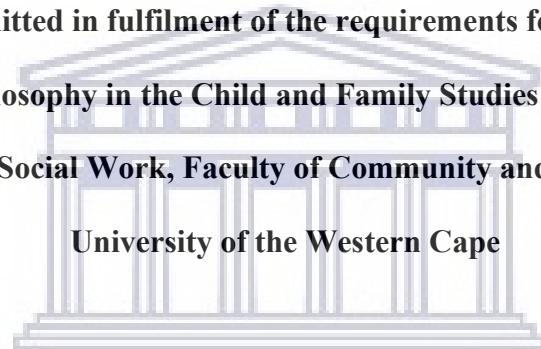


**THE DEVELOPMENT OF A NUTRITION EDUCATION  
PROGRAMME FOR PARENTAL FEEDING STYLES AND  
PRACTICES**

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**A thesis submitted in fulfilment of the requirements for the degree of  
Doctor Philosophy in the Child and Family Studies Programme,  
Department of Social Work, Faculty of Community and Health Sciences,  
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## KEYWORDS

Nutritional knowledge

Parenting styles

Parenting feeding practice

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Intervention mapping

Mixed methods

Narrative review

Focus group

Programme development



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# ABSTRACT

## Introduction

Many low- and middle-income countries are faced with a rise in the double burden of malnutrition - undernutrition and overweight/obesity. Nutrition-related factors contribute to approximately 45% of deaths in children under five years (mainly due to undernutrition) globally, while low- and middle-income countries are simultaneously witnessing a rise in childhood overweight and obesity. In 2016, an estimated 41 million children under the age of five in low- and middle-income countries were overweight or obese, while 155 million were chronically undernourished. In Africa alone, the estimated prevalence of overweight and obese children in 2010 was 8.5%, expected to reach 12.7% in 2020. In comparison, globally, one in nine people are either hungry or undernourished, while one in three people are overweight.

There are several drivers at play in creating the double burden of malnutrition we are now experiencing: behavioural, environmental, biological and sociodemographic. Obesity studies indicate that children of obese parents are more likely to be overweight themselves, showing that obesity in children aged 3-15 years often relates to familial and environmental factors, including incorrect eating habits. Parental feeding practices, styles, and nutritional knowledge can therefore influence the child's eating patterns and overall health and wellbeing.

## Aim

The overall aim of the study was to develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to improve their children's nutritional status.

## Method

The study employed a mixed methodological sequential exploratory design in two phases. Phase 1 consisted of three stages: (i) quantitative methodology with a cross sectional research design, (ii) a narrative review, and (iii) a qualitative design. Phase 2 consisted of the development of the nutritional education programme using the consensus workshop approach. In phase 1, stage 1 quantitative data was collected using a self – reported online questionnaire completed by primary caregivers. This questionnaire consisted of five sections: demographic information, Parents as Social Context Questionnaire (PSCQ), the Emotional Related Parenting Styles scale (ERPS), the Comprehensive Child Feeding Practice Questionnaire (CCFPQ) and the General Nutritional Knowledge Questionnaire (GNKQ). Four online Facebook groups were purposefully selected and sent an invitation with the questionnaire link. The data was analyzed using the Statistical Package of Social Sciences V22 (SPSS) for descriptive and inferential statistics (correlations and multivariate analysis of variance). The narrative review (phase 1 stage 2) made use of the RE-AIM framework to disseminate results to allow for cross-comparison of core components inherent in health promotion interventions. The RE-AIM framework was used as it facilitates the development, delivery and evaluation of health interventions. Qualitative data for the study (phase 1, stage 3) was collected through in-depth face-to-face interviews with parents or caregivers of under and overweight children in a resource constrained community in Cape Town, South Africa. A thematic analysis was carried out on the transcribed interviews to identify patterns or themes, with the findings sorted according to their themes. Phase 2 of the study followed the consensus workshop approach with experts and primary caregivers providing inputs into the development of the programme.

## Results

The quantitative questionnaire to determine the feeding styles, feeding practices and nutritional knowledge of primary caregivers was completed by 102 primary caregivers. The results suggested that, in general, parents were inclined to encourage balance and variety in the food intake of their children, they modelled healthy eating behaviour, and monitored the food intake of their children, while restricting unhealthy foods. It also suggested that parental acceptance in emotional focused parenting significantly predicted teaching in feeding style.

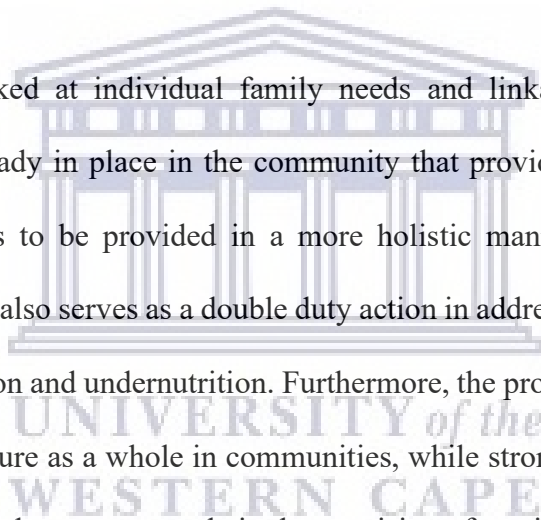
In the narrative review, 8,220 articles on nutrition interventions were screened, with only four selected. The four selected studies were the only ones that discussed nutrition interventions with clear aims and purposes, as well as meeting all other selection criteria. The narrative review also revealed that there was limited research on nutrition interventions within the South African context.

In Phase 1, the perceptions of primary caregivers on the role of fathers in the provision of nutritional care was explored. The findings showed that mothers and grandmothers shoulder the responsibility of nutritional and emotional support to the children and family, with many fathers being absent from the home and not providing any financial support. Primary caregivers provided insight into the challenges of providing a healthy diet in a resource constrained environment. The findings of this study showed that primary caregivers in resource-constrained environments want nutritional knowledge support and training on how to cook and feed the family on a budget in order for them to be able to provide optimum nutrition to their families, despite resource limitations. Phase 2 of the study was a consensus workshop conducted to develop the nutritional knowledge programme with inputs from both primary caregivers and nutritional and medical experts.

## **Conclusion**

The thesis aimed to develop an educational nutritional programme for primary caregivers. The programme was developed with inputs from both primary caregivers and health experts. It was designed as a 7-week face-to-face facilitated course aimed at: increasing nutritional knowledge; food preparation knowledge; and exploring best practices for parental feeding styles and practices, and the provision of a balanced diet in a resource constrained environment for the whole family. It also aimed to support primary caregivers in their own personal growth by allowing them to understand what their feeding styles and practices are and if needed how best to positively change them.

The programme also looked at individual family needs and linkages to community service organizations that are already in place in the community that provide social support. This is to assist in enabling services to be provided in a more holistic manner, rather than in a siloed approach. The programme also serves as a double duty action in addressing malnutrition as it aims to address both overnutrition and undernutrition. Furthermore, the programme also raises the need to look at the family structure as a whole in communities, while strongly identifying the need for fathers or father figures to play a greater role in the provision of nutritional care.



## DECLARATION

I hereby declare that the present work entitled, *The development of a nutrition education programme for parental feeding styles and practices*, is my own work. It has not been submitted for any degree or examination at any other university. All sources used or quoted in this thesis have been indicated and acknowledged as complete references.

Name: Melissa Brown

Date: 28 October 2020



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Signature:



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*This thesis is dedicated to my Grandparents*



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# CHAPTER ONE

## INTRODUCTION

### 1.1. Background and Rationale

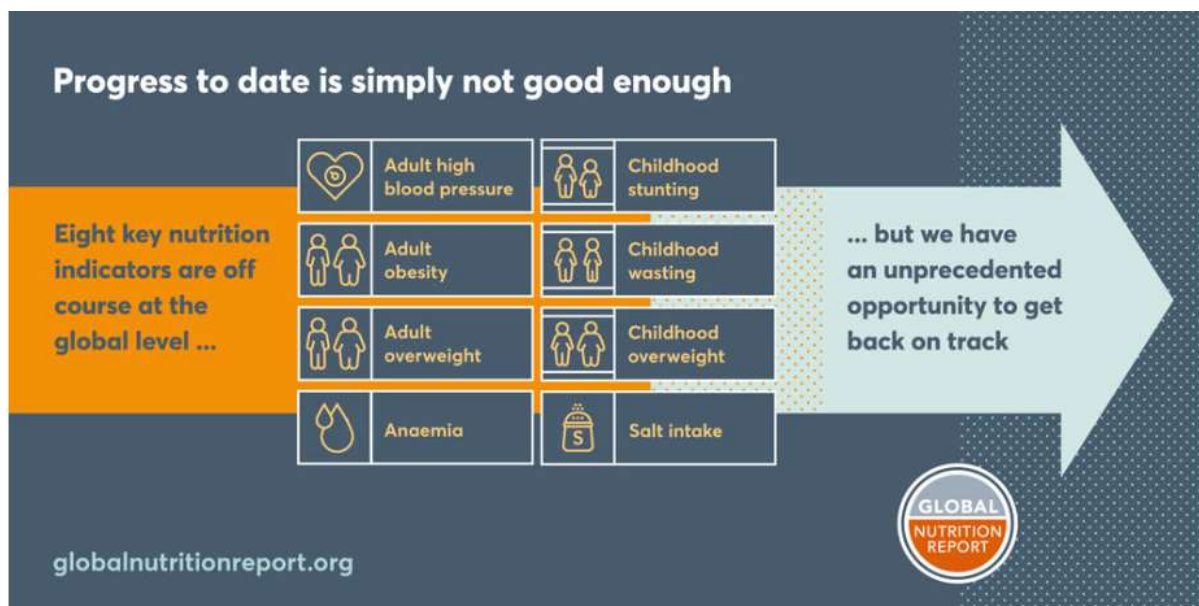
Globally nutrition related factors contribute to as much as 45% of the deaths of children under 5 years, while simultaneously, low-and-middle income countries are seeing a rise in childhood overweight and obesity (WHO, 2017). These confounding forms of malnutrition are known as the double burden of malnutrition - undernutrition (including wasting, stunting and deficiencies in important micronutrients) along with overweight, obesity or diet-related non-communicable diseases (NCDs) (UNICEF, 2017). In 2017, an estimated 38.3 million children under the age of five were classified as being overweight, while as many as 150.8 million and 50.5 million children under the age of five were classified as stunted and wasted respectively (UNICEF, 2018). From 2000-2016, the proportion of overweight children (5-19 years old) rose from 1 in 10 to almost 1 in 5 (WHO, 2017). De Onis et al., (2010) estimated the prevalence of overweight and obese preschool children in Africa in 2010 was 8.5% and is expected to reach 12.7% in 2020. Overweight and obesity in children is measured using Body Mass Index (BMI)-for-age percentiles (WHO, 2017). Obesity in adults is measured worldwide by an increase in Body Mass Index (BMI) greater than 25 (Razak et al., 2007). A BMI score > 25 is overweight while a BMI score > 30 is obese and > 35 is classified as morbidly obese (Razak et al., 2007).

The World Health Organization (WHO) (2016) has reported that as many as 2 billion adults are overweight, with 650 million of them considered obese (BMI  $\geq 30$  kg/m<sup>2</sup>) (WHO, 2018). That equates to 39% of men and 40% of women of adults aged 18 or over who were overweight, with 13% obese (WHO, 2018). It is well acknowledged that poor diet and obesity are major contributory factors to NCDs, such as Coronary Heart Disease (CHD), certain types of cancer and Type II

Diabetes (Johnson et al., 2012). Even though obese individuals have a high daily caloric intake, they may also have high rates of micronutrient deficiencies (Via, 2012). These micronutrients are cofactors in the glucose metabolic pathways, pancreatic beta cell function, and in the insulin signaling cascade, suggesting that a deficiency of micronutrients may play a role in the onset of type 2 diabetes (Via, 2012).

Obesity is often defined as a complex condition with many serious social and psychological elements that affects all age and socio-economic groups and is affecting both developed and developing countries (WHO, 2003, para.2). As overweight and obesity gain more worldwide attention, they represent not just a medical problem, but emotional issues play an important role as well (Kroller & Warschburger, 2008). Obesity in children is a leading cause of many health-related conditions such as diabetes, joint disorders, difficulty breathing, and heart disease (WHO, 2003). Being overweight affects the activity level of children. They tend to lead a sedentary lifestyle because of being overweight, and because lack of motivation to exercise because of being overweight (Kroller & Warschburger, 2008). It is widely accepted that being overweight and obese is a costly health care problem. However, new data suggests that being undernourishment is even more expensive, with the Global Nutrition Report estimating that malnutrition (undernutrition) costs \$3.5 trillion per year (Development Initiatives, 2018). This is much higher in comparison to the authors' estimates on obesity, which costs \$500 billion annually (Development Initiatives, 2018). The global nutrition report outlined that most countries have at least two issues related to malnutrition, with the most prevalent issues being children who are overweight, anemic or suffering from stunted growth. Per the global nutrition report, a total of eight key nutrition indicators globally are not progressing well enough, as indicated in figure 1.1 below.





**Figure 1.1. Key Nutrition Indicator Progress (Development Initiatives, 2018)**

The WHO has emphasized the need for “monitoring the prevalence of overweight and obesity in different populations” (Toriola et al., 2012). Policy makers are realizing the need to spring into action and take greater steps to address both obesity and malnutrition as it has major economic consequences (Bhutta, 2017). This needs to be done through what is called double duty actions for malnutrition which include interventions, programmes, and policies that have the potential to positively impact the burden of both undernutrition (including wasting, stunting and micronutrient deficiency or insufficiency) and overweight, obesity or diet-related NCDs (including type 2 diabetes, cardiovascular disease and some cancers) (WHO, 2017).

South Africa presents an interesting dynamic in that it is ranked as the one of the most food secure countries in Africa and 48<sup>th</sup> of 133 countries worldwide according to the 2018 Global Food Security Index (FSI, 2018). However, at least a quarter of South African children suffer from stunting (Sanders et al., 2019). Stunting arises from prolonged undernutrition. Undernutrition is influenced by poor living conditions and a high prevalence of infectious diseases. Rural communities have always been associated with food poverty, however recently, urbanization has

resulted in a marked shift in poverty from rural to urban areas in the country (Tydeman-Edwards et al., 2018).

NCDs often coexist with poverty-related infectious diseases and malnutrition (undernutrition) (Tydeman-Edwards et al., 2018). It has been noticed that a major shift is taking place from traditional diets towards a more westernized diet, which is classified as nutritional transition (Tydeman-Edwards et al., 2018). Although lower in variety, traditional diets tend to be higher in fibre and lower in fat, sugar, and salt, resulting in a low prevalence of NCDs, whereas the Western diet is identified as the cause of an “increased risk for developing NCDs” due to the higher sugar and fat and lower fibre content (Tydeman-Edwards et al., 2018).

A current trend emerging is that of overweight and stunting coexisting in countries such as rural Mexico, Peru, Russia, Brazil, South Africa and China (Atsu et al., 2017). The concurrency of overweight and stunting has been shown to be influenced by “socioeconomic, demographic, parental education, and environmental factors” (Atsu et al., 2017, p 177). South Africa’s socioeconomic transformation, with increasing urbanization, is accompanied with negative lifestyle habits which promote sedentariness and patronage of fast-food restaurants (Toriola et al., 2012). These factors serve to increase rates of overnutrition and obesity.

It has been documented that overweight children are more likely to have overweight parents (Cutting et al., 1999; Dehghan et al., 2005; Vollmer, 2019). This association reflects both the “genetic and environmental influences” that parents have on their children (Benton, 2004, p.858). Parents encourage physical activity in the household due to their own likes and dislikes of physical activity and in this way shape their children’s level of physical activity, or sedentary behaviours (Institute of Medicine (US) Committee, 2005). This, in combination with dietary practices, ultimately shapes children’s weight status (Institute of Medicine (US) Committee, 2005). There are many influences on parents’ knowledge of nutrition - their influence over food selection, meal

structure, and home eating patterns; their modeling of healthful eating practices; their levels of physical activity; and their modeling of sedentary habits including television viewing, are all influential in their children's development of lifelong habits that contribute to overweight and obesity (Institute of Medicine (US) Committee, 2005). Increased "mealtime pressure" and maternal controlling feeding practices (pressing a child to eat, restricting intake of certain foods), has been observed in parents with a higher BMI (Haycraft & Blissett, 2008), and linked to childhood overweight or obesity because of the effect to hinder children's ability to develop adequate self-regulatory eating practices (Faith et al., 2004). These eating patterns would normally be driven by natural hunger and or satiety cues (Bergmeier et al., 2005).

The preschool years/young child (from the age of three) have been shown to be a critical period for the development of life-long eating habits; this is the time when mothers, who are usually the primary caregivers, are involved in socializing their children's attitudes toward food and eating (Bergmeier et al., 2005 & Haycraft & Blissett, 2008). A worthwhile goal for primary caregivers is teaching children to make healthy choices in the food they select as this one goal will affect their lives through adulthood (Yardimici et al., 2015).

Three reasons for involving parents in obesity-prevention interventions have been highlighted by the Institute of (US) Medicine (2005, p.235); "(1) obesity runs in families, and it may be unrealistic to intervene with one member of a family while other family members are modeling and supporting behaviours that run counter to the intervention's goals", (2) "parents serve as models and reinforce and support the acquisition and maintenance of eating and exercise behaviours", (3) "to produce maximal behaviour change in children, it may be necessary to teach parents to use specific behaviour-change strategies such as positive reinforcement".

Parents have been found to influence their children's dietary behaviour through many connected direct behaviours such as food parenting practices, or through indirect behaviours like feeding

styles. Food parenting practices, also referred to as feeding practices, are “behaviours that parents employ with the aim of influencing their children's eating behaviours or intake” (Baranowski et al., 2013). Examples of such parental behaviour can be when, “a parent bribes his or her child to eat broccoli by rewarding that child with dessert, or pressure his or her child to eat all of the food on a plate even if the child expresses fullness” (Vollmer, 2019, p.2). Feeding styles are not goal-oriented behaviours, and there are four categories of styles as stated by Vollmer, (2019, p.2): “authoritative (high demands on child's eating, high responsiveness to child's wants/needs)”, “authoritarian (high demands on child's eating, low responsiveness to child's wants/needs)”, “indulgent (low demands on child's eating, high responsiveness to child's wants/needs)”, and “uninvolved (low demands on child's eating, low responsiveness to child's wants/needs)”. If a feeding style is not goal-orientated, a child can dictate what and when he or she eats, and this can be “viewed as a noncoercive, child responsive food parenting practice” (Vaughn et al., 2016, p. 99). Many have viewed using food as a reward as being a “coercive food parenting practice” that causes the child to place more intent on the reward food, thereby increasing the liking of the reward food, and in this way increasing the intake of “energy-dense snacks ” (Vaughn et al., 2016, p.99). Food parenting practices are conceptually different from parental feeding styles, “although they are often incorrectly used or interchangeably used in the literature” (Vollmer & Mobley, 2013, p.232). Parents' feeding styles are one way of influencing children’s eating (Zarychta et al., 2019). There are both direct (demands or restrictions) and indirect (e.g. modelling and monitoring) feeding styles. However, in order to select a healthy diet for their children, Zarychta et al., (2019) states that parents must strive towards the ability to “ignore the advertiser’s blandishments and the immediate appeal to the palate, therefore drawing on a complete technical and scientific knowledge – base concerning nutrients, food and health”. Parents therefore need to have within their knowledge base the minimal “nutritional requirements and recommendations” for their children, and as such be able to apply those to the food products which they consider buying

(Parmenter et al., 2000, p163). Tabak et al., (2017, p.52) states that the “use of feeding practices seems to be dependent of the education and economic background of parents” while there being evidence of “more frequent use of strategies to control the child’s food intake in households with higher socio-economic status” (Scaglioni et al., 2018). Given the adverse health, psychosocial and economic consequences of overweight and obesity, developing strategies to prevent overweight and obesity among children should be a priority (Toriola et al., 2012). Anything that hinders the optimum nutritional state of individuals will negatively impact the health, life-expectancy, work and agricultural productivity and economic development of any population (Schonfeldt et al, 2013).

The purpose of the current study was therefore to develop a nutrition education programme to enhance primary caregivers’ current nutritional knowledge. It is not aimed at a specific age group of children, but to equip primary caregivers with nutritional knowledge and strengthen concepts that they may be already familiar with, or that they have not been exposed to, to help improve their children’s nutritional status through the understanding of their feeding styles and practices.

## **1.2 Problem Statement**

Nutrition in childhood plays a vital role in the life cycle, and correct food choices, among other interventions, could ensure that their nutritional needs are met. It is becoming evident that there needs to be more innovative ways of engaging the population in order to assist them with deciding to choose a healthier lifestyle (Lakshman et al., 2010). Establishing healthy eating habits with increased physical activity in young children is one way that may prevent various chronic health disorders during childhood and adult life, including “obesity, diabetes, hypertension, cardiovascular disease, cancer, and dental caries” (Lakshman et al., 2010, p.1). In fact, obesity (BMI > 30kg/m<sup>2</sup>) has been recognized by the World health Organization (WHO) as a chronic disease (Logan & Pepper, 2010).

South Africa has not been spared in the rampant global increase in obesity (Logan & Pepper, 2010). Whilst knowledge about the genetic causes and etiology of obesity is growing, it is likely that changes in lifestyle, particularly the increase in consumption of energy dense, ultra-processed food, and the marked decline in physical activity are the major influences (Warren et al., 2003). Childhood overweight and obesity are also being linked to a variety of psychological issues (Sharma et al., 2013, p208). Some of the psychological issues are depression, low self-esteem, peer-rejection and stigmatization (Sharma et al., 2013).

Parents shape the development of children's food acceptance patterns by determining what foods are offered to children and by providing the social contexts in which children eat (Fisher & Birch, 1999). Lessons learned at mealtime may influence dietary patterns and weight status throughout the lifespan. Dickin & Seim, (2015, p. 898) states that there is a "shortage of data on the effectiveness of obesity prevention efforts targeting parents as the main risk factors for simple obesity" but rather that there is a link shown for it to be "familial and environmental conditions" that have an influence. With the latter in mind, this sets the tone for further expansion of parents' nutritional knowledge to influence children in making the best nutritional choices. However, there is a demand for an understanding of the developmental factors that impede the acceptance and consumption of healthy food (Johnson, 2016). The current gap exists due to a limited understanding of parents' ability to positively influence children's eating habits (Vaitkeviciute et al., 2015). The majority of research relating to overweight and obesity programmes focuses on programmes that show success by limiting the negative health effects of a sedentary lifestyle, however, even these programmes fail to provide long-term results to their short-term interventions (Vaitkeviciute et al., 2015). There is literature on the use of parent-focused interventions with a very strong obesity prevention slant, however, these are targeted at children under the age of five years (Benjamin Neelon, Taveras, Ostbye, & Gillman, 2014; Carper et al., 2000; Reilly et al., 2019).

Our premise is that there is a need to further expand primary caregivers' nutritional knowledge to influence children in making the best nutritional choices in order to prevent obesity. The current study therefore focuses on caregivers' primary understanding of nutrition and is not specific, or limited to, the age of their child/ren. It is acknowledged though, that there is a demand for an understanding of the developmental factors that impede the acceptance and consumption of healthy food across varying age groups of children (de Ridder et al., 2017).

This study focused on the development of a nutrition education programme to equip primary caregivers with nutritional knowledge to improve their children's nutritional status. Through this programme it aimed to enhance their current knowledge they may already have as primary caregivers and foster a deeper understanding and improvement of their current feeding styles and practices with their children.

