

# Field-testing of the revised, draft South African Paediatric Food-Based Dietary Guidelines among mothers/caregivers of children between the ages of 3 and 5 years in the Northern Metropole, City of Cape Town, Western Cape province, South Africa

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**Objective:** To assess the appropriateness and understanding of the revised, draft South African Paediatric Food-Based Dietary (SA-PFBDGs) among mothers/caregivers of children between the ages of 3 and 5 years. Exposure to similar messages, barriers and enablers were also assessed.

**Design:** A qualitative, descriptive, cross-sectional study design was followed. Participants were purposively recruited to participate in 9 focus-group discussions (FGDs) conducted in isiXhosa, English and Afrikaans totalling 55 participants.

**Setting:** Formal and informal urban communities along the West Coast, in the Northern Metropole, City of Cape Town, Western Cape, South Africa.

**Subjects:** Mothers/caregivers older than 18 years who provided informed consent.

**Results:** The majority of the participants mentioned previous exposure to messages similar to the revised, draft SA-PFBDGs mainly from healthcare workers, health facilities and the media. Cultural differences and taste preferences contributed to poor following of healthy eating guidelines, specifically regarding lean meats and chicken, dry beans, split peas, lentils and soya, salt, fat and sugar. With regard to dietary variety and fresh fruit and vegetables, availability and financial barriers existed. Understanding nutritional needs of children, supportive communities and education were strong enabling factors for following of the revised, draft SA-PFBDGs.

**Conclusion:** Overall, the guidelines were familiar and understood. However, the comprehension of some guidelines must be clarified further, specifically those pertaining to sugar, salt and fat. The design of appropriate educational materials for the revised draft SA-PFBDGs, complementing national actions, could help to minimise inconsistent messages on young-child nutrition and create a supportive environment for improved nutritional health.

**Keywords:** consumer testing, paediatric food-based dietary guidelines, young children

## Introduction

The 2016 South African Demographic and Health Survey (SADHS, 2016)<sup>1</sup> reported on the nutritional status of children under five years of age and showed no decrease in child stunting, which remained at 27%,<sup>1</sup> with severe stunting occurring in 10% of children. Higher levels of childhood stunting were reported among lower income mothers, possibly indicating the positive impact of improved maternal education and income on stunting reduction. According to 2016 SADHS data, 13% of South African children under five years of age were classified as overweight, indicating a need for strategies to address over-nutrition in young children.<sup>1</sup>

Globally, the focus of Infant and Young Child Feeding (IYCF) has been on the first thousand days. Early or late initiation of complementary feeding and provision of inappropriate and/or nutrient-deficient meals for young children have been shown across different countries, and cultural and economic backgrounds.<sup>2</sup> Inadequate nutrition contributes toward reduced learning ability of children, psychological dysfunction and decreased employment potential of adults in low- and middle-income countries (LMICs). Poverty and stunting contribute significantly toward children failing to reach their full potential throughout their school years, adolescence and adult lives, leading to

devastating economic impact.<sup>3</sup> Global regions that scored lowest for amount of food and frequency of meals provided for 6–23-month-old children are those with the highest percentages of stunting, namely in Asia and Africa.<sup>4</sup> It becomes increasingly difficult to reverse growth deficiencies after the first two years of life. Deficiencies may remain or worsen as the child enters the preschool phase.<sup>4</sup> Inversely, overweight among children is increasing, predisposing them to NCDs. Globally, overweight in children younger than 5 years was reported as 7% in 2011, a 54% increase since 1990.<sup>5</sup> The importance of adequate nutrition in early years seems clearer now, more than ever before.

Nutrition interventions, including nutrition education, can help achieve the necessary healthy dietary behaviour, especially in environments with limited resources. Continuous evaluation, reformulating and re-testing of nutrition guidelines are, however, necessary to optimise nutrition education of both the consumers and healthcare workers.<sup>6,7</sup>

This study formed part of a larger study that aimed to field-test the revised, draft SA-PFBDGs amongst mothers/caregivers of children aged 0–5 years in the Western Cape and Mpumalanga provinces of SA.<sup>8</sup> This study aimed to test the revised, draft SA-PFBDGs in the age group 3–5 years.

