**Methods:** A cross-sectional study design was used in this study. Ninety-six participants (M=57; F=39) between the ages of 6 months and 60 months were selected. Data on demographics, admission details, and anthropometry were collected using a structured questionnaire. Additionally, STRONGkids questionnaire and MUAC assessment tool were used to assess the risk of malnutrition. Also, kappa value was used to calculate the inter-rater agreement of STRONGkids. Sensitivity (Sn), specificity (Sp), positive predictive value (PPV), and negative predictive value (NPV) were used to determine validity of the two tools compared to weight-for-height (WFH) z-scores.

**Results:** Acute malnutrition defined by WFH z-score was found to be 35%. A total of 58 (60%) children were identified to be at risk of malnutrition by STRONGkids whilst, eighteen children (19%) were identified by MUAC. In comparison with the reference standard, sensitivity, and specificity of STRONGkids were 68% (95%CI; 0.52-0.83) and 44% (95%CI; 0.31-0.56) respectively and that of MUAC were 38% (95%CI; 0.22-0.55) and 92% (95%CI; 0.85-0.99) respectively. The positive and negative predictive values of STRONGkids was 40% (95%CI; 0.27-0.52) and 71% (95%CI; 0.57-0.85) respectively and that of MUAC was 72% (95%CI; 0.52-0.93) and 73% (95%CI; 0.63-0.83) respectively. Moderate inter-rater agreement (0.57, p=0.006) was found between observations for STRONGkids.

**Conclusion:** STRONGkids is a more sensitive tool for predicting malnutrition whereas MUAC is more specific. The degree of validity of STRONGkids was low (Sn, Sp, PPV, NPV) whereas MUAC was between low (Sn, PPV, NPV) to high (Sp) based on an established grading system

**Conflict of Interest:** None

**Keywords:** malnutrition risk, malnutrition, STRONGkids, MUAC

## 514[R] Cost of the diet is associated with dietary diversity and nutrient adequacy and children aged 12 to 24 months

Ms Tshavhuyo Audry Mulabisano<sup>1</sup>, Dr Marinel Rothman<sup>3</sup>, Mrs Ria Laubscher<sup>1</sup>, Prof Cornelius M. Smuts<sup>2</sup>, Prof Mieke Faber<sup>1,2</sup>

<sup>1</sup>South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>North-West University, Potchefstroom, South Africa, <sup>3</sup>University of Pretoria, Pretoria, South Africa

**Biography:** BSc Nutrition degree from the University Venda and currently an NRF-intern at the South African Medical Research Council.

**Introduction:** Children less than 2 years of age have high nutrient needs to support growth and development, and therefore need nutrient dense foods. It has been documented that a varied diet is significantly associated with micronutrient adequacy in young children.

**Objective:** To determine the association of cost of the diet with dietary diversity and nutrient adequacy for breastfed and non-breastfed children aged between 12 to 24 months in resource-poor settings.

**Methods:** Data of previously collected 24-hour dietary recalls data were pooled. The 24-hour recalls were recoded to ensure that coding was standardized. Food intake data in the pooled dataset was converted to energy and nutrients using Stata software and the 2017 South African Food Composition Database, which includes an updated section on infant foods. A dietary diversity score was calculated based on seven food groups. The mean nutrient adequacy ratio was calculated as an average of the nutrient adequacy ratios (ratio of nutrient intake relative to nutrient requirement; capped at 1) of the individual nutrients of interest. Cost of total dietary intake was calculated. Associations were determined using Spearman's correlation analysis. P<0.05 was considered statistically significant.

**Results :** The dataset included 812 breastfed and 938 non-breastfed 12-24-month-old children. The median number of food groups consumed was three. A higher dietary diversity score was associated with higher mean adequacy ratio (breastfed r=0.248; non-breastfed r=0.390). Cost of the diet was positively associated with the dietary diversity score (breastfed r=0.485; non-breastfed r=0.452) and mean adequate ratio (breastfed r=0.657; non-breastfed r=0.697).

**Conclusion:** To improve nutrient adequacy, children should consume a more varied diet. In low socio-economic settings this may however be a challenge, as dietary diversity was shown to be associated with cost of the diet.

**Conflict of Interest:** none

**Keywords:** Dietary diversity, Nutrient adequacy, Cost

## 124[R] Cultivating healthier eating behaviors among Haitian women farmers by combining nutrition education with introduction of Asian spinach

Dr Elizabeth Gollub<sup>1</sup>, Dr. David Diehl<sup>2</sup>, Ms. Anne Gilot<sup>3</sup>, Dr. Thanos Gentimis<sup>4</sup>

<sup>1</sup>Louisiana State University Agricultural Center, School of Nutrition and Food Sciences, Baton Rouge, United States, <sup>2</sup>University of Florida, Institute of Food and Agricultural Sciences, Department of Family, Youth and Community Sciences, Gainesville, United States, <sup>3</sup>University of Florida, Institute of Food and Agricultural Sciences, AREA Project, Gainesville, United States, <sup>4</sup>Louisiana State University Agricultural Center, Experimental Statistics, Baton Rouge, United States

**Biography:** Dr. Elizabeth Gollub, an Assistant Professor in the School of Nutrition and Food Sciences, LSU AgCenter, works closely with individuals, communities, and organizations to develop, implement, and assess innovative approaches to creating healthier environments, changing social norms, and diminishing health disparities. Through community nutrition programs and evaluation research, Dr. Gollub focuses on strategies aimed at routinizing healthier eating and physical activity behaviors while exploring the impact on health and quality of life.

Dr. Elizabeth Gollub earned her PhD in Nutrition and Dietetics from Florida International University's National Resource Center on Nutrition, Physical Activity, and Aging. She holds a Master of Public Health degree from the University of North Carolina, Chapel Hill, she is a Registered Dietitian with a Certificate of Training in Adult Weight Management and she is a Certified Health Coach.

**Introduction:** Haiti is a country with high rates of undernutrition, especially among women and children. Asian spinach, an easily cultivated, nutrient rich, green leafy vegetable, was introduced to women's farming collectives in conjunction with nutrition education training, to motivate consumption among women and their children.

**Objectives:** To determine effectiveness of training on nutrition knowledge, general and specific to Asian spinach. To determine influence of training on planting and consumption of Asian spinach.

**Methods:** The nutrition training was developed to highlight basic nutrition concepts; nutrient content of Asian spinach; relationship of nutrients to growth and health; relevance to women and children. Training included food hygiene, spinach preparation techniques, tastings, planting instruction and demonstration. Spinach seeds and soil pellets were distributed. The training was conducted in two regions. Participants were recruited through local women-only farmer associations. A pre-post statistical analysis was used to capture knowledge change and descriptions of current and intended practices. Behavior change such as growing, hygienically preparing, and consuming Asian spinach will be captured through a 6-month follow-up (November 2019).

**Results:** A total of 132 women participated; 127 pre-training and 130 post-training surveys were collected. Overall, there was a significant increase ( $p < 0.0001$ ) in mean score (61% to 82%) on the 5-item knowledge-based questionnaire; improvement ( $p < 0.0001$ ) was also demonstrated for items specific to Asian spinach. Pre-training, 82% of participants reported washing vegetables prior to cooking; 46% reported washing hands; 58% reported adding leafy vegetables to family meals; 68% prioritized healthy meals over enjoyable meals or just feeding the family. All participants tasted Asian spinach for the first time. Post-training, 93% intended to grow Asian spinach with 83% intending to add this vegetable to meals over the next few months.

**Conclusions:** The training provided information that increased nutrition knowledge and positively influenced intentions to grow and consume Asian spinach among participants.

**Conflict of Interest:** None

**Keywords:** nutrition education; women farmers; spinach

## 71[R] Cultural food security: What is it and what do dietitians need to know?

Dr Jennifer Brady<sup>1</sup>

<sup>1</sup>Mount Saint Vincent University, Halifax, Canada

**Biography:** Jennifer Brady is a Registered Dietitian and Assistant Professor at Mount Saint Vincent University in Halifax, Nova Scotia, Canada. Her work draws on mixed and qualitative methods to explore critical perspectives of food, nutrition, and health.

**Introduction:** Power (2008) asserts that cultural food security is an important social justice concern that lies beyond income-related individual, household, or community food insecurity (95). Similarly, having an occupation is as important as access to cultural food and foodways in defining identity and connecting individuals to their communities.<sup>1,2</sup> Nowhere are these connections to cultural food, foodways, and occupation more threatened than in the lives of newcomers (i.e. immigrants and refugees).

**Methods:** This research was conducted in partnership with Common Roots Urban Farm in Halifax, Nova Scotia, Canada, and used semi-structured qualitative interviews to explore cultural food insecurity from the perspective of newcomers and individuals within organizations that provide newcomer settlement services.

**Results:** Analysis of one-on-one interviews with service providers (n=10) and newcomers (n=12) resulted in three key issues relevant to cultural food security for newcomers: 1) Access to culturally appropriate foods; 2) desire for land to grow foods; 3) Informal economy.

**Conclusions:** Cultural food security is an important issue that is crucial to food security and settlement of newcomers, and that also exists beyond experiences of income-related food insecurity. Finding ways to enhance cultural food security has potential for social just food systems change and occupational justice by providing economic and community development, as well as agricultural diversity. Understanding newcomers' experiences of cultural food insecurity is important for dietitians working with this population.

**Conflict of Interest:** None

**Keywords:** Immigrants, refugees, food security, culture

## 197[R] Cultural tool for weight control

Mrs Patricia Thompson<sup>1</sup>

<sup>1</sup>CANDi, Port of Spain, Caribbean, <sup>2</sup>Jamaica Island Nutrition Network, Kingston  
<sup>6</sup>, Jamaica

**Biography:** Patricia Thompson is a Registered Nutritionist in Jamaica practicing for over 40 years in consulting (community and school nutrition programmes), private practice and education (university lecturer). She served as the Chairperson for the advisory committee at the University of Technology (UTech) for the 4-year degree course in Dietetics and Nutrition up until 2013. Patricia has presented papers at several local, regional and international conferences (including ICDA). She promotes the use of Caribbean and tropical foods for healthy eating and has published in peer-reviewed journals and authored several books, chapters and learning aids on nutrition at all educational levels.

Patricia is a former Nutrition Educator with the Caribbean Food and Nutrition Institute (CFNI)/Pan American Health Organization (PAHO) and also served on many projects sponsored by international agencies such as USAID, World Bank and IDB. Her professional activities include positions of Past President and Vice President of the Caribbean Association of Nutritionists and Dietitians (CANDi) and the Jamaica Association of Professionals in Nutrition and Dietetics (JAPINAD). She is also a member of the Academy of Nutrition and Dietetics (A.N.D.) and is credentialed as a School Nutrition Specialist (SNS) with the US School Nutrition Association.

**Introduction:** The common language of nutrition is in the realm of science – i.e. nutrients and nutrient requirements. However, this must be translated into foods and eating behaviour. This falls in the realm of culture which has many challenges, foremost of which is quantifying foods in the raw, cooked or combined state to convey calorie balance – leading to weight control. The first Caribbean food exchange list was based on servings similar to the US standards but applicable to locally available and familiar Caribbean foods. This was published as a M.Sc. Nutrition research and thesis working with obese patients with type 2 diabetes (Thorbourne, Patricia 1975). This data was compiled in the publication of the Caribbean Food and Nutrition Institute (CFNI 1980) as Meal Planning for Diabetes and this document is used even today although the CFNI has closed down.

**Methods:** Twenty (20) years later after many counselling encounters and grappling with the challenges of nutrition semi-literacy, eating patterns and modern influences, a new tool was developed with different serving sizes and applications tested with private practice clientele using the Caribbean food groups in meal planning. This led to the UNIT calorie counting tool depicting portion equivalents. This was introduced to the Jamaican medical community and later nutrition professionals in a new publication entitled “The Caribbean Calorie Counter and Conscious Eating Guide” (Thompson, Patricia 2012).

**Results:** The Ministry of Health, Jamaica accepted this approach for application in its clinics in 2018 to replace the old system and training was conducted with the nutrition professionals across Jamaica.

**Conclusion:** This presentation summarizes the comparative evaluation acceptability results of the two instrument’s use with preference for unit counting.

**Conflict of Interest:** None

**Keywords:** cultural tool, food exchange, calorie counting, portion equivalents

## 407[R] Demonstrated assumptions about individuals identified as dietitians based on appearance, and impacts on patients’ trust

Mrs Majeedah Belding<sup>1,3</sup>, Mr Gerry Kasten<sup>2</sup>

<sup>1</sup>Acadia University, Wolfville, Canada, <sup>2</sup>University of British Columbia, Vancouver, Canada, <sup>3</sup>Stirling University, ,

**Biography:** Majeedah Belding is a registered dietitian with a Bachelor of Science in Nutrition with Honours from Acadia University. While attending Acadia, she had to opportunity to specialize in sports nutrition and has been the recipient of an undergraduate research excellence award. This has led to the completion of the IOC Diploma in Sports Nutrition and is currently completing a Masters of Science in Sports Nutrition at the University of Stirling.

In addition to private practice, Majeedah has worked as a clinical dietitian in a centre for mental health care, and long-term care. She also has a strong interest in food security and food waste.

Although she is new to the field of nutrition and dietetics, she has already presented posters at conferences, a speaker at a fitness summit, a TEDx presenter, and a peer reviewer for the Canadian Journal of Dietetics practice and research.

Not one to shy away from difficult topics, she has pursued the topic of weight bias towards dietitians, which often evokes strong emotions and thoughts. The interest arose from her own personal experiences and observations. Despite the mixed reception, she feels it is an important topic to address.

**Introduction:** There is a large body of evidence indicating the negative impacts of patient care by health professionals who demonstrate weight bias. There is very little research investigating implications on patient care and trust if the health professional is the recipient of weight bias.

**Methods:** An anonymous online survey was created and circulated recruiting 1289 participants. Participants were asked to answer the same four questions about two individuals identified as dietitians based on the corresponding images provided. The individuals pictured were wearing the same outfit, had the same background, and did not include faces, to limit the differences between the images. One individual had a BMI > 30, the other had a BMI < 25.

**Results:** Our findings were that many judgements and assumptions were made about each individual based on their appearance. Participants were asked to provide 3 words or phrases about the images. The main themes that emerged, in descending order, were: weight, wardrobe, identity, health status, lifestyle, open bias, age, and credibility. The respondents were asked if they would be confident with the nutritional recommendations about specific medical conditions, nutritional recommendations about general healthy eating, and confidence consulting with the dietitian. The participants replied positively for the BMI >30, 84.2%, 65.0%, 65.9 and the BMI <25, 92.7%, 93.1%, 89.4% respectively.

**Conclusion:** The participants had lower levels of confidence consulting the dietitian with a BMI >30. There is a very small number of participants who would prefer to consult with the dietitian with a BMI > 30. This preliminary data provides more insight into the snap judgements made about a dietitian’s appearance and how that may affect the efficacy of their recommendations. Identifying that there is a weight bias towards dietitians, and it is more than just anecdotal evidence is a starting point to address the issue.

**Conflict of Interest:** None

**Keywords:** Weight bias; Weight stigma; Overweight; Registered Dietitian

## 710[R] Determination of sodium, potassium, calcium and magnesium contents of restaurant vended lunch meals on KNUST campus

Mr Collins Afriyie Appiah<sup>1</sup>, Ms Priscilla Adjei<sup>1</sup>, Mr Brown Mendel<sup>1</sup>

<sup>1</sup>Department Of Biochemistry And Biotechnology, College Of Science, Kwame Nkrumah University Of Science And Technology, Kumasi, Ghana

**Biography:** Mr. Collins Afriyie Appiah is an Assistant Lecturer and a registered dietitian at the Department of Biochemistry and Biotechnology, Kwame Nkrumah University of Science and Technology, Ghana

**Background:** Excessive sodium intake and inadequate potassium, calcium and magnesium intakes have been shown to increase blood pressure. Some restaurant vended meals tend to have high fats, sugar and salt with minimal beneficial micronutrients thus, posing deleterious effects on health particularly cardiovascular disease.

**Aim:** This research sought to determine the sodium, potassium, magnesium and calcium contents of restaurant vended lunch meals on KNUST campus.

**Method:** Through convenience sampling, (15) different food samples, five from each of the three restaurants (A, B and C) were homogenized to obtain a representative of the bulk sample and wet digested using strong acids and oxidizing agents (nitric acid, per chloric acid and sulphuric acid) to completely digest all organic matter present under specified standard procedures. Atomic Absorption Spectrophotometry was carried out in analyzing the mineral contents by measuring absorbance at wavelengths characteristic to the selected minerals for all food samples.

**Results:** Restaurant A amongst the other two restaurants (B and C) recorded the highest sodium (14.10 mg/100 g), potassium (14.47 mg/100 g), calcium (5.91 mg/100 g) and magnesium (90.32 mg/100 g) contents. Average sodium (126.54 mg), potassium (136.08 mg) and calcium (45.09 mg) contents per total weight of food samples in all three restaurants were found to be below one-third the Recommended Dietary Allowance (RDA) (766.67 mg/day), (1566.67 mg/day) and (333.33 mg/day) correspondingly whilst magnesium levels (852.72 mg) exceeded one-third of the RDA (106.67-140 mg/day). At 95% confidence level and  $\alpha$ -value = 0.05, ( $p > 0.05$ ) was recorded when the average mineral contents (sodium, potassium, calcium and magnesium) of food samples by restaurants were determined.

**Conclusion:** The study found that restaurant vended lunch meals, had low amounts of sodium, potassium and calcium, and high amounts of magnesium.

**Conflict of Interest:** None

**Keywords:** Sodium, potassium, calcium, magnesium, restaurant-meals

## 627[R] Determining utilisation of the Road to Health Booklet(RTHB) to assess nutrition status of children 6-60 months old in Mangaung Metropolitan Municipality Clinics, Free State Province

Ms Patience Legoale<sup>1</sup>

<sup>1</sup>Free State Department Of Health, Bloemfontein, South Africa

**Biography:** Nutrition - Turfloop University

Finalise Masters in Dietetics – Sefako Makgatho Health Science University

Short courses: Advanced Diabetes Management, Project Management, Sales & Marketing

1998 June – 2000 Dec: West Rand Regional Health Office – Community Dietitian

2001 Jan – 2004 Feb: Free State Provincial Health Department – Assistant Director: Nutrition

2004 Mar – 2010 Oct: Free State Education Department – Project Manager: NSNP

2010 Nov – 2011 Oct: Private Practice in Mangaung Metro: Dietitian

2012 Nov – 2013 Dec: Programme of Advanced Technology in Health (PATH): Nutrition Technical Advisor

2014 Jan – 2016 July: Private Practice: Dietitian

2016 Aug – 2017 Sept: University Research Company(URC) Assist: Nutrition Officer

Start date – present

2017 October – present: Free State Provincial office- Deputy Director: Dietetics

**Introduction:** The Child Healthcare Problem Identification Programme (CHPIP) 2016 report indicated that in South Africa, 24% of all children aged 1 to 5 years who died had unknown nutrition status. The optimal use of RTHB and its nutrition indicators especially Weight-for-Length/Height (WfLH), Length/Height-for-Age (LHfA) and Mid-Upper-Arm-Circumference (MUAC) in the Free State Province are not confirmed.

**Objectives:** To determine the utilisation of the RTHB for nutrition assessment of children by auditing the RTHB. To validate ability of the clinics to utilise the RTHB by assessing availability of required resources. Method: A descriptive quantitative study was conducted using a structured questionnaire for child health nurse in 26 clinics and a checklist to audit 264 RTHB between February and August 2018.

**Results:** Data was analysed using STATA software version 13. The last weight was measured and recorded in most (95.45%) RTHB, no recording of last length in 55.69% (n=147). The last MUAC recorded in 42.05% (n=111). The graph of WfA plotted routinely in most (91.29%, n=241). The plotting of LHfA done in few (37.5%, n=99). The plotting of WfLH done in few (30.68%, n=81). None of the RTHB have noted the interpretation/classification of the MUAC, WfA, WfLH and LHfA. Most (96.15%, n=25) clinics are resourceful, had trained staff on the utilisation of the RTHB between 2012 and 2014, had all functioning anthropometric equipment and tools for children below 24 months as well as above 24 months.

**Conclusion:** The RTHB is not optimally utilised for nutrition assessments which results to delayed or missed identification of wasting, overweight and stunting in children.

**Recommendations:** To strengthen monthly audit of the RTHB as a routine indicator in the Key Performance Area of Dietitians and Local Area Manager.

**Conflict of Interest:** None

**Keywords:** WHO Child Growth Standards, Growth monitoring, Road-to-Health-Booklet in under fives

## 689[R] Developing a parent caregiver support package to strengthen the 1st 1000 days Initiative in the Western Cape province

Dr Hilary Goeiman, Dr Elmarie Malek, Ms Elizabeth Pegram

<sup>1</sup>Western Cape Government: Health, Cape Town, South Africa

**Biography:** Hilary Denise Goeiman is a registered Dietitian with the Health Professions Council of South Africa. She is the Deputy Director of the Integrated Nutrition Programme at the Western Cape Health Department with a Masters in Nutrition (SU) and a PhD in Public Health (UWC). She is an experienced and public health practitioner with over 27 years in the public health sector, functioning at different levels of the health service including operations, health programmes and policy. In the last 15 years, she has operated at policy level in health programmes (working across the areas of maternal, child and women's health). She has led and participated in many projects (facility and community-based) including conferences, and has co-authored scientific papers and posters.

Currently, she is the provincial nutrition manager and project manager for the Western Cape Province's First 1000 Days Initiative. She is the chairperson of the executive committee responsible for the conceptualisation, launch and development of a "Theory of Change", as well as implementing activities and the alignment of strategy with services. The initiative is one of the strategic priorities working with multiple stakeholders to increase wellness, safety and tackle social ills utilising a "Whole of Society Approach".

**Introduction:** The period from conception to 2 years of age, has been shown to provide a unique opportunity to shape healthier and prosperous futures. Environmental influences have a huge impact on the rapid developing brains of children. The 1st 1000 days initiative has been implemented in the Western Cape as a transversal project with the aim to improve maternal, neonatal and child outcomes (including nutrition as a key element) and to support mothers, caregivers and families in this early life course period.

**Methods:** Strategically the First 1000 days has been aligned and integrated in health services using a systemic intervention framework of Survive, Thrive and Transform to improve outcomes. Implementation of the FTD is taking place in learning sites following the life course and using the whole of society approach (WoSA). Ongoing iterative processes are followed through adaptation, learning and reflection as experienced in the learning sites, alignment of interventions in services through service redesign initiatives and incorporation of new evidence. Working together with internal and external stakeholders has been key in the development of a parent/caregiver support package to ensure integration of programmes and services in community.

**Results:** A parent caregiver support package has been developed in the province bringing together 7 interrelated components, integrating services including both facility and community based activities. The components include the following; communication; risk assessment, referral and support; Implementation of Side by Side under 5-year campaign and new Road to Health Booklet; Parent support at health facility touch points antenatally and postnatally; Home and community touch points for family relationship support; Staff training & support and capturing and sharing learnings.

**Conclusions:** Through this collaborative learning process, a platform for exploring the fit and feasibility of a support package to strengthen the first 1000 days Initiative in the Western Cape was possible.

**Conflict of Interest:** None

**Keywords:** First 1000 days; Nurturing care; Nutrition and health; Nurture Care and Support; Safety protection and stimulation

## 182[R] Developing a standardized language to document diagnostic and treatment data

Mrs Sytske Runia<sup>1,2</sup>, Mrs Willy Visser<sup>2,3</sup>, Dr Yvonne Heerkens<sup>2,4,5</sup>

<sup>1</sup>Department of Dietetics, University Medical Center Utrecht, Utrecht, the Netherlands, <sup>2</sup>Member Expert Group, Dutch Association of Dietitians, Houten, the Netherlands, <sup>3</sup>Department of Dietetics, Leiden University Medical Center, Leiden, the Netherlands, <sup>4</sup>Department Occupation & Health, HAN University of Applied Sciences, Nijmegen, the Netherlands, <sup>5</sup>Dutch Institute of Allied Health Care, Amersfoort, the Netherlands

**Biography:** Sytske Runia is a dietitian and deputy head of the Department of Dietetics at UMC Utrecht, the Netherlands. She has developed and implemented the clinical dietetic care record in the hospital and ensures that the record supports the methodical working of the dietitians in clinical practice. She provides training for dietitians in methodical working and encourages the use of the International Classification of Functioning, Disability and Health (ICF) and the ICF scheme within dietetics at the UMC Utrecht and in the Netherlands. Sytske is also chairman of the expert group Classifications and Code lists of the Dutch Association of Dietitians (NVD). That expert group developed the ICF-dietetics and collaborates with dietitians in Belgium, Germany and Austria to implement the ICF-dietetics in Europe. Sytske publishes regularly in Dutch manuals and journals and is co-author of the publication 'Toward Harmonization of the Nutrition Care Process Terminology and the International Classification of Functioning, Disability and Health-Dietetics: Results of a Mapping Exercise and Implications for Nutrition and Dietetics Practice and Research'. *J Acad Nutr Diet* January 2018

**Introduction:** The International Classification of Functioning, Disability and Health (ICF) of the World Health Organization (WHO), a classification of health and health-related domains, offers a biopsychosocial framework of health and can be used to (multidisciplinary) describe functioning. In the Netherlands the ICF-dietetics is the central part of a set of classifications and code lists especially developed for dietitians (CCD). ICF terms can be used to classify the results of dietetic assessment and to formulate the dietetic diagnosis, treatment goals and outcome measures.

**Methods:** An expert group of dietitians developed the ICF-dietetics based on the ICF/ ICF-CY (International Classification of Functioning, Disability and Health for Children and Youth) and other applicable classifications. Dietitians working in various fields reviewed and provided feedback resulting the most recent edition.

**Results:** The ICF-dietetics includes all the ICF (CY) categories completed with additional categories relevant for dietetic practice. Additionally the expert group developed the Classification of Assistive Products for dietetics (CAPD), which is used to document the instruments and assistive products used by dietitians and clients. Secondly the Classification of Dietetic Interventions (CDI) was developed to document the interventions of the dietetic care process. Finally a code list Dietary treatment goals was developed, providing general terms to formulate dietary treatment goals; general terms describing a desired result of the treatment such as reduction, prevention, improvement or maintaining are combined with specific ICF terms.

**Conclusion:** The CCD enables a full description of the relevant data of the dietetic care process and a supports a multidisciplinary approach. The most recent Dutch versions are available for members of the NVD (Dutch Association of Dietitians). The ICF-dietetics is also available in English; the CAPD, CDI and Dietary treatment goals will be published in 2020.

**Conflict of Interest:** None

**Keywords:** ICF-dietetics; classification; codelists; dietetic care process

## 478[R] Development and preliminary validation of a brief household food insecurity screening tool for paediatric health services in Australia

Prof Danielle Gallegos<sup>1</sup>, Ms Aria Kerz<sup>1</sup>, Dr Kristie Bell<sup>2</sup>, Dr Melinda White<sup>2</sup>, Ms Amy Thompson<sup>3</sup>, Ms Michelle Suter<sup>3</sup>, Dr Rebecca McKechnie<sup>1</sup>

<sup>1</sup>Queensland University Of Technology, Kelvin Grove, Australia, <sup>2</sup>Children's Hospital Queensland, South Brisbane, Australia, <sup>3</sup>Caboolture Hospital, Caboolture, Australia

**Biography:** Danielle Gallegos is a social dietitian-nutritionist and Professor of Nutrition and Dietetics at Queensland University of Technology. She is a Fellow of the Dietitians Association of Australia and currently Chair of the Council of Deans Nutrition and Dietetics (Australia and New Zealand). She has worked in all areas of nutrition and dietetics including acute care, foodservice, private practice and for the last 15 years in public health nutrition. She undertakes research in child nutrition particularly related to the nexus between nutrition and social justice. She is an experienced dietetic educator contributing to the development of both public health nutrition and dietetic competency and accreditation standards. Her research interests include household food security, food literacy and breastfeeding.

**Introduction:** Household food insecurity (HFI) is a significant public health challenge and is associated with poor health outcomes for children. Dietitians currently do not necessarily screen for HFI in practice. Our study aimed to (1) measure the prevalence of HFI in families attending paediatric healthcare services; and (2) to determine and validate questions suitable to screen for households at risk of HFI.

**Methods:** A cross-sectional survey was used to collect data from caregivers of children aged 0-18 years, attending paediatric appointments at two sites in Brisbane, Australia (n=148). Sociodemographic and health-related characteristics were collected, and food security status was assessed based on four commonly used HFI measures; a single question from the Australian National Health Survey, the 18-item United States Department of Agriculture Household Food Security Survey Module (USDA-HFSSM), the 2-item Hunger Vital Sign and the 8-item Food and Agricultural Organisation Food Insecurity Experience Scale. A brief HFI screener was developed, based on the most frequently endorsed questions from any HFI measure, among families who were food insecure. Validity was assessed through calculation of sensitivity and specificity. Chi-square, independent t-tests and logistic regression were used to explore associations between HFI and health-related characteristics.

**Results:** Prevalence of HFI ranged from 19-45% depending on the tool used. Poor child health was the only significant independent predictor of HFI (aOR 5.59, 95% CI: 1.3-23.5). The combination of two questions from the USDA-HFSSM had the highest sensitivity (96.0%) and specificity (90.3%) and thus make up the proposed HFI screener.

**Conclusion:** Two in every five households were food insecure. A highly sensitive and specific HFI screener was developed and validated. This brief screener may assist in identifying these vulnerable households in Australian paediatric healthcare settings. It is vital that dietitians understand the food security status of their clients in order to tailor dietary advice.

**Conflict of Interest:** None

**Keywords:** household food insecurity, screening tool, paediatric primary care, children, health outcomes

## 486[R] Development and validation of the "Dietary Pattern Calculator" (DPC) for personalized assessment and feedback

Dr Mahsa Jessri<sup>1,2,3,4</sup>, Ms Adelia Jacobs<sup>4</sup>, Alena (Praneet) Ng<sup>5</sup>, Carol Bennett<sup>1,6</sup>, Dr Dierdre Hennessey<sup>2</sup>, Dr Amy Hsu<sup>1,2,3,7</sup>, Dr Douglas Manuel<sup>1,2,3,6,7,8</sup>

<sup>1</sup>Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa, Canada, <sup>2</sup>Health Analysis Division, Statistics Canada, Government of Canada, Ottawa, Canada, <sup>3</sup>School of Epidemiology and Public Health, University of Ottawa, Ottawa, Canada, <sup>4</sup>Food, Nutrition and Health Program, Faculty of Land and Food Systems, The University of British Columbia, Vancouver, Canada, <sup>5</sup>Department of Nutritional Sciences, Faculty of Medicine, University of Toronto, Toronto, Canada, <sup>6</sup>Institute for Clinical Evaluative Sciences, Ottawa, Canada, <sup>7</sup>C.T. Lamont Primary Health Care Research Centre Program, Bruyère Research Institute, Ottawa, Canada, <sup>8</sup>Department of Family Medicine, University of Ottawa, Ottawa, Canada

**Biography:** Adelia Jacobs is a Master of Science Candidate in Human Nutrition at the University of British Columbia (UBC) in Vancouver, Canada. She is a Registered Dietitian(t) having recently completed her undergraduate degree in Food, Nutrition, and Health with a specialization in Dietetics at UBC.

**Introduction:** Despite the known causal links between poor dietary patterns and mortality/morbidity, there is a considerable knowledge translation gap of well-established findings from dietary pattern research. The overall goal of this study was to develop the first validated Dietary Pattern Calculator (DPC) for providing personalized risk assessment and feedback to individuals and healthcare providers.

**Methods:** To identify currently-available short dietary quality tools, a scoping review of literature was conducted. In the development phase, repeated 24-hour dietary recalls from the most-recent nationally-representative nutrition survey (i.e., Canadian Community Health Survey- Nutrition 2015) were used (n=19,796) to derive and validate a personalized dietary pattern using weighted partial least squares (wPLS).

**Results:** The scoping review revealed a widespread lack of validated short dietary pattern assessment tools. The dominant dietary pattern of Canadians derived in this research showed high positive loadings for fast-foods, carbonated drinks, and salty snacks and high negative loadings for whole fruits, orange vegetables, other vegetables and juices, whole grains, dark green vegetables, and legumes and soy (loadings  $\geq |0.17|$ ). A simplified dietary pattern was created using the above food groups as the underpinning of DPC (after checking with literature). DPC demonstrated high construct and criterion validity as well as reliability (internal consistency) and is planned to be launched on our publicly-available website ([www.projectbiglife.ca](http://www.projectbiglife.ca)).

**Conclusion:** DPC is the first valid and reliable digital tool for evaluating dietary patterns in a time-efficient and evidence-based manner, while engaging with clinicians, researchers, and policy actors to inform practice, care, and policy. The DPC sets a foundation for individualizing dietary advice by fostering the use of diet-related risk assessments in clinical settings. Web-based personalized dietary pattern profiles that individuals can understand, access, and share (with clinicians or others) will increase understanding and awareness, and has the potential to motivate individuals to explore options for reducing their risk.

**Conflict of Interest:** None

**Keywords:** Dietary Patterns; Diet Quality; Calculator; Personalized Risk Assessment; Digital Health

## 284[R] Development of a dietary care map for metabolic syndrome treatment

Prof Paula Brauer<sup>1</sup>, Ms Dawna Royall<sup>1</sup>, Ms Rupinder Dhaliwal<sup>2</sup>

<sup>1</sup>University of Guelph, Guelph, Canada, <sup>2</sup>Metabolic Syndrome Canada, Kingston, Canada

**Biography:** Paula Brauer PhD, RD, FDC was an academic at the University of Guelph working on obesity services in team-based primary care. Her career has focused on efforts to improve the effectiveness of dietetic services. She has been active in primary health care reform and as a member of the Canadian Task Force on Preventive Health Care 2010-15. A RD since 1975, she was a DC Board member, editor of the Journal, and Ryley-Jeffs award winner, the most prestigious award from Dietitians of Canada.

**Introduction:** Metabolic syndrome (MetS) comprises a cluster of metabolic abnormalities including hypertension, dyslipidemia, type 2 diabetes and/or visceral fat deposition that increases cardiovascular disease risk. Many diet interventions have been promoted in the literature to treat MetS or its components. As part of a multi-centre feasibility study in primary care (CHANGE project), we created a visual Dietary Care Map (2014) to guide the individualized diet counselling process. The objective of this work was to update the Dietary Care Map based on study results.

**Methods:** 14 Registered Dietitians (RD) recorded key aspects of the counselling process (food behaviour change foci, behaviour change strategies and barriers to change) and tracked food / nutrient changes for 283 patients over one year. Changes in nutrient intake, dietary patterns (assessed by Healthy Eating Index [HEI] and Mediterranean Diet Score [MDS]), patient experience and clinical indicators were evaluated at 3 and 12 months. The literature was also reviewed for updated evidence to support dietary changes.

**Results:** After one year, there was 19% remission of MetS. Improvements in diet quality (HEI and MDS) occurred at 0 to 3 months ( $p < 0.001$ ) and were maintained at 12 months. Total energy intake decreased over 12 months, reflected by modest 3% average weight loss ( $p < 0.001$ ). In counselling, RDs first focused on healthy dietary patterns (e.g. balanced plate and Mediterranean-style diet). They then aimed for more specific changes to target metabolic abnormalities as identified in joint goal setting; weight loss was not always feasible or desirable. The Care Map was revised and a nutrition toolkit was developed to further support counselling.

**Conclusion:** The Dietary Care Map depicts key strategies for client-centred counselling in MetS based on evidence and practitioner experience from a successful program. It is being used in training of new counsellors, and can inform others implementing programs to address MetS.

**Conflict of Interest:** None

**Keywords:** pre-diabetes; cardiometabolic; diet; therapy; client-centred

## 508[R] Development of a sustainability index for potato products in relation to other staple foods

Prof Hettie Schönfeldt<sup>1</sup>, Dr Beulah Pretorius<sup>1</sup>, Dr Carmen Muller<sup>1</sup>

<sup>1</sup>University Of Pretoria, Pretoria, South Africa

**Biography:** Carmen Muller is a research assistant at the University of Pretoria since 2012 with a focus on sustainability, nutrition science, red meat and potatoes. She completed her undergraduate degree in 2012, followed by a MSc nutrition degree in 2015. As of 2016 she is a PhD nutrition student at the University of Pretoria. She is involved in various projects as researcher to conduct descriptive and consumer research and sensory panels, laboratory work, compilation of scientific and technical reports for industry and academic institutions.

Addressing and overcoming issues of sustainability requires a systemic approach and cooperation among actors operating in the supply chain, from producer to final consumer. A projected world population of 9.5 billion people by 2050 dictates that future food-related policies must support a sustainable food system. An urgent need to define recommendations and actions are high on the international agenda and a new set of Sustainable Development Goals have thus been implemented in an attempt to ensure improved quality of life for all.

It is becoming increasingly important to consider concerns about nutrient density (ND) in relation to environmental impact. To develop a strong quantifiable case for potatoes, a project was done to mathematically evaluate the nutrient density of South African potato products and staple foods in relation to their carbon footprint and water usage. In this project greenhouse gas emissions (GHGE's) of specific food products were merged with nutrient composition data for those foods. Nutrient density scores were calculated and linked to GHGE's and embodied water values and plotted.

Potatoes proved to have the highest ND score associated with lowest GHGE values of maize meal, bread, pasta and rice. Furthermore, it was found that potatoes had the lowest embodied water value per unit nutrient density indicating that potatoes are extremely water efficient in terms of nutrients delivered when compared to the most commonly consumed staple foods.

**Conflict of Interest:** None

**Keywords:** Sustainability, nutrient density, staple foods

## 614[R] Dietary diversity and its association with weight status and food choices of females at risk of diabetes in resource poor communities.

Ms Samukelisiwe Madlala<sup>1</sup>, Dr. Jillian Hill<sup>1</sup>, Prof Ernesta Kunneke<sup>2</sup>, Dr. Nasheeta Peer<sup>1</sup>, Prof Andre Kengne<sup>1</sup>, Prof Mieke Faber<sup>1</sup>

<sup>1</sup>Non-Communicable Diseases Research Unit, South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>Department of Dietetics and Nutrition, University of the Western Cape, Cape Town, South Africa

**Biography:** Samukelisiwe Madlala graduated in 2017 from the University of KwaZulu-Natal with a Masters of Science degree in Human Nutrition. She is a registered nutritionist currently based at the Non-Communicable Diseases Research Unit (NCDRU) of the South African Medical Research Council (SAMRC) as a student intern. She is registered as a PhD Public Health student at the University of the Western Cape. The topic of her PhD is on dietary diversity and its association with food choices and nutritional status of adults at risk of diabetes and the retail food environment in resource poor communities.

**Introduction:** Current literature suggests that high dietary diversity may be associated with intake of unhealthy foods as well as overweight/obesity in adults.

**Objective:** To determine the relationship between dietary diversity, weight status and food choices of females at risk of type 2 diabetes (T2DM).

**Methods:** A cross-sectional descriptive study using baseline screening data from the South African Diabetes Prevention Programme (SA-DPP) study was conducted. Study participants included Black and Mixed-ancestry adult females (n = 564) aged 25-65 years at risk of T2DM. Data collected included socio-demographic information, anthropometric measurements, an unquantified 24-hour dietary recall and a short food frequency questionnaire. The Minimum Dietary Diversity for Women (MDD-W) indicator was calculated based on the 24-hour dietary recall. Weight status was defined by body mass index categories. Chi-square analyses were done to analyse the relationship between MDD-W, BMI categories and whether certain foods were consumed the previous week.

**Results:** Approximately 12.0% of participants were overweight and 86.6% were obese. The MDD-W was not achieved for 71.0% of the participants. No relationship was found between MDD-W and weight status (p = 0.59). With regards to whether certain foods were consumed the previous week, a higher percentage of participants who achieved MDD-W had consumed cookies (47.0% vs 37.6%; p = 0.021), sweets (55.9% vs 45.5%; p = 0.013), salty foods (30.7% vs 19.7%; p = 0.002) sugar-sweetened beverages (84.2% vs 77.2%; p = 0.041) and fruit juice (55.0% vs 40.0%; p < 0.001) compared to those who did not achieve MDD-W.

**Conclusion:** Results indicate high prevalence of obesity and low percentage of participants achieving MDD-W. Achieving the minimum dietary diversity was associated with intake of various unhealthy foods. Further investigation of DDS usefulness in non-communicable disease research is therefore needed.

**Conflict of Interest:** None

**Keywords:** Dietary diversity, food choices, body mass index, type 2 diabetes

## 591[R] Dietary habits and prevalent hypertension in HIV infected South Africans in Cape Town

Dr Kim Nguyen<sup>1</sup>, Dr Nasheeta Peer<sup>1</sup>, Dr Mieke Faber<sup>1</sup>, Prof. Andre P Kengne<sup>1</sup>

<sup>1</sup>Non-Communicable Diseases Research Unit, South African Medical Research Council, Cape Town, South Africa

**Biography:** Kim Anh Nguyen is a post-doctoral fellow at Non-Communicable Diseases Research Unit, South African Medical Research Council. She has a clinical background as a medical doctor with specializing in tuberculosis and lung diseases in children, a MPhil in Maternal and Child Health and a PhD in Medicine. Kim's interests in epidemiology - detection, prevention and treatment, and evidence synthesis of non-communicable diseases co-morbid, especially cardio-metabolic risk in HIV-infected population.

**Introduction:** This study aims to assess and compare the dietary habits in HIV-infected South African adults according to their status for prevalent hypertension.

**Methods:** Cross-sectional data were collected across 17 primary health facilities providing HIV-treatment in the Western Cape Province. Hypertension status of participants was classified as 'known-hypertension' (self-reported previous diagnosis of hypertension by a doctor), 'screen-detected hypertension' for systolic and/or diastolic blood pressure (BP) >140/90 mmHg, and 'no-hypertension' for BP <140/90 mmHg and no hypertension history. Dietary habits were assessed using WHO step-wise approach questionnaire.

**Results:** Of 742 adults (79.2% female, mean age 38 years, 93% on ART) included, 141 (19%) were previously diagnosed with hypertension, 141 (19%) had screen-detected hypertension and the rest had no hypertension. The majority of participants liked their food slightly salty (76% known-hypertension, 70% screen-detected-hypertension and no-hypertension, p=0.671). About half never added salt to their meals (54%, 48% and 46% respectively, p=0.129), while a quarter often added salt (22%, 29% and 22%, p=0.129). More known-hypertension participants had received advice to reduce salt in meals (40.4% vs 19.8% and 16.7%, p<0.001). Over half reported eating fruit and/or vegetables ≥4 days per week (65%, 65% and 68%, p=0.589); none in known-hypertension, 4% in screen-detected-hypertension and 3% in no-hypertension groups ate ≥5 servings of fruit and/or vegetables daily (p=0.040). Participants reported changing their habits during the past year, aiming for reducing fat in meals (42%, 31% and 34%, p=0.115), reducing salt in meals (38%, 28% and 28%, p=0.086), eating more fresh fruits (50%, 43% and 51%, p=0.293) and more green leafy vegetables (54%, 48% and 53%, p=0.583).

**Conclusions:** The dietary habits were not optimal irrespective of hypertension status. Comprehensive evaluation to identify facilitators and barriers to healthy lifestyle in people living with HIV are needed to develop effective strategies for prevention of cardiometabolic diseases in this population.

**Conflict of Interest:** None

**Keywords:** dietary habits; lifestyle; hypertension; HIV; South African

## 220[R] Dietary Intake, Nutrition Status and School Performance of Pupils 8-14 years, in Bungoma County, Kenya

Ms Rhoda Musungu<sup>1</sup>, Prof. Asenath Sigot<sup>2</sup>, Dr. Jane Situma<sup>3</sup>

<sup>1</sup>Masinde Muliro University Of Science And Technology, Kakamega, Kenya,

<sup>2</sup>Masinde Muliro University of Science and Technology, Kakamega, Kenya,

<sup>3</sup>Masinde Muliro University of Science and Technology, Kakamega, Kenya

**Biography:** A postgraduate student in the department of Nutritional Sciences at Masinde Muliro University of Science and Technology, Kenya. Currently in the final year of study for Master of Science in Public Health Nutrition with interest in school children nutrition. A registered dietician with the Kenya Nutritionists and Dieticians Institute.

**Introduction:** Good nutrition is crucial for forming proper eating habits for growth and development. Dietary intake and nutrition status are powerful determinants of pupils learning outcomes and school performance. The objectives of this study were to establish the dietary intake of pupils, 8-14 years in Bungoma County, to determine the nutrition status of pupils, 8-14 years in Bungoma County and to assess the school performance of pupils, 8-14 years in Bungoma County.

**Methods:** A descriptive, cross-sectional study design. Multi-stage random sampling was used to determine the schools and pupils included in the study. Four hundred pupils were enrolled for the study. Data was collected on 24 hour dietary recalls, food frequency questionnaire, anthropometric measurements, observation checklist and key informant interview questionnaire. Data collected was analyzed using WHO ANTHRO PLUS and the Statistical Package for Social Sciences version 20.

**Results:** The study found out that majority of the pupils had low dietary diversity (n=270, 67.50%) and had inadequate dietary intake (n=217, 54.3%). Malnutrition was observed in almost half of the population (n=182, 45.5%) with both over nutrition and under nutrition recorded. Majority of the pupils had below average performance in their examination results (n=276, 69%) with irregular class attendance (n=320, 80%), poor concentration span (n=300, 75%) and lack of involvement in competitive sports and games (n= 360, 90%). There was a significant relationship between the pupils' dietary diversity score and their nutrition status  $X^2(8, N=400) = 15.943$ , p value 0.043 and the pupils nutrition status and their school performance  $X^2(8, N=400) = 12.889$ , p value 0.016. **Conclusion:** Adequate dietary intake and good nutrition status are necessary for pupils to be able to realize full benefit from their learning experience with regards to their school performance. Nutrition education should begin at home and be integrated in the school curriculum.

**Conflict of Interest:** None to declare

**Keywords:** Dietary intake, nutrition status, school performance, pupils, 8-14

## 383[R] Dietary patterns and progression of kidney failure and mortality in adults with chronic kidney disease: A narrative systematic review

Mrs Jacomie Nel<sup>1</sup>, Dr Martani Lombard<sup>1</sup>, Dr Robin Dolman<sup>1</sup>

<sup>1</sup>North West University (NWU), Potchefstroom, South Africa

**Biography:** Jacomie is a registered dietitian RD(SA) with a B.S.c Dietetic degree obtained from the North-West University in 2013. She has experience in several different aspects of nutrition. Ranging from clinical hospital work, private practice, nutraceutical sales, and teaching. She has done her Masters degree at the North-West University focus on metabolic acidosis in patients with Chronic Kidney Disease (CKD). Her special interests are nutrition in critical care and patients with diabetes.

**Background:** The current dietary recommendations for patients with chronic kidney disease (CKD) are very restrictive and difficult to comply with. Recent evidence shows that overall healthy dietary patterns rich in fruit and vegetables may improve the clinical outcomes of these patients.

**Methods:** The aim of this systematic review of cohort studies was to investigate the effect of dietary patterns on clinical outcomes of patients with CKD, especially the progression of kidney failure. A search was systematically performed on EBSCO Host, Google Scholar, MedLine, Pubmed, Science Direct, Scopus and The Web of Science for studies published before July 2019. Cohort studies with an adult population with CKD, defined as an estimated glomerular filtration rate (eGFR <60 ml/min/1.73m<sup>2</sup>), not receiving dialysis, were included.

**Results:** Five observational studies (8 649 participants) were included. Four of the included studies found that a higher plant-based dietary pattern and intake of fruit and vegetables reduced all-cause mortality in patients with CKD when compared with the lowest quintile intake. The overall risk of bias of the studies was low but the quality of the studies was assessed as low as observational studies are considered low-quality evidence.

**Conclusion:** Dietary patterns rich in fruit and vegetables are associated with lower mortality in patients with CKD. This data should be interpreted with caution as the exact cause of mortality is unknown and the quality of the studies is poor.

**Conflict of Interest:** None of the authors has any conflict to declare.

**Keywords:** Chronic kidney disease; dietary patterns; fruit intake; vegetable intake; metabolic acidosis

## 460[R] Dietetic practice in the scope of obesity management for bariatric surgery recipients in Saudi Arabia

Dr Elham Aljaaly<sup>1</sup>

<sup>1</sup>King Abdulaziz University, Faculty of Applied Medical Sciences, Jeddah, Saudi Arabia

**Biography:** Elham Aljaaly is an Associate Professor at the Clinical Nutrition Department, King Abdulaziz University, Saudi Arabia and a Consultant in Clinical Nutrition. She was the Head of the CLN Program and one of the program's establishers. Was the Chairperson of the Commission for National and International Academic Accreditation for the Clinical Nutrition Programme (NCAAA) & (AHPGS). She is a member in different organizations including "American Society for Nutrition (ASN)", "World Obesity Federation", and "The Canadian Obesity Network", World Association for Sustainable Development (WASD). She is an editorial member in (AJNE), The EC Nutrition, and the Journalism of Mass Communication. She is a regular reviewer for many institutions/organizations & Journals including e.g. the Bulletin of the World Health Organization; KACST. She is the first graduate RD who practiced the profession. Holding a M.Sc. in Human Nutrition from University of Sheffield, UK and PhD in Community Nutrition, Media Nutrition and International Health & Development from University College London (UCL), UK. Done Post-Doctoral Fellowships Programs: In Clinical Nutrition at GOSH, London, UK and in the Nutrition & Public Health (University of Westminster), London, UK. Has a house of Experience that is under the KAU: "The Professionalism for Clinical Nutrition".

**Introduction:** Surveys on bariatric surgery prevalence, reported about 15,000 bariatric operations are performed annually in Saudi Arabia.