### **1.3 Research Questions**

The following research questions were developed:

1. What are the feeding styles and practices of primary caregivers/parents in children older than three years old?
2. What is the knowledge of primary caregivers/parents regarding childhood nutrition?
3. What are the best practice and nutrition education programmes and models for primary caregivers/parents for improving their children's nutritional status?
4. What is needed to develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to possibly improve the nutrition status of their children?

## 1.4 Aim and Objectives of the Study

The overall aim of the study was to develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to improve their children's nutritional status.

The objectives of this study were designed using Intervention Mapping (IM) as a framework. IM traditionally has five phases (van Oostrom et al., 2007) and although it is structured, it is a non-linear process. This therefore allows one to go back to previous stages and incorporate any new insights that have been developed (Bartholomew, Parcel, & Kok, 1998). The five IM stages are, (1) a needs assessment, (2) identifying performance objectives, (3) methods and strategies, (4) programme development, (5) adoption and implementation, and evaluation. For the purposes of this study only four phases were used: a needs assessment, identifying performance objectives, methods and strategies and programme development. IM stage five, adoption and implementation, and evaluation were out of scope of the project and therefore not used.

The objectives of the study were therefore to:

1. Determine and explore the feeding styles and practices of primary caregivers/parents.
2. Determine the knowledge of primary caregivers/parents' regarding childhood nutrition, including sources of nutrients and diet–disease relationships.
3. Conduct a narrative review to identify best practice models and nutrition education programmes for primary caregivers/parents aimed at improving their children's nutritional status.
4. Develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to possibly improve the nutritional status of their children.



## 1.5 Dissemination of Findings

The present thesis was completed by publications, with five manuscripts having been submitted to peer-reviewed journals. One of the five have been published thus far. In other words, partial findings of the present study have been disseminated in the form of a manuscript. The other manuscripts were submitted for review but are not published yet. The papers for journal publication are presented in Chapters five to nine.

The publication reference is as follows:

Melissa Brown & Nicolette V. Roman (2019). Nutritional knowledge, parenting styles and feeding practices of a South African sample of parents. *Ecology of Food and Nutrition*, DOI: 10.1080/03670244.2019.1641800

The following manuscripts were submitted to the respective journals:

Article 2: M. Brown and N. Roman. Using the RE-AIM Framework to identify and describe nutritional feeding styles and intervention model best practices for primary caregivers in Africa: A narrative review. Submitted to *Sage Nutrition and Health*.

Article 3: M. Brown and N. Roman. Primary caregivers' perceptions of the role of fathers in the provision of nutritional care in a resource constrained environment in Cape Town, South Africa. Submitted to *African Journal of Food, Agriculture and Nutrition Development*.

Article 4: M. Brown and N. Roman. Primary caregivers' provision of a healthy diet in a resource constrained environment in South Africa. Submitted to *Ecology of Food and Nutrition*.

Article 5: M. Brown and N. Roman. The development of a nutritional education programme for primary caregivers using a consensus workshop approach. Submitted to *Sage Food and Nutrition Bulletin*

## **1.6 Thesis Structure**

The structure of the present thesis and the chapter titles are as follows: Chapter 1: Introduction, Chapter 2: Theoretical Framework, Chapter 3: Literature Review, Chapter 4: Methodology, Chapters 5 – 9: phases of research conducted, and Chapter 10: Discussion. Any manuscripts which are presented are based on the submission guidelines of the respective journals, which includes referencing styles. Therefore, this doctoral thesis incorporates a collection of a published journal article and manuscripts submitted for review, together with an introduction and summary of each article as part of the format required for a PhD by publication.

### **Chapter One: Introduction**

This chapter describes and explains the major concepts explored in the study. It highlights the need for the study interventions and provides a clear breakdown of the aims and objectives.

### **Chapter Two: Theoretical Framework**

This chapter outlines and discusses the theoretical framework: social learning theory and self-determination theory. The foundation for any effective programme is based on the utilisation of relevant theory. The effective use of theory allows people to make changes to their behaviour and to have control over environmental influences.

### **Chapter Three: Literature Review**

This chapter provides an extensive overview of the literature that was reviewed in the process of developing the programme and exploring the current trends in parents / primary caregivers' feeding styles, practices and nutritional knowledge.

### **Chapter Four: Methodology**

This chapter provides a description and rationale of the research design, methods and procedures used in relation to the aim and objectives of the study. Three study phases are described within the framework of the intervention mapping research design.

### **Chapter Five: Nutritional Knowledge, Parenting Styles and Feeding Practices of a South African Sample of Parents (Article 1: Ecology of Food and Nutrition)**

This chapter discusses the published manuscript of the above – titled article. It focuses on the first, second and fourth objective of the research study which is *to determine the feeding styles and practices of primary caregivers/parents; determine the knowledge of primary caregivers/parents on/about sources of nutrients and diet–disease relationships; and explore the feeding styles and practices, and nutritional knowledge of primary caregivers/parents.*

### **Chapter Six: Using the RE-AIM Framework to identify and describe nutritional feeding styles and intervention model best practices for primary caregivers in Africa: A Narrative Review. (Article 2: Sage Nutrition and Health Journal)**

A narrative review was done in order to approach the second objective of the present study. The narrative review processes, results, and discussion are presented in the draft manuscript currently under review for publication.

**Chapter Seven: Primary Caregivers' Perceptions of the Role of Fathers in the Provision of Nutritional Care in a Resource Constrained Environment in Cape Town, South Africa (Article 3: African Journal of Food, Agriculture and Nutrition Development)**

This article focuses on the development of the qualitative section of the study in relation to the father's role in the provision of nutritional care. It explores the role of fathers in a low socio-economic community and used in-depth interviews with primary caregivers as a method of data collection. The submission process of the manuscript is also briefly outlined.

**Chapter Eight: Primary Caregivers' Provision of a Healthy Diet in a Resource Constrained Environment in South Africa (Article 4: Ecology of Food and Nutrition)**

This article explores primary caregivers' understanding of the provision of a healthy diet. Data collection was done through in-depth interviews. The submission process of the manuscript is briefly outlined.

**Chapter Nine: The Development of a Nutritional Education Programme for Primary Caregivers using a Consensus Workshop Approach (Article 5: Sage Food and Nutrition Bulletin)**

The last objective of the study is addressed in the manuscript presented in Chapter 9. This chapter is divided into two sections. Section A looks at the focus group workshop conducted to design and develop the primary caregiver's nutritional knowledge programme. Section A was submitted to Sage Nutrition and Health. The journal selection process is described before the presentation of the manuscript. Section B focuses on the intersection of theory and the development of the programme, as well as providing detail on the programme focus during each face-to-face session.

## **Chapter 10: Discussion**

This final chapter covers the discussion summary, conclusions from the thesis, limitations, and recommendations. This chapter is outlined in terms of three notions. First, in answering the aims and objectives of the study, the main findings of Chapters 5–9 are summarized. Secondly the study's findings are discussed in relation to the contextual, practical and theoretical implications. Lastly, the significance of the study is presented, as well as putting forth the limitations and recommendations for future studies.



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# CHAPTER TWO

## THEORETICAL FRAMEWOEK

### 2.1 Introduction

This chapter examines the theories that are explored in the development of the nutrition education programme described in this thesis. The foundation for any effective programme is based on the use of relevant theory. The effective use of theory in a nutrition education programme allows people to make changes in their eating practices and to have control over environmental influences.

### 2.2 Theoretical Framework

Social learning theory and self-determination theories (SDT) are the two theories that underpin this study. Social learning theory views the course of human development based on children's socialization experiences and acquisition of self-regulation (Smelser & Baltes, 2018). Therefore, children's development of personality characteristics, such as dependency and aggression, as well as their skill in academics, sports, arts, or professions, are assumed to emerge from learning experiences embedded within the social milieu of their family, peers, gender, and culture (Smelser & Baltes, 2018; Zimmerman, 2001). Self-determination theory is a theory of motivation. It is concerned with supporting our natural or intrinsic tendencies to behave in effective and healthy ways (Deci & Ryan, 2000). In everyday life, parents, teachers, coaches, and managers struggle with how to motivate those that they mentor, and some individuals struggle to find energy, mobilize effort, and persist at the tasks of life and work. Using these two theories as a basis, the current study plays an important role in trying to understand the reasons behind nutritional choices, as well as if those choices are based on sound nutritional knowledge of parents and primary caregivers.

It is important to understand that people are often “stirred by external factors such as reward systems, grades, evaluations, or the opinions they worry that others might have of them” (Ryan & Deci, 2000, p.70). However, just as frequently “people are motivated from within, by interests, curiosity, care or abiding values” (Ryan & Deci, 2000, p.70). These intrinsic motivations may not always be seen as external rewards or be supported as such, but at times can sustain “passions, creativity, and efforts” (Ryan & Deci, 2000, p.71). The interplay between the external environment which acts on an individual and their internal motivation is the realm of SDT, which is “an organismic dialectical approach” (Centre for Self - Determination Theory, 2018, para 2). It starts with the basic assumption that individuals are dynamic in nature, who tend to be inclined to overcome challenges, allowing learning to take place from new experiences (Deci & Ryan, 1985; Ryan & Deci, 2000). These experiences are integrated into a “coherent sense of self”. At times these “developmental tendencies” do not just happen on their own but require continual “social nutriment and supports” (Ryan & Deci, 2000, p.71). That is, the social setting can either allow for full support or destroy a person’s inherent desire for real active engagement and the need for psychological development (Deci & Ryan, 1985; Ryan & Deci, 2000). The social setting can also be a perceived negative effect that includes behaviours that catalyse “a lack of integration, defence, and fulfilment of need-substitutes” (Ryan & Deci, 2000, p.71). It is this dialectic between the active organism and the social context that is the basis for SDT’s predictions about behaviour, experience, and development. Within SDT, “the nutriment for healthy development and functioning” are clearly outlined “using the concept of basic psychological needs for autonomy, competence, and relatedness” (Centre for Self - Determination Theory, 2018, para 3).

Social behaviour is shaped by imitating or modelling others’ behaviour. Individuals learn behaviours by observing those around them (Bandura, 1977, 1986), particularly those they are close to such as parents, siblings, or friends. This is pivotal for the current study and its evaluation

of parental dietary choices and their influences on children's dietary habits. Four requirements for learning have been identified - observation (environmental), retention (cognitive), reproduction (cognitive), and motivation (environmental and cognitive). For the current study all these requirements could be seen in through the parents' meal choices, the feeding environment structured by the parent (feeding styles and practices), as well as what factors motivate the child to eat the food they want or the food that is being provided to them. Research shows that "parenting programmes for school-aged children are typically based on behavioural principles" as they are "applied in social learning theory" (O'Connor et al., 2013, p.359). Social learning theory was chosen as it can be considered a bridge or a transition between behaviourist learning theories and cognitive learning theories. The focus being that social learning theory further explains human behaviour in terms of "continuous reciprocal interaction between cognitive, behavioural and environmental influences" (Omerad, 1999, p32).

### **2.3 Social Learning Theory**

Social learning theory (SLT) is increasingly being referenced as a pivotal component of "sustainable natural resource management and the promotion of desirable behavioural change" (Nabavi et al., 2012, p.5). SLT is based on the idea that we learn from our social interactions with others. Mostly we observe the "behaviours of others and develop similar behaviours" (Nabavi et al., 2012, p.5), which leads to the assimilation and imitation of that behaviour, especially if their observational experiences are positive ones or include rewards related to the observed behaviour (Nabavi et al., 2012, p.5). This imitation produces a re-enactment of observed motor activities. Boeree, (2006, para.3) when discussing reciprocal interaction work of Bandura (1977) stated that Bandura theorized that people learn through "observing others' behaviour, attitudes, and outcomes of those behaviours and explored behaviourism" with its emphasis on "experimental methods, focusing on observable variables, measurement, and manipulation". Bandura avoided whatever

was subjective, internal, and unavailable. He found that in the experimental method, the standard procedure was to manipulate one variable, and then measure its effects on another. This relates to a theory of personality, with the premise being that one's environment causes one's behaviour (Boeree, 2006). This however was too much of a simple avenue for Bandura and he took it a step further, suggesting that environment causes behaviour, but also that behaviour influences environment as well. He labelled the concept "reciprocal determinism; meaning that the world and a person's behaviour cause each other" (Boeree, 2006, para.3). Based on these general principles, "learning can occur without a change in behaviour" (Nabavi et al., 2012, p.8). In other words, it means a behaviourist would call it a "permanent change in behaviour"; while in contrast social learning theorists would say that "because people can learn through observation alone, their learning may not necessarily be shown in their performance" (Bandura, 1986; Nabavi, 2012, p.8). Bandura (1977) states: "Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behaviour is learned observationally through modelling: from observing others, one forms an idea of how new behaviours are performed, and on later occasions this coded information serves as a guide for action." When an individual observes others, an idea is formed of how new behaviours are performed, this information is then internalized, and on later occasions this coded information serves as a guide for action (Bandura, 1977). Nabavi et al., (2012, p.8) states that Bandura believed "aggression reinforced by family members was the most prominent source of behaviour modelling"; the effect being "that children use the same aggressive tactics that their parents illustrate when dealing with others".

### **2.3.1 Principles of Social Learning Theory**

There are three main principles that are focal to social learning theory as presented by Richard Culatta, (2018, para.4). They are:



1. “The highest level of observational learning is achieved by first organizing and rehearsing the modelled behaviour symbolically and then enacting it overtly. Coding modelled behaviour into words, labels, or images results in better retention than simply observing”.
2. “Individuals are more likely to adopt a modelled behaviour if it results in outcomes they value”.
3. “Individuals are more likely to adopt a modelled behaviour if the model is similar to the observer, has admired status, and the behaviour has functional value”.

In taking the above a step further, Bandura (1966) researched that humans can regulate their behaviour through a self-regulation process. This self-regulation process also involves three steps:

1. **Self-observation (self-motivation):** Self-observation requires that you focus your attention and closely monitor your own behaviour. This could be at a time when there is a need for motivation to change a behaviour. Both before and after any directed or focused behaviour change must be evaluated in order to monitor the progress made. Self-observation is necessary, although by itself, it is insufficient for sustained self-regulation. Self-regulation as a mechanism is pivotal in how it affects an individual’s ability to move from thought, to motivation, to the actual action that is taken. For example monitoring visits to the gym, personally tracking your sessions, and whether you ate healthily on those days: - this would allow you to know which days you were most active and why; whether you were with others on those days; and whether you motivated yourself or they motivated you? In the current study this self-regulation could be used parents who are trying to maintain a healthy, structured meal by recording what meals they prepared for the family or whether they bought take-out meals. These answers afford users the opportunity to address their motivation for the next day. (Bandura, 1986).

2. **Judgment:** Refers to comparing/self-judging one's performance with the specific set goal. Such comparisons inform goal progress and can exert motivational effects on future performance. A plan can be put in place, which has several goals that need to be reached in order to receive a reward (if there has been significant adherence to the determined goal plan). If there is non-adherence to the plan, self-punishment can take place. If deemed necessary, the agreed upon goals can be recorded and witnessed by someone else. (Bandura, 1986). In the current study self-judgement could be used by primary caregivers who want to eat healthy and prepare healthy meals for their family but are not able to as they are not sure what a nutritional meal entails. They can make use of a programme that tells them what to prepare, and helps them understand basic nutritional concepts, and how to cook meals on a restricted budget in a supported way. By following the programme they can judge if they are meeting the goal of creating the most nutritionally nurturing environment for the family.
3. **Self-response: in the form of a reward.** An example of rewarding oneself could be the purchasing of fitness attire or healthy snacks after reaching a set number of gym sessions with the desired body transformation goal being reached. This is also used by many medical aids by linking to fitness applications that allows them to monitor your exercise performance and reward you as their customer; either through discount healthy meal vouchers or them partnering with other shops to offer lifestyle discounts. In the current study an example of this was seen in parents who rewarded their children through the use of junk foods like potato chips, chocolates and fizzy drinks. The self-response can also be a negative one such as a punishment by the person on themselves for not achieving set standards or goals. In the fitness example, this could be an increased exercise time, or increased intensity of the exercise session (Bandura, 1986) for not meeting goals.

A clear example of the use of social learning theory as the foundation for a nutritional intervention programme for parents was conducted in a study in Cincinnati by Gribble et al., (2003). The programme was made up of 10 sessions of two hours long with “lessons consisting of one hour of instruction provided to children and parents devoted to enhancing knowledge about a fruit, skills necessary to incorporate the fruit in the diet, and techniques to enhance goal-directed behaviours” (Gribble et al., 2003, p.102). After the first hour, children needed to complete pen and paper activities to assist in memory recall of the ideas learnt in the first section of the structured class. Gribble et al., (2003, p.103) further outlined that “parents were taken into a separate room where they were given instruction on child-feeding strategies to enhance the fruit’s acceptance. The sessions included interactive discussions, case studies, brainstorming activities, and games”. Class topics focused on: 1) “exposure - increasing the availability of healthful foods; 2) monitoring - understanding that the children can self-regulate the amount of food they need each day; 3) restriction - learning how to present a variety of foods to children without restricting access to certain foods; 4) rewarding/punishing - understanding that using food as a reward or punishment can be counterproductive; and 5) encouragement - learning how to present food to a child in a non-pressurized manner without using verbal prompting” (Gribble et al., 2003, p.103). The results of the study showed a marked increase in the knowledge scores and fruit intake by children in the experimental vs the control group (Gribble et al., 2003). It also noted the decreased use of controlling child-feeding strategies by parents in the “intervention vs the control group” (Gribble et al., 2003, p.105). Parents were also more active role players in all set activities while also teaching their children “positive ways to present foods in order to promote food acceptance” (Gribble’s et al., 2003, p. 103). In contrast, school-based dietary intervention programmes often only minimally involve parents and in most cases “a newsletter is sent home to parents informing them of nutrition-related classroom activities” (Gribble et al., 2003).

This example demonstrates the importance of also looking at theory related to motivation in order to determine why people do the things they do. For this reason, SDT was also explored, as discussed in section 2.4 below.

### 2.3.2 Effective Modelling

There are a set of conditions that are necessary for effective modelling. These conditions include “attention, retention, reproduction, and motivation” (Orrell-Valente et al., 2007, p.38).

1. **In attention**, various factors increase or decrease the amount of attention paid, for example, primary caregivers who pressurize or demand a child to eat would use a tone that could be “perceived as brusque, rude and bullying” (Orrell-Valente et al., 2007, p.38). The behaviour of the feeder, often the primary caregiver, can be that of scolding, threatening and yelling at the child to eat, using phrases such as “When I say eat, you eat!” Alternatively, the feeder could try to rationalise to get the child to eat, but the choice still remains with the child. An example of this would be: “Want to try the beans? I made them the way you like them.” These all influence the attention paid by the child during the mealtime. Sensory capacities, arousal level, perceptual set and past reinforcement are characteristics which affect attention (Allen & Santrock, 1993). Sensory arousal can be brought about at the table by food preparation styles which caregivers use to attract the attention of children.
2. **Retention.** Good parenting, in its totality, is a means to reinforce good behaviour and to carry out the responsibilities of child upbringing in such a manner that the child is well prepared to explore his full potential as an individual (Vaughn et al., 2016). For example, guiding a child’s emotional development includes helping a child feel worthy and capable. Guiding a child’s social development includes teaching them how to socialize and how to interact with society, all of which helps them to do well at school (Allen & Santrock, 1993). Modelling has been shown to be a highly effective means of establishing abstract or rule-

governed behaviour (Bandura, 1986). Bandura (1986) further states that based on “modelled information, people acquire judgmental standards, linguistic rules, styles of inquiry, information-processing skills, and standards of self-evaluation”. For example, a simple verbal description of what the model (in the case of this study, the primary caregiver) performed would be a known as retention (Allen & Santrock, 1993). Retention includes “symbolic coding, mental images, cognitive organization, symbolic rehearsal and, motor rehearsal” (Theory, 2017).

3. **Reproducing** the attended and retained image includes physical capabilities and self-observation of reproduction. An example of motor reproduction would be a child learning to use chopsticks to eat. Once a behaviour is learned through “attention and retention”, they process the physical capabilities (Allen & Santrock, 1993, p.92).
4. **In motivation**, the individual has a good reason to imitate behaviour. Parent role modelling, with respect to nutrition, is often conceptualized as a parent's purposeful or intentional endeavour to demonstrate good food choices and eating patterns to encourage similar behaviours in the child. However, a parent may also be less deliberate and unintentional in these behaviours and their demonstration of healthy or unhealthy eating in front of the child (Vaughn et al., 2016). Parents’ eating behaviours strongly influence food acceptance and eating patterns of children (Vaughn et al., 2016). Food is seen as a holding of persuasive power and it controls the behaviour on which its “delivery or acquisition is dependent” (Scaglioni et al., 2018, p.706). However, a product of this is offering a reward, which can result in increased preference for the reward food and decreased inclination for the food that was initially promoted (Scaglioni et al., 2018). If we want to change families to be more motivated to eat differently even when they are presented with many food choices, a measure of self - motivation is needed (Cook & Artino Jr, 2016).

## 2.4 Self-determination Theory

SDT represents a broad framework for the study of human motivation and personality (Deci & Ryan, 2015). Humans have an “innate desire to be autonomous”, using their will (the capacity to choose how to satisfy needs) to interact with their environment, as well as the tendency to pursue activities they find inherently enjoyable (Cook & Artino Jr, 2016, p.998). It is believed that our greatest moments of creativity and highest levels of productive achievements occur when we are motivated by an internal interest in the process of task completion (Cook & Artino Jr, 2016).

SDT is defined as a framework for the study of human motivation and personality, with focus on how social and cultural factors influence a person’s psychological wellbeing (Ryan & Deci, 2000). To formulate a deeper understanding of the self, there needs to be an intensive study of personality and self-development. This suggests that individuals have a “natural, innate, and constructive tendency to develop a sense of self” (Lens, Vansteenkiste, & Matos, 2010). Self-determination theory provides the structure for understanding what motivates both parent and child to build intrinsic motivation to adopt certain behavioural patterns (Lens et al., 2010).

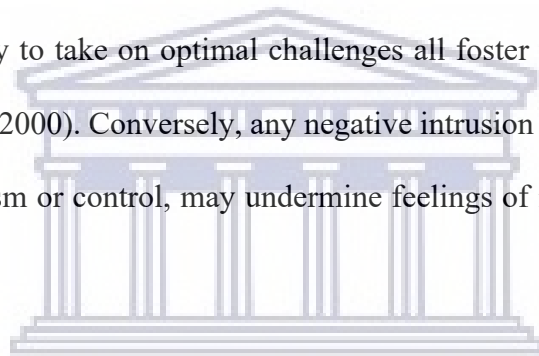
The Centre for Self-determination Theory, (2018, para.3) states that SDT “articulates a meta-theory for framing motivational studies”, therefore it is a “formal theory that defines intrinsic and varied extrinsic sources of motivation, and a description of the respective roles of intrinsic and types of extrinsic motivation in cognitive and social development and in individual differences”. SDT advocates that an individual needs the ability to make choices (Deci & Ryan, 1985). These choices allow the individual to determine his/her actions, which in turn develops into capabilities, and thus feelings of competence. The environment also plays an essential part in either promoting or obstructing the quality of a person’s functioning and therefore capabilities (Roman, 2008). SDT is seen as a theory of motivation, which means that it is “stimulated by drive and inspiration” however, more to the point, it is focused on “intrinsic goals positioned within individuals”

(Bartholomew et al., 1998, p.546; Deci & Ryan, 1985). This means that motivation is a self-determining component which allows for self-development as it promotes autonomous behaviours (Roman, 2008). These behaviours include “individual decisions, resolutions of conflict, independence and other skills development needed for adulthood” (Roman, 2008, p.42). Thus, decisions made, or actions taken by young adults are not highly influenced or controlled by others, such as parents, but instead are self-motivated. Self-determination is therefore internally developed, which stimulates the desire to change within and requires individuals to take responsibility for their own development (Ryan & Deci, 2000). Since SDT is a theory of motivation, there is a clear relationship between one’s actions and the motivation which inspired the action, as individuals should develop the ability to make self-motivated decisions (Ryan & Deci, 2000). Motivation is a critical factor in supporting sustained exercise, for example, which in turn is associated with important health outcomes. Accordingly, research on exercise motivation from the perspective of SDT has grown considerably in recent years (Teixeira et al., 2012).

