

Reinforcing Mothers' Nutritional Knowledge to Combat the Spread of Non-Communicable Diseases: Food-Based Dietary Guidelines



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ABSTRACT

The primary objective of this study was to examine the firsthand experiences and perspectives of expectant mothers regarding the incorporation of food-based dietary guidelines into their daily routines as a means of reducing the risk of specific non-communicable diseases (NCDs) such as diabetes, obesity, and cardiovascular diseases for both themselves and their children. The 2020 UNICEF Conceptual Framework on the Determinants of Maternal and Child Nutrition served as the foundation for this investigation. Utilizing a case study design within an interpretive research paradigm, this study sought to assess how reinforcing maternal nutritional knowledge, guided by Food-Based Dietary Guidelines (FBDGs), could help reduce the prevalence of these NCDs during early childhood. A group of 10 individuals was selected using purposive sampling, and a qualitative approach was employed to gather insights. The study revealed that many survey participants were unaware of the South African Food-Based Dietary Guidelines (SA FBDGs). Some mentioned their search for official guidelines from SA FBDGs, while others referred to the four dietary categories. Limited overall health knowledge" and "lack of awareness among parents were discovered. Considering these findings, the research suggested that nutritional education should start in primary school. In collaboration with health and nutrition experts, it proposed that the Department of Education consider introducing such programs in Early Childhood Development Centres before elementary school. It is essential to emphasize the government's importance in ensuring appropriate educational interventions are implemented. Increasing knowledge about nutrition through education and interventions may help reduce the risk of chronic diseases and enhance overall health.

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INTRODUCTION

Mothers need to have a certain level of nutrition knowledge to help their children develop healthier eating habits and get the necessary nutrients for proper growth and development.¹ The research explores mothers' perspectives on the Food-Based Dietary Guidelines and their awareness of their children's eating behaviours within the main results of the OR Tambo district in the Eastern Cape Province. Worldwide, malnutrition is a widespread problem that many nations are struggling to combat.² Despite the adoption

¹ Ali Khomsan, "Maternal Nutritional Knowledge as a Determinant of Stunting in West Java: Rural-Urban Disparities," 2022.

² Faareha Siddiqui et al., "The Intertwined Relationship between Malnutrition and Poverty," *Frontiers in Public Health* 8 (2020): 453.

of Food-Based Dietary Guidelines, Başçı contends that rates of childhood overweight are expected to double by 2025.³ In addition, there are about 2 billion children and adults deficient in vitamins or minerals, which can lead to anaemia, blindness, cognitive impairment, and greater susceptibility to many diseases, resulting in higher mortality.⁴ It is estimated that 15% to 20% of all births worldwide have low birth weight.⁵

Furthermore, Anand et al. reported that one in four children who survive malnutrition in early childhood are stunted; today, 161 million futures are permanently compromised.⁶ Sotiraki et al concur with Grammatikopoulou that 161 million children under the age of five were stunted (too small for their age) in 2015, at least 51 million were severely or moderately wasted (weighing too little for their height), and 42 million more were obese or overweight.⁷ In addition, Hasan et al. revealed that since 1990, the number of overweight children under five has quadrupled to 43 million in 2013.⁸ Thus, malnutrition is a severe concern for many individuals in developing countries. Some scholars highlighted that NCDs are the world's leading cause of mortality and that poor nutrition is causing health issues for a large number of individuals across all age groups.⁹ However, Adeyeye et al. believe that hunger results in 16 million premature deaths annually.¹⁰

The primary factor behind approximately 50% of global deaths was reported to be malnutrition by the United Nations Children's Fund 2024. These findings support the opinion of Li et al. and the WHO estimates, that 41 million children worldwide are overweight.¹¹ The researcher believes that this could be connected to the parent's lack of knowledge about maintaining a healthy diet and making lifestyle decisions. Thus, FBDGs implementation could be of help.

A key element for maintaining excellent health over one's whole life span is eating a nutritious, balanced diet at early stages of development to reach full potential.¹² According to Fanzo et al., nutritious eating is vital for everyone's health.¹³ Moreover, Patel et al. contend that eating habits can also prevent NCDs, including obesity, diabetes, cardiovascular disease in children, and chronic, long-term health issues.¹⁴ These habits are the deliberate and regular ways in which an individual chooses what they eat, how much they eat, and when they eat it, following social and cultural norms.¹⁵ Despite knowing what to eat, individuals often make choices influenced by different factors. Various countries have developed and implemented strategies and policies to tackle this issue. Regardless of these actions, global patterns in the combination of hunger, non-communicable diseases, sickness, and poverty continue to be high.

It is somewhat unexpected/surprising that Food-Based Dietary Guidelines seemed to be sparse and unclear for caregivers of certain areas, yet Mialon et al. attest that these have been developed to

³ Ayşe Burcu Başçı, "A Public Health Perspective to Childhood Obesity," *Hitit Sağlık Dergisi*, no. 1 (2023): 44–60.

⁴ World Health Organization, *The State of Food Security and Nutrition in the World 2023: Urbanization, Agrifood Systems Transformation and Healthy Diets across the Rural–Urban Continuum*, vol. 2023 (Food & Agriculture Org., 2023).