**Aim:** This study evaluates the provision of nutrition and dietetic services (N&D) and the registered dietitians' (RDs) practices of pre-operative bariatric surgery in hospitals providing bariatric services in Jeddah city, Saudi Arabia.

**Methods:** A cross-sectional survey to evaluate N&D services and 32 RDs' pre-operative practices in eight hospitals. The study used adapted surveys with permission.

**Results:** 25% of the surveyed hospitals are following international-based standards in providing services, and 75% are following both national and international standards. Hospitals had mostly (75%,n=6) 4 or more employed dietitian involved with bariatric services. All hospitals have separate independent N&D departments. Employed RDs were all accredited by the credential body and 75% of them are not members of the professional body. RDs were all female (18.8%,n=6), 50% were practicing in a specific field and (18.8%,n=6) specialized in bariatric surgery. Dietary changes were based on food preferences and allow for flexible and individual approaches in reducing calorie intake 56.3%(n=18). Provision of dietary instructions to be followed postoperatively were reported by 43.8%(n=14), 56.3% advise patients on protein supplements, and 75% asserting the importance to keep on adequately hydrated. RDs 43.8% always re-evaluate patients on dietary guidelines, 50% provide instructions on diet, exercise, vitamin/mineral supplementations, and lifestyle changes. RDs (87.5%,n=28) always document their notes in medical records, conduct laboratory assessment for patients about iron levels (62.5%,n=20), vitamin B12 (37.5%,n=12), vitamin D (75.0%), and blood glucose (81%,n=26). RDs believe that it is extremely important to have a standardized process or protocols for the preoperative nutritional management of patients undergoing bariatric surgery (43.8%,n=14).

**Conclusion:** The study is the first to evaluate provided N&D bariatric services and practices in Saudi Arabia and could help in defining the provided services and unifying the practice.

**Conflict of Interest:** The author declares that no conflict of interest for this work

**Keywords:** Nutrition & Dietetic Services, Preoperative, Bariatric Surgery, Dietitians, Obesi

## 457[R] Dietitians address health equity and inclusion in special olympics: A global picture

Ms Alice Lenihan<sup>1</sup>, Ms Diane Beukers<sup>2</sup>

<sup>1</sup>Special Olympics International, Raleigh, United States, <sup>2</sup>Special Olympics Belgium, Brussels, Belgium

**Biography:** Alice Lenihan, MPH, RD, LDN is a Global Clinical Advisor for Special Olympics International. In collaboration with a team of health professionals, she is responsible for strategic health and wellness programming for Special Olympics Health Programs. Ms. Lenihan had a 30+ year career as the Branch Head for Nutrition Services with the NC Division of Public Health, with responsibility for managing Maternal and Child Health Nutrition Programs. She is a graduate of the University of North Carolina Gillings School of Global Public Health.

**Introduction:** The 2016-2020 Special Olympics International Health Strategy focuses on reducing health disparities individuals with Intellectual Disabilities (ID) face. The strategy is in alignment with Sustainable Development Goals #3 -Ensure Healthy Lives and promote well-being for all at all ages and #10 - Reduce inequality within and among countries.

**Methods:** Dietitians along with other health professionals are volunteering in over 80 countries playing an active role in Special Olympics Health. Programs include: 1) Healthy Athlete Screening – Health screenings across 8 areas: Fit Feet (podiatry), FUNfitness (physical therapy) Health Promotion (better health and well-being), Healthy Hearing (audiology), MedFest (sports physical exam), Special Olympics-Lions Clubs International Opening Eyes (vision), Special Smiles (dentistry), and Strong Minds (emotional well-being) 2) Healthy Communities - combines Healthy Athlete screening events with follow-up care, year-rounds fitness and wellness opportunities, community wide partnerships and sustainability and 3) Inclusive Health – Programs and services to ensure people with ID are able to take full advantage of the same health programs and services available to people who do not have ID. Special Olympics partners with health departments, ministries of health, and international organizations including UNICEF, World Health Organization (WHO) and the Pan American Health Organization (PAHO) in order to create inclusive, sustainable health systems and services inclusive of all people with ID.

**Results:** In 2017, 30,146 Health Promotion screenings were conducted in 50 countries at 257 events. Results indicate that:

- 27.1% of adult athletes have low bone density
- 29.7% of youth athletes are overweight or obese
- 62.1% of adult athletes are overweight or obese
- 56.4% had a pre-hypertensive or hypertensive reading at time of screening .

**Conclusion:** Dietitians are critical partners in a multidisciplinary health team. They have a unique set of skills to address health equity and inclusion for individuals with intellectual disabilities.

**Conflict of Interest:** Alice Lenihan is a consultant with Special Olympics International

Diane Beukers is a volunteer with Special Olympics Belgium

**Keywords:** Intellectual Disabilities, Health Equity, Inclusive Health

## 181[R] Documenting diagnostic and treatment data in Electronic Dietetic Care Records; a quantitative systematic assessment

Mrs Sytske Runia<sup>1</sup>, Mrs Maaïke Somer<sup>1</sup>, Mrs Marleen de Bruin<sup>1</sup>

<sup>1</sup>Department of Dietetics, University Medical Center Utrecht, Utrecht, Netherlands

**Biography:** Sytske Runia is a dietitian and deputy head of the Department of Dietetics at UMC Utrecht, the Netherlands. She has developed and implemented the clinical dietetic care record in the hospital and ensures that the record supports the methodical working of the dietitians in clinical practice. She provides training for dietitians in methodical working and encourages the use of the International Classification of Functioning, Disability and Health (ICF) and the ICF scheme within dietetics at the UMC Utrecht and in the Netherlands. Sytske is also chairman of the expert group Classifications and Code lists of the Dutch Association of Dietitians (NVD). That expert group developed the ICF-dietetics and collaborates with dietitians in Belgium, Germany and Austria to implement the ICF-dietetics in Europe. Sytske publishes regularly in Dutch manuals and journals and is co-author of the publication 'Toward Harmonization of the Nutrition Care Process Terminology and the International Classification of Functioning, Disability and Health-Dietetics: Results of a Mapping Exercise and Implications for Nutrition and Dietetics Practice and Research'. *J Acad Nutr Diet* January 2018

**Introduction:** The Dietetic Care Process (DCP) is a system of six structured steps for diagnostics and treatment by a dietitian. Using a standardized method to document collected DCP data will improve quality of care and outcome monitoring. The aim of this project was to implement a standardized method to document data of the first consultation in the electronic clinical dietetic care record (EDCR) and to perform a quantitative systematic assessment to examine to what extent dietitians apply to this method.

**Methods:** The EDCR consists of multiple topics to document data obtained from the first consultation. At first, an inventory among dietitians (n=25) was performed. Dietitians reported individually which data they considered relevant to document assessment, diagnostics and treatment. After discussing the results of the inventory and relevant guidelines and literature, a working method was agreed. A year later, a quantitative systematic assessment of 19 topics in 52 randomly chosen EDCR's was performed to determine whether dietitians followed the working method and documented the agreed data.

**Results:** The most frequently documented topics were: report to doctor/nurse (98%), dietetic diagnosis (96%), anthropometric measurements (85%), name of the dietitian treating the patient (79%), dietary interventions (75%), dietary treatment goals (73%) and follow-up plan (73%). The least often documented topics were, conclusion of food intake (29%), complaints and symptoms (33%), evaluation goals/ outcomes (33%) and request for help (44%).

**Conclusion:** Several topics are well documented, some need to be improved to comply with the agreed method. The dietitians discussed the reasons of omissions and how to improve documentation of several topics.

**Conflict of Interest:** None

**Keywords:** care process; dietetic record; standardized, assessment

## 381[R] Effect of fruit and vegetable intake on the progression of kidney failure in adults with chronic kidney disease: A systematic review

Mrs Jacomie Nel<sup>1</sup>, Dr Martani Lombard<sup>1</sup>, Dr Robin Dolman<sup>1</sup>

<sup>1</sup>North West University (NWU), Potchefstroom, South Africa

**Biography:** Jacomie is a registered dietitian RD(SA) with a B.S.c Dietetic degree obtained from the North-West University in 2013. She has experience in several different aspects of nutrition. Ranging from clinical hospital work, private practice, nutraceutical sales, and teaching. She has done her Masters degree at the North-West University focus on metabolic acidosis in patients with Chronic Kidney Disease (CKD). Her special interests are nutrition in critical care and patients with diabetes.

**Background:** This systematic review aimed to investigate the effect of fruit and vegetable intake on clinical outcomes of patients with chronic kidney disease (CKD), especially the estimated Glomerular Filtration Rate (eGFR).

**Methods:** A search was performed on EBSCO Host, Google Scholar, MedLine, Pubmed, Science Direct, Scopus, The Web of Science and The Cochrane Central Register of Controlled Trials systematically using keywords and MeSh terms. Randomised controlled trials (RCTs) of the effect of fruit and vegetable intake on blood pressure, metabolic acidosis and eGFR in adult patients with CKD (eGFR <60 ml/min/1.73m<sup>2</sup>) published before April 2019 was included. Control groups received usual care.

**Results:** Out of 417 articles two articles with a total of 143 participants were included. The eGFR of the fruit and vegetable group in the first study was the as that of the sodium bicarbonate (NaHCO<sub>3</sub>) group after one year. The eGFR was significantly higher in the fruit and vegetable group when compared with usual care. The two included studies found a significant reduction in body weight, systolic blood pressure and Potential Renal Acid Load (PRAL) when compared with baseline and the control group. A significant improvement in plasma total carbon dioxide (TCO<sub>2</sub>) in the fruit and vegetable group was found when compared with baseline. Fruit and vegetable intake had no effect on plasma potassium when compared with baseline and/or the control group in both the included studies. The studies had a risk of selection bias and performance bias.

**Conclusion:** Fruit and vegetables are an effective way of delaying the progression of kidney failure in CKD patients with metabolic acidosis without producing hyperkalaemia.

**Conflict of Interest:** None of the authors has any conflict to declare.

**Keywords:** Chronic kidney disease; fruit intake; vegetable intake; metabolic acidosis; GFR

## 17[R] Effect of graded levels of *Moringa oleifera* leaves on type 2 diabetic subjects.

Dr Ifeoma Afiaenyi<sup>1</sup>

<sup>1</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria

**Biography:** Dr Ifeoma Afiaenyi is a registered dietitian and currently an academic staff (Lecturer 1) in the department of Nutrition and Dietetics, University of Nigeria, Nsukka. She graduated from the department of Home Science, Nutrition and Dietetics, University of Nigeria, Nsukka with First Class Honours in 2007. She served her country (Nigeria) for one year under the scheme "National youths Service corps" in 2008/2009. She did her one year internship programme at University of Nigeria Teaching Hospital, Ituku-Ozalla in 2009/2010. She was appointed a Graduate Assistant in the department of Nutrition and Dietetics, University of Nigeria, Nsukka in 2010. She enrolled into M.Sc/Ph.D programme in the same department with specialization in Clinical Nutrition and Dietetics. She obtained her Ph.D in Clinical Nutrition and Dietetics in 2018. She currently has 9 papers in peer review journals. She is happily married with two lovely kids.

Diabetes has crept into the rural areas of Nigeria causing devastating effects on its sufferers; most of them could not afford diabetic medications. Moringa has been used extensively in animal models to demonstrate its antidiabetic qualities; however, there is scarcity of data on the antidiabetic potential of graded levels of moringa leaves in human diabetic subjects. The study determined the effect of moringa leaves on the blood glucose and blood pressure of type 2 diabetic subjects in Ukehe, a rural Nigerian community. Twenty-four adult male and female diabetic subjects were purposively selected for the study. The diets used in the study were isocaloric. A control group (diabetics, group 1) was fed diets without moringa leaves. Experimental groups 2, 3 and 4 received 20g, 40g and 60g of moringa leaves daily respectively in addition to the diets. Fasting blood glucose and blood pressure of the subjects were measured prior to, during and at the end of the feeding trial. The data obtained were analyzed using the computer programme, Statistical Product for Service Solution (SPSS) for windows version 21. Paired-samples t-test was used to compare the means of values collected before and after the feeding trial within the groups and significance was accepted at  $p < 0.05$ . There was no significant ( $p > 0.05$ ) difference in the mean fasting blood glucose levels in all the groups after the feeding trial. There was a significant ( $p < 0.05$ ) decrease in the mean systolic pressure of the subjects in group 3 and group 4 after the feeding trial. There was a non-significant ( $p > 0.05$ ) decrease in the mean diastolic pressure of the subjects in all the groups. The changes observed in the parameters assessed were not dose dependent.

**Conflict of Interest:** None

**Keywords:** diabetes mellitus; blood pressure; moringa leaves; isocaloric diets; phytochemicals

## 513[R] Effect of malted-rice amazake on the gut environment of the elderly

Ms Miki Doi<sup>1</sup>, Dr. Rikako Inoue<sup>1</sup>, Prof. Makoto Ayabe<sup>2</sup>, Prof. Satoko Hiramatsu<sup>1</sup>, Dr. Aki Ogawa<sup>3</sup>, Ms. Yasmin Syauki A.<sup>1</sup>, Ms. Suzumi Kageyama<sup>1</sup>, Prof. Kazuko Sumiyoshi<sup>4</sup>, Prof. Yasuyuki Irie<sup>1</sup>

<sup>1</sup>Department of Nutritional Science, Faculty of Health and Welfare Science, Okayama Prefectural University, Soja, Japan, <sup>2</sup>Department of Human Information Engineering, Faculty of Computer Science and Systems Engineering, Okayama Prefectural University, Soja, Japan, <sup>3</sup>Department of Clinical Nutrition and Dietetics, Faculty of Clinical Nutrition and Dietetics, Konan Women's University, Kobe, Japan, <sup>4</sup> Department of Nursing Science, Faculty of Health and Welfare Science, Okayama Prefectural University, Okayama, Soja, Japan

**Biography:** April 2004 - March 2008 Kurashiki Sakuyo University Faculty of Food and Culture Department of Nutrition  
April 2008 - March 2013 Kurashiki Kosai Hospital  
April 2013 - July 2015 Japan International Cooperation Agency (JICA)  
Participated in Japan Overseas Cooperation Volunteers as a dietitian in Botswana  
April 2018 – current Okayama Prefectural University Nutritional Major, Graduate School of Health and Welfare Science

**Background:** Constipation is considered a functional bowel disorder with decreased frequency of defecation, difficulty in defecation, and a sense of residual stool. The number of people with constipation increases with aging. Laxatives and enemas are often used to improve constipation. However, the constipation leads to increase burden on the elderly and caregivers, resulting in a decline in quality of life. The malted-rice amazake which is a fermented food had been proving to change gut microbiota and improve constipation in adult females. In our study, we would like to examine the effect of the malted-rice amazake of the elderly.

**Method:** The subjects were 32 healthy elderly who live in their home, intaking 35g / day of malted-rice amazake every day for 6 weeks. We examined the constipation scale by using Constipation assessment scale and Bristol stool scale. Feces were collected before and after the intervention. Brief-type self-administered diet history questionnaire (BDHQ) was examined only before the intervention. The gut microbiota from fecal was quantified by Real time-PCR and short chain fatty acids of fecal were measured using the TOF-MS method.

**Result:** Ingestion of malted-rice amazake softened the stool in hard stool subjects and significantly improved constipation symptoms in the constipated subjects. In BDHQ, there were no significant differences in all nutrients between the constipated subjects and the non-constipated subjects. Gut microbiota on all subjects significantly decreased in the ratio of Firmicutes / Bacteroidetes and significantly decreased in Firmicutes. In the constipated subjects, there was significantly increased in Bifidobacterium and Akkermansia.

**Conclusion:** It was suggested that ingestion of malted-rice amazake changed stool softness and gut microbiota, resulting in improvement of constipation.

**Conflict of Interest:** None

**Keywords:** Microbiota1; Malted-rice amazake2; Constipation3; Elderly4;

## 286[R] Effective interventions for increasing dried bean consumption: Consensus results

Prof Paula Brauer<sup>1</sup>, Ms Roya Daneshmand<sup>1</sup>, Prof Sunghwan Yi<sup>1</sup>, Prof Jess Haines<sup>1</sup>, Prof Lisa Duizer<sup>1</sup>, Dr Michelle Edwards<sup>1</sup>, Prof Manickavasagan Annamalai<sup>1</sup>

<sup>1</sup>University of Guelph, Guelph, Canada

**Biography:** Paula Brauer PhD, RD, FDC was an academic at the University of Guelph working on obesity services in team-based primary care. Her career has focused on efforts to improve the effectiveness of dietetic services. She has been active in primary health care reform and as a member of the Canadian Task Force on Preventive Health Care 2010-15. A RD since 1975, she was a DC Board member, editor of the Journal, and Ryley-Jeffs award winner, the most prestigious award from Dietitians of Canada.

**Introduction:** Although Canada is a leading grower of dried beans and the recent Canada's Food Guide (2019) emphasizes eating more plant-based protein, the consumption of dried beans is still low in Canada. With an ultimate goal of changing eating habits of Canadians, the focus of this work was to identify promising marketing and health education strategies, based on the opinions of a group of experts from agri-food industries, academia and health promotion.

**Method:** A one-day consensus process using nominal group and ranking methods was conducted using an electronic meeting system, developed at the Queen's School of Business. The process was facilitated by a professional moderator. The 14 stakeholders were asked to generate ideas to answer the question, "What are some potential interventions to increase dried bean consumption?" Ideas were typed into linked laptops, and appeared on a screen at the front of the room. These ideas were then discussed and categorized into common themes. The group was then asked, "if we could only trial five of these strategies in the next year, which ones are most promising?" Individuals selected his/her top 5 and the overall results were then displayed to the group and further discussed.

**Results:** Top ranked interventions were Meal kits, promotional activities such as coupons, increasing individuals' knowledge on how to introduce dried beans into current diet choices, providing taste testing of bean products, connecting with a Registered Dietitian through video discussion or live chat, and providing a social media platform for sharing experience and stories.

**Conclusion:** The consensus meeting results point to several strategies to increase pulse consumption in the Canadian population based on the known barriers from previous consumer research. Various combinations of these strategies will be tested together in a planned pilot study to promote dried bean consumption.

**Conflict of Interest:** Research supported by Ontario Bean Growers and Agricultural Adaptation Council of Canada

**Keywords:** marketing; beans; legumes; health education

## 587[R] Effectiveness of the nutrition intervention by using transtheoretical model for inpatients with obesity

Ms Hsiao-chun Lin<sup>1</sup>, Ms Yu-Ru Lin<sup>1</sup>, Ms Kang-Wei Lee<sup>1</sup>, Dr Chung-Mei Ouyang<sup>1</sup>

<sup>1</sup>National Taiwan University Hospital Hsin-chu Branch, Hsinchu City, Taiwan

**Biography:** I was graduated from Chung Shan Medical University, and the first job was work in a private clinic to teach the diet about diabetes, chronic kidney, and weight control for 2 years. This experience not only allowed me to become familiar with online work, but also allowed me to enrich my clinical knowledge. With those experiences, then I go the National Taiwan University Hospital Hsin-chu branch as a register dietician since 2012. Nowadays, I design many healthy promote-hospital-plan and conduct the team education like: the Diabetes Conversation Map Education. I am also the director of the Taiwan Dietician Association Shinchiu Local since this year. Besides, I have patient on research, so I usually go to share my poster on different conferences.

**Introduction:** Obesity is a contributing factor to a myriad of medical problems. The prevalence of obesity presents a burden for health care in the hospital. The transtheoretical model (TTM, stage of change) is a theoretical architectural model that spans psychotherapy and behavioral change. The purpose of this study was to investigate the stages of changes for hospitalized obese patients, and to evaluate the effectiveness of different lifestyle (diet and exercise) interventions with stage of the change on weight control.

**Methods:** We screened all patients from July to September, 2019 in the hospital and chose patients with BMI $\geq$ 27. All subjects were assessed by the stage of change, knowledge, beliefs, self-efficacy and eating behavior questionnaires. We gave them group and individual weigh-control educations during hospitalization. After 3 month of intervention we made phone calls to them and ask those questionnaires again. All data were analyzed by using SPSS 25.0 version software.

**Results:** A total of 153 patients attended in the project, and 55(36%) and 48(31%) of them were at pre-contemplation and contemplation stages respectively. The average of body weight was decreased from 82.2 kg to 79.8 kg (3% weight loss). The knowledge and beliefs were no differences after 3 months intervention. However, the self-efficacy and healthy diet behaviors were significantly different. The percentages of "ready" and "action" phases were increased after intervention.

**Conclusion:** With lifestyle intervention, we could effectively change the obese inpatients from pre-contemplation to preparation phase and control their weight significantly.

**Conflict of Interest:** None

**Keywords:** The transtheoretical model, obesity, nutrition intervention

## 505[R] Effects of Nutrition Education on anthropometric and bio chemical indices of adolescents in secondary schools in Owerri North Local Government Area, Imo State, Nigeria

Prof Olivia Afam-Anene<sup>1</sup>

<sup>1</sup>Imo State University Owerri Nigeria, Owerri, Nigeria

**Biography:** Prof. Olivia is a registered Dietitian Nutritionist and a Professor of Nutrition and Dietetics in Imo State University Owerri. She has over 50 publications in community and public health nutrition, clinical nutrition and diet therapy

**Introduction:** The study examined the effect of nutrition education on anthropometric and bio-chemical indices of adolescents in Owerri North Local Government Area of Imo State.

**Methods:** A random sampling technique was used to select 346 adolescents (189 as treatment and 157 as control) from four randomly selected schools. A structured and validated questionnaire was used to collect demographic information. Height and weight measurement, haemoglobin and serum ferritin were determined using standard procedures. Nutrition education (NE) was administered to the subjects at 3 weeks intervals for a period of 3 months. Data collected were analyzed using SPSS version 20. Student t-test and Chi-square was used to find out differences and association between nutrition education with BMI, hemoglobin and serum ferritin level of the subjects.

**Results:** Result shows that 72.6% of the control group and 70.4% of treatment group had normal BMI. In the treatment group 5.5% were obese but reduced after nutrition education to 2.1%. Normal haemoglobin level were 47.6% and 40.1% in the treatment and control groups respectively, mild anemia were 36% and 47.2% while moderate anemia were 16.4% and 12.7% respectively. Normal ferritin for treatment group was 79.4% and 88.5% for control group. There was association between nutrition education and serum ferritin but no association with haemoglobin.

**Conclusion:** Nutrition education may not have affected some of the variables maybe because of duration and non-participation of the care givers in the study. NE should be part of school curriculum to enhance nutrition knowledge and positive attitude towards right food choices. Conflict of Interest: None.

**Keywords:** Nutrition education, anthropometric, biochemical indices, adolescents.

**Conflict of Interest:** None

**Keywords:** Nutrition Education, Anthropometric, Biochemical, Adolescents

## 280[R] Effects of physical exercise on body composition and malnutrition risk in patients after surgery for esophageal cancer participating in the Physical Exercise Following Esophageal Cancer Treatment (PERFECT) study

Mrs Elles Steenhagen<sup>1</sup>, MSc Anouk Hiensch<sup>2</sup>, MD, PhD Jonna K. van Vulpen<sup>3</sup>, MD, PhD Jelle P. Ruurda<sup>4</sup>, MD, PhD Richard P.R. Groenendijk<sup>5</sup>, MD, PhD Donald L. van der Peet<sup>6</sup>, MD, PhD Camiel Rosman<sup>7</sup>, MD, PhD Bas P.L. Wijnhoven<sup>8</sup>, MD, PhD Mark van Berge-Henegouwen<sup>9</sup>, MD, PhD Hanneke W.M. van Laarhoven<sup>10</sup>, MD, PhD Richard van Hillegersberg<sup>4</sup>, MD, PhD Peter D. Siersema<sup>11</sup>, PhD Anne M. May<sup>2</sup>

<sup>1</sup>Department of Dietetics, University Medical Center Utrecht, Utrecht, The Netherlands, <sup>2</sup>Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, The Netherlands, <sup>3</sup>Department of Radiation Oncology, University Medical Center Utrecht, Utrecht, The Netherlands, <sup>4</sup>Department of Surgery, University Medical Center Utrecht, Utrecht, The Netherlands, <sup>5</sup>Department of Surgery, IJsselland Hospital, Capelle a/d IJssel, The Netherlands, <sup>6</sup>Department of Surgery, Amsterdam University Medical Center VUmc, Amsterdam, The Netherlands, <sup>7</sup>Department of Surgery, Radboud University Medical Center, Nijmegen, The Netherlands, <sup>8</sup>Department of Surgery, Erasmus Medical Center, Rotterdam, The Netherlands, <sup>9</sup>Department of Surgery, Amsterdam University Medical Center AMC, Amsterdam, The Netherlands, <sup>10</sup>Department of Medical Oncology, Amsterdam University Medical Center AMC, Amsterdam, The Netherlands, <sup>11</sup>Department of Gastroenterology and Hepatology, Radboud University Medical Center, Nijmegen, The Netherlands

**Biography:** Elles Steenhagen is a registered and research dietitian at the University Medical Center Utrecht in the Netherlands. She is member of the upper gastrointestinal (GI) oncology multidisciplinary team in her hospital. Besides dedicated patient care she is interested in evidence-based dietetics to improve professional practice and patient outcomes. Her research focuses specifically on nutritional assessment in the perioperative period in patients with upper GI cancers. She has authored / co-authored various publications and a chapter about esophageal cancer in a national textbook, presented research papers at international and national congresses and been a board member of the Dutch evidence based perioperative nutrition guidelines.

**Introduction:** Following esophagectomy, esophageal cancer patients often experience treatment-related side effects, including eating difficulties and weight loss, affecting their quality of life. The effects of a postoperative 12-week exercise program were examined in the PERFECT study. In this study, patients were asked to participate in optional dietetic measurements. This add-on study aimed to assess the effects of the exercise intervention on body composition and malnutrition risk.

**Methods:** The multicenter PERFECT study (NTR5045) randomly assigned 120 patients after esophagectomy to supervised aerobic and resistance exercise (EX) or usual care (UC). Dietetic measurements were performed at baseline, 12- and 24-weeks post-baseline. Fat free mass (FFM) and fat mass (FM) were determined in fasted state by whole body bioelectrical impedance analysis (BIA). Malnutrition risk was assessed by the Patient-Generated Subjective Global Assessment (PG-SGA) score.

**Results:** Thirty-three of 120 patients agreed to participate in the dietetic measurements (EX=17, UC=16). Patients were on average 61.05 years (SD=8.43), 5.11 months post-surgery (SD=3.87), had a BMI of 24.54 (SD=3.12) and 86.5% was male. Intention-to-treat mixed linear model analyses showed that patients in the EX group had a significant lower risk for malnutrition (-3.27 (-6.43;-0.11)) at 12 weeks, compared to UC. Compared to UC, patients in the EX group had a lower weight at 12 weeks (-1.81 (-4.52;0.90) kg) and a significant lower weight at 24 weeks (-2.83 (-5.62;-0.05) kg). Compared to baseline, FM and FM index decreased significantly at 12 and 24 weeks in the EX group, while FFM and FFM index did not change.

**Conclusion:** The exercise intervention showed a positive effect on the risk of being malnourished and therefore should be recommended to patients following esophagectomy. Patients

often concern about their weight, but this study shows that weight loss caused by exercise seems to be mainly loss of FM, and not FFM.

**Conflict of Interest:** None

**Keywords:** cancer; exercise; body composition; malnutrition

\*\*\*\*\*

## 120[R] Effects of raw and boiled garlic extract on body weight, fasting blood glucose and lipid profile of alloxan induced adult male wistar rats

*Ms Ogechukwu Umeakuka<sup>1</sup>, Ms Ogechukwu Umeakuka<sup>1</sup>, Ms Joy Obi<sup>1</sup>*

<sup>1</sup>University Of Nigeria, Nsukka. Nigeria, Enugu State, Nigeria

**Biography:** My Name is Umeakuka Ogechukwu Peace, I hold a Bachelor degree in Nutrition and Dietetics in University of Nigeria, Nsukka. Nigeria. I am a registered Dietitian Nutrition currently running my masters program in Human Nutrition and Dietetics specializing in the field of Community Nutrition and Public Health. I work at the Department of Nutrition and Dietetics, University of Nigeria, Nsukka

**Introduction:** The disease burden of diabetes is high and rising in every country, fuelled by the global rise in the prevalence of obesity and unhealthy lifestyles. This study assessed the effects of raw and boiled garlic extract on body weight, fasting blood glucose and lipid profile of alloxan induced adult male wistar rats.

**Methods:** Fresh Garlic bulbs were peeled, washed and drained after which they were divided into 2 equal portions. One portion was blended and filtered to obtain the extract while the second portion was blended and boiled for 2 minutes at 100°C before undergoing same procedure. A total of 35 adult male wistar rats weighing between 110-140g were grouped into seven (7) on the basis of body weight. Three groups were administered with 10mg, 20mg and 30mg of raw garlic extract (RGE) per kilogram body weight, another three groups were administered with same doses of boiled garlic extract (BGE) per kilogram body weight while the seventh group (control) was administered with 10mg of plain water per kilogram body weight. Fasting blood glucose, lipid profile level and mean body weight were obtained before and after the experiment using standard procedures. Statistical Product for Service Solution was used to analyze the data obtained. Significance was accepted at  $P < 0.05$ .

**Results:** There was significant ( $P < 0.05$ ) decrease in the fasting blood glucose level of the rats administered the experimental diets. Significant ( $P < 0.05$ ) decrease in body weight was observed in rats fed the experimental diets while that of the control group increased significantly. The total cholesterol and triglyceride levels of all the groups increased however, the control had the highest (38.56 & 40.45%) percentage increase ( $P < 0.05$ ).

**Conclusion:** Garlic extract has significant effect in reducing body weight and blood glucose level.

**Conflict of Interest:** None

**Keywords:** Garlic; Diabetes; Lipid profile; Body weight

## 619[R] Effects of supplementing iron and n-3 fatty acid deficient female rats with iron and n-3 fatty acids, alone and combined, during pregnancy and lactation on bone mineral density in offspring

*Ms Estelle Strydom<sup>1</sup>, Dr Lizelle Zandberg<sup>1</sup>, Prof Salome, Herculina Kruger<sup>1</sup>, Prof Cornelius, Marius Smuts<sup>1</sup>, Dr Jeannine Baumgartner<sup>1,2</sup>*

<sup>1</sup>Centre of Excellence for Nutrition, North-west University, Potchefstroom, South Africa, <sup>2</sup>Laboratory of Human Nutrition, Institute of Food, Zurich, Switzerland

**Biography:** Mrs Strydom is a registered dietician with her main interest being infant feeding. She obtained her dietetics degree in 2014 at Stellenbosch University, after which she completed her community service year at Kimberley Hospital Complex. She completed her M.Sc. in dietetics at the North-West University on the effect of iron and omega-3 fatty acids on bone development during early life. She is currently appointed as the local South African ImpENSA (Improving Early Nutrition and Health in South Africa) project manager at the Centre of Excellence for Nutrition at the North-West University.

**Introduction:** We previously showed that a combined deficiency in iron (ID) and omega-3 (n-3) fatty acids (FAD) during early life may result in irreversible deficits in bone development in rats. The aim of this study was to investigate the effects of supplementing female rats with a coexisting ID and n-3 FAD with iron (Fe) and docosahexaenoic acid (DHA)/eicosapentaenoic (EPA), alone and in combination, during pregnancy and lactation on bone mineral density (BMD) in offspring at adolescence.

**Methods:** Using a 2x2-factorial design, 40 female Wistar rats were placed on an n-3 FAD diet seven weeks before mating and a combined ID and n-3 FAD diet three weeks before mating. Ten days after conception, female rats were randomly allocated to one of 4 diet groups: ID+n-3 FAD, Fe+n-3FAD, ID+DHA/EPA or Fe+DHA/EPA. Rats were maintained on allocated diets throughout pregnancy and lactation. After weaning, offspring remained on their respective experimental diet until postnatal day (PND) 42-45. BMD was measured in the lumbar spine and right femur using dual X-ray absorptiometry.

**Results:** We found significant effects of supplementing ID+n-3 FAD female rats with Fe and DHA/EPA for higher BMD in the spine (Fe  $P < 0.001$ ; DHA/EPA  $P < 0.001$ ) and right femur (Fe  $P = 0.008$ ; DHA/EPA  $P = 0.030$ ) of the offspring, adjusted for sex. Compared to offspring born to ID+n-3FAD females that received no supplementation, offspring born to females supplemented with Fe and EPA/DHA in combination had significantly higher BMD in spine and right femur. However, neither iron nor EPA/DHA supplementation alone resulted in significantly higher BMD. No significant diet x sex interaction was observed on BMD.

**Conclusion:** These results in rats indicate that in women with a coexisting ID and n-3 FAD, only combined iron and DHA/EPA supplementation during pregnancy and lactation may be able to counteract the negative effects of a combined deficiency on BMD in offspring.

**Conflict of Interest:** None

**Keywords:** iron; omega-3 fatty acids; bone mineral density

## 438[R] Energy and macronutrient content of breast milk from South African mothers of preterm infants: an exploratory study

Dr Johanna Kemp<sup>1</sup>, Prof Friede Wenhold<sup>1</sup>, Dr Firdose Nakwa<sup>2</sup>, Prof Piet Becker<sup>1</sup>

<sup>1</sup>University of Pretoria, Pretoria, South Africa, <sup>2</sup>University of the Witwatersrand, Johannesburg, South Africa

**Biography:** Johanna (Hannelie) Kemp qualified as a dietitian in the early 90's and have worked as a clinical dietitian in several hospitals, including Steve Biko Academic Hospital (Pretoria) and St Mary's Hospital (London, UK). She has also been involved in dietetic student training as a part time lecturer at the University of Pretoria (UP). She is currently employed as a sessional dietitian at Chris Hani Baragwanath Academic Hospital where she is working in the neonatal units. Her interest is in Paediatric nutrition, specifically nutrition of preterm infants and she is currently finalizing her PhD study on human milk fortification at the Department of Human Nutrition, UP.

**Introduction:** Human milk is the feed of choice for all infants. Milk from mothers who delivered prematurely has a different composition during the first weeks of life compared to mature milk. In calculating preterm infants' nutritional intake, the energy and macronutrient composition of mothers' milk is assumed to be similar to published figures. Little is known about the actual content of South African mothers' milk. This study aimed to analyse the macronutrient content of human milk from mothers who gave birth to preterm infants in a tertiary South African hospital (2018).

**Methods:** Day and night samples of preterm (first 14 days of life) and mature (from day 15 of life) expressed hind milk were obtained. Day and night samples were analysed separately and also mixed in equal parts to approximate a 24hour sample. A total of 193 (87 day; 53 night; 53 mixed) human milk samples were analysed (mid-infrared spectroscopy) and 164 (72 day; 42 night; 50 mixed) retained for statistical analysis after 29 (15%) out-of-range readings were excluded.

**Results:** Retained human milk samples came from 85 mothers (age: 27.7±6.7 years) of infants with mean gestational age 30.3±2.9 weeks, mean birth weight 1310±401g and mean post-menstrual age of 33.6±3.1 weeks, mean weight of 1461±376g at sample collection. Mean protein, carbohydrate, fat and energy content of mixed samples per 100mL were 1.5±0.4g, 7.2±0.7g, 3.5±1.0g and 69.0±9.7kcal respectively. Mixed preterm milk (n=13) had 1.9±0.3g protein and 66.4±10.4kcal, and mixed mature milk (n=37) 1.4±0.4g protein and 69.9±9.5kcal, per 100mL. The protein content of preterm (P=0.0002) and mature (P=0.0022) milk and the energy content of mature milk (P<0.001) were significantly higher than published data (Preterm milk: 1.5g protein, 65kcal; mature milk: 1.2g protein, 72kcal, per 100mL. Cormack 2016).

**Conclusion:** Macronutrient content of human milk from South African mothers with premature babies differs from published data.

**Conflict of Interest:** None

**Keywords:** Human milk, preterm, macronutrient analysis

## 735 R] Enhancing mineral bioaccessibility in an african cereal-based porridge using a food-based approach: a potential sustainable strategy to alleviate essential mineral deficiency in Africa

Dr Oluyimika Y. Adetola<sup>1</sup>, Prof John R.N. Taylor<sup>1</sup>

<sup>1</sup>Department of Consumer and Food Sciences and Institute for Food, Nutrition and Well-being, University of Pretoria, Pretoria, South Africa

**Biography:** Ms Oluyimika Adetola is a PhD student from Nigeria currently undertaking nutritional science research at the University of Pretoria, South Africa. She had a BSc. degree in Nutrition and Dietetics and her Masters degree in Nutrition Sciences. She is a trained and registered Dietitian in Nigeria. Oluyimika's passion is to help alleviate iron, zinc and vitamin A deficiencies in at-risk populations such as children and women of reproductive age in Africa. She believes that Africa has the potential to meet her nutritional needs with her rich and diverse indigenous food resources if they are properly harnessed.

**Introduction:** Zinc and iron deficiencies are major public health problems in Africa. Child-bearing women and children are mostly affected primarily due to monotonous cereal-based diets low in minerals and high in inhibitors of mineral bioavailability. Objectives: To determine the effect of adding locally available plant-foodstuffs rich in minerals (moringa-leaf powder) and mineral bioavailability enhancers (baobab fruit powder) to wholegrain maize-porridge on the mineral bioaccessibility.

**Methods:** 1) Maize-porridge (100 g dry basis): wholegrain maize (64.5 g), carrot-mango powder mix (7.0 g) and iron as FeSO<sub>4</sub> (9.4 mg), 2) Maize-porridge+moringa-leaves (13.5 g), 3) Maize-porridge+moringa-leaves (13.5 g)+baobab fruit (15.0 g) were formulated. Zinc and iron bioaccessibility of the porridges were determined using in vitro dialysability assay. The potential percentage contribution of total bioaccessible zinc of the porridges (100 g, dry basis) to the absolute requirement (AR-1.75 mg zinc/day) for child-bearing women was calculated. Results: Addition of moringa-leaves to the maize-porridge increased (p<0.05) the total bioaccessible zinc by 36% compared to maize-porridge alone. Moringa-leaves together with baobab fruit further increased (p<0.05) the percentage and total bioaccessible zinc in the porridge by 31% and 83%, respectively. Furthermore, moringa-leaves and moringa-leaves+baobab fruit could potentially improve (p<0.05) the contribution of zinc in the porridge to the AR for child-bearing women by 36% and 83%, respectively. The enhancing effect of moringa-leaves and baobab fruit on zinc bioaccessibility was probably due to their high levels of zinc (2.8 mg/100g) and organic acids (ascorbic (155 mg/100 g) and citric (3965 mg/100 g)), respectively. Organic acids chelate minerals and keep them in a soluble and absorbable form. However, none of the fortified porridges increased iron bioaccessibility.

**Conclusion:** Addition of moringa-leaves and baobab fruit to cereal-based foods, such as maize-porridge, could be a sustainable food-based strategy to improve dietary bioavailable zinc for child-bearing women in Africa as well as their zinc status.

**Conflict of Interest:** None

**Keywords:** zinc; iron; bioaccessibility; moringa-leaves; baobab fruit

## 273[R] Enteral nutrition in ICU: the use of dietetic outcomes to improve adequacy.

Mrs Rowan Clemente<sup>1</sup>, Miss Kaylee Allan<sup>1</sup>, Dr Stephen Taylor<sup>1</sup>, Miss Frances Greer<sup>1</sup>, Miss Claire Downer<sup>1</sup>, Miss Danielle Milne<sup>1</sup>, Ms Natalie Dumont<sup>1</sup>

<sup>1</sup>North Bristol NHS Trust, Bristol, United Kingdom

**Biography:** Rowan Clemente is an experienced ICU dietician. One of her professional interest is the integration of dietetic outcome measures to evidence what has been achieved nutritionally in a patients care pathway and how the collection of this data can inform quality improvement.

**Introduction:** The difference between dietetic prescription for enteral feed and the amount of feed delivered on the intensive care unit (ICU) has been well described in the literature. The aim of the audit is to measure nutritional delivery against nutritional prescription in enterally fed ICU patients, to inform on how to improve delivery.

**Methods:** An outcome tool was developed to record estimated energy and protein requirements, the calories and protein prescribed from feed and the delivered amounts of calories and protein. Only patients receiving full enteral feed were included.

**Results:** In 2016, 130 patients on the ICU had the adequacy of nutritional delivery vs prescription measured, energy and protein was prescribed to provide between 80-110% of estimated requirements in 92% and 75% of patients respectively. Delivery of energy and protein prescription at 80-110% occurred in 68% and 61% respectively. A number of prescription-related problems were identified as contributing to this discrepancy, including inadequate protein provision from current feeds available, alongside the use of titrating regimes that aimed to increase feed volume as patients sedation was reduced. In 2017-2018 a higher protein feed and protein supplements were introduced on ICU alongside changes made to how nutrition was prescribed. In 2017-2018, 93 patients were prescribed between 80-110% of estimated energy and protein requirements in 88% and 72%, respectively, and received 80-110% of what was prescribed in 70% and 69% of patients. These results suggest that the implementation of new feeding products and a revised feed prescription had improved nutritional delivery.

**Conclusion:** The collection of dietetic outcomes pertaining to feed provision vs feed prescription helped to identify a number of strategies to improve the nutritional delivery on our ICU. The same tool was used to prove improved adequacy post-strategy changes.

**Conflict of Interest:** None

**Keywords:** enteral nutrition; protein intake; nutritional adequacy; outcome measure;

## 575[R] Evaluation of diet quality markers in vegans compared to other types of vegetarians in Brazil

Msc Shila Minari Hargreaves<sup>1</sup>, Prof Renata Puppim Zandonadi<sup>1</sup>, Prof Eduardo Yoshio Nakano<sup>1</sup>, Prof Raquel Botelho<sup>1</sup>, Prof Wilma Maria Coelho Araújo<sup>1</sup>

<sup>1</sup>University Of Brasilia, Brasilia, Brazil

**Biography:** Dietitian graduated from the University of Brasilia, Master's degree in Human Nutrition from the University of Brasilia and Ph.D. in Health Sciences from the University of Brasilia. She is currently Associate Professor at the University of Brasilia. Has experience in Nutrition, focusing on Nutrition, acting on the following subjects: Low-income population, Food security, Gluten-related disorders.

**Introduction:** Despite the association between vegetarian diet with many health benefits, restrictive diets can pose a risk of diet inadequacy. Therefore, vegans would be the ones facing greater risks for inadequacies. The vegetarianism is increasing in Brazil, however the characterization of their diet quality markers is still lacking. We aimed to evaluate the vegans diet quality comparing different types of vegetarians.

**Methods:** We performed a nationwide cross-sectional study approved by the University of Brasilia Ethic Committee using an online self-administered questionnaire. Invitation to participate in the study was spread nationwide. Vegetarian individuals that were at least 18 years old were eligible to participate. The results on regular intake and intake adequacy were compared among vegetarians using the Pearson's chi-square test. The body mass index (BMI) were analyzed by the Analysis of Variance (ANOVA) followed by Tukey post-hoc test. The Kolmogorov-Smirnov test verified normality. All analyses considered bilateral hypotheses and a significance level of 5% ( $p < 0.05$ ).

**Results:** A total of 3319 individuals participated, of which 33.6% were vegans. A higher percentage of vegans (49.4%) had adequate daily intake of fruits and vegetables (five or more portions per day) compared to the other types of vegetarians (29.1-36.2%;  $p < 0.05$ ). Regular weekly intake of fruits and vegetables (five or more times per week) was also more frequent among vegans (71.5%) compared to the other groups (50.6-54.8%;  $p < 0.05$ ). Less vegans (13%) reported intake of processed foods in the previous day when compared to the other groups (16.4-20.9%;  $p < 0.05$ ). Regular intake of soft drinks (negative diet quality marker) was similar among groups. Vegans were the ones with lower BMI average levels (22.87Kg/m<sup>2</sup>).

**Conclusion:** Vegans showed better diet quality markers results when compared to other types of vegetarians, and more vegans achieved the World Health Organization recommendation for fruits and vegetables daily intake, compared to the other types of vegetarians.

**Conflict of Interest:** None.

**Keywords:** Vegans; Diet quality; markers; Brazil.

## 176[R] Evaluation of Nutritional and anti-nutritional compositions in leaves of *Ginkgo biloba* (Maiden Hair) tree found in Nigeria

Mr Onyeka Nwosu<sup>1</sup>

<sup>1</sup>National Biosafety Management Agency, Abuja, Nigeria

**Biography:** Nwosu, Onyeka Kingsley is a well refined bio-scientist with B.Sc. and M.Sc. degrees in Applied Biochemistry from Enugu State University of Science and Technology, Nigeria and Nnamdi Azikiwe University, Awka, Nigeria respectively. He also holds a PGD in Education and currently enrolled for PhD in Biochemistry. His areas of specialty include Nutritional and Medical Biochemistry, Nutraceuticals and Phytomedicine, Genetically Modified Foods and Biosafety.

He currently works with the National Biosafety Management Agency, Abuja, Nigeria.

**Introduction:** *Ginkgo biloba* (GB) leaves and extracts have been recognized worldwide for its renowned nutritional and medicinal properties. GB tree is highly grown and used in Asian and South American countries unlike Nigeria. In this study, we examined the nutritional and anti-nutritional compositions of GB leaves (whole dried, and aqueous and ethanol extracts) grown in Nigeria.

**Methods:** Association of Official Analytical Chemists (AOAC) method was used to determine the proximate and vitamin compositions while Atomic Absorption Spectrophotometer (AAS) was used to analyze the minerals. Anti-nutrients analysis was done using gas chromatography.

**Results:** The results of analyses on whole dried leaves showed that the nutritional composition was high in carbohydrate (59.70±1.02mg/100g) and energy value (287.00±2.59Kcal/g) and low in protein (6.65±0.38mg/100g), lipid (2.40±0.14mg/100g), fibre (2.50±0.21mg/100g) and moisture (15.65±0.38mg/100g). High concentrations was also observed for vitamins A (79.75±9.05), C (79.20±2.56) and E (59.31±2.84) while vitamins B1, B2, B3, B6 and B12 (1.53±0.04, 2.98±0.62, 2.44±0.25, 3.57±0.24 and 0.28±0.01 mg/100g) respectively, were found in lower concentrations. The mineral analysis also showed high concentrations in macro minerals especially calcium and magnesium (24.620±0.410 and 18.450±0.28mg/100g) followed by phosphorous (4.896±0.003mg/100g), potassium (4.332±0.000mg/100g), and sodium (2.340±0.001mg/100g). The concentrations in micro minerals were iron (6.667±0.003mg/100g), zinc (1.851±0.001mg/100g), manganese (0.626±0.025mg/100g), copper (0.640±0.000mg/100g) and selenium (0.391±0.003mg/100g). However, the absence of molybdenum (Mo) in the leaves was observed. The calcium/phosphorous and sodium/potassium ratios were 5.029±0.087 and 0.540±0.000 mg/100g respectively. The anti-nutrients analysis of the aqueous and ethanol extracts of the leaf showed low concentrations of phytate, oxalate and tannin. The low concentrations observed are considered to be non-toxic to man.

**Conclusion:** These investigations have revealed the nutritional potentials of *Ginkgo biloba* leaves grown in Nigeria. The findings therefore, will be useful for nutritional and medical practice in Nigeria and beyond for maintenance of good health of individuals especially the elderly.

**Conflict of Interest:** None

**Keywords:** *Ginkgo biloba*; Nutritional compositions; Anti-nutritional factors; Gas chromatography; Atomic absorption spectrophotometer;

## 439[R] Evaluation of reporting quality of oral nutrition support interventions in randomised controlled trials

Ms Christine Marmada<sup>1</sup>, Dr Elizabeth Weekes<sup>2</sup>, Dr Christine Baldwin<sup>1</sup>

<sup>1</sup>King's College London, London, United Kingdom, <sup>2</sup>Guy's & St Thomas' NHS Foundation Trust, London, ,

**Biography:** Ms Marmada is currently a Masters student at King's College London

**Introduction:** Oral nutritional support interventions for the management of nutritionally vulnerable patients have been investigated in randomised controlled trials (RCTs) and summarised in systematic reviews with a frequent recommendation for more trials. High quality reporting of interventions is needed to avoid waste of research funding, enable their replication and to facilitate synthesis of findings in meta-analyses. This study aimed to evaluate the description of RCTs using food-based (FB), or combined approaches (FB and Oral Nutrition Supplements (ONS)), in nutritionally vulnerable patients.

**Methods:** 58 RCTs from a Cochrane systematic review on efficacy of dietary advice in the management of malnutrition. Reporting quality was assessed using the 12-Item Template for Intervention Description and Replication (TIDieR) checklist and guide. RCTs published before and after the CONSORT statement of 2010 were compared, and information about intensity was used to assess the heterogeneity observed in analyses.

**Results:** None of the 58 studies included complete descriptions for all 12 items of TIDieR. Background of intervention provider, intensity of intervention, assessment and outcome of adherence were inadequately described in more than 70% of studies. Inclusion of a brief name, rationale, and description of methods and procedures of the intervention were reported more frequently in studies of FB interventions (58-95%) than studies using FB+ONS interventions (23-51%). Reporting quality of the rationale and expertise of the intervention provider improved in studies of FB+ONS interventions published after 2010 ( $p < 0.05$ ) but there was no impact on studies of FB interventions. Intensity of intervention was too poorly reported to allow assessment of its effect on heterogeneity.

**Conclusion:** The reporting quality of oral nutrition support interventions remains sub-optimal which limits the usefulness of trials in supporting clinical practice. The CONSORT statement in 2010 had a minimal impact on reporting quality. The reporting of oral nutritional support interventions needs improvement.

**Conflict of Interest:** None

**Keywords:** nutrition support; systematic review; malnutrition; CONSORT

## 194[R] Exploring the factors that contribute to high levels of stunting in under-five children in a highly productive agricultural region: A case of Ntchisi District in Central Malawi.