SDT propositions also focus on how social and cultural factors facilitate or undermine people’s sense of volition and initiative, in addition to their well-being and the quality of their performance (Centre for Self - Determination Theory, 2018). Within the SDT, the sustenance for healthy social development and functioning are outlined using the three Basic Psychological Needs - autonomy, competence, and relatedness (Ryan & Deci, 2000). This means that should these basic needs be met; a socially functional individual will emerge. Comparatively, should these needs be dissatisfied, a socially “crippled” individual will emerge presenting with behavioural traits such as aggression, prejudice, and certain types of psychopathy (Lilienfeld et al., 2014). These three needs are discussed further in the sections to follow.

### **2.4.1 Competence**

According to Deci and Ryan (1985, p121), “a sense of competence comes from success experiences and overall positive feelings about an activity”. Competence is intertwined with the concept of optimal challenge and can best be explained by observing young children exploring their environment (Deci and Ryan, 1985, p121). Children, by nature, are driven by a need for competence (Deci & Ryan, 1985). Children experiment with and manipulate objects around them, and the joy on their faces when they figure it out is demonstrative of intrinsic satisfaction (Riley, 2016). Children also constantly test their knowledge by assimilating concepts they have already mastered with new stimuli, creating personal challenges for themselves (Riley, 2016). A sense of competence and the ability to take on optimal challenges all foster the development of intrinsic motivation (Ryan & Deci, 2000). Conversely, any negative intrusion toward this process, whether it be in the form of criticism or control, may undermine feelings of intrinsic motivation (Deci & Ryan, 1985).



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### **2.4.2 Autonomy**

Current evidence suggests that a person will more likely develop and maintain self-determined motivation in a context that is autonomy-supportive (Leblanc et al., 2016). Leblanc et al., (2016, p.2) states that autonomy support refers to “eliciting and acknowledging a person’s perspectives and values, supporting initiatives, offering options, and providing relevant information while minimizing persuasion and control”. For intrinsic motivation to flourish, a sense of competence must also be accompanied by a sense of autonomy (Deci & Ryan, 1985). When an individual is given a sense of choice, an acknowledgment of feelings, or an opportunity for self-direction, feelings of intrinsic satisfaction are enhanced. However, when a reward is offered as an incentive, learning and autonomy decrease, as do feelings of self-motivation (Riley, 2016). During the school



years, the role of a parent or teacher is to support a child's innate intrinsic motivation. By taking the child's perspective and encouraging a child's initiative, and by being responsive to thoughts, questions, and ideas, the educator is providing what Deci and Ryan (1985) have termed autonomy support, allowing an individual's sense of choice. Creating choice and an opportunity for self-direction is one of the many ways educators can provide autonomy support; thereby enhancing a student's intrinsic motivation (Riley, 2016). This motivation can be further fostered by creating learning opportunities that take into consideration a student's personal interests and provide greater choices.

### **2.4.3 Relatedness**

It is believed that autonomy support goes hand in hand with relatedness, as both needs influence cognitive and affective outcomes of education (Riley, 2016). Researchers have specifically stressed that parents and teachers who are more involved with their children, have children who are highly motivated and self-directed (Riley, 2016) According to Hwang & Kim (2013) SDT has been used to constructively identify relationships between the initiation of physical activity, adherence to it, and the psychological variables influencing obese children. Understanding these relationships is important in designing strategies for the promotion of physical activity to prevent weight gain and to treat obesity among adolescents (Hwang & Kim, 2013). In this regard, there has been extensive application of SDT approaches in research in the field of obesity and physical activity (Hwang & Kim, 2013). Hwang & Kim, (2013) found that these studies indicated that obese children with high levels of intrinsic motivation have greater adherence to physical exercise programmes designed to lose weight compared to their counterparts with low levels of motivation. Likewise, overweight and obese adolescents present higher scores on demotivation and extrinsic motivation, but lower scores on intrinsic motivation than their normal weight counterparts (Hwang & Kim, 2013).

#### 2.4.4 SDT Mini Theories

SDT comprises six mini-theories, each of which was developed to explain a set of motivationally based phenomena that emerged from laboratory and field research. Each address one facet of motivation or personality functioning: cognitive evaluation theory, causality orientations theory, organismic integration theory, basic psychological needs theory, goal contents theory, and relational motivation theory (Sheldon & Prentice, 2019).

1. **Cognitive Evaluation Theory (CET)** is a theory in psychology designed to explain the effects of external consequences on internal motivation (Deci, 1975). CET draws attention to the critical autonomy and competences' role that provides support in fostering intrinsic motivation, which is vital in education, arts, sports, and many other domains. CET suggested that there are two types of motivational systems, namely intrinsic motivators and extrinsic factors, which develop from the individuals working environment and is controlled by others (Ryan & Deci, 2000). Meer (2013), explains that an extrinsic motivator is “when you are motivated to do something because of external rewards and/or punishment associated with it” whereas, an intrinsic motivator is completely independent of any external reward and is done solely to benefit the individual. Intrinsic motivation is an innate concept. It is an energy orientation, a display of the positive attributes of humanity which include curiosity, vitality, and self-determination. Extrinsic motivation, on the other hand, is defined as a desire to engage in behaviour for external reasons (Riley, 2016). CET states that a powerful extrinsic motivator can result in a lowered intrinsic motivation (Ryan & Deci, 2000), which can damage the overall motivation in the long run (Meer, 2013). Within the context of children, intrinsic factors can be seen as children's exploration and play whereas extrinsic factors are seen as a lifelong developed skill (Ryan & Deci, 2000). CET stipulates that there are factors in the social context of the child that can create inconsistency in intrinsic motivation. Therefore, although a child will obtain a feeling of competency while completing an action, this may not necessarily

enhance their intrinsic motivational levels unless there is a sense of autonomy that accompanies this feeling of competence (Ryan & Deci, 2000).

2. **Organismic Integration Theory (OIT)** addresses the topic of extrinsic motivation in its various forms, with their properties, determinants, and consequences (Deci & Ryan, 2000). Extrinsic motivation is behaviour that is instrumental in aiming toward outcomes extrinsic to the behaviour itself, but have distinct forms of instrumentality, which include external regulation, introjection, identification, and integration (Centre for Self-determination Theory, 2018). These subtypes of extrinsic motivation are thought of as being more along a continuum of internalization and the more internalized the extrinsic motivation, the more autonomous the person will be when enacting the behaviours (Centre for Self-determination Theory, 2018). In addition, OIT is also mindful of social contexts that enhance or forestall internalization—that is, with what conduces people to either resist, partially adopt, or deeply internalize values, goals, or belief systems (Centre for Self-determination Theory, 2018). OIT particularly highlights support for autonomy and relatedness as critical to internalization. Ryan and Deci (2000) describe OIT as the extent to which a behavioural regulation has become internalized by the individual, meaning that any belief originates from the individual rather than external sources. This extrinsic motivation will then directly affect persistence as well as performance of that individual.
3. **Causality Orientations Theory (COT)** is described by Ryan and Deci (2000) as “individual differences in people's tendencies to orient toward environments and regulate behaviour in various ways”. Therefore, two people can react very differently in similar situations and each person’s reaction to any circumstance will be different. COT assesses three types of causality orientation: firstly, an autonomy orientation, which states that a person acts out of interest and appreciates what is occurring. These behaviours are chosen based on the individual’s needs

and integrated goals. These self-determined behaviours are seen to be linked to more creativity and better cognitive flexibility, which in turn enhances competence (Deci & Ryan, 1985). Secondly, there is a control orientation, which states that the individual focuses only on rewards and outcomes within a controlled environment while lacking autonomy (Ryan & Deci, 2000). This type of orientation is non-integrated and lacks creativity as well as flexibility. Furthermore, the willpower of the individual is diminished (Deci & Ryan, 1985). An example of this within a parental context would be an authoritarian parent who provides a strict dietary routine for the child. The child would then adhere to this routine out of fear of punishment rather than autonomy. Thirdly, there is impersonal orientation, which is characterized by anxiety concerning competence (Ryan & Deci, 2000). This type of orientation is studied as personal helplessness, where the behaviours are neither intrinsically or extrinsically motivated resulting in the individual not being able to direct their behaviour in a way that would yield the desired results (Deci & Ryan, 1985). An example of this would be when an individual is angry and lashes out at others in bad behaviour. In the context of this study, an impersonal causality orientation could prove detrimental to the child's overall health as this provides an unstable environment in which to grow. The role of parents is strongly viewed in this regard. Parents play a fundamental role in imparting the necessary values and regulations which will enable the child to effectively engage in society. According to Landry and Koestner (2008), the central socialising goal is "internalization" where the child "takes in" the social regulations, adopts them, and then applies them autonomously. In the context of this study, COT can be used when assessing the dietary preferences of an overweight child who has either an authoritarian parent or an authoritative parent.

4. **Basic Psychological Needs Theory (BPNT)** elaborates on the psychological needs directly associated with psychological health and wellbeing (Ryan & Deci, 2000). This theory states

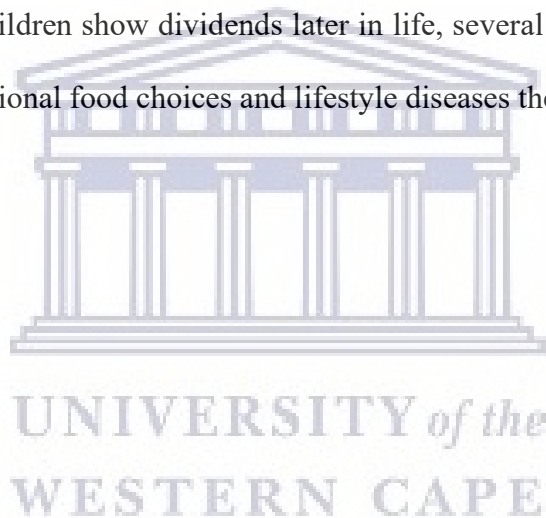
that a positive psychological wellbeing is reliant on autonomy, competence, and relatedness which are the three fundamental psychological needs that form the foundation of SDT.

5. **Goal Contents Theory (GCT)** was developed from the goals that arose from basic needs satisfactions and will therefore be individually different (Ryan & Deci, 2000). This means that everyone will have different goals based on their different needs which arise from similar situations to others.
6. **Relationship Motivation Theory (RMT)** is concerned with the relationships of individuals that bring about interaction, which is fundamental in the wellbeing of an individual, as it satisfies the psychological need of relatedness (Deci & Ryan, 2015). According to Deci and Ryan (2015), the psychological need of relatedness speaks to the development and maintenance of close personal relationships, such as best friends or romantic partners. The needs of competence and autonomy are also satisfied in high quality relationships. In relation to this study, the relationship between parent and child is of utmost importance, which makes RMT relevant. From this we can understand that should a parent and child have a high-quality relationship, the basic psychological needs of relatedness, autonomy and competence will all be obtained resulting in the overall wellbeing of both the parent and child.

## 2.5 Conclusion

In the context of this study, social learning theory offers an understanding of how children attend, retain and model the behaviour of primary caregivers during meal preparation time and feeding time. Self-regulation has been incorporated into self-control therapy which has been very successful in dealing with problems such as smoking. Additionally, social learning theory suggests that the behaviour which is attended and retained will be modelled at a later stage in the human lifespan. Parents, as key gatekeepers of the home environment, strongly influence the home's physical and social characteristics. This is seen in how food parenting practices have been shown

to impact children's dietary intake. The self-determination theory identifies the authoritative parenting style as supporting the psychological needs of the child by providing structure in the form of a menu of options to choose from and thus provides a basis for recommended behaviour. From this we understand that the parenting style the parent chooses forms the environment in which the child grows, and it is important to assess these environments and the parenting style when looking at why the child is obese, overweight and or underweight. This study requires the use of SDT to understand the different psychological aspects of parents that result in different parenting styles, that in turn directly contribute to parental feeding practices and children's nutritional wellbeing. The benefits of interventions targeted at adults start to show immediately, whilst those targeted at children show dividends later in life, several years after implementation, as can be seen in the nutritional food choices and lifestyle diseases they manifest later in life.



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## CHAPTER 3

### LITERATURE REVIEW

#### 3.1 Introduction

This chapter focuses on the review of empirical studies which were used to explore the current trends in relation to parents / primary caregivers' feeding styles, practices and nutritional knowledge and to develop the programme.

#### 3.2 Nutrition

Nutrition is defined as the study of the food and liquid requirements of human beings for normal physiological function, including energy, maintenance, growth, activity, reproduction, and lactation (Nichols, 2000). Broader to this definition “nutrition is both a ‘maker’ and a ‘marker’ of development by understanding that improved nutrition is the platform for progress in health, education, employment, empowerment of women, and the reduction of poverty and inequality, and can lay the foundation for peaceful, secure and stable societies,” as stated by Ban Ki-moon, United Nations 8th Secretary General, in a message for the SUN Movement Strategy and Roadmap (2016-2020).

The global understanding of nutrition was further evolved in September 2015, when more than 150 world leaders attended the United Nations Sustainable Development Summit, with the aim of formally adopting an ambitious new sustainable development agenda, formally titled, “*Transforming Our World: 2030 Agenda for Sustainable Development*”. Over a fifteen-year period, the Sustainable Development Goals (SDGs) commit “all governments to comprehensive, integrated, and universal transformations, including ending hunger and malnutrition by 2030. Countries are to mobilize efforts to end all forms of poverty, fight inequalities, and tackle climate

change, while ensuring that no one is left behind” (UNDP, 2019). To date, seventeen SDGs build on the foundation of the eight Millennium Development Goals (MDGs), and seek to complete and build on the targets set by the MDGs and respond to new challenges over the next 15 years (UNDP, 2019). These seventeen goals (Figure 3.1) constitute an integrated set of global priorities for sustainable development, democratic governance, peacebuilding, and climate and disaster resilience by integrating economic, social and environmental aspects. Goal 3 of the SDGs is aimed at ensuring healthy lives and promoting wellbeing for all at all ages (UNDP, 2019).



Source: UN. Sustainable Development Goals, 2015.

Figure 3.1: Sustainable Development Goals (UNDP, 2019)

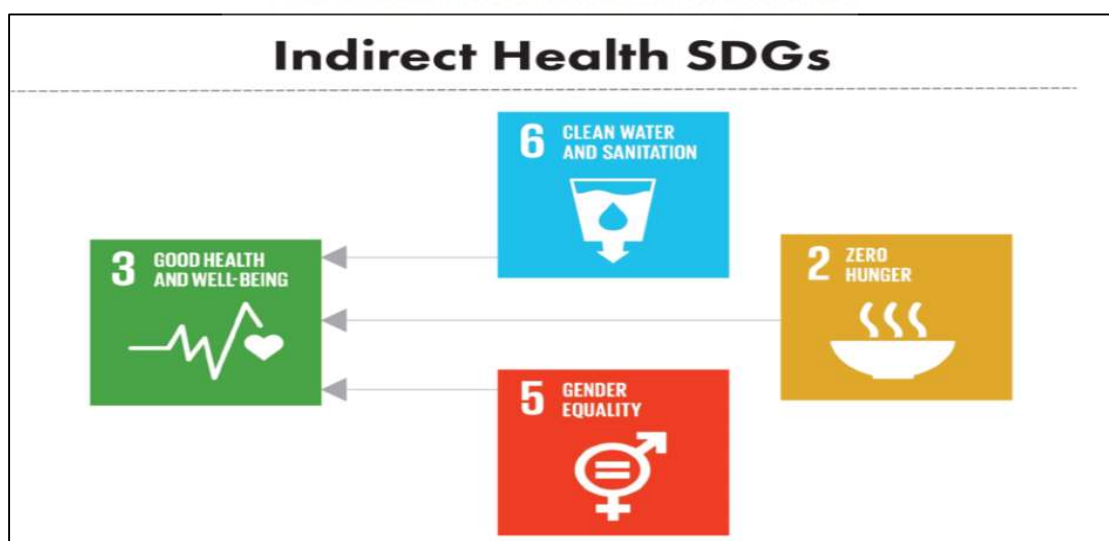


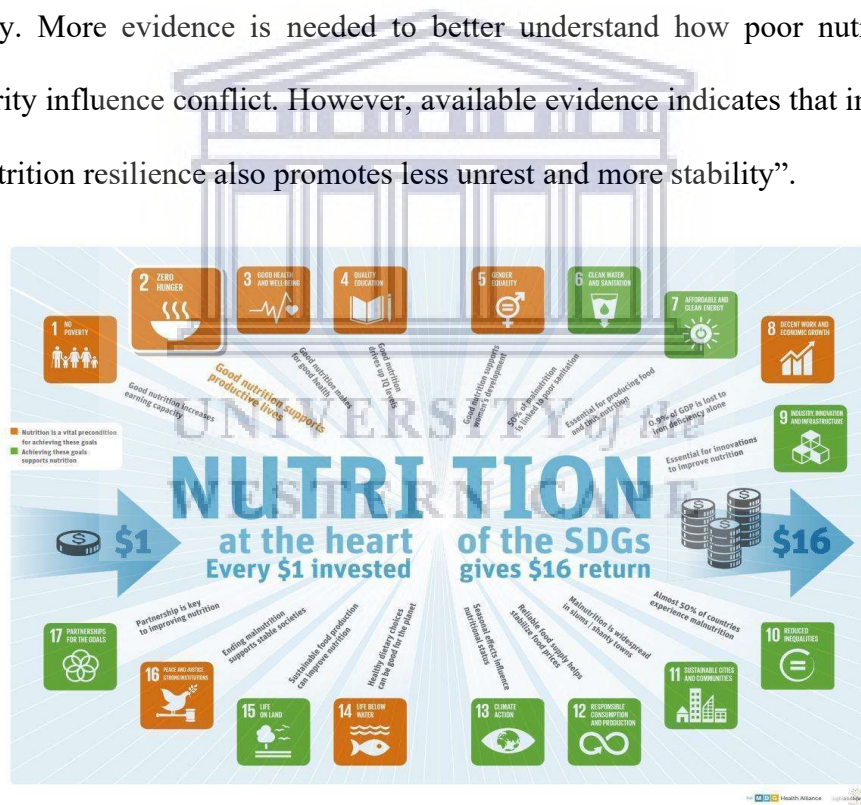
Figure 3.2: Health Indirect Sustainable Development Goals (UNDP, 2019)

Figure 3.2 highlights the indirect effect and potential of reaching Goal 3 by addressing goals 2, 5 and 6. Improving nutrition was highlighted as having a powerful effect across all the SDGs, as well as stating that it would be a challenge to address any of the other SDGs without first addressing nutrition (Development Initiatives, 2018). The 2017 Global Nutrition Report analysis showed that there are five core areas that run through the SDGs that nutrition could contribute to, and in turn benefit from (Development Initiatives, 2018, p6):

1. **Sustainable Food Production:** “Good nutrition can drive greater environmental sustainability. Agriculture and food production are the backbone of our diets and nutrition. Food production uses 70% of the world’s freshwater supply and 38% of the world’s land. Current agricultural practices produce 20% of all greenhouse gas emissions, and livestock uses 70% of agricultural land. Eating better is necessary to ensure that food production systems are more sustainable”.
2. **Strong Systems of Infrastructure:** “Good nutrition provides infrastructure for economic development. Stunting disrupts the critical ‘grey matter infrastructure’ – brain development – that builds futures and economies. Investing in this infrastructure supports human development throughout life and enhances mental and productive capacity, offering a \$16 return for every \$1 invested (as shown in Figure 3.3 below). Nutrition is linked to gross domestic product (GDP) growth. The prevalence of stunting declines by an estimated 3.2% for every 10% increase in income per capita, and a 10% rise in income translates into a 7.4% fall in wasting”.
3. **Health Systems:** “Good nutrition means less burden on health systems, with health being indivisible from nutrition. Good nutrition results in less sickness and thus less demand on already stretched health systems to deliver prevention and treatment”.

4. **Equity and Inclusion:** “Good nutrition supports equity and inclusion, acting as a platform for better outcomes in education, employment, female empowerment, and poverty reduction. Well-nourished children are 33% more likely to escape poverty as adults, and each added centimetre of adult height can lead to an almost 5% increase in wage rate. Nutritious and healthy diets are associated with improved performance at school. Children who are less affected by stunting early in their life have higher test scores on cognitive assessments and activity level”.

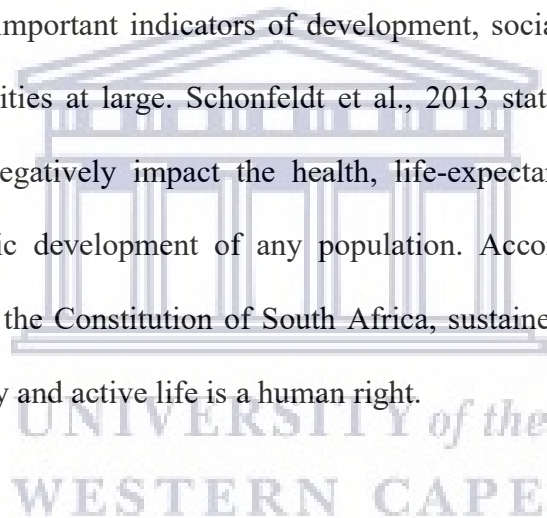
5. **Peace and Stability:** “Good nutrition and improved food security enhances peace and stability. More evidence is needed to better understand how poor nutrition and food insecurity influence conflict. However, available evidence indicates that investing in food and nutrition resilience also promotes less unrest and more stability”.



**Figure 3.3: Nutrition Expenditure Developed by Sight and Life Humanitarian Think Tank**

In understanding nutrition as being an umbrella term, one needs to explore the sub-term of nutrients, which allows one to gain an understanding of the nutritional make up of food and consequently, a diet. Nutrients are defined as a constituent of food necessary for normal physiological function, with essential nutrients being defined as nutritional substances for optimal

health (Nichols, 2000). These nutritional substances must be in the diet as they are not formed or metabolized within the body (Nichols, 2000). For nutritional substances to be available to the body at any time, a balanced diet is needed through daily intake of enough food of adequate quality. Nicklaus (2008) states that eating a variety of foods is essential to achieve adequate levels of macro-and micronutrient needs. Further to the concept of nutrition, there are nutritional dimensions of eating food which also contribute to the psychological dimension of eating since variety, both within and between meals, contributes to the pleasure of eating. The pleasure of eating is not just encouraging foods which are high in fat and sugar content, but also food which provides the nutritional substances for optimal health. Health and nutritional status, particularly that of young children, serve as important indicators of development, social upliftment, and access to resources within communities at large. Schonfeldt et al., 2013 states that anything that is not optimum nutrition will negatively impact the health, life-expectancy, work and agricultural productivity and economic development of any population. According to the World Health Organization (WHO) and the Constitution of South Africa, sustained access to health care and adequate food for a healthy and active life is a human right.