## Methodology

The methodology described in this section refers to the specific study reported here. An outline of the methodology for the larger study is reported in the overview paper.<sup>8</sup>

### Study design, setting and population

A qualitative, descriptive, cross-sectional study design was followed.

Non-random, snowball sampling provided a selection of higher and lower income, urban informal and formal areas in Atlantis, Witsand, Du Noon and Blouberg areas for data collection. This area was selected for its diverse population profile and the Division of Human Nutrition, Faculty of Medicine and Health Sciences, Stellenbosch University has an existing service-learning arrangement with School Health Services in these communities.

Recruitment and data collection took place between 25 August and 28 September 2017 at community and household levels by inviting eligible women to participate in focus-group discussions (FGDs) with the help of the isiXhosa facilitator in isiXhosa-speaking areas.

Mothers/caregivers referred to all women over the age of 18, who had or had taken care of children in the age range of 3–5 years, including family members, babysitters and crèche owners. Afrikaans-, isiXhosa- and English-speaking mothers/caregivers were included for participation. Mothers/caregivers were excluded if they: did not give written informed consent; were not permanent residents of the chosen study sites; or were under the age of 18 years.

Due to the qualitative nature of the research, sample size only became apparent once data saturation was reached, i.e. when responses became repetitive.<sup>9</sup> Depending on participant availability, FGDs were conducted with fewer or more participants from a minimum of 4 to a maximum of 10 participants. Two groups consisted of only two participants. These discussions were conducted, although they were smaller than advised, due to the trouble the participants went through to arrive for the discussion.

### Data collection

Convenient, comfortable venues were arranged with local crèches and community-based organisations (CBOs) in advance, with the help of knowledgeable community members.

Each session lasted approximately 1–2 hours, including 10–15-minute refreshment breaks. FGDs were audio recorded.

At the beginning of each FGD a self-administered questionnaire was completed gathering participants' personal information, including: age, ethnicity and home language, highest level of education, employment status and relation to the child, with the translation and help of the facilitators when necessary.

The trained isiXhosa-speaking research assistant facilitated the isiXhosa FGDs, during which the first author was also present. The first author fulfilled the facilitator role in all the English and Afrikaans FGDs.

### Data analysis

Audio recordings were professionally transcribed in English, with simultaneous translation from Afrikaans, where necessary.

The first author read transcriptions and simultaneously listened to audio recording for quality control purposes. Following on, main topics and common interests were extracted and grouped. Coded responses were tabulated in Microsoft Excel 2016 (Microsoft Corp, Redmond, WA, USA). Data from the self-administered questionnaires were recorded and analysed in Microsoft Excel 2016.

### Ethics approval

Ethics approval for the study was granted from the Health Research Ethics Committee, Stellenbosch University (reference number: N14/09/122). Prior to any data collection, written informed consent was obtained from each participant. Participants were clearly informed that their participation was entirely voluntary and that they could withdraw from the study at any point in time. Anonymity and protection of personal information was ensured. Participants were identified by numbers only throughout the FGDs.

### Results

A total of 9 FGDs were conducted with 55 participants. Socio-demographic data are given in Table 1.

### Appropriateness and understanding of the revised, draft SA-PFBDGs

#### Revised, draft SA-PFBDG: 'Enjoy a variety of foods'

Study participants expressed an understanding of and willingness to follow this guideline. There was a shared understanding of 'variety' as different colours and food groups.

'It's a must to eat different food types like when you eat vegetables, there are vitamins from vegetables, when eating fruit, there are vitamins from fruit ...' (FGD 1, participant 8, Informal, IsiXhosa)

The affordability of a variety of fresh produce was cited as a possible barrier.