Mrs Whitney Mphangwe Kondowe<sup>1</sup>

<sup>1</sup>Ministry Of Agriculture, Irrigation And Water Development-malawi, Balaka, Malawi

**Biography:** My name is Whitney Mphangwe. I am a female Malawian with a Masters Degree in Global Health from the University of Dublin and a Graduate Degree (BA) in Education from the University of Malawi. My major areas of study were with strong bias towards health and human nutrition. Upon graduation in 2013, I worked on a number of projects with NGOs. I then joined the civil service in 2016 as a District Nutrition Officer, a focal point position on health and nutrition in a district. I have experience in rolling out interventions whose broad objective is scaling up nutrition in a resource-limited setup. I have technical knowledge and vast on the job experience in formulation, implementation and monitoring and evaluation of nutrition interventions aimed at improving human health and social wellbeing. Socially, I am friendly, approachable and objective. My studies in Global Health, Nutrition and the work experience have enhanced my knowledge and sharpened my skills in among other things policy formulation, advocacy, research and evidence-based programming and decision making that is contributing towards the attainment of my country's Sustainable Development Goals.

**Background and Aim:** The prevalence of undernutrition continues to be high in the under-five population globally. Despite the prevalence reduction in Malawi over time, some 37% under-fives are currently stunted. Even with good food production, the prevalence is even higher in Central Malawi, especially Ntchisi district, with a prevalence rate of 40%. This study thus aimed to explore the factors that contribute to that high prevalence in such a context.

**Research Methods:** To achieve the aim and objectives, this study used a qualitative approach. Focus group discussions (FGD) were conducted with participants, purposively sampled at implementation/policy, health treatment, and household levels in three different areas in Ntchisi district. At the household level, FGDs were conducted with mothers having under-five children, and fathers, to understand processes at the household/community level. Data were analysed using Inductive Thematic Analysis (ITA).

**Results:** According to the participants, factors that contribute to stunting in Ntchisi are lack of knowledge in IYCF; household social norms and economic context; coverage and linkages of agriculture and nutrition interventions; disease burden; gender roles in health treatment; and general demographic characteristics.

**Conclusion:** The study found out that the causes of undernutrition in Ntchisi accord with the broader three-level parameters stipulated in the UNICEF Conceptual Framework of Malnutrition namely Immediate, Underlying and Basic. However, gender norms and dependence on subsistence farming are the key issues that explain why stunting persists in Ntchisi, despite the high production of food and a number of programmed interventions.

**Conflict of Interest:** None

**Keywords:** Children; Malawi; Malnutrition; Stunting; Prevalence.

## 212[R] Factors affecting the feeding practices of mothers with infants in a high socioeconomic area in Johannesburg

Mrs Annica Madeleen Rust<sup>1</sup>, Dr Lucia Meko<sup>1</sup>, Me Mariette Nel<sup>1</sup>

<sup>1</sup>University of the Free State, Bloemfontein, South Africa

**Biography:** Annica Rust obtained her BSc Dietetics & MSc Dietetics degree from the University of Free State. She is a registered dietician with the Health Professions Council of South Africa (HPCSA) and currently practices at the Breast Care Centre in Netcare Milpark Hospital and independently in Bryanston. She has a special interest in child and infant feeding as well as oncology.

**Introduction:** Studies determining the link between feeding practices and socioeconomic status are limited, and results of those published are found to be conflicting. Additionally, studies aiming to determine breastfeeding rates are mostly concentrated in low socioeconomic communities. In an effort to guide researchers when attempting to describe factors affecting feeding practices, Hector et al. developed a conceptual framework and categorized the factors affecting breastfeeding practices as individual-level factors, group-level factors and society-level factors.

**Objectives:** The objective of this study was to investigate individual-, group- and society-level factors affecting feeding practices of mothers with infants in a high socioeconomic area in Johannesburg.

**Methods:** A descriptive cross-sectional study was conducted in Johannesburg North, in the Gauteng Province, South Africa. One hundred and nine mothers residing in the area who met the inclusion criteria completed a self-administered questionnaire.

**Results:** The misconception of insufficient milk supply was the most common reason among individual-level factors (37%) why mothers decided not to breastfeed. The most common group-level factor why mothers decided not to breastfeed was that formula milk was more convenient when working and therefore less time consuming (63%). The most common society-level factor why mothers did not breastfeed was that it was culturally unacceptable to breastfeed in public or in front of others (29%).

**Conclusion:** The most common factor why mothers decided not to breastfeed was that formula milk was more convenient when working and therefore less time consuming.

**Conflict of Interest:** 'None'

**Keywords:** Breastfeed; Johannesburg; Convenient; Factors; Feeding

## 487 R] Food and nutrition education within Australian primary schools: A cross-curriculum gap

Dr Penelope Love<sup>1</sup>, Dr Alison Booth<sup>1</sup>, Dr Claire Margerison<sup>1</sup>, Professor Caryl Nowson<sup>1</sup>, Dr Carley Grimes<sup>1</sup>

<sup>1</sup>Deakin University, Institute For Physical Activity And Nutrition, Melbourne, Australia

**Biography:** Dr Love's career as a community and public health nutritionist spans two decades, and two countries. An early interest into the impacts gained through a population-wide approach of environmental and policy changes led to her PhD research developing country-specific food-based dietary guidelines for South Africans. Her career has included a focus on nutrition in the early years, Indigenous nutrition, healthy lifestyles, and food security. Dr Love re-joined academia in 2013 delivering a national knowledge translation and exchange platform to build capacity and a community of practice to support obesity prevention efforts across Australia. Within IPAN (2016-), Dr Love's research investigates elements of intervention implementation and sustainability for the early prevention of childhood obesity.

**Introduction:** Schools are regarded as a key setting for obesity prevention, providing an opportunity to reach a large number of children, frequently and over a prolonged period, through formal and informal opportunities to learn about health behaviours. However, the low value placed on health versus academic achievement is a barrier to effective implementation of food and nutrition education.

**Methods:** This study used a qualitative exploratory approach to explore the views of teachers and key health and education sector stakeholders regarding opportunities for food and nutrition education within the Australian primary school setting. To the best of our knowledge, this is the first study to explore this topic from the perspectives of state-level coordination and development through to local-level implementation and support within the Australian primary school context.

**Results:** Only 2.6% of the Victorian Curriculum related to food and nutrition education, taught through two (of seven) learning outcomes, Health and Physical Education, and Technologies. While stakeholders considered child health a priority, and schools an ideal setting for food and nutrition education, barriers included a lack of strategic policy alignment, limited leadership and coordination, a 'crowded curriculum', and poor availability of shelf-ready resources with explicit curriculum links.

**Conclusions:** It was acknowledged that greater collaboration between the Health and Education sectors was required to re-position food and nutrition education as a core function of primary schools, rather than a time-limited activity. A cross-curriculum approach was strongly supported as a means of embedding food and nutrition education as a core component of the school curriculum. Teacher support was regarded essential to enable the delivery of food and nutrition across the curriculum, but the value of a dedicated workforce to assist in this delivery should also be considered.

**Conflict of Interest:** None

**Keywords:** Food and nutrition education; primary schools; curriculum; whole-of-schools approach

## 469[R] Fructose, obesity and non-alcoholic fatty liver disease in schoolage children of 6 to 9 years old.

Dr Elizabeth Solis Perez<sup>1</sup>, Master Raquel Gonzalez Garza<sup>1</sup>, Dr Laura Elia Martinez Garza<sup>2</sup>, Dr Jesus Zacarias Villarreal Perez<sup>3</sup>, Dr Hugo Leonid Gallardo Blanco<sup>2</sup>, Nutrition Specialist Maria Alejandra Sanchez Peña<sup>1</sup>

<sup>1</sup>Facultad de Salud Pública y Nutrición-UANL, Monterrey, Mexico, <sup>2</sup>Genetics Department-Hospital Universitario "José Eleuterio González", Monterrey, México, <sup>3</sup>Endocrinology Service-Hospital Universitario "José Eleuterio González", Monterrey, México

**Biography:** Graduated from the Bachelor of Nutrition and the Master of Public Health of the Facultad de Salud Pública y Nutrición, where she has been a teacher for 35 years. She obtained a PhD with emphasis on Nutrition at the Texas Woman's University. In 1994, she was the Director of the Facultad de Salud Pública y Nutrición (FaSPyN). She was a member of the State Scientific Technical Committee for Healthy Eating and Physical Activity of 2009-2015, from which she created and actively collaborated in the State Intersectoral Program for Health to Learn, the Law for the Prevention of Overweight and Obesity, coordinating the State Health and Nutrition Survey, strategic alliances with the food and beverage industry, and the State Strategy for the Prevention of Overweight, Obesity and Diabetes promoted by the Federal government of Mexico. She is currently Director of the UANL Business Incubation and Technology Transfer Center, Full-time Professor of FaSPyN and responsible for the Childhood Obesity Program in the Academic Body of Nutrition Obesity and Related Diseases. Dr. Solís is a certified nutritionist by the Mexican College of Nutritionists and is part of the Board of Directors of the International Confederation of Nutrition and Dietetics 2016-2020.

**Introduction:** Obesity is associated with comorbidities, standing out the Non-Alcoholic Liver Disease (NAFLD). An association has been found between obesity, NAFLD and fructose intake; the latter is a risk factor for liver disease.

**Objective:** To study the relationship of fructose consumption with NAFLD in children aged 6-9 years old with obesity and normal Body Mass Index (BMI).

**Methodology:** Pilot, descriptive and correlational study, sample of 30 students. Consent obtained from parents and consent from children. The children were classified with obesity and normal BMI according to the WHO criteria 2007; biochemical and lipid profiles were obtained by spectrophotometry. Magnetic Resonance Imaging Study was used with the Vario3T equipment with spectroscopy technique for the quantification of intrahepatic fat; the collection of dietary data and fructose intake was through: a semi-quantitative food frequency questionnaire and 24-hour recall of 3 representative days. Multivariate statistical analysis that includes: descriptive statistics, analysis of variance, Mann Whitney U test and regression models.

**Results:** The average fructose intake was 88.2g/day in children with obesity, and 72.3g/day with normal BMI vs the recommended intake for 6-9 years old (15.8g/day). We found 13 children with a diagnosis of NAFLD according to the percentage of intrahepatic fat, 8 with obesity and 5 with normal BMI. A statistically significant association (p-value 0.04) was observed between the added fructose consumption of the 5 schoolchildren with normal BMI with a diagnosis of NAFLD.

**Conclusion:** Schoolchildren with obesity as with normal BMI consume excessive amounts of fructose. 61% of the sample of schoolchildren presented NAFLD, of these five had normal BMI. Although not associated exclusively with obesity, the intake of added fructose is associated with the percentage of intrahepatic fat in both groups of schoolchildren. This shows that not only schoolchildren with obesity present dietary risk to develop NAFLD.

**Conflict of Interest:** None

**Keywords:** Childhood, obesity, fructose, NAFLD, MRI

## 560[R] Gearing up our sodium data: A national food database approach for updating sodium, following policy call in South Africa

Mrs Joelaine Chetty<sup>1</sup>, Mrs Malory Jumat<sup>1</sup>, Dr Averalda Van Graan<sup>1</sup>

<sup>1</sup>South African Medical Research Council. Biostatistics Research Unit. South African Food Data System (SAFOODS), Cape Town, South Africa

**Biography:** Joelaine Chetty completed her undergraduate, BSc Dietetics (Hons) degree in 1998 at the University of the Western Cape, her Masters of Public Health (MPH) degree at the University of Cape Town in 2013 and currently pursuing a PhD degree. Kicked off her Nutrition/Dietetics career in Gauteng as a Community Dietitian for the Central Wits Regional Health Services. An interest in Food composition focus area was sparked and initiated at the South African Medical Research Council in 2000. A strong interest in the scarce skill of food compilation has seen her active in the field and committed in striving for a country-specific food composition database for South Africa. She has presented food composition related research nationally and internationally over her 12 year food composition field. She serves on the Transformation Forum representative for the South African Medical Research Council and is an active member of the Health Professionals Council of South Africa and Association for Dietetics of South Africa. Joelaine is a Military spouse, a mother of two teenagers and is blessed to be able to care for her visually impaired 85yr old Father.

**Introduction:** Non-communicable diseases remain a challenge globally, and South Africa follows suite. Repackaging and analyses of food products affected by national legislation for sodium, has been aggressively undertaken by food industry in country. The resultant urgency to update a national food database, is only logical and mandatory for all nutrition research. Final policy for sodium reduction effective as at 30 June 2019 across 13 categories of foods within South Africa.

**Objective:** To highlight a food database process approach for updating sodium values affected by category changes, as per policy.

**Method:** Companies targeted for data sharing of rebranded products affected by R.260 of 2015. Thirteen categories affected by sodium reductions include breads, cereals, snacks, processed meats, soup, gravy and instant powders, instant noodles and stock cubes category. Food products sourced for each category by connecting with relevant stakeholders of food industry within an allocated time frame for data sharing. Final data for upload of reanalyzed products amended across food database.

**Results:** Six companies readily assisted in contributing to the call for food database update, with provision of certificate of analyses (CoA). A good rapport with the six public-private partners exist and ensures optimal update of the food database. Total of 121 foods, identified for update; 99 new foods added into database, across 4 categories; 25 items amended with newer sodium values, as per industry update. A range of approximately 19 components captured from accredited laboratories for each food item affected. Additional 18 components were matched with similar food types, for inclusion into the user database (n=98).

**Conclusion:** Food composition database custodians are responsible for the effective update of sodium legislation across a national food database. Advocacy is aimed at stakeholders, food industry, nutrition and health drivers, for a more effective turnaround time and data of high quality when updating our national food database and its products.

**Conflict of Interest:** None

**Keywords:** sodium; laboratories; matching; food composition; legislation

## 526[R] General practitioners' preferences for the delivery, content and structure of a malnutrition education tool: an exploratory study.

Prof Clare Corish<sup>1,2,11</sup>, Dr Ciara Reynolds<sup>1,2</sup>, Dr Patricia Dominguez Castro<sup>1,2</sup>, Dr Sharon Kennelly<sup>3</sup>, Dr Barbara Clyne<sup>4</sup>, Professor Gerard Bury<sup>5</sup>, Dr David Hanlon<sup>6</sup>, Dr Catriona Bradley<sup>7</sup>, Ms Karen Finnigan<sup>8</sup>, Ms Sarah Clarke<sup>8</sup>, Professor Michael Barry<sup>8</sup>, Dr Laura McCullagh<sup>9</sup>, Dr Celine Murrin<sup>1,2</sup>, Dr Carla Perrotta<sup>1,2</sup>, Ms Katherine Loayza Villaroel<sup>1,2</sup>, Dr Eileen Gibney<sup>2,10</sup>

<sup>1</sup>School of Public Health, Physiotherapy and Sports Science, University College Dublin, Dublin,, Ireland, <sup>2</sup>UCD Institute of Food and Health, University College Dublin, Dublin,, Ireland, <sup>3</sup>National Primary Care Division, Community Funded Schemes Service Improvement, Mountmellick Primary Care Building, Laois,, Ireland, <sup>4</sup>HRB Centre for Primary Care Research, Department of General Practice, Royal College of Surgeons in Ireland, Dublin,, Ireland, <sup>5</sup>School of Medicine, University College Dublin, Dublin,, Ireland, <sup>6</sup>Health Service Executive, Clinical Strategy and Programmes Division, Integrated Care Programmes, Dr Steevens Hospital, Dublin,, Ireland, <sup>7</sup>Royal College of Surgeons in Ireland, Dublin,, Ireland, <sup>8</sup>Department of Pharmacology and Therapeutics, Trinity Centre for Health Sciences, St James's Hospital, Dublin,, Ireland, <sup>9</sup>National Centre for Pharmacoeconomics, St James's Hospital, Dublin,, Ireland, <sup>10</sup>School of Agriculture and Food Science, University College Dublin, Dublin,, Ireland, <sup>11</sup>National Nutrition Surveillance Centre, University College Dublin, Dublin,, Ireland

**Biography:** Clare Corish is Associate Professor in Clinical Nutrition and Dietetics in University College Dublin (UCD), Ireland and Programme Director for the UCD MSc in Clinical Nutrition and Dietetics. Professor Corish has a strong research reputation in malnutrition in the older person. Key projects include the European Union Joint Programming Initiative (EU JPI) Malnutrition in the Elderly Knowledge Hub (MaNuEL), ONSPres-focusing on the management of malnutrition within the community/primary care setting and Novel NUTRITIONAL solutions to combat chronic MALnutrition in the elderly (NUTRIMAL). She is the Irish lead for a new EU JPI project investigating prevention of undernutrition in community-dwelling older persons by enhancing appetite through targeted nutrition and physical activity (APPETITE).

Clare has served as President of the Irish Nutrition and Dietetic Institute, Chair of the Irish Section of the Nutrition Society and Education Representative on the Dietitians Registration Board; CORU. She is a member of the Food Safety Authority of Ireland Public Health Nutrition sub-committee and the Clinical Effectiveness Committee that produced the 2020 Irish Clinical Guideline for the Prevention and Treatment of Undernutrition in Acute Care. She is on the Editorial Board of the Journal of the Academy of Nutrition and Dietetics, Nutrition Today and Nutrition and Dietetics.

**Introduction:** Protein energy malnutrition (PEM) affects approximately 10% of independently living older persons and is both a cause and a consequence of poor health. PEM is optimally treated by providing first-line dietary counselling, and when necessary, this counselling should be combined with oral nutritional supplements (ONS). In Ireland, GPs are the main prescribers of ONS in the community healthcare setting. Previous research suggests that the management of malnutrition and those at risk of malnutrition is suboptimal. The aim of this study was to determine GPs' delivery, content and structure preferences for a malnutrition education programme.

**Methods:** Sixteen GPs from primary care practices in Dublin, Ireland were interviewed using a topic guide. Interviews were recorded and transcribed verbatim. Deductive content analysis was used to identify themes related to the mode of delivery, content and structure of an educational programme for GPs on the management of malnutrition in the community.

**Results:** In total, more GPs expressed preference for an online malnutrition education tool (n=11) compared to a study day/lecture (n=7) due to their busy work schedules. The majority of GPs suggested that continuing professional development (CPD) points on completion of the programme would incentivize engagement. A large number of GPs also reported that the programme should contain downloadable and printable low-literacy patient information, the content should be clearly displayed using

flowcharts or algorithms and include an online quiz and case studies. Specific content preference themes included guidance on available ONS and the differences between them, how to discontinue, change and review ONS, dietary/food-first advice, ONS for specific diseases and appropriate ONS use.

**Conclusion:** Based on qualitative interviews, GP preferences are for an online education tool for the management of malnutrition in the community with strong content on the appropriate use of ONS.

**Conflict of Interest:** None

**Keywords:** protein-energy malnutrition, malnutrition management, online education, general practitioners, oral nutritional supplements.

\*\*\*\*\*

## 596[R] Glycaemic response and sensory evaluation of biscuits produced from African yam bean and tiger nut composite flour

Ms Chioma Anidi<sup>1</sup>, Ms Chioma Anidi<sup>1</sup>, Ms Chidimma Ugwu<sup>1</sup>, Mr Aloysius Maduforo<sup>1</sup>

<sup>1</sup>University Of Nigeria Nsukka, Enugu, Nigeria

**Biography:** Chioma Anidi is a graduate of Human Nutrition and Dietetics from Micheal Okpara University of Agriculture, Umudike, Abia State, Nigeria. She is a registered Dietitian with the Dietitians Association of Nigeria. She is currently a postgraduate student and a Dietetic/Technical Instructor at the University of Nigeria. Her areas of Interest include Clinical Nutrition and Public Health Nutrition.

Chioma is an advocate for healthy eating which she promotes through her social media page, and community outreach. She enjoys reading, listening to music and travelling. She is currently carrying out a research on the Prevalence of Diet Related Non-Communicable Diseases in Enugu State, Nigeria. She has also published in National Journals.

**Introduction:** The use of wheat flour as the most common type of flour for baked products has raised considerable interest as regards its effect on postprandial blood glucose level. With the increase in the incidence of Diabetes it is pertinent to explore healthier alternatives to wheat flour as the main type of flour for baking which can serve as snack for Diabetic Patients. Objective: This study evaluated the glycemic response and sensory characteristics of biscuits produced from African yam bean-tigernut composite flour.

**Methods:** Samples were obtained from a local Market in Nsukka Local Government of Enugu State. The samples were sorted and blended into composite flour at graded levels of 30:70, 40:60 and 50:50 for African yam bean (AYB) and Tigernut flour respectively to produce the biscuit. Wheat flour was used as the control. Available carbohydrate analysis of the formulated biscuits was done using standard methods. Ten healthy adults participated in the blood glucose response study. Twenty individuals participated in the Sensory evaluation using a 9-point hedonic scale. Statistical analysis was done using analysis of variance and Duncans new multiple range test. A  $p < 0.05$  was considered statistically significant.

**Result:** The result showed that the available carbohydrate values of the biscuits were 76.45 (30:70), 67.55 (40:60), 54.56 (50:50) and 48.76 (wheat only). There was no significant difference ( $p > 0.05$ ) in blood sugar level 30 minutes after consumption of the biscuits made from the composite flour. Among the 3 biscuits, the 30:70 blend lowered the blood sugar level after 120 minutes of consumption. Result from sensory evaluation showed that among the three formulated blends, 50:50 was generally acceptable with a mean of 7.10.

**Conclusion:** The Biscuit made from African yam bean-tiger nut composite flour can be said to be a suitable snack for diabetic Patients.

**Conflict of Interest:** None

**Keywords:** African Yam Bean, Tiger-Nut, Composite Flour, Sensory, Biscuit

## 699[R] Glycaemic response and sensory evaluation of four banana varieties in Enugu State

Mr Aloysius Maduforo<sup>1</sup>, Mrs Appolonia Obiloma<sup>2</sup>, Ms Dorcas Ogbuabo<sup>3</sup>, Professor Elizabeth Ngwu<sup>4</sup>, Dr Chika Ndiokwelu<sup>5</sup>, Mrs Clementina Okoro<sup>6</sup>, Ms Josephine Okorie<sup>7</sup>

<sup>1</sup>Department of Nutrition and Dietetics, Faculty of Agriculture, University of Nigeria, Nsukka, Nsukka, Nigeria, <sup>2</sup>Department of Nutrition and Dietetics, Imo State Polytechnics Umuagwo Owerri, Imo State, Nigeria, Umuagwo, Nigeria, <sup>3</sup>Department of Nutrition and Dietetics, Faculty of Agriculture, University of Nigeria, Nsukka, Nsukka, Nigeria, <sup>4</sup>Department of Nutrition and Dietetics, Faculty of Agriculture, University of Nigeria, Nsukka, Nsukka, Nigeria, <sup>5</sup>Human Nutrition and Dietetics Unit, Department of Biochemistry, University of Calabar, Nigeria, Calabar, Nigeria, <sup>6</sup>Department of Nutrition and Dietetics, Faculty of Agriculture, University of Nigeria, Nsukka, Nsukka, Nigeria, <sup>7</sup>Department of Hospitality Management, School of General and Liberal Studies, Niger State Polytechnics Zungeru, Campus, Bida, Niger State, Nigeria, Bida, Nigeria

**Biography:** The presenter is a Registered Dietitian-Nutritionist, Lecturer and a Researcher living in Nigeria. He delights in mentoring younger professionals and enjoys discussing new findings in conferences.

**Background:** Banana varieties (Gros Michel, Red Dacca, Lady's Finger and Green Mutant) commonly consumed in Enugu State have been considered to be similar in terms of their post-prandial effect without an empirical study that assessed their effect on the blood glucose. The study determined the glycaemic response and sensory evaluation of four banana varieties consumed in Enugu State.

**Methods:** Banana varieties were purchased from different retailers in local markets in Nsukka Local Government Area, Enugu State. Ten healthy human subjects participated in the glycaemic response study for each banana variety. Glycaemic response was evaluated using standard methods. Thirty judges evaluated sensory attributes of the banana varieties using 9-point hedonic scale. Statistical analysis was done using IBM SPSS statistical software version 22. Descriptive statistics (mean and standard deviation) was used to describe the data obtained. One-way Analysis of Variance and turkey HSD test was used to compare the means of the glycaemic level and sensory evaluation scores of the banana samples and  $p < 0.05$  was significant.

**Results:** Subjects recruited for glycaemic response study had mean age of 23 years and mean BMI was 21.82kg/m<sup>2</sup>. The glycaemic response of all the banana varieties was comparable ( $p > 0.05$ ) after 120 minutes. The glycaemic index of Gros Michel was 52, Red Dacca, 24, Lady's Finger 45 and Green Mutant 71. Glycaemic load of banana varieties were Gros Michel (3.22), Red Dacca (1.52), Lady's Finger (1.91) and Green Mutant (3.99). Sensory evaluation result of the four varieties of banana showed that Red Dacca was rated highest in general acceptability. The glycaemic index of the banana varieties studied shows medium glycemic index except the Green Mutant variety, low glycaemic load and moderate glycaemic response.

**Conclusion:** Banana could be consumed by all individuals including diabetic patients as the glycaemic index showed low to medium level.

**Conflict of Interest:** none declared

**Keywords:** glycaemic; sensory; banana;

## 326[R] Growing-up milks: Sugar content, nutrient profiles and nutrient content claims.

Mrs Anz lle Mulder<sup>1</sup>, Ms Jane Badham<sup>1</sup>, Mrs Lara Sweet<sup>1</sup>, Mrs Elizabeth Zehner<sup>2</sup>, Dr Alissa Pries<sup>2</sup>

<sup>1</sup>JB Consultancy, Johannesburg, South Africa, <sup>2</sup>Helen Keller International, Washington, USA

**Biography:** Anz lle Mulder is a dietitian, registered in South Africa, with an MSc in Nutrition and experience in both the public sector and research environment. Her international education and background inspired her strong passion for sustainable development and maternal, infant and young child health with a focus on nutrition. She is a consultant with JB Consultancy, a global health and nutrition communication, strategy, facilitation and research management company. Anz lle currently works predominantly on The Assessment and Research in Child Feeding (ARCH) project led by Helen Keller International, that works to strengthen policies that promote optimal infant and young child nutrition and explores marketing of commercial foods and diets of young children in rapidly evolving food environments.

**Introduction:** Young child feeding is under the global spotlight. Growing up milks (GUMs) are the fastest growing breast-milk substitute in low-middle-income countries. Research and global recommendations do not recommend GUMs for children 1-3 years - only breastmilk or full fat cow's milk. GUMs marketed should comply with global standards in order not to discourage continued breastfeeding and/or promote unhealthy eating habits.

**Objective:** To assess the sugar content, nutrient profiles and nutrient content claims of GUMs launched on the Indonesian market.

**Methods:** A database of GUMs (n=100) launched in Indonesia, over a 28-month period, was purchased from Innova Market Insights and assessed against draft Codex standards and the UK Food Standards Agency (UKFSA) nutrient profiling model. Nutrient content claims were also recorded.

**Results:** More than a third (34%, n= 34) of GUMs did not comply with Codex sugar guidelines ( $\leq 2.5\text{g}/100\text{kcal}$  free sugar). Three quarters (77%, n=77) contained either sucrose or fructose, and 98% (n=98) contained one or more added sugars/sweeteners, with the average being five. Almost all (97%, n=97) made nutrient content claims despite this being against Codex guidance. GUMs contained on average 29% more sugar than cow's milk. Almost three quarters of GUMs did not provide sufficient label information to be assessed using the UKFSA nutrient profile model, while the UKFSA front-of-pack sugar assessment classified 70% of GUMs as having high sugar content. GUMs cost 9 times more than whole cow's milk.

**Conclusion:** GUMs launched in Indonesia did not comply with draft Codex standards and three-quarters did not provide enough label information for nutrient profiling. GUMs are generally high in sugar and make nutrient content claims. In addition, they are very expensive compared to cow's milk. GUMs are not appropriate in the diets of young children and are unsuitable as a replacement for breastmilk or full fat cow's milk.

**Conflict of Interest:** None

**Keywords:** Breast-milk substitutes, Growing-up milks, young child nutrition, added sugar, nutrient profiling.

## 534[R] Gruels Formulated From African Yambean, Walnut and Maize Improved the Body Mass and Biochemical Parameters of Hiv-Infected Adults

Dr Peace Ani<sup>1</sup>, Dr. Justina Okoli<sup>2</sup>, Dr. Peace Ani<sup>1</sup>

<sup>1</sup>Department of Nutrition and Dietetics, University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>2</sup>Department of Nutrition and Dietetics, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria

**Biography:** Peace Ani started her academic career in July 2011 as a graduate assistant after she graduated with first class honours (BSc. Nutrition and Dietetics) and emerged as the best graduating student. She obtained her doctoral degree in Human Nutrition in 2018 from the University of Nigeria, Nsukka (UNN). Peace is currently a lecturer in the Department of Nutrition and Dietetics, UNN. She is actively involved in teaching and supervision of students' research works. She does research in Human Nutrition and Food Science. Her research interests include malnutrition, household food security, food analysis, non-communicable diseases and rural health. She is a registered member of the Dietitians Association of Nigeria (DAN) and Nutrition Society of Nigeria (NSN).

**Introduction:** Malnutrition is the major challenge facing people living with HIV in developing countries. It threatens their survival and increases the risk of transmission and progression of the infection. This study determined the effect of gruels formulated from African yambean, walnut and maize on body mass and biochemical parameters of HIV-infected adults.

**Methods:** African yambean, walnut and maize were separately processed into flour. The flours were blended into different ratios (M84W11Y5, M84W8Y8, M84W6Y10, M76W18Y6 & M77W6Y17) to formulate five composite flours, supplying equal amount of protein (25.4g). Sixty HIV-infected adults visiting Anti-Retroviral Departmental clinic of a teaching hospital were randomized into six groups of ten each. Five groups were fed on daily basis with the formulated gruels while the sixth group received no intervention. Anthropometric measurements and biochemical parameters were obtained at baseline and at the end of the feeding trial which lasted for 3 weeks. Statistical Product for Service Solution was used to analyze data obtained. Significance was set at  $P < 0.05$ .

**Results:** No difference was observed in the body mass index (BMI) and CD4 count of the control group at the end of the trial. The highest percentage increase in BMI and CD4 count was observed in groups fed M84W8Y8 (2.78%) and M77W6Y17 (6.29%), respectively. Percentage increase in hemoglobin level of the experimental groups ranged from 0.1 to 0.3%. Fasting blood glucose level increased in the control while that of the experimental groups decreased however, this decrease was only significant ( $p < 0.05$ ) in group fed M76W18Y10 diet. High density lipoprotein cholesterol increased and total cholesterol decreased similarly in all groups fed the experimental diets.

**Conclusion:** Locally formulated gruels could improve the nutritional status of HIV-infected individuals hence delaying progression of the disease.

**Conflict of Interest:** None

**Keywords:** Human Immunodeficiency Virus; walnut; African yambean; maize; CD4 count

## 24[R] How entrepreneurship is affecting dietetic and nutrition practices? The ICDA members' perspective: responses from the 2018-2019 Trends Survey.

Dr Judith Rodriguez<sup>1</sup>, Ms. Alana Marrero Gonzalez<sup>1</sup>

<sup>1</sup>University Of North Florida, Jacksonville, United States

**Biography:** Judith Rodriguez is professor in, and past chair of, the Department of Nutrition & Dietetics in the Brooks College of Health at the University of North Florida (UNF). She has many peer reviewed and consumer publications, including the Latino Food Lover's Glossary (Florida Dietetic Association), The Diet Selector (Running Press) and 200 Surefire Ways Eat to Well and Feel Better (Fair Winds Press). Dr. Rodriguez, a Medallion recipient of the Academy of Nutrition and Dietetics and the UNF 2013 Distinguished Professor, has received numerous recognitions. For over thirty years she has been involved in educational, service and research activities and done media interviews. She served as a consultant on a variety of initiatives, including a national health study of U.S. Hispanics/Latinos and projects with an international focus. She has collaborated with others to provide travel abroad and community based experiences to UNF students. Dr. Rodriguez received a PhD in Anthropology from Rutgers University, an MA in Nutrition and Higher Education, a BS in Nutrition and Dietetics from New York University, and is a Registered Dietitian/Nutritionist. She is a Past President of the Academy of Nutrition and Dietetics (formerly the American Dietetic Association).

**Background:** This presentation summarizes responses in the 2018-2019 ICDA Trends survey to questions related to nutrition and dietetics entrepreneurship

**Introduction:** Every four years the International Confederation of Dietetic Associations has been conducting a survey on the education and work of Dietitian-Nutritionists of member countries. In 2018-2019, the ICDA Board conducted a brief survey to identify trends and changes in practice areas.

**Methods:** The Institutional Review Board (IRB) of the University of North Florida (Jacksonville, Florida, U.S.A.) approved the brief survey, which was developed and administered on the Qualtrics™ platform. The survey was sent to ICDA member country representatives late 2018 and reminders were sent early 2019.

**Results:** Twenty-four out of 44 or slightly more than half (54.5%) of the ICDA members responded to the survey. Of these 75% (18 out of 24) responded that the number of practitioners becoming entrepreneurs was increasing. While most respondents indicated that this trend would likely have a positive impact on the visibility and practice of the profession, two respondents (7%) though entrepreneurship could have a negative impact. Although there were a variety of responses regarding the foci of entrepreneurship, the use of media as part of the communication method was identified as an integral to that practice area. This presentation will include members' stated pros and cons regarding entrepreneurship. Tracking trends in entrepreneurship will provide Congress attendees with valuable information regarding possible practice models, benefits, pitfalls, and ideas for how practitioners are using media and communication to promote their practice. In addition, there does not appear to be research regarding entrepreneurial education (EE) for the profession so information about practice trends may help with the formulation of EE for dietitians and nutritionists.

**Conflict of Interest:** None

**Keywords:** Entrepreneurship; communication; trends; media; practice

## 262[R] How Nutrition in Integrative and Functional Medicine Standards can impact practice

Dr Sudha Raj<sup>1</sup>, MPH RD CCN LD Diana Noland, Mrs Monique Richard<sup>3</sup>

<sup>1</sup>Syracuse University, Syracuse, United States, <sup>2</sup>Sequoia Family Medicine, Burbank, United States, <sup>3</sup>Nutrition-in-Sight, Johnson City, United States

**Biography:** Dr. Raj holds a B.Sc. degree in Nutrition and Dietetics from Madras University and M.Sc. degree from Bombay University in India. She completed her M.S and PhD degrees in Nutrition Science from Syracuse University. Dr. Raj is also a Fellow of the Academy of Nutrition and Dietetics.

Dr. Raj is interested in exploring the role of acculturative factors as they impact the health and well-being of Asian Indian immigrants specifically from India. She has developed dietetics related educational resources, written book chapters and given presentations highlighting the unique Asian Indian food culture and role of food as delineated in the traditional medical system of Ayurveda. She was instrumental in developing and implementing one of the first pilot studies to investigate dietary acculturation patterns in Asian Indian immigrants in the U.S. She has served as Newsletter Editor, Chair for the Vegetarian Nutrition Dietetic Practice Group and Chair for the Vegetarian Nutrition Evidence Analysis Group. She has also served as an author for the recent publication on the development of Standards of Practice for the Dietitians in Integrative and Functional Medicine. Dr. Raj's research and curricular development interests extend into the areas of vegetarian nutrition, integrative and functional nutrition and Ayurveda.

**Introduction:** The Academy of Nutrition and Dietetics (Academy): Revised 2019 Standards of Practice (SOP) and Standards of Professional Performance (SOPP) for Registered Dietitian Nutritionists (RDNs) (Competent, Proficient, and Expert) in Nutrition in Integrative and Functional Medicine (NIFM) was published in the Journal of Academy of Nutrition and Dietetics in June 2019 and is on a scheduled 7-year review process. This resource provides consensus standards for use by RDNs in determining competence and professional development. The Academy SOP SOPP articles are updated to consider changes in global health care and other business segments, public health initiatives, new research, consumer interests, technological advances, and emerging practice environments. The previous article was published in June 2011 with the goal of the 2019 revision to reflect changes in practice and anticipate future trends.

**Methods:** The SOP SOPP for RDNs in NIFM were revised by the authors with input and consensus of content experts representing diverse practice and geographic perspectives. The Standards were reviewed and approved by the Academy Dietitians in Integrative and Functional Medicine Dietetic Practice Group (DIFM DPG) Executive Committee and the Academy Quality Management Committee.

**Results:** The Revised 2019 SOP SOPP for RDNs in NIFM was published with update highlights including: a new definition of and levels of practice figure for NIFM, an integrative and functional medicine principles figure, an updated Integrative and Functional Medical Nutrition Therapy (IFMNT) Radial to facilitate a detailed nutrition and lifestyle assessment, an amended glossary and role examples among others.

**Conclusions:** The Standards can be applied in self-evaluation, professional development, advancement of practice, patient assessment in addition to helping determine competence for RDNs. Educators and preceptors can use these tools to help guide students and interns who are interested in NIFM practice.

**Conflict of Interest:** None

**Keywords:** Standards, Competence, Integrative and Functional Medicine, Professional Development, Self-Evaluation

## 269[R] How to save a small fortune! Improving the quality, clinical and cost effectiveness of oral nutritional supplement (ONS) prescribing in NHS Scotland

Ms Lynsey Robinson<sup>1</sup>, Miss Janie Gordon<sup>2</sup>, Mrs Margaret Ryan<sup>1</sup>, Mrs Alpana Mair<sup>3</sup>

<sup>1</sup>NHS Greater Glasgow & Clyde, Glasgow, United Kingdom, <sup>2</sup>NHS Fife, Fife, United Kingdom, <sup>3</sup>Effective Prescribing & Therapeutics, Scottish Government, Edinburgh, United Kingdom

**Biography:** Lynsey qualified as a registered dietitian in 2002 and has 17 years' experience across general community and prescribing support services in NHS Greater Glasgow & Clyde. Lynsey has a passion for quality improvement and as an 'Advanced Prescribing Support Dietitian' currently leads on initiatives that aim to improve the quality of patient care and oral nutritional supplement (ONS) prescribing. Lynsey has also held national roles for Scotland wide ONS improvement work as project manager of the 2016-18 Scottish ONS Short Life Working Group and as chair of the Scottish Dietetic Prescribing Support Group. Lynsey is currently studying for a Master's degree in Health Research.

**Introduction :** In 2016 work began to accelerate transformational change for high quality, clinically and cost-effective patient care and oral nutritional supplement (ONS) prescribing in line with the Scottish Government's Quality Ambitions and Once for Scotland vision.

**Methods:** Sustained development has been enabled through an inter-professional Short Life Working Group (SLWG) and continued collaboration between the Scottish Dietetic Prescribing Support Group, Dietetic Leadership Network and Effective Prescribing & Therapeutics branch (Scottish Government).

**Results:** All 14 NHS Boards in Scotland are progressing with implementing the SLWG's 12 key recommendations, published 2018.

### Key results:

1. Current data (2019) indicates improvement to the appropriateness of ONS prescribing; annual Scottish % variance ONS volume use (+3.8% 2015-16; -4% 2018-19) and cost (£16 million 2015-16; £11 million 2018-19).
2. Standardised ONS prescribing data reporting and analysis is now used by all 14 NHS Boards in Scotland to continually drive improvement
3. Formulary variation is being reduced through Scotland wide Best Practice Guidance for Adult ONS Formulary Development
4. Continuous improvement to unwarranted variation in practice and processes has been driven through findings from structured interviews, e-surveys and a focus group. Scotland wide Guidelines for appropriate prescribing of ONS have been published. A Once for Scotland approach is being taken to patient/public information. There are also recommendations for the development of Best Practice Principles for dietitians and pre and post registration dietetic training.
5. New models of care, including the use of Technology Enabled Care, are currently being trialled in several NHS Boards to create transformational change in dietetic practice in line with NHS Scotland priorities

**Conclusion:** Inter-professional working and shared learning has unlocked the potential to support improvement to the quality, clinical and cost-effectiveness of patient care and the development of equitable care pathways and health systems across Scotland – and perhaps beyond!

**Conflict of Interest:** None

**Keywords:** Inter-professional, quality-improvement, prescribing, transformation, cost-effectiveness

## 645[R] Hydration status and the prevalence of the indications of urinary tract infections amongst day shift nurses, practicing at a private hospital in Durban, KZN, SA.

Ms Kerry Lowe<sup>1</sup>, Dr Chara Biggs<sup>1</sup>

<sup>1</sup>UKZN, Pietermaritzburg, South Africa

**Biography:** Master of Science (Dietetics) (University of KwaZulu-Natal) Postgraduate Diploma (Dietetics) with Distinction (University of KwaZulu-Natal) BSc in Dietetics - Summa Cum Laude (University of KwaZulu-Natal)

- Dietitian/Planner at Best10, Previously, Community Service Dietitian at Lower Umfolozi War Memorial Regional Hospital (LUWMRH), Empangeni, KwaZulu-Natal.

**Introduction:** Nurses work in a high risk environment for dehydration. Any degree/type of dehydration can detrimentally impact cognitive and physical performance, as well as mood. Dehydration can therefore impact patient care and also increase the nurses' risk of urinary tract infections (UTIs).

**Objectives:** To determine the prevalence of dehydration and the indications of UTIs, as well as contributing risk factors and behaviours. Method: A descriptive, cross-sectional study involving 242 day shift nurses practicing at a private hospital in Durban. Midstream urine samples were assessed for indications of UTIs, using urine dipsticks and pre- and post-shift urine specific gravity (USG) was measured. Self-administered questionnaires were used to collect data on contributing risk factors and behaviours.

**Results:** The mean age was 38years 5months, 91.7% (222/242) were female and 52.7% (127/241) were Black. Half began (51.2%; 124/242) and ended (45.4%; 110/242) work dehydrated, with significantly more being severely dehydrated post-shift ( $p < 0.005$ ). Pregnancy ( $p = 0.035, p = 0.025, p = 0.007$ ) and wards with higher relative humidity levels ( $p = 0.057$ ) were associated with dehydration. Older ( $p = 0.001, p = 0.006$ ), as well as White nurses ( $p = 0.002, p = 0.002, p = 0.017, p = 0.004, p = 0.034$ ), were likely to be better hydrated both pre- and post-shift. Diabetes Mellitus was the only self-reported medical condition significantly related to dehydration ( $p = 0.047, p = 0.017$ ). Overall 33.1% (80/242) had indications of a UTI, 30.6% (74/242) a possible indication and 2.5% (6/242) a strong indication. Indications of UTIs were not significantly related to hydration status or any of the factors or behaviours expected to increase the risk.

**Conclusion:** Dehydration is a preventable health challenge that impacts the nurses' health and behaviour. As they perform a cognitively demanding job that requires critical decision making, pivotal to patient safety and care, there is a need for education and the establishment of guidelines for improved hydration amongst nurses. When implementing such initiatives, high risk groups and those working in high risk environments should be especially targeted.

**Conflict of Interest:** None

**Keywords:** Dehydration; Hydration; Urinary Tract Infections; Nurses; South Africa

## 219[R] Identifying participants who improve and sustain change after an adult food literacy program

Dr Andrea Begley<sup>1</sup>, Dr Ellen Paynter<sup>1</sup>, Lucy Butcher<sup>2</sup>, Vanessa Bobongie<sup>2</sup>, Professor Satvinder Dhaliwal<sup>1</sup>

<sup>1</sup>Curtin University, Perth, Australia, <sup>2</sup>Foodbank WA, Perth, Australia

**Biography:** Dr Andrea Begley is an advanced accredited practicing dietitian with a focus on public health nutrition issues and programs. She completed a Doctor of Public Health investigating cooking skills and their conceptualisation in health. Andrea currently is a Senior Lecturer in the School of Public Health at Curtin University and has teaching and research responsibilities in dietetics and public health. Over the past four years she has led the development of the curriculum and accreditation of Curtin University's new Master of Dietetics. Andrea's research is currently focused on developing and evaluating effective food literacy programs for adults, parents and secondary school students, in addition to assessing the contribution of school breakfast programs and improving charitable food.

**Introduction:** Community focused food literacy programs present evaluation challenges as they are not research trials. Food Sensations® for Adults (FSA), a free four-week nutrition and cooking program funded by the Western Australia Department of Health, targets low to middle income participants who would like to improve their food literacy. Impact results demonstrate effectiveness in changing participants from low to moderate or high food literacy and achieved a mean increase in self-reported vegetable intake (½ serve per day) ( $p < 0.0001$ ).

**Methods:** The objectives were to compare demographic characteristics of those completing the three month follow-up and assess if participants improve or sustain changes. Questionnaires were developed from validated tools. Innovative analysis methods were used to examine the mean self-reported change in food literacy using factor scores (Planning, Selection and Preparation) and using tertile stratification to calculate change in participants with low food literacy at the end of the program.

**Results:** Matched data was available for  $n=594$  from 1855 participants providing some evaluation. Participants who completed follow-up were more likely to be older, have higher education levels and some employment. Analysis identified a statistically significant increase in follow-up scores for domains of Planning (3.0%), Selection (7.2 %) ( $p < 0.0001$ ) and a mean decrease in scores for Preparation (3.1 %) ( $p < 0.001$ ) and serves of vegetables consumed (7.9%) ( $p < 0.0001$ ) but still higher than baseline. Of those classified with low food literacy at the end of the program, 60% significantly improved follow-up scores for Planning ( $p < 0.0015$ ), 73.3% for Selection ( $p < 0.0001$ ) and maintained Preparation scores (ns). Participants classified as moderate or high food literacy at the end of the program maintained their ranking three months after the program in Planning, Selection and Preparation.

**Conclusion:** FSA is effective in sustaining food literacy and dietary behaviours and ways to support change for all participants after program completion need to be considered.

**Conflict of Interest:** None

**Keywords:** food literacy, evaluation, dietary intakes, tertiles

## 422[R] Identifying and treating malnutrition in the community – are we making every contact count?

Ms Massar Dabbous<sup>1</sup>, Dr Christine Baldwin<sup>1</sup>, Dr Christine Elizabeth Weekes<sup>2</sup>

<sup>1</sup>King's College London, London, United Kingdom, <sup>2</sup>Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

**Biography:** Massar Dabbous is a US registered dietitian and a PhD candidate at King's College London, UK. After obtaining her MSc at University College London in Clinical and Public Health Nutrition in the UK, Massar worked as a clinical and research dietitian in her home country of Lebanon. Currently, as part of her PhD, she is exploring nutrition intervention strategies for nutritionally vulnerable older adults in the community. Her research interests include malnutrition, ageing and frailty.

**Introduction:** Malnutrition originates in the community and at any disease stage in the patient's journey, thus necessitating timely identification and first line management of nutritional issues at every opportunity by healthcare professionals. This study aims to determine the proportion of older people at risk of malnutrition and to establish the proportion who were identified and had a treatment plan implemented in the community.

**Methods:** One hundred people (aged  $\geq 60$  years) accessing Intermediate care (IC) services in south London were recruited and information was collected on nutritional risk status ('at-nutritional-risk' = BMI  $< 20$  kg/m<sup>2</sup> or weight loss in the past 3-6 months) for one year from recruitment. Data were collected from electronic healthcare records of three healthcare Trusts in the UK on participant contact with hospital, outpatient and community services and documented nutritional care. Data were analysed using SPSS v25.

**Results:** At baseline mean age was  $81.1 \pm 8.6$  years. Ninety-two participants were categorised as frail, 72 had  $\geq 1$  comorbidity and 67 were 'at-nutritional-risk'. In those who were at-nutritional-risk, the majority of healthcare visits were to the outpatient setting ( $n=457$ ), followed by hospital admissions ( $n=297$ ). Fifty-six (83%) of the at-nutritional-risk participants also received community healthcare services and were seen mainly by community nurses ( $n=79$ ) and physiotherapists ( $n=41$ ). Twenty-five of at-risk participants were nutritionally screened by a nurse and twenty were referred to the dietitian but in the acute setting only. In the community setting, screening was performed in seven (12%) participants by nurses, and two were referred to the dietitian. Among the at-nutritional-risk participants 10% were seen by the dietitian as an outpatient and 12% in the community setting.

**Conclusion:** This study suggests missed opportunities in nutritional screening, dietetic referral and input in the outpatient and community settings. In this study, every contact did not count with regard to nutrition.

**Conflict of Interest:** None

**Keywords:** malnutrition; community nutrition; older adults; nutrition screening; nutrition intervention

## 306[R] Identifying factors relating to meal preparation difficulties encountered by older individuals – a cross-sectional study

Mrs Gaëlle Soriano<sup>1</sup>

<sup>1</sup>Chu Toulouse, Toulouse, France

**Biography:** French Registered Dietitian. PhD Student in Nutritional Epidemiology, INSERM 1027 Université Paul Sabatier Toulouse.

**Introduction:** Difficulties with meal preparation are prevalent in older individuals. This may influence food intake and contribute to nutritional risks in this population. However, to date, little attention has focused on meal preparation difficulties and their potential impact on dietary intake. This study highlights factors associated with meal preparation difficulties, including socio-demographic characteristics, functional status and food intake.

**Methods:** We used data from 1295 community-dwelling older adults aged 70 years and above, enrolled in the Multidomain Alzheimer Preventive Trial (MAPT), a French multicentre, randomised, placebo-controlled trial. The difficulties encountered in preparing meals were self-reported using the Alzheimer's Disease Cooperative Study-Activities of Daily Living Prevention Instrument (ADCS ADL-PI) Scale. A brief semi-quantitative FFQ (Food Frequency Questionnaire) was administered to assess the dietary habits of a subset of 628 participants.