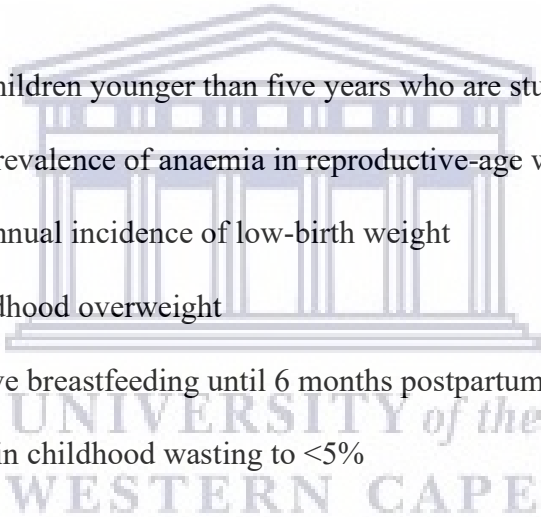
Important landmarks on the rise of nutrition on the global agenda were the initiation of the Scaling Up Nutrition Movement in 2010; the adoption by the World Health Assembly in 2014; and the WHO's Global Action Plan for the Prevention and Control of Noncommunicable Diseases for 2013–2020 (Delisle et al., 2017). Further to this, the United Nations embarked on the Decade of Action on Nutrition where all member states work towards achieving universal access to effective nutrition interventions, advocating for healthy diets and sustainable food systems (WHO, 2020). The Decade of Action on Nutrition is led by WHO and the Food and Agriculture Organization of the United Nations (FAO), and calls for policy action across 6 key areas (WHO, 2020):

- creating sustainable, resilient food systems for healthy diets



- providing social protection and nutrition-related education for all
- aligning health systems to nutrition needs, and providing universal coverage of essential nutrition interventions
- ensuring that trade and investment policies improve nutrition
- building safe and supportive environments for nutrition at all ages
- strengthening and promoting nutrition governance and accountability everywhere.

This is supported by the *Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition Strategy* which was adopted by member states in 2012. This 13-year plan (2012 - 2025) aims to reach the following goals:

- 
- 40% reduction in children younger than five years who are stunted
  - 50% reduction in prevalence of anaemia in reproductive-age women
  - 30% reduction in annual incidence of low-birth weight
  - No increase in childhood overweight
  - Increase of exclusive breastfeeding until 6 months postpartum to at least 50%
  - Reduce and maintain childhood wasting to <5%

WHO set five action plans and proposed activities for its member states to implement through various international partners to achieve the above (WHO, 2014). These actions are:

*Action 1:* Create a supportive environment for the implementation of comprehensive food and nutrition policies

*Action 2:* Include all required effective health interventions with an impact on nutrition in national nutrition plans

*Action 3:* Stimulate development policies and programmes outside the health sector that recognize and include nutrition

*Action 4:* Provide sufficient human and financial resources for the implementation of nutrition interventions

*Action 5:* Monitor and evaluate the implementation of policies and programmes

As a member state of the United Nations since its inception in 1945, South Africa is part of this global community, and has developed an action programme called the United Nations Development Assistance Framework to support the country through advocacy in promoting the MDGs and the full commitment to a pro - poor agenda (UNSA, 2020). This has continued through the current Decade for Action Initiative which is to support member states mobilizing “everyone, everywhere” in reaching the SDGs (UNSA, 2020).

### **3.3 South African Nutrition Policy Review**

There are several policies in South Africa which address nutrition as a whole, as well as individual policies which are specific to children. An outline of the key messages from these is provided below, and some are further explored in the sub - sections of this chapter.

In South Africa the Medium-Term Strategic Framework (MTSF) for 2009 - 2014 focused on improving the health of all South Africans. This would be done through an outcomes-based approach in four areas of the Health Negotiated Service Delivery Agreement:

- increasing life expectancy
- decreasing maternal and child mortality
- combating HIV and AIDS and decreasing the burden of disease from Tuberculosis
- strengthening health system effectiveness

The Roadmap for Nutrition for South Africa 2013 - 2017 was therefore developed to direct nutrition-related activities in the health sector to achieve the four focus areas (DOH, 2013). These aimed to contribute to increased life expectancy of the entire population by improving the quality, coverage and intensity of specific nutrition interventions that support reduction in mortality rates, especially maternal, neonatal, infant and child mortality. The Roadmap aimed to:

- Promote optimal growth of children and prevent overweight and obesity later in life, by focusing on optimal infant and young child nutrition.

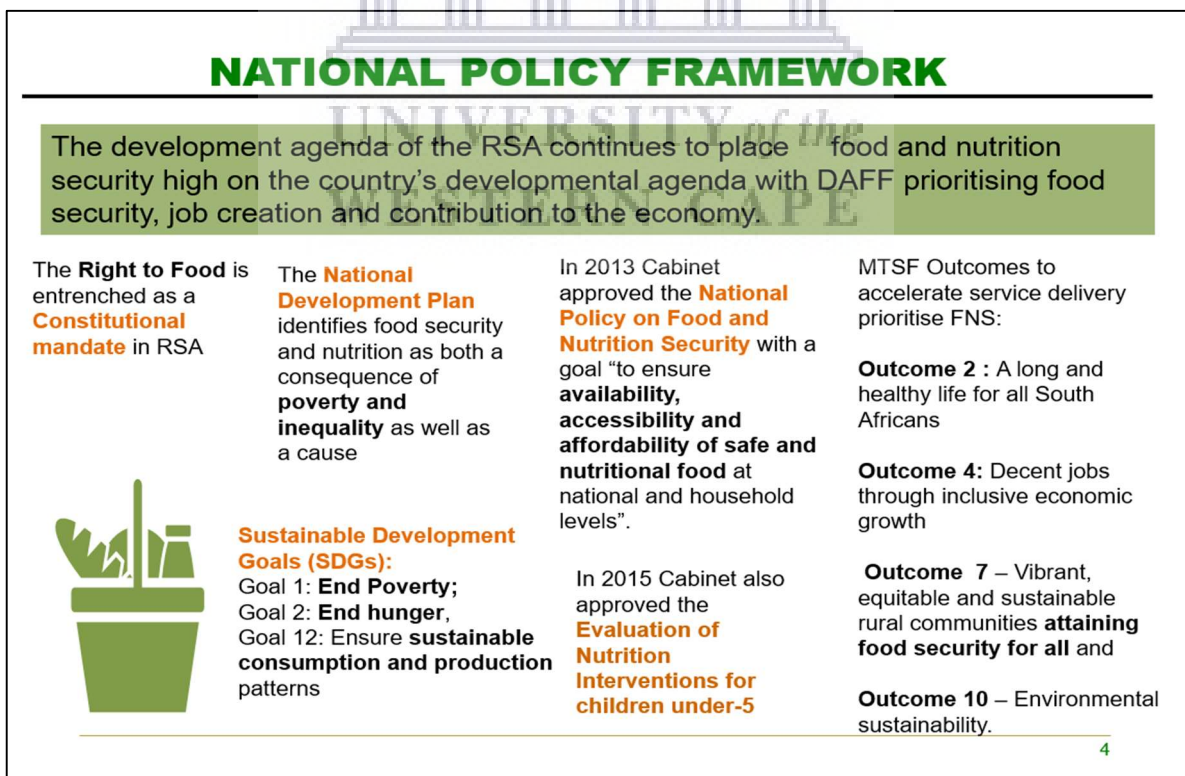
- Contribute to the prevention, control and treatment of HIV and Tuberculosis through targeted nutritional care and support strategies.
- Contribute to the effective functioning of the health sector by reducing the demand for curative services and improving recovery rates from diseases, thus freeing up resources for preventive and promotive services.
- Empower families and communities to make informed nutrition-related decisions, through advocacy regarding household food security, multisectoral collaboration and effective nutrition education.

The Roadmap also focused on interventions that would be impactful during the life - cycle stages before and during pregnancy, as well as the first two years of life (DOH, 2013). This first 1000 days of life is recognised as the “window of opportunity”, as optimal nutrition during this period provides the needed foundation of a healthy life, as well as decreasing the risk of chronic disease related to diet (DOH, 2013). The Strategy for the Prevention and Control of Obesity in South Africa 2015 – 2020 builds on the Nutrition Roadmap (DOH, 2016).

The Roadmap for Nutrition drew on the recommendations of the implementation of the Integrated Nutrition Programme (INP). The INP was established in 1994 to facilitate an intersectoral approach to solving nutrition problems, which would be coordinated through the Department of Health. It is based on the UNICEF Conceptual Framework and follows the Triple A-cycle on the implementation of nutrition programmes as an ongoing process of assessment, analysis, and action (Gillespie et al., 2003). This meant that depending on the location of the target group and the nature of the intervention, the INP was implemented at the population level, community sites, households, health facilities, and schools (Iversen et al., 2012).

In 2013 the South African Infant and Young Child Feeding Policy was developed with a clear focus on infants and children 0 - 60 months (DOH, 2013). This policy was developed to standardize and harmonize infant feeding messages; act as a guide for healthcare providers on how to address threats and challenges to infant feeding, specifically during the first 1000 days of life; and to promote optimum infant feeding practices (DOH, 2013).

The above policies are important as they lay the foundation for intervention planning focused on prevention and addressing the nutrition transition in which malnutrition co-exists with a rising incidence of overweight and obesity (DOH, 2013). The country has also developed a National Food and Nutrition Security Plan 2018 – 2023. Although not a policy, it is worth mentioning as it will have far reaching effects on the country’s drive to optimal nutrition for all, by placing food and nutrition security high on the country's development agenda while prioritizing job creation and contributions to the economy. Figure 3.4 below shows how the framework has been conceptualised.

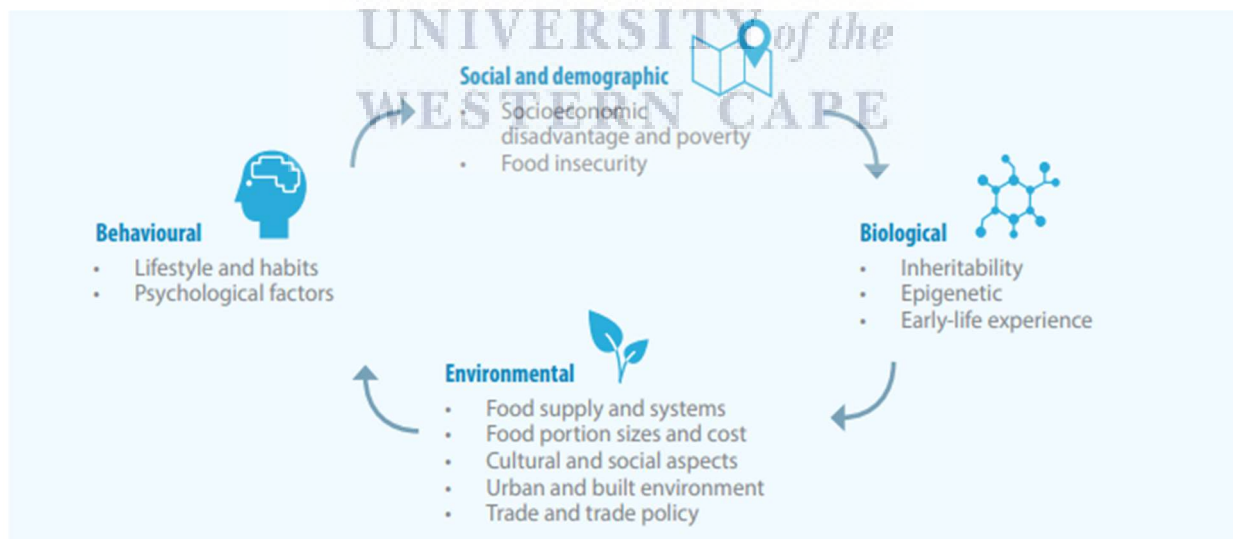


**Figure 3.4: Overview of progress towards the National food and Nutrition security plan for the South (DAFF, 2019).**

The National food and nutrition security plan should enable the country to address problems such as hunger, malnutrition and micronutrient deficiencies that affect physical growth and cognitive development, especially among children, as directed by the National Development Plan 2030 (DAFF, 2019).

### 3.4 Malnutrition

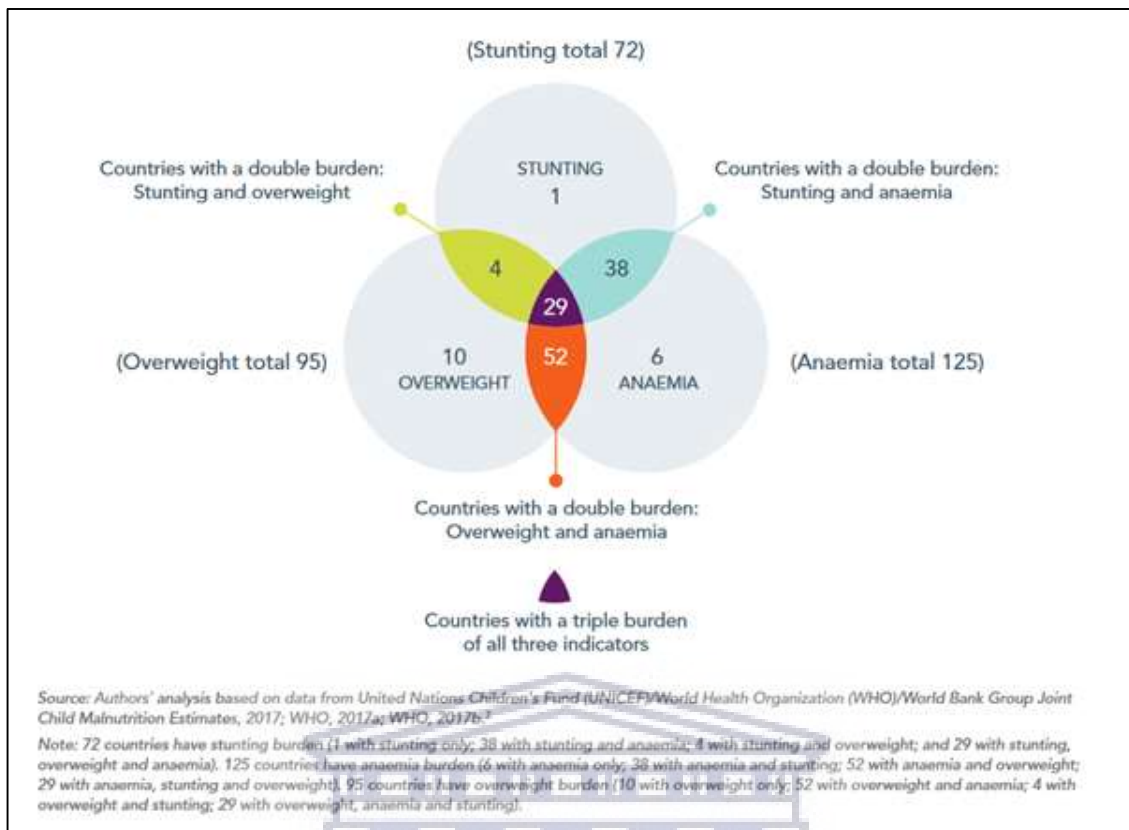
The world has taken significant steps towards improving nutrition over recent decades; however, much remains to be done. These efforts need to be focused on a wide range of conditions under the umbrella of malnutrition, namely undernutrition and overnutrition. Undernutrition includes stunting, wasting and micronutrient deficiencies. Overnutrition includes excess such as overweight, obesity or diet related non communicable diseases (NCDs) (WHO,2017). This coexistence of malnutrition, known as the double nutrition burden, can occur at three levels - individual, household and population, along with very clear drivers as depicted in the figure 3.5 below (WHO, 2017).



**Figure 3.5: Drivers of the double burden of malnutrition, (WHO, 2017).**

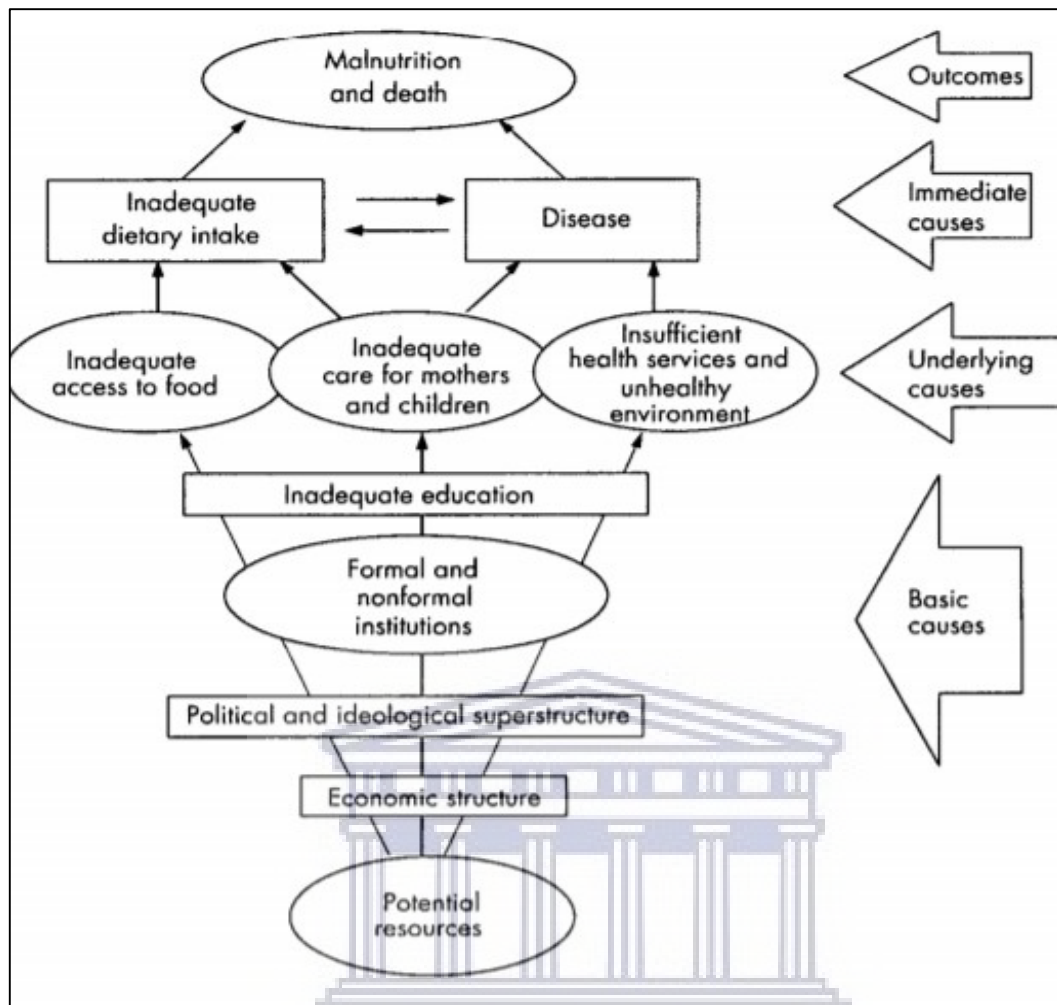
To really understand the extent of malnutrition in a given population, children are "weighed and measured against a reference population" that are known to be growing really well (UNICEF, 1998). The three main immediate causes of undernutrition are (1) unsuitable or insufficient food intake, (2) poor care practices, and (3) disease (WHO,1990; WHO, 2020). The number of children who are chronically undernourished, or stunted, has fallen in many countries, as has the number of children who are acutely malnourished, or wasted. However, the burden remains high and undernutrition rates have not fallen fast enough to keep pace with changing global trends (Development Initiatives, 2018). Malnutrition overall, remains an immense and universal problem, with at least one in three people globally experiencing malnutrition in some form (Figure 3.6). No country is immune, almost every country in the world is facing a serious nutrition-related challenge (Development Initiatives, 2018). The Global Nutrition Report, an independently produced annual analysis of the state of the world's nutrition, reviewed data from 140 countries (Development Initiatives, 2018). The authors tracked childhood stunting, anaemia in women of reproductive age, and the overweight rate in adult women. These indicators show that countries experience multiple burdens of malnutrition. It was found that all 140 countries are dealing with at least one of these major nutritional problems. Of the 140 countries, 123 (88%) face a grave burden of either two or three of these forms of malnutrition.

Africa and Asia account for nearly all the global burden of stunting. In 2016, two of every five of the world's stunted children and more than half of all wasted children, lived in South Asia. Over the same period, the number of children under the age of five who are overweight increased dramatically worldwide (Development Initiatives, 2018).



**Figure 3.6: Child Malnutrition Estimates, 2017, Global Nutrition Report**

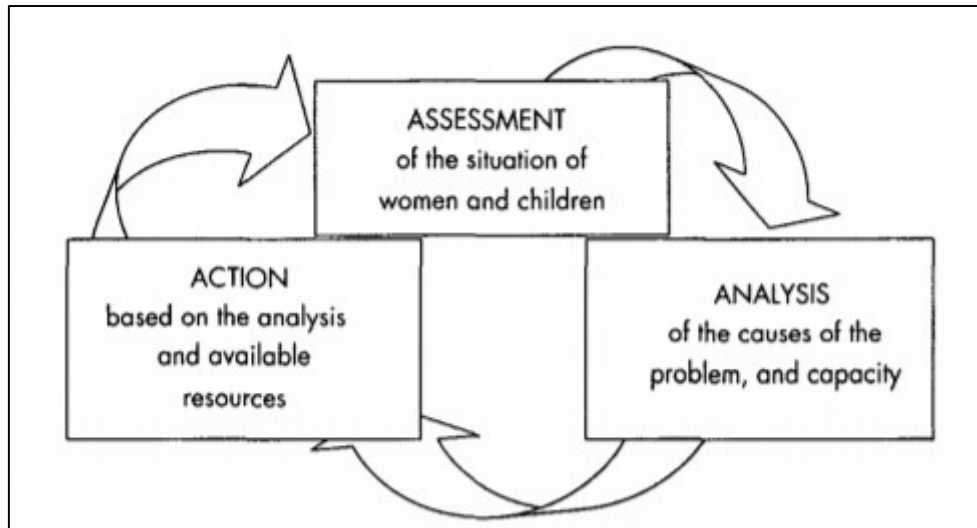
The UNICEF conceptual framework on malnutrition was developed in 1990 as a Nutrition Strategy. The framework outlines the many causes of malnutrition as being multisectoral, as well as viewing various food, health and caring practices (UNICEF, 1998). This inclusive framework focused on “organizing scientific knowledge and experience, fostering a common understanding, and developing coherent strategies for addressing them” (UNICEF, 1998).



**Figure 3.7: Conceptual Framework of Cases of Malnutrition (UNICEF, 1990)**

An influential tool at the time, it looked to highlight and draw nutrition theory and practice closer together. During this same period, the operational Trip A construct was developed which focused on the assessment, analysis and action of nutrition practice (Gillespie et al., 2003).





**Figure 3.8: Triple A Construct (UNICEF, 1990)**

The application of the Triple A construct is used for analysing the potential significance of food, health, and care (UNICEF, 1990). In the full Nutrition Framework, it is the lens through which more basic causes of malnutrition are scrutinized, such as lack of resources, weakness in formal and nonformal institutions, and disparities in power. All these are extremely important at the household, community, national, and international levels (Gillespie et al., 2003). In order to confront child undernutrition, it is necessary to understand the multiple causes that operate at the immediate (individual) level, at the underlying (household/community) level, and at the basic (societal) level.