'They are unemployed. So, people, they go and buy some basics like mielie [maize] meal, rice, there's a lot of starch, instead of vegetables and fruits, because there's no money to buy the healthy foods. So, instead of that, they buy the basics for their living.' (FGD 3, participant 4, Informal, English)

Table 1: Participant socio-demographic information

Factor	n (%)
Caregiver's age/;	
19–25	11 (20%)
26–45	37 (67.3%)
Older than 46 years	6 (10.9%)
Education:	
Grade 1–7	3 (5.5%)
8–11	33 (60%)
Grade 12	13 (23.6%)
Post-matric education	6 (10.9%)
Employment:	
Employed	20 (36.4%)
Unemployed	32 (58.2%)
Missing data	3 (5.5%)

*Revised, draft SA-PFBDG: 'Eat plenty of fresh fruits and vegetables every day'*

Vitamins and minerals were considered important nutrients, provided by fruit and vegetables. However, taste preferences of children were suggested barriers, as well as availability and affordability, even though many vendors selling fresh produce were visible in the lower income areas of Witsand and Atlantis.

'It's very important, yes, because children need lots of fruits and vegetables. They provide different 'nutritious' and things, those vitamins and such.' (FGD 4, participant 4, Formal, Afrikaans)

'Kids mostly don't like vegetables, they don't like it at all, they put it on the side if you give them vegetables and most of the time, they eat food with no vegetables.' (FGD 4, participant 3, Informal, IsiXhosa)

*Revised, draft SA-PFBDG: 'Make starchy foods part of most meals'*

Mothers/caregivers understood the phrase 'starchy foods' and listed food items such as rice, potatoes, pasta, maize meal, spaghetti, lentils and sugar beans and indicated that they are very affordable and familiar.

'But because it's children there must then be rice or a potato ... that's the starch. So then maybe they do not get hungry right after meals. Then that's the starch that has filled them.' (FGD 2, participant 2, Formal, Afrikaans)

'Basically, I think at home we daily eat starch because there's rice or mealie-meal, so it's something they're used to, also potatoes.' (FGD 3, participant 10, Informal, IsiXhosa)

Participants mentioned their beliefs that starchy foods can cause weight gain and feared making their children obese but agreed that 3–5-year-old children require more energy to grow and play. Some participants mentioned low-carbohydrate high-fat diets and various sugar documentaries that they had seen. English-speaking participants voiced their preference for the term 'carbohydrates' over 'starchy foods' and felt that examples of healthy carbohydrate-rich foods should be provided.

*Revised, draft SA-PFBDG: Use sugar and food and drinks high in sugar sparingly'*

Sugar was enjoyed by many formal and informal participants alike. Mothers/caregivers agreed on the importance of monitoring sugar consumption of children but mentioned barriers to following the guideline, including taste preferences. Formal English participants voiced their concern about the way the guideline starts with 'use sugar ...' and they suggested that the guideline should have a more discouraging stance towards using sugar at all, for example, starting with 'if you use sugar ...'.

'... we love to give our children cool drinks, like 'Coke' and they warn us, do not do it. But we still do it.' (FGD 2, participant 4, Formal, Afrikaans)

'Because our kids, they like too much sweets, the moment you give the money, they run to the shop and go lot of

sweets. And then they, if maybe 5 years and they got a sugar and they start to taste it, 'uh-uh mommy I don't like, put more', again, you see.' (FGD 1, participant 3, Informal, English)

*Revised, draft SA-PFBDG: 'Feed your child small, regular meals and healthy snacks throughout the day'*

Participants understood the need to feed their children regular meals throughout the day. Most participants could describe the difference between meals and snacks and identify unhealthy snack-foods.

'Yes, every day, but, after three hours ... must skip the two or three hours and then you give again and then after two hours or three hours you give again, a small amount. Don't give the full slice or three slices ... you must cut a triangle, a square ...' (FGD 3, Participant 1, Informal, English)

Some of the participants were concerned about the unhealthy connotations of the term 'snacks'. Some Afrikaans participants considered snacks to be 'luxury items' (i.e. unhealthy take-away or processed foods). A piece of fresh fruit, dried fruit, yoghurt or a slice of bread with peanut butter, viennas (processed meat sausages), peanuts, carrots and chips (processed baked/fried maize- or potato-based snack food with added salt) were considered 'snacks'. Most available snack foods in lower income areas were bread and chips.