**Results:** Meal preparation difficulties are more common in women ( $p=0.016$ ). Subjects reporting difficulties were older ( $p<0.001$ ), and prone to depression ( $p<0.001$ ) with a lower physical function ( $p<0.001$ ) and cognitive score ( $p<0.001$ ) compared to those without difficulties. More subjects were classified at risk of malnutrition ( $p=0.045$ ) but no difference was observed based on the body mass index. As regards food intake, only the consumption of dairy produce and vegetables differed depending on meal preparation difficulties.

**Conclusion:** Meal-related activities in later life may impact food intake in some essential food groups. Individuals with functional decline and depressive symptoms are more likely to encounter meal preparation difficulties and may need closer monitoring and greater assistance in this respect.

**Conflict of Interest:** None

**Keywords:** older individuals ; cooking ; meal preparation ; malnutrition

## 471[R] Identifying potential barriers to food intake in a rural Canadian hospital

Ms Lauren Enwright<sup>1</sup>

<sup>1</sup>Middlesex Hospital Alliance-Four Counties Hospital Services, Newbury, Canada

**Biography:** Lauren Enwright is a Registered Dietitian and Certified Diabetes Educator in Ontario, Canada. She received an Honours Specialization Bachelor of Science in Food and Nutrition and a Diploma in Dietetic Education and Practical Training from Brescia University College in London, Ontario, Canada. She is passionate about diabetes education, however, she also has an interest in the study of malnutrition in the acute care hospital setting, particularly in the geriatric population.

**Introduction:** The Canadian Malnutrition Task Force (CMFT) identified that barriers to food intake in acute care hospitals can exacerbate or lead to malnutrition, which can increase length of stay and delayed recovery. Objectives: To identify the prevalence of barriers to food intake at Four Counties Health Services (FCHS), a 14-bed rural community hospital in Newbury, Ontario.

**Methods:** Volunteers were trained to identify, record and help address specific barriers to food intake among patients. Seven barriers, based on CMFT findings, were assessed during multiple visits to individual patients: difficulty with opening packages, cutting foods, and adding condiments, food out of reach of patient, lack of socialization, need for cueing and encouraging, and patient preferences. Patients with precautions, NPO, chewing/swallowing issues or requiring full feed assistance were excluded. 408 visits to 118 patients (38.1% Male, 61.0% Female, 0.9% unspecified sex) were recorded over 8 months.

**Results:** In 408 visits, the following barriers were identified in order of frequency; socialization: 83.8% opening packages: 26.5%, placing food within reach: 13.0%, adding condiments: 10.8%, cutting food: 9.8%, cueing and encouraging: 8.8%, patient preferences 4.4%. 12.5% of visits could not be completed or had a missing/incomplete form. No barrier was identified, or visit was refused in 1.5% of visits.

**Conclusions:** Most frequently identified was a lack of socialization, a risk factor for depression which can affect food intake. This may be due to the rural location of the hospital, which may make regular visitation from family difficult. Although statistical comparison to the CMFT cannot be completed due to differing methodology, patients at FCHS do face preventable barriers to optimal nutrition intake. Further research needs to be done to determine if volunteer visits addressing these specific barriers impacts malnutrition rates, length of stay and readmissions at our hospital.

**Conflict of Interest:** None

**Keywords:** malnutrition, poor intake, CMFT, rural, acute care.

## 23[R] Impact of the type and duration of dialysis on the nutritional status of adults with end-stage renal disease

Ms Anchen Martens<sup>1</sup>, Ms Gerda Gericke

<sup>1</sup>University of Pretoria, Pretoria, South Africa

**Biography:** Anchen Martens is a clinical dietitian working at a tertiary hospital in KwaZulu-Natal. She is currently working in the ICU setting and dialysis units. She thoroughly enjoys nutrition in critical care and has a special interest in the field of renal nutrition. It felt natural for her to continue her research journey in the same field, where she investigated the impact of the type of dialysis as well as the duration of dialysis, on the nutritional status. Anchen recently graduated with a master's degree in dietetics through the University of Pretoria. She is an active member of the Parachute Association of South Africa and is re-energized by mountain biking through the lush forest close to her home.

**Introduction:** Protein-energy wasting (PEW) is common in patients with end-stage renal disease (ESRD) and in those who are receiving hemodialysis (HD) or peritoneal dialysis (PD). PEW in dialysis patients is strongly associated with morbidity, mortality and poor clinical outcomes.

**Objective:** To determine and compare the nutritional status of adults (18-60 years) who had been on hemo- or peritoneal dialysis for less than two years, or two years or more through anthropometric assessments, biochemical investigations, and subjective global assessment.

**Methods:** A non-randomised, observational cross-sectional descriptive study with an analytical component was conducted. The nutritional status of 132 participants, 72 on HD and 60 on PD, was assessed and compared between the type and duration of dialysis.

**Results:** The HD group had significantly more moderately malnourished participants ( $p=0.044$ ) with significantly lower values in the oedema free body weight ( $p=0.0129$ ), body mass index ( $p=0.0129$ ), body fat percentage ( $p=0.048$ ) and serum cholesterol ( $p<0.0001$ ) compared to the PD group. The arm muscle area and the body fat percentage were significantly higher in participants who had been on PD for more than two years ( $p=0.032$  and  $p=0.032$  respectively). The serum albumin was significantly higher in participants who had been on HD for more than two years ( $p=0.035$ ). Overall, the participants who had been on dialysis for more than two years had a better nutritional status compared to those who had been on dialysis for less than two years.

**Conclusion:** The PD participants and those who were on dialysis for longer than two years had a better nutritional status. The results demonstrated that the nutritional outcomes may vary according to the type of dialysis, as well as the duration of dialysis received.

**Conflict of Interest:** None

**Keywords:** Nutritional status; End-stage renal disease; Hemodialysis, Peritoneal dialysis.

## 136[R] Implementation of the Prevention of Mother-to-Child Transmission (PMTCT) Program in the Northern Cape, South Africa

Mrs Bianca Tromp<sup>1,2</sup>, Dr Ronette Lategan-Potgieter<sup>2,3</sup>, Mrs Riette Nel<sup>2</sup>

<sup>1</sup>Heart and Stroke Foundation, Cape Town, South Africa, <sup>2</sup>University of the Free State, Bloemfontein, South Africa, <sup>3</sup>Stetson University, Stetson, United States of America

**Biography:** Bianca Tromp obtained her MSc in Dietetics from the University of the Free State with dissertation title: *The Implementation of the Prevention of Mother to Child Transmission policy in the Northern Cape, South Africa*. The study investigated the health of HIV infected mothers and their HIV exposed children in a rural setting where they were enrolled in the PMTCT antenatal and postnatal care system.

Bianca is an advocate for legislation and policies to improve public health especially with regards to mother and infant care in vulnerable communities.

South Africa's Prevention of Mother-to-Child Transmission (PMTCT) of HIV program has been implemented for over ten years. This has led to a considerable reduction in mother-to-child transmissions. In 2010, the Northern Cape Province had a 1.4% transmission rate, being the lowest in the country.

**Objective:** To describe the implementation of the PMTCT program in the Frances Baard district, Northern Cape Province; South Africa and identify factors that may influence the effectiveness of this program.

**Method:** 100 Mother-child pairs from four clinics participated in this cross-sectional study. Information was collected on socio demographics, antenatal clinic attendance, feeding counseling, knowledge and practices, CD4 cell count and HIV stage, antiretroviral treatment (ART) initiation/adherence and partner involvement.

**Results:** Almost 25% of mothers first attended an antenatal clinic during their third trimester, out of them, 52.2% were tested for HIV infection for the first time. Most of the mothers received counseling on feeding practices during antenatal visits (97%), after labor (64%) and during post natal visits (84%). Most mothers knew the definition (77%) and recommended duration (76%) of exclusive breastfeeding and the dangers of defaulting ART when breastfeeding (75%), but only two mothers knew the risk of mixed feeding. Fifteen mothers were pressured to stop breastfeeding by healthcare professionals before 12 months. More than half (52%) of the mothers started ART during their last pregnancy, among them, 50% only started treatment after 14 weeks of gestation. The children who received ART, 13.7% defaulted their treatment for one day or more. All three HIV infected children's mothers defaulted their own ART while breastfeeding.

**Conclusion:** The PMTCT program is implemented according to the national policy in this district. Earlier ART initiation and improved compliance, education of healthcare workers, more focused counseling sessions and improving community awareness of early antenatal visits may improve effectiveness of this programme.

**Conflict of Interest:** The first author obtained a post-graduate student bursary from the Nestlé Nutrition Institute Africa, used to fund the operational costs of this study. The first author is employed by the Department of Health, Northern Cape Province, South Africa

**Keywords:** HIV; PMTCT; Breastfeeding; ART; antenatal

## 206[R] Improved prediction equations for estimating height in adults from ethnically diverse backgrounds

Dr Angela Madden<sup>1</sup>, Dr Alla Mashanova<sup>1</sup>, Dr Farzad Amirabdollahian<sup>2</sup>, Ms Sandeep Ghuman<sup>1</sup>, Ms Munibah Makda<sup>2</sup>, Dr Avril Collinson<sup>3</sup>, Ms Frances Dean<sup>3</sup>, Ms Malgorzata Hirsza<sup>4</sup>, Dr Susan Lennie<sup>5</sup>, Dr Maria Maynard<sup>4</sup>, Dr Brian Power<sup>6</sup>

<sup>1</sup>University Of Hertfordshire, Hatfield, United Kingdom, <sup>2</sup>Liverpool Hope University, Liverpool, UK, <sup>3</sup>University of Plymouth, Plymouth, UK, <sup>4</sup>Leeds Beckett University, Leeds, UK, <sup>5</sup>Newcastle University, Newcastle, UK, <sup>6</sup>University College London, London, UK

**Biography:** Angela Madden graduated from the University of Surrey UK and worked as a clinical dietitian in the NHS at the Hammersmith Hospital and Royal Free Hospital in London, specialising in nutritional management of liver disease. After completing her PhD at University College London, she became a lecturer at London Metropolitan University and moved to the University of Hertfordshire in 2006 to lead the first undergraduate dietetic programme in the East of England. Her current role at Hertfordshire includes teaching, research and research supervision with a particular focus on student-staff collaborative investigations.

**Introduction:** When body height cannot be measured, it can be predicted from ulna length (UL). However, commonly used published prediction equations may not provide useful estimates in adults from all ethnicities. This study aimed to evaluate the relationship between UL and height in adults from diverse ethnic groups and to consider whether this can be used to provide useful prediction equations for height in practice.

**Methods:** Standing height and UL were measured in 542 adults at seven UK locations. Ethnicity was self-defined using UK Census 2011 categories. Data were modelled to give two groups of height prediction equations based on UL, sex and ethnicity and these were tested against an independent dataset.

**Results:** UL and height were significantly associated overall and in all groups except one with few participants ( $P=0.059$ ). The new equations yielded predicted height ( $H_p$ ) that was closer to measured height in the Asian and Black subgroups of the independent population than the Malnutrition Universal Screening Tool (MUST) equations. For Asian men, ( $H_p$  (cm) =  $3.26 \text{ UL (cm)} + 83.58$ ), mean difference from measured (95% confidence intervals) was  $-0.6$  ( $-2.4, +1.2$ ); Asian women, ( $H_p$  =  $3.26 \text{ UL} + 77.62$ ), mean difference  $+0.5$  ( $-1.4, 2.4$ ) cm. For Black men,  $H_p$  =  $3.14 \text{ UL} + 85.80$ ,  $-0.4$  ( $-2.4, 1.7$ ); Black women,  $H_p$  =  $3.14 \text{ UL} + 79.55$ ,  $-0.8$  ( $-2.8, 1.2$ ). These differences were not statistically significant while predictions from MUST equations were significantly different from measured height.

**Conclusions:** The new prediction equations provide an alternative for estimating height in adults from Asian and Black groups and give mean predicted values that are closer to measured height than MUST equations. This presentation has potential benefit to an international audience by sharing new prediction equations that have been derived to better serve a diverse adult population.

**Conflict of Interest:** None

**Keywords:** Anthropometry; Height; Ulna; Prediction equations; Ethnicity

## 662[R] Improving dietary diversity of children aged 6 to 59 months through developing easy to understand and disseminate nutrition information, education and communication materials

Mr Innocent Sanga<sup>1</sup>, Mrs Neema Nkotagu<sup>2</sup>

<sup>1</sup>Sokoine University Of Agriculture, Morogoro, Tanzania, United Republic of, <sup>2</sup>The Centre for Counselling, Nutrition and Health Care (COUNSENUH), Dar Es Saalam, Tanzania, United Republic of

**Biography:** Innocent Sanga graduated from Sokoine University of Agriculture with first class overall GPA of 4.5 majoring Human Nutrition area in the academic year 2018/2019. He undertook a study that aimed at developing nutrition communication and education materials in helping to improve dietary diversity of children aged 6 to 59 months as a special project during the undergraduate degree studies. This opportunity imparted the interest of him wanting to further his academic carrier while basing his research on nutrition information, education and communication.

He was awarded best first year student Bachelor of science in Human Nutrition and overall best final year student in the same undergraduate degree course.

Innocent is currently enrolled at Sokoine university of Agriculture pursuing Masters of science in Human Nutrition.

**Introduction:** In Tanzania, low dietary diversity among children aged 6 to 59 months is one of the main reasons leading to malnutrition among these children. As per Tanzania National Nutrition Survey 2018, only 35.1% of children aged 6 to 23 months receive minimum dietary diversity. Objective: To develop various communication materials with simple but relevant nutrition information for parents/caregivers to be able to easily diversify diets of their children.

**Methods:** Needs assessment among the 14 mothers was conducted to determine their information, communication and education demands. The process was conducted using individual interviews among mothers so that to develop the communication materials that meet needs of the target group. These materials were pretested using expert reviews and individual interviews to the mothers. 30 people were involved in pretesting the communication materials, 16 nutrition experts from Sokoine University of Agriculture and 14 mothers/caregivers from Morogoro municipality. The activity involved presenting the materials to the respective individuals and considered five factors; clarity of content and presentation, attractiveness, acceptance, involvement and call to action of the materials.

**Results:** Nutrition education and Communication needs assessment revealed that the parents/caregivers need more knowledge on the five main food groups, nutrients they provide and their importance on child nutrition status and they normally receive information through print materials and electrical sources of information such as audios, audiovisual materials. Audiovisual material that can be accessed through a YouTube link, <https://youtu.be/aA8V95UhwJg> and print material (calendar) were produced as materials easy to understand and disseminate among the target group.

**Conclusion:** Lack of appropriate knowledge on child feeding is the main problem leading to malnutrition that should be addressed by developing easy to understand Information, Education and Communication materials in order to facilitate behavior change among the mothers/caregivers and improve their children's nutrition status

**Conflict of Interest:** None

**Keywords:** Dietary Diversity; Malnutrition

## 485[R] Infant feeding practices: knowledge, attitude and beliefs of male staff employed at the University of Limpopo, MEDUNSA campus

Mrs Chinwe Maryfrancis Omeh<sup>1</sup>, Dr. Lindiwe Ncube<sup>1</sup>, Dr. Masudu Manafe<sup>1</sup>

<sup>1</sup>Department of Human Nutrition and Dietetics, Sefako Makgatho Health Sciences University, Pretoria, South Africa

**Biography:** Mrs. Omeh (Enwelu) Chinwe Maryfrancis is a registered Dietitian with the Health Professions Council of South Africa (HPCSA) and currently working in Tshwane District (Health sub-district 1), Department of Health Gauteng. She obtained her BSc. in Nutrition and Dietetics from University of Nigeria, Nsukka (UNN), Postgraduate diploma in HIV and AIDS management from University of Stellenbosch and MSc. in Dietetics from University of Limpopo. She is currently writing a research for her PhD in Dietetics in the department of Human Nutrition and Dietetics at Sefako Makgatho Health Sciences University.

**Introduction:** Adequate nutrition during infancy and early childhood is crucial for health, growth and development as well as child survival. It is sound that breastfeeding has a vital impact on the child's physical, emotional and cognitive development. Whenever infant feeding is argued, the relationship between the foremost role players - the mother and infant is more likely to be mirrored - whereas the influence of the partner/father is unnoticed. Fathers can influence the initiation and maintenance of breastfeeding. However, relevant training targeted at fathers prenatally is necessary to empower them with skills to support their partners in an informed and practical manner. Therefore, the purpose of this study was to assess the knowledge, attitude and beliefs about infant feeding among male staff (fathers) at the University of Limpopo, Medunsa Campus.

**Methods:** A descriptive quantitative, cross sectional study design was used in this study. A self-administered questionnaire was used to collect data from 179 fathers. Descriptive statistics were calculated for the mean and frequencies.

**Results:** The result showed that 109 (61%) of the fathers did not know that colostrum should not be discarded and 111(62%) fathers said that they believed that colostrum is discarded because it is dirty. The result also showed that 115 (65%) of fathers did not know that frozen human milk can be thawed in the refrigerator and kept for the rest of the day.

**Conclusion:** Even though the results of the study showed that the fathers have good knowledge, positive attitude and preferred beliefs on infant feeding practices, however there is still a course for concern about the awareness on colostrum and handling of human milk. In this view, there should be continuous dissemination of information about breastfeeding to the fathers and in turn it will help in achieving the global nutrition target 5.

**Conflict of Interest:** 'None'

**Keywords:** Infant feeding practices, fathers, knowledge, attitude, beliefs

## 236[R] Infant formula feeding practices of mothers in a high socioeconomic area in Johannesburg

Mrs Annica Madeleen Rust<sup>1</sup>, Dr Lucia Meko<sup>1</sup>, Me Mariette Nel<sup>1</sup>

<sup>1</sup>University of the Free State, Bloemfontein, South Africa

**Biography:** Annica Rust obtained her BSc Dietetics & MSc Dietetics degree from the University of Free State. She is a registered dietician with the Health Professions Council of South Africa (HPCSA) and currently practices at the Breast Care Centre in Netcare Milpark Hospital and independently in Bryanston. She has a special interest in child and infant feeding as well as oncology.

**Introduction:** Most studies conducted in South Africa were carried out in low socioeconomic areas and do not focus on the decision to use infant formula but rather on the use of infant formula in combination with breastfeeding. Results from most of these studies show that barriers such as a lack of knowledge and experience, returning to work, a lack of breastfeeding support after birth, lack of facilities to support breastfeeding at work and public places, health problems, and family dynamics affect a mother's decision to use formula. In turn, these reasons lead to low rates for exclusive breastfeeding rates and a high rate of use of infant formula.

**Objectives:** The objective of the study was to investigate the formula feeding practices of mothers in a high socioeconomic area in Johannesburg.

**Methods:** A descriptive cross-sectional study was conducted in Johannesburg North, in the Gauteng Province, South Africa. One hundred and nine mothers residing in the area who met the inclusion criteria completed a self-administered questionnaire.

**Results:** The majority of mothers based their decision on which infant formula to use on the advice of paediatricians (60.4%), followed by friends (39.6%), nurses (38.7%), and family (33%). The most common factor that influenced the choice of infant formula used by mothers was the brand name of the infant formula (42.5%). Mothers preferred a range of infant formula that had a follow-on formula available (39.9%). The infant's medical condition (35.6%), the composition of the formula milk (34.5%), and the formula that the infant preferred (34.5%) were other common properties indicated by mothers.

**Conclusion:** South African mothers in high socioeconomic status obtained most of their information about infant feeding from paediatricians. The infant formula property that mostly influenced mothers' choice of infant formula was the brand name of the formula.

**Conflict of Interest:** 'None'

**Keywords:** Breastfeed, Johannesburg, Paediatricians, Formula, Feeding

## 270[R] Informing the design and delivery of a lifestyle program for women with polycystic ovary syndrome: a mixed-methods investigation on patients' perspectives

Dr Stephanie Pirotta<sup>1</sup>, Dr Anju Joham<sup>1,2</sup>, Associate Professor Lisa Moran<sup>1</sup>, Dr Siew Lim<sup>1</sup>, Professor Helen Skouteris<sup>1,3</sup>

<sup>1</sup>Monash Centre for Health Research and Implementation, Monash University, Clayton, Australia, <sup>2</sup>Department of Diabetes, Monash Health, Clayton, Australia, <sup>3</sup>Warwick University, Coventry, UK

**Biography:** Dr. Stephanie Pirotta is an accredited practising dietitian and post-doctoral research fellow at Monash University, School of Public Health and Preventive Medicine. Her PhD used a mixed-methods approach to inform the development and implementation of a clinical PCOS lifestyle program informed by women with PCOS as well as PCOS healthcare professionals. After completing her PhD in 2020 she now continues to work towards implementing the new model of care within the PCOS clinical at Monash Medical Centre Clayton, Victoria, Australia. Other PCOS projects include identifying areas of priority to improve the quality of life of women with PCOS and identifying how healthcare services are meeting this need. Stephanie is also the founder and leading dietitian of the private dietetic practice Womanly Nutrition and Dietetics, where she helps women receive evidence-based lifestyle therapy to optimise their PCOS management.

**Introduction:** Polycystic ovary syndrome (PCOS) is associated with metabolic, psychological and reproductive dysfunction in women of reproductive-age. Evidence-based PCOS guidelines recommend lifestyle management as first line treatment to manage and improve short and long term consequences of PCOS. Currently no research seeks to understand the preferences of a lifestyle program from the perspective of women diagnosed with PCOS. This mixed-methods study sought to explore women's preferences for a lifestyle program using the Template for Intervention Description and Replication (TIDieR) checklist.

**Methods:** A mixed-methods analysis incorporated semi-structured interviews (n=18) and an online survey (n=286) among women with PCOS residing across Australia. Thematic analysis was performed to identify major qualitative themes. Quantitative survey responses were presented as frequencies.

**Results:** Most women reported being willing to take part in a lifestyle program if offered (94.6%) and were willing to use their annual 5 Medicare-subsidised (government funded) sessions to attend the program (83%). Most preferred 45-60 minute sessions (75%) and 60% of the participants were willing to pay less than \$AU50 for each session. Interviews revealed women lack awareness regarding the availability of Medicare-subsidised sessions, with their willingness to use these on PCOS depending on other co-existing health conditions. Women preferred more sessions, citing long term support as important to sustain lifestyle changes. Multidisciplinary care was also emphasised, with PCOS-trained dietitians, endocrinologists, psychologists, exercise physiologists and fertility specialists requested to provide evidence-based information. The most preferred education topics were sustainable daily physical activity (58%), overcoming non-hungry eating (54%), PCOS-specific diets (51%) and overcoming barriers to behaviour change (45%).

**Conclusion:** PCOS specific lifestyle management programs should provide multidisciplinary care over multiple sessions. Overall design of the service should consider the preferences of women with PCOS for optimal engagement and health improvement.

**Conflict of Interest:** None

**Keywords:** Polycystic Ovary Syndrome, Lifestyle Management

## 742[R] Initial evaluation of Break-up with Salt: Virtual nutrition education for hypertension management

Ms. Helena Salgado, Dr Elizabeth Gollub<sup>1</sup>

<sup>1</sup>LSU AgCenter, Baton Rouge, United States

**Biography:** Dr. Elizabeth Gollub, an Assistant Professor in the School of Nutrition and Food Sciences, LSU AgCenter, works closely with individuals, communities, and organizations to develop, implement, and assess innovative approaches to creating healthier environments, changing social norms, and diminishing health disparities. Through community nutrition programs and evaluation research, Dr. Gollub focuses on strategies aimed at routinizing healthier eating and physical activity behaviors while exploring the impact on health and quality of life.

Dr. Elizabeth Gollub earned her PhD in Nutrition and Dietetics from Florida International University's National Resource Center on Nutrition, Physical Activity, and Aging. She holds a Master of Public Health degree from the University of North Carolina, Chapel Hill, she is a Registered Dietitian with a Certificate of Training in Adult Weight Management and she is a Certified Health Coach.

**Introduction:** Hypertension, has been identified as a risk factor for serious COVID-19 symptoms and an underlying cause of death from covid-19. Break Up with Salt (BUWS) is a 4-session, community-based nutrition education program, developed in response to the pandemic, to help adults throughout Louisiana prevent or manage hypertension. The BUWS virtual program was first piloted from September to December 2020. The curriculum, developed within the LSU AgCenter nutrition program, focuses on the DASH diet and strategies for healthy food selection and preparation, while also integrating habit formation techniques, and guidance on physical activity and stress management.

**Objective:** To determine if BUWS effectively influences food consumption and related behaviors among participants.

**Methods:** Program participants were recruited in 5 Louisiana parishes, by nutrition extension agents trained to facilitate the BUWS program and participant evaluation. A pre/post/follow-up e-survey design was used to collect data on immediate progress (post program) and again at a 3-month time point. The survey focused on indicators of food consumption associated with the DASH diet, physical activity, sedentary behavior, utilization of food/product labels for healthier food selection, perceived stress and health, and participant demographics.

**Results:** Data collection proved challenging. Among 32 evaluation participants, 16 pre/post-matched surveys and 2 follow-up surveys were collected. This group of participants was predominantly female (92%), middle age (88%), and White/Caucasian (50%) or Black/African American (40%). The paired t-test indicated no pre/post differences for food consumption (e.g., dark green vegetables p=0.3), time spent doing physical activity (p=0.3), use of food labels when grocery shopping (p=0.5), or stress levels (p=0.1); the Improvement Index indicated increased perceived health (1.3).

**Conclusion:** Assessment measures, time frames, and participant numbers must be reconsidered and BUWS must be re-piloted to determine influence on the targeted hypertension management behaviors among participants.

**Conflict of Interest:** None

**Keywords:** Hypertension; DASH diet; Virtual nutrition education

## 11[R] International Confederation of Dietetic Associations (ICDA) member country dietitian-nutritionist practice trends 2018-2019

Dr Judith Rodriguez<sup>1</sup>, Ms Carole Middleton<sup>2</sup>

<sup>1</sup>University Of North Florida and ICDA Director, Jacksonville, United States,

<sup>2</sup>ICDA Board, Director an U.K. ICDA Representative, , U.K.

**Biography:** 1. J. Rodriguez is Emeritus Professor in the Department of Nutrition & Dietetics in the Brooks College of Health at the University of North Florida (U.S.) and Past President of the Academy of Nutrition and Dietetics. She has peer-reviewed articles and co-authored *The Diet Selector, 200 Surefire Ways Eat to Well and Feel Better*, and other consumer publications. She is a Medallion recipient of the Academy of Nutrition and Dietetics and UNF's 2013 Distinguished Professor. She has been involved in educational, service and a research activities, worked as a consultant, and collaborated on study abroad and community based experiences for students.

2. C. Middleton has had a long involvement with the British Dietetic Association, including Honorary Chairman and sitting on a wide range of committees. As Chairman, she represented the BDA on the Department of Health Nutrition Task Force. She is currently a Director of the International Confederation of Dietetic Associations and has been the BDA representative at ICDA since 2004. Carole became a Fellow of the British Dietetic Association in 1993 and in 1997 Carole was awarded the honour of Member of the Order of the British Empire (MBE), in the Queen's Birthday Honours list, for Services to Dietetics.

**Introduction:** The International Confederation of Dietetic Associations has conducted a survey of the education and work of Dietitian–Nutritionists of member countries every four years. The 2016 survey indicated an increase in a wider range of settings and different ways of working in addition to the traditional hospital-based work. In 2018–2019 the ICDA Board conducted another survey regarding changes related to where and how Dietitian–Nutritionists are working.

**Methods:** Upon approval from the University of North Florida's (Jacksonville, Florida, U.S.A.) Institutional Review Board (IRB) a brief survey was developed using the Qualtrics™ platform. A link to the survey was sent to the ICDA representatives of all the member countries.

**Results:** Slightly more than half of ICDA members (24 out of 44) responded to the survey. Almost all (22 of 24) indicated that the number of practitioners had increased and of these, 18 reported that more Dietitian–Nutritionists were becoming entrepreneurs. Slightly more than half thought that this is having a positive impact but a few (2, or 7%) were concerned regarding its possible negative impact on the profession. Public health and clinical practice in primary care and hospitals were also identified as having had an increase by more than 50% of the respondents. The greatest increase in focus was on obesity and wellness, followed by other areas, including chronic diseases and malnutrition. Politics (21%), employment opportunities (21%), technology (13%), and competition (12%) were most commonly cited as things affecting practice.

**Conclusion:** There are common areas related to changes in practice, areas of focus, and issues affecting the profession. This provides information regarding topics to address at the global level to help organizations better position themselves and their profession within their countries and internationally. Continued tracking of this data will help to proactively address issues.

**Conflict of Interest:** N/A

**Keywords:** Trends, Social Media, Entrepreneurship, Issues

## 726[R] Interprofessional education and dietetic interns: Successes & challenges from the faculty perspective

Ms Amy Nickerson<sup>1</sup>, Prof MV Palumbo<sup>1</sup>

<sup>1</sup>University Of Vermont, Burlington, United States

**Biography:** A Nickerson - In her role as Senior Lecturer in Nutrition and Food Sciences and Program Director for the Master of Science in Dietetics at the University of Vermont, Amy teaches classes and administers a dietetic internship that prepare aspiring nutrition professionals to become registered dietitian nutritionists. The program concentration is community health and nutrition with a focus on practice through the lens of a sustainable food system. She has also taught undergraduate courses, including Diet & Disease; Nutrition & Aging; and faculty-led travel abroad courses focused on the Mediterranean food pattern and another on food insecurity. She is an active member of the Interprofessional Practice collaborative with colleagues in the College of Nursing & Health Sciences (CNHS) and was one of the core faculty for a new 3-credit graduate-level interprofessional critical inquiry/evidence-based practice course offered through the CNHS. For 10 years prior to joining the faculty at UVM, she managed statewide nutrition and health promotion programs for the Vermont Department of Disabilities, Aging & Independent Living. Ms Nickerson received her MS in Human Nutrition at the University of Vermont (1986) and her BS in Human Nutrition at the University of Massachusetts (1977).

MV Palumbo - DNP, APRN, GNP-BC is a Professor at the University of Vermont College of Nursing and Health Sciences (CNHS) where she teaches in the Adult/Gerontology Nurse Practitioner track. She is also the Director of Interprofessional Education for the CNHS. Her clinical practice, as a Gerontological Nurse Practitioner, has been at the University of Vermont Memory Program for the past 10 years. Dr. Palumbo received her DNP from Rush University in 2004 and her MSN from Massachusetts's Institute of Health Professions in 1985.

**Introduction:** Interprofessional education (IPE), an ACEND-required curriculum and learning activity for dietetic education and internship programs, involves extensive collaboration among faculty across numerous professions from different colleges within the University. Guided by IPEC core competencies, scaffolded learning experiences are designed to prepare students for interprofessional practice (IPP) as registered dietitian nutritionists (RDN).

**Methods:** Strategies developed to prepare students for IPP include: an annual orientation for new graduate students of dietetics, nursing, physical therapy, medicine, medical laboratory science, pharmacy, and speech language pathology; an avatar-based virtual case study care planning meeting; a 3-credit team-taught graduate critical inquiry course; and an in-person case simulation focused on end-of-life care. In addition, dietetic students work with doctor of nursing practice students to complete wellness assessments at a community-based older adult residential facility. The COVID-19 pandemic required an immediate shift of all events to an online format. Student evaluations are continually collected for quality improvement. To plan and implement these events several different teams of IPE faculty meet monthly throughout the year.

**Results:** Dietetics student numbers are too small for statistical analysis. Evaluations suggest improved awareness of roles and responsibilities of other professionals on the team; deeper understanding of IPP impact on patient, family and community outcomes; and greater sense of confidence about the RDN voice on the team.

**Conclusion:** In order for dietetics and other health profession students to function effectively on an interprofessional health care team, faculty across the professions must assure inclusion of the principles of team science, role modeling exemplary collaboration and communication, and multiple opportunities to practice team effort. Further, faculty must embrace the principles of team science and workload plans must include sufficient time to ensure the success of an interprofessional practice curriculum.

**Conflict of Interest:** None

**Keywords:** Inter-professional practice; inter-professional education; dietetics

## 593[R] Investigating calculated energy implications with adjusting the energy conversion factor for total dietary fibre in the SAFOODS database

Dr Averalda Van Graan<sup>1</sup>, Ms Joelaine Chetty<sup>1</sup>, Ms Malory Jumat<sup>1</sup>

<sup>1</sup>South African Medical Research Council, SAFOODS, Biostatistics Unit, Bellville, Cape Town, South Africa

**Biography:** Averalda van Graan is currently employed at the South African Medical Research Council in the capacity as the Research Manager of the South African Food Data System, a position which she has held for the past 5 years. She in addition holds an Extra ordinary appointment at the University of Stellenbosch. Averalda has joined the SAMRC after 13 years in Academia, with appointments at the North West University and Western Cape University as Academic program manager, and Program leader. She is currently a member of the Executive Council of the Nutrition Society of South Africa.

**Introduction:** Continuous improvement of physicochemical analysis methods in addition to a database comprising various food composition data sources, poses the application of newer recommendations from guiding authorities, challenging. Due to the variety of analytical methods and data sources used, the energy values within the database were calculated applying an energy conversion factor (ECF) of 17 kJ/g to total carbohydrate, which equals the sum of available carbohydrates and dietary fibre. The aim was to determine the impact of amending the conversion factor for dietary fibre to 8 kJ/g, on the calculated total energy value of food items across the database.

**Methods:** The energy calculation method was modified from applying a conversion factor to total carbohydrate to the application of different ECFs to available carbohydrate and dietary fibre. The ECFs applied to calculate the total energy contribution from carbohydrates were 17 kJ/g and 8 kJ/g for available carbohydrate and dietary fibre respectively. The ECFs for protein, lipid and alcohol remained unchanged in their respective contribution to the total energy value across all food groups and food items within the database.

**Results:** The modified calculation method was applied across 16 food groups and 1741 food items. The difference in the calculated energy values ranged between 0.5 and 88.6 kJ/100g of food within the Egg and Nuts and seeds food groups respectively. The average energy percentage difference across the whole database was 3.2%, with a minimum of 0% and the Vegetable group showing a maximum of 32%. As expected the Eggs and Fish and seafood food groups showed the smallest percentage difference (0.1%), while the Vegetable group showed an average 11.4% difference in the modified energy value with the new proposed calculation method.

**Conclusion:** The preliminary investigation suggests further attention and consideration for the amendment and update of energy calculations in the database.

**Conflict of Interest:** None

**Keywords:** Energy, Calculation, Dietary fibre, Database

## 59[R] Knowledge, attitude and dietary practices of adult diabetic clients attending the diabetic clinic at a tertiary teaching hospital in Calabar, Nigeria

Dr Chika Ndiokwelu<sup>2</sup>, Mr Aloysius Maduforo<sup>1</sup>, Ms Stephanie Inyang<sup>2</sup>, Professor Henrietta Ene-Obong<sup>2</sup>

<sup>1</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>2</sup>University of Calabar, Calabar, Nigeria

**Biography:** The presenting author has practiced as a Registered Dietitian-Nutritionist for 8 years. He is presently lecturing in the department of Nutrition and Dietetics, University of Nigeria. Mr A.N. Maduforo is currently a doctoral student in the Human Nutrition. He holds a B.Sc in Nutrition and Dietetics from Imo State University Owerri in Nigeria and Masters in Dietetics from University of Ghana. He is passionate about innovative and challenging researches.

**Introduction:** This study assessed knowledge, attitude and practices of diabetes clients attending the diabetic clinic of a tertiary teaching hospital in Calabar, Nigeria.

**Methods:** The study utilized a cross-sectional study design to obtain data from the diabetes clients visiting the diabetic clinic. Interviewer-administered questionnaire was used to assess knowledge, attitude and dietary practices of the respondents. Demographic and medical history of the respondents were elicited using questionnaire. Anthropometric parameters and blood glucose level were assessed using appropriate tools and standard methods. Statistical analysis was done using IBM SPSS statistics version 22. Descriptive statistics (mean, standard deviation, frequency and percentage) was used to describe the data while Chi square, independent sample student t-test and Pearson correlation were used to compare and determine relationships among variables. Significant level was set at  $p < 0.05$ . A total of 88 participants completed the study.

**Results:** More females (68.2%) than males (31.8%) had diabetes mellitus. Individuals 40-60years age-group were mostly affected. Most (58%) of the diabetes clients were diagnosed of type2 diabetes mellitus, 39.8% were obese with a significant ( $\chi^2 = 9.278$ ;  $p = 0.026$ ) higher proportion of females (45.5%) compared to males (28.6%) and 30.7% of them were overweight. Result also indicated that 67% of the respondents had poor knowledge of diabetes. More than half (59.1%) had poor glycaemic control, 35.2% did not engage in physical activity, 25% and 58% believed that diabetes medication could cure diabetes mellitus and consumption of bitter foods (particularly herbs) could reduce blood glucose level respectively. The study indicated that knowledge score of the respondents was poor despite the high literacy level of the study population. Inappropriate practice was also, common among the respondents.

**Conclusion:** There was poor knowledge which affected their attitude, thus, investing in diabetes education will improve attitude and practices which will translate to better self-care.

**Conflict of Interest:** Non Declared

**Keywords:** Knowledge; Attitude; Dietary Practices; Diabetes

## 621[R] Leadership of Brazilian dietitians

Dr Raquel Braz Assuncao Botelho<sup>1</sup>, dr Rita Akutsu<sup>1</sup>, MS Mayara Vidigal<sup>1</sup>, dr Renata Zandonadi<sup>1</sup>

<sup>1</sup>University Of Brasilia, Brasilia, Brazil

**Biography:** Raquel Botelho is a dietitian and a professor at the university of Brasilia. The work fields are food development and restaurant management. Master in food science and PhD in Health Sciences.

**Introduction:** Leadership is a skill identified throughout human history needed by any group of people who have a common goal, including the health services. Dietitians require such skill in order to promote health through diet. The objective of this study was to investigate how Brazilian dietitians perceive themselves in relation to the exercise of their leadership in the profession.

**Methods:** We used The Management Style Assessment Scale after adaptation and validation by judges for the self-assessment model. Social networks randomly recruited a sample of 252 dietitians, where socio-demographic characteristics and the relationship of respondents with leadership performance and training were also investigated. We analyzed data with the SPSS 23.0<sup>®</sup> program. Mean scores by scale factor, hypotheses for regression models, normality tests and descriptive analyzes were calculated. Sample means and proportions were calculated and compared with the Kruskal-Wallis and Mann-Whitney tests.

**Results:** After the analysis of judges, the instrument obtained a total of 20 items and 3 factors: relationship (9), task (7) and situational (4). Reliability tests yielded excellent results (Cronbach's alpha of 0.884, KMO of 0.895 and Bartlett of 0.001). Regarding the dietitians' contact with the leadership theme, most reported not having previous professional experience (64.0%) and they did not play the role of a leader before being a dietitian (72.0%). They did not do any leadership training (64.5%), indicating few inputs to critically evaluate their status. Dietitians rated their leadership as being more inclined towards the relationship factor, and rated their leadership positively with about 80% success.

**Conclusions:** Dietitians judged their leadership appropriate and not amenable to improvement. More studies are necessary in this area so it is possible to create and implement strategies to improve dietitians' leadership in order to deliver a higher quality service to the population.

**Conflict of Interest:** None

**Keywords:** leadership; dietitian; auto perception

## 172[R] Linking the sensory taste properties of sweet baked biscuits to consumers' emotions: A cross-cultural study

Prof Annchen Mielmann<sup>1</sup>, Dr Thomas Brunner<sup>2</sup>

<sup>1</sup>School of Physiology, Nutrition and Consumer Sciences, North-West University, Potchefstroom, South Africa, <sup>2</sup>Food Industry and Consumption, Berner Fachhochschule, Hochschule für Agrar-, Forst- und Lebensmittelwissenschaften HAFL, Bern, Switzerland

**Biography:** For the past eleven years I have been an academic at the School of Physiology, Nutrition and Consumer Sciences, North-West University (NWU), Potchefstroom campus. I graduated with a PhD (Food Sciences) degree at the University of the Free State (2014). My research focuses on the link between food, sensory research and consumer behaviour to provide a composite mosaic of scientists' current understanding of sensory qualities and the global consumers' food choices. I am a member of the South African Association of Family Ecology and Consumer Sciences (SAAFECES) and The South African Association for Food Science and Technology (SAAFoST).

**Introduction:** The snacking trend contributes to the growth of the global bakery products market, serving as a driver for the rise in overweight and obesity around the world. The aim of this research is to measure consumers' emotional response to the specific sensory taste properties of sweet baked biscuits (SBBs).

**Methods:** Data for the present study was collected from adults in South Africa (n=106) and Switzerland (n=110). A quantitative, non-experimental study was implemented using a descriptive cross-sectional, online questionnaire. The questionnaire consisted of four sections measuring emotional response, intensity of sensory taste properties, attitude towards SBBs and demographics. Multiple linear regression analyses were calculated to test the predictors of respondents' positive and negative emotions before and after the consumption of the biscuits.

**Results:** Consumers' levels of positive and negative emotions decreased after biscuit consumption, except for the negative emotion, guilt. A chocolate taste contributed significantly to respondents' positive emotions, but a guilty attitude positively changed their negative emotions. The regression models revealed that the positive and negative emotions after biscuit consumption differed for South Africans (54%; 40%) and Swiss (10%; 20%) respondents. Furthermore, the regression models that predicts a change in positive and negative emotions also varied for SA (39%; 21%) and Switzerland (24%; 14%).

**Conclusion:** These findings suggest that by understanding the positive and negative emotions towards specific sensory taste properties from different cultures, these emotional responses can be used to identify possible aspects promoting the eating of SBBs, which can be used to address the rising prevalence of overweight and obesity epidemic.

**Conflict of Interest:** None

**Keywords:** sensory; emotion; obesity; cross-cultural; biscuits

## 244[R] Louisiana Team Nutrition: influencing healthier eating among public school students

Dr Elizabeth Gollub<sup>1</sup>, Ms. Praja Adhikari<sup>1</sup>

<sup>1</sup>LSU AgCenter, School of Nutrition and Food Sciences, Baton Rouge, United States

**Biography:** Dr. Elizabeth Gollub, an Assistant Professor in the School of Nutrition and Food Sciences, LSU AgCenter, works closely with individuals, communities, and organizations to develop, implement, and assess innovative approaches to creating healthier environments, changing social norms, and diminishing health disparities. Through community nutrition programs and evaluation research, Dr. Gollub focuses on strategies aimed at routinizing healthier eating and physical activity behaviors while exploring the impact on health and quality of life.

Dr. Elizabeth Gollub earned her PhD in Nutrition and Dietetics from Florida International University's National Resource Center on Nutrition, Physical Activity, and Aging. She holds a Master of Public Health degree from the University of North Carolina, Chapel Hill, she is a Registered Dietitian with a Certificate of Training in Adult Weight Management and she is a Certified Health Coach.

**Introduction:** The Louisiana Team Nutrition Training Grant program is part of the USDA Team Nutrition Initiative. Its purpose is to create healthier school nutrition environments and encourage healthier eating behaviors among students. The Louisiana program implemented an array of innovative school-based food service strategies, complemented by classroom nutrition education.

**Objective:** To determine the influence of classroom nutrition education on nutrition knowledge, and on attitudes and behaviors associated with healthy eating.

**Methods:** A grade specific, nationally recognized nutrition curriculum was implemented over a 5-6-month period, by teachers of 1st to 10th-grade students in 14 public schools statewide. A curriculum-based survey was developed, and pre-post statistical proportions tests were used to analyze group change in student's nutrition knowledge, attitudes, and behaviors.

**Results:** A total of 623 students were exposed to a nutrition curriculum; 606 completed pre and 492 completed post surveys. The percent of correct responses to knowledge items increased ( $p < 0.004$ ) for: healthy snacking, sugar content of foods, physical activity recommendations, protein foods, food groups, fats, and MyPlate. There was minimal knowledge gain for whole grains. Favorable attitudes increased ( $p = 0.001$ ) by 1% and 14% for fruits and vegetables respectively, and by 9% ( $p = 0.04$ ) for whole grains. Improvements in healthy eating advice articulated by these students reflected the following themes: eat lots of fruits and vegetables; eat more whole grains; be active; drink water, not soda; eat less junk food; eat beans and peas; eat healthy to be strong. This indicated a strong foundation for healthy eating; yet, no change in eating behavior was detected.

**Conclusion:** As a group, students exposed to the classroom nutrition curriculum demonstrated improvements in nutrition knowledge, in attitudes toward healthy eating, and in how to eat healthy. Although improvement in eating behaviors was inconclusive, the classroom nutrition education appears to have had a positive influence.

**Conflict of Interest:** None

**Keywords:** classroom nutrition education; healthy eating

## 349[R] Love, joy and necessity – contrasting aspects of food and meals in adolescents and young adults with cancer undergoing high-emetogenic chemotherapy

Ms Marie Ernst Christensen<sup>1,2,3</sup>, PhD, MScN. Pia Riis Olsen<sup>4</sup>, Consultant, MD, ph.d Hanne Krogh Rose<sup>4</sup>, PhD, MScN. Annelise Norlyk<sup>1</sup>, PhD, MScN. Anita Haahr<sup>2</sup>

<sup>1</sup>Research Unit for Nursing and Health Care, Department of Public Health, Aarhus University, Aarhus, Denmark, <sup>2</sup>Research Centre for Health and Welfare Technology, VIA University College, Aarhus N., Denmark, <sup>3</sup>Nutrition and Health Department, VIA University College, Aarhus N., Denmark, <sup>4</sup>Department of Oncology, Aarhus University Hospital, Aarhus, Denmark

**Biography:** Marie Ernst Christensen is a Ph.D. Fellow at Aarhus University and a Senior Lecturer at the Nutrition and Health Department at VIA University College. Her Ph.D. is entitled Food And Eating Challenges Among Adolescents And Young Adults Undergoing Chemotherapy, which is funded by the Danish Cancer Society from which she received a great grant. Marie is a Bachelor of Science in Nutrition and Health, and holds a master degree in Public Health. She's currently 2.5 years into her Ph.D.

**Introduction:** Adolescents and young adults (AYAs) aged 15-29y undergoing high-emetogenic chemotherapy (HEC) is an exceptional vulnerable population. Not being able to eat during treatment may delay or inhibit important growth and maturation, and may influence their resilience and feeling of abnormality. AYAs are particularly more susceptible to side effects than younger or older patients. Consequently, AYAs may develop food aversions, and thereby become reluctant to eat. Studies indicate that there is a lack of knowledge about the information provided and the skills needed among the health care professionals to qualify the management of eating throughout the cancer trajectory for AYAs and their next-of-kin.

**Purpose:** This study explored how the phenomenon of meals appeared in the interrelationship between adolescents and young adults (AYAs) undergoing high-emetogenic chemotherapy, their next of kin and the health professionals in the clinical setting.

**Method:** Data were collected by 140 hours of participant observation conducted to gain insights into the nature of how meals appeared in the interrelationship between 12 AYAs (age 15-29 years), their next-of-kin and health professionals. The AYAs were patients with oncological and haematological diseases recruited from three university hospital departments. Data analysis was guided by van Manen's hermeneutic-phenomenological approach.

**Results:** The essential meaning of the phenomenon may be characterized by the overarching theme; 'Seeking the joy of meals in the shadow of treatment' and the following three themes; 'Meals as a necessary evil' (AYAs); 'Meals as a matter of love' (next-of-kin); and 'Meals in the shadow of medical treatment' (health professionals).

**Conclusions:** Meals is a multi-faceted and complex phenomenon that has different meanings to AYAs, next-of-kin and health professionals. The findings revealed that adopting a holistic approach to AYAs concerning meals had the potential to increase their food intake.

**Conflict of Interest:** None.

**Keywords:** Adolescents; Cancer; Nausea; Lack of appetite; Malnutrition.

## 309[R] Market nutrient and consumer demand gap analysis of diets of children (6-23 months) in Kotido, Lamwo and Kisoro districts, Uganda

*Ms Esther Joanita Naluguza<sup>1</sup>*

<sup>1</sup>Abt. Associates, KAMPALA, Uganda

**Biography:** Esther Naluguza is a Public Health & Nutrition specialist with a Bachelor of science in Human Nutrition and Dietetics of Kyambogo University and a Masters of Public Health of the International Health Sciences University. She has a wide experience in various public health related program implementation under various technical areas with the various sub themes including; Integration of Nutrition Assessment, Counselling and Support (NACS) services in to routine health service delivery at district, health facility and community levels and using a Quality Improvement (QI) approach, the integrated Community Case Management (iCCM), Maternal, Infant and Young Child Nutrition (MIYCN), Integrated Management of Acute malnutrition (IMAM), including all 4 components of In-patient Therapeutic Care (ITC), Out-patient Therapeutic Care (OTC), Referrals and Community linkages. The Baby Friendly Health Facility Initiatives (BFHI) for Uganda, Nutrition in HIV/AIDS, Micronutrient interventions, and Monitoring and Evaluation for nutrition programs as a contribution to the acceleration of Health Care specific Sustainable Development Goals (SDGs). Fostering governance for nutrition through the implementation of the UNAP by supporting districts to functionalize the District Nutrition Coordination Committees (DNCCs) and Sub county Nutrition Coordination Committees (SNCCs)

**Background:** Childhood malnutrition, from birth to two years of age, continues to impede socio-economic development in various communities in Uganda. Despite the registered decline (UDHS 2016), malnutrition has remained unacceptably high among children. This prompted the need for a dietary study to document nutrient gaps of young children and cost market consumer demand for foods that could reduce identified nutrient gap whose objectives of the study was to; quantify the food and nutrient intakes during complementary feeding among children aged 6 to 23 months in the Activity focal districts; identify nutrient gaps that cannot be closed using local foods as consumed and recommend Complementary Feeding Recommendations (CFRs) to improve nutrient intake adequacy at the minimum change in dietary patterns and cost.

**Methodology:** ata was eventually collected from a total of 890 children (Lamwo 263, Kotido 284 and Kisoro 313) using multiple pass 24- hour recall method, to estimate the food intake and eating patterns (amounts per serving of different foods, and frequency of consumption). The ProPAN questionnaire was used to collect child and household level indicators needed for the study.