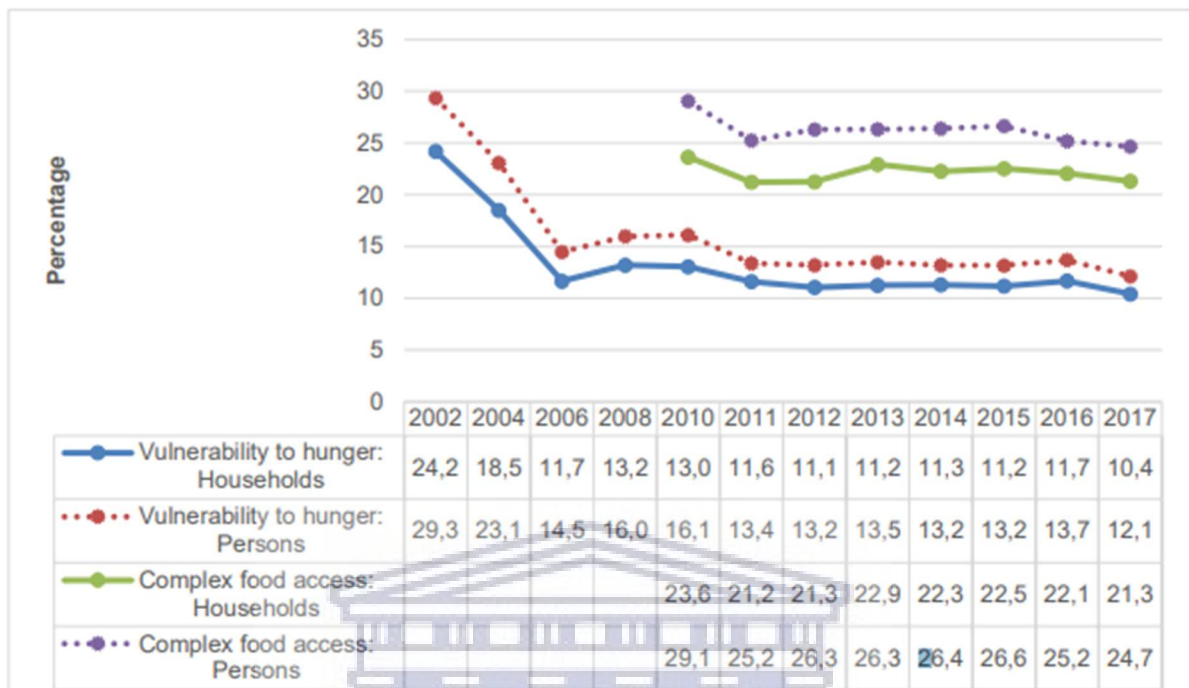
- Immediate causes (individual) – food intake, activity, health status, personal choice, growth, taboos, care.
- Intermediate causes (household/community) – gender, family size, food distribution rules, income, availability, access and utilisation of food.
- Underlying causes (national) – health education, sanitation, food security, urbanization, resources, war.
- Basic causes (international) – social, political, and economical structures, trade agreements, population size and growth.

The collective causes of different forms of malnutrition have been noted as being pivotal to its prevalence (Schonfeldt et al., 2013). Therefore, it is important to focus on the most basic causes of malnutrition as they create the building blocks for higher levels of causes. Epigenetics (altering the expression of genes - switching them on or off) can be a cause of malnutrition and is thought to influence the risk of low birth weight, overweight, obesity and NCDs (WHO, 2017; Tiffon, 2018). The quality and quantity of nutrition during foetal development and infancy is another cause as it has an impact on the body's immune function, cognitive development and regulation of energy storage and expenditure, summed up as early life nutrition. Socioeconomic factors such as poverty, gender empowerment and education also play a key role and affect all forms of malnutrition in different ways (Tiffon, 2018). Another identified cause is people's surroundings - the quality of environments around people are relevant to all forms of malnutrition. For example, lack of availability of nutritious foods in the 'food environments' around people can affect the risk of both an inadequate and unbalanced diet. The last cause identified is food systems which underpin both what people eat, and their food environments. The food system includes "the entire food value chain, from agricultural input markets, through food production, processing, distribution, retail, consumption and waste handling, as well as regulatory functions and support services" (Drimie & McLachlan, 2013).

### **3.5 Malnutrition in South Africa**

In 2014, over 10 million South Africans, approximately 19.7% of the country's population, reported having inadequate food access (Statistics South Africa, 2016). Factors such as accessibility, affordability, and quality of available food are part of the reason why over three million people (6.5%) reported having severely inadequate food access (Statistics South Africa, 2016). However, strides have been made and Figure 3.9 positively shows that those who have

experienced hunger decreased from 29.3% in 2002 to 12.1% in 2017 (Development Initiatives, 2018).



**Figure 3.9: South African Hunger and Vulnerability, Global Nutrition Report (2017)**

South Africa is a society in nutrition transition as evidenced by the coexistence of under- and over-nutrition within the same population. According to Govender et al. (2016), food and nutrition insecurity has developed into a chronic challenge in sub-Saharan Africa, with devastating effects on both rural and urban areas in South Africa. This is reflected in the results of the National Food Consumption Survey of children aged 1–9 years that showed that while 10.3% were underweight and 21.6% were stunted, 6% were overweight. Undernutrition contributes to 50% of deaths in children below 5 years of age from common childhood illnesses such as neonatal disorders, diarrhoea, pneumonia, malaria and HIV and AIDS (Symington et al., 2016). The following indicators (Figure 3.10) provide a status update to the food and nutritional status indicators which monitor progress towards the National Food and Nutrition Security Plan.

Indicator	Unit	Current status	Data Source
Vulnerability to hunger: Households	%	10,4% in 2017 (hovering around 11% since 2011)	GHS 2017
Vulnerability to hunger: Persons		12,1% in 2017 (hovering around 13% since 2011)	GHS 2017
Households with complex (limited) food access	%	21,3% in 2017 (decreased from 23,6% in 2010)	GHS 2016
Individuals with complex (limited) food access	%	24,7% in 2017 (decreased from 29,1% in 2010)	GHS 2017
Childhood stunting <60 months	%	27% (worsened from 24% in 2005)	SADHS 2016
Children < 15 yrs overweight or obese	%	13% in 2016, down from 14% in 2012	SANHANES 2012 SADHS 2016
Obese women >15 yrs	%	41% in 2016 (worsened from 24,8% in 2012)	SANHANES 2012 SADHS 2016
Overweight women > 15 yrs	%	26,6% in 2016 (decreased from 39,2% in 2012)	SANHANES 2012 SADHS 2016
Obese men >15 yrs	%	11% in 2016 (was also 11,6% in 2012)	SANHANES 2012 SADHS 2016
Overweight men > 15 yrs	%	20,3% in 2016 (19,6% in 2012)	SANHANES 2012 SADHS 2016

**Legend**

	Good progress based on available data from previous assessment
	Modest progress based on available data from previous assessment
	No progress or deteriorated based on available data from previous assessment

**Figure 3.10: Food and nutritional status indicators. (DAFF, 2019).**

The nutritional status of South African women and children, according to three national surveys (NFCS 1999, NFCS-FB 2005, and the SAHNAHES, 2013), collectively indicate a persisting high prevalence of undernutrition (stunting) and micronutrient deficiencies (vitamin A, iron, and zinc) as well as anaemia among almost a third of women and children. The rate of breastfeeding, which is recommended by WHO for the first six months and continued following the introduction of complementary foods, has decreased, with only 23% of infants being exclusively breastfed at four to five months. After breastfeeding when complementary foods are introduced, infants and young children need a varied diet, fulfilling their energy and micronutrients requirements for optimal growth and development (Sanders et al., 2019). However only 23% of children aged 6 – 23 months are provided with a minimum acceptable diet (Sanders et al., 2019).

Additionally, a high prevalence of overweight and obesity among women of reproductive age was reported, together with the high levels of food insecurity and hunger (Shisana et al., 2013). Public

health professionals are progressively focusing on environmental challenges that influence the ability of households to meet the suggested South African Food-Based Dietary Guidelines (FBDG) (Munoz-Plaza et al., 2013; Schönfeldt et al., 2013). These challenges are faced by adults in resource constrained communities, many of whom are dealing with non-communicable diseases such as hypertension, diabetes, strokes, and heart diseases.

### **3.6 Obesity**

The obesity problem in all age groups has been attributed to trends in increasing calorie consumption and decreasing levels of physical activity (Neelon et al., 2014). In 2016, it was reported that more than 1.9 billion adults aged 18 years and older were overweight. Similarly, 13% of the world's adult population (11% of men and 15% of women) were obese in 2016 (Biadgilign et al., 2017). Current estimates in 2019 highlight that 38.2 million children under the age of 5 years are overweight or obese (WHO, 2020). The WHO reports that the share of children and adolescents aged 5-19 who are overweight or obese has risen from 4% in 1975 to around 18% in 2016 (WHO, 2020). Reported increasing rates of overweight and obesity of 17.1% - 22.8% among South African children is expected by 2020 (Toriola et al., 2012). Adolescents and youth (10–24 years of age) constitute almost one-quarter of the world's population, with more than 80% of this group living in low- and middle-income countries (LMICs) (Wrottesley et al., 2019). The World Bank rates South Africa as a middle-income country however, it has an unemployment rate of 29%, showing a jobless rate which is the highest since the first quarter of 2003. The number of unemployed rose by 455 thousand to 6.65 million and employment rose by 21 thousand to 16.31 million (Moya, 2019). It is important to note that inequitable access to healthy foods is one way that socioeconomic factors influence food choice behaviours, overall diet quality, and increased bodyweight (Drewnowski, 2012). In LMICs, rapid urbanisation exacerbates nutritional transition by exposing young people to increasingly westernised diets, high in saturated fat, added sugar and

salt, and low in fibre (Wrottesley et al., 2019). The food environment in South Africa has changed rapidly since the mid-1990s, thought to be driven by an influx of trade and foreign direct investment by large and transnational food and beverage industries, as well as an ever-growing market share by supermarket retailers and fast food chains (Claasen et al., 2016). Within this context, growing levels of independence make adolescents highly susceptible to the adoption of obesogenic behaviours that may persist into adulthood, thereby increasing the risk of obesity and NCDs in later life (Shloim et al., 2015).

Obesity is caused by the chronic mismatch between energy intake and expenditure, with food intake in excess of requirements, and therefore an increase in body mass. This chronic imbalance is exacerbated by gene-environment interactions. Some of these factors, such as candidate genes, socioeconomic status (SES), exercise, sedentary behaviour, and lack of sleep, are well established (Shloim et al., 2015). The consequences of childhood obesity are enormous and include the subsequent development of chronic non-communicable diseases, psychological dysfunction, and excess adiposity in adulthood (Toriola et al., 2012). A strong link between childhood obesity and cardiovascular diseases have been established and reinforces the likelihood that obese children will grow up to be obese adults, at risk of acquiring hypertension, angina pectoris, non-insulin dependent diabetes mellitus and hypercholesterolemia (Neelon et al., 2014). Sharma (2011), states that the Bogalusa heart study found that 60% of overweight children they had researched had at least one biochemical or clinical cardiovascular risk factor by the time they were 10 years old, and 25% overweight children have more than two. Research results from the Bogalusa Heart Study, which is one of the longest running biracial health studies in the world, demonstrated that when risk factors for metabolic syndrome and heart disease are present in childhood, related health problems such as hypertension, atherosclerosis, cardio – vascular disease and diabetes are more likely to occur in adulthood (Freedman et al., 1999).

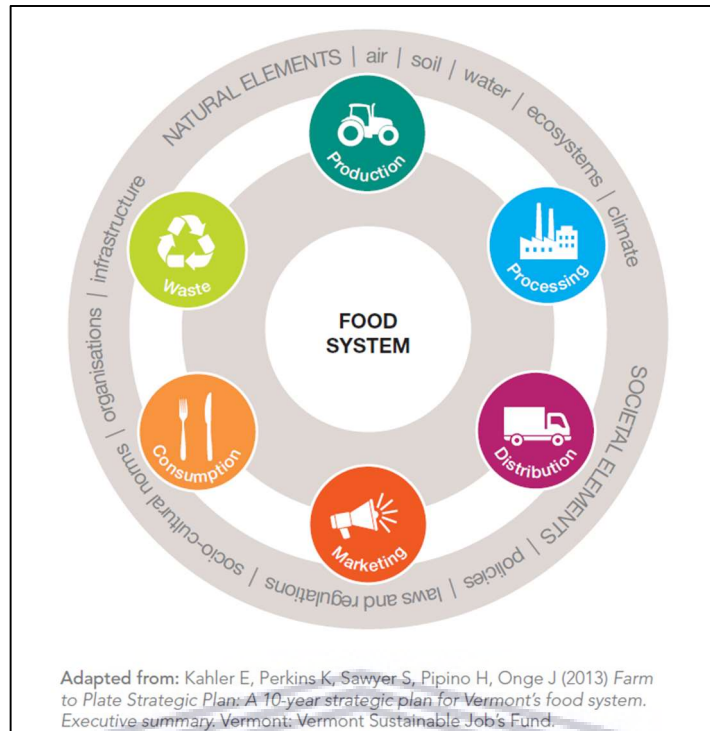
Other health risk behaviours can be related to controlling parental feeding practices which disrupt the child's ability to attend to their hunger and satiety (Farrow, 2012). Eating habits and cooking practices have considerably changed in industrialised countries. The time devoted to cooking has decreased; in the United States for example, it has reduced from 1:63 hour per day in 1965–1966 to 58 min in 2006–2007 (Smith et al., 2013). Furthermore, the prevalence of obesity in children has been partially attributed to the over-consumption of energy-dense foods, that is, foods high in fat, salt and sugar, such as most snack foods (Troesch et al., 2015). Despite the importance of healthy snack eating (e.g. eating fruits, vegetables and dairy snacks) being widely publicised, unhealthy snack consumption by pre-school children has rapidly increased (Alexy et al., 2011).

Additional factors increasing obesity are the sources of food consumed. People consume less food prepared at home and foods prepared away from home represent an increasing part of the diet (Ducrot et al., 2017). Ducrot, et al. (2017) states that studies have evaluated the potential impact of food prepared away from home on dietary quality and weight status, and have found that the consumption of food prepared away from home is associated with a lower quality diet and a higher body mass index (overweight and obese). On the other hand, more frequent home food preparation has been associated with better adherence to dietary objectives, higher intakes of fruits, vegetables, fibre, folate and vitamin A, while seeing lower fat intake in young people. Therefore, home meal preparation has been increasingly promoted as a strategy for improving dietary quality and preventing obesity (Ducrot et al., 2017). Parents/caregivers play a pivotal role in providing meals to children and consequently impact dietary behaviours.

### 3.7 Obesity in the South African Context

In South Africa, the National Income Dynamics Study (NIDS) was a two-staged survey, with the first being completed in 2008. The survey results showed that one-third of women over the age of 15 were classified as obese in contrast to 11% of men (Cois & Day, 2015). The 2012 SANHANES report confirmed the NIDS study, with 39.2% of women classified as obese compared to 10% of men. The highest prevalence was seen among urban women at 42% (NDoH, 2016). In terms of sedentary behaviour, the 2008 Youth Risk Behaviour Survey reported that nationally, 29.3% of learners watched television or played video or computer games for more than three hours per day, with no significant variation by gender, grade or age, and more than 41.5% did not participate in sufficient physical activities. In addition, NIDS found a high prevalence of the dual burden of child malnutrition and adult obesity within the household, concluding that in 45% of households where there is stunting, there is at least one obese adult (NDoH, 2016). Obesity in South Africa is ranked fifth as a risk factor for early death and years of life lived with disability or disability adjusted life years (DALYS) (NDoH, 2016). The escalating obesity in South Africa has occurred in conjunction with urbanisation and an increase in sales of sugar-sweetened beverages (SSBs), as well as high-caloric energy dense foods (NDoH, 2016). For some, obesity is seen as a sign of wealth and happiness (Sanders et al., 2019). It is also important to note that many food choice drivers are based on the available food system as illustrated below in figure 3.11. These food systems are at times mostly dominated by “Big Food” a small number of transnational corporations who are making ultra-processed food increasingly available and desirable (Sanders et al., 2019).

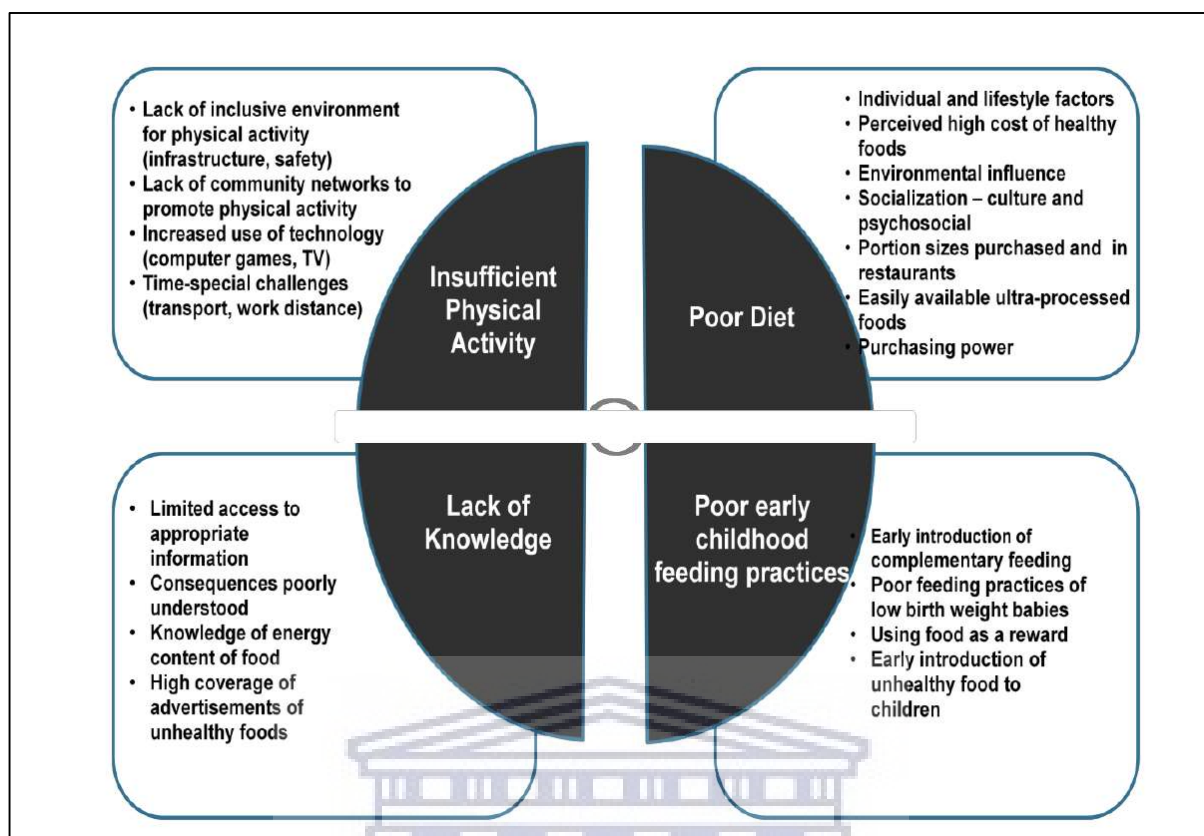




**Figure 3.11: Food Systems (Sanders, et al, 2019)**

There are four main drivers of overweight and obesity in South Africa (NDoH 2016), as shown in Figure 3.12 below. These are a lack of knowledge, poor diet, physical inactivity, and inappropriate early childhood feeding practices.

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**Figure 3.12: Drivers of Obesity in South Africa (NDoH 2016)**

The South African National Department of Health has a key responsibility in addressing obesity in the country and therefore developed a strategy known as the Prevention and Control of Obesity in South Africa 2015-2020. The strategy itself has six broad goals, namely (South Africa, 2016, p.6):

1. Create an institutional framework to support inter-sectoral engagement
2. Create an enabling environment that supports availability and accessibility to healthy food choices in various settings
3. Increase the percentage of the population engaging in physical activity
4. Support obesity prevention in early childhood
5. Communicate with, educate, and mobilise communities
6. Establish a surveillance system and strengthen monitoring, evaluation and research

The strategy is focused on using the 2015 Lancet series findings on how to address obesity as a whole, through restricting marketing of foods aimed at children, regulating nutritional quality of foods, labelling the front of food packages with nutritional values, establishing a sugar tax, and instituting media campaigns to drive the initiatives (Hawkes et al., 2015).

The Department will “use schools as a vehicle for promoting access to a range of public services amongst learners in areas such as health, poverty alleviation, psychosocial support, sport and culture” (NDoH, 2016). This shows a commitment to address challenges relating to health, including obesity, and schools are able to influence behaviour change. Addressing the nutritional environment clearly aligns with the South African food and nutritional security policies that focus on achieving household food and nutritional security with the express aim of allowing individuals to access sufficient dietary intake to meet their needs at different stages of their life (Hendriks, 2013). Many of these stages are governed by parents and primary caregivers, and as such they are influential in children's decision-making regarding nutrition choices (Ventura & Birch, 2008).

### **3.8 Parenting Approaches that Shape Food Behaviours**

The relationship between parents and their children changes over the entire lifespan. Parenting is described as encompassing feelings of responsibility in ensuring the nurturing of children, and consists of the child receiving compassion, guidance and affection by the parent (Kerby, 2007). Parenting is a key element in the socialisation and rearing of children, as parental nurturing contributes towards learning and development, which in turn influences children's adjustment in later stages of development (Bandura et al., 1966). When children are younger, there is more dependency until eventually, over time and across development, the child becomes an independent adult. It is widely accepted that parents are instrumental in the development of children's eating behaviours, especially in the early years (Ventura & Birch, 2008).

## **I. Parental Influence**

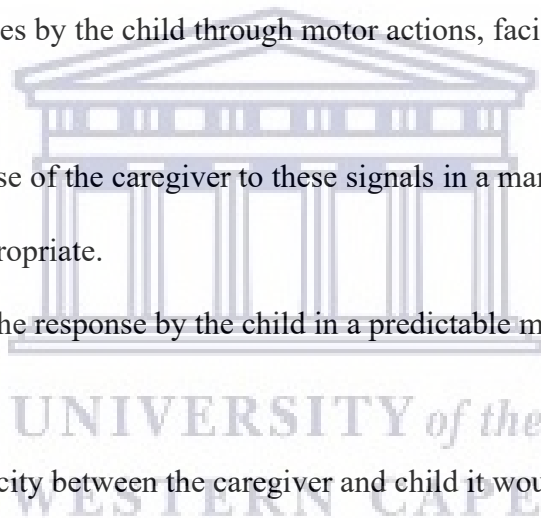
A time of rapid physical growth and change is observed in the first years of life, and these are the years when eating behaviours can serve as a foundation for the development of future eating patterns (Savage et al., 2007). During these early years, children are learning what, when, and how much to eat based on the transmission of cultural and familial beliefs, attitudes, and practices surrounding food and eating. Parental interest and recognition of the importance of nutrition are related to the amount of nutritional information parents discuss with children, thereby influencing the levels of nutritional knowledge children have (Zarnowiecki et al., 2014). In most families, women still have primary responsibility for feeding children (Flagg et al., 2014). Changes in employment patterns and family structure, however, leave women with less time to devote to this activity (Savage et al., 2007). This can mean that at times children are fed by somebody other than their parents which could mean care from a grand - parent, older sibling or relative (Savage et al., 2007). Parents' influence on their children's diet is already related to factors such as accessibility and availability, as children may not consume fruits and vegetables that are inaccessible, even if available, especially if unhealthy foods are also available or accessible (Bassul et al., 2020). Therefore parenting, feeding practices and styles need to be examined. Blissett (2011) states that problems with terminology abound in this field. Terms such as parenting style, feeding style and feeding practice are often used interchangeably but have very different meanings. These terms are described below.