⁵ H. B. Ragsdale, "Developmental Influences on Reproductive Investment: Linking Maternal Nutritional History With Pregnancy Metabolism and Fetal Growth" (Northwestern University, 2023).

⁶ Pramod Kumar Anand et al., "Early Childhood Nutrition: Pathways to Nurture," *Investing in Early Years in Human Capital for Future Resilience*, n.d.

⁷ Marianthi Sotiraki et al., "Burden of Childhood Malnutrition: A Roadmap of Global and European Policies Promoting Healthy Nutrition for Infants and Young Children," *Children* 9, no. 8 (2022): 1179. Maria G Grammatikopoulou and Tonia Vassilakou, "Nutrition in Pediatric Patients and Vulnerable Populations: Updates and Advances," *Children* (MDPI, 2024).

⁸ Babar S Hasan et al., "Recommendations for Developing Effective and Safe Paediatric and Congenital Heart Disease Services in Low-Income and Middle-Income Countries: A Public Health Framework," *BMJ Global Health* 8, no. 5 (2023): e012049.

⁹ Raheela Mushtaq and Tahir Hussain Shah, "Awareness on Non Communicable Diseases (NCDs) among Rural Population of District Rajouri (J&K UT)," n.d.; Sudip Bhattacharya, Petra Heidler, and Saurabh Varshney, "Incorporating Neglected Non-Communicable Diseases into the National Health Program—A Review," *Frontiers in Public Health* 10 (2023): 1093170.

¹⁰ Samuel Ayofemi O Adeyeye et al., "Africa and the Nexus of Poverty, Malnutrition and Diseases," *Critical Reviews in Food Science and Nutrition* 63, no. 5 (2023): 641–56.

¹¹ Li Bai, Haiheng Tang, and Mingliang Wang, "Dietary Behaviors of Rural Residents in Northeastern China: Implications for Designing Intervention Information and Targeting High-Risk Population," *Frontiers in Public Health* 12 (2024): 1239449; WHO, "World Health Statistics 2015," 2015, <https://iris.who.int/handle/10665/170250>.

¹² Cátia Silva et al., "Self-Efficacy to Regulate Eating Behaviors Scale for Children: A Validation Study," *International Journal of Environmental Research and Public Health* 20, no. 4 (2023): 2807.

¹³ Jessica Fanzo et al., "The Importance of Food Systems and the Environment for Nutrition," *The American Journal of Clinical Nutrition* 113, no. 1 (2021): 7–16.

¹⁴ Priya Patel et al., "Effects of Fermented Food Consumption on Non-Communicable Diseases," *Foods* 12, no. 4 (2023): 687.

¹⁵ Nina Van Dyke, Michael Murphy, and Eric J Drinkwater, "We Know What We Should Be Eating, but We Don't Always Do That." How and Why People Eat the Way They Do: A Qualitative Study with Rural Australians," *BMC Public Health* 24, no. 1 (2024): 1240.

address nutritional needs, prevent diseases, and improve health.¹⁶ In response to this gap, the researcher sought to obtain qualitative insights as to what mothers in OR Tambo Inland know and think regarding the incorporation of food-based dietary guidelines into their daily routines as a means of reducing the risk of specific NCDs and their nutritional knowledge concerning children's eating habits. The following research question guided this study: -

- What are the lived experiences and perceptions of expectant mothers regarding the integration of food-based dietary guidelines into their daily routines to mitigate the risk of NCDs for themselves and their children?

The findings are subsequently presented in this paper.

LITERATURE REVIEW

This study explores the lived experiences and perceptions of expectant mothers regarding the integration of food-based dietary guidelines into their daily routines to mitigate the risk of NCDs for themselves and their children. The objective of the FBDGs is to influence the dietary behaviours of the population through the promotion of concise, optimistic, evidence-based messages that cater to energy and nutritional requirements and aid in the prevention of non-communicable diseases.¹⁷ On the contrary, Kraak and Aschemann-Witzel postulate that FBDGs are evidence-based suggestions and concise advice that consider accepted dietary patterns, ecological settings, socioeconomic and cultural factors, and the population's physical and biological environment while mainly focusing on nutrition education principles related to foods.¹⁸ Corrêa Rezende et al. contend that FBDGs provide advice on foods, food groups, and dietary habits to encourage healthy eating and lifestyle choices, prevent chronic diseases, and improve overall health.¹⁹ FBDGs can also assist in creating a diet based on long-lasting, healthy habits to promote mindfulness.

However, to address the growing prevalence of healthy eating habits, public health policy prioritises theoretical contributions and actions that promote healthy eating.²⁰ In this case, a mother's understanding of nutrition needs to be considered. Mother's knowledge of nutrition may be declarative or procedural. As per Amer, et al., declarative knowledge of nutrition is knowledge of objects and procedures.²¹ Mothers' declarative nutritional knowledge, which Bai referred to as knowing about facts and objects, could be improved by the nutritional information found in FBDGs.²² For example, consuming lower amounts of fat is recommended to maintain a healthy diet. Therefore, encouraging and boosting good eating in children might be a particularly effective method for promoting healthy lives and lowering chronic diseases in future generations. Gao et.al., highlighted that procedural knowledge is knowledge of food and nutrition techniques and tactics, that is, having the ability to carry out particular activities or procedures that involve food.²³ For example, pick out a packet of nuts with low sodium content while grocery shopping, resulting in a healthier option for controlling sodium consumption.