'Snack foods available in our environment are the fifty-cent chips so that is not healthy snack food.' (FGD 2, Participant 2, Formal, Afrikaans)

Formal English participants suggested that the word 'meals' needed additional information regarding meal size and frequency. It was suggested that the wording could be altered slightly rather to 'three meals and healthy snacks'.

*Revised, draft SA-PFBDG: 'Use salt and foods high in salt sparingly'*

In this study salt consumption was linked to increased blood pressure, organ damage, diabetes mellitus, cholesterol and heart conditions in adults. Participants agreed that too much salt was unhealthy, especially for children, and described trying to limit their intake.

'Ja, when you start weaning the kids they say; leave out salt, you can only put spices.' (FGD 2, participant 1, Formal, English)

Salt was also described as necessary to make food taste good.

'Yes ... because food with no salt it's tasteless. Put a pinch of salt in food ... something that will make food tasty.' (FGD 2, participant 2, Informal, IsiXhosa)

Some participants were uncertain about the wording used, such as starting with 'Use ...' and 'foods high in salt' but were able to identify such food items correctly (e.g. salty snack foods such as popcorn, peanuts and biltong). 'Sparingly' was understood as 'only when necessary', 'very little', 'in between' or 'only a teaspoon or less'.

*Revised, draft SA-PFBDG: 'Use fats sparingly, choose vegetable oils rather than hard fats'*

Participant responses demonstrated cultural and economic differences in terms of taste preferences, meal quality and understanding of fat classification. Participants felt that this guideline is important, and that fat is an important source of energy and good for joint lubrication.

'Yes, it's important, but not putting too much, even if it's just a spoon it's tasty. There are things that need oil; there are things that don't need oil when you're cooking.' (FGD 2, participant 2, Informal, IsiXhosa)

Mothers/caregivers debated whether this meant olive oil or sunflower oil, admitting that they check the price rather than the type when purchasing oil, even if 'vegetable oils' meant there are certain oils that are healthier than others. Participants believed it is important to limit fat consumption to prevent obesity and illness. Formal English participants explained the need for essential fatty acids and differentiating healthy from unhealthy fats and believed that fats should not be completely excluded but rather used in moderation as part of a balanced diet. Responses revealed that animal fats were clearly favoured, especially in lower income areas, and this was described as a difficult habit to change later in life, emphasising the importance of creating healthy habits from childhood. Lower income participants discussed re-using rendered animal fats and that sunflower oil was described as 'weak'. Low-fat cooking methods were reportedly implemented only for those already suffering from NCDs. Consumption of unhealthy fats was seemingly limited, especially for children; however, higher prices and low availability of healthier fats remained challenges in the lower income areas.

'For me, hard fat is that in meats and fat that is very ... unhealthy.' (FGD 3, Participant 4, Formal, Afrikaans)

*Revised, draft SA-PFBDG: 'Lean chicken or lean meat or fish or eggs can be eaten every day'*

Current study participants understood the nutritional value of protein.

'Because protein builds muscle, and as soon as you build a child's muscle through healthy protein, they're going to end up being stronger ... Instead of building it up with bread ... or empty carbs, as cereals and stuff like that ...' (FGD 1, Participant 2, Formal, English)

There was an understanding that making healthier choices regarding types of meat and fat can play a role in preventing chronic diseases (e.g. obesity, diabetes and heart disease). Participants described lean meats as not always available, especially in the lower income areas. Eggs, tinned fish or beans, polony or peanut butter were consumed more regularly as more affordable protein-rich options.

*Revised, draft SA-PFBDG: 'Consume milk, maas or yoghurt every day'*

Dairy foods were described as 'un-processed' and 'nutritious', and considered important for growth and development, providing healthy protein, calcium and probiotics. Afrikaans and English participants from formal areas associated 'maas' with 'African areas'. Affordability was a barrier for lower income participants. It was clear that not all items listed must be eaten daily. Milk was used every day in different ways, but yoghurt

was considered a special treat for some and was not always kept in the house.