## **II. Feeding Practices**

In order to understand parent feeding practices, it is important to note that parents and caregivers need to develop the correct skills to perceive their infants' hunger and satiety cues and in that way respond appropriately (Harbron et al., 2013). Responsive parenting involves quick attention by caregivers to “verbal cues and contingencies which are appropriate to the stage of development”

(Harbron et al., 2013). This provides the start of a relationship between infants and children and their parents and caregivers, by which they learn to recognise and interpret both verbal and nonverbal communication signals from one another (Harbron et al., 2013). This shared process forms the basis of an emotional bond that is foundational for healthy social functioning, as well as optimal feeding behaviour (Harbron et al., 2013). Responsive feeding (RF) can be defined as “reciprocity between the child and the caregiver”, conceptualised as a four-step process (Harbron et al., 2013):

- The creation of a structured routine where expectations are made known and emotions promote interaction.
- The signaling of cues by the child through motor actions, facial expressions or vocalisation.
- The prompt response of the caregiver to these signals in a manner that is supportive, contingent and appropriate.
- The perception of the response by the child in a predictable manner.



If there is a lack of reciprocity between the caregiver and child it would lead to Nonresponsive feeding (NRF) characterised by three types (Harbron et al., 2013):

- Indulgence type, where the child controls the feeding situation.
- Uninvolved type, where the caregiver ignores the child during meals.
- Pressuring and controlling or restricting type, where the caregiver takes excessive control and dominates the feeding situation.

The specific feeding practices used by parents with different parenting or feeding styles may vary according to their concerns about child feeding (Blissett, 2011). Feeding practices are specific techniques or behaviours usually used to facilitate or limit ingestion of foods. They include practices such as “pressure to eat, restriction, monitoring of the child's food intake, or the use of

rewards for food consumption” (Blissett, 2011, p.267). The two most studied feeding practices are “restriction and pressure to eat” (Blissett, 2011, p.267). Restrictive food practices used by parents allow for the limiting of certain foods as well as controlling the amount of food consumed at a time (Blissett, 2011). While pressure to eat is more focused on enforcing the amounts of food that needs to be consumed, it is also the determination to control eating of specific foods (Blissett, 2011). However, the feeding practices of restriction and pressure to eat seem to have a different, or at times, negative effect on children’s food preferences and weight. Usually these outcomes are the opposite of parent's intentions, with children wanting more of the foods which are restricted and less of the foods which are being forced on them (Blissett, 2011). A typically authoritative mother may opt to use more ‘authoritarian’ practices such as “pressure to eat if she is particularly concerned about her child's weight or dietary quality” (Blissett, 2011, p.267). Her use of this feeding practice may be delivered in a different emotional climate than that of an authoritarian parent, however, and this may moderate the outcome of the practice on child behaviour (Blissett, 2011).

Parenting styles allow children to grow their character by developing skills necessary to equip them for mastering and overcoming the many challenges in adulthood (Baumrind, 1967). However, parenting is very complex and focusing only on parenting styles as identified by Baumrind (1991) may be considered very limiting. One factor that needs to be highlighted is the influence of societal norms. Previous research has found that there are contradictions in the perceptions of Baumrind’s authoritative parenting (Sorkhabi 2005). Individualistic societies have viewed authoritative parenting as yielding the most desirable developmental outcomes on children and adolescents, but collectivist societies differ with this view of authoritative parenting (Sorkhabi, 2005). Countries like China may not find Baumrind’s authoritative module appropriate due to the cultural norms, as it would seem better suited to that of European countries or families of European descent (Sorkhabi, 2005). Steinberg (2001) however suggests that adolescents are better and more

well-rounded when their parents are authoritative regardless of their racial or social background. This has been confirmed in many other countries such as Pakistan, Hong Kong and Scotland (Sorkhabi, 2005). Central to families and patterns of observation is feeding practices (Birch & Fisher, 1998). Feeding practices are not easily defined but rather highlighted by habits.

### **III. Parental Feeding Practices**

Parental feeding practices play a critical role in establishing young children's food preferences, eating patterns, and nutrition (Patel et al., 2018). Feeding practices refer to the specific goal-directed behaviours used by parents to directly influence their children's eating. This might include attempts to increase or decrease intake of certain foods. Common feeding practices include: modelling eating behaviours, restricting certain types of food, pressuring children to eat, rewarding positive behaviours with food, and availability of food at home (Shloim et al., 2015). Parents feeding decisions affect all types of foods made available to children as well as to what extent children have control over the food they are exposed to and how much they consume (Patrick & Nicklas, 2005). Development research indicates that certain child feeding practices, such as exerting excessive control over what and how much children eat, may contribute to a child being overweight (Johnson & Birch, 1994). Overly controlling feeding practices can unintentionally contribute to a child being overweight by disrupting the child's autonomy regarding feeding and eating (Birch & Fisher, 1998). Research has begun to address the drivers of parents' feeding practices and why they implement the strategies they do (Haycraft & Blissett, 2008).

To examine different feeding practices, researchers have developed a range of measurement tools (Jansen et al., 2015). By far the most widely used measure is the Child Feeding Questionnaire (CFQ) developed by Birch and colleagues (Birch et al., 2001). The measure contains three subscales that assess aspects of control over feeding: restriction, monitoring, and pressure to eat. Of

these, restriction has received the most empirical attention (Shloim et al., 2015). A number of reviews have concluded that parental use of restrictive feeding practices is somewhat paradoxically associated with poorer child outcomes in terms of the increased consumption of unhealthy foods and higher child body mass index (BMI) (Rollins et al., 2016; Ventura & Birch, 2008). In addition, previous validation studies of the CFQ in various populations have identified some psychometric issues within the restriction scale, including low loading items and items loading on to more than one factor (Anderson et al., 2005; Kong et al., 2015). A broader limitation of the CFQ is that it measures highly controlling feeding strategies (Kong et al., 2015). Thus, it neglects to examine a range of potentially more positive strategies that parents may use to manage their children's food intake (Clark et al., 2007). Indeed, these may be particularly important when examining children's snack intake, as snack-related parent-child interactions potentially involve a wider range of parental behaviours/influences in a wider range of situations than meals do (Brown & Ogden, 2004). According to Lipowski et al. (2018, p.1), a parents' efforts to promote the development of a child's nutritional preferences and habits can be divided into three categories: "when, what and how".

- (a) *When* pertains to the specific timing of introducing a variety of new nutrients and ingredients.
- (b) *what* applies to diet composition and exposure to a variety of food tastes and textures.
- (c) *how* concerns the approach to feeding in the context of parent-child interactions and the development of eating self-regulation.

Orrell-Valente et al., (2007) conducted an extensive study examining the structure of children's mealtimes and the strategies which parents employ to get their children to eat. The key finding in the research was that the primary aim of parents was to get their children to eat more. Restrictions of children's food intake can be carried out covertly by parents, for example, limiting children's unhealthy food intake by not purchasing unhealthy snacks at supermarkets. In contrast, parental



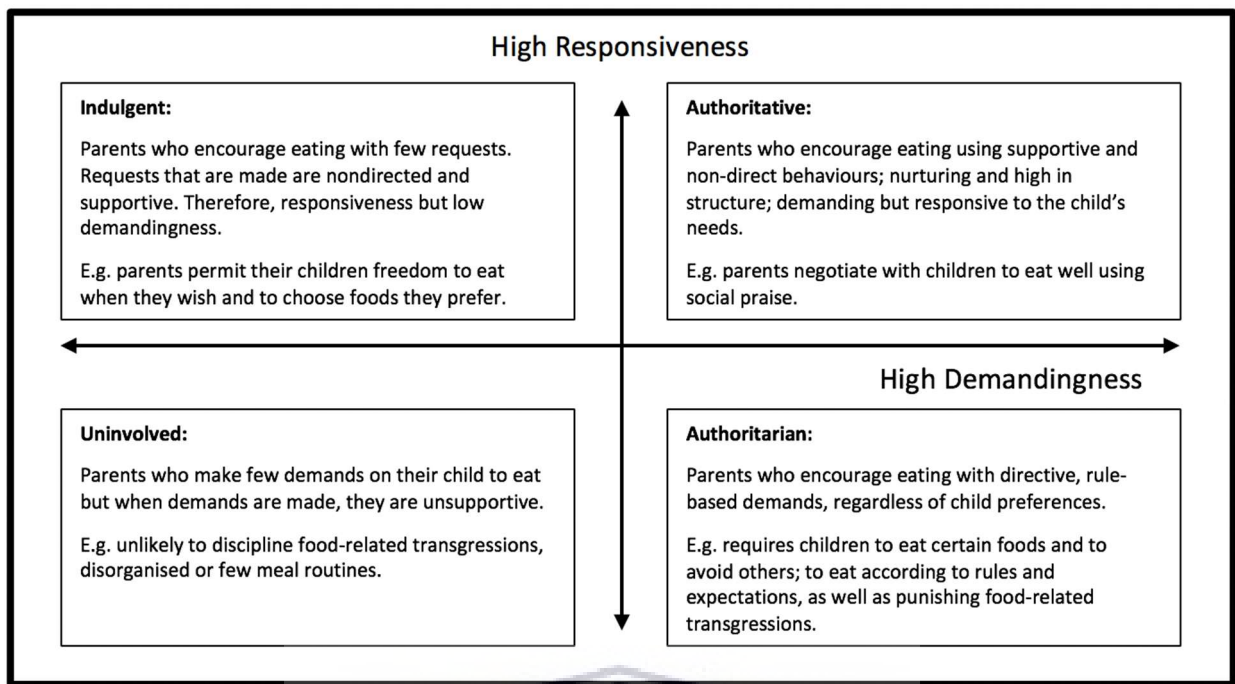
strategies to control children's eating behaviours may also be related to children's energy intake and / or weight (Orrell-Valente et al., 2007). The literature suggests more consistent positive outcomes when parents use non-food-based incentives (e.g., stickers or a game) to encourage eating. Many studies have found that using non-food-based rewards increases intake, with a few longitudinal studies suggesting that the increased intake is maintained months later. A study by Faith et al. (2004) focused on the interactions of the parent's behaviour regarding food and their food choices and how it relates to their children within the household. This was different from Johannsen et al. (2006) who's study showed that mothers exert a strong influence over their children's weight and seem to be more concerned about their children's eating behaviours. The above highlights two focus areas for understanding certain aspects of the behaviour and concerns of parents, one being food choice behaviour and the other being weight concerns. Up until now, research tended to focus on mothers and their feeding practices, with fathers receiving little attention (Haycraft & Blissett, 2008). However, Johannsen, et al. (2006) found that fathers who reported more controlling feeding practices with daughters, showed the daughters as having a higher percentage of fat. These same fathers were also concerned with their daughters' future health. More mealtime pressure was observed in parents with a higher BMI (Haycraft & Blissett, 2008). Fathers placed more pressure on children to eat and their restrictions were associated with increased control of the children's food choices at mealtimes (Haycraft & Blissett, 2008). This shows the differences in parental feeding styles even within the same family.

#### **IV. Parenting and Feeding Styles**

Parenting style is a general behavioural construct which sets the emotional context within which parents and children interact (Shloim et al., 2015). These have often been characterized as having at least two dimensions: demandingness (how much control parents exercise) and responsiveness (warmth and acceptance in response to their children's needs). Within this definition, there are four

types of parenting styles, varying along these two dimensions: “(1) authoritative parenting, associated with a high level of demandingness and rules with high responsiveness to the child; (2) authoritarian parenting, linked to high demandingness but low responsiveness characterized by rules but with less influence from the child's needs; (3) indulgent parenting, combining low demandingness and high responsiveness with few rules but high engagement with the child's needs; and (4) uninvolved parenting, which is associated with both low demandingness and low responsiveness” (Shloim et al., 2015, p.1850). An authoritative parenting style is generally associated with the most “positive child outcomes”, such as higher school performance (Shloim et al., 2015, p.1850) and with a more positive home food environment (Johnson et al., 2012). In the current study, parents and primary caregivers highlighted strong authoritative parenting styles as well as uninvolved parenting styles - absent fathers leaving the responsibility to mothers and grandmothers. The authoritarian parents clearly highlighted that their children had little choice in the food being prepared and if they did not eat, they would go to bed hungry.

Feeding styles may be viewed as a sub-category of parenting styles that are specific to mealtimes and therefore the same dimensions of demandingness and responsiveness are applied in the feeding context (Shloim et al., 2015). Feeding style is a parents’ attitude towards nutrition, which translates itself into a parent–child interaction during mealtime and thus impacts the development of a child’s eating behaviours and habits (Blisset, 2011). With an authoritative feeding style, parents actively encourage their child to eat and achieve this through supportive behaviours including rules explained in a sensitive way. With an authoritarian feeding style, parents encourage eating through parent-centric rules (Shloim et al., 2015). Indulgent feeding styles have been associated with less optimal child eating behaviours and higher weight status (Papaioannou et al., 2013).



**Figure 3.13: Summary of the Parental Feeding Styles Adapted from a Typological Approach to Parenting Developed by Hughes et al. in 2005 (Shloim et al., 2015)**

The general ways in which parents interact with their children (parenting style) and particularly during meals and snack times (feeding style) may influence parents' choice of feeding practices or the outcomes of these practices (Shloim et al., 2015). The interaction between parents and children at the family meal is bi-directional and informed by a number of different environmental factors (income and culture), parental attributes (beliefs, attitudes, behaviours), and child characteristics (temperament, eating traits and learned behaviours). Ventura & Birch (2008) state that research differences do exist for the terms parenting style and parenting practices, with both the terms being related but distinct and having differing influences on, and implications for, child outcomes.

There are few studies however that have used appropriate methodological designs to provide causal evidence for the indirect effect of parenting on weight status via effects on child eating (Ventura & Birch, 2008). Developmental psychologists define the concept of parenting style as a typology of attitudes and behaviours that characterize how parents will interact with a child across domains of parenting (Ventura & Birch, 2008). Parents influence their children's eating through both their

styles of parenting and their goal-directed food parenting practices (Keller et al., 2006). The general approach parents use to raise children is known as the general parenting style, which creates the emotional climate of the parent–child relationship (Papaioannou, et al., 2013). Papaioannou, et al., 2013, states that in some studies, general parenting style has been linked to increased child food consumption and childhood overweight, whereas in other studies, no relationship has been found. Because parenting behaviour can vary across contexts, Costanzo and Woody (1985, p.3) argued that it may be “more constructive to measure parenting in specific domains”.

Feeding styles are more focused than general parenting styles because they examine the emotional climate that parents create in the feeding context, with these generally being different from feeding practices. Parents however need to be provided with strategies or programmes which allow them to further their knowledge, explore new ways of engaging their children on nutrition concepts, or even just give them the means to provide for their basic nutritional needs.

### **3.9 Intervention Programmes for Improving Nutritional Status of Families in South Africa**

#### **I. Shortfalls of current South African interventions**

For South Africa to fully improve the nutritional status of its people, a review of current policies was done to understand why current interventions were not producing the needed change. In 2009 a landscape analysis was completed, and the process identified bottlenecks and gaps. The following challenges were identified in the assessment as reported in the Roadmap for Nutrition (NDoH, 2013):

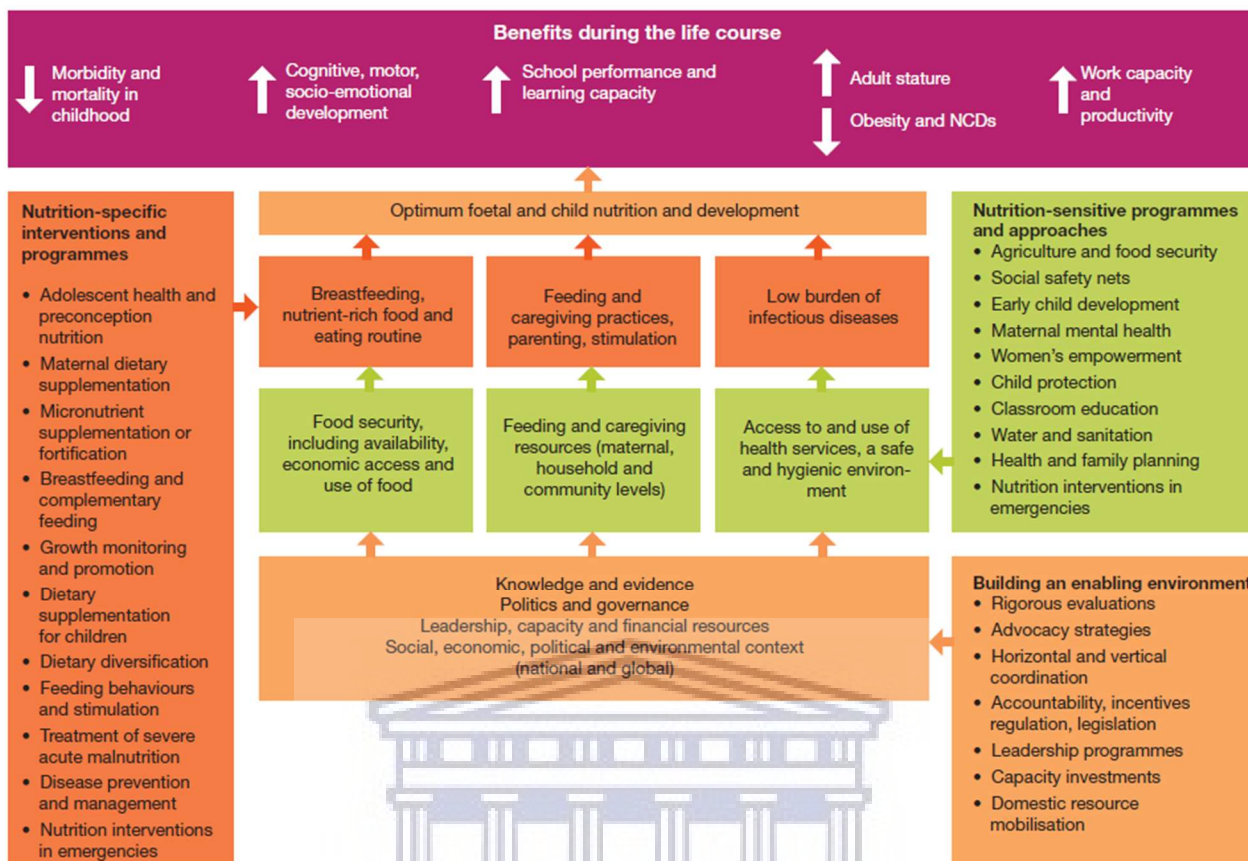
- Policies were not streamlined to focus on key nutritional problems as identified through national studies and routinely collected data. There is a need to consolidate existing

guidelines into a small number of interventions programmes to avoid continued implementation of ill-defined nutrition activities.

- Lack of a multisectoral nutrition working group which would include various departments and partners (e.g. industry, academia, civil society, development partners, etc.), and would play a key role in advocating for greater attention to nutrition focusing on priority interventions, and would promote better coordination among the different role players.
- Lack of a comprehensive monitoring and evaluation plan and nutrition surveillance system and poor use of information for decision making.
- While there has been an increase in budgetary allocation to nutrition, it remains less than 0.3% of the health budget, and the bulk of funding is spent on supplementary feeding. Furthermore, the funds are not always available for nutrition interventions due to reallocation to other priorities.
- Weak implementation.

Any barriers in the scale up of nutrition interventions in South Africa were also noted, namely: the lack of community based nutritional interventions; under - utilisation of services that are at times offered by community - based organisations; shortage of human resources; lack of copies of guidelines; lack of training and interventions for health care professionals (DOH, 2013).

It is however important to note that South Africa has a comprehensive package of key nutritional interventions which are interventions focused on optimum nutrition over the life course as listed in the Lancet nutrition series (DOH, 2013).



**Figure 3.14: Interventions for Optimum Nutrition over the Life Course, Lancet Series (Black et al., 2013)**

## II. Exploring nutrition specific interventions and programmes

A number of examples of large-scale interventions that focus on diet and activity patterns related to nutrition related chronic diseases in developing countries exist (Doak, 2002). In the Western Cape Province, South Africa, a systematic review was conducted by Steyn and colleagues to review all school interventions published in peer-reviewed literature between 1995 and 2006 that had a nutrition component (Steyn et al., 2009). The review also documented activities that were successful as well as the possible barriers experienced, with the aim of developing a best practice school intervention for the Western Cape Province, South Africa. The lessons learned from the review were applied to the development of the HealthKick Programme. The HealthKick Programme was initiated in schools in the Western Cape in 2007 (Steyn et al., 2009). It involved

the Action Planning Process (APP) that guided school staff through a process that enabled them to assess areas for action; identify specific priorities; and set their own goals regarding nutrition and physical activity at their schools (de Villers et al., 2015). Four action areas including the school nutrition environment; physical activity and sport environment; staff health; and chronic disease and diabetes awareness were covered in the programme. It aimed to promote a healthy lifestyle for the general well-being of primary school learners, their families and educators, and to prevent NCDs (de Villers et al., 2015). The study at the time highlighted the health priorities for learners (lack of physical activity, underweight and unhealthy diets), parents (substance abuse, tobacco use, and unhealthy diet), and educators (lack of physical activity, NCDs, and being overweight) (de Villers et al., 2015). It also supported the school feeding programmes, as they are generally said to have two major impacts (Fumbar, 2007). The first impact is on the improvement of the nutritional status of school-going children and the reduction of malnutrition rates. The second impact is to promote healthful eating habits and increase regular participation in health-enhancing physical activity in children, parents, and teachers in order to prevent overweight, and reduce the risk of chronic diseases (particularly type 2 diabetes); as well as to promote the development of an environment within the school and community that facilitates the adoption of healthy lifestyles (Draper et al., 2010). The HealthKick Programme highlighted the key role that educators play in implementing a school-based intervention, but that developing capacity within school staff and stakeholders is not a simple or easy task (Draper et al., 2010).

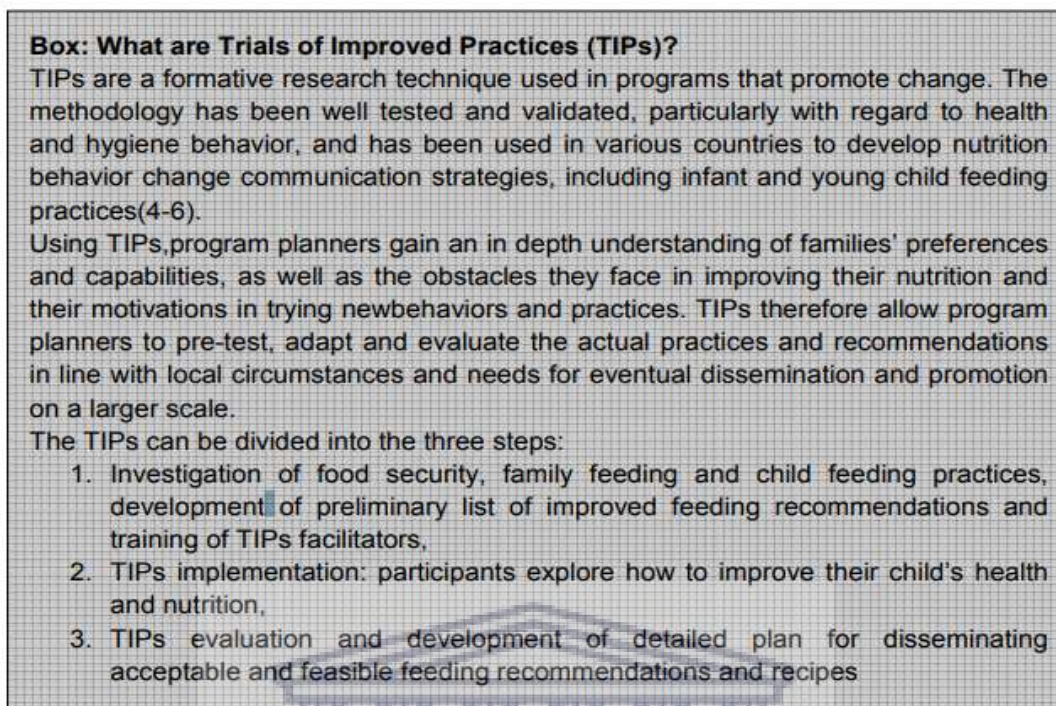
Nutrition education in the context of the school environment has also received considerable research attention, and as an intervention strategy, has witnessed a gradual change from knowledge orientation to behaviour orientation (Kupolati et al., 2015). For many decades the healthy school environment, with a focus on healthy food environments, has been a focus in the global health arena according to de Villers & Faber (1970). During the 1990s, WHO aimed to develop a Global School Health Initiative with a focus on helping parents, students, staff and community members.