Sequena posits that procedural knowledge could impact the mother's food choices, subsequently influencing the child's eating habits and food consumption.²⁴ Thus, children might inherit nutritional knowledge, including their mothers' knowledge, which can impact their future eating habits. This could

¹⁶ MéliSSa Mialon et al., "Conflicts of Interest for Members of the US 2020 Dietary Guidelines Advisory Committee," *Public Health Nutrition* 27, no. 1 (2024): e69.

¹⁷ Lisanne M Du Plessis et al., "Development and Field-Testing of Proposed Food-Based Dietary Guideline Messages and Images amongst Consumers in Tanzania," *Nutrients* 14, no. 13 (2022): 2705.

¹⁸ Vivica I Kraak and Jessica Aschemann-Witzel, "The Future of Plant-Based Diets: Aligning Healthy Marketplace Choices with Equitable, Resilient, and Sustainable Food Systems," *Annual Review of Public Health* 45, no. 1 (2024): 253–75.

¹⁹ Júlia Laura Corrêa Rezende et al., "Food-Based Dietary Guidelines for Children and Adolescents," *Frontiers in Public Health* 10 (2022): 1033580.

²⁰ C. R. Thompson, *Prevention Practice and Health Promotion: A Health Care Professional's Guide to Health, Fitness, and Wellness* (Taylor & Francis, 2024).

²¹ Omar S. Asfour and Amer M. Alkharoubi, "Challenges and Opportunities in Online Education in Architecture: Lessons Learned for Post-Pandemic Education," *Ain Shams Engineering Journal* 14, no. 9 (September 2023): 102131, <https://doi.org/10.1016/j.asej.2023.102131>.

²² Bai, Tang, and Wang, "Dietary Behaviors of Rural Residents in Northeastern China: Implications for Designing Intervention Information and Targeting High-Risk Population."

²³ Yaxin Gao et al., "Study on the Quality of Soybean Proteins Fermented by *Bacillus Subtilis* BSNK-5: Insights into Nutritional, Functional, Safety, and Flavor Properties," *Food Chemistry* 443 (2024): 138523.

²⁴ Roselyn Sequena, "Early Childhood Health and Nutrition as Influenced by Food Competence Practices," *Nexus International Journal of Science and Education* 1, no. 2 (2024).

lead to enhanced nutritional status and quality of life for the children. FBDGs directly influence mothers' nutritional awareness, food choices and how their children eat.²⁵ Thus, this research aims to obtain qualitative insights as to what mothers in OR Tambo Inland know and think regarding incorporating food-based dietary guidelines into their daily routines to reduce the risk of specific NCDs and their nutritional knowledge concerning children's eating habits.

Vermeulen concurs with Vorster that FBDGs are frequently produced at the national level to help bring dietary intakes closer to nutrient consumption targets.²⁶ South Africa is, therefore, not an exception because the country's 2012 publication of the SA FBDGs promotes eating a diversified diet regularly. They seek to address recognized nutritionally linked public health concerns and enhance nutritional status in rich and disadvantaged South African areas. Majija believes that SA FBDGs are based on the current intake of readily available foods in the area.²⁷

Many countries and regions are adopting Food-Based Dietary Guidelines because nutrient-based dietary recommendations do not effectively promote balanced diets and overall health despite the substantial worldwide effects of diet-related diseases.²⁸ Furthermore, Becher contends that, out of the forty-seven countries with general FBDGs, only 12% incorporate food symbols tailored for children, and none of these symbols are present in Africa.²⁹ Therefore, developing and implementing inclusive Food-Based Dietary Guidelines that cater to all age groups, especially children, is imperative to foster healthier eating habits and combat diet-related diseases globally.

Although around 100 countries have developed FBDGs, only eight of the 47 African countries that comprise the WHO Africa region have recognized FBDGs.³⁰ These nations are Benin, Kenya, Namibia, Nigeria, Seychelles, Sierra Leone, South Africa, Zambia, and Ethiopia. South Africa has two sets of FBDGs, with one specifically designed for young children. Due to the significant public health issue of child malnutrition, South Africa has implemented a dedicated set of guidelines for infants and young children. These guidelines were based on paediatric nutrition-related health issues and local dietary habits, intended especially for young children from birth up to the age of 7 years. Muller et al. highlighted that paediatric guidelines focus on optimal growth, development, and prevention of nutritional deficiencies in this vulnerable age group.³¹

Kisighii et al., highlight the current suggestion by the WHO of using a food-based approach as a preferred long-term solution to the issue of malnutrition in developing nations.³² The strategy aims to improve nutritional quality by increasing consumption of locally grown foods that are rich in vital nutrients. However, the intervention should be tailored to the local environment and culture to be more effective.³³ The strategy is implemented depending on the community's approval, local accessibility, and cost of nutrient-rich foods.