**Results:** OPTIFOOD analysis indicated that if chosen carefully, locally most common available foods (those consumed by 10% or more of the population) eaten at current feeding patterns (in terms of average amounts and number of servings per week) are able to provide more than enough energy per child for their age (estimated 92% to 245% of the RDI).

**Conclusions:** Even with the best of the CFR, zinc and iron requirements cannot be met using local foods without significantly altering the current dietary practices or new dietary patterns being introduced. Introducing foods that are best sources of zinc and iron would not necessarily have significant nutritional impact.

**Conflict of Interest:** None

**Keywords:** Complementary Feeding Recommendations, OPTIFOOD, ProPAN

## 254[R] Measuring team member mealtime experience in residential care

*Prof Heather Keller<sup>1</sup>, Jill Morrison-Koechl<sup>1</sup>, Vanessa Vucea<sup>1</sup>*

<sup>1</sup>Schlegel-university Of Waterloo Research Institute For Aging, Waterloo, Canada

**Biography:** Heather Keller is the lead researcher for the Making the Most of Mealtimes research program. She is an expert in geriatric nutrition, covering all sectors of healthcare. As the Schlegel-Research Chair in Nutrition and Aging, research and knowledge translation are focused on improving practice

**Introduction:** Team members (i.e., staff) in long-term care (LTC) influence the mealtime experience of residents and are key to providing resident- and relationship-centred care during mealtimes. However, their perspectives on their ability to provide care during mealtimes is under-researched. A valid and reliable tool is required to collect this information to develop effective mealtime interventions and improve the mealtime experience.

**Objective:** The aim of this study is to describe the development and determine the test-retest reliability of the Team member Mealtime Experience Questionnaire (TMEQ).

**Methods:** A 23-item questionnaire was developed through several steps (e.g., literature review, LTC team member consensus). A Likert scale of strongly disagree (score= 1) to strongly agree (score= 5) was used for item responses. The TMEQ was administered to 137 team members at five diverse LTC homes. Descriptive statistics were used to analyze responses. Factorial structure of the TMEQ was determined using iterated principal axis factor analysis with oblique varimax rotation. Of the initial respondents, 103 (75%) completed the questionnaire a second time, approximately two weeks later. Intraclass correlation (ICC [95% confidence interval]) was used to determine reliability.

**Results:** Almost all participants were female (90%) and roles included serving (68%), providing eating assistance during meals (77%) and plating food (31%). Time and task-focused items had lower scores (indicating more negative perceptions), whereas knowledge and capability of how to provide resident- and relationship-centred mealtime care had higher scores. A five factor structure was determined (factor loadings >0.30) and included all items excepting one: "I am able to make mealtimes enjoyable for residents." Cronbach's alpha for TMEQ was 0.93, indicating good internal consistency. The total TMEQ score had an ICC of 0.87 (0.807, 0.912).

**Conclusion:** The TMEQ is face valid and sufficiently reliable for use in research and practice.

**Conflict of Interest:** None

**Keywords:** residential care, mealtimes, staff, team

## 259[R] Media training for success: be an effective nutrition ambassador

Dr Sylvia Klinger<sup>1</sup>

<sup>1</sup>Hispanic Food Communications, Hinsdale, United States

**Biography:** International recognized nutrition expert who is relentlessly passionate about helping people fall in love with the process of creating and enjoying delicious but most importantly, nutritious foods.

A food & nutrition communications professional, award-winning author and global nutrition entrepreneur Dr. Sylvia Klinger is founder of Hispanic Food Communications.

It's her Hispanic background that has fueled her passion for nutrition, which has led her to empower and encourage those in her community through the foods they make in their kitchens.

Understanding that everyone's needs are different, Sylvia seeks to individualize nutrition, so that it can be a highly beneficial experience to us all during the unique journey we are here to live.

It has been through the study of nutrition and her experiences growing up in a Hispanic home, that Sylvia has realized the power nutrition has; the power to glue people together, no matter who they are or where they come from.

Sylvia has been a sought-after consultant for global diversity issues, food, beverage, agriculture, pharmaceutical, and non-profit health organizations.

The Little Book of Simple Eating was published in 2018 in both English and Spanish.

She loves learning about food and exploring how food impacts our culture.

Dietitians need to be the #1 nutrition ambassadors. This dietitians media training (1-1/2 to 2 hours) workshop incorporates the following: Setting up the stage, how to develop compelling media messages, how to deliver it effectively, and how to modify your approach to meet the needs of your audience

### Part 1: Our Media Training Strategy

The training is packed with real life examples and opportunities to practice new acquired skills while keeping the focus during the interview.

Present relevant practice interview questions/scripts.

### Deeper Curriculum

Incorporates most essential media interviewing skills, but deeper. Participants will learn the subtle points that often get overlooked, but can make a significant difference. Media ethics guidelines, cooking demo interviews and videos will be covered.

### Focus on your Messages

Going beyond body language. Your delivery is essential, it rest upon the quality of your message.

### Challenging Questions

We'll ask the tough and challenging questions and empower dietitians with effective science based answers your audience will thank you.

### Interactive Practice Interviews

Deliver several practice taped interviews with specific feedback and review key excerpts.

### Part 2: Social Media Strategy

Finding your niche and more.

### Social Media Management

How to best manage the every day social media grind.

### Social Media Set Up

Providing you the social media essentials check list.

### Two Way Feedback

All the feedback you need in a warm and caring environment.

### Part 3: After the Workshop

Invitation to a follow up webinar – to be recorded

Take away resource guide will be provided at the workshop

**Conflict of Interest:** None

**Keywords:** Media; training; development; socialmedia; communications

## 140[R] Nurses' perceptions regarding the prevalence, screening and causes of malnutrition in adult hospitalised patients in Nelson Mandela Bay, South Africa

Ms Esmarie Van Tonder<sup>1</sup>, Ms Amber Kelly<sup>1</sup>

<sup>1</sup>Nelson Mandela University, Port Elizabeth, South Africa

**Biography:** Esmarie Van Tonder (Registered Dietitian) is a lecturer in Therapeutic Nutrition at the Department of Dietetics, Nelson Mandela Metropolitan University in South Africa. She obtained both her BSc Dietetics and Master of Nutrition degree from Stellenbosch University.

She has been involved in under- and postgraduate teaching for the past six years and her research areas of interest include malnutrition in the adult hospitalized patient, cystic fibrosis, oncology and medical ethics. She has been the recipient of numerous research awards in the past two years, including best poster presentation at the Critical Care Society of Southern Africa Congress (2017 & 2019), Emerging researcher of the year for the Faculty of Health Sciences at Nelson Mandela University (2018) and most recently the Arina Prins Clinical Nutrition Award for best publication in a national journal (2019). She has also been a reviewer for high impact journals, including Clinical Nutrition and The Journal of Human Nutrition and Dietetics.

Prior to starting her career in the academic field, Esmarie has gained extensive experience as a clinical dietitian, both in South Africa, as well as England. She worked in the areas of oncology, surgery, critical care, cystic fibrosis, nutrition support, internal medicine and general out-patients.

**Introduction:** Nurses play a key role in identifying hospital malnutrition and referring high risk patients for the appropriate nutritional care. The aim of the study was to determine nurses' perceptions regarding the prevalence, screening and causes of malnutrition in adult hospitalised patients.

**Method:** Self-administered semi-structured questionnaires were completed by 89 consenting registered nurses in 11 adult wards across three Nelson Mandela Bay public hospitals. Data was analysed with Statistica® to summarize the data, identify relationships and obtain frequencies and percentages. Deductive analysis was performed on open-ended questions to group data and identify themes.

**Results:** Nurses overestimated the prevalence of underweight (37.5% vs 27%), and overweight patients (50-74% vs 32.6%). The causes of malnutrition were perceived to be: poverty, poor socioeconomic status, illness, loss of appetite, eating an unbalanced diet and lack of education. Approximately half of nurses reported to consistently weigh patients on admission (49.4%), record intake and output (53.4%), and to discuss nutrition management on ward rounds (51.1%). The majority of nurses (84.3%) were unaware of screening tools but were willing to do nutritional screening, with body mass index (BMI) being the preferred screening tool. Only 11.4% and 3.4% of nurses reported to have received in-service and additional nutrition training, respectively, but regarded nutrition knowledge to be important. Three quarters (76.3%) of nurses expressed an interest in the role of a Nutrition Link Nurse.

**Conclusion:** Reported practices to identify malnutrition were sub-optimal in this study. Nurses perceived nutrition knowledge as important, and training at undergraduate level and in-service training, should be escalated to improve practices to identify malnutrition, including the use of malnutrition screening tools. The introduction of a Nutrition Link Nurse, to strengthen the role of nutrition at ward level in South African public hospitals, should be explored.

**Conflict of Interest:** None

**Keywords:** nurses; malnutrition; hospitalised; screening; perceptions

## 632[R] Nutrient and energy composition per portion size of commonly consumed mango varieties in Enugu state

Ms Chiamaka Chukwu<sup>1</sup>, Prof Elizabeth Ngwu<sup>2</sup>, Dr Justina Chikwendu<sup>2</sup>, Dr Chika Ndiokwelu<sup>3</sup>, Mr Aloysius Maduforo<sup>2</sup>, Mrs Clementina Okoro<sup>2,4</sup>, Mrs Chinyere Okwara<sup>1,2</sup>, Mrs Appolonia Obiloma<sup>5</sup>

<sup>1</sup>Department of Nutrition and Dietetics, University Of Nigeria Teaching Hospital, Ituku-ozalla, Enugu State, Nigeria, Ituku/Ozalla, Nigeria, <sup>2</sup>Department of Nutrition and Dietetics, University of Nigeria Nsukka, Nsukka, Nigeria, <sup>3</sup>Human Nutrition and Dietetics Unit, Department of Biochemistry, University of Calabar, Calabar, Nigeria, <sup>4</sup>Nutrition Section, Federal Capital Territory Primary Health Care Board, Abuja, Nigeria, <sup>5</sup>Department of Nutrition and Dietetics, Imo State Polytechnics Umuagwo, Umuagwo, Nigeria

**Biography:** She is a nutrition and dietetics intern in university of Nigeria teaching Hospital ituku/ozalla, Enugu state. She obtained her BSc in nutrition and dietetics in university of Nigeria nsukka. She is 22 year old, single and loves travelling, research and adventure. She has participated actively in various professional trainings, conferences and workshops in Nigeria.

**Introduction:** Mango (*Mangifera indica*) is commonly consumed in West Africa as fruits when in season or as juices by technology. Although there have been studies on proximate composition of mango but there is lack of scientific data on the proximate and energy composition of varieties of mango fruit based on average portion size. This study determined the nutrient and energy composition in a portion size of four mango varieties; Sweet mango (SM), Haden mango (HM), German mango (GM) and Alphonso mango (AM).

**Methods:** Samples of four mango varieties were collected from different markets in Nsukka, Enugu state, Nigeria. Seven ripe mangoes from each variety were randomly selected, washed and weighed. The edible portions were separated, homogenized and subjected to chemical analysis to determine the nutrient content using standard methods. The energy content was determined using Atwater factor for energy giving food nutrients. The weight of each variety was standardized to derive the mean weight and used to calculate the average composition in a portion. The data were analysed using Analysis of variance (ANOVA) and turkey HSD test to compare mean. Significance level was accepted at  $p < 0.05$ .

**Results:** The average weight of the four mango varieties are 124.14g for GM, 121.71g for AM, 192g for HM and 91.14g for SM. This study revealed that the ash content of AM was significant ( $p < 0.05$ ) highest (1.42g/aps). GM had significantly ( $p < 0.05$ ) the highest fat content (0.91g/aps). The crude fiber content differs significantly ( $p < 0.05$ ) amidst the samples but their protein content was comparable ( $p > 0.05$ ). SM had significantly ( $p < 0.05$ ) least carbohydrate content (7.95g/aps). The energy composition per portion ranged from 108.21kcal/aps in GM to 140.09kcal/aps in HM. The potassium, sodium, zinc and iodine content of the samples were statistically similar ( $p > 0.05$ ).

**Conclusion:** This study shows the nutrient and energy contribution of different mango varieties per portion size, which is vital in dietary counseling and portion size control.

**Conflict of Interest:** None

**Keywords:** Keywords: Proximate, Mango, Portion Size.

## 132[R] Nutrient intake from university cafeteria lunches: A comparison between students who are health-conscious and those who are not

Dr Makiko Nakade<sup>1,2</sup>, Yuka Nakamura<sup>1</sup>, Natsumi Iwaki<sup>1</sup>

<sup>1</sup>University Of Hyogo, Himeji-city, Japan, <sup>2</sup>Research Institute for Food and Nutritional Sciences, Himeji-city, Japan

**Biography:** Since 2018, I (Makiko Nakade) have been working in the University of Hyogo in Japan. My research field is public health nutrition. I am especially interested in the theme of obesity and eating habits of university students.

**Introduction:** Many universities in Japan have adopted the cafeteria system, wherein students select dishes for themselves. Therefore, students' nutrient intake depends on the selected dishes. In this study, we examined 1) the proportion of students who were health-conscious and selective in their lunch choices and 2) whether or not nutrient intake differs between health-conscious students and the rest.

**Methods:** In 2019, a self-administered questionnaire and one-day dietary lunch survey was conducted in a university cafeteria in Japan. A total of 202 students participated (response rate: 70.1%). Sex, department, frequency of cafeteria use, and consciously selecting healthy dishes (Yes or No) were covered in the questionnaire. In the analysis, the data of 149 students (aged 18-23) were used as they contained no missing values. They were divided into two groups (the "conscious" and "not conscious" groups) based on whether they were health-conscious or not. Then, the following items were compared using the chi-squared test or the Mann-Whitney U test: the questionnaire items; amount paid for lunch; energy, nutrient, and vegetable intake from lunch; and choosing a well-balanced diet (that is, a combination of staple foods, fish/meat, and vegetables).

**Results:** A total of 84 students (56.4%) were categorized into the conscious group. A significant number of students from the nutrition course were in the conscious group. Intake of vegetables, calcium, vitamin C, vegetables (per 1000 kcal), and calcium (per 1000 kcal) were significantly higher in the conscious group. In addition, the proportion of students who selected a well-balanced diet was significantly higher in the conscious group.

**Conclusion:** Health-conscious students followed a well-balanced diet, ate more vegetables, and had a high calcium intake. Health education may be effective in improving food choices in the school cafeteria.

**Conflict of Interest:** None

**Keywords:** Nutrient intake; cafeteria; university students; Japan

## 518[R] Nutrient intakes of first and third year female dietetics students at the University of Pretoria, Gauteng

Mrs Nikki Lee Verwey<sup>1</sup>, Prof Friede Wenhold<sup>1</sup>, Ms Joyce Jordaans<sup>2</sup>

<sup>1</sup>Department of Human Nutrition, University of Pretoria, Pretoria, South Africa,

<sup>2</sup>Department of Statistics, University of Pretoria, Pretoria, South Africa

**Biography:** I have recently submitted my mini-dissertation for my Masters degree in Dietetics at the University of Pretoria. I am a registered dietitian who has my own practice inside a Virgin Active in Boksburg, Gauteng. I have a passion for helping people using evidence-based guidelines and information. I also locum at a doctors practice in Benoni.

**Introduction:** Dietetics students as future nutrition educators should be aware of the challenges involved in recording dietary intake. Furthermore, the diet of these students may change as they progress in their studies.

**Aim:** To evaluate and compare nutrient intakes of first and third year female dietetics students at the University of Pretoria.

**Methods:** Cross-sectional survey of multiple-day weighed food records analysed with FoodFinder3 of first (2012-2015) and third (2012-2017) year female dietetics students (N=368). Intakes were evaluated against Dietary Reference Intakes, Nutrient Adequacy Ratio (NAR) and Mean Adequacy Ratio (MAR). Comparison of year groups' intake and first weekday versus weekend day: Mann-Whitney U and Wilcoxon Signed Rank respectively. Ethical approval: 2/2018.

**Results:** Recorded mean energy intakes of first (n=105) and third (n=166) years (response rate: 74%) fell below the Estimated Energy Requirement. Many first and third years exceeded the Acceptable Macronutrient Distribution Range (AMDR) for fat and fell below the AMDR for carbohydrates. Estimated Average Requirements of ten micronutrients were exceeded by over 50% of both year groups (exceptions: vitamins A, C and B6; first years). There was a significant difference ( $P < 0.001$ ) between the year groups for magnesium, protein, calcium, vitamin A and zinc intakes. There was a significant difference ( $P < 0.001$ ) between the two year groups for NAR for magnesium, zinc, vitamins A, B6 ( $P = 0.002$ ), B12 and calcium. Average MAR was 70% and 77% for first and third years respectively. For the whole group, median intakes of energy, macronutrients, calcium, iron, vitamin B12 and zinc increased over the weekend. There was a significant difference between first recorded weekday and weekend day (third years) for energy ( $P = 0.019$ ), fat ( $P < 0.001$ ) and magnesium ( $P \leq 0.001$ ).

**Conclusions:** Nutrient intakes improved from first year to third year. Overall, underreporting cannot be ruled out. Consumption of a 'lower-carbohydrate, higher-fat' type-diet was seen.

**Conflict of Interest:** None

**Keywords:** NAR, MAR, weighed food record, nutrient intakes

## 571 R] Nutrition Education: Development and implementation

Dr Mamotsamai Ranneileng<sup>1</sup>

<sup>1</sup>National University Of Lesotho, Roma, Lesotho

**Biography:** 59 years old female, specialist in health promotion and nutrition  
For more details refer to the first abstract

**Introduction:** The aim of this study is to provide evidence of the effectiveness of a systematically designed nutrition education programme by providing guidance on its development and implementation.

**Methods:** literature review of processes involved in a systematic development of a nutrition education programme. Steps suggested in the literature were followed and a nutrition education programme was developed, pretested and implemented at a workshop with women working at a factory weaving wall mats.

**Results:** A pre and post test showed that the nutrition education was successful raising nutrition-related knowledge, attitudes and beliefs. Practices are yet to be determined by an impact study. At pre-test the participants scored 60%, 54%, and 49% on nutrition-related knowledge, attitudes and beliefs respectively. At post test the scores had improved to 98% and 85% on knowledge and both attitudes and beliefs respectively. On knowledge, participants were able to identify single foods and their benefits, named the food groups and the servings recommended, listed most of the food based dietary guidelines, made positive attitude statements and expressed positive beliefs about food. They also formed an intention to implement the changes in their diet.

**Conclusion:** Nutrition education programmes must be systematically designed and delivered to have an impact. A Systematic design follows a set process that also guides implementation that is empowering to the participants and therefore holds a promise for success.

**Conflict of Interest:** none

**Keywords:** nutrition education, systematic development, implementation, effectiveness

#### 4[R] Nutrition risk and validation of a HIV disease-specific nutrition screening tool in Ghana

Dr Lauri Wright<sup>1</sup>

<sup>1</sup>University Of North Florida, Jacksonville, United States

**Biography:** Lauri Wright is an assistant professor at the University of North Florida, co-director of the Doctorate in Clinical Nutrition, director of the Center for Nutrition and Food Insecurity, and Chair of the Department of Nutrition and Dietetics. Through her research and with the Center, she develops programs for food insecure individuals in the community, works globally with malnutrition, and directs nutrition programming for people with AIDS. Wright has developed a food recovering and meal distribution model that serves the food insecure (Food Fighters) and seniors (Meals on Wings) in the community. She formerly worked as a clinical dietitian for the Veterans Administration, providing medical nutrition therapy for veterans with chronic disease. Wright is past-president of the Florida Academy of Nutrition and Dietetics, member of the Academy's Legislative and Public Policy Committee and is Speaker-Elect to the Academy's House of Delegates. Wright earned an undergraduate degree in nutrition from Ohio State University, a master's degree from Case Western Reserve University and a doctorate from University of South Florida.

**Objectives:** The objectives of this study were to assess the nutritional status and the most commonly reported nutrition-related factors contributing to nutritional risk among people living with HIV/AIDS (PLWHA) in Ghana and the specificity and sensitivity of the Rapid Nutrition Screening for HIV disease tool (RNS-H) in this population.

**Design:** A cross-sectional design was utilized. Patients were screened for nutritional status during a one week period by clinic nurses using the RNS-H. Results were compared to a comprehensive nutritional assessment by a dietitian.

**Setting:** The research was conducted in a public health clinic at University of Ghana Hospital, Legon.

**Subjects:** Patients receiving care at the clinic were asked to participate.

**Outcome Measures:** The nutritional screening and nutritional assessment both resulted in participants being assigned to one of three nutritional statuses: "low risk," "at-risk," and "high risk. The association between the nutritional screening and nutritional assessment was measured.

**Results:** The results of the nutritional status assigned by the RNS-H and nutritional assessment were compared. A total of 51 patients participated. A high prevalence of nutritional risk based on the RNS-H (54.9%) was found with 33.3% of the sample being malnourished. The most common nutrition-related complications were food insecurity, poor appetite, weight loss and diarrhea.

**Conclusions:** The RNS-H was found to have a strong specificity and sensitivity in Ghanaian PLWHA. Because of the nutritional risk and complexity of HIV in Ghana, nutritional screening using the RNS-H and nutrition care by a dietitian should be a standard of care.

**Conflict of Interest:** None

**Keywords:** nutrition risk, nutrition screening, malnutrition, validity

#### 660[R] Nutrition risk screening tool in a low-resource setting: Identifying malnutrition in Lao PDR

Mrs Joanna Cummings<sup>1,2</sup>, Ms. Hannah Wilson<sup>1</sup>, Ms. Slackchay Rasprasith<sup>2</sup>, Dr. Diane Stadler<sup>1</sup>

<sup>1</sup>Oregon Health & Science University, Portland, United States, <sup>2</sup>Lao Clinical Nutrition Education and Research, Vientiane Capital, Lao PDR

**Biography:** Joanna Cummings is an instructor in the Graduate Programs in Human Nutrition at Oregon Health & Science University (OHSU) and the Director of Clinical Nutrition Education and Research in Lao PDR. She received her BS in Human Nutrition from Metropolitan State University of Denver, and her MS in Clinical Nutrition from OHSU. She is a Certified Nutrition Support Clinician. Joanna coordinates the clinical education and research program on behalf of OHSU in partnership with Lao in South East Asia to provide clinical nutrition education to Lao doctors and nurses with the goal of building capacity of clinical nutrition in the low-resource country of Lao PDR. In addition to her educational activities overseas, Ms. Cummings also teaches Global Nutrition course at OHSU. Her research interests include nutrition screening, severe and moderate malnutrition, nutrition management of neglected tropical diseases, diabetes, thalassemia, and ethics of global development. Joanna has previously worked at University of Colorado Health and Children's Hospital Colorado. She is currently the Member Services Chair for the Global Member Interest Group and a member of the International Affiliate of the Academy of Nutrition & Dietetics. She is also a Nutrition Focused Physical Exam Trainer for the Academy of Nutrition and Dietetics.

**Background:** The aim of this study was to investigate the sensitivity and specificity of a nutritional risk screening tool (NRST) to identify patients at risk for malnutrition. The screening tool is designed to be used in Lao, a low-resource country in Southeast Asia.

**Method:** A cross-sectional study was conducted in two national hospitals in Lao over a one-month period during August and September 2018. The screening tool consisted of 4 items: 1) subjective clinical assessment, 2) presence of high risk disease, 3) adequacy of nutritional intake, 4) weight loss history. ASPEN/Academy consensus on acute and chronic malnutrition indicators were used to make a diagnosis of malnutrition.

**Results:** A total of 194 patients were screened. Adult median age was 43 years and pediatric median age was 8 years. Of adults screened, 56% were classified as "at risk" or met criteria for malnutrition. In children one month to four years, 51% met criteria for malnutrition, whereas children and adolescents five to 17 years, 58% met criteria for malnutrition. The inter-user reliability of the NRST was significant with a fair kappa score of 0.27 +/- 0.03 (p<0.0001). There was no significant difference in correctly identifying a malnourished patient when comparing trained and untrained observer scores (70%, 64% respectively; p>0.05). Additionally, mean BMI (21.8 ± 3.2 kg/m<sup>2</sup> vs 23.9 ± 4.3 kg/m<sup>2</sup>) and MUAC (25.6 ± 3.9 cm vs 27.5 ± 3.9 cm) were significantly lower in those with malnutrition. Patients with a MUAC <24 cm were 4 times more likely to be diagnosed with malnutrition (p = 0.049, 95% CI: 1.008 to 12.295).

**Conclusion:** The nutritional risk screening tool applied to hospitalized patients in Lao identified a significant relationship between having a 'high risk' score and a diagnosis of malnutrition.

**Conflict of Interest:** None

**Keywords:** screening; low-resource; Lao; malnutrition; MUAC

## 99[R] Nutritional intake and meal composition of patients consuming texture modified diets and thickened fluids: A systematic review and meta-analysis

Ms Xiaojing Wu<sup>1</sup>, Dr Andrea Braakhuis<sup>1</sup>, Dr Anna Miles<sup>2</sup>

<sup>1</sup>University of Auckland, Auckland, New Zealand, <sup>2</sup>University of Auckland, Auckland, New Zealand

**Biography:** Xiaojing is an Australian Accredited Practising Dietitian and a PhD candidate in University of Auckland. Xiaojing is interested in geriatric care, and her PhD is investigating the use of texture-modified foods in aged-care population.

Texture-modified diets (TMDs) play an important role in ensuring safety for those with dysphagia but come with risks to nutrition and quality of life. The use of TMDs has been addressed with the increasing prevalence of dysphagia in previous decades. However, there is limited literature that investigates the nutrition perspectives of TMD consumers. This review summarises the nutrition outcomes of adults consuming TMDs and thickened fluids (TFs) and identifies the limitations of TMD and TF productions. A systematic database search following PICO criteria was conducted using Cochrane Central (via Ovid), MEDLINE, CINAHL, EMBASE and Scopus databases. Nutrition intake, meal consumption, adequacy and meal composition were identified as relevant outcomes. 35 studies were included for analysis. Consumption of TMDs demonstrated a poorer intake compared to regular diets, in particular significant in energy and calcium. Meta-analysis of mean differences showed favourable effects of shaped TMDs on both energy (-273.8 kJ/d; 95%CI: -419.1 to -128.6, p=.0002) and protein (-12.4 g/d; 95%CI: -17.9 to -6.8, p<.0001) intake compared to traditional cook-fresh TMDs. Nutrition intake was compromised in TMD consumers. Optimisation of nutrition intake was achievable through enrichment and adjusting meal texture and consistency. However, the heterogeneity of studies and the missing verification of the consistencies lead to the difficulty in drawing conclusions regarding particular texture or intervention.

**Conflict of Interest:** None

**Keywords:** Nutrition; Foodservice; Texture-modified diet; Dysphagia; Malnutrition

## 374[R] Nutritional knowledge and practices among cataract patients attending Sabatia Eye Hospital, Kenya

Ms Enid Keseko<sup>1</sup>, Dr. Jane Situma<sup>1</sup>, Prof. Asenath Sigot<sup>1</sup>

<sup>1</sup>Masinde Muliro University of Science and Technology, Department of Nutritional Sciences, Kakamega, Kenya

**Biography:** Enid Keseko is an independent researcher and is currently a postgraduate student at Masinde Muliro University of Science and Technology, Kenya. Enid is pursuing a Master of Science degree in Public Health Nutrition and attained a Bachelor's degree from Kenyatta University. She is a Registered Dietitian and is passionate about leadership development and research. She has published and presented research nationally and internationally.

**Introduction:** Cataract, the leading cause of blindness and visual impairment globally, induces damage to the eye through mechanisms like oxidative stress. Antioxidants are the first line of defense against oxidative stress and are primarily obtained through diet. Objective: To establish the nutritional knowledge levels and practices among cataract patients attending Sabatia Eye Hospital, Kenya.

**Methodology:** A descriptive cross-sectional study was conducted on a sample size of 144 cataract patients and the study area and study population were purposively selected. Using a structured questionnaire, data was collected on nutritional knowledge and dietary practices among the cataract patients. Analysis was done using Social Package for Statistical Sciences version 20.

**Results:** The mean score on knowledge was 56.1 and it was used as the knowledge threshold to put patients into two levels: below average and above average. Less than half, 42.4% (n=61) scored above average on knowledge. In terms of practices, the most frequently consumed antioxidant rich food source was green leafy vegetables consumed by about 66.7% (n=96) at a frequency of once per day. The average individual dietary diversity score was moderate; 6.5 with the most consumed food group being cereals. However, antioxidant rich food groups had the least scores in the diet diversity. The use of nutrient supplements was poorly reported with about 93.8% (n=135) indicating that they never use nutrient supplements.

**Conclusion:** The patients' nutritional knowledge exists but not to all and the frequency of consumption and the diet diversity of antioxidant rich foods is low. The study recommended for sensitization on frequency of intake of antioxidant food sources to be done at the community and hospital level through a multidisciplinary approach.

**Conflict of Interest:** None

**Keywords:** Nutrition; Knowledge; Practices; Cataract

## 218[R] Nutritional management practices for patients admitted for alcohol withdrawal: a five year retrospective audit

Mr Cameron McLean<sup>1,2</sup>, Senior Professor Linda Tapsell Tapsell<sup>1</sup>, Dr Sara Grafenauer<sup>1</sup>, Dr Anne-Therese McMahon<sup>1</sup>

<sup>1</sup>University Of Wollongong, Wollongong, Australia, <sup>2</sup>St George Hospital, Kogarah, Australia

**Biography:** Cameron McLean is an Accredited Practising Dietitian (APD) working at St George Hospital in Sydney Australia. Cameron commenced his PhD in 2017 titled 'Dietetic Practice with patients undergoing alcohol withdrawal – towards recommendations for practice' through the University of Wollongong which is being completed alongside his clinical work within the Age and Extended Care service stream. Cameron's PhD will contribute to more meaningful evidence based guidelines to support the role of the Dietitian Practitioner in this practice setting.

**Introduction:** Patients undergoing alcohol withdrawal are a vulnerable population presenting with large variation in risk of morbidity rates and nutritional problems. The literature shows little consensus on best practice for identifying their nutritional needs. In the context of a tertiary hospital in Sydney, Australia, the aim of this research was to describe the characteristics of patients undergoing alcohol withdrawal and identify approaches to nutritional management.

**Methods:** A retrospective medical record audit was conducted, identifying all adult admissions which were primarily coded for alcohol withdrawal in a five year period (2012-2017). Data on patient characteristics and nutritional management were extracted and presented using descriptive statistics.

**Results:** There were 109 admissions coded for alcohol withdrawal (M=73, F=36), with mean age of patients 47.29yr ( $\pm 11.17$ ) and average length of stay 3.74 days ( $\pm 3.92$ , range 0.70–27.8). Ten percent (11/109) discharged against medical advice and body weight was recorded for 15% of patients (16/109). Nutritional data emerged as micronutrient supplementation and/or dietetic consultation. Parenteral thiamine was provided to 85% (96/109) of patients for 1.97 days ( $\pm 1.14$ , range 0–6.0), with a mean dose of 2458.72mg ( $\pm 1347.65$ , range 300–6700mg). Multivitamin supplements were provided to 22% (24/109). Only 21% (23/109) were seen by a dietitian compared to 95% (104/109) by a Drug and Alcohol Clinical Nurse Consultant (CNC). Of those seen by the dietitian, only 16 were assessed using a nutrition assessment tool validated for this population. Others were screened using the Malnutrition Screening Tool (3/7) or did not undergo comprehensive nutritional assessment (4/7).

**Conclusion:** This case study suggests further research is needed to establish best practice guidelines for the nutritional management of patients admitted for alcohol withdrawal.

**Conflict of Interest:** Cameron McLean is employed as a clinical dietitian working in the area of alcohol withdrawal.

**Keywords:** alcohol; malnutrition; nutrition; thiamine; dietitian

## 311[R] OSCE and simulation-based education: implications for improving clinical education and assessing learners' competencies in a Saudi dietetic program.

Dr Elham Aljaaly<sup>1</sup>

<sup>1</sup>King Abdulaziz University, Faculty of Applied Medical Sciences, Jeddah, Saudi Arabia

**Biography:** Elham Aljaaly is an Associate Professor at the Clinical Nutrition Department, King Abdulaziz University, Saudi Arabia and a Consultant in Clinical Nutrition. She was the Head of the CLN Program and one of the program's establishers. Was the Chairperson of the Commission for National and International Academic Accreditation for the Clinical Nutrition Programme (NCAAA) & (AHPGS). She is a member in different organizations including "American Society for Nutrition (ASN)", "World Obesity Federation", and "The Canadian Obesity Network", World Association for Sustainable Development (WASD). She is an editorial member in (AJNE), The EC Nutrition, and the Journalism of Mass Communication. She is a regular reviewer for many institutions/organizations & Journals including e.g. the Bulletin of the World Health Organization; KACST. She is the first graduate RD who practiced the profession. Holding a M.Sc. in Human Nutrition from University of Sheffield, UK and PhD in Community Nutrition, Media Nutrition and International Health & Development from University College London (UCL), UK. Done Post-Doctoral Fellowships Programs: In Clinical Nutrition at GOSH, London, UK and in the Nutrition & Public Health (University of Westminster), London, UK. Has a house of Experience that is under the KAU: "The Professionalism for Clinical Nutrition".

**Introduction:** Dietetic learners' capability to apply and practice the medical nutrition therapy using the nutrition care process (NCP) will improve their competencies in the profession and heighten future employment opportunities. Students' feedback on applied teaching approaches is value to assess its effectiveness. To evaluate Saudi dietetic students' perception about the implemented objective structured clinical examination (OSCE) and simulated-based (SBL) approaches.

**Methods:** The study implemented a developed and validated an electronic student feedback survey to evaluate perceptions of the implemented OSCE and SBL approaches in preparing for competences and clinical placements. Applied approaches were on a 2-level, clinical education course of the Clinical Nutrition Program at King Abdulaziz University in Jeddah, Saudi Arabia. All enrolled to the course seniors, completed the online survey after completing the course in the academic year 2018-2019. The survey included open and close-ended questions.

**Results:** All senior learners thought the applied approaches prepared them for employing learned theories and concepts in managing in-patient cases, to combine and contrast information from various resources (86.5%,n=32) and to take evidence-based decisions in managing patients. Believing in gaining effective skills (89%,n=33) when communicating with peers and course instructors, patients and other healthcare professionals when gathering and delivering information. Gaining skills in considering professional roles in prioritizing patient care need, in delivering respectful, evidence-based answers to patient questions, confirmed by (86.5%,n=32). Seniors (67.6%,n=25) reported gaining confidence in practicing NCP component, 97.9% believed the approach should continue to be applied in the following academic year, 89% knew what is OSCE abbreviate for, 88.9% found OSCE was stressful for them, and 73%(n=27) thought the approach has prepared them for future clinical placement.

**Conclusion:** Seniors' positive feedbacks on the implemented clinical education approaches confirmed the importance of implementing well-structured simulated-based sessions and exams in dietetic education. Well-designed simulation centers are important to employ approaches.

**Conflict of Interest:** None

**Keywords:** OSCE, simulation, clinical placements, dietetics, clinical education, assessment.

## 178[R] Patient satisfaction with a home enteral nutrition service

Mr Nicholas van Veenendaal<sup>1</sup>, Ms Lina Breik<sup>1</sup>

<sup>1</sup>Eastern Health, Box Hill, Australia

**Biography:** Nicholas is a Clinical Dietitian within Eastern Health in Victoria, Australia. Graduated from Monash University with a Bachelor of Nutrition and Dietetics (with honours) in 2017. Interested in clinical research and improving patient outcomes and consumer engagement within the healthcare framework, and incorporation of patient reported outcomes into clinical research.

**Introduction:** Home Enteral Nutrition (HEN) is the administration of nutrition via a tube into the gastrointestinal tract at home for patients unable to meet their nutritional requirements orally. Eastern Health (EH) HEN provides dietetic phone consults 3-6 monthly, facilitates annual tube changes, and delivery of monthly nutrition formula and equipment to patient homes free of charge. Research into HEN patient satisfaction and quality of life (QOL) is limited. The aim of the study was to investigate satisfaction with the EH HEN program, and define QOL.

**Methods:** All patients on the EH HEN database that met the study inclusion criteria were recruited. Patients were contacted via phone and if consented they completed: 1) a satisfaction survey and 2) a validated QOL questionnaire (EQ-5D-3L). Data was analysed using RedCAPS.

**Results:** Of the 38 eligible patients, 24 completed the study (63%). Respondents were 50% male and had a mean age of 55.8 years  $\pm$  22.7 and 7.3 years  $\pm$  6.5 for adult and children, respectively. The primary reason for HEN was neurological disease for adults and failure to thrive for paediatrics. Of the respondents, 93% reported satisfaction with nutrition and tube care and timely provision of equipment and formula; 25% of respondents were dissatisfied with access to support tube changes and if EH were to open a HEN clinic 62.5% said they would attend. A total of 22 QOL questionnaires were completed (58%); 79% reported some problems in their daily life, 60% had some problems with pain and discomfort.

**Conclusion:** This study is the first to describe the satisfaction and QOL of EH HEN patients. Good satisfaction with EH HEN was evident; however improvements include: increased access to support tube changes, establishment of an EH HEN clinic, and further investigation into practical ways to improve the five QOL domains for this vulnerable patient group.

**Conflict of Interest:** None

**Keywords:** Home Enteral Nutrition 1; Patient Satisfaction 2; Quality of Life 3; Tube feeding 4;

## 239[R] Patient-reported nutritional-related symptoms, eating and nutritional advice post-ICU in previously ventilated adult patients - The pilot Symptoms and Nutrition After Critical Care (SNACC) survey.

Mrs Louise Albrich<sup>1,2</sup>, Prof Mary Hickson<sup>2</sup>

<sup>1</sup>Yeovil District Hospital, Yeovil, United Kingdom, <sup>2</sup>University of Plymouth, Plymouth, United Kingdom

**Biography:** Louise is a BSc Dietetics graduate of Stellenbosch University and currently works as an advanced dietitian in nutrition support and critical care in Somerset, England. Over the past number of years, since embarking and completing her NIHR funded masters in Clinical Research, she has pursued a keen interest in the post-ICU recovery phase. Her involvement in critical care and research networks have since offered the opportunity to participate in and facilitate collaborative projects to translate post-ICU research into practice. Today she would like to share with you the data from the 'Symptoms and Nutrition After Critical Care (SNACC)' pilot survey which she conducted with Professor Mary Hickson from the University of Plymouth.

**Introduction:** Nutrition-related symptoms after intensive care includes poor appetite, which may compound suboptimal oral intake after discharge. Since nutrition is an important part of rehabilitation, timely nutrition advice can prepare patients better to cope with symptoms and optimise their recovery. Here we explore eating habits and nutritional advice received, after intensive care unit (ICU) stay.

**Methods:** We invited patients discharged from 17 UK ICUs and via the patient charity ICUsteps, who had at least 2 days ventilation, to complete a survey.

**Results:** 74 participants completed surveys (43% response rate), were mostly 51-80 years old (69%) and 54% were male. 60% had  $\geq$ 7 days ventilation, median ICU-length of stay (LOS) was 14 days (IQR=8-25), and median hospital-LOS 33 days (IQR=19-56). 13 nutrition-related symptoms (IQR=10-17) were reported at a median 86 days post-discharge (IQR=43-178). 45% reported not enjoying eating, 39% not eating all meals, and 49% not eating snacks. 60% reported having had dietary advice in hospital and 64% either in hospital or at home. 50% saw a dietitian at some point, with 8% seeing one at home. 30% would have liked advice, especially at home (27%). Most had (41%) or wanted (15%) advice on how to increase protein and energy intake; a few wanted advice on limiting energy-dense foods (12%) or how to lose weight (8%). 84% of participants reported being compliant with advice received, and 64% with taking oral nutritional supplements.

**Conclusion:** Significant numbers of participants reported changes in eating habits after ICU stay. Although a slight majority received some dietary advice, many wanted further advice on either increasing protein and energy intake or healthy eating. When given advice most patients reported complying with it. This data illustrates the need for individualised advice at several points in the recovery pathway. Better nutritional advice may help optimise recovery post ICU.

**Conflict of Interest:** This MSc in Clinical Research project was funded by the NIHR as part of the HEE/NIHR Integrated Clinical Academic Pathway for non-medical healthcare professions.

**Keywords:** critical care; nutrition; diet; eating; recovery

## 572[R] Pattern of alcohol consumption and its relationship with health and nutritional status of adults in rural Nigeria communities

Dr Peace Ani<sup>1</sup>, Prof. Elizabeth Ngwu<sup>1</sup>, Prof. Vivienne Ibeanu<sup>1</sup>

<sup>1</sup>Department of Nutrition and Dietetics, University Of Nigeria, Nsukka, Nigeria

**Biography:** Peace Ani started her academic career in July 2011 as a graduate assistant after she graduated with first class honours (BSc. Nutrition and Dietetics) and emerged as the best graduating student. She obtained her doctoral degree in Human Nutrition in 2018 from the University of Nigeria, Nsukka (UNN). Peace is currently a lecturer in the Department of Nutrition and Dietetics, UNN. She is actively involved in teaching and supervision of students' research works. She does research in Human Nutrition and Food Science. Her research interests include malnutrition, household food security, food analysis, non-communicable diseases and rural health. She is a registered member of the Dietitians Association of Nigeria (DAN) and Nutrition Society of Nigeria (NSN).

**Introduction:** Alcohol abuse is one of the top four risk factors of non-communicable diseases. The consequences of alcohol abuse are disastrous especially in rural communities due to high rates of unemployment, low income, ignorance and poor access to quality health care. This study assessed the alcohol consumption pattern of rural adults in relation to their health and nutritional status.

**Methods:** A total of 2,996 respondents were selected from rural communities in Enugu State, Nigeria using a multi-stage sampling technique. Data were collected using questionnaire, anthropometry, clinical examination and biochemical analysis. Average daily alcohol intake was calculated and respondents were classified as abstainers (lifetime abstainers and former drinkers) and current drinkers. The current drinkers were further categorized into 4 groups (low risk, medium risk, high risk and very high risk drinkers) using the WHO criteria. Data obtained were analyzed using Statistical Product for Service Solution, version 21 and significance was accepted at  $p < 0.05$ .

**Results:** The respondents were mostly males (61.60%) with a mean age of 39.47 years. Majority (79.74%) of them was current drinkers and 20.26% were abstainers. Diastolic pressure, body mass index, waist circumference and waist-hip ratio significantly ( $p < 0.05$ ) increased with increase in the quantity of alcohol consumed. There was also a significant ( $p < 0.05$ ) increase in total cholesterol, low density lipoprotein cholesterol, bilirubin total and aspartate transaminase with increase in the quantity of alcohol consumed. High-risk drinkers had significantly ( $p < 0.05$ ) higher LDL cholesterol level than other groups of drinkers. Bilirubin total, bilirubin direct and alanine transaminase level of very high-risk drinkers were significantly ( $p < 0.05$ ) the highest among the groups. Positive relationship existed between number of clinical signs of alcohol abuse present and daily alcohol consumption.

**Conclusion:** Alcohol consumption was associated with increased risk of non-communicable diseases among the study population.

**Conflict of Interest:** None

**Keywords:** Alcohol consumption pattern; body mass index; lipid profile; blood pressure; waist-hip-ratio

## 709[R] Perceptions and Issues of Transportation for African American Custodial Grandmothers in an Urban Metropolitan Southern City: A Spectrum of Experiences, Access and Potential Policy Implications

Dr Kellie Mayfield<sup>1</sup>, Dr. Deb Whitley<sup>1</sup>, Dr. Susan Kelley<sup>1</sup>

<sup>1</sup>Georgia State University, Atlanta, United States

**Biography:** Dr. Mayfield conducts theoretically centered community based mixed methods interdisciplinary research that engages marginalized communities as research partners. One of the primary goals of this research practice is to support community-level agency in a movement toward sustainable changes in their food environment. She is interested in and has experience working with multiple disciplines such as (Urban) Geography, Family Studies, Community Sustainability, Social Justice and Sociology. She is also interested in exploring additional variables that influence food intake and indicators of health, such as sleep and stress.

Dr. Mayfield's current area of research includes nutritional concerns surrounding aging and African American women. She is particularly interested in nutritional concerns of households lead by African American custodial grandmothers in parent-absent households.

This presentation details a qualitative analysis from focus groups of transportation related nutrition concerns (and health implications) of African American grandmothers raising grandchildren in parent-absent households. Transportation, as it relates to food access and nutrition management, is an important underexplored facet of food-based household organization of custodial grandparents. A manifestation of limited monetary resources is having inadequate, irregular, insufficient and sometimes costly transportation. These manners of transportation can further complicate diet-related adverse health outcomes such as obesity, diabetes and hypertension; common for custodial grandparents of color. The present thematic analysis is part of a larger study that qualitatively explored grandmothers (N=22) experiences, ideas and perceptions surrounding food/nutrition and the involvement of grandchildren in food-related practices and traditions. Grandparent participants were recruited from a community-based intervention, a program that provides health and social support services to grandparents raising grandchildren in metropolitan Atlanta, Georgia. The custodial grandmothers were asked open-ended questions over seven (7) focus groups from February to August 2019. Vehicular transportation, as a secondary theme within transportation, was mentioned by 91% (N=20) of the grandmothers. Themes within transportation describe how transport and access to food was manifold: a source of freedom, expensive, a stressor and a struggle when trying to 'put food on the table'. Nutrition and transportation is of particular importance for an area experiencing limited public transportation, inadequate affordable housing and a state with the 5th largest population of grandparents living with grandchildren in the United States. The findings suggest implications for food and health policy, housing policy, community-level programming and nutrition education interventions. Audience members will benefit from first hand perspectives of older custodial African American women from the American south; a population within the aging spectrum whose nutritional concerns are often overlooked.

**Conflict of Interest:** None

**Keywords:** Custodial, Grandparents, Nutrition, African American

## 324[R] Perceptions of South African Nutrition Professionals of Avocados: Findings of the South Africa Avocado Growers' Association (SAAGA) Consumer Survey

Mrs Monique Piderit<sup>1</sup>

<sup>1</sup>South African Avocado Growers' Association, Johannesburg, South Africa

**Biography:** Monique Piderit RD (SA) is a registered dietitian at Nutritional Solutions with a Masters degree in dietetics from the University of Pretoria. Monique is at present a PhD candidate at the University of Pretoria.

Monique has worked in the private sector since 2011. Guided by evidence-based nutrition, Monique believes in an integrate approach to wellness where the key to being healthy is to adopt small yet sustainable, unique changes to your lifestyle.

Monique has a keen interest in the role of good nutrition to optimize performance and recovery in athletes. She has a wealth of experience in executive nutrition, corporate wellness initiatives, wellness day activations, and nutrition workshops. Monique consults to the food industry and regularly addresses both consumers and healthcare professionals with informative and evidence-based presentations on various topics of nutrition.

Monique consults to the media and has contributed to many print and online publications, including radio and TV. Monique is an executive member of ADSA (Association of Dietetics in South Africa), serving on the communications portfolio and registered with the HPCSA (Health Professionals Council of South Africa).

**Introduction:** The avocado fruit is a nutrient-dense food consisting of a unique combination of dietary fibre (75% insoluble, 25% soluble), vitamins and minerals (potassium, magnesium, vitamin E, vitamin K and folate), dietary fats (mostly the monounsaturated fatty acid, oleic acid), and is cholesterol free and low in sodium. Collectively, this supports the inclusion of avocados as part of the diet.

**Methods:** To understand the perceptions of nutrition professionals on avocados, market research was done using a survey (administered online via an internet-enabled tablet) conducted over three days at the Nutrition Congress in September 2018. The population included 464 delegates who are nutrition professional (dietitians or nutritionists) in South Africa.

**Results:** A response rate of 44.6% (n=207) was achieved. The majority of respondents were between 26 – 30 years (28.5%) and mostly in private practice, (47.3%) academia, (19.8%), government (19.8%) or working for industry (11.1%). Almost all respondents (94.7%) reported consuming avocados, with "I don't like the taste/texture" and "lack of availability" cited as reasons for not consuming avocados. When asked about serving sizes, 50.0% of nutrition professionals reported advising their patients/clients to include half an avocado as part of the daily diet, and 12.7% recommended consuming a whole avocado per day. Respondents reported that recommending avocados is limited primarily by affordability and seasonality of the fruit. Almost one fifth (18.4%) and two thirds (67%) of respondents recommended that patients/clients consume avocados daily and several times a week, respectively. Cardiovascular disease (93.7%), weight management (91.3%) and type 2 diabetes (90.8%) were cited as the primary disease/conditions for recommending that patients/clients include avocados as part of the diet.

**Conclusion:** Based on results of this market research, nutrition professionals in South Africa support the inclusion of avocados as part of the diet.

**Conflict of Interest:** The author is a consultant for the South African Avocado Growers' Association (SAAGA).

**Keywords:** Avocado, monounsaturated fatty acids, dietitian, nutritionist

## 110[R] Pilot study of qualitative food intake, by a mobile app compared to a 24h recall, of 12 to 14 years adolescents with obesity and percentage of processed food

Mrs Sylvie Borloz<sup>1</sup>

<sup>1</sup>SVDE ASDD Swiss Dietetic Association, Aigle, Switzerland, <sup>2</sup>Lausanne University Hospital, Lausanne, Switzerland

**Biography:** Dietitian in Pediatrics in University Hospital in Lausanne, Switzerland. Master of Science in Health Sciences (major Nutrition and Dietetics). ICDA Delegates for Swiss Dietetic Association

**Introduction:** Obesity has multifactorial causes and its treatment is lifestyle-based, being mostly based on a balanced diet. In Switzerland, there is a lack of data on the quality of diet of adolescents with obesity and the educational feeding style of parents that can influence their eating habits. The purpose of this study is to: 1) observe the dietary habits of adolescents in obesity counseling related to the educational style and socio-economic status of the parents, and 2) evaluate the collection of data photographed by a mobile phone.