However, due to the increase in NCD, the WHO focus shifted from general health promotion to NCDs, supported through the global action plan for the prevention and control of NCDs 2013 – 2020 (Collaborators, 2016). In 2011, owing to the series published by the Lancet, focus shifted mostly to the problem of obesity.

Schools provide the ideal vehicle for the delivery of interventions for childhood obesity (Warren et al., 2003). Public policies targeting the school setting are increasingly being used to address childhood obesity; however, their effectiveness depends on their implementation (Walls et al., 2011). Targeting families has been a feature of only a minority of past studies (Warren et al., 2003). The identification of the family as being pivotal to behaviour change is also found to be evident in other nutritional education programmes such as the Nutrition Education Intervention Programme (NEIP), which was developed based on the South African Food Based Dietary Guidelines (SAFBDG) and the South African Paediatric Food Based Dietary Guidelines (SAPFBDG) (Mushaphi et al., 2017).

Interventions to prevent childhood obesity must consider not only how child feeding behaviours are related to child weight status but also which behaviours parents are willing and able to change (Dickin & Seim, 2015). Dickin & Seim (2015) conducted a study in which the adapted Trials of Improved Practices (TIPs) research technique to promote change, (as outlined in Figure 3.15 below), was used to assess acceptability and feasibility of nutrition and parenting recommendations, using in-depth interviews and household trials to explore families' experiences over time.





**Figure 3.15: Trials of Improved Practice (Muehlhoff et al., 2011)**

Even though challenges were experienced, TIPs was adapted to evaluate complex nutrition and parenting practices. TIPs therefore provide needed guidance for childhood obesity prevention programmes based on information about parents' willingness and ability to try practices (Dickin & Seim, 2015).

South Africa has also embarked on an obesity strategy. The strategy acknowledges the fact that there is limited control which people have over their food environment as well as “limited behaviour change interventions and nutrition education in preventing under - over nutrition in resource poor settings” (Sanders et al., 2019).

The South African Department of Health Obesity Strategic Plan states that “The Organisation for Economic Cooperation and Development (OECD), in collaboration with WHO, carried out a model-based assessment of a range of interventions to prevent chronic diseases” (South African,

2016, p.12). The aim of the assessment was to design an economic model of the impact of interventions which would address overweight/obesity as well as all associated risk factors (nutritional poor diets and sedentary lifestyle). The table 3.1 below outlines the most cost-effective interventions.

**Table 3.1: Cost-effective Interventions (DoH, 2016)**

RISK FACTOR/ DISEASES	INTERVENTIONS/ ACTIONS	COST OF IMPLEMENTA TION (Low = < L\$1 per capita, High = > L\$2 per capita)	HEALTH IMPACT (DALYs per 1 m population) Small < 100; Large > 1,000	COST EFFECTIVENES S (\$1 per DALY averted) (Very = <GDP per capita, Quite = 1–3 GDP per capita)
HEALTHY DIET AND PHYSICAL INACTIVITY	Reduce salt intake	Low	Large	Very
	Food taxes on unhealthy food (foods high in fats and sugar) and food subsidies on healthy food (fruits and vegetables)	Low	Modest	Very
	Physician counselling	High	Large	Quite

In rand value (2010), the most cost-effective intervention was found to be fiscal measures, followed by food advertising regulations as displayed in Table 3.2 below.

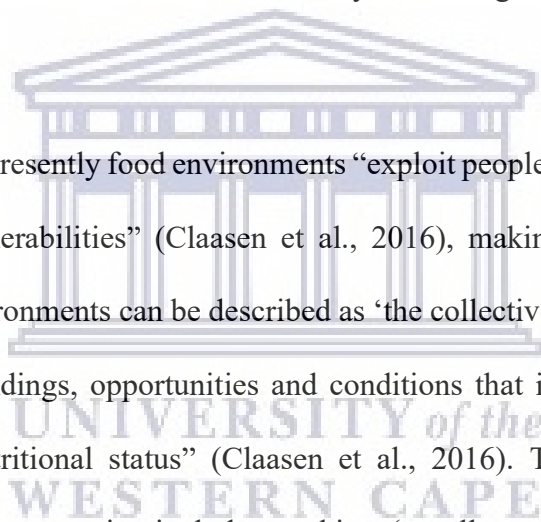
**Table 3.2: The Most Cost-effective Intervention to Address Obesity (DOH, 2016)**

Intervention	Cost in Rand per Head (2010)
Fiscal measures (e.g., taxes)	R0.20
Food advertising regulation	R0.90
Food labelling	R2.50
Worksite interventions	R4.50
Mass media campaigns	R7.50
School-based interventions	R11.10
Physician counselling	R11.80

It is important to note that a multiple intervention approach is essential to see substantially larger health gains. Cost savings have been achieved in countries that have implemented multiple interventions to address obesity. The largest health gains at the population level for high risk individuals are achieved by intensive primary counselling, such as a nutritionist, dietitian, or physician counselling (Kraak et al., 2014).

Further to the above, the South African government has also set a goal for the Department of Sports and Recreation to increase the number of citizens participating in sports. To achieve this, the Department is implementing a mass community participation programme and works in partnership with the Department of Basic Education for the delivery of an integrated school sports programme (South African, 2016).

It has been suggested that presently food environments “exploit people’s biological, psychological, social and economic vulnerabilities” (Claasen et al., 2016), making it easier for them to eat unhealthy food. Food environments can be described as ‘the collective physical, economic, policy and socio-cultural surroundings, opportunities and conditions that influence people’s food and beverage choices and nutritional status’ (Claasen et al., 2016). Typically, adolescent eating behaviours in high-income countries include snacking (usually energy-dense foods), skipping meals (particularly breakfast), a high consumption of fast food and sweetened beverages, and a low intake of fruit, vegetables, and dairy products. Such behaviours have been found to be associated with poor nutritional quality (Feeley et al., 2012). In South Africa, individuals have a high exposure to fast foods because these foods are available from formal (commercial franchises) and informal (street vendors) outlets (Feeley et al., 2012). This, in turn, increases the preference and demand for food of poor nutritional quality, and creates an unhealthier food environment. Although people have a personal responsibility for their own health, making healthy choices is challenging within a food environment that is dominated by nutrient-poor and energy-dense food,



ultra-processed food, large portion sizes, attractive packaging, the strategic placing of food in supermarkets, as well as highly visible marketing strategies. Food policies have an important role to play in reducing the prevalence of overweight and obesity. Hawkes et al. (2015) proposed four mechanisms through which food policies can affect diet:

- Provide an enabling environment in which healthy preferences can be learnt from a very young age.
- Overcome the barriers that prevent people from expressing healthy preferences.
- Influence the price, availability and presentation of healthier options to encourage people to reassess their unhealthy preferences and to make healthier choices.
- Stimulate a food-systems response.

The NOURSHING framework provides good guidance on how key recommendations can be put in place to address food policy with regards to overnutrition which can lead to obesity (Sanders et al., 2019).

		Policy area	Policies and actions needed
Food environment	N	Nutrition label standards and regulations	Labelling and advertising of foodstuffs <sup>125</sup>
	O	Offer healthy foods at public institutions and set standards	Healthy meal provisioning in the workplace <sup>126</sup> Standards on healthy diets
	U	Use economic tools to ensure affordability of food and to provide incentives	Taxes and subsidies to encourage healthy diets Discounts on healthy foods for the broader public
	R	Restrict advertising of unhealthy food	Restriction on the marketing of unhealthy food <sup>127</sup>
	I	Improve quality of food supplied	Elimination of trans fats, <sup>128</sup> restrictions on sodium intake <sup>129</sup> and introduction of the sugar tax Restrictions on ultra-processed food Increase fruit and vegetable consumption
	S	Set incentives for healthy retail environment	Incentivise retailers to provide healthy foods
Food system	H	Harness supply chain and actions across sectors	Promote a universal healthy reference diet Link with the global strategies to transform the food system
Behaviour change communication	I	Inform through public awareness	Food-Based Dietary Guidelines
	N	Nutrition counselling and advice	Review existing guidelines e.g. IMCI
	G	Give nutrition education	Integrate healthy eating with existing campaigns

**Figure 3.16: A framework of policies and actions to promote a healthy diet and address overnutrition (Sanders et al., 2019).**

The NOURISHING framework focuses on three domain areas that are pivotal to addressing the country's overnutrition concerns, as well as providing recommendations on policies that could be developed. This aligns with many proposed double duty actions in addressing and hopefully ending the burden of all forms of malnutrition: protection and promotion of exclusive breastfeeding; actions to optimise early nutrition; maternal and antenatal care programmes; school food policies and programmes; and marketing regulations (WHO, 2017). Recommendations for front labelling of unhealthy food, subsidising the cost of basic foods like eggs, fruit and vegetables, and limiting trade of unhealthy products should also be researched to identify a best practice approach for the South African context (Sanders et al., 2019). Much work will need to be done in the coordination of various nutrition efforts; however, this is already a priority for the South African Department of Health.

### **3.10 Conclusion**

The literature review shows that it is important to highlight the growing problem of the double burden of malnutrition in the global community, including in Africa. The rapid rise in obesity and overweight is due, in part, to nutrition alteration (fast food) and sedentary lifestyles, which has affected society health in an unprecedented way. Changes in urbanisation, westernisation of diets, lifestyle modifications, and the consumption of a highly processed diet contribute to the rise in obesity, decreased physical activity, and increasing risk of metabolic and cardiovascular diseases. In the same way, considerable demographic, social and economic changes have been happening in LMICs, including rapid urbanisation, expanded education, increased industrialisation and rising incomes in the past few decades. Undernutrition has also been driven by the lack of exclusive breastfeeding, complementary feeding not providing the needed nutritional requirements, and the effect of poverty and food insecurity. Therefore, for any nutrition programme to be successful it needs to remain focused on the framework of optimum nutrition throughout the life cycle, as this

would provide the clear intersect between policy and implementation and therefore have a direct effect on all factors relating to malnutrition: decreasing morbidity and mortality, increasing cognitive, motor, and socio - emotional development, improving school performance and learning capacity, increasing adult stature, and decreasing obesity and NCDs.



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# CHAPTER FOUR

## METHODOLOGY

### 4.1 Introduction

This chapter provides mixed methods methodological framework is presented. Mixed methods are well-positioned when conducting community-based research. Following this the research design, the research setting, the study population and sampling, data collection, and data analysis, as well as the trustworthiness, are discussed.

### 4.2 Methodological Framework

This study used Mixed Methods Research (MMR) to implement intervention mapping (IM) as the overall research design for evidence-based health promotion programmes. Intervention steps incorporated in the study design included (1) a needs assessment, (2) identifying performance objectives, (3) methods and strategies, and (4) programme development (Bartholomew et al., 1998; Bartholomew et al., 2006).

MMR continues to grow in popularity as a methodology in educational, social, and health science research. In this study, a mixed method approach was adopted as a methodological framework as it provides comprehensive evidence with a complete and clear picture of the issues that are being studied (Creswell & Plano, 2006; Johnson & Onwuegbuzie, 2004).

Santos et al. (2017) recommends using MMR when one of the following four areas are questioned:

1. When very little is known about a new concept, a qualitative approach can be used before a quantitative approach.

2. When findings from a research approach can be better interpreted by using findings from the other approach.
3. When a sole approach is not enough to generate meaningful findings.
4. When quantitative findings can be enriched by qualitative findings.

MMR is therefore defined as an “approach to research in which both quantitative and qualitative data are collected, analyzed, and integrated, thereby drawing interpretations based on the combined strengths of both sets of data” (Moseholm & Fetters, 2017, p.3). Researchers have used MMR approaches in “natural, social, and health science research” (Moseholm & Fetters, 2017, p.4) since the 1980s. Since then, several empirical studies have been published, and there is increased agreement about the nomenclature for core designs than there was even a decade ago (Moseholm & Fetters, 2017). Integration is considered by many to be the gold standard of MMR. It is defined as an “intentional process by which the researcher brings quantitative and qualitative data together in one study” (Moseholm & Fetters, 2017, p.4). Through integrating the data, the researcher can access insights which can prove to be foundational to the study. Therefore, this provides the research with more information than just using quantitative or qualitative data independently (Moseholm & Fetters, 2017). Researchers can achieve MMR integration through the philosophical, research design, methods and data collection, and/or during the interpretation and reporting levels of the research. MMR is both a method and methodology for conducting research that involves collecting, analyzing, and integrating quantitative and qualitative research in a single study or a longitudinal programme of inquiry (Creswell et al., 2003). This assists with expanding on and strengthening a study's conclusion (Schoonenboom & Johnson, 2017). Johnson and Onwuegbuzie (2007, p.20) state that mixed methods combine elements of qualitative and quantitative research approaches such as use of qualitative and quantitative viewpoints, data

collection, analysis and inference techniques, for the “broad purposes of breadth and depth of understanding and corroboration”.

It has also been conclusively reported that disciplines in health sciences and education appear to employ mixed methods in order to engage in dialogue about the different methods of viewing, hearing and understanding the social world of the clients (Creswell & Plano Clark, 2006; Evans et al., 2011). Additionally, mixed methods seem to hone researchers' understanding of research findings in relation to the phenomenon of the study. Five functions of mixed methods, that are popular classifications and still used today, were introduced in 1989 by Green, Caracelli, and Graham (Schoonenboom & Johnson, 2017, p110). These are:

1. “Triangulation function which involves seeking convergence and corroboration of results from different methods and designs studying the same phenomenon.”
2. “Complementarity function which promotes seeking elaboration, enhancement, illustration, and clarification of the results from one method with results from another method.”
3. “Initiation function which involves discovering paradoxes and contradictions that lead to a reframing of the research question.”
4. “Development function which includes using the findings of one method to help inform another method.”
5. “Expansion function which involves seeking to expand the breadth and range of research by using different methods for different inquiry components.”

Further to this, Alan Bryman (Bryman, 2006 p.106) expanded the above to examine the ways in which quantitative and qualitative research are integrated and used in practice. The five functions

are broken down into the following additional areas (Schoonenboom & Johnson, 2017, p.110-111):

- a) “**Credibility** – refers to suggestions that employing both approaches enhances the integrity of findings.”
- b) “**Context** – refers to cases in which the combination is justified in terms of qualitative research providing contextual understanding coupled with either generalizable, externally valid findings or broad relationships among variables uncovered through a survey.”
- c) “**Illustration** – refers to the use of qualitative data to illustrate quantitative findings, often referred to as putting meat on the bones of dry quantitative findings.”
- d) “**Utility** or improving the usefulness of findings – refers to a suggestion, which is more likely to be prominent among articles with an applied focus, that combining the two approaches will be more useful to practitioners and others.”
- e) “**Confirm and discover** – this entails using qualitative data to generate hypotheses and using quantitative research to test them within a single project”; and
- f) “**Diversity of views** – this includes two slightly different rationales – namely, combining researchers' and participants' perspectives through quantitative and qualitative research, respectively, and uncovering relationships between variables through quantitative research while also revealing meanings among research participants through qualitative research.”

Three contributing aspects for integrating quantitative and qualitative data and results have been identified when one considers using mixed methods; these are priority/weighting, timing/implementation and integration (Ivankova et al., 2006; Plano et al., 2015).



## **Priority/Weighting**

In research, priority/weighting is determined when importance is placed on quantitative data, qualitative data, or an equal priority is shared across the two forms of data in a mixed method approach (Creswell et al., 2004; Plano Clark & Ivankova, 2015). In the mixed method, priority/weighting refers to the comparable significance of the quantitative and qualitative methods in answering the research questions of the study (Creswell & Plano, 2006). At times there are many influences on the weighting of qualitative or quantitative data, the suggestion being that there is either a theoretical drive or a worldview (Creswell & Plano, 2006). A qualitative priority is considered when a researcher places greater emphasis on the qualitative data collection and analysis, known as unequal weighting. In contrast, a quantitative priority indicates that a researcher places greater emphasis on the quantitative data collection and analysis, also an unequal weighting. However, there are times when a researcher places emphasis on both types of quantitative and qualitative data collection and data analysis, which promotes equal weighting (Creswell et al., 2004). Unequal weighting could happen when resources are limited as it is more resource intensive to implement a study that provides equal weighting (Creswell & Plano, 2006).

## **Timing/Implementation/Sequence**

Researchers Creswell & Plano, (2006) suggest that the following question is addressed when using a mixed method approach: What will the timing of the quantitative and qualitative methods be? This refers to the importance of considering when a researcher can collect data, and more importantly, when the researcher is able to use the data in the study (Creswell & Plano, 2006). It also refers to the analysis of quantitative and qualitative data simultaneously (concurrently) and/or at different times (sequentially) (Creswell, 2003). Creswell et al. (2004) highlight that in concurrent (simultaneous) timing, the results of the mixed methods are merged during the interpretation. Sequential timing allows researchers to implement the methods in two phases

therefore collecting and analysing quantitative and qualitative data in a specific sequence (Creswell & Plano, 2006). This indicates that one method follows, or may depend on, the other one in order to progress.

### **Integration/Mixing**

A significant component of the mixed methods research process is integration/mixing as it places greater emphasis on combining the quantitative and qualitative data (Creswell et al., 2004). The process of combination occurs in various stages of the research methods, including data collection, analysis, interpretation and/or discussion. Three methods that may be used to facilitate the integration process are integration through narrative, contiguous and staged data transformation and joint display (Fetters et al., 2013). The weaving approach involves writing both qualitative and quantitative findings together on a theme-by-theme or concept-by-concept basis thereby resulting in a narrative-weave (Fetters et al., 2013). The contiguous sees the presentation of findings within a single report, however the qualitative and quantitative findings are reported in different sections (Fetters et al., 2013). The staged approach is used when the results of each step are reported in stages as the data are analyzed and published separately. The data at this time can also be collated in a visual means through tables and matrices, to present new insights beyond the information gained from the quantitative and qualitative results (Fetters et al., 2013). Consequently, data integration may be gained, referred to as coherence of the quantitative and qualitative findings (Fetters et al., 2013). This lends support to the outcomes of assessment through the fit of integration by confirmation and expansion. A confirmation assessment occurs when the findings from both types of data complement each other. Mixed methods seem to provide comprehensive evidence and a clear picture of the phenomenon because of the combination of quantitative and qualitative research approaches. The mixed methods approach therefore tends to resound with a pragmatic worldview (Johnson et al., 2007). Using both quantitative and qualitative methods would assist in

satisfying the overall aim of this study, which was to design a nutritional education programme for primary caregivers/parental feeding styles and practices to improve child BMI scores (nutritional status) of their children.

#### **4.2.1 Paradigms of Mixed Methodology**

In deciding on the weighting of a study, a post positivistic worldview calls for a quantitative priority, a naturalistic worldview calls for a qualitative priority, and a pragmatic worldview calls for either equal or unequal weighting, depending on the research question (Creswell & Plano, 2006). Discussions, or paradigm wars, still exist amongst researchers, particularly within the social sciences, on questions around qualitative and quantitative research. These discussions have been well documented in literature (Feilzer, 2009). Paradigms are thought of as being more than just assumptions about ontology, epistemology, methodology, and ethics but rather as being products of “tensions and conflicts that stretch outside the university to state bureaucracies, pressure groups, big corporations, community groups” (Denzin, 2010). The positivist / post-positivist paradigm views reality as being independent of and separate from the researcher, where making sense of the world can only be done by following a ‘scientific process’. Therefore, a phenomenon can only be studied and observed when it is measurable (taking into consideration quantitative methods and statistics) (Creswell, 2003; Somekh et al., 2005). In contrast is the constructivist / social constructivist paradigm, where researchers make sense of the world by understanding subjective experiences that people associate with their conceptions of the world (that are largely interpretative and done by means of qualitative methods) (Creswell, 2003; Somekh et al., 2005).

Research perspectives have also contributed to the assumption that quantitative methods are thought to be higher on the hierarchy of evidence, while the opposite is thought of qualitative methods (Muncey, 2009). The ‘purist’ view of researchers stuck within their silos of qualitative and quantitative research, as well as the paradigm wars, have led to the perceived importance of the hierarchy of evidence and has given rise to methods that are more readily published and accessed. The emergence of mixed methodological research also came with contested views from researchers on different ends of the continuum (Bryman, 2008). Several purists believed qualitative and quantitative research cannot be merged, and that they each have their own distinct purpose (Bryman, 2008; Creswell et al., 2007).

In understanding perspectives of paradigm wars, it becomes important to define the concept of ‘paradigm’, particularly within the social sciences. Morgan (2007) has proposed four conceptions of paradigm common to the social sciences, namely: (1) worldviews, (2) epistemological stances, (3) shared beliefs in a research field, and (4) model examples. These are explained below:

1. Paradigm as worldview is one of the most comprehensive paradigms, as it takes into consideration the broadest understanding about the views, actions, experiences, and thoughts regarding the world.
2. Paradigms as epistemological stances are largely shaped by the researcher’s ‘philosophy of knowledge’ that shapes the way research questions are examined and answered, narrowly framed within the researcher’s belief system (examples of this paradigm include realism and constructivism).
3. Paradigms as shared beliefs often arise in a group of researchers who share a common view of which questions are considered important and the ways in which they should be answered in research.

4. The final perspective of paradigms as model examples is where archetypes or protocols of research act as examples of how research can be conducted within a given specific research area.

### **Pragmatism**

Pragmatism as a research paradigm is an example of where paradigms are understood from the perspective of being ‘model examples’ for research. The perspective of paradigms as examples for how research should be done, considering pragmatism, becomes important when examining the combination of qualitative and quantitative methods in mixed methodological research (Morgan, 2007). Mixed methodological research presents a number of alternative ‘paradigms’ of which pragmatism is most commonly used (Feilzer, 2009). Pragmatism allows the researcher to focus on the research problem needing to be addressed and the associated consequences of the research, which is the opposite to what positivism, post-positivism, and constructivism offer as part of their worldview (Bryman, 2008; Miller, 2006; Feilzer, 2009). Johnson et al. (2007) argue that the pragmatic approach considers the importance of the reality and influences of the inner world of human experience in action. Pragmatism, as a paradigm, views the world as consisting of both single and multiple realities that allow the researcher to be open to examining and addressing the research problem within the ‘real world’ (Feilzer, 2010; Morgan, 2007; Creswell & Plano Clark, 2007). The pragmatic paradigm questions the underpinnings of positivism and constructivism and promotes a worldview of the amalgamation of qualitative and quantitative methodologies (Feilzer, 2010; Morgan, 2007). This confirms that these methods are not distinct when considering the epistemology and ontology, but that they are collectively similar in their attempts to unravel research problems (Hanson, 2008; Feilzer, 2009). Overall, pragmatism is not concerned with the segregation that exists in the hierarchy of evidence regarding qualitative and quantitative methods and can be seen as providing a solution to what has been considered the paradigm wars (Feilzer, 2010; Morgan, 2007). Pragmatism affords researchers the opportunity of satisfying what their

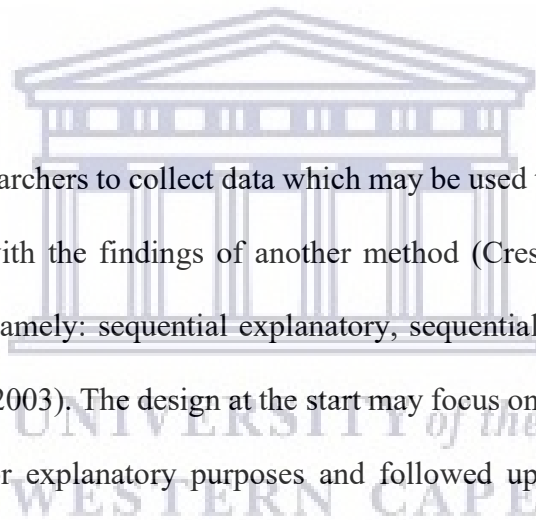
intended questions were regarding the research problem, rather than addressing it minimally from within a silo, or ‘purist’ paradigm (Feilzer, 2010). The current study employed a pragmatist paradigm, as using both qualitative and quantitative methods would assist in satisfying the overall aim of the study.