Seven African nations now have FBDGs.³⁴ Nevertheless, Sinha indicates that the African continent is also dealing with the problem of overweight children, and malnutrition significantly impacts

²⁵ Linda M Lord, Carol McGinnis, and Carly Densmore, "Addressing the Unique Needs and Quality of Life Issues for Adults Receiving Long-term Home Enteral Nutrition," *Nutrition in Clinical Practice* 38, no. 2 (2023): 257–76.

²⁶ Hester Vermeulen, Ferdinand Meyer, and Hettie C Schönfeldt, "A Basic Healthy Food Basket Approach to Evaluate the Affordability of Healthy Eating in South Africa and Kenya," *Frontiers in Sustainable Food Systems* 7 (2023): 1181683.

²⁷ Yolisa Christina Majija, "Exploring the Influence of Demographic Factors on Mothers' Nutritional Knowledge Through the Use of Food Based Dietary Guidelines" (University of South Africa, 2018).

²⁸ Kim Anastasiou et al., "From Harmful Nutrients to Ultra-Processed Foods: Exploring Shifts in 'Foods to Limit' Terminology Used in National Food-Based Dietary Guidelines," *Public Health Nutrition* 26, no. 11 (2023): 2539–50.

²⁹ Shmuel I Becher, "The Alternative Meat of the Matter," *Tul. L. Rev.* 98 (2023): 99.

³⁰ Selena Ahmed et al., "International Organizations, Governments, Researchers, and Activists Have Proposed the Need for Deeper Integration of Sustainability Considerations in National Food-Based Dietary Guidelines (FBDGs). Yet, as Recent Scholarship Advances the Conversation, Questions Remain around How to Effectively Frame and Address the Interconnectedness of Multiple Sustainability Domains. Little Systematic Analysis Has Evaluated How Current FBDGs," *Food Systems Evaluation Methods and Sustainability Assessment*, 2024, 52.

³¹ Moritz Müller et al., "Citizen Science for the Sustainable Development Goals? The Perspective of German Citizen Science Practitioners on the Relationship between Citizen Science and the Sustainable Development Goals," *Citizen Science: Theory and Practice* 8, no. 1 (2023).

³² Happyness Amani Kisighii, Jofrey Raymond, and Musa Chacha, "Context-Specific Optimal Dietary Guidelines for Managing Cancer for Hospitalized Patients in Tanzania," *Nutrition & Food Science* 53, no. 2 (2023): 416–31.

³³ David Micallef et al., "Emerging Adult Gamers and Their Diet—a Socio-Ecological Approach to Improve Health Behaviour," *Journal of Social Marketing* 14, no. 1 (2024): 95–113.

³⁴ Esther K Papiés, Kristian Steensen Nielsen, and Vera Araújo Soares, "Health Psychology and Climate Change: Time to Address Humanity's Most Existential Crisis," *Health Psychology Review*, 2024, 1–31.

nation-states, affecting production, growth, health, and people's quality of life.³⁵ In low and middle-income countries (LMICs), inadequate nutrition is a factor in individuals' lower employment prospects, psychological problems, and impaired capacity to study.

Children who experience stunted development and poverty are more likely to fail to reach their full potential during their school years, adolescence, and adult life, which can have disastrous economic repercussions.³⁶ A study conducted in 2017 by the South African Medical Research Council (SAMRC), Statistics South Africa (Stats SA), and the National Department of Health (NDoH) revealed that 27% of children in the country suffer from chronic malnutrition. According to the study, one-third of South Africa's child deaths are caused by malnutrition. Conditions can be more challenging in the country's outlying areas, such as the Eastern Cape. Matebesi et.al., have stated that the Eastern Cape is the most impoverished province in South Africa, having the highest rates of both official and expanded unemployment in the country and with 50% of rural households facing food insecurity.³⁷ Studies in this isolated area seldom examine how children's eating habits align with the Food-Based Dietary Guidelines. However, the increasing prevalence of malnutrition can be linked to a lack of enforcement of the FBDGs, along with low literacy rates and limited access to education for both parents and children, particularly in rural areas.³⁸ Pradeilles et.al., suggest that higher levels of mother education are associated with reduced rates of wasting, stunting, and obesity.³⁹ Therefore, it is crucial to enhance the enforcement of Food-Based Dietary Guidelines and improve educational opportunities for parents and children, particularly in rural areas, to combat malnutrition and its far-reaching consequences on health, development, and economic stability.

Promoting a balanced diet at home is essential for starting nutrition education and fostering children's health. This study explores the effectiveness of this title. Dietary guidelines are instructions for adults and children to eat foods and drinks that promote growth and development while lowering their risk of chronic illnesses.⁴⁰ The authors further revealed that in 1980, the US Department of Agriculture and the Department of Health and Human Services established federal nutrition guidelines to promote health and prevent chronic diseases. However, maternal nutrition knowledge is one area with strong potential to prevent the development of childhood non-communicable diseases.