**Method:** This is an observational pilot study of 12 adolescents aged from 12 to 14 years and the educational style of one of their parents with validated questionnaires. Teenagers photographed their meals for 14 days with an application on the mobile phone. These data were compared with those of a 24-hour recall. Nonparametric statistical tests were used for the analysis of associations.

**Results:** Adolescents had unbalanced dietary habits with a lack of vegetables, fruits, starchy foods and an excess of fatty, sugary and ultra-processed foods (UPF). UPF accounted for 20% to 26% of the food consumed. The parents' educational feeding style was not permissive. All teenagers defined their parent as being restrictive in terms of diet. The highest intake of UPF was associated with lower parental restriction. The highest consumption of sugary products and UPF was associated with higher number of food intake. Parents' origin or level of education did not influence eating behaviors. The use of the application with photos did not allow to collect, on the last day of the study, the same food intake compared to a 24h recall.

**Conclusion:** The diet of the adolescents studied is imbalanced and related to parental practices for UPF and sugary foods. Proportion of UPF food is about a quarter of all food consumed.

**Conflict of Interest:** None

**Keywords:** Obesity; Adolescent; Ultra-processed food; Mobile phone application

## 567[R] Plant-based dietary patterns in relation to CVD risk in Africa: systematic review

Ms Tatum Lopes<sup>1,2</sup>, Prof Annalise E. Zemlin<sup>2</sup>, Prof Rajiv T. Erasmus<sup>3</sup>, Prof Mieke Faber<sup>1</sup>, Prof Andre P. Kengne<sup>1,4</sup>

<sup>1</sup>Non-Communicable Diseases Research Unit, South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>Division of Chemical Pathology, Department of Pathology, Faculty of Medicine and Health Sciences, University of Stellenbosch and National Health Laboratory Service (NHLS), Tygerberg Hospital, Cape Town, South Africa, <sup>3</sup>Division of Chemical Pathology, Department of Pathology, Faculty of Medicine and Health Sciences, University of Stellenbosch, Tygerberg Hospital, Cape Town, South Africa, <sup>4</sup>Department of Medicine, University of Cape Town, Cape Town, South Africa

**Biography:** Tatum is a young researcher from Cape Town, South Africa. She is an alumnus of Stellenbosch University who specialized in medical science. In 2017, Tatum joined the South African Medical Research Council (SAMRC) and gained work experience as a junior scientist. During this period, she developed skills in community-based research. Currently, she is registered as a PhD candidate at Stellenbosch University in collaboration with the SAMRC as her host institution. Her research topic aims to investigate the association between plant-based diet and cardiovascular disease risk in the African setting. Through her research she hopes to contribute to the fields of epidemiology, pathology and public health.

**Introduction:** Cardiovascular disease (CVD) is currently the leading cause of deaths globally. Africa is no exception with increasing rates of non-communicable diseases in general and CVD in particular. Studies from high-income countries have suggested that a plant-based diet (PBD) is associated with lowering CVD risk. However, there is a paucity of evidence on the association of PBD in Africa. This review aims to investigate the relationship between PBD and CVD risk in Sub-Saharan Africa (SSA).

**Methods:** Electronic databases namely PubMed-MEDLINE and Scopus, as well as the EBSCOhost and African Journals Online platforms was searched up to December 2019. The search strategy utilized the PECO concept with search terms including the African filter and related to healthy dietary pattern, unhealthy dietary pattern and CVD risk. Observational studies investigating PBD in relation to CVD risk profile in African adults were eligible. Identified records were screened independently by two investigators. Full texts were reviewed by two investigators and disagreements resolved via consensus or consultation of a third investigator.

**Results:** Three hundred and seventy records were identified across all databases and platforms. After screening 334 records were excluded, 36 were eligible for full text review and 12 studies met the inclusion criteria. The studies originated from 10 SSA countries; included 8,609 participants, sample size ranged from 110 to 2,362 and were published from 2002 to 2019. None of these studies reported that they assessed a PBD. However, 12 studies investigated the consumption of either plant foods, plant-based dietary or nutrient patterns, or a healthy dietary index in relation to CVD risk. Of these, 7 studies reported significant associations between these predominantly plant-based dietary exposures and CVD risk namely overweight/obesity and hypertension, diabetes, etc.

**Conclusion:** The few available studies warrant further investigations to evaluate the protective effects of a PBD on CVD risk in SSA.

**Conflict of Interest:** None

**Keywords:** Plant-based; Dietary patterns; Cardiovascular disease risk; Africa

## 149[R] Poorly controlled glycemia and beta cell function are associated with higher energy expenditure, but lower fat oxidation, in adults with obesity and type 2 diabetes

Dr Heidi Silver<sup>1</sup>, Mr. John Del Castillo<sup>2</sup>, Ms. Katie Friese<sup>1</sup>, Ms. Dianna Olson<sup>1</sup>

<sup>1</sup>Vanderbilt University Medical Center, Nashville, United States, <sup>2</sup>University of Mississippi Medical Center, Jackson, United States

**Biography:** Dr. Heidi J. Silver is a Research Professor at Vanderbilt University Medical Center and a Health Scientist with the Department of Veterans Affairs Tennessee Valley Healthcare System. Dr. Silver's many years of clinical nutrition practice uniquely inform her research and its' clinical applications. Her expertise in clinical nutrition, metabolism, energy balance, and body composition informed creation of the Vanderbilt Diet, Body Composition, and Human Metabolism Core Lab. In that Core Lab, Dr. Silver employs a team of dietitians, dietetic technicians, nurses, and exercise physiologists who are actively involved in translational research. Currently, Dr. Silver's research targets studying how changes in dietary energy and macronutrient intake and changes in body composition influence inflammation, insulin resistance, dyslipidemia, and risk for chronic diseases like obesity, type 2 diabetes, and cardiovascular disease. Dr. Silver has published over 40 research articles and has presented about 85 lectures, as well as several webinars for dietitians on nutrition and diet assessment methods, identifying and diagnosing malnutrition, and how to implement medical nutrition therapy in hospital and long-term care settings. More recently Dr. Silver's research has been the basis for national and international presentations on the role of nutrition and diet in insulin resistance, obesity and diabetes.

**Background:** It is thought that individuals with obesity and type 2 diabetes are likely to be hypometabolic and have reduced fat oxidation – furthering a metabolic state that promotes energy imbalance, fat storage, and excess weight gain. This study was designed to uncover specific relationships between glycemic status, body composition, fat oxidation, and resting (REE) and total (TEE) energy expenditure. We hypothesized that better glycemia and beta cell function would be associated with lower bodyfat, higher fat oxidation, and greater energy expenditure.

**Methods:** A cohort of 68 adults age 47.9 ± 7.1 years with class II obesity (BMI 37.3 ± 4.3) and diagnosed type 2 diabetes were compared to a cohort of 15 lean healthy age and sex matched controls. The doubly labelled water method was used to measure TEE; indirect calorimetry by Parvo metabolic cart to measure REE and macronutrient oxidation; and DXA and MRI imaging to determine body composition. The Oxford HOMA2 software was used with fasting glucose, insulin and c-peptide levels to derive HOMA indexes that reflect insulin resistance (HOMA-IR) and beta cell function (HOMA%B).

**Results:** REE comprised 71.4% of TEE and TEE was 15.5% higher in obese diabetics compared to lean healthy controls. REE and TEE increased in relation to higher amounts of lean tissue mass and/or visceral fat mass (Ps < 0.001). Increased blood glucose and higher insulin resistance were associated with higher REE and TEE – and this relationship was especially robust in subjects with blood glucose ≥170mg/dl. Better beta cell function was associated with lower visceral fat (-0.34, P = 0.01), REE (r = -0.31, P = 0.02) and TEE (r = -0.36, P = 0.01).

**Conclusion:** Hyperglycemia or poor beta cell function (HOMA%B score), reflecting poor glucose homeostasis in obese diabetics, are associated with reduced fat oxidation but uncharacteristically high energy expenditure.

**Conflict of Interest:** None

**Keywords:** diabetes; obesity; energy expenditure; oxidation

## 524[R] Predictors of fat free mass from anthropometric measures and handgrip strength in 6-9 year old children in Pretoria (South Africa).

Ms Lauren Morgan Walsh<sup>1</sup>, Doctor Zelda White<sup>1</sup>, Professor Piet Becker<sup>2</sup>

<sup>1</sup>Department Human Nutrition, Faculty of Health Sciences, University of Pretoria, Pretoria, Private Bag X<sup>223</sup>, Arcadia<sup>0007</sup>, South Africa, <sup>2</sup>Faculty of Health Sciences, University of Pretoria, Pretoria, Private Bag X<sup>223</sup>, Arcadia<sup>0007</sup>, South Africa

**Biography:** Lauren Walsh is a registered dietitian currently residing in Cape Town, South Africa. She has been the head dietitian for an online fitness and nutrition app since 2020. Lauren completed her BSc in Dietetics and a postgraduate diploma in Dietetics at the University of Kwa-Zulu Natal in 2017. She then completed her community service at Stanger hospital up the north coast of KZN in 2018. Most recently, she has completed a Coursework Masters degree in Dietetics at the University of Pretoria. Lauren has a special interest in sports nutrition, maternal and child health and immunonutrition.

**Introduction:** Body mass index (BMI) for age is one of the accepted methods in identifying malnutrition in children above the age of 5, but cannot distinguish between fat free mass (FFM) and fat mass (FM). FFM can be predicted from various bioelectrical impedance analyses (BIA), but such equipment is not always available in low resource and field settings. This study aimed to derive prediction equations for FFM from simple anthropometric measures and handgrip strength (HGS) in children aged 6-9 years.

**Methods:** A cross-sectional study was carried out on 120 conveniently sampled black and white 6-9 year old children (mean age = 7.9 ± 0.8 years). Impedance values obtained from the Seca mBCA 514 Medical Body Composition analyser were used to calculate FFM using a prediction equation. Anthropometric measurements included height, weight, mid-upper arm circumference (MUAC), triceps skinfold thickness (TST) and waist circumference (WC). HGS was also measured on the dominant hand. Data was statistically analysed using STATA software. Predictors of FFM were calculated using multivariable linear regression analysis. The strength of the relationships were reflected by the coefficient of determination ( $R^2 \times 100\%$ ) at a confidence interval of 95%.

**Results:** The FFM prediction equation,  $FFM = (-0.070 \times \text{age in years}) + (0.696 \times \text{sex}^*) + (0.921 \times \text{Race}^*) + (0.144 \times \text{Height in cm}) + (0.522 \times \text{Weight in kg}) + (0.141 \times \text{HGS in kg}) - (0.166 \times \text{TST in mm}) - (0.087 \times \text{WC in cm}) - 8.765$ , yielded an  $R^2 = 0.917$  (where sex: F=0, M=1 and race: B=0, W=1). FM can be calculated by difference.

**Conclusion:** FFM can be predicted in children by using simple anthropometric and HGS measurements, which can be used in low resource settings to assess and monitor body composition.

**Conflict of Interest:** None

**Keywords:** Body Composition; Anthropometry; Bioelectrical Impedance Analysis; Fat Free Mass; Children

## 339[R] Premenstrual syndrome associated with adiposity and lifestyle among young women

Mrs Harshada Thakur<sup>1</sup>, Dr Priyanka Pareek<sup>2</sup>, Dr Suhas Otiv<sup>3</sup>

<sup>1</sup>Symbiosis School of Biological Sciences, Symbiosis International (Deemed University), Pune, India, <sup>2</sup>MGM School of Biomedical Sciences, MGMIHS, Navi Mumbai, India, <sup>3</sup>King Edward Memorial Hospital and Research Centre, Pune, India

**Biography:** Mrs. Harshada Thakur is a Registered Dietitian and has been working in the field of clinical nutrition and research since last 11 years. She has contributed to National and International publications, undertaken research projects and received academic awards. She is recipient of research fellowship from University Grant Commission, Government of India. Currently, she is pursuing PhD from Symbiosis International (Deemed University), India.

**Introduction:** Premenstrual syndrome (PMS) is a cyclical late luteal phase disorder whereby the daily functioning of women in child bearing age is affected by emotional and physical symptoms which substantially interfere women's quality of life. This study focuses on PMS among young women in the light of adiposity and lifestyle behaviors.

**Objectives:** To explore prevalence and severity of PMS among young women and its association with adiposity, dietary habits and lifestyle behaviors.

**Methodology:** Total 330 women participated with informed consent and information on menstruation, dietary habits and physical activity was recorded using structured questionnaire. Rudolf Moose's Menstrual Distress Questionnaire (MDQ) was used for the diagnosis and categorization of PMS. Body composition analysis was done by measuring 4-site skin fold thickness and bio-electrical impedance analysis.

**Results and Discussion:** The most common symptoms reported were anxiety and irritability. About 46.8% had mild PMS, 37.1% had moderate and 16.1% had severe PMS. Though basic metabolic index (BMI) was within normal range ( $22.25 \pm 5.01 \text{Kg/m}^2$ ), body fat percentage was  $32.97 \pm 5.65\%$  which is above the normal cut-off for young women. Body fat percentage, total body water, muscle mass and waist circumference correlated significantly with occurrence and severity of PMS. Intake of energy, protein and essential micronutrients was significantly low than recommended dietary allowance for Indian women. To the contrary intake of fat was significantly higher. The results showed a significant correlation between the severity of PMS and dietary habits (consumption of foods high in calorie, fat, sugar, salt) ( $r=0.190$ ,  $p<0.01$ ), while salad consumption and better physical activity level was found to be protective against PMS ( $r=-0.294$ ,  $p<0.01$ ).

**Conclusion:** This study has attempted to investigate PMS among young women highlighting prevalence of PMS and adiposity. It was observed that there is an inter-relation between adiposity and dietary habits with occurrence and severity of PMS symptoms studied group.

**Conflict of Interest:** None

**Keywords:** Premenstrual Syndrome, Body Composition, Adiposity, Nutrient Intake, Lifestyle

## 643[R] Prevalence of Mercury aka 'Sekete' consumption during pregnancy

*Dr Rose Kokui Dufe Turkson<sup>1</sup>, Ms Pont'so Khoabane<sup>1</sup>*

<sup>1</sup>National University Of Lesotho, Maseru, Lesotho

**Biography:** She is a lecturer at the National University of Lesotho, Department of Nutrition for the past 10 years

She graduated from the University of the Free States with a PhD in Nutrition

**Introduction:** Mercury is a compound found in nature which can cause harm to human, ecosystem and wildlife, mercury exposure during pregnancy can cause harm to the Nervous system development (brain, nerves and the spinal cord) cardiovascular, digestive system, kidneys, lungs of the developing fetus.

**Aims:** The study was aimed at assessing the prevalence of mercury consumption by pregnant women at Mafeteng district.

**Methods:** This was a cross sectional study where purposive sample of 50 pregnant women and 22 traditional healers were selected. A 15 question structured questionnaire was used to interview the pregnant women while the traditional healers were interviewed with 8 question structured questionnaire.

**Results:** About 36% of women said they consumed mercury to reduce pain during child birth, 24% stated that they want to protect their unborn babies against the act of witchcraft and 12%, stated that they want to speed up the labour time during the delivery of the baby, the rest said it was a cultural practice. Also 38% traditional healers stated that their reason for administering the mercury to pregnant women was to protect the unborn children from the acts of witchcraft and 53% stated that they wanted to reduce labor pain and to ensure safe and natural delivery of the baby on its time.

**Conclusion:** Prevalence of mercury consumption due to traditional practices was very high among the pregnant women and the traditional healers are administering mercury to their client.

**Conflict of Interest:** None

**Keywords:** Mercury consumption, pregnant women

## 749[R] Prevalence of obesity and central adiposity in HIV-positive kidney transplant candidates and recipients from HIV-positive donors.

*Dr Claire Juliet Martin<sup>1</sup>, Prof Demetre Labadarios<sup>2</sup>, Mrs Zarina Ebrahim<sup>2</sup>, Professor Elmi Muller<sup>3</sup>, Professor Frederick Veldman<sup>4</sup>, Professor Susanna Maria Kassier<sup>5</sup>*

<sup>1</sup>University of Pretoria, Pretoria, South Africa, <sup>2</sup>Stellenbosch University, Cape Town, South Africa, <sup>3</sup>University of Cape Town, Cape Town, South Africa, <sup>4</sup>Sefako Makgatho Health Sciences University, Pretoria, South Africa, <sup>5</sup>University of KwaZulu-Natal, Pietermaritzburg, South Africa

**Biography:** Claire qualified as a dietitian through the University of Natal. During the course of a diverse career, she has worked in the public sector, industry and academia. She completed a Masters through Stellenbosch University, investigating the CPD system for dietitians. Working closely with the HIV/TB out-patient clinic at one of the hospitals, sparked an interest in HIV medicine and nutrition, specifically in non-communicable diseases in HIV. Therefore, her PhD research (UKZN) focused on nutritional and quality of life assessments in the HIV-positive kidney transplant population. Most recently, she has taken up a post as lecturer in the department of Human Nutrition at the University of Pretoria.

**Background:** Obesity influences health outcomes in kidney transplantation. This study investigated the prevalence of obesity, central obesity and the metabolic syndrome (MetS) in HIV-positive kidney transplant candidates and recipients from an HIV-positive donor, and the relationship between diet and obesity indicators.

**Methods:** Weight, body mass index (BMI), waist circumference (WC), fasting glucose, HDL-cholesterol and triglycerides were collected at baseline and six months.

**Results:** Transplant candidates (n= 54): The mean baseline weight was 73.9 ± 13.1 kg. At six months, 62.7% of candidates lost a statistically significant [t (50) = 2.072, p = 0.043] amount of weight. WC classified 33.3% and 30.4% with central obesity and the presence of MetS in 47.5% and 51.0% at baseline and six months respectively.

**Transplant recipients (n=22):** The mean baseline weight was 70.2 ± 17.2 kg. At six months, 52.4% experienced non-significant weight gain. WC classified 33.3% and 44.4% with central obesity at baseline and six months respectively. Mean WC at baseline was 89.6 ± 13.1cm, which increased significantly to 95.8 ± 12.3cm [t (14) = -2.861, p 0.013] at six months. MetS was present in 35% of recipients. At baseline, weight correlated with total protein (r = 0.609, p = 0.003), animal (r = 0.513, p = 0.017) and plant protein (r = 0.534, p = 0.013) intake. At six months, WC correlated with animal protein (r = 0.517, p = 0.028) intake.

**Conclusion:** Weight loss in transplant candidates should be investigated and appropriate interventions planned. In recipients, WC should be a routinely assessed and animal protein intake monitored.

**Conflict of Interest:** none

**Keywords:** Weight, metabolic syndrome, BMI, kidney transplantation, diet

## 696[R] Prevalence of obesity and hypertension among health professionals in Nsukka Local Government Enugu State

Ms Chinonye Ugwu<sup>1</sup>, Dr Justina Chikwendu<sup>2</sup>, Mr Aloysius Maduforo<sup>3</sup>

<sup>1</sup>Department Of Nutrition And Dietetics, University Of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria, <sup>2</sup>Department Of Nutrition And Dietetics, University Of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria, <sup>3</sup>Department Of Nutrition And Dietetics, University Of Nigeria Nsukka, Enugu State, Nigeria, Nsukka, Nigeria

**Biography:** She is a final year student waiting to commence dietetic internship. She is young, energetic and ever ready to learn new things. Travelling and adventure is her hobby

**Background:** Hypertension and Obesity are the most common risk factors of cardiovascular diseases. Cardiovascular diseases (CVDs) contribute to the highest cause global mortality alongside other non-communicable diseases. There is paucity of findings on the prevalence of obesity and hypertension among health professionals in Nsukka local government area. This study assessed the prevalence of obesity and hypertension among health professionals in Nsukka local government area.

**Methods:** Cross-sectional design was used sample 260 health professionals from 46 health facilities using multi stage sampling method. Structured and validated questionnaire was used to elicit information on socio-demographic, lifestyle and dietary pattern of the respondents. Anthropometric data were collected with appropriate standardized tools. The blood pressure was measured using CVS pharmacy sphygmomanometer. The data obtained were compared with the reference standards. Statistical analysis of the data was done using descriptive statistical tools (mean, standard deviation, percentages and frequencies) and inferential statistical tools (Chi-square test, Independent sample student T-test and Pearson correlation). Significant level was accepted at  $p < 0.05$ .

**Result:** The result showed that 60% were overweight, 16.2% were obese, waist-hip ratio and waist circumference classification of the respondents showed that 88.5% and 69.2% respectively were predisposed to CVD. Blood pressure result showed that 43.8% were pre-hypertensive and 13.5% were hypertensive. Dietary data revealed that 26.2% has a low dietary diversity score. 81.2% met their daily fruit serving's consumption recommendation, and 49.2% met their daily vegetable serving's consumption recommendation. There was a significant positive correlation between the age and daily servings of vegetable intake ( $r = 0.139$ ;  $p = 0.025$ ) and BMI ( $r = 0.373$ ;  $p = 0.000$ ) respectively.

**Conclusion:** There is high prevalence of obesity and hypertension among health professionals and majority of them are insufficiently active.

**Conflict of Interest:** none declared

**Keywords:** obesity; hypertension; health professionals

## 0[R] Prevalence of overweight and obesity in Chronic Kidney Disease stage 3-5 attending a Predialysis clinic in Cape Town, South Africa.

Mrs Zarina Ebrahim<sup>1</sup>, Prof Renee Blaauw<sup>1</sup>, Mrs Tonya Esterhuizen<sup>3</sup>, Prof Rafique Moosa<sup>2</sup>

<sup>1</sup>Stellenbosch University Department of Human Nutrition, Cape Town, South Africa, <sup>2</sup>Stellenbosch University Department of Internal Medicine, Cape Town, South Africa, <sup>3</sup>Stellenbosch University Department of Biostatistics, Cape Town, South Africa

**Biography:** Mrs Zarina Ebrahim works as a clinical lecturer in the Department of Human Nutrition at Stellenbosch University. She specializes in the area of Chronic Kidney Disease and other non-communicable diseases. She is currently doing her PhD in the area of CKD, uremic toxins and the gut microbiome. She also supervises post-graduate students in the area of CKD and non-communicable diseases. She has many years of clinical experience both at local and hospitals in the United Kingdom and has worked at the University of Cape Town and the University of the Western Cape.

**Introduction:** Chronic Kidney Disease (CKD) is increasing in sub-Saharan Africa. Undernutrition has been prevalent amongst end stage CKD patients, with limited data on the prevalence of overweight and obesity.

**Objectives:** to assess the anthropometric status of CKD patients and to determine associated factors.

**Method:** Stage 3-5 CKD patients (GFR < 60ml/min/1.73m<sup>2</sup>) from a pre-dialysis clinic in Cape Town, were enrolled. Exclusion criteria included infectious and autoimmune conditions. Sociodemographic and biochemical data were collected, anthropometric measurements were performed using WHO methods. Dietary intake was measured with a quantified food frequency questionnaire (FFQ). SPSS Statistics (descriptive statistics, T tests and one way Anova's) was used to analyse data and statistical significance was set at 5%.

**Results:** Seventy patients, average age 41.8±11.8 years, 52.9% (n=37) females and 47.1% of males (n=33) were enrolled. Mean GFR was 21.2 ± 11.9 ml/min/m<sup>2</sup>. Sixty-seven percent (n=56) earned <R5000 per month and 31% (n=22) were unemployed. Thirty percent (n=21) were overweight and 36% (n=25) were obese, 28.6% normal weight only 4.3% were underweight. Significant differences were found between BMI categories and gender ( $p < 0.001$ ). The average waist circumference for females (89.5cm ± 13.7) and males (94.9cm ± 19.48) were higher than recommended cutoffs. The average energy intake was 29kcal/kg ideal body weight (IBW)(within recommendations), and higher than recommended intakes of protein 1.1g/kg IBW, total sugar 81.5g ± 36g and saturated fat of 11%. There were no significant differences in BMI categories and dietary intake although there was a significant difference between income categories and protein intake ( $p = 0.027$ ).

**Conclusion:** There is an increased prevalence of overweight and obesity in CKD stage 3-5 patients, with higher than recommended intakes of protein, saturated fat and sugar. Intervention strategies should be targeted at treating obesity in this group and possibly re-evaluating the recommendations for energy intake in CKD patients.

## 93[R] Printed tray table messaging enhances meal delivery service

Dr Angela Vivanti<sup>1,2</sup>, Mr Jordan Lambi<sup>1</sup>, Mr Scott Prichard<sup>2</sup>, Ms Karen Slater<sup>2</sup>, Ms Jan Hill<sup>2</sup>, Mr Noel Matson<sup>2</sup>

<sup>1</sup>School of Human Movement and Nutrition Studies, University of Queensland, Brisbane, Australia, <sup>2</sup>Princess Alexandra Hospital, Brisbane, Australia

**Biography:** Dr Angela Vivanti is an Advanced Accredited Practising Dietitian and the Research and Development Dietitian at the Princess Alexandra Hospital.

She is Australia's representative and chairs the Nutrition Care Process Terminology Research Outcomes Committee and has previously chaired the Nutrition Care Process Terminology International Workgroup

This work progresses professional implementation of a standardized Nutrition Care Process Terminology including integration into SNOMED-CT International to optimize the interface with electronic health records for the transformational (and not just transitional) opportunity that it offers. Angela has been on the scientific committees of international and national conferences over many years. She has co-authored a text book, peer reviewed articles, abstracts, evidence-based guidelines and systematic reviews including Cochrane reviews.

It is essential for foodservice systems in acute care settings to optimise nutrition care while maintaining high standards of safety and person-centred care. A supportive acute care environment is crucial for this to be accomplished. The impact of new over-bed meal tray-tables with printed messages in supporting tray placement within reach at meal times by keeping tables clutter-free was investigated. The customer service impacts of printed tray-table messaging upon personal greetings, tray-tables being cleared and within reach were also assessed by a point of service meal delivery audit at breakfast, lunch and dinner over six days including all acute wards except intensive care. Categorical data was assessed using Fisher's Exact test. A 5% change was considered clinically significant. There was a significant increase in tray-tables with printed messages being cleared before meal times (59.8%, 76/127) compared to no messages (42.6%, 95/223) ( $p=0.003$ ). Clinically significant improvements were also evident with more tray-tables with printed messages being within reach at meal times (87.4%, 111/127) compared to no messages (80.7%, 180/223). Additionally, a clinically important higher rate of personal greetings was evident with printed tray-table messages (56.7%, 72/127) compared to no messages (50.7%, 113/223). Using a passive and relatively inexpensive approach for impacting hospital ward environments, printed tray-table messages were confirmed to increase the clearing of tray-tables in preparation for meal times, as well as enhance the number of tables within reach and the numbers of personal greetings.

**Conflict of Interest:** none

**Keywords:** Foodservice, Meal Delivery, Nutrition support.

## 468[R] Prunes reduce the postprandial insulin response necessary to similarly regulate glucose in comparison to a refined snack food

Dr Mark Kern<sup>1</sup>, Ms. Brittany South<sup>1</sup>, Ms. Stephanie Nelson<sup>1</sup>, Ms. Alexandra Zawilski<sup>1</sup>, Dr. Shirin Hooshmand<sup>1</sup>

<sup>1</sup>San Diego State University, San Diego, United States

**Biography:** Mark Kern has been a Professor of Exercise and Nutritional Sciences at San Diego State University since 1995. He earned his BS and MS degrees in Nutrition Science from Indiana University and PhD in Foods and Nutrition from Purdue University. His research focuses on the independent and interactive effects of diet and exercise on appetite, body weight regulation, chronic disease risk factors and exercise performance with specific interests not the impacts of functional foods including fruits and less refined sweeteners as well as fructose and other fructose-rich foods.

The carbohydrate-insulin model (CIM) has been proposed. It predicts that greater postprandial insulin responses to dietary carbohydrate can increase food intake and lead to weight gain. Past research has demonstrated that prunes (dried plums) enhance satiety, which may be due to lower glycemic and/or insulinemic responses suggesting that they may serve as an excellent choice of snacks in comparison to more highly refined snack foods. This research was designed to evaluate the acute effects of prune consumption versus refined muffins with a similar content of carbohydrate, fat, and protein in health adults on glycemic and insulinemic responses.

**Methods:** Twenty men and women aged 18-45 years with BMIs of 18.5-29.9 and lacking any pre-diagnosed medical conditions were recruited to participate. Participants arrived fasted and were fed isocaloric (~300 kcal) portions of either dried plums or a snack muffin on separate occasions separated by at least 1 week. During each session blood was collected at baseline and 60, 75, 90, and 120 min after ingestion to assess plasma glucose and insulin responses. Potential differences in responses were assessed using 2 (trials) by 5 (time points) repeated measures ANOVA.

**Results:** Significant main effects of trial ( $F=9.672$ ,  $p \leq .008$ ) and time ( $F=9.338$ ,  $p \leq .002$ ) as well as time x trial interaction ( $F=8.924$ ,  $p \leq .002$ ) were detected for plasma insulin responses with relatively similar responses for plasma glucose.

**Conclusions:** Prunes reduce the postprandial insulin response necessary to regulate plasma glucose concentrations in comparison to a refined snack food. Prunes should be viewed as a healthier snack option compared to refined carbohydrate rich snacks when assessed in consideration of the CIM.

**Conflict of Interest:** This study was supported in part by the California Prune Board

**Keywords:** snack; fruit; functional foods; dried plum; prune

## 663[R] Public health workforce planning to address the nutrition-related burden in South Africa

*Dr Hilary Goeiman<sup>1</sup>, Prof Elizabeth Swart, Prof Roger Hughes*

<sup>1</sup>Western Cape Government: Health, Cape Town, South Africa

**Biography:** Hilary Denice Goeiman is a registered Dietitian with the Health Professions Council of South Africa. She is the Deputy Director of the Integrated Nutrition Programme at the Western Cape Health Department with a Masters in Nutrition (SU) and a PhD in Public Health (UWC). She is an experienced and public health practitioner with over 27 years in the public health sector, functioning at different levels of the health service including operations, health programmes and policy. In the last 15 years, she has operated at policy level in health programmes (working across the areas of maternal, child and women's health). She has led and participated in many projects (facility and community-based) including conferences, and has co-authored scientific papers and posters.

**Introduction:** South Africa has not responded well to recommendations in national evaluation reports to address human resource challenges associated with the implementation of nutrition programmes and improved service delivery. This study aimed to develop a comprehensive and empirically sound nutrition workforce development planning framework for the public health sector so that it is better equipped to address the nutrition-related burden of disease in South Africa.

**Methods:** The study explored the provision of nutrition services in South Africa, focusing on the nutrition-specific work components of health personnel – doctors, nurses, dietitians, nutritionists, health promoters and community health workers working at the primary health care level in the public health sector. Workforce information was collected through a mixed methodology comprising: literature reviews, document reviews, analysis of scopes of practice, job descriptions, competencies, workforce surveys, key informant interviews and consensus assessments through the application of the Delphi technique. Data was analysed using descriptive statistics, content and thematic analysis and triangulation of all findings, followed by consensus assessments to describe the nutrition workforce and delineate the roles and functions thereof.

**Results:** The study identified significant shortcomings in workforce development and the capacity of many practitioners to do the work, for lack of know-how, time, physical infrastructure, and emotional and managerial support, among other factors.

**Conclusion:** Based on the findings, a number of recommendations were made, including the following: that more, and more reliable, information should be sourced to fill knowledge gaps; that the nutrition workforce should be properly defined and key personnel roles and functions clearly be delineated – particularly to eliminate the current confusion between professionals' scope of responsibility and scope of practice. A workforce development planning framework was constructed to inform and guide future nutrition and other health-related workforce planning in South Africa.

**Conflict of Interest:** None

**Keywords:** Nutrition workforce; Nutrition workforce development and capacity; Human Resources for Health; Dietitian; Nutritionist

## 441[R] Questioning the university restaurants for students in France : Norms, practices and sourcing.

*Dr Virginie Masdoua<sup>1</sup>, Dietitian Pavaud Brigitte<sup>2</sup>, Dr Laurent Caroline<sup>3</sup>*

<sup>1</sup>Associate Professor, University of Montpellier, France, <sup>2</sup>Liberal Dietitian, Aix-Marseille, France, <sup>3</sup>Lecturer, University of Montpellier, France

**Biography:** Virginie Masdoua is a registered dietitian.

Currently, she is a Dietitian Manager in the Assistance publique des hôpitaux de Paris where she leads several dietitian teams in four University Hospitals centers.

After earning a higher University diploma in Dietetics, she passed a master's degree in Sociology of food and got a PhD in Anthropology of food.

She has been an associate researcher at the National Scientific Research Center during for 10 years.

She has conducted surveys with EFAD in 2011. Her theme of research is sustainable diet in the 21 century for reasons and to be reasonable. In 2014 she has obtained a grant to develop a scientific program for the students' project on food sustainability.

She has conducted the change for cook teams and defining the new products offered, implemented questionnaires and studies with 1300 students and given a conference at the University of Liverpool to share results and ideas.

In addition she teaches at the bachelor level courses in nutrition and human nutrition, as well as courses at the master's level at the University of Montpellier for dietitians students. She has evaluated for the French Ministry of Health hospitals research programs written by dietitians manager.

In Languedoc Roussillon, the score of social fragility among students increased by 5% in 5 years, denoting an increase in precariousness (2012).

**Objectives:** Improve food options for students, INCO labeling to encourage changing their purchasing behaviors into a healthy food direction in a new University food store.

**Methods:** Researchers have established an inventory of food products and designed menus to meet the nutritional needs recommended for students. Menus accessible, after focus groups, a questionnaire conducted, were proposed. To carry out a nutritional evaluation, we used the SAIN / LIM scores on aspects of the nutritional density. To measure the nutritional impact of supply on students' food consumption, we conducted among 30 students nutritional surveys over 3 consecutive days associated with a diary before and after the opening of the food store. We compared food diaries using the Student's t-test for 2 paired samples (bilateral tests, 5%)

**Results:** The SAIN / LIM defines classes of food, shows more than half of this proposal does not correspond to nutritional recommendations. It includes too many foods rich in saturated fatty acids (FA) because of nutritionally untargeted snacking products. Although unsweetened yogurts have been introduced, they are drowned out in the overabundance of other desserts. A "bar à sauces" has been equipped with different oils (supply of essential FA). Our questionnaire revealed that students were still 63.8% likely to choose the stick, the bar lacking visibility. Assessment of food diaries, showed there was a significant difference only in energy intake: more than half of individuals have superior intakes before opening. The winter survey for the first and second in the spring would be a hypothesis.

**Conclusion:** INCO labeling, the only nutritional communication implemented did not change behaviors. Tools must be developed to promote healthy choices.

**Conflict of Interest:** Virginie Masdoua : received a FFAS grant. Brigitte Pavaud : none. Caroline Laurent : none

**Keywords:** Student restoration; Nutritional quality; Nutrient density

## 522[R] Retention and yield of beef and lamb retail cuts

Dr Beulah Pretorius<sup>1</sup>, Prof Hettie Schönfeldt<sup>1</sup>

<sup>1</sup>Department of Animal and Wildlife Sciences, University Of Pretoria, Pretoria, South Africa

**Biography:** Dr Pretorius's work experience and research interest focus on nutrient composition, quality and bioavailability of nutrients from foods. She is actively involved in the Focus Areas and research projects as technical and analytical expert. She is also involved with managing the day-to-day and research operations and students.

The nutritional analysis of cooked foods is costly, time-consuming and cannot be performed in many instances. Calculation of the nutrient composition of the cooked dishes are still the method of choice by researchers studying food intake of population groups. Recipe calculations also contribute to a significant proportion of the nutrient information of combined dishes in food composition tables.

In this study the retention and yield factors for six beef and six lamb retail cuts were determined. Beef and lamb cuts were cooked to an internal temperature of 70°C using a dry heat cooking method. Each meat sample was dissected into edible and inedible fractions and weighed. The nutrient content of the edible fractions was determined.

The data showed the importance of reporting on what specific species' meat and cut is eaten. For example, a "lamb chop" can be a "chump chop" or a "rib chop" with meat fractions ranging from 24.2g to 58.2g per cut and subcutaneous fat ranging from 10.2g to 26g.

Protein is retained in high percentages in meat after cooking. Retention factors for protein in beef ranged from 88% for short ribs to 103% in shin bones and in lamb from 96% in chump chops to 139% in riblets. The retention for fat in beef ranged from 50% for blade steak to 159% for short ribs and in lamb from 51% in riblets to 100% in neck chops. The mineral content is largely affected by the cooking process, ie. leaching into the water.

It is evident that generalisation and lack of product specific consumption information can lead to possible over- or underestimation of nutrients consumed. The differences in retention and yield factors reported by other researchers and the factors found in this study prove the importance of determining country specific retention and yield factors.

**Conflict of Interest:** None

**Keywords:** Beef; Lamb; Retention and Yield Factors

## 690[R] Risk factor profile for non-communicable diseases: findings of a STEPS survey among the support staff at University of Pretoria, South Africa

Ms Sithabile Mathunjwa<sup>1</sup>, Dr Modiehi Legodi<sup>1</sup>

<sup>1</sup>University Of Pretoria, Pretoria, South Africa

**Biography:** Sithabile Nombulelo Mathunjwa is a Master of Dietetics graduate from the University of Pretoria (from 2018 to 2019). Her Master's research study investigated the non-communicable diseases (NCDs) risk profile among the University of Pretoria's insourced staff. She employed the World Health Organisation (WHO) STEPS questionnaire in order to determine the NCDs risk profile in the target population. She holds a Bachelor of Science in Dietetics from the Sefako Makgatho Health Science University (from 2012 to 2015). Sithabile has also done an online Postgraduate Program in Paediatric Nutrition from Boston University School of Medicine in 2019. In 2020, she completed a Public Health Nutrition Course Centre from The Centre for Global Child Health. She also did two short courses in 2018 on Entrepreneurship and Career Planning from Enterprises University of Pretoria. Sithabile has had the privilege to work as a research assistant at a UNICEF consultancy's research project in the year 2019. She is interested in enhancing her career by branching to public health nutrition. She is a registered active member of the Health Professions Council of South Africa (HPCSA) and is currently working at the University of Pretoria, Department of Human Nutrition as a part-time lecturer.

**Introduction:** Non-communicable diseases (NCDs) account for 71% mortalities globally and 60% in South Africa. Common behavioural health risk factors linked to NCDs include; smoking, alcohol consumption, physical inactivity and unhealthy diet. Early screening could help lower NCDs incidences, treatment costs and prevent long term consequences. The study aimed to profile NCD risk factors among insourced support staff at the University of Pretoria.

**Methodology:** A cross-sectional, descriptive study approach was used. The WHO STEPS questionnaire was administered to collect the following; firstly, STEPI: demographic information and behavioural risk factor profile (diet history including fruit, vegetable, and salt intake) and NCDs history). Secondly, Step II: anthropometric (weight, height, waist circumference, body mass index (BMI)) and blood pressure measurements. Lastly, STEP III: Biochemical measurements (blood glucose and cholesterol levels). Participants were insourced support staff aged 18 - 64 years old (60% females) at the University of Pretoria. Data was double entered in excel and analysed using Epi-Info version 3.5.1.

**Results:** A quarter of the sample reported consuming alcohol daily and 18.5% were current smokers. The majority of participants (97.8%) had low daily fruit and vegetable intake. Eighty percent of the study population "always" or "often" added salt to their food when cooking. Based on BMI, more than two-thirds of all the participants were overweight or obese (70.6%) and 61.1% had abdominal obesity. More than a third of the participants had raised systolic and diastolic blood pressure blood sugar and cholesterol levels.

**Conclusion:** The study identified low fruit and vegetable intake, obesity, and overweight, alcohol, and tobacco use and high salt intake as the most prevalent NCD risk factors among insourced support staff. Regular screening and appropriate tailored nutrition education needed to lower the elevated risk in this population.

**Conflict of interest:** None. **Keywords:** chronic diseases, non-communicable diseases, risk factors, support staff

**Conflict of Interest:** None

**Keywords:** Chronic diseases; Non-communicable diseases; Risk factors, Support staff

## 298[R] Self-efficacy, lifestyle practices and cardiovascular diseases (CVD)s risk factors among elderly in Ibadan, Nigeria.

Mrs Oluwaseun Akinmoladun<sup>1,2</sup>, Mrs Abidemi Femi<sup>3</sup>, Dr (Mrs) Cebisa Nesamvuni<sup>2</sup>

<sup>1</sup>Wesley University, Ondo, Nigeria, <sup>2</sup>University of Venda, Thohoyandou, South Africa, <sup>3</sup>Department of Food Science and Technology, School of Agriculture and Agricultural Technology, Federal University of Technology, Minna, Nigeria

**Biography:** Mrs Akinmoladun O.F. holds a Bachelor of Technology (2010) in Food Science and Nutrition from Federal University of Technology Minna and a higher degree (MSc, (2014)) in Human Nutrition from the University of Ibadan, Nigeria. She is currently doing her doctoral program at the University of Venda, South Africa. She is also an academic staff (lecturer) in the Nutrition and Dietetics Unit, Department of Food Science and Technology, Wesley University Ondo, Nigeria and has supervised over five honour students. Her research area focused on food processing and nutrition interventions in non-communicable diseases. She has to her credits published conferences proceedings (local and international) and articles in peer-reviewed scholarly journals

**Introduction:** Development of CVD among elderly can be escalated by defective lifestyle practices and the increase in age. Objective: To evaluate the lifestyle practices, cardiovascular diseases risk factors and self-efficacy among the elderly in Ibadan, the largest city in Nigeria.

**Methods:** The study was descriptive and cross-sectional in nature. 423 individuals ( $\geq 60$  years, male or female) were randomly selected from households. A semi-structured, interviewer administered questionnaire on self-efficacy scale (six and seven questions on dietary and lifestyle modification respectively) was used to collect data. The lifestyle practices of CVD risk factors were determined using eighteen questions. Self-efficacy and lifestyle scores were rated as either low, medium or high and poor, fair or good respectively. Respondents with a total score of  $\leq 50\%$ ,  $51\%-74.99\%$  and  $\geq 75\%$  were classified as low, medium or high self-efficacy and poor, fair or good lifestyle.

**Results:** Out of the total respondents selected, 69.6% (295) are females. Only a small fraction (1.7%) of the participants are involved in physical exercise. 92.7% of the participants used excess salt during cooking, 64.6% eat outside their home, 38.4% consumed fruits daily and 18.2% regularly consumed soft drinks. 4.5% and 13.2% of the participants smoked cigarette and consumed alcohol respectively. 58.5%, 30.0% and 11.6% of the participants had fair, good and poor lifestyle practices respectively. 11.3%, 58.7% and 30.0% had low, medium and high self-efficacy scores and were significantly related ( $P=0.001$ ) with the gender.

**Conclusion:** Eating outside the home, high consumption of alcoholic drinks, sedentary lifestyle and high salt intake as observed in this study are regarded as high risk factors for CVD developments among the respondents. The higher percentage of smoking in males compared to females makes them to be more vulnerable to CVD. Conflict of Interest: None.

**Keywords:** Elderly; lifestyle; self-efficacy; cardiovascular diseases

## 418[R] Self-reported non-communicable disease profile and dietary diversity of a deep rural community in KwaZulu-Natal, South Africa

Ms Jandri Barnard<sup>1</sup>, Dr Susanna Kassier<sup>1</sup>

<sup>1</sup>University Of Kwazulu-natal, Pietermaritzburg, South Africa

**Biography:** MSc Dietetics (University of KwaZulu-Natal) 2016 - "Comparison of BMI, eating behaviour and eating attitude between dietetic and non-dietetic female undergraduate students at a South African University"

Research Fellowship (University of Groningen) 2009 - "Beta-cell heterogeneity during development as an immunocytochemical, fluorescent and scanning electron microscopic investigation"

BDietetics (University of Pretoria) 2008

World Obesity Federation: SCOPE accreditation course

Post Graduate Program in Paediatric Nutrition (PGPN) 2017 in association with Boston University School of Medicine, USA

Galliova Awards SAPA for health writers: 2019 Egg Champion Award 2nd Prize and 2020 Health Writer 3rd Prize

Allergy Association of South Africa: compiling and evaluation of online allergy course modules for health care professionals for University of Cape Town

**Introduction:** Over 85% of deaths from non-communicable diseases (NCDs) occur in low- and middle-income countries like South Africa (SA) with the highest attributing causes including hypertension, hyperlipidemia, and hyperglycemia. Those affected most, are aged 30 to 69 years, with 50% being female. This poses a threat to achieving a reduction in premature deaths from NCDs by a third by 2030, as per the 2030 Agenda for Sustainable Development. Hence the study aimed to determine self-reported NCD profile and dietary diversity among adults residing in a deep rural community where access to health facilities are poor.

**Methods:** Participants were conveniently sampled with door-to-door visits in the Umzinyathi district, one of the most underdeveloped rural areas of KwaZulu-Natal (KZN). A fieldworker-administered 24-hour recall was used to determine dietary diversity as per the consumption of 12 food groups.

**Results:** The black African study sample (N=150) were predominantly female (83.3%). Self-reported NCDs included hypertension (50%), diabetes mellitus (29.3%) and hypercholesterolemia (21%). Primary food group consumption included cereals (97.3%), sweets (94.6%), miscellaneous items (93.3%) and oils and fats (81.3%), followed by flesh and organ meats (40%) and fruit (36.6%). Although 70% of participants reporting daily vegetable consumption, it was predominantly limited tomatoes and onions. Nearly 6/10 (56.6%) consumed 4 – 6 food groups, while 14.6% consumed 10 – 12 food groups. Traditional food consumption included jeqe (steamed bread), samp (dried corn kernels that have been stamped and chopped), organ meats and indigenous vegetables like amadumbe tubers and amaranth (wild spinach).

**Conclusion:** Self-reported hypertension and diabetes mellitus is in line with cardiovascular diseases being the leading category of NCDs in SA, with black African mortality rates being attributed to cerebrovascular disease, hypertensive heart disease and diabetes mellitus. The lack of dietary diversity is likely to contribute to morbidity and mortality from NCDs in this deep rural community.

**Conflict of Interest:** None

**Keywords:** Non-communicable diseases; dietary diversity; traditional food; hypertension; deep rural

## 225[R] Socio-economic status, supplement intake and dietary quality of pregnant women in Igbo-Eze South Local Government area, Enugu State, Nigeria

Miss Chidinma Ezeh<sup>1</sup>, Professor Joy Nwamarah<sup>2</sup>, Dr Justina Chikwendu<sup>3</sup>, Mrs Clementina Okoro<sup>4</sup>, Mr Aloysius Maduforo<sup>5</sup>

<sup>1</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>2</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>3</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>4</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria, <sup>5</sup>University Of Nigeria, Nsukka, Nsukka, Nigeria

**Biography:** Aloysius Maduforo is a Registered Dietitian-Nutritionist and a Lecturer in University of Nigeria Nsukka. He is presently a Ph.D student in the same University. His research interest is on maternal and child health, non-communicable diseases and development of nutrition communication tools for dietary counselling. He is also engaged in profiling of the nutrient content of local foods and crops in Nigeria.

**Introduction:** Increased energy and nutrient intake is important during pregnancy as it helps to ensure healthy birth outcome. Supplements are needed to complement nutrients derived from diets to meet with the needs of pregnant women. Some women do not take these supplements which could be detrimental to the foetus. Socioeconomic status, supplement intake and dietary quality of pregnant women was assessed.

**Methods:** The study was a cross-sectional health facility based survey design. Multistage sampling technique was used to sample respondents. Interviewer administered questionnaires were used to elicit information from the respondents. Socio-demographic characteristics, previous pregnancy history, frequency of supplement intake and 24-hour dietary recall were captured. Descriptive statistics was used to analyse the data. Chi-square was used to test the association between categorical variables. Pearson correlation was used to correlate numerical variables. Significance level was accepted at  $p < 0.05$ .

**Results:** A total of 159 respondents completed the study with 12% aged 10-19 years old (adolescent pregnancy), 40.9 % and 56.6% were in the second and third trimester of pregnancy respectively. Seventy-three percent of the respondents had secondary education as the highest educational qualification, 43.3% were traders and earned below N 15,000 (\$41.44) monthly. Previous pregnancy history revealed that 25.2% has experienced an abortion/miscarriage. Frequency of supplementation shows that 42.8%, 44% takes folic acid and ferrous sulphate two times daily and about 30% takes multivitamin three times daily. Using the dietary diversity score, 45.3% of the respondents had a high dietary diversity while 43.4% had a medium dietary diversity. Dietary diversity correlated significantly ( $p = 0.025$ ) with gestational age.

**Conclusion:** Adherence to supplementation during pregnancy is low in the study area, also the dietary diversity is below average and can be related to dietary inadequacies associated with pregnancy and low income level.

**Conflict of Interest:** none declared

**Keywords:** Supplementation; Dietary diversity; Pregnancy; socioeconomic status

## 353[R] Supporting breastfeeding at work among provincial government employees: evidence from a Southern context

Ms Prudence Bongekile Mabaso<sup>1</sup>, Dr Ameeta Jaga<sup>1</sup>, Prof Tanya Doherty<sup>2</sup>

<sup>1</sup>University Of Cape Town, Cape Town, South Africa, <sup>2</sup>South African Medical Research Council, Cape Town, South Africa

**Biography:** Prudence B. Mabaso is a PhD candidate in the School of Management Studies at the University of Cape Town. Her research is on workplace support for breastfeeding, specifically focusing on enabling supervisors to provide support for breastfeeding mothers to continue breastfeeding upon return to employment. She obtain her master's degree in Human Nutrition at the University of KwaZulu Natal. She then worked for 5 years at Charles Johnson Memorial Hospital as a Registered Nutritionist. She led a team in the establishment of 16 Phila Mntwana Centres which were initiated to provide community based child health services including infant and young child feeding support, vitamin A supplementation, growth monitoring and promotion and immunization. The project was nominated to participate in the provincial MEC Service Excellence Awards. Furthermore, the team received the following awards (1) The uMzinyathi District Best Integrated Nutrition Programme Team (2016), (2) Most innovative team with fully functional Phila Mntwana Centres (2015), and (3) Certificate of Appreciation for reducing severe acute malnutrition (2017).