'It's not a must that you must eat all of them per day. You can maybe, today eat maas, perhaps tomorrow you eat yoghurt, a day after tomorrow you drink milk but as long you at least eat something dairy every day.' (FGD 4, participant 10, Informal, IsiXhosa)

*Revised, draft SA-PFBDG: 'Eat dry beans, split peas, lentils and soya regularly'*

'Regularly' was interpreted as 'once a day', 'once a week/month' or '1–3 times a week'. Informal English groups felt that the term 'regularly' emphasised their importance, while formal English participants felt the opposite. Some of the formal English participants explicitly stated that their children do not like these foods and questioned whether biltong, dried fruit, nuts and chickpeas fall into this category of 'protein snacks'. Some formal participants mentioned replacing animal-source protein with legumes or beans. Personal or cultural preferences for dry beans, split peas, lentils and soya varied considerably. For the lower income participants, they were more familiar and affordable, recognised for their protein content and longer shelf-life. Lentils and beans were consumed more often, and soya was used to increase meal volume. Various participants described using lentils in traditional Indian recipes (e.g. biryani), showcasing the influence of history and diversity of people in the Western Cape region. Seasonal preferences (e.g. more likely to cook beans/lentils in winter), unfamiliarity, longer preparation time and amount of electricity needed were discussed as barriers to following this revised, draft SA-PFBDG.

'This is a regular ... It also lasts longer, goes further. It suits my pocket to buy lentils and split peas.' (FGD 2, Participant 1, Formal, Afrikaans)

*Revised, draft SA-PFBDG: 'Drink lots of clean, safe water and make it your beverage of choice'*

Comprehension of this revised, draft guideline was clear among participants. Drinking water was described as important, but a challenge due to its unpopular taste, especially in winter and for fear of consuming contaminated water in the informal areas. 'Safe water' was described as boiled, cooled water that has been kept covered, the City of Cape Town water supply and treated/purified water. Structural and financial access to water was an issue for some informal and lower income formal participants.

'For example, in my area people are still fetching water, people in the rural areas don't have toilets, and people make use of the open spaces, so when it's raining that dirt descends to the river. So, there are people educating other people about the fact that water must be boiled then put a little bit of Jik [strong cleaning bleach containing calcium hypochlorite]. Many people suffered ... and were hospitalised because of water.' (FGD 1, participant 1, Informal, IsiXhosa)

*Revised, draft SA-PFBDG: 'Hands should be washed with soap and clean water before eating or preparing food'*

Mothers/caregivers all understood this message and stressed the importance of hand-washing. Stagnant water was considered unsafe for hand washing. Structural water and sanitation issues were noted.

'I do tell my kids that they must wash hands because washing hands it's important before eating food. If you didn't wash hands after going to the toilet or touching food maybe you would have germs then get sick. It's something that I always tell them.' (FGD 1, Participant 5, Informal, IsiXhosa)

### **Previous exposure to guidelines with similar messages to the revised, draft SA-PFBDGs**

Participants from both formal and informal areas indicated exposure to guidelines with similar messages to the revised, draft SA-PFBDGs. The most common sources of such messages included clinics and hospitals, dietitians, doctors, schools and crèches, and the media (magazines, radio and television).

Similar to recent revised, draft SA-PFBDG testing in Siswati,<sup>10</sup> some myths were mentioned. Chips were believed to give children ringworm. Other myths included that eating too much sugar can cause worms and that cooked salt or fat is healthier than raw versions.

### **Discussion**

The aim of this research was to assess the appropriateness and understanding of the revised, draft SA-PFBDGs among mothers/caregivers in selected areas in the Western Cape province of South Africa.

The ability to follow the revised, draft SA-PFBDGs was affected by clarity of comprehension, personal preference, motivation, planning, time and financial factors. A variety of food, fruit, vegetables, dairy, healthy snacks and animal source proteins were most often described as expensive and unavailable.