Research indicates a link between poor maternal nutrition and the development of NCDs in adult offspring. Bhattacharya stated that noncommunicable illnesses include cardiovascular diseases (such as heart attacks and strokes), cancer, chronic respiratory disorders (such as chronic obstructive pulmonary disease/COPD and asthma), obesity, and diabetes.⁴¹ NCDs are the leading cause of mortality and disability worldwide, and malnutrition is a significant global burden.⁴² The authors further postulate that, in 2015, around 462 million people worldwide were underweight; 264 million women of reproductive age had iron amenable anaemia; and 1.9 billion adults were overweight or obese. Undernourishment and over-nourishment, known as the 'double burden of malnutrition,' are especially worrisome in lower-middle-income countries (LMIC). Mothers can play a crucial role in implementing FBDGs to help combat NCDs in early childhood. As key role players in choosing and preparing food in the home environment, they must promote healthy and sustainable eating habits among children to limit this disease.

³⁵ Braj Raj Kumar Sinha, *Urban Dynamics, Environment and Health: An International Perspective* (Springer Nature, 2024).

³⁶ S H Röhrs and L M Du Plessis, "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," *South African Journal of Clinical Nutrition* 34, no. 4 (2021): 151–56.

³⁷ Sethulego Matebesi, Lochner Marais, and Verna Nel, *Local Responses to Mine Closure in South Africa: Dependencies and Social Disruption* (Taylor & Francis, 2024).

³⁸ Takalani Eldah Thabathi, "A Strategy to Facilitate the Implementation of Educational Nutritional Guidelines for Caregivers of Children in Selected Rural Communities of Vhembe District" (2023).

³⁹ Rebecca Pradeilles et al., "Changes and Correlates of Household Food Insecurity during COVID-19: A Repeated Cross-Sectional Survey of Low-Income Households in Peri-Urban Peru," *Food Security* 16, no. 4 (2024): 973–87.

⁴⁰ Carlo Agostoni et al., "What Should I Eat Today? Evidence, Guidelines, Dietary Patterns and Consumer's Behavior," *European Journal of Internal Medicine*, 2024.

⁴¹ Malavika Bhattacharya, "Role Of Malnutrition Towards Predisposing The Population Towards Non-Communicable Diseases (Ncds)," n.d.

⁴² Elizabeth Wilkins et al., "Maternal Nutrition and Its Intergenerational Links to Non-Communicable Disease Metabolic Risk Factors: A Systematic Review and Narrative Synthesis," *Journal of Health, Population and Nutrition* 40 (2021): 1–11.

Mothers have a significant influence on how their children learn about food because they shape the so-called home food environment from an early age.⁴³ This covers household food availability and accessibility, family food norms, parents' eating habits, food knowledge, and feeding styles and practices. What, where, when, how much, and in what emotional and social context mothers introduce meals to their children can have an immediate influence on them (for example, their desire to try various foods), as well as a long-term impact throughout childhood and adulthood.⁴⁴ However, posit that the majority of stunting cases in children arise within the first thousand days as a result of poor maternal nutrition and ineffective child-feeding methods. Maternal health status and inadequate nutrition are well-acknowledged as factors in developing children and adult illnesses.⁴⁵ Early nutrition, especially breastfeeding, significantly impacts an individual's health later in life. Nevertheless, Riedel highlighted that the foundation of many chronic diseases is now thought to be rooted in childhood, where critical periods of development depend on the adequate supply of nutrients.⁴⁶ Thus, FBDGs were developed to reduce the burden of NCDs in future generations.

Cabrera contends that NCDs became more prevalent with the epidemiological and nutritional transition than infectious diseases.⁴⁷ The author further revealed that the widespread availability and affordability of ultra-processed items create societal norms around processed meals, sustaining unhealthy habits that are difficult to change. Ares et al. further state that children globally do not consume enough micronutrient-rich foods such as fruits, vegetables, legumes, and whole grains, as recommended by FBDGs; instead, they consume an abundance of energy-dense, ultra-processed foods high in sugar, fat, and salt.⁴⁸ These eating patterns depart significantly from scientific standards for healthy and sustainable diets, which include a variety of plant-based meals, limited amounts of animal foods, and ultra-processed foods. For this reason, maternal nutrition knowledge must be related to the application of recommended FBDGs.

THEORETICAL FRAMEWORK

The theoretical framework underpinning this study was based on the UNICEF Conceptual Framework on the Determinants of Maternal and Child Nutrition.⁴⁹ The framework emphasizes the importance of Enabling factors, which include policies, programs, and system-level interventions that can support or hinder nutritional outcomes. Underlying determinants are factors like food security, caregiving resources, and the overall health environment that directly affect nutritional status. Immediate determinants are the direct causes of nutritional outcomes, such as dietary intake and health status. Researchers in the field of health are concerned that so many children globally suffer from malnutrition in all of its forms. This situation necessitates a determined and effective policy response. Still, such a response can be implemented only if there is a political will to protect and uphold children's human rights, particularly the right to an adequate diet that ensures freedom from hunger and includes nutrition as a critical component.