She co-authors a paper "Impact of extension intervention in Severe acute malnutrition cases while promoting climate smart agriculture in the rural Nqutu community", that was presented as a poster at the DAFF, AFAAS, SASAE 2017 Conference.

**Introduction:** Breastfeeding is a key child survival strategy to prevent childhood illnesses and deaths. Despite global increases of females in the labour force, return to employment remains a major barrier to breastfeeding continuation. Exclusive breastfeeding rates are significantly low in South Africa even with maternity protection rights and statutory provision of breastfeeding breaks at work. Surprisingly, limited management literature acknowledges breastfeeding as a workplace issue and the recent Lancet series explicitly highlighted a gap on breastfeeding research from the workplace perspective in low-middle income countries such as South Africa. In one province, provincial government is the largest employer with good work-family program implementation, including four months fully paid maternity leave. The objective of this study was to explore experiences of workplace breastfeeding support amongst mothers and senior managers in two provincial government departments.

**Methods:** An exploratory qualitative design was used and twelve in-depth interviews carried out with working mothers ( $n = 8$ ) and senior managers ( $n = 4$ ). Participants were recruited by e-mail, word of mouth as well as snowball sampling. Thematic analysis of the data yielded findings that are presented according to critical maternity phases: pregnancy, maternity leave and return to work. **Results:** During pregnancy, participants lacked knowledge about the full maternity benefits and did not engage in conversations with managers about feeding practices upon return to work. During maternity leave, mothers' perceptions of a non-breastfeeding friendly climate influenced their decision to wean infants early. Upon return to work, mothers experienced a lack of infrastructural and emotional support for breastfeeding continuation at work. Generally, breastfeeding was perceived as a personal issue and mothers lacked the agency to request support.

**Conclusion:** Among several recommendations, immediate supervisors were identified as key catalysts for advancing support for breastfeeding at work. Our findings have implications for policy makers, employers and work-family scholars

**Conflict of Interest:** None

**Keywords:** Breastfeeding, Workplace support, Qualitative, Public sector, Supervisors

## 86[R] Taxation of sugar-sweetened beverages in South Africa: Perspectives of consumers

Dr Nelene Koen<sup>1</sup>, Ms Aziwe Boo<sup>1</sup>, Ms Anika Botha<sup>1</sup>, Ms Mandisa Mzila<sup>1</sup>, Ms Santi Turner<sup>1</sup>, Ms Jancke Van Dyk<sup>1</sup>, Mrs Zarina Ebrahim<sup>1</sup>, Prof Daan NeP, Mrs Yolande Smit<sup>1</sup>

<sup>1</sup>Division of Human Nutrition, Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Centre for Statistical Consultation, Stellenbosch University, Stellenbosch, South Africa

**Biography:** Dr Nelene Koen is a registered dietitian employed as a senior lecturer in the Division of Human Nutrition, Department of Global Health, Faculty of Medicine and Health Sciences, Stellenbosch University for the past 13 years. She coordinates and teaches various undergraduate and postgraduate modules, provide post-graduate study supervision to Master of Therapeutic Nutrition, Public Health Nutrition and Food and Nutrition Security students and is actively involved in research related to food and nutrition labelling in South Africa, the South African sodium regulations and sugar taxation. She has presented her research at various national and international congresses and has published in several accredited peer-reviewed journals.

She is the recipient of the Stellenbosch University Rector's award for Excellence in Teaching.

Her main areas of interest falls within the public health nutrition domain and includes food and nutrition labelling, population-wide strategies to combat non-communicable diseases, organic foods and GMOs.

She is married and lives in Cape Town. She has two sons, Niel and Francois.

**Introduction:** Globally, fiscal measures such as taxes are increasingly recognised as effective complementary tools to curb the obesity epidemic at population level. In 2018, a health promotion levy (HPL) was implemented in South Africa (SA) to discourage purchasing of sugar-sweetened beverages (SSBs). This study aimed to determine the perspectives of consumers within the City of Cape Town regarding the HPL and to determine the self-reported impact on consumer purchasing behaviour and consumption of SSBs since the HPL implementation.

**Methods:** In this cross-sectional descriptive study, an interviewer-administered questionnaire was conducted with literate adult consumers (n=696) from 16 grocery stores within four health sub-districts of the City of Cape Town, South Africa.

**Results:** Less than half (n=320; 45.97%) of consumers indicated that they were aware of the HPL. Of the consumers who were aware of the taxation, only two (0.63%) participants knew the correct amount of sugar (in grams) that is allowed in SSBs before being levied (4g in 100ml). Fifty four percent (n=379) of consumers reported to have noticed a price increase in SSBs and of these consumers, 43.07% (n=171) reported that the increased SSBs pricing influenced their purchasing behaviour resulting in them purchasing less SSBs. There is almost an equal amount of participants who agreed (n=326; 46.84%) and disagreed (n=331; 47.56%) on whether the HPL will help to reduce overweight and obesity rates in SA whilst the remaining participants (n=39; 5.60%) were unsure. More than half of participants had an overall positive feeling towards the HPL (n=388; 55.83%).

**Conclusion:** City of Cape Town consumers had mostly mixed reactions towards the HPL, its effectiveness and whether it has influenced consumer purchasing behaviour. More should be done to educate consumers about the HPL and the impact of consuming large quantities of sugar on their health.

**Conflict of Interest:** None

**Keywords:** consumers; South Africa; sugar-sweetened beverages; health promotion levy; perspectives

## 743[R] The association between COVID-19-related employment challenges and students' dietary intake in the United States

Ms Gugulethu Moyo<sup>1</sup>, Mr Temitope Ibiyemi<sup>1</sup>, Ms Hyunjung Lee<sup>1</sup>, Ms Li-Ling Peng<sup>1</sup>, Dr Wilna Oldewage-Theron

<sup>1</sup>Texas Tech University, Lubbock, United States

**Biography:** Gugulethu Moyo is a third-year PhD Nutritional Sciences student at Texas Tech University, United States. She has research interests in food security, behavior change interventions, infant and maternal nutrition, and micronutrient deficiencies. Her doctoral research will investigate the social and nutritional determinants of various health outcomes. Gugu obtained her MSc in International Public Health Nutrition in London, UK, and is currently a Fulbright Fellow.

**Introduction:** The coronavirus (COVID-19) pandemic has affected income levels, employment status, and food intakes globally. In the United States (US), many university students work to fund their studies. The objective of this study was to assess the number of students whose work hours and income were affected by COVID-19 and to investigate if these factors were associated with dietary intake.

**Methods:** An online questionnaire was administered using Qualtrics to 280 students at a public research university in Texas between November 2020 and March 2021. Chi-square tests of independence were performed on R version 4.0.3.

**Results:** Preliminary analysis found that 45.2% had a change in income or employment status that was related to COVID-19 and 36.9% of the students had experienced a COVID-19 related reduction in working hours. There was an association between reduced working hours and fast-food intake ( $X^2 = 12.494$ ,  $p = 0.014$ ). Additionally, COVID-related changes in income/employment status were associated with snack and dessert consumption ( $X^2 = 21.06$ ,  $p = 0.021$ ). No significant associations were found between either income/employment status or reduced working hours, and home-cooked meals or fruit and vegetable intake.

**Conclusion:** The results suggest that employment challenges related to COVID-19 have an association with students' dietary intake, specifically in relation to higher calorie foods such as snacks, desserts, and fast food.

**Conflict of Interest:** None

**Keywords:** Students; dietary; COVID-19; employment; university

## 405[R] The association between substitution of dietary saturated fat and changes in serum cholesterol levels in healthy post-menopausal women

*Ms Sandra Losper<sup>1</sup>, Professor Yvonne van der Schouw<sup>2</sup>, Ivonne Sluijs<sup>2</sup>*

<sup>1</sup>University Medical Center Utrecht, Utrecht, Netherlands, <sup>2</sup> Department of Epidemiology Julius Center Research Program Cardiovascular Epidemiology, Utrecht, Netherlands

**Biography:** Sandra Losper, BSc, MSc, RD, received her BSc in Dietetics from the University of the Western Cape (South Africa, 1997) and MSc in Nutritional Epidemiology and Public Health from Wageningen University (Netherlands, 2019). For the past 11 years Sandra worked as a renal dietitian in the University Medical Center Utrecht (UMC Utrecht). She is member of the Dutch Renal Dietitian Association and in the past served as board member of this association. Before working in Utrecht, she worked as a dietitian in a nursing home in Gouda (Zorgpartners Midden-Holland) for nearly 6 years. During this period, she (together with 4 colleagues) organized the first annual Dutch Geriatric network symposium (2004).

**Background:** The association between saturated fat (SFA) and coronary heart disease (CHD) may depend on the substituting macronutrient. A substantial amount of evidence comes from prospective observational studies. Substitutions of SFA with other macronutrients during follow-up within persons were not actually observed, but inferred from comparisons between persons in baseline data. We investigated if within-person dietary SFA substitution took place over a 4-year period, and whether this results in changes in serum cholesterol levels in healthy post-menopausal women.

**Methods:** In a subset of 277 women of the PROSPECT study, biochemical and dietary intake (via validated food frequency questionnaire) measurements were performed at baseline and after 4 years follow-up. Cross-tabulations were calculated to gain insight into changes and substitution of macronutrient intakes over the study period. Linear regression models were used to investigate the associations of SFA substitution over time with changes in serum cholesterol levels within individuals.

**Results:** Mean (SD) baseline SFA was 27.9 (8.5) g/d and after 4 years it was 25.8 (8.7) g/d. Decreases in SFA intake often went together with increases in carbohydrates (n=102, 36.8%) and decreases in mono-unsaturated fatty acids(MUFA) (n=80, 28.8%) intakes and vice versa. An increase of 1 energy % of PUFA at the expense of SFA was associated with a reduction in the ratio total to HDL cholesterol ratio (Beta: -0.01; 95% CI: -0.19 to -0.01 mmol/L) within persons. No associations were found between substitution of SFA by carbohydrates, MUFA and other macronutrients with cholesterol levels.

**Conclusion:** Over a 4y period, dietary within-person substitution of SFA took place, most frequently with carbohydrates. This was not associated with changes in cholesterol levels. Within-person replacement of SFA by poly-unsaturated fatty acids(PUFA) was associated with a beneficial change in the total to HDL cholesterol ratio, what is in line with current dietary guidelines for CHD prevention.

**Conflict of Interest:** none

**Keywords:** coronary heart disease, saturated fat, within-person dietary substitution, ratio total to HDL cholesterol

## 216[R] The associations between lifestyle factors and subjective health among community-dwelling Japanese adults.

*Ms Eri Imai<sup>1</sup>, Ms Sae Aya Tanaka<sup>1</sup>, Ms Aya Kito<sup>1</sup>, Ms Sayu Muraki<sup>1</sup>*

<sup>1</sup>The University Of Shiga Prefecture, Hikone, Japan

**Biography:** Associate Professor, University of Shiga Prefecture School of Human Cultures Department of Food Science and Nutrition. Research Fields - Public Health Nutrition, Nutritional Epidemiology

**Background:** The Ministry of Health has reported that in Japan, the Shiga prefecture has the highest life expectancy. Subjective health perception is a predictive indicator of mortality. For this study, we examined the association between subjective health perception and multiple lifestyle factors.

**Methods:** Data were obtained from the 2015 Health and Nutrition Survey in Shiga prefecture. The analytic sample comprised 6057 adults aged 20 or older. Information on subjective health perception and lifestyle behaviors was obtained from a self-administered questionnaire. As for subjective health perception, participants were divided into 2 groups: (1) Excellent or Good and (2) Average, Poor, or Very Poor. A 1-day dietary survey was also administered. The health behaviors score (HBS) was calculated based on 5 factors: consuming a healthy diet, never smoking, low-risk alcohol drinking, regular exercise, and moderate sleep duration. HBS scores ranged from 0 to 5. Multiple logistic regression was used to calculate the sex-, age- BMI- and energy intake-adjusted odds ratios (ORs) of poor subjective health across HBS, with 0 points as the reference.

**Results:** Among all participants, 2397 (39.6%) reported Good or Average subjective health. Participants with an HBS of 3 (OR 0.59), 4 (OR 0.40) or 5 (OR 0.33) had a better subjective health OR compared with those having zero. The association with a higher HBS was remarkable (p for trend: <0.001). Additional analyses revealed that the combinations including regular exercise were particularly associated with a lower risk of subjective poor health.

**Conclusions:** This study showed that the higher the number of healthy lifestyle factors, the lower risk of subjective poor health. Combinations of healthy lifestyle factors, especially those involving exercise, suggest good subjective health and longevity for individuals living in the Shiga prefecture.

**Conflict of Interest:** 'None'

**Keywords:** subjective health; elderly; lifestyle-related factors

## 106[R] The concept of adherence to treatment and its applications in the field of nutrition and dietetics: a narrative review

Mrs Evelina Liljeberg<sup>1,2</sup>, Dr Agneta Andersson<sup>1</sup>, Professor Margaretha Nydahl<sup>1</sup>

<sup>1</sup>Department of Food Studies, Nutrition and Dietetics, Uppsala University, Uppsala, Sweden, <sup>2</sup>Function Area Clinical Nutrition, Karolinska University Hospital, Stockholm, Sweden

**Biography:** I am a registered dietitian and a PhD student at the Department of Food Studies, Nutrition and Dietetics, Uppsala University in Sweden. My PhD project is focusing on adherence to nutrition therapy with oral nutritional supplements (ONS) and we are using a mixed methods approach.

In Sweden, ONS are primarily prescribed by dietitians and our study on hospital outpatients within clinical practice showed a very high adherence rate to ONS. Now we are continuing our studies by investigating patient's and dietitian's experiences of nutrition therapy with ONS.

In the study presented at the ICD2020 we have placed adherence to ONS in a bigger context by doing a literature review upon the concept of adherence to treatment, with a specific focus on nutrition therapy.

**Introduction:** Patient adherence is an area of great concern in many nutrition therapies as well as in all medical treatments. The aim of this study was to summarise and problematise the literature on adherence to treatment, with a specific focus on nutrition therapy.

**Methods:** PubMed, Web of Science and DISA (local library catalogue) were searched using the terms "adherence" and "compliance" alone and in combination with e.g. "nutrition" and "dietetics". Additional hand-searches were made by using literature reference lists. Scientific articles (n=46), textbooks (n=10), and other documents such as reports (n=6) were included in the reviewed literature.

**Results:** Several definitions for "adherence", "compliance" and connective terms exist in the literature. Over 400 individual factors identified as being of importance for patient adherence have been classified into five dimensions: (i) Socio-economic, (ii) Therapy-related, (iii) Healthcare team and system-related, (iv) Condition-related and (v) Patient-related factors. Adherence is pictured as a challenge in studies of nutrition therapy for obesity, metabolic syndrome, celiac disease and kidney disease. In general, adherence is high within intervention studies where food is served, while lower when dietary advice is given. Theories and models of behavioural sciences are often applied in order to better understand adherence to treatment. However, no golden intervention aiming to improve adherence to dietary advice or other treatments has been found. Alongside the medical field's struggle to solve the problem of non-adherence, there is a major critique against the concept since it manifests a hierarchical relationship between the superior health care professional and the patient.

**Conclusions:** Adherence to treatment is a multifactorial phenomenon, and no golden solution has yet been presented to the challenge of changing eating behavior as part of the nutrition therapy. Different research fields, all of relevance for dietetics, address the question of adherence differently, sometimes with conflicting agendas.

**Conflict of Interest:** None

**Keywords:** Adherence; Compliance; Nutrition therapy; Literature review

## 490[R] The correlates of sedentary behavior among adults in Africa: A systematic review

Mr Chad Africa<sup>1</sup>, Dr Cindy George<sup>1</sup>, Dr Jillian Hill<sup>1</sup>

<sup>1</sup>Non-Communicable Disease Research Unit, South African Medical Research Council, Cape Town, South Africa

**Biography:** BSc Biokinetics degree at the University of the Western Cape; Currently an NRF-intern at the SAMRC

**Introduction:** An increasing amount of evidence has emerged regarding the association between sedentary behavior (SB) and dietary intakes and the further unfavorable effects on health outcomes, yet there is a shortage of evidence addressing the correlates of SB in low and middle-income countries. SB is defined as behaviors that involve sitting or reclined positions and low-levels of energy expenditure (<1.5 metabolic equivalents) during waking hours and can be classified by the domains in which they occur such as occupation, leisure and transport. This study aims to review the qualitative and quantitative literature on the correlates of SB among adults in Africa.

**Methods:** The review followed the PRISMA protocol. Three electronic databases were searched, namely Medline, Scopus and Web of science. The search strategy was based on the following five terms: SB and its synonyms; correlates and its synonyms; types of SB; Africa and its search filters; adult and the different phases of adulthood.

**Results:** The search identified 3809 articles of which 16 titles met the inclusion criteria. These studies spanned six African countries, with South Africa (n=6) and Uganda (n=4) having the greatest number of studies. Of the included studies, factors associated with SB were being female, older, lower level of education, peri-urban residence and engaging in domestic work or formal employment.

**Conclusion:** The general findings suggest that future interventions to reduce SB and increase physical activity should focus on older (55-65+) females residing in peri-urban areas. There is insufficient evidence regarding the correlates of SB in Africa, therefore, future studies should focus on longitudinal studies to identify determinants of SB, further exploration of environmental, family-related and social factors and better classification of SB domains.

**Conflict of Interest:** None

**Keywords:** Sedentary behavior; correlates; domain-specific.

## 719[R] The development and evaluation of a web-based mobile application as a dairy intake screener for South African adults.

Mrs Monique Piderit<sup>1</sup>, Prof Friede Wenhold<sup>1</sup>

<sup>1</sup>University of Pretoria, Pretoria, South Africa

**Biography:** Monique Piderit RD (SA) is a registered dietitian at Nutritional Solutions with a Masters degree in dietetics from the University of Pretoria. Monique is at present a PhD candidate at the University of Pretoria.

Monique has worked in the private sector since 2011. Guided by evidence-based nutrition, Monique believes in an integrate approach to wellness where the key to being healthy is to adopt small yet sustainable, unique changes to your lifestyle. Monique has a keen interest in the role of good nutrition to optimize performance and recovery in athletes, as well as gut health.

Monique has gained a wealth of experience in executive nutrition, corporate wellness initiatives, wellness day activations, and nutrition workshops. Monique is confident in addressing consumers and healthcare professionals with informative presentations on various topics of nutrition and has engaged in evidence-based academic writing for several institutions. Other services include canteen audits/reviews, recipe analysis, recipe development and SA food label regulation compliance. Monique also consults to the food industry.

Monique consults to the media and has contributed to many publications, as well as radio and TV. Monique is an executive member of ADSA (Association of Dietetics in South Africa), serving on the communications portfolio.

**Background/aim:** Traditional dietary assessment tools are making way for technology-based versions. Amidst low dairy intake in South Africa, we aimed to develop and evaluate the usability of an application (app) intended to screen dairy intake.

**Methods:** Informed by public and private interests and scientific Best Practice Guidelines, a dairy intake screener ("Dairy Diary") was developed as a web-based mobile app for higher income South African adults. The format was an eight-item quantitative food frequency questionnaire, including forms of commonly consumed local dairy products: milk, maas (fermented milk), yoghurt, and cheese (hard and soft). Reported frequency of consumption and portion size were scored, resulting in three risk classes. Digitalisation included graphics and a link to relevant preliminary guidance. Using the end-user version of the Mobile Application Rating Scale (uMARS), a convenience sample of 1 102 participants evaluated the "Dairy Diary" in April 2020 via a link to a digital questionnaire (Qualtrics). Subjects with incomplete and/or missing data (n=354), participants with living standards measure (LSM) < 8 (n=37), and those who did not give consent (n=8) were excluded from the study. A final sample of 703 participants (81% female) were included.

**Results:** The app objective quality mean score (3.9±0.85), app subjective quality score (3.5±0.77), and app-specific mean score (3.6±0.94) each met the minimum acceptability score of ≥ 3.0. For the subscales, the mean score for aesthetics was the highest (4.4±0.82), followed by information (4.3±0.90) and functionality (4.0±1.33). Engagement scored lowest (3.0±1.55).

**Conclusion:** The "Dairy Diary" is a user-friendly screener for dairy intake.

**Conflict of Interest:** The "Dairy Diary" belongs to the CEP of Milk SA on whose web domain the dietary screener is housed. The CEP is supportive of the study

**Keywords:** dietary screener, dairy, technology, web-based, uMARS, usability

## 223[R] The effect of aspalathin on intestinal barrier, immune function and inflammation in diabetic db/db mice

Dr Sylvia Riedel<sup>1,2</sup>, Ms Chelsi Fortuin<sup>2</sup>, Ms Rizwaana Suleman<sup>4</sup>, Dr Phwayinkosi Dladla<sup>1</sup>, Dr Rabia Johnson<sup>1,2</sup>, Prof Johan Louw<sup>1,3</sup>, Prof Christo Muller<sup>1,2,3</sup>

<sup>1</sup>Biomedical Research and Innovation Platform, South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>Division of Medical Physiology, Stellenbosch University, Cape Town, South Africa, <sup>3</sup>Department of Biochemistry and Microbiology, University of Zululand, KwaDlangezwa, South Africa, <sup>4</sup>African Cancer Institute, Stellenbosch University, Cape Town, South Africa

**Biography:** Dr. Riedel graduated from the University of Muenster, Germany, in April 2012. Her doctoral studies focused on the preventive properties of omega3 fatty acids against the induction of precancerous rat liver lesions by the mycotoxin fumonisin B1. Methodology on cellular antioxidant status, cell culture and image analysis was established and refined as part of the study. From 2009 to 2013 she coordinated projects on anticancer properties of Rooibos and Honeybush herbal teas at the PROMEC Unit, South African Medical Research Council, including effects on apoptosis and inflammation in a variety of human cell culture models. Since 2014 she has been part of the Biomedical Research and Innovation Platform of the SAMRC, supervising projects on preventive effects of South African plant extracts on insulin resistance in cell cultures representing target tissues, such as liver, skeletal muscle and adipose tissue. To establish herself as principal investigator, her studies focus on the role of intestinal inflammation, immune responses and barrier dysfunction in the development of Type 2 diabetes using cell culture and animal models, for which she received a research grant from the South African Rooibos Council. She has supervised 6 MSc, 2 BSc Hons and 1 PhD students.

**Introduction:** Type 2 diabetes is a global epidemic and associated with increased inflammation, impaired immune responses and intestinal barrier dysfunction. Anti-diabetic properties of Rooibos (*Aspalathus linearis*) and its major compound aspalathin are well-established.

**Objectives:** To determine whether a 6-week treatment with aspalathin could modulate intestinal inflammatory, barrier and immune status in leptin receptor deficient diabetic (db/db) mice compared to lean (db/+) mice.

**Methods:** Mice were divided into 6 groups (n=6): lean control, diabetic control, lean and diabetic mice treated with low dose aspalathin (LD, 13 mg/kg/day) and high dose aspalathin (HD, 130 mg/kg/day). The duodenum, jejunum, ileum, and colon were embedded in paraffin. For assessment of immune and inflammatory status, immunoglobulin A (IgA), forkhead box protein 3 (FoxP3) positive regulatory T cells, and cyclooxygenase-2 (COX-2) expressing cells were measured following immunohistochemical staining and/or protein expression by Western blot. A Caco-2 cell model was used to assess the ability of aspalathin to protect the epithelial barrier against lipopolysaccharide (LPS)-induced inflammation.

**Results:** The duodenum of db/db mice contained significantly lower numbers of IgA+ (p=0.005) and FoxP3+ (p=0.048) cells regardless of the treatment. In the jejunum, db/db (p=0.006) and LD treated db/+ mice (p=0.032) showed decreased numbers of IgA+ cells when compared to db/+ mice. HD treatment reduced FoxP3+ cells in duodenum (p=0.013) and colon (p=0.003) compare to no treatment. Numbers of COX-2 expressing cells were not different in db/db and db/+ mice in the intestinal sections, however the HD treatment increased (p=0.018) COX-2 expression in the jejunum compared to untreated db/db mice. Aspalathin treatment marginally improved LPS-induced barrier dysfunction in Caco-2 cells.

**Conclusion:** While aspalathin may support tissue repair through COX-2-mediated restoration of cell proliferation, immunohistochemical results indicated that aspalathin may suppress the immune system similar to diabetic mice, suggesting that diseases comprising hyperactive immune responses could be targeted in future.

**Conflict of Interest:** None

**Keywords:** Type 2 diabetes; intestines; inflammation; intestinal immune system

## 484[R] The effect of Growing Up Milk – Lite (GUMLi), cow's milk and protein intake at 2 years on IGF-1 concentrations: the GUMLi randomised controlled trial

Dr Amy Lovell<sup>1</sup>, Professor Cameron Grant<sup>1</sup>, Associate Professor Clare Wall<sup>1</sup>

<sup>1</sup>The University Of Auckland, Auckland, New Zealand

**Biography:** Amy is a New Zealand Registered Paediatric Dietitian (NZRD) and completed her PhD within the Discipline of Nutrition, Faculty of Medical and Health Sciences, The University of Auckland. Her research focused on early childhood nutrition and was part of a broader three-year research project called 'The Growing Up Milk Lite Trial - The GUMLi Trial' in collaboration with the University of Queensland. Amy's specific focus for her PhD was to examine the effect of a nutrition intervention (Growing Up Milk) on dietary patterns, diet quality, nutrient intakes and nutritional status in the second year of life (1 to 2-years-of-age). Amy is a lecturer within the Discipline of Nutrition, where she co-ordinates a new Foundations of Nutrition course and lectures to Bachelor of Science, Nursing and Dietetic students.

**Introduction:** The role of protein intake on insulin-like growth factor 1 (IGF-1) concentrations in well-nourished children during the second year of life is not clear. Aim: To explore the effect of a reduced-protein Growing Up Milk (GUMLi), and cow's milk (CM) intake on protein intake and plasma IGF-1 at 2 y.

**Methods:** An exploratory analyses of a sample of 1 y. children in the GUMLi trial (a double-blind, randomised controlled trial, N=160) received a non-fortified CM (3.1 g protein/100 mL) or GUMLi (1.7 g protein/100 mL) for 12-months. Child diet was assessed by food frequency questionnaire and blood samples taken at 1 and 2 y. rANOVA was used to evaluate the main effects of time, group and their interactions with dependent variables. After combining the intervention groups, multivariate regression tested for associations between IGF-1 and nutrient intakes adjusting for confounding factors at 2 y.

**Results:** 106 children had samples for IGF-1 exploratory analysis. At 2 y., IGF-1 increased over time, with no independent effects of group ( $p=0.628$ ) or group-by-time interaction (0.924). There was a significant group-by-time interaction for protein as a percent of energy intake (%EI) ( $p=0.002$ ) and % protein intake (%PI) from CM ( $p=0.006$ ). Post hoc analysis showed that protein intake (%EI) increased by 19% in the CM group ( $p<0.01$ ) and 10% in the GUMLi group ( $p<0.01$ ), with an independent effect of group at 2 y. ( $p<0.0001$ ). The estimated mean difference in %PI from CM was lower in the GUMLi group compared to the CM group -5.23% (95% CI [-9.7, -0.8],  $p=0.022$ ) after adjusting for baseline outcome. After combining the intervention groups, in multivariate regression, IGF-1 concentration at 2 y. was positively associated with current cow's milk intake ( $p=0.022$ ).

**Conclusion:** Plasma IGF-1 concentrations are positively associated with current cow's milk intake at 2 y. in well-nourished children.

**Conflict of Interest:** The trial received an investigator-initiated grant from Danone Nutricia Research. Study design, implementation, statistical analyses, and interpretation were performed independently.

**Keywords:** protein, IGF-1, growing up milk, children, cow's milk

## 698[R] The food safety perspective of Food truck: the Brazilian Federal District scenario

Dr Ligia Auad<sup>1</sup>, Dr Veronica Ginani<sup>1</sup>, dr Renata Zandonadi<sup>1</sup>, Dr Elke Stedfeldt<sup>2</sup>, Dr Raquel Braz Assuncao Botelho<sup>1</sup>

<sup>1</sup>University Of Brasilia, Brasilia, Brazil, <sup>2</sup>Federal university of Sao Paulo, Santos, Brazil

**Biography:** Veronica Ginani is a dietitian and a professor and coordinator of food hygiene laboratory at the university of Brasilia. She is a member of the public health and human nutrition post-graduate programs

**Introduction:** Despite their prominence as an out of home food option, food trucks (FTs) represent a challenge to public health due to incipient regularization and inspection and food safety assurance. In this context, the aim of this work was to assess the FT scenario in the Brazilian Federal District from the food safety perspective.

**Methods:** From the 118 FTs registered in this region, 37,3% (n = 44) participated in the study. Vehicles were evaluated using a 22-item instrument, divided in eight sections according to food contamination probability assessment. According to the cutoff proposed, FTs with up to 11 points and 12 or more points exhibit low and high probability of contamination and low and high risk of foodborne diseases, respectively.

**Results:** The percentage of inadequate FTs according to each section was as follows: Vehicle Structure and Adjacent Areas – 49.4%; Equipment and Kitchenware – 79.5%; Food and Water Storage – 52.3%, Food and Water Preparation and Handling – 41.8%, Residue Handling – 81.8%; Food Handlers – 65.9%; Pest and Vector Control - 34.1%; and Documentation - 40.9%. In the final evaluation, 21 and 23 FTs were classified as at low and at high risk of contamination, respectively.

**Conclusion:** These findings revealed that FTs present worrisome structural and operational issues, with an imminent risk of foodborne diseases. Therefore, the FT sector demands attention to improve its structure and assure access to safe food.

**Conflict of Interest:** none

**Keywords:** food truck; foodborne disease; food safety

## 202[R] The impact of dietitians in the multi-disciplinary primary care team in the UK

Dr Avril Collinson<sup>1</sup>, Dr Jenny Child<sup>1</sup>, Professor Mary Hickson<sup>1</sup>

<sup>1</sup>University of Plymouth, Plymouth, United Kingdom

**Biography:** Dr Avril Collinson qualified as a dietitian in 1989 from the University of Surrey, UK. Since then she has worked as a dietitian in many different clinical specialities and undertaken clinical research. She was awarded her doctorate in 1997, which investigated eating patterns and the impact on body weight and lipid profiles. She joined the University of Plymouth in 2008 and now supports the nutrition and dietetic team in her role as Academic Lead. She was awarded the British Dietetic Association's Rose Simmonds award in 2018 for her work and publication on 'Future Dietitian 2025: informing the development of a workforce strategy for dietetics'.

**Introduction:** There is a need for more allied health professionals, including dietitians, to reduce demand on general practitioners (GPs) time and manage the primary care workload. This service development and evaluation project evaluates three models of dietetic-led care; one managing paediatric allergy patients, one managing frailty and malnutrition in older patients, and one exploring a dietitian working to enhance the multi-disciplinary team (MDT).

**Methods:** Three specialist dietitians were employed to see patients for six months, one for each of the three models of care. The three evaluation projects were held at three different locations in the UK. The dietitians counselled patients and collected clinical outcome data, for example, hand grip, allergy symptoms and frailty scores. Cost savings from optimisation of prescribed products (e.g. oral nutritional supplements (ONS) and milk formula), reduction of GP workload and secondary care referrals were collected.

**Results:** Patients' clinical outcomes improved across all three models. For example, in the frailty model strength improved significantly after the dietitian's intervention (handgrip before (mean=19.69, SD=6.55) and after (mean=21.43, SD=6.61),  $t(20)=-6.64$ ,  $p<0.001$ ). In all models dietitians contributed to cost savings by optimising ONS, milk formula and/or other medicine prescriptions. In the paediatric allergy model the number of GP contacts per patient prior to seeing the dietitian was less in the dietetic-led service (median=3, range 0-12) compared to the usual community dietetic service (median=6, range 0-20) ( $U=2447$ ,  $p<0.001$ ). Data was also significantly less for consultant appointments (dietetic-led: median=0, range 0-1; community: median=0, range 0-13;  $U=3389$ ,  $p=0.002$ ). This reduction in healthcare use represents potential significant cost savings if these service models were implemented.

**Conclusion:** Dietitians demonstrate that they can act successfully in three different models of care focussed on frailty, paediatric allergy and as part of the MDT. They enable cost and time savings, support the GP workforce, and improve patient outcomes.

**Conflict of Interest:** Conflict of interest declaration: This review is funded by a project grant award to the University of Plymouth by the British Dietetic Association (BDA). Officers of the BDA had no role in the development of the protocol, design of the study, data collection and collation, nor interpretation and discussion of the data. Authors MH and AC are members of the BDA.

**Keywords:** Primary care; dietitian; cost-effectiveness; general practice; outcomes

## 669[R] The impact of size at birth on dietary intake patterns among healthy young adults

Ms Rebecca Garofano<sup>1</sup>, Dr. Tiago V. Barreria<sup>1</sup>, Dr. Qiu Wang<sup>1</sup>, Dr. Tom D. Brutsaert<sup>1</sup>, Dr. Jessica Garay<sup>1</sup>

<sup>1</sup>Syracuse University, Syracuse, United States

**Biography:** Rebecca Garofano is a graduate student in Nutrition Science at Syracuse University. She has a B.A. in Sociology and International Development from Calvin College and has worked in nonprofits that focus on smallholder agriculture and environmental health. She is interested in the ways that communities are resilient and address agricultural, public health, and nutritional needs, particularly in the context of change.

**Introduction:** Sub-optimal maternal nutritional intake during fetal development impacts birth weight and developmental plasticity. Experiencing such fetal programming (FP) leads to lifelong consequences on chronic disease risk and body composition, including higher body fat and lower muscle strength. The role of FP on adult health behaviors such as dietary intake is unclear based on past research. The current study evaluated the relationship between size at birth and dietary intake patterns among healthy young adults.

**Methods:** This cross-sectional study included 95 individuals (78% female) who were singletons born to term (37-42 weeks gestation). Participants self-reported birth information and completed a food frequency questionnaire. Birth weight was adjusted for gestational age by comparing to a national dataset to create a standardized birth weight (SBW). Correlation analysis was performed on all variables. Linear regression analysis was used to evaluate the relationship between SBW and various dietary outcomes, accounting for age, sex, and current weight.

**Results:** Participants were young (mean age = 23 years, range 18-40) and healthy (mean BMI = 24). Average daily macronutrient intake was 222 g, 81 g, and 68 g for carbohydrates, protein, and fat, respectively. The average daily caloric intake was 1827 kcal. Correlation testing showed no significant relationships between SBW and any dietary variable. Regression models indicated that there was no association between SBW and total energy (kcal), the percent of calories from carbohydrates, proteins, fat, grams of carbohydrates, proteins, fat, sugar, or grams/kilogram body weight of carbohydrates, proteins, fat.

**Conclusion:** There was no significant relationship between birth weight (adjusted for gestational age) and dietary intake among healthy young adults born to term. Other prior studies have found significant effects for select dietary variables, but no consistent pattern has emerged. Therefore, further research is needed to confirm whether or not FP effects extend to lifelong health behaviors.

**Conflict of Interest:** None

**Keywords:** fetal programming, dietary intake behavior

## 510[R] The necessity of nutrient data on processed meat in African diets

Prof Hettie Schönfeldt<sup>1</sup>, Dr Beulah Pretorius<sup>1</sup>

<sup>1</sup>University Of Pretoria, Pretoria, South Africa

**Biography:** Professor Schönfeldt's research focuses on linking nutrient quantity and quality of foods to sustainable food systems for attaining nutrition and food security for all. She is an advocate for nutrition research, promoting excellence through the creation, translation and dissemination of science-based information into policies, programmes and training programmes both nationally, and internationally. She publishes evidence on why country specific food composition data is essential to make it possible to interpret the dietary outcomes of countries. She serves as scientific advisor to AFROFOODS, a network on the African continent, forming part of IUNS/UNU/FAO INFOODS Task Force. She is the director of the new African Research Universities Alliance Centre of Excellence in Food Security and holds a Department of Science and Technology /National Research Foundation Research Chairs Initiative in Nutrition and Food Security.

**Background:** Dietary protein is important for growth and development and in the adult diet to help the body repair and regenerate cells particularly so in the elderly. Economic constraints and cultural preferences contribute to differences in food choices observed among socioeconomic groups in developing countries. Ready-to-eat processed meat products form a significant part of the diets particularly true for vulnerable groups. It can be attributed to their low cost, versatility, extended shelf-life, and availability on the market. Value-added processed meat consumption has increased significantly since 1994.

**Aims:** The objective of the study was to evaluate the nutrient composition of processed meats as analysed compared to the nutrient content reported in food composition tables.

**Methods:** Current data on the nutrient composition of processed meat in food composition tables in Africa were reviewed. Additionally, seven commonly consumed processed meat products were analysed for nutrient content and compared to label values and values as stated in food composition tables.

**Results:** Of all the food items found in the Food Composition Tables for South Africa, West Africa, and Nigeria only thirteen, two and one processed meat items are listed in the respective tables. All the data for processed meat is borrowed from the American Food Composition Tables and none of African origin. However, these products differ substantially from those of American origin, e.g. the polony value is derived from bologna. There are significant differences in the nutritional value of different processed meats; protein values ranged from 8.6g – 17.8g/100g, from 0.34g – 2.81g/100g for iron, and from 0.54g – 1.62g/100g for zinc respectively.

**Conclusions:** Processed meat is not a homogeneous food group and the composition of these products varies widely. It is important to study dietary quality for distinct meat categories and to inform the development of specific appropriate food-based dietary guidelines at the country and regional level.

**Conflict of Interest:** None

**Keywords:** Food composition, processed meat, Africa

## 675[R] The nurturing care profile of early childhood development centres in the Breede Valley, Western Cape

Ms Tayla Saaiman<sup>1</sup>, Ms Darian Kayser<sup>1</sup>, Prof Lisanne M du Plessis<sup>1</sup>

<sup>1</sup>Stellenbosch University, Stellenbosch, South Africa

**Biography:** Tayla Saaiman is a Registered Dietitian who graduated with a BSc in Dietetics Cum Laude from Stellenbosch University in 2018. In her final year she received the award for the Best BSc in Dietetics Student as well as the Rector's Award for Excellent Achievement. Tayla has a passion for Infant and Young Child Nutrition as well as Public Health Nutrition.

**Introduction:** Nurturing care ensures a good foundation for child growth and development. This study aimed to describe the nurturing care profile of early childhood development (ECD) centres in Worcester, Breede Valley through perspectives of stakeholders in children's immediate environment.

**Methods:** ECD centres (n=29) were randomly selected from a list supplied by the Department of Social Development. Mothers (n=276) of children attending ECD centres completed self-administered questionnaires. Interviews were done with 29 ECD centre managers/staff. Variables from the questionnaire data were described by summary statistics. Audio recordings were transcribed and content analysis was performed.

**Results:** Elements of the enabling environment for ECD include parental education, parental physical and mental health, age of marriage, nutrition during pregnancy, antenatal care, safe delivery, birth spacing and family planning, safety and cleanliness of neighbourhoods and absence of stigma. Data showed less than half of parents (40%;n=201/502) completed 12 years of education. The mean age of marriage for mothers was 26.2 years (SD=4.36). Almost all mothers (96%;n=242/253) received micronutrient-supplements during pregnancy. The majority of mothers (70%;n=163/234) reported not feeling stigmatised in their communities.

The components of nurturing care, namely: health, nutrition, safety and security, responsive caregiving and early learning were mostly in place. For health and nutrition, the majority of children's immunizations (91%;n=236/260) were up to date. Most children (89%;n=244/273), were breastfed from birth. The mean amount of time spent breastfeeding was 13.32 months (SD=12.61). Most ECD centres provided meals for children and security and safety were ensured by adult supervision and procedures to deal with child neglect/abuse. Responsive caregiving and early learning were cultivated through communication and relationship building with ECD staff and primary school preparedness was ensured through various activities.

**Conclusion:** Therefore, most elements of the enabling environment for children attending ECD centres in Breede Valley exist to support the components of nurturing care.

**Conflict of Interest:** None

**Keywords:** nurturing care, health, nutrition

## 447[R] The Nutrition For Cirrhosis Guide : Assessing its potential beneficial effects on patients with chronic liver disease

Mrs Chantal Bemeur<sup>1,2</sup>, Mrs Mélanie Tremblay<sup>1</sup>, Centre de Recherche de l'Université de Montréal Geneviève Huard<sup>3</sup>, Mr Christopher F Rose<sup>1,2</sup>, Mrs Chantal Bemeur<sup>1,2</sup>

<sup>1</sup>Centre de Recherche du Centre Hospitalier de l'Université de Montréal, Montreal, Canada, <sup>2</sup>Département de nutrition, Université de Montréal, Montreal, Canada, <sup>3</sup>Centre Hospitalier de l'Université de Montréal, Montreal, Canada, <sup>4</sup>Département de Médecine, Université de Montréal, Montreal, Canada

**Biography:** Manila Sophasath is a registered dietitian who studied dietetics in the Université de Montréal in Canada. She began her MSc in nutrition under the direction of Dre Chantal Bemeur, PhD, registered dietitian, at the Centre de Recherche du Centre Hospitalier de l'Université de Montréal in Montreal. After a year into her masters, she fast-tracked into the PhD in nutrition program, working on the study of a new nutrition guide for patients suffering from chronic liver disease.

**Introduction:** Liver disease affects over 9 million Canadians and kills 2 million people annually worldwide. Malnutrition is the most common complication of chronic liver disease and impacts the patients quality of life. This project aims to investigate the potential beneficial impact of the Nutrition in Cirrhosis Guide, an evidence-based document developed by experts and patients. Specifically, 1)Assess the short/long-term effects on i)nutritional status; ii)nutritional knowledge; iii)quality of life; iv)liver function; and, long-term only, v)complications; vi)hospital stays. 2) Determine the Guide's impact on the caregivers's quality of life and burden. 3)Assess the patients' and caregivers' satisfaction towards the Guide. 4)Elaborate implementation steps of the Guide among this population.

**Methods:** 160 patients from the hepatology outpatients clinic from the Centre hospitalier de l'Université de Montréal in Canada will be divided in 2 groups (n=80/group): Experimental (Guide) and Control (no Guide). Assessments will be performed by a registered dietitian at T=0, 12 and 52 weeks regarding nutritional status, quality of life, liver function and nutritional knowledge. At 52 weeks, complications and hospital stays will be documented. The caregivers' quality of life and burden will be assessed at 0, 12 and 52 weeks. Finally, three focus groups of patients and caregivers will be randomly chosen from the Experimental group to discuss the Guide's appreciation.

**Preliminary results:** So far, 24 patients completed the study (67% men, 60 years old in average, and etiologies 30% NASH, 25% alcohol, 12,5% HCV, HBV and mixed etiologies, and 4% others). The results show a trend of a better nutritional knowledge in the Experimental group (n=19) compared to controls (n=5) by 10% after 12 weeks. There is yet no difference in nutritional status and quality of life.

**Conclusion:** Overall, our results should facilitate the implementation of the Guide and, importantly, optimize the quality of care in the cirrhotic community.

**Conflict of Interest:** None

**Keywords:** Nutrition; Education; Cirrhosis; Complications; Caregivers

## 431[R] The relationship between under-nutrition risk, and quality-of-life in community-dwelling older adults after hospital discharge

Dr Anna Julian<sup>1</sup>, Professor Gary Frost<sup>1</sup>, Professor Mary Hickson<sup>1,2</sup>

<sup>1</sup>Section for Nutrition Research, Department of Medicine, Imperial College London, London, United Kingdom, <sup>2</sup>Institute of Health and community, University of Plymouth, Plymouth, United Kingdom

**Biography:** Anna is a dietitian with an interest in the relationship between nutrition and ageing. Since completing her PhD in 2019, she has worked for the UK's National Health Service, combining roles in clinical dietetics with service development and research.

**Introduction:** A relationship exists between nutrition and quality-of-life in older adults. We present data illustrating the relationship between under-nutrition risk and quality-of-life in older adults post hospital admission.

**Method:** A cohort of community-dwelling older adults were categorised as at-risk or low-risk of under-nutrition at hospital discharge. Measurements of quality-of-life using ED-5D utility index (UI) and visual analogue scale (VAS) were taken at baseline, 3, 6 and 12 months and compared to UK normative values. Comparisons between those at-risk and low-risk were made using Student's t-test or Mann Whitney U-test.

**Results:** At baseline, EQ-5D UI did not differ between those at-risk compared low-risk and no change was identified between 0-3 months in either group. However, at 12 months there was a significant between-group difference, with UI in the low-risk group increasing (median (IQR) at-risk: 0.69 (0.41, 0.69) vs low-risk: 0.89 (0.61, 1.0) p=0.032). Similarly, there was no difference in EQ-5D VAS scores between the two groups at baseline. However, at 12 months EQ-5D VAS scores had improved in the low-risk group (mean (SD) baseline: 61.3 (26.7) vs 12 months: 68.4 (26.0) p=0.044), compared to the at-risk group which showed no improvement (60.5 (24.6) vs 60.4 (27.6) p=0.974). These results suggests the trajectory of recovery differed for each group. In addition, the total cohort had significantly lower baseline EQ-5D UI and VAS scores compared to UK normative data (age group: 75+ UI Mean (SE): 0.55 (0.648) vs 0.73 (0.013) and VAS Mean (SD): 60.68 (26.22) vs 73.8 (1.1) for study and normative samples respectively.

**Conclusion:** Health-related quality-of-life in this sample did not differ between those at-risk and low-risk of under-nutrition at hospital discharge, but was worse than UK norms. Those at low-risk experienced an improvement in their quality-of-life in the year following hospitalisation, but this improvement did not occur for at-risk individuals.

**Conflict of Interest:** None

**Keywords:** Undernutrition; older adults; quality-of-life

## 432[R] The relationship between under-nutrition risk, sarcopenia, strength and function in community-dwelling older adults after hospital discharge

Dr Anna Julian<sup>1</sup>, Professor Gary Frost<sup>1</sup>, Professor Mary Hickson<sup>1,2</sup>

<sup>1</sup>Section for Nutrition Research, Department of Medicine, Imperial College London, London, United Kingdom, <sup>2</sup>Institute of Health and Community, University of Plymouth, Plymouth, United Kingdom

**Biography:** Anna is a dietitian with an interest in the relationship between nutrition and ageing. Since completing her PhD in 2019, she has worked for the UK's National Health Service, combining roles in clinical dietetics with service development and research.

**Introduction:** Hospital discharge is a point in the care pathway when people at risk of under-nutrition may be missed and adequate follow-up may not be instigated. Dietetic input is recommended by most screening tools on identification of nutritional risk. We examined whether dietetic input during the year after discharge produced improvements in activities of daily living (ADL), quality-of-life, nutritional and sarcopenia risk.

**Method:** A longitudinal cohort of community-dwelling older adults were categorised as at-risk or low-risk of under-nutrition at hospital discharge (n=171). Participants at-risk at baseline (thus warranting dietetic input) and with follow-up data at 12 months (n=56) were categorised as either having dietetic input during the year (17/56) or not (39/56). Measurements were taken of sarcopenia risk using SARC-F score; ADL capability using modified Townsend scale; satisfaction with food-related quality-of-life (SWFL); and malnutrition universal screening tool (MUST) score; and compared between groups.

**Results:** Neither groups' MUST score changed over time. Those without dietetic input showed deterioration in sarcopenia risk (median (IQR) baseline: 4 (2,7) vs 12 months: 5 (4,6) p=0.021), ADL capability (32 (11, 58) vs 52 (24, 72) p<0.001) and SWFL (20 (17, 21) vs 18 (11, 20) p=0.041). No changes were seen in the group with dietetic input.

**Conclusion:** A lack of dietetic input in a sample of people at risk of under-nutrition on discharge from hospital resulted in deterioration in markers of functional ability, quality-of-life and risk of sarcopenia. Dietetic input did not result in improvements in these measures but did prevent deterioration. Older nutritionally compromised people are vulnerable at hospital discharge and dietetic input may prevent deterioration in this group.

**Conflict of Interest:** None

**Keywords:** Under-nutrition; older adults; dietetic care; hospital discharge

## 230[R] The social and ethical responsibility of cultural humility

Ms Teresa Turner<sup>1,2</sup>, Ms Krista Latortue<sup>1</sup>

<sup>1</sup>Family Food, LLC, Philadelphia, United States, <sup>2</sup>Army Child and Youth Services, Fort George G. Meade, United States

**Biography:** Krista Yoder Latortue is a registered dietitian with a Master of Public Health. She is also credentialed as both a project management professional and professional business analyst. Krista has a great passion for social justice issues, diversity, inclusion, cultural humility, nutrition, and health. For her, it all comes together through her company, Family Food, which she created in 2009—and functions as its Executive Director—to make RDNs easily accessible to the public through a variety of funding streams. Family Food empowers families via healthy food and nutrition cognizance. Family Food accomplishes its mission by meeting with clients in the home, work, and community settings and working with a number of Medicaid plans. Krista spent her childhood in rural Pennsylvania. She then found the rest of the world and herself through a cross-cultural leap into urban Philadelphia at 15 years old. Experiencing people and food in such varied settings shaped her lens on nutrition. Krista has given over 300 group presentations across the country on a variety of nutrition, corporate wellness, and advocacy topics. Her scholarly research and popular writing are published in the *Journal of the Academy of Nutrition and Dietetics*, *Experimental Biology*, *Huffington Post*, *WebMD*, and more.