Current study participants reported using less expensive vegetable-based protein-rich foods to ensure protein consumption in line with their cultural preferences and financial capacity. It is documented that protein-rich foods are often first abandoned when food security is threatened, further emphasising the need to enable LMIC households with young children to obtain sufficient, good quality dietary protein.<sup>11,12</sup> The 2013 revised technical rationale for the SA-PFBDG, 'Eat dry beans, split peas, lentils and soya regularly', concluded that there is sufficient evidence to encourage South Africans to incorporate these protein-rich foods into their regular diet as a cost-effective alternative.<sup>13</sup>

Field-testing in 2007 led to revision of the initially proposed SA-PFBDG from 'Feed children five small meals a day' to 'Feed your child small regular meals and healthy snacks throughout the day'.<sup>14</sup> However, as found by Love *et al.*,<sup>7</sup> the word 'snacks' raised concern among some FGDs for being associated with unhealthy food items. The revised, draft SA-PFBDGs outline healthy options and the availability of healthier snack foods should therefore be advocated in order to support caregivers to follow this guideline.<sup>7</sup>

Education on the revised, draft SA-PFBDG on salt should be stressed, since many participants indicated that their children consume salty snack foods, including processed meats and chips, in addition to salt added during home food preparation. A recent study in South Africa also reported lack of awareness and understanding of salt usage among consumers, highlighting the importance of promoting salt reduction at individual and household levels to achieve health benefits.<sup>15</sup>

Study participants preferred SSBs and reported giving it to their children. Children were also inclined to buy sugary foods when given money. A high percentage of sugar consumption in South Africa has been linked to sugar-sweetened beverages (SSBs).<sup>16</sup> Dissemination of clear guidelines and additional regulation, e.g. sugar tax,<sup>17</sup> could help to reduce SSB and sugar consumption.

The SA-PFBDG guideline for drinking water was well understood and considered important, but water consumption levels have been inversely related to physical distance from water sources as reported by Love *et al.* in 2001.<sup>7</sup> Similarly, current informal participants reported wariness of water safety and going to fetch water as having an impact on following of the guideline.

The hand-washing SA-PFBDG is an example of a 'nutrition-sensitive' approach, improving individual nutrition security.<sup>18,19</sup> All participants reported having heard of this guideline before and implementing hand-washing. This reflects the potential for success in spreading vital information when sectors join forces (e.g. health, education and sanitation). Water, sanitation and hygiene (WASH) is a universal approach to reduce incidence of infectious diseases. Lack of access to water and low implementation of personal hygiene increases the probability of young-child morbidity and mortality due to infectious diseases (e.g. diarrhoea).<sup>19</sup> For significant further improvements in food safety and to decrease the incidence of infectious diseases in lower income areas, government must improve WASH as well as access to safe drinking water on a structural level.<sup>20</sup>

Study limitations included identifying informal English-speaking participants, which was overcome by a diverse community where English was the preferred language of communication. Formal isiXhosa and informal Afrikaans participants were difficult to reach, and thus there are no data for these groups resulting in the possibility that certain responses were not heard. Household and community level recruitment in the informal and formal, lower income areas provided larger groups of participants compared with formal higher income areas. Formal English mothers were mostly working or unwilling to sacrifice their time, therefore only two FGDs took place, consisting of 2–3 participants.

### **Conclusion and recommendations**

Despite general understanding of the revised, draft SA-PFBDGs among mothers/caregivers, implementation was not always followed through due to barriers beyond consumer knowledge. Eating behaviours in the lower income areas were strongly dependent on societal and environmental determinants such as financial and physical accessibility. Lack of motivation to buy and prepare healthier meals by including a variety of fresh vegetables, carbohydrate- and protein-rich foods highlights the importance of engaging multiple stakeholders in planning and implementing behaviour change interventions together with social marketing principles to normalise healthy food choices. Preventative approaches such as improved nutrition education must be strengthened to transform South African health care, which is largely curative.<sup>21</sup>

The revised, draft SA-PFBDGs can be incorporated as part of nutritional support and training for crèche owners/preschool teachers and to ensure consistent nutrition messaging in communities and households, as one of the key interventions of the

National Integrated Plan for ECD by the South African Department of Social Development, together with conditional ECD grants.<sup>22</sup> More research is necessary in this age group of children to devise the most effective interventions and educational materials to enable the children to adopt healthy eating behaviours early on.

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