This framework depicts that disease and inadequate consumption of calories, protein, and micronutrients are the primary reasons for poor nutrition in children. These elements are interdependent. For instance, a child who does not consume enough nutrition is at a higher risk of getting sick, leading to reduced appetite, hindering the intake of nutrients, and draining the child's energy. Adequate dietary intake is necessary in quantity and quality, with nutrients being absorbed in the correct proportions. Three

⁴³ Intan R Nirmala et al., "Cooking Behavior among Mothers of Children Aged 2–5 Years Old in Kendari, Southeast Sulawesi, Indonesia," *BMC Public Health* 24, no. 1 (2024): 391.

⁴⁴ Gastón Ares et al., "Development of Food Literacy in Children and Adolescents: Implications for the Design of Strategies to Promote Healthier and More Sustainable Diets," *Nutrition Reviews* 82, no. 4 (2024): 536–52.

⁴⁵ Wilkins et al., "Maternal Nutrition and Its Intergenerational Links to Non-Communicable Disease Metabolic Risk Factors: A Systematic Review and Narrative Synthesis."

⁴⁶ Eric Riedel, "The Impact of High School Community Service Programs on Students' Feelings of Civic Obligation," *American Politics Research* 30, no. 5 (2002): 499–527.

⁴⁷ Natasha J Cabrera, Brenda L Volling, and Rachel Barr, "Fathers Are Parents, Too! Widening the Lens on Parenting for Children's Development," *Child Development Perspectives* 12, no. 3 (2018): 152–57.

⁴⁸ Ares et al., "Development of Food Literacy in Children and Adolescents: Implications for the Design of Strategies to Promote Healthier and More Sustainable Diets."

⁴⁹ UNICEF and UNICEF, "Conceptual Framework on the Determinants of Maternal and Child Nutrition," *A Framework for the Prevention of Malnutrition in All Its Forms*, 2020.

fundamental elements - access to food, proper care of mothers and children, and a healthy environment with access to healthcare services - influence the key factors contributing to child malnutrition. Ultimately, the essential factors - the possible assets available to a country or society and a range of political, cultural, and social aspects that affect their utilization - play a role in the foundational determinants. Food security is achieved when a family has sufficient access to food for a healthy and active lifestyle.

METHODOLOGY

Research Design

This study employs a case study design to explore the lived experiences and perceptions of expectant mothers regarding the integration of food-based dietary guidelines (FBDGs) into their daily routines. The case study approach allows for an in-depth examination of a small number of cases within their real-life context, providing rich, detailed insights into complex phenomena.

Data Collection and Analysis

Data were collected through semi-structured in-depth interviews with purposively selected mothers from the OR Tambo Inland District, KSD Local Municipality, Mthatha. The interviews, conducted in isiXhosa, focused on six major questions to gather detailed information on the participants' experiences and perceptions. The data was analyzed using thematic analysis to identify key themes and patterns, revealing common perceptions, barriers, and strategies related to the integration of FBDGs.

Ethical Considerations

Ethical approval was obtained from the relevant institutional review board. Participants were informed about the study's purpose, procedures, and their rights, including the right to withdraw at any time. Informed consent was obtained from all participants, ensuring confidentiality and anonymity. The study adhered to ethical guidelines to protect the participants' well-being and privacy.

PRESENTATION OF FINDINGS AND DISCUSSIONS

The objective of this study was to explore the lived experiences and perceptions of expectant mothers regarding the integration of food-based dietary guidelines into their daily routines to mitigate the risk of NCDs for themselves and their children. The themes that emerged from data analysis were: "Limited general health knowledge" and "parents' ignorance."

Theme 1: Limited general health knowledge

One of the findings of this paper was the parents' limited knowledge about general health issues. Schruff-Lim has stated that FBDGs aim to ensure adequate diets that meet all dietary needs while preventing deficiencies and non-communicable diseases.⁵⁰ Nevertheless, most of the participants in the study professed to have little knowledge of the SA FBDGs. Some participants indicated that they do not have sufficient knowledge about food-dietary guidelines.

"I am unsure of what food-based dietary guidelines are. Is this the triangular food diagram? "Oh, you're referring to the four essential food groups."

"I need to find the official guidelines from the SAFBDGs, which I think are linked to the wealthy demographic." (Participant J)

"If it tells me what to eat, I will rather not know because it will not bring that food to my plate. We eat what is available, and if there is no food, I tell the kids that there is no food, I can't do otherwise." (Participant B)

I think I heard about FBDGs by the time I was schooling; I didn't know that it would follow me as old as I am. However, I always have stiff pap in the pot; whoever feels hungry dish for himself and eat." (Participant F)

⁵⁰ Eva-Maria Schruff-Lim, "1. Front-of-Pack Nutrition Labels Are Necessary, yet Insufficient.(This Thesis)," n.d.

Most participants who provided knowledgeable answers about nutrition acknowledged being unfamiliar with the FBDGs and did not recognize their relevance to the SA FBDGs. FAO stated that disseminating information through FBDGs makes sense because consumers are more interested in food rather than nutrition. The participants mistakenly mixed the Food Guide Pyramid and Food Groups with SAFBDGs. The replies suggest that the local community has limited knowledge about SAFBDG publications and procedures. Consumer scientists, nutritionists, dietitians, and other professionals are tasked with utilizing SA FBDGs in nutrition education for diverse populations. Nevertheless, it is the responsibility of the Department of Health, in collaboration with the Department of Education, to guarantee the promotion and monitoring of this technology within the fields of medical and applied sciences.