**Introduction:** The World Health Organization notes that there is a 36-year gap in life expectancy between countries along with considerable gaps in health outcomes within countries. Populaces of African descent or indigenous people experience disparate healthcare and a diminished health status. Dietetics professionals and associations are focusing more globally in impact and reach. With the majority of dietetics professionals across the globe identifying as “white,” cultural humility is essential to ensure practitioners are providing equitable care to patients. Cultural humility emphasizes a lifelong commitment to self-evaluation and self-critique in order to discover how one's own beliefs impact their competence.

**Materials and methods:** Data demonstrates that health care outcomes are compromised when the demographics of the provider and patient do not align. Efforts are being made to diversify the profession. In the meantime, dietetics practitioners must improve cultural sensitivity to bridge the gap between the demographics of the profession and those of the populations served.

**Results:** Bridging the gap will allow for better health outcomes and is also an ethical obligation. The Academy of Nutrition and Dietetics' Code of Ethics addresses how cultural influences may affect ethical decision-making.

**Conclusions:** Bridging the gap through cultural humility, while also working to diversify the profession, is necessary to accelerate patient improvements in nutrition by improving health outcomes. It is our ethical duty as health professionals to improve cultural humility and reduce implicit bias to provide equitable care. Participants will gain the ability to recognize opportunities to aid their organizations and programs in lessening occurrences of unconscious and implicit bias.

**Conflict of Interest:** None

**Keywords:** cultural humility, implicit bias, equitable care

## 90[R] The taxation of sugar-sweetened beverages in South Africa: The perspectives of key role-players in the City of Cape Town, Western Cape, South Africa

Mrs Yolande Smit<sup>1</sup>, Ms Barbara Cronjé<sup>1</sup>, Ms Sabeeha Abdullah<sup>1</sup>, Ms Jessica Nathan<sup>1</sup>, Ms Alexa Theron<sup>1</sup>, Mrs Zarina Ebrahim<sup>1</sup>, Prof Daan Nel<sup>2</sup>, Dr Nelene Koen<sup>1</sup>

<sup>1</sup>Faculty of Medicine and Health Sciences, Department Global Health, Division Human Nutrition at Stellenbosch University, Cape Town, South Africa, <sup>2</sup>Centre for Statistical Consultation, Stellenbosch University, Cape Town, South Africa

**Biography:** Yolande Smit is a registered dietician and lecturer at the Division of Human Nutrition at Stellenbosch University since 2012. She obtained her BSc Dietetics and Master of Nutrition degrees from Stellenbosch University.

She coordinates and teaches various undergraduate modules and is also involved in undergraduate research and post graduate supervision. She is a registered PhD candidate focusing on nutrition environments at child day care centres to improve standardisation and implementation of meal provision guidelines at ECD centres.

Besides teaching and learning other fields of interest are food service management, consumer behaviour and childhood nutrition.

**Introduction:** The prevalence of overweight and obesity, a major risk factor for non-communicable diseases, are reaching staggering statistics worldwide, claiming more lives every year. Eighty percent of these deaths occur in low- and middle income countries. The South African government responded to this crisis by implementing the taxation of sugar sweetened beverages (SSBs) or the health promotion levy (HPL) Added sugars may contribute to obesity and other NCDs. The aim of the study was to determine the perspectives of industry role-players regarding the HPL.

**Methods:** A descriptive, cross-sectional study was conducted. Key role-players from government, the public sector and academia were identified via snowball sampling and recruited via email. An online, electronic survey using Survey Monkey was used for data collection.

**Results:** Thirty-nine role players completed the electronic survey. Role players (n=31, 8%) were of opinion that the food industry understands the government's reason for implementing the HPL. Almost two thirds of the participants (n= 25, 64,1%) felt that the general public are not aware of, nor understand (n=24, 64,5%) the HPL. Sixty-four percent (n= 24) of the participants believed that the proposed taxation rate of 11% is not sufficient to significantly influence purchasing behaviour of consumers. Half of the participants (n=20, 54%) believed that the HPL will not lead to a healthier population. Fifteen role-players (40.5%) were of opinion that the taxation will have a negative impact on job security. Participants were doubtful that the revenue from the HPL would be spend on health promotion. Two thirds of respondents (n=25, 64.1%) agreed that the food industry will reformulate products to lower the sugar content.

**Conclusion:** Key role-players are of opinion that fiscal measures alone is not enough to change consumer's behaviour. More should be done by government to educate consumers, raise awareness and create a supportive environment.

**Conflict of Interest:** None

**Keywords:** Taxation, sugar-sweetened beverages, legislation, industry

## 102[R] The use of arm span as a substitute for height in calculating Body Mass Index for spine deformity patients

Mrs Harriet Adu-Amoah<sup>1,2</sup>

<sup>1</sup>Focos Orthopedic Hospital, Accra, Ghana, <sup>2</sup>Ghana Dietetic Association, Accra, Ghana

**Biography:** Harriet Adu-Amoah is a registered dietician at FOCOS Orthopedic hospital. Her primary role at the hospital is to oversee the diet therapy unit and food service unit in providing evidenced based and high standard of practice in nutrition and food safety. She holds a BSc. in Biological Sciences from the Kwame Nkrumah University of Science and Technology. Also an MPhil in Dietetics and Master of Public Health from University of Ghana. For the past five years she has worked with the department of Dietetics, University of Ghana as a preceptor. Her research interest is in maternal and child nutrition, adolescent health and nutrition in spine deformed patients.

**Introduction:** Body Mass Index (BMI) value is based on weight to height ratio. In patients with spine deformities height does not reflect the true body size and the use of height in calculating BMI is likely to produce errors. A surrogate for height that is closest to a person's actual standing height such as the Arm span (AS) will provide better values in nutritional assessment.

**Methods:** Ninety three pediatric spine deformity patients (Group1) were matched with 64 normal children (Group2). Anthropometric values (Height, AS and weight) and spinal curve were obtained. BMIs using AS and height were calculated, statistical analysis was done to assess the relationship between BMI /height and BMI /AS in both groups as well as the relationship between these values and AS to Height difference (Delta AH) in the subjects

**Results:** The mean age was 15.4 yrs (SD:5.3) (Group 1) vs 14.8yrs (SD:4.4) (Group 2). 46 M/47F: Group 1 vs 33M/31F Group 2. A logistic regression showed that arm span could be used as a proxy to height (R<sup>2</sup>= 0.94) in persons with normal spines (Group 2) and that there was linearity in BMI scores (R<sup>2</sup>=0.97). There was a significant difference in the BMI values when comparing BMI/ AS vs BMI/height (p<0.0001). Mean BMI values using height was overstated by 2.81 (18.6%) i.e 18.1kgm<sup>2</sup> instead of 15.3 kgm<sup>2</sup>. Further analysis showed that the value at which BMI score must be calculated using AS as opposed to the height was 3 centimeters (Delta AH > 3cm).

**Conclusions:** Spine deformity patients experience height loss which can impact their true BMI values thereby giving erroneous impression of their nutritional status. Patients with Delta AH > 3cm have a significant negative effect on the BMI calculation and should have the AS used as substitute to height in BMI calculation and nutritional assessment.

**Conflict of Interest:** None

**Publication Disclosure:** This paper was published in the May 2018 Issue of Spine deformity

**Keywords:** BMI; Arm span; Height; Spine deformity; Nutrition Assessment

## 443[R] Top food sources of energy and nutrients of public health concern in lower income children aged 9-11

Dr Lynn Brann<sup>1</sup>

<sup>1</sup>Syracuse University, Syracuse, United States

**Biography:** Dr. Brann is an Associate Professor and Graduate Program Director in Nutrition Science at Syracuse University in Syracuse, NY, USA. She is a registered dietitian/nutritionist. Her research focuses on child nutrition and diet quality in relation to health outcomes.

**Introduction:** Child diet quality is lacking. The aim of the study was to explore children's diets to identify food sources that contribute to nutrients of concern and nutrients to limit. **Methods:** Participants (n=242; n=132 male and n=110 female) were drawn from the cross-sectional Environmental Exposures and Child Health Outcomes study conducted with 9 to 11-year-old children from lower income neighborhoods in a mid-sized city in the United States. Parents reported demographic data and children completed the Youth Adolescent Food Frequency Questionnaire. Average intakes of energy and micronutrients of public health concern (fiber, vitamin D, calcium and potassium) were compared to dietary reference intakes. Top five food sources were tabulated for energy, nutrients of concern, and nutrients to limit (added fats and added sugar).

**Results:** Average participant energy intake was 2353 ± 1134 kcals. All nutrients of concern were, on average, lower than dietary reference intakes. Top 5 contributors of energy included milk, pizza, fruit punch, smoothies, and peanut butter and jelly (PBJ) sandwiches. Fiber was supplied by apples, beans, PBJ sandwiches, spaghetti sauce, and smoothies. Foods contributing calcium included milk, American cheese, pizza, chocolate milk, and yogurt while sources of vitamin D included milk, chocolate milk, American cheese, yogurt, and coffee with milk. Main food providers of potassium included milk, orange juice, chocolate milk, potatoes, and smoothies. Added fats contributors were milk, American cheese, ice cream, pizza, and processed meats. Added sugars sources included fruit punch, soda, smoothies, non-chocolate candy, and chocolate candy with nuts. Children were not meeting their needs for nutrients of concern. Milk and other dairy products were key sources of most nutrients of concern but also provided added fats.

**Conclusions:** Identifying food sources that contribute to meeting dietary recommendations can help inform dietary interventions.

**Conflict of Interest:** None

**Keywords:** children; public health; nutrients; diet quality

## 345[R] Towards increasing the physical activity behaviours of people at risk for diabetes in low-resourced communities in Cape Town

Dr Jillian Hill<sup>1</sup>, Ms Camille Lavigne Delville<sup>2</sup>, Ms Anne-Marie Aurousseau<sup>2</sup>, Mrs Deborah Jonathan<sup>1</sup>, Prof Andre Pascal Kengne<sup>1</sup>

<sup>1</sup>South African Medical Research Council, CAPE TOWN, South Africa, <sup>2</sup>University of Bordeaux, Bordeaux, France

**Biography:** I am a Senior Scientist appointed on a permanent basis at the Non-Communicable Diseases Research Unit at the South African Medical Council (SAMRC) in Cape Town. Currently I am the project manager/coordinator of The South African Diabetes Prevention Programme. The overall purpose of this project to develop and evaluate a culturally-relevant model of diabetes prevention programme for South Africa, using evidence from successful diabetes prevention effectiveness and implementation programmes. My research focus in recent years has been in the Food Environment, Healthy Lifestyles and NCD Prevention. My interests lie in community participatory research, understanding the complexities of adopting healthy lifestyles, intervention development and project evaluation. I have 15 peer reviewed publications and have presented at over 20 national and international congresses.

**Introduction:** Targeted lifestyle interventions that include nutrition and physical activity (PA) have proven to prevent or delay the onset of diabetes for those at risk of developing it. South Africa's unique context, complex environments and people require tailored interventions.

**Aims:** The objective of this study was to develop a context-appropriate tool for the South African Diabetes Prevention Programme's (SA-DPP) PA lifestyle component, to assist low-resourced communities at risk for developing diabetes in adopting and/or increasing PA behaviours.

**Methods:** Mixed methods were used in developing the PA tool. Study participants comprised the pilot phase SA-DPP population. First a descriptive analysis of baseline screening data was conducted. This included information on socio-demographics, anthropometrics, blood pressure, biochemical measurements, reported medical history, PA behaviours and built environment information. Secondly, focus group discussions were conducted to understand perceived challenges, barriers and facilitators/opportunities to PA. Next literature was searched for successful PA interventions conducted in SA and lastly PA experts in Cape Town consulted. Quantitative data were analysed using the software R, version 3.4.4 and qualitative data were thematically analysed.

**Results:** A total of 316 participants were recruited, of which 54.4% were black and 44.6% of mixed-ancestry. Participants were mainly female (80.1%), mostly obese (75.2%), 30% had hypertension and 65.5% had a HbA1c above 5.7mmol/l. The majority met the WHO PA recommendation (87%). Main barriers to PA practice were safety, cost and accessibility of sports facilities, and laziness. Social support was highlighted as an enabler. Literature positively linked aerobic exercises, resistance training, flexibility exercises and balance exercises with the management/control of T2DM or the prevention thereof.

**Outcomes:** By combining results, we produced a practical and promotional PA booklet. We included practising moderate-intensity aerobic and resistance exercises and take-home self-help materials as recommended.

**Conflict of Interest:** None

**Keywords:** lifestyle; physical activity; diabetes prevention

## 318[R] 'Treading the risky edges': The feasibility and utility of established frameworks for interpreting and addressing recurring issues in professional practice during dietetic training

Ms Gillie Bonner<sup>1</sup>, Ms Isobel Bandurek<sup>2</sup>, Ms Clare Cremin<sup>1</sup>, Mrs Annemarie Knight<sup>1</sup>, Dr Alastair Duncan<sup>1</sup>, Ms Janeane Dart<sup>3</sup>

<sup>1</sup>King's College London, London, United Kingdom, <sup>2</sup>World Cancer Research Fund, London, UK, <sup>3</sup>Monash University, Melbourne, Australia

**Biography:** Gillie Bonner is a placement tutor on the dietetics programme at King's College London (UK), where she supports both dietetic students and practice educators to optimise practice-based learning. She leads on the Communication Skills module and has a special interest in the application of communication skills in dietetics, both for effective dietary counselling, and in student supervision and feedback practices.

Recurring observations from dietetic placement providers suggest that lapses in student professionalism play a crucial role when students are not meeting competency standards. Unpicking the numerous facets of professionalism presents many challenges.

**Aims:** We aimed to explore the feasibility and utility of established frameworks as tools for interpreting professionalism during dietetic training and to make recommendations for extending this inquiry.

**Methods:** Composite examples of (i) break-down of professionalism, and (ii) exemplary professionalism, were constructed using recurring themes reported by placement providers and students. Flow diagrams were used to elucidate antecedents and consequences of the events and to examine the impact of student-supervisor interactions. Constructed examples were interpreted collaboratively by the authors using the professionalism frameworks proposed by Dart (2019) and by Hodges (2011).

**Results:**

**Dart framework:** Parallel behaviours and qualities were emphasised across the positive and negative professionalism examples, e.g. self-awareness and insight / unaware and lacking insight. The significance of hard-to-assess aspects of professionalism, such as integrity and emotional intelligence, was emphasised.

**Hodges framework:** Students and supervisors tended to perceive professionalism as an objective, absolute, and inherent construct. The role of interpersonal and cultural context was largely unacknowledged.

**Themes:** Individual negotiation of the nuances of interpersonal interactions/relationships ('risky edges') was identified as a nascent theme. Students exhibiting exemplary professionalism appeared to negotiate 'risky edges' to enhance professional relationships; lapses in professionalism often stemmed from lack of awareness of 'risky edges'.

**Conclusion:** Frameworks for exploring drivers of professionalism could facilitate approaches to tackling competency-threatening lapses in professionalism. 'Risky edges' of interpersonal relationships appear mutable between contexts (temporal/cultural/departmental) and may facilitate understanding why some students appear intuitively professional. This process will be extended with a year-long systematic inquiry exploring frameworks and 'risky edges' in a variety of dietetic settings.

**Conflict of Interest:** None

**Keywords:** Professionalism; practice education; communication; student training; interpersonal interactions.

## 361[R] Underlying, non-modifiable and intermediate risk factors for the development of Gestational Diabetes Mellitus, in Cape Town: A case-control study

Mrs Elzie Koech<sup>1</sup>, Mrs Sharmilah Booley<sup>1</sup>, Dr Janetta Harbon<sup>1</sup>, Mr Tawanda Chivese<sup>2</sup>, Prof Naomi Levitt<sup>3</sup>

<sup>1</sup>Division of Human Nutrition, Department of Human Biology, Faculty of Health Sciences, University of Cape Town, Cape Town, South Africa, <sup>2</sup>Department of population medicine, College of medicine, Qatar University, Qatar, <sup>3</sup>Chronic Disease Initiative for Africa, Department of Medicine, Faculty of Medicine and Health Sciences, University of Cape Town, Cape Town, South Africa, Cape Town, South Africa

**Biography:** Elzie Koech is a Masters student at the division of Human Nutrition, Department of Human Biology, Faculty of Health Sciences, University of Cape Town. She is the founder of Nutrifit Delight, a company that promotes wellness and healthy living. She is also passionate about educating individuals, pupils and communities about healthy living.

**Introduction:** Gestational diabetes mellitus (GDM) is associated with complications to the mother and child during pregnancy as well as increased cardio-metabolic disease risk after pregnancy. **Objective:** This study investigated the underlying, non-modifiable and intermediate risk factors for the development of gestational diabetes mellitus in women living in Cape Town.

**Method:** A case-control study which included 167 cases and 199 controls was conducted. A questionnaire and medical record review were used to obtain data.

**Results:** Advanced maternal age (OR 1.16, 95% CI 1.09-1.23, p <0.001), MUAC (OR 1.33, 95% CI 1.04-1.69, p =0.021) and family history of diabetes DM (OR 3.19, 95% CI 1.76-5.80, p <0.001) were associated with GDM risk. When MUAC was excluded, BMI was significantly associated with GDM risk (OR 1.12, 95%CI 1.08-1.17, p <0.001). The optimum cut-off point for predicting GDM was 27.5 years for age, with a sensitivity of 81% and specificity of 64% while for MUAC the optimum cut-off point was 30.1cm, with a sensitivity of 82% and specificity of 65%. The cut-off point for BMI for predicting GDM was 30.1kg/m<sup>2</sup>, with a sensitivity of 77% and a specificity of 64%.

**Conclusion:** Understanding these non-modifiable risk factors is beneficial in GDM prevention, therefore reducing its increasing prevalence globally.

**Conflict of Interest:** None

**Keywords:** Gestational diabetes mellitus; non-modifiable risk factors; intermediate risk factors; underlying risk factors; Cape Town

## 386[R] Update of Canadian competencies for dietetic education and practice

Mrs Corinne Eisenbraun<sup>1</sup>, Dr David Cane<sup>2</sup>, Dr Doris Gillis<sup>3</sup>, Dr Bryna Shatenstein<sup>4</sup>, Ms Jaki Thornhill<sup>5</sup>, Ms Helen Toews<sup>6</sup>

<sup>1</sup>Dietitians of Canada (until October 2020), Winnipeg, Canada, <sup>2</sup>Owner & Principal Consultant, Catalysis Consulting, Kamloops, Canada, <sup>3</sup>Senior Research Professor, Department of Human Nutrition, St Francis Xavier University, Antigonish, Canada, <sup>4</sup>Adjunct professor, Département de nutrition, Faculté de médecine, Université de Montréal, Montréal, Canada, <sup>5</sup>Professional Practice Leader, Clinical Nutrition, Providence Health Care, Vancouver, Canada, <sup>6</sup>Dietetic Education Coordinator, Brescia University College, Hamilton Health Sciences, Hamilton, Canada

**Biography:** Could you please use the same bio that I have submitted with my other abstract? I didn't make a copy of that before submitting

**Introduction:** Development of the Integrated Competencies for Dietetic Education and Practice (ICDEP 2013) was mandated by the Partnership for Dietetic Education and Practice (PDEP), and adopted by dietetic education programs, dietetic regulators and Dietitians of Canada. Regular review and update of ICDEP is foundational to dietetic education curriculum to ensure that it remains current and reflects the evolving nature of the work of registered dietitians in Canada.

**Methods:** With the goal of publishing an updated ICDEP in 2020, a preliminary stakeholder review of ICDEP 2013 was conducted in 2016. PDEP then created a Working Group (WG), composed of a professional competency development consultant and four dietitian-educators, to lead the update process. A four-step iterative work-plan was developed, including stakeholder consultations.

**Results:** The ICDEP WG has completed updates to the Practice Competencies and the Entry-Level-Practice statement; developed a graphic reflecting relationships among the six Domains of Practice; updated the Performance Indicators (PIs) and Foundational Knowledge (FK), incorporating all FK statements into the PIs as measurable outcomes, thereby reducing PI/FK statements by 50%; sought input and feedback from dietitians working in Indigenous communities; revised the PIs assessment tool, proposing a change from Bloom's Taxonomy to an adaptation of Miller's Pyramid of Clinical Competence and translated all materials into French. Two stakeholder consultations were carried out to obtain feedback, leading to further updates of the materials.

**Conclusion:** The updated ICDEP will be finalized by end of 2019 with development of an Interpretation Guide underway. Final approval by the PDEP Steering Committee is expected by March 31, 2020 with release of the materials in both English and French in April 2020. A transition plan for accreditation to ICDEP 2020 will follow. The product of this work reinforces the strong competency-based link between education, entry-to-practice assessment and dietetic practice.

**Conflict of Interest:** None

**Keywords:** Professional Competencies, Curriculum development, Assessment

## 359[R] Use of a mobile health application in wellness: an assessment of needs, perceptions, usability and efficacy in changing dietary choices in a university student population

Ms Cecile Slazus<sup>1</sup>, Mrs Zarina Ebrahim, Dr Nelene Koen

<sup>1</sup>Stellenbosch University Division of Human Nutrition, Tygerberg, South Africa

**Biography:** Cecile Slazus is a registered dietitian. She attended Stellenbosch University where she received her master of nutrition degree in 2019. She worked at Humansdorp Hospital as a clinical dietitian after which she moved to Portugal. Thereafter she worked with private chef Neill Anthony on a wellness project at a private school in the Middle East. She is passionate about the role of nutrition in wellness and sustainability.

**Introduction:** Wellness promotion is essential to improve the health of the population and reduce healthcare costs. This study aimed to explore the use of mobile health (mHealth) applications as dietary self-monitoring tools for wellness purposes, and its possible role in improving food choices. MyFitnessPal is explored in greater depth.

**Methods:** This descriptive, cross-sectional study comprised two phases. The sample population was undergraduate university students. The Phase 1 survey aimed to assess the need for and perceptions of mHealth apps to serve as dietary assessment tools for wellness purposes. The Phase 2 survey (conducted after a three-week period of using MyFitnessPal) aimed to assess the usability of this app, and its perceived efficacy in changing dietary choices. Surveys were constructed using Checkbox 4.7 through SunSurvey. Data was analysed using Stata SE version 15.1.

**Results:** The first phase survey was completed by 991 students (mean age 20.78, SD ±1.51). Most indicated wanting to improve their diet to be healthier and to improve their weight, and actively searching for information on how to accomplish this. 79.31% indicated they were aware of apps that allow for diet tracking. MyFitnessPal was the most popular app that participants had used previously (67.45%). The second phase survey was completed by 61 students. MyFitnessPal was found to be relatively easy to use. Users reported that MyFitnessPal helped them to change their dietary intake (47.54%) and advance towards their personal weight and health goals (65.57%). A significant reduction in self-reported sugary food intake after the use of MyFitnessPal was found ( $p=0.030$ ). No change was found in the intake of fatty foods ( $p=0.910$ ) or fruit and vegetables ( $p=0.980$ ).

**Conclusion:** Findings demonstrate that a need for diet-tracking health apps exists and that users find them effective in changing their dietary choices.

**Conflict of interest:** None

**Keywords:** mHealth; health apps; dietary self-monitoring

## 108[R] Using mealtime routines as early intervention for infants and toddlers with visual impairment to enhance development of feeding skills and dietary intake in the United States

Prof Alena Clark<sup>1</sup>, Prof Jamie Erskine<sup>1</sup>

<sup>1</sup>University of Northern Colorado, Greeley, United States

**Biography:** Dr. Clark is a professor in the Department of Nutrition and Dietetics at the University of Northern Colorado, USA. Her research interest is in maternal and child nutrition. This presentation is the result of a federal grant from the Dept. of Education of the United States.

**Introduction:** One of the three most prevalent health conditions associated with visual impairment (VI) in children is feeding problems. These include difficulties accepting food textures, delayed utensil use, and poor comprehension of the feeding process and mealtime behaviors.

**Objective:** To determine whether a year-long home-based mealtime intervention enhanced feeding skills and dietary intake.

**Methods:** Teachers (TSVIs) serving families with a child between the ages of 6 to 12 months with VI were recruited nationally (USA). Fourteen TSVI/family participants were randomly assigned to the intervention or control group. Nutrition and child development education as well as strategies to assist children with VI was provided to the intervention group only. A tailored FFQ dietary intake tool, Caregiver/Child Mealtime Behavior assessment, and Parent-Child Interaction Feeding Scale were used to collect data monthly. Assessments were scored using videos. Differences between groups were analyzed by unpaired two-sample t-tests.

**Results:** The mean age of the children (7 females) was 9.97 + 1.72(SD) months and 13 completed the study. Scores for intake of food textures were higher for the intervention group during 6-24 months of age (0.91 + 0.29 and 0.67 + 0.47, p=0.005) and 13-24 months (0.94 + 0.24 vs 0.69 + 0.47, p<0.007). The intervention group scored higher (0.85 + 0.36 vs 0.67 + 0.48, p>0.04) for variety of food intake between 6-12 months. There was a positive correlation between healthy choices and intake of variety during 13-24 months of age,  $r(82) = 0.9833$ , p<0.0000. Scores for the Caregiver/Child Mealtime Behavior were higher in the intervention group, p=0.0000, effect size > 0.87, as well as for the Parent-Child Interaction Feeding Scale, p< 0.05.

**Conclusions:** Children with VI benefitted from early mealtime intervention. Providing nutrition education and strategies to caretakers may enhance development and decrease common feeding problems in young children with VI.

**Conflict of Interest:** None

**Keywords:** infants and toddlers, visual impairment, early intervention, dietary intake, feeding behaviors

## 147[R] Water versus fluid intake from beverages and food predicts the hydration status of hospitalised older adults

Prof Carol Wham<sup>1</sup>, Ms Alexander Smithers<sup>1</sup>, Dr Rozanne Kruger<sup>1</sup>, Dr Hajar Mazarey<sup>1</sup>, Dr Marilize Richter<sup>1</sup>

<sup>1</sup>Massey University, Auckland, New Zealand

**Biography:** Carol Wham is a Professor of Public Health Nutrition at Massey University, Auckland, New Zealand. She is an experienced dietitian and an Associate Editor of 'Nutrition and Dietetics' journal of the Dietitians Association of Australia. In 2017 Carol received the prestigious Dietitians New Zealand Award of Excellence in the category of Outstanding Achievement in Dietetics.

Carol has undertaken a sustained programme of research focused on improving the nutritional health of older people. Her particular interest is the interrelationship between nutrition status and health outcomes in the ageing population. She has been an investigator in two longitudinal studies of ageing; Life and Living to Advanced Age: a Cohort Study in New Zealand and within the New Zealand Health, Work and Retirement Study. She has examined malnutrition risk across community, hospital and residential care settings and leads the ENRICH study which seeks to Evaluate Nutrition Risk and Intervene to encourage healthy eating.

**Introduction:** Hospitalised patients may have worse clinical outcomes and a longer length of stay if they are dehydrated. The aim of this study was to assess volume and sources of fluid intake and access to fluid among hospital in-patients (aged ≥65 years), and to compare their total fluid intake and hydration status.

**Methods:** Total daily fluid intake was assessed after each meal to coincide with the 24-hour period when blood was drawn to measure serum osmolality. Sources of fluid and food intake were determined using an interactive assessment tool.

**Results:** Of 89 patients (mean age 82±8.0), 16% were dehydrated (serum osmolality ≥300mOsm/kg) and 27% had impending dehydration (295-299mOsm/kg). The median (IQR) total fluid intake was 1.7 (1.6, 1.9) L/day. Foods contributed 18% of total fluid intake while approximately 82% came from water, hot and cold beverages. Participants who struggled versus didn't struggle to open fluid lids had lower median fluid intakes (p= 0.005). Patients who were hydrated (serum osmolality <295mOsm/kg) versus impending dehydration or dehydrated (≥295mOsm/kg), had a higher median total fluid intake p=0.16), from all beverages (p=0.06) and water (p=0.02). Binary logistic regression suggested of all sources of fluid intake, water was the only predictor of hydration status (p=0.02). The adjusted odds of serum osmolality ≥295 were increased for patients in the first (56%), <0.3 litre, OR=8.1, 95%CI 1.8-37, p=0.007 and second (48%), 0.3-0.8 litre, OR=5.3, 95%CI 1.1-25, p=0.04, tertiles than the third (26%) tertile of water intake (≥0.8 litre). Patients with bladder control difficulty had a lower water intake (in the first/second tertiles (81%) than those without difficulty (p=0.03).

**Conclusion:** Overall, 43% of patients were dehydrated or had impending dehydration. Monitoring the frequency and intake of water, and additional assistance for patients with bladder control difficulty may be potential strategies to prevent dehydration in older hospitalised patients.

**Conflict of Interest:** None

**Keywords:** Older adults; hydration; hospitalisation; New Zealand

## 452[R] What practical support do nutritionally at-risk older people receive in the community?

Dr Elizabeth Weekes<sup>1</sup>, Prof Mary Hickson<sup>2</sup>, Prof Peter Emery<sup>3</sup>

<sup>1</sup>Guy's & St Thomas' NHS Foundation Trust, London, London, United Kingdom, <sup>2</sup>Plymouth University, Plymouth, United Kingdom, <sup>3</sup>King's College London, United Kingdom

**Biography:** Dr Liz Weekes is a dietitian with 25 years clinical and research experience in the detection and management of disease-related malnutrition. Having worked predominantly in the acute setting during her early career, her PhD studies focused on the identification, assessment and management of nutritionally vulnerable community-based individuals with chronic obstructive pulmonary disease. More recently Dr Weekes has extended her studies to include evaluating both hospital and community-based initiatives designed to improve the nutritional care of elderly people, and undertaking systematic reviews. Dr Weekes has a particular interest in patient-centred outcomes, such as quality of life and activities of daily living, and the health economic analysis of nutritional interventions. These interests are reflected in her current research where she is leading a large, observational study designed to explore the impact of malnutrition on older people in the community. Dr Weekes is a Cochrane-trained systematic reviewer and, together with Dr Christine Baldwin, has completed two Cochrane reviews. She has extensive experience of guideline development and recently led the guideline group on the estimation of nutritional requirements for the Parenteral and Enteral Nutrition Group of the British Dietetic Association.

**Introduction:** Malnutrition in the community is under-recognised and under-treated. Practical support from family and friends (FF) or paid carers (PC) and Home meal delivery services (HMDS) could potentially optimise dietary intake and improve clinical outcomes. This study aimed to determine the types and amount of practical support people receive if they are nutritionally at-risk.

**Methods:** 570 community-dwelling participants ( $\geq 60$  years) were recruited for a 12-month observational study if they had been in contact with healthcare or voluntary services in the previous 3 months. Two definitions of nutritional risk were assessed at baseline; BMI $<20$ kg/m<sup>2</sup> and presence of both unplanned weight loss and reduced dietary intake in the previous 3-6 months. Participants were asked about any practical support they had received from FF and PC in the previous 6 months and whether they received HMDS.

**Results:** Mean age 77.5 ( $\pm 9.4$ ) years and BMI 25.6 ( $\pm 5.9$ ) kg/m<sup>2</sup>, 352/570 (62%) female. 127/570 (22%) had a BMI $<20$ kg/m<sup>2</sup>. Of these, 48 (38%) received no support from FF and 62 (49%) received no input from PC. 17 (13%) received no support from anyone. 79 (94%) did not receive HMDS. No difference in the amount of support received between those with BMI $<20$  kg/m<sup>2</sup> and BMI $\geq 20$ kg/m<sup>2</sup> (mean 6.8 ( $\pm 8.9$ ) vs. 6.6 ( $\pm 27.2$ ) hours/week, respectively;  $p=0.899$ ). 143 (25%) reported both weight loss and reduced dietary intake. Of these, 47 (33%) received no support from FF and 74 (52%) received no input from PC. 30 (21%) received no help from anyone. 137 (96%) did not receive HMDS. No difference in the amount of support received by the at-risk group compared with the remainder (mean 11.6 ( $\pm 44.8$ ) vs. 5.3 ( $\pm 14.2$ ) hours/week, respectively;  $p=0.113$ ).

**Conclusion:** In this study the majority of nutritionally at-risk older people failed to receive HMDS and the practical support, paid or unpaid, that could improve their nutritional status.

**Conflict of Interest:** None

**Keywords:** Malnutrition; nutrition risk status; social care; community setting

## INDEX

### A...

Abayomi, Julie	50	Aljaaly, Elham	460, 311
Abdullah, Sabeeha	90	Allan, Kaylee	273
Adeniran, Oluwaseyefunmi Iyabo	449	Amirabdollahian, Farzad	206
Adetola, Oluyimika Y.	735	Andersson, Agneta	106
Adhikari, Praja	126, 244	Ani, Peace	534, 572
Adjei, Priscilla	710	Anidi, Chioma	596
Adu-Amoah, Harriet	101, 114, 102	Anku, Eric Komla	114
Afam-Anene, Olivia	512, 505	Annamalai, Manickavasagan	286
Afiaenyi, Ifeoma	17	Anoshirike, Cyril	674
Africa, Chad	490	Appiah, Collins Afriyie	710
Ainuson-Quampah, Joana	114	Aryeetey, Richmond	101
Akinmoladun, Oluwaseun	298	Auad, Ligia	698
Akutsu, Rita	621	Aucamp, Rachel	121
Akutsu, Rita	670	Aurousseau, Anne-Marie	345
Albrich, Louise	239	Ayabe, Makoto	513

### B...

Badham, Jane	326	Bonner, Gillie	318
Baldwin, Christine	439	Booi, Aziwe	86
Baldwin, Christine	422	Booley, Sharmilah	361
Bandurek, Isobel	318	Booth, Alison	487
Barnard, Jandri	418	Borloz, Sylvie	110
Barrera, Tiago V.	669	Botelho, Raquel	575
Barry, Michael	526	Botha, Anika	86
Basson, Albertus	241	Braakhuis, Andrea	99
Baumgartner, Jeannine	619	Bradley, Catriona	526
Baxter, Hannah	50	Brady, Jennifer	71
Becker, Piet	438, 524	Brann, Lynn	443
Begley, Andrea	219	Brauer, Paula	285, 284, 286
Belding, Majeedah	407	Braz Assuncao Botelho, Raquel	682, 670, 621, 698
Bell, Kristie	478	Breik, Lina	178
Bemeur, Chantal	447	Brigitte, Pavaud	441
Bennett, Carol	486	Brunner, Thomas	172
Beukers, Diane	457	Brutsaert, Tom D.	669
Biggs, Chara	645	Buccino, Jennifer	305
Blaauw, Renee	0	Burghard, Marcella	165
Blaauw, René	435	Bury, Gerard	526
Bobongie, Vanessa	219	Butcher, Lucy	219
Bölke, Philipp	121		

**C...**

Cane, David	386	Clarke, Sarah	526
Carneiro, Leticia	682	Clemente, Rowan	273
Caroline, Laurent	441	Clyne, Barbara	526
Caswell, Susan	305	Coelho Araújo, Wilma Maria	575
Chetty, Joelaine	583, 560, 593	Collinson, Avril	206, 202
Chikwendu, Justina	632, 696, 225	Corish, Clare	526
Child, Jenny	202	Coufopoulos, Anne	82
Chivese, Tawanda	361	Cremin, Clare	318
Christensen, Marie Ernst	349	Cronjè, Barbara	90
Chukwu, Chiamaka	632	Cruz, Gabriela	682
Clark, Alena	108	Cummings, Joanna	660

**D...**

Dabbous, Massar	422	Doherty, Tanya	353
Daneshmand, Roya	286	Doi, Miki	513
Dart, Janeane	318	Dolman, Robin	383, 381
Dean, Frances	206	Dominguez Castro, Patricia	526
Del Castillo, John	149	Downer, Claire	273
Dhaliwal, Rupinder	284	Drimie, Scott	358
Dhaliwal, Satvinder	219	Du Plessis, Lisanne Monica	358, 675
Diehl, David	124	Duizer, Lisa	286
Dietrich, Linda	285	Dumont, Natalie	273
Dludla, Phiwayinkosi	223	Duncan, Alastair	318

**d...**

de Bruin, Marleen	181	de Santa Rita, Gloria	682
de Roos, Nicole	165	du Toit, Elmine	511

**E...**

Ebrahim, Zarina	0, 86, 90, 359	Enwright, Lauren	471
Ebrahim, Zarina	749	Erasmus, Rajiv T.	567
Edwards, Michelle	286	Erskine, Jamie	108
Eisenbraun, Corinne	305, 386	Esterhuizen, Tonya	0
Emery, Peter	452	Ezeh, Chidinma	225
Ene-Obong, Henrietta	59	Ezekiel, Chibundu N	517

**F...**

Faber, Mieke	614, 591, 567	Fortuin, Chelsi	223
Faber, Mieke	514	Friese, Katie	149
Femi, Abidemi	298	Frost, Gary	431, 432
Finnigan, Karen	526		

**G...**

Gallardo Blanco, Hugo Leonid	469	Ginani, Veronica	670, 698
Gallegos, Danielle	478	Goeiman, Hilary	689, 663
Garay, Jessica	669	Gollub, Elizabeth	126, 124, 742, 244
Garofano, Rebecca	669	Gonzalez Garza, Raquel	469
Gentimis, Thanos	124	Gordon, Janie	269
George, Cindy	490	Grafenauer, Sara	218
Gericke, Gerda	23	Grant, Cameron	484
Ghuman, Sandeep	206	Greer, Frances	273
Gibney, Eileen	526	Gresse, Annelie	121
Gillis, Doris	386	Grimes, Carley	487
Gilot, Anne	124	Groenendijk, Richard P.R.	280

**H...**

Haahr, Anita	349	Hiensch, Anouk	280
Haines, Jess	286	Hill, Jan	93
Hakel-Smith, Nancy	125	Hill, Jillian	490, 345
Hanlon, David	526	Hill, Jillian	614
Hanning, Rhona	305	Hiramatsu, Satoko	513
Harbon, Janetta	361	Hirsz, Malgorzata	206
Harper, Alexandra	82	Hollander-Kraaijeveld, Francis	165
Heerkens, Yvonne	182	Hooshmand, Shirin	468
Heijerman, Harry	165	Hsu, Amy	486
Hennessey, Dierdre	486	Huard, Geneviève	447
Hickson, Mary	431, 239, 432, 452	Hughes, Roger	663
Hickson, Mary	202		

**I...**

Ibeanu, Vivienne	572	Inyang, Stephanie	59
Ibiyemi, Temitope	743	Irie, Yasuyuki	513
Imai, Eri	216	Iwaki, Natsumi	132
Inoue, Rikako	513		

**J...**

Jacobs, Adelia	486	Jonathan, Deborah	345
Jaga, Ameeta	353	Jordaan, Joyce	518
Jaga, Rohini	121	Jordaan, Marizeth	360
Jessri, Mahsa	486	Joubert, Gina	360
Joham, Anju	270	Julian, Anna	431, 432
Johnson, Rabia	241, 223	Jumat, Malory	583, 560, 593

**K...**

Kageyama, Suzumi	513	Kerz, Aria	478
Kaltenbrun, Tayla Ashton	358	Kesa, Hema	344, 446
Kassier, Susanna	418	Keseko, Enid	374
Kassier, Susanna Maria	749	Khoabane, Pont'so	643
Kasten, Gerry	407	Kito, Aya	216
Keller, Heather	254	Klinger, Sylvia	259
Kellerman, Ilde-Marié	435	Knight, Annemarie	318
Kelley, Susan	709	Koeh, Elzie	361
Kelly, Amber	140	Koen, Nelene	86, 90, 359
Kemp, Johanna	438	Kolanisi, Unathi	347
Kengne, Andre	614	Kruger, Herculina	21
Kengne, Andre P	591	Kruger, Iolanthé	21
Kengne, Andre P.	567	Kruger, Mariana	435
Kengne, Andre Pascal	345	Kruger, Rozanne	147
Kennelly, Sharon	526	Kruger, Salome, Herculina	619
Kern, Mark	468	Kunneke, Ernesta	614

**L...**

Labadarios, Demetre	749	Liljeberg, Evelina	106
Lambi, Jordan	93	Lim, Siew	270
Lane, Katie	50	Lin, Hsiao-chun	587
Lategan-Potgieter, Ronette	137, 511, 136	Lin, Yu-Ru	587
Latortue, Krista	230	Lindeman, Yael	165
Laubscher, Ria	514	Loayza Villaroel, Katherine	526
Lavigne Delville, Camille	345	Lombard, Martani	383, 381
Lee, Hyunjung	743	Lopes, Tatum	567
Lee, Kang-Wei	587	Lopez Cabanillas-Lomeli, Manuel	470
Lees, Carolyn	50	Losper, Sandra	405
Legoale, Patience	627	Louw, Johan	223
Legodi, Modiehi	690	Love, Penelope	487
Lenihan, Alice	457	Lovell, Amy	484
Lennie, Susan	206	Lowe, Kerry	645
Levitt, Naomi	361	Lycett, Deborah	82
Lieffers, Jessica	305		

**M...**

Mabaso, Prudence Bongekile	353	McMahon, Anne-Therese	218
Madden, Angela	206	Meko, Lucia	212, 236
Madlala, Samukelisiwe	614	Mendel, Brown	710
Maduforo, Aloysius	596, 699, 59, 632, 696, 225	Mfono, Zitandile	295
Mair, Alpana	269	Middleton, Carole	11
Makda, Munibah	206	Mielmann, Annchen	172
Malek, Elmarie	689	Miles, Anna	99
Manafe, Masudu	485	Milne, Danielle	273
Manuel, Douglas	486	Minari Hargreaves, Shila	575
Margerison, Claire	487	Minns Lowe, Catherine	171
Marmada, Christine	439	Mogale, M. Alfred	449
Marrero Gonzalez, Alana	24	Moosa, Rafique	0
Martens, Anchen	23	Moran, Lisa	270
Martin, Claire Juliet	749	Morrison-Koechl, Jill	254
Martinez Garza, Laura Elia	469	Moyo, Gugulethu	743
Masdoua, Virginie	441	Mphangwe Kondowe, Whitney	194
Mashanova, Alla	206	Mpiana, Bukasa Andy	347
Mathunjwa, Sithabile	690	Mulabisano, Tshavhuyo Audry	514
Matson, Noel	93	Mulder, Anz�elle	326
May, Anne M.	280	Muller, Carmen	515, 508
Mayfield, Kellie	709	Muller, Christo	223
Maynard, Maria	206	Muller, Elmi	749
Mazarey, Hajar	147	Muraki, Sayu	216
McCullagh, Laura	526	Murrin, Celine	526
McKechnie, Rebecca	478	Musungu, Rhoda	220
McLean, Cameron	218	Mzila, Mandisa	86

**N...**

Nakade, Makiko	132	Nesamvuni, Cebisa	298
Nakamura, Yuka	132	Ng, Alena (Praneet)	486
Nakwa, Firdose	438	Nguyen, Kim	591
Naluguza, Esther Joanita	309	Ngwu, Elizabeth	699, 632, 572
Nathan, Jessica	90	Nickerson, Amy	726
Naude, Celeste	517	Nkotagu, Neema	662
Ncube, Lindiwe	485	Noland, Diana	262
Ndiokwelu, Chika	699, 59, 632	Norlyk, Annelise	349
Nel, Daan	86, 90	Nowson, Caryl	487
Nel, Jacomie	383, 381	Nwamarah, Joy	225
Nel, Mariette	212, 236	Nwosu, Onyeka	176
Nel, Riette	137, 136	Nydahl, Margaretha	106
Nelson, Stephanie	468		

**O...**

Obi, Joy	120	Oldewage-Theron, Wilna	743
Obiloma, Appolonia	699, 632	Oliveira, Leticia	682
Ogawa, Aki	513	Olsen, Pia Riis	349
Ogbuabo, Dorcas	699	Olson, Dianna	149
Ojwang, Alice	21	Omeh, Chinwe Maryfrancis	485
Okoli, Justina	534	Onuoha, Nne Ola	674
Okorie, Josephine	699	Osei Ngounda, Jennifer	360
Okoro, Clementina	699, 632, 225	Otiv, Suhas	339
Okoye, Chinonye	674	Ouyang, Chung-Mei	587
Okwara, Chinyere	632		

**P...**

Palumbo, MV	726	Piderit, Monique	324, 719
Pareek, Priyanka	339	Pimentel, Juliana	682
Paynter, Ellen	219	Pirotta, Stephanie	270
Peer, Nasheeta	591	Power, Brian	206
Peer, Nasheeta	614	Pretorius, Beulah	515, 508, 522, 510
Pegram, Elizabeth	689	Prichard, Scott	93
Peng, Li-Ling	743	Pries, Alissa	326
Perrotta, Carla	526	Puppin Zandonadi, Renata	682, 575
Pheiffer, Carmen	241		

**Q...**

Quirino, Thayze	670		
-----------------	-----	--	--

**R...**

Rae, Michele	725	Rodriguez, Judith	24, 11
Raftis, Denise	188	Romano, Vittoria	171
Raj, Sudha	262	Romo Tello, Susana	470
Randall, Nicola	517	Roome, Karen	725
Randall Simpson, Janis	285	Rooney, Jane	50
Ranneileng, Mamotsamai	571	Rose, Christopher F	447
Rasprasith, Slackchay	660	Rose, Hanne Krogh	349
Reynolds, Ciara	526	Rosman, Camiel	280
Richard, Monique	262	Rothman, Marinel	514
Richter, Marilize	147	Royall, Dawna	284
Riedel, Sylvia	223	Runia, Sytske	182, 181
Ritter-Gooder, Paula	125	Russell, Mary	22
Robb, Liska	360	Rust, Annica Madeleen	212, 236
Robb, Yvonne	725	Ruurda, Jelle P.	280
Robinson, Lynsey	269	Ryan, Margaret	269
Rodrigues da silva, Izabel	670	Rysdale, Lee	188

**S...**

Saaiman, Tayla	675	Smithers, Alexander	147
Salgado, Helena	742	Smuts, Cornelius	21
Sanchez Peña, Maria Alejandra	469	Smuts, Cornelius M.	514
Sanga, Innocent	662	Smuts, Cornelius, Marius	619
Schmidt, Tanya	20	Solis Perez, Elizabeth	470, 469
Schoeman, Judy	435	Somer, Maaike	181
Schönfeldt, Hettie	515, 508, 522, 510	Soriano, gaelle	306
Schoonees, Anel	517	South, Brittany	468
Shatenstein, Bryna	386	Stadler, Diane	660
Siersema, Peter D.	280	Stedfeldt, Elke	698
Sigot, Asenath	220, 374	Steenhagen, Elles	280
Silver, Heidi	149	Strydom, Estelle	619
Situma, Jane	220, 374	Suleman, Rizwaana	223
Skouteris, Helen	270	Sumiyoshi, Kazuko	513
Slabbert, Emma	121	Suter, Michelle	478
Slater, Karen	93	Swart, Elizabeth	663
Slazus, Cecile	359	Sweet, Lara	326
Sluijs, Ivonne	405	Syauki A., Yasmin	513
Smit, Yolande	86, 90		

**T...**

Tanaka, Sae Aya	216	Thornhill, Jaki	386
Tapsell, Linda Tapsell	218	Toews, Helen	386
Taylor, John R.N.	735	Torres Lopez, Ernesto	470
Taylor, Stephen	273	Tremblay, Mélanie	447
Tchuenchieu Kamgain, Alex Dimitri	344	Tromp, Bianca	137, 136
Thakur, Harshada	339	Turkson, Rose Kokui Dufe	643
Theron, Alexa	90	Turner, Santi	86
Thompson, Amy	478	Turner, Teresa	230
Thompson, Patricia	197	Turner , Andy	82

**U...**

Ugwu, Chidimma	596	Umeakuka, Ogechukwu	120
Ugwu, Chinonye	696		

**V...**

van Berge-Henegouwen, Mark	280	van Laarhoven, Hanneke W.M.	280
van de Graaf, Ed	165	van Rooyen, Cornel	511
van der Peet, Donald L.	280	van Veenendaal, Nicholas	178
van der Schouw, Yvonne	405	van Vulpen, Jonna K.	280
van Hillegersberg, Richard	280		

**V...**

Van Deventer, Maricia	515	Vidigal, Mayara	621
Van Dyk, Jancke	86	Villarreal Perez, Jesus Zacarias	469
Van Graan, Averalda	583, 593	Viraragavan, Amsha	241
Van Graan, Averalda	560	Visser, Marianne	517
Van Onselen, Annette	347	Visser, Willy	182
Van Tonder, Esmarie	140	Vivanti, Angela	93
Veerapen, Yovane	622	Voce, Anna	295
Veldman, Frederick	749	Vucea, Vanessa	254
Verwey, Nikki Lee	518		

**W...**

Wall, Clare	484	White, Zelda	524
Walsh, Corinna	360	Whitley, Deb	709
Walsh, Lauren Morgan	524	Wijnhoven, Bas P.L.	280
Wang, Qiu	669	Willmer, Tarryn	241
Weekes, Christine Elizabeth	422	Wilson, Hannah	660
Weekes, Elizabeth	439, 452	Winfield, Castyn	121
Wenhold, Friede	438, 518, 719	Wojcik, Jennifer	305
Wentzel-Viljoen, Edelweiss	21	Wright, Lauri	4
Wham, Carol	147	Wu, Xiaojing	99
White, Melinda	478	Wyatt, Marlene	285

**Y...**

Yi, Sunghwan	286	Yoshio Nakano, Eduardo	575
--------------	-----	------------------------	-----

**Z...**

Zandberg, Lizelle	619	Zec, Manja	21
Zandonadi, Renata	670, 621, 698	Zehner, Elizabeth	326
Zawilski, Alexandra	468	Zemlin, Annalise E.	567