Most of the participants had a "neutral" stance regarding unhealthy conditions of being overweight. In this case, the presence of this factor suggests that there might still be a deficiency in the overall understanding of the factors that play a role in a healthy lifestyle, leading to uncertainty when addressing related statements.

"Food is food, be it good or bad. It fills the stomach, and that is what we want for us to get fat and not be associated with HIV." (Participant H)

They mentioned that they eat food that fills the stomach so that they get fat and not be associated with HIV. The majority of individuals in this study were unaware of the negative health implications of being overweight. One possible explanation is that society views overweight women as more attractive, leading to a connection between fitness and HIV/AIDS status. According to Agyemang et.al., in African society, being overweight is linked to beauty, joy, wealth, good health, and a lack of HIV/AIDS.⁵¹

There is no connection between following a healthy diet and the views shared in the earlier comments. Participants believe that a better explanation of healthy eating includes foods they like, such as white bread with sausage, queen cakes, and Stoney ginger cold drink. Their perception of good nutrition differs from that of Rana, who suggests that consumption of added sugars in food and beverages should be restricted.⁵² These items include candy, sweet sodas, and fruit beverages. These foods are high in calories but low in essential nutrients, leading to excessive energy intake and nutritional gaps. Nyarko et al. think that this contributes to poor child development and decreased learning ability in the long run.⁵³ Furthermore, the physiological impact of malnutrition persist into adolescence and adulthood, increasing susceptibility to central obesity, insulin resistance, and the associated metabolic changes that may eventually result in NCDs such as type 2 diabetes, hypertension, and dyslipidaemia.⁵⁴ The increased availability of low-cost energy from sugary and fatty meals increases the risk of becoming overweight, obese, or developing NCDs.

If that is the case, it appears doubtful that the participants could achieve the goals outlined in the guidelines. Several people involved in the study noted deficiencies in their understanding of nutrition because they were unsure about the accuracy of the information regarding healthier food choices.

Theme 2: Parents' Ignorance

This theme revealed that parents are informed of unhealthy food choices and lifestyles. Participants' responses indicated that although some were more informed about healthier food choices and could differentiate between what was beneficial and harmful to their health, they still utilized unhealthy food. This statement reflects what Participant B acknowledges as the nutritional benefits of a healthier option (brown bread) but still prefers a less healthy alternative (white bread). This participant demonstrates a level of nutritional knowledge, particularly understanding the health benefits of whole grains in foods

⁵¹ Charles Agyemang et al., "Obesity in Africa: A Silent Public Health Crisis," in *Metabolic Syndrome: A Comprehensive Textbook* (Springer, 2024), 47–64.

⁵² Ziaul H Rana et al., "Why Don't College Freshmen Meet the US Dietary Guidelines for Added Sugar, Refined Grains, Sodium, and Saturated Fat?," *Journal of American College Health* 72, no. 1 (2024): 142–52.

⁵³ Marian Joyce Nyarko, Wilma ten Ham-Baloyi, and Dalena R M van Rooyen, "Qualitative Exploration of Health Professionals' Perceptions of Addressing Malnutrition Within the First 1,000 Days," *Journal of Nutrition Education and Behavior*, 2024.

⁵⁴ Ashraf Soliman et al., "Early and Long-Term Consequences of Nutritional Stunting: From Childhood to Adulthood," *Acta Bio Medica: Atenei Parmensis* 92, no. 1 (2021).

like brown bread. This showcases an awareness of the impact of dietary choices on health. Dietary fibre (DF) is widely accepted as an essential component of a healthy and balanced diet, with recommended consumption amounts determined by global dietary recommendations.⁵⁵ Increased dietary fibre consumption from staple foods is an important technique to enhance consumer health.

“Despite brown bread being healthier, I still choose to consume white bread.” (Participant B)

"Ensure starchy foods are included in most meals" is one of the South African Food-Based Dietary Guidelines. This guideline aims to promote the consumption of adequate dietary carbohydrates from minimally processed, traditional, and Indigenous foods high in starch, such as whole grains, cereal products, legumes, and certain root vegetables, for example, potatoes and sweet potatoes.⁵⁶ However, a diet that lacks variety and regularly consists of the same foods is more likely to be deficient in certain nutrients. This can lead to food insecurity and subsequently result in malnutrition. Moreover, the capacity of mothers to adhere to healthy eating practices was impeded by economic constraints in food selection. Reflecting on the feedback from participants, it is evident that a balanced diet is consumed only during special occasions rather than as part of their regular home diet.

“If we don’t eat starch, how can we survive? Izishebo like vegetables ziduru, I can’t afford them. We usually eat them at wedding ceremonies and other joyous occasions. Samp potatoes and homemade fatty gravy-like soup are the best for my kids; they like that meal.” (Participant I)

However, most participants demonstrated knowledge about healthy eating based on their various responses. These include promoting a well-rounded diet, eating more fruits and vegetables, drinking more water), and cutting back on sugary foods. According to a few people interviewed, "baking and grilling" are examples of healthy cooking techniques—the following statements detail how the participants discussed the concept of "healthy eating" from their perspectives.

“Eating lots of vitamins and fewer sweets; Enjoying nutritious food and maintaining a balanced diet for a healthy body; Choosing foods like vegetables, fruits, and water that I enjoy. To eat properly cooked food. Foods that are baked, grilled, or steamed with lower fat content are also considered part of a healthy diet. Water is preferred than any other drink” (Participant C)

The data shows that few participants demonstrate a good understanding of healthy eating by mentioning eating enough fruits and vegetables, drinking more water, eating a balanced diet, cutting back on sugary foods, and using healthy cooking techniques such as boiling, grilling, and steaming. The individuals in this study align with the conclusions drawn by Muindi, who suggests that various cooking methods, including boiling, steaming, frying, and baking, significantly impact the nutritional value of food.⁵⁷ For instance, boiling is often considered a healthier cooking technique because it helps preserve the vitamins and minerals in the food by subjecting it to low levels of heat. Embracing healthy eating practices can play a crucial role in disease prevention by reducing the risk of nutritional deficiencies, obesity, and the onset of non-communicable diseases like specific cancers and metabolic disorders.⁵⁸

As much as some of the participants agreed with the positive statements, others held a contrasting opinion. Educating people with differing views about the risks of eating high-calorie foods that lack vital nutrients might be advisable.

DISCUSSION SUMMARY

Using the FBDGs to assess mothers' knowledge of nutrition, it was observed that they often did not adhere to the recommendations while cooking. However, they demonstrated an understanding of how to prepare nutritious meals for their families and children. Participants' responses to various questions revealed their perspectives on the benefits of consuming sufficient vitamins, reducing sugar intake, and

⁵⁵ Rebecca Sempio et al., “Closing the Fibre Gap—The Impact of Combination of Soluble and Insoluble Dietary Fibre on Bread Quality and Health Benefits,” *Foods* 13, no. 13 (2024): 1980.

⁵⁶ Hester H Vorster, “‘Make Starchy Foods Part of Most Meals’: A Food-Based Dietary Guideline for South Africa,” *South African Journal of Clinical Nutrition* 26 (2013): S28–35.

⁵⁷ Elizabeth Nduge Muindi, Jonathan M Mwanja, and Joseph Metet, “Influence of Collaboration as a Conflict Management Style on Academic Performance in Secondary Schools in Makueni Sub-County, Makueni County, Kenya,” 2017.

⁵⁸ Lisa Newson and Julie Abayomi, “Reframing Interventions for Optimal Child Nutrition and Childhood Obesity: The Importance of Considering Psychological Factors,” *Proceedings of the Nutrition Society*, 2024, 1–31.

maintaining a balanced diet for overall health. The study showed that various factors influence individuals' dietary choices, leading to knowledge gaps in nutrition. Some participants were uncertain about the accuracy of information regarding healthier food options. According to Daly et.al., choosing food is intricate and influenced by interconnected factors, including the food's characteristics, the attributes of decision-makers, and the surrounding social and economic environment.⁵⁹ In South Africa, low economic status impedes adherence to dietary guidelines.

RECOMMENDATIONS

Based on the findings and discussion the following recommendations are made. The Department of Health and the Department of Education must continue collaborative efforts to raise awareness about the significance of Food-Based Dietary Guidelines for children's health. This collaboration will enrich and empower communities to adopt optimal nutrition practices. Furthermore, the Department of Education should consider introducing nutrition education at Early Childhood Development Centres before primary school, as elementary school is an ideal starting point for nutrition education.

CONCLUSION

This study has underscored the critical role of reinforcing mothers' nutritional knowledge to combat the spread of NCDs through integrating FBDGs. The findings reveal a significant gap in awareness and understanding of the South African Food-Based Dietary Guidelines among mothers in the OR Tambo Inland District, highlighting the need for targeted educational interventions. Enhancing nutritional education, particularly starting at the primary school level and involving Early Childhood Development Centres, has the potential to significantly reduce the prevalence of NCDs.

The study suggests that collaboration between the Department of Education and health and nutrition experts is essential to develop and implement effective, culturally sensitive dietary programs. These programs should aim to increase nutrition knowledge, thereby empowering mothers to make informed decisions about their families' diets. Such initiatives can lead to improved health outcomes, reducing the risk of chronic diseases and enhancing overall well-being for mothers and their children.

In conclusion, addressing the nutritional knowledge gap among mothers is vital to mitigating the risk of NCDs. By prioritizing educational interventions and ensuring that mothers are well-informed about FBDGs, stakeholders can foster healthier eating habits and contribute to future generations' long-term health and development.

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⁵⁹ Aisling N Daly, John M Kearney, and Elizabeth J O'Sullivan, "The Underlying Role of Food Guilt in Adolescent Food Choice: A Potential Conceptual Model for Adolescent Food Choice Negotiations under Circumstances of Conscious Internal Conflict," *Appetite* 192 (2024): 107094.

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