#### **4.2.2 Mixed Methodology: Types of Research Designs**

The different typologies of mixed methods that can be used in a study are highlighted below. The typologies of mixed methods use more than one methodology, which comprises sequential and concurrent procedures.

##### **Sequential Procedure**

This procedure assists researchers to collect data which may be used to elaborate on or expand the findings of one method with the findings of another method (Creswell, 2003). Three types of sequential designs exist, namely: sequential explanatory, sequential exploratory, and sequential transformative (Creswell, 2003). The design at the start may focus on the quantitative method as a priority, which is used for explanatory purposes and followed up with lesser emphasis on a qualitative method. In this design, the priority is more on the quantitative aspects, and the qualitative aspect is used to explain the relationships and differences found in the first phase. It has been indicated that a sequential explanatory design does not use an explicit advocacy lens. Integration takes place in the interpretation of the findings or discussion (Hanson et al., 2005). This procedure is known as a sequential explanatory mixed method (Creswell, 2003). The sequential exploratory designs do not use an explicit advocacy lens. Integration occurs in the interpretation of findings or in the discussion phase, where the results are combined. In this design, data analysis is separate, and integration takes place in the interpretation of the findings.



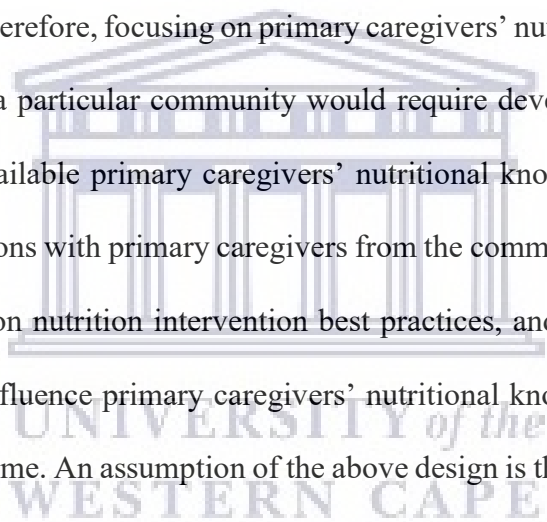
## **Concurrent Procedure**

This is a procedure that allows researchers to use a mixed method in order to converge quantitative and qualitative data in a study (Creswell, 2003;). Hanson et al. (2005) list three types of concurrent designs. They are concurrent triangulation, concurrent nested, and concurrent transformative. In concurrent triangulation, quantitative and qualitative data are collected and analyzed simultaneously (Hanson et al., 2005). Priority is equally shared between both forms of data. Interpretation typically involves discussing the extent to which the data triangulate or converge (Hanson et al., 2005), as the designs tend to confirm, cross-validate, and corroborate study findings. The research combines the quantitative and qualitative information in the interpretation of the overall results. In relation to the concurrent nested approach, qualitative and quantitative data are collected and analyzed simultaneously (Hanson et al., 2005). Priority is unequal between the two forms of data. In this design, data analysis is conducted in order to transform data, while integration takes place in data analysis. In contrast, concurrent transformative designs use an explicit advocacy lens, such as a sequential transformative design. This design uses both qualitative and quantitative methods to collect and analyze data simultaneously. Priority can be unequal and given to one form of data; however, it can be equal and given to both forms of data (Hanson et al., 2005).

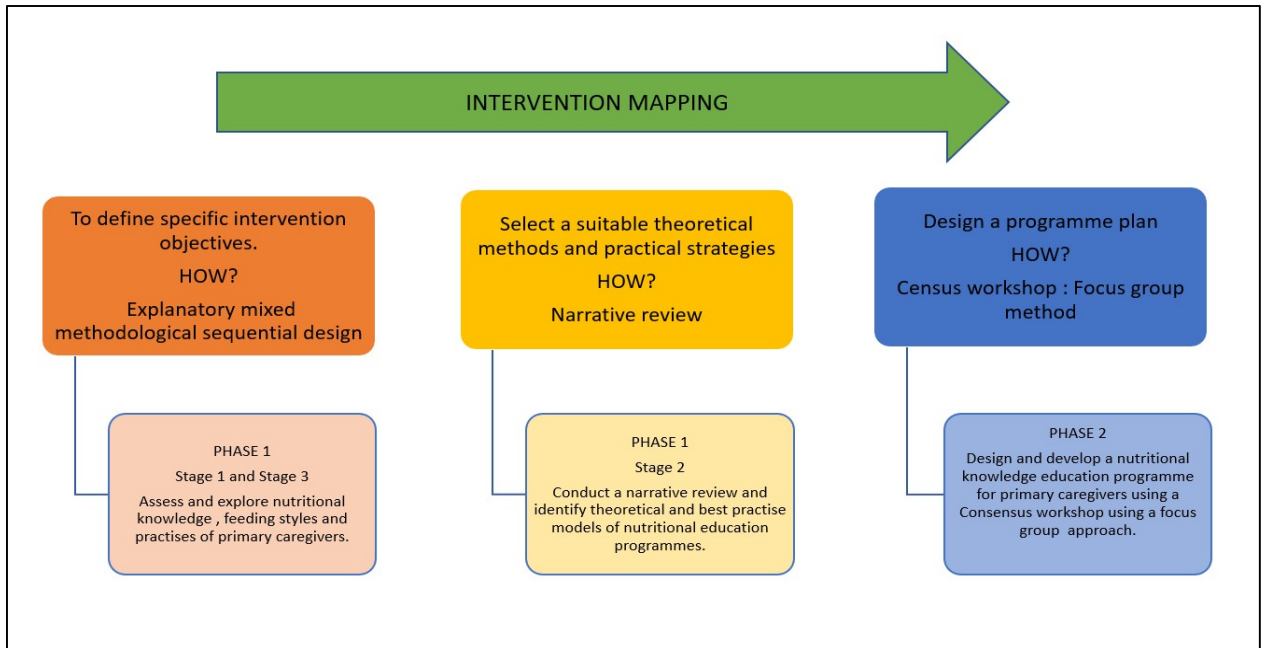
### **4.3 Research Design of the Current Study**

This study used a sequential, exploratory, mixed method approach within a two-phase intervention mapping framework as its research design. Research design refers to the strategy that researchers choose to use to integrate the different components of the study in a logical manner. Therefore, it articulates what data is required, what methods are going to be used to collect and analyse data, as well as how it will answer your research question (Creswell & Plano Clark, 2006). This study used the mixed methods approach to implement IM for evidence-based health promotion programmes. Intervention steps included in the study design were: (1) a needs assessment, (2) identifying

performance objectives, (3) methods and strategies, and (4) programme development (Bartholomew et al., 1998, 2006). It was out of scope of the current study to focus on adoption, implementation and evaluation, which is the fifth step in IM. IM is the systematic implementation of the basic tools of intervention development based on theory, empirical insights from the literature, and information collected from the target population (Bartholomew et al., 1998). The overall design of the study entails using the knowledge obtained from the literature as well as key stakeholder groups to develop, implement and evaluate an intervention in five stages (van Oostrom et al., 2007). IM is also embedded within a socioecological approach, viewing individuals and phenomena as nested within influencing environments, and as such is aligned with the conceptual framework of the study. Therefore, focusing on primary caregivers' nutritional knowledge, feeding styles and practices from a particular community would require developing an intervention that uses IM to incorporate available primary caregivers' nutritional knowledge, feeding styles, and practices, through discussions with primary caregivers from the community. This was followed by a review of the literature on nutrition intervention best practices, and an analysis of the various factors and reasons that influence primary caregivers' nutritional knowledge, in order to deliver the an appropriate programme. An assumption of the above design is that there will be cooperation and collaboration between those that would make use of the intervention and the intervention developers (van Oomstrom et al., 2007). Figure 4.1 below provides an outline of the intervention mapping and is discussed in detail below.

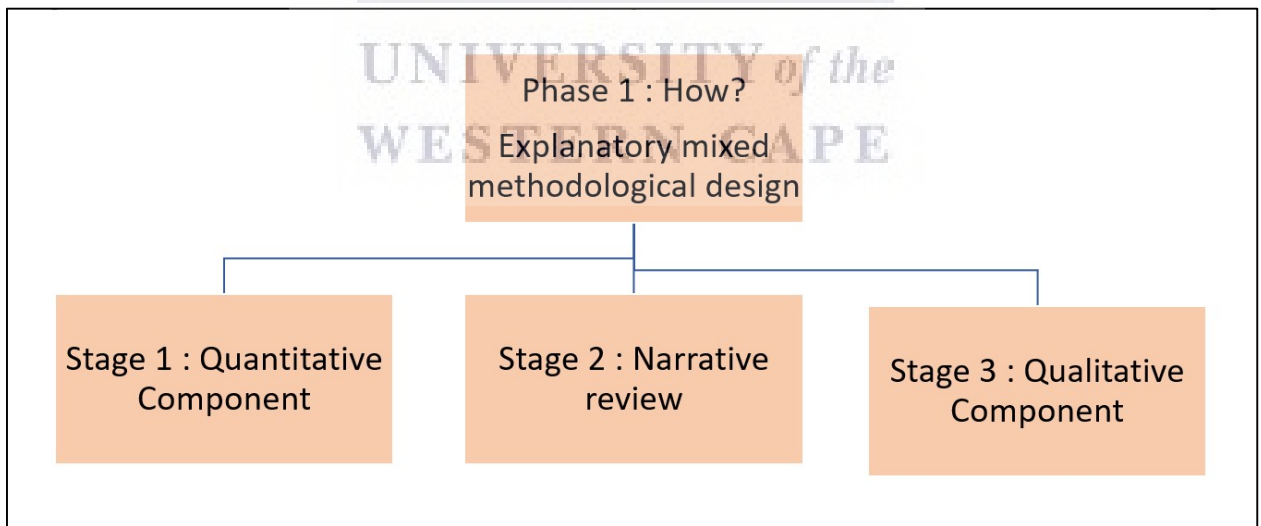






**Figure 4.1: Outline of the Selected Phases and Processes Followed**

**Phase one** of the study is the identification of the problem in three stages: a cross-sectional quantitative study exploring the nutritional knowledge of parents, a narrative review, and a qualitative study. Figure 4.2 outlines the stages developed in phase one of the study.



**Figure 4.2: Stages Developed in Phase 1 of the Study**

**Phase 1 - Stage 1 of the study focused on the nutritional knowledge of primary caregivers.**

The study was cross-sectional in terms of the time dimension as several factors were assessed at the same time (Babbie & Mouton, 2007). Cross-sectional studies are relatively inexpensive and take little time to conduct (Sedgwick, 2014). This quantitative design allowed data to be collected at a single point in time, although the selection of participants could take a longer time (Sedgwick, 2014).

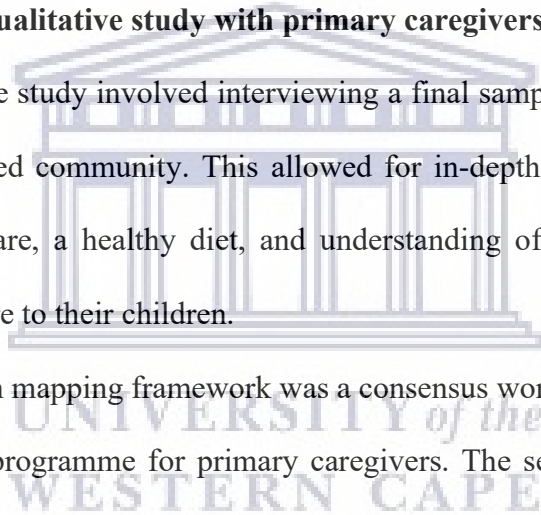
**Phase 1 - Stage 2 of the study was a narrative review of nutrition best practice models**

A narrative review was conducted to identify best practice models of a nutrition education programme for parental feeding styles and practices to improve their children's nutritional status.

**Phase 1 - Stage 3 was a qualitative study with primary caregivers**

The qualitative stage of the study involved interviewing a final sample of ten primary caregivers from a resource-constrained community. This allowed for in-depth interviews focusing on the provision of nutritional care, a healthy diet, and understanding of the roles of fathers in the provision of nutritional care to their children.

**Phase 2** of the intervention mapping framework was a consensus workshop conducted to develop the nutritional education programme for primary caregivers. The sequential exploratory mixed methods research design was used in order for the findings from the first phase to be used in the second phase.



### **4.3.1 The Context of the Current Study**

The following provides a description of the context of the current study based on the aim, research questions and distinctive study phases

#### **Aim**

The overall aim of the study was to develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to improve their children's nutritional status.

#### **Research questions**

The following research questions were developed:

1. What are the feeding styles and practices of primary caregivers/parents in children aged older than 3 years old?
2. What is the knowledge of primary caregivers/parents regarding childhood nutrition?
3. What are the best practice in nutrition education programmes and models for primary caregivers/parents at improving their children's nutritional status?
4. What would be needed to develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to possibly improve the nutrition status of their children?

#### **Objectives**

The objectives of this study were designed using IM as a framework. IM traditionally has five phases (van Oostrom et al., 2007) and although it is structured, it is a non-linear process. This means that one is able to go back to previous stages with new insights to incorporate (Bartholomew et al., 1998). Each of the objectives outlined were addressed within a specific phase and stage of the study.

The objectives of the study were therefore to:

1. Determine and explore the feeding styles and practices of primary caregivers/parents.

2. Determine the knowledge of primary caregivers/parents' regarding childhood nutrition including sources of nutrients and diet–disease relationships.
3. Conduct a narrative review to identify best practice models and nutrition education programmes for primary caregivers/parents aimed at improving their children's nutritional status.
4. Develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to possibly improve the nutritional status of their children.

### **4.3.2 Phase 1: A Needs Assessment**

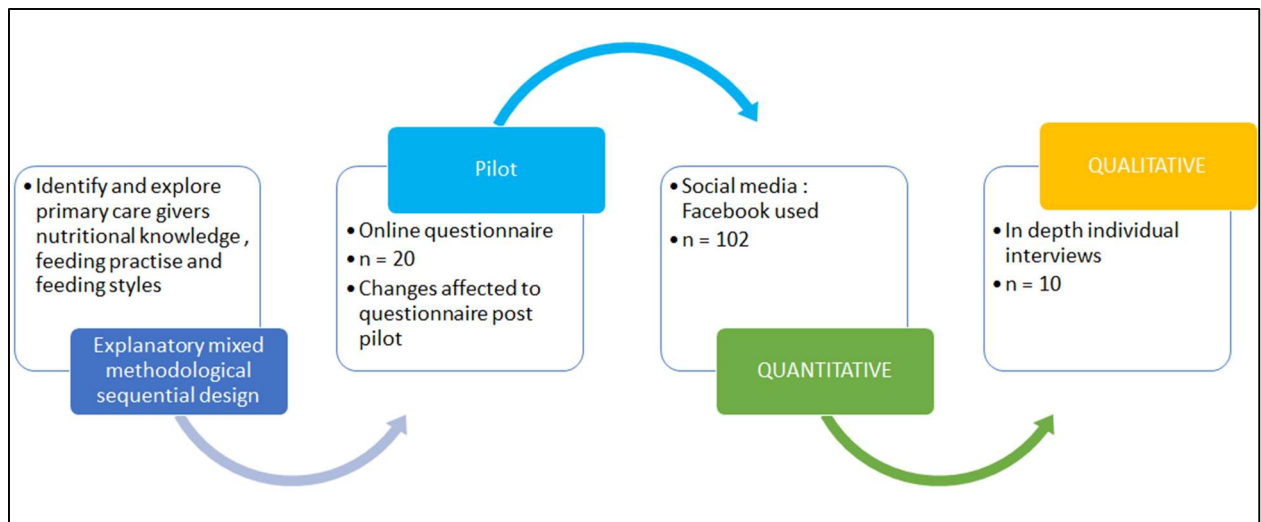
#### **Exploring Nutritional Knowledge, Feeding Styles and Practices of Primary Caregivers**

The needs assessment focused on the answering the following objectives in stage one and three of the study. Stage two focused on its own objectives which is outlined further in the chapter.

**Objective 1:** Determine and explore the feeding styles and practices of primary caregivers/parents.

**Objective 2:** Determine caregivers/parents' knowledge of the sources of nutrients and diet-disease relationships.

In phase one an explanatory mixed methodological sequential design was implemented as this design honors a strong initial data collection, is easy to administer, and is often used by beginning mixed methods researchers (Creswell & Hirose, 2019). According to Ivankova, Creswell and Stick (2006), data are first collected and analyzed quantitatively. This information provides a general understanding of the research problem – in this case, the nutritional knowledge, feeding styles, and practices of primary caregivers – and so informs the second, qualitative stage which builds upon the first (Ivankova et al., 2006). The qualitative stage was necessary for not only understanding the 'community definitions' (Wood, 2016) of nutrition in general, but allowed the researcher to gain further input/comments/suggestions, thus also ensuring that reflection and analysis is continuous throughout the process (Kemmis & McTaggart, 2008; Wood, 2016).



**Figure 4.3: Methodological Sequence**

### **I. Stage 1: Quantitative component of the nutritional knowledge programme**

This stage addressed the following objectives:

**Objective 1:** Determine and explore the feeding styles and practices of primary caregivers/parents.

**Objective 2:** Determine caregivers/parents' knowledge of the sources of nutrients and diet-disease relationships.

**Participants:** Parents and caregivers of children ages 3 – 18 years old were recruited via an online social media platform. A list of four online groups were created on Facebook, specifically within South Africa, which met the criteria of parents and caregivers. Researchers are finding the Internet an especially rich domain for conducting survey research. Virtual communities have flourished online, and hundreds of thousands of people regularly participate in discussions about almost every conceivable issue and interest (Wright, 2017). The study itself was not concerned with the age category of the participants children, but rather on the primary caregivers feeding styles, practice and their nutritional knowledge in general. The Facebook group was administered via email, and the study abstract proposal was sent to group members, asking them to participate in the survey, as well as asking if they were open to sharing a post or forum message highlighting the study.

Collectively in all four Facebook groups there were 2,752 participants. The administrators of all four groups posted the message four times over the period of a month. The message across each Facebook group received a total of 352 likes but this did not translate into the same number of participants completing the survey itself which had a response rate of 3.7%. Members of the groups who agreed and fitted the profile of having children between the ages of 3 – 18 years of age were included in this study if they completed the questionnaire. An online Google questionnaire (Appendix A) was created to collect the data. The questionnaire consisted of a basic demographic section (age, gender, race), and included questions on current employment status, household makeup (i.e. head of the household and family structure including if the father is present in the home), as well as education level. Upon completion of the questionnaire, the data was automatically submitted to a centralized database by the participant selecting the 'submit' tab on the questionnaire form. Data collection instruments were then populated. Table 4.1 below outlines the demographic information of the participants in the pilot study.

**Table 4.1: Demographic Information of the Participants in the Pilot Study (n=20)**

Variables	n	%
Male	3	15
Female	17	85
Employed	15	75
Home language (English)	19	95
Age		
31-39	13	65
40 - 49	3	15
50 -59	4	20

The sample was made up of 102 South African parents and caregivers with a mean age of 38.48 (SD = 8.65) years. Demographic details of the quantitative sample are shown in Table 4.2 below.

**Table 4.2: Demographic Information of the Quantitative Sample n= 102**

<b>Variables</b>	<b>n</b>	<b>%</b>
<b>Gender</b>		
Male	15	14.8
Female	87	85.2
<b>Age</b>		
21 - 30	35	34.3
31- 39	38	37.2
40 - 49	21	20.5
50 -59	8	7.8
<b>Post Matric Education</b>		
Post matric education	60	58.8
<b>Race</b>		
Asian/Indian	13	13
Mixed Ancestry /Heritage	53	52
Black	22	22
Caucasian	13	13
Other	1	1
<b>Home Language</b>		
English	53	59.8
Africans	18	22.5

IsiXhosa	22	17.4
<b>Head of Household</b>		
Yourself	42	39.9
Spouse	60	56.1
Father	4	3.7
Other family	1	0.9
Employed	85	83.3

### Data Collection Instruments

The Parents as Social Context Questionnaire (PASCQ) (Skinner et al., 1986) was used as the data collection instrument. Additionally, the Emotion Related Parenting Styles (ERPS) scale (Paterson et al., 2012) was attached for completion. The ERPS is a 20-item scale, based on meta-emotion theory (Gottman & DeClaire, 1997), which contains four subscales. Each subscale measures a different emotion-related parenting style, namely: PA - parental acceptance of negative emotions (emotion approving), PR - parental rejection of negative emotions (emotion disapproving), EC - emotion coaching of negative emotions (active socialization), and UI - uncertain/ineffective socialization of negative emotions (passive socialization). Each subscale has five gender-neutral items. Examples include the following: PA - "I want my child to experience sadness", PR - "Children act sad to get their way", EC - "When my child is angry, it's time to problem solve", and UI - "When my child is sad, I'm not quite sure what he or she wants me to do". Responses were rated along a 4-point Likert-type scale from 1 (Not at all true) to 4 (Very true). Total subscale scores were calculated by summing the items of each subscale. High scores represented an endorsement of the associated parenting style. The Comprehensive Child Feeding Practice Questionnaire (CFPQ) (Musher-Eizenman & Holub, 2007) and the General Nutritional



Knowledge Questionnaire (GNKQ) (Parmenter et al., 2000) for adults was also included to gain a perspective on the nutritional knowledge of parents. The CFPQ contained 12 items which indicate different feeding practices of primary caregivers: (1) child control (5 items); (2) emotion regulation (3 items); (3) encourage balance and variety (4 items); (4) environment (4 items); (5) food as reward (3 items); (6) involvement (3 items); (7) modelling (4 items); (8) monitoring (4 items); (9) pressure (4 items); (10) restriction for health (4 items); (11) restriction for weight control (8 items); and (12) teaching about nutrition (3 items). Participants had to respond on a 5-point Likert scale ranging from 1 = Never to 5 = Always. The alpha co-efficient for the CFPQ range between 0.64 and 0.86.

The GNKQ covered current dietary recommendations, sources of nutrients, everyday food choices, and diet-disease relationships. The questionnaire was suitable as it very clearly addressed Objective 2: To determine the knowledge of primary caregivers/parents' regarding childhood nutrition including sources of nutrients and diet-disease relationships. It was previously used in a South African sample which examined the nutritional knowledge among a sample of urban black and caucasian South Africans (Peltzer, 2004). It was adapted to suit the food ideas and names commonly found in the South African context e.g. tomato ketchup was changed to tomato sauce, removing the brand names of cheese and just using cheese. The questionnaire helped highlight the behaviours of participants with regard to their food choices as it underlined the main aspects relating to knowledge about dietary behaviour. These aspects are:

- Do people know what the current expert dietary recommendations are?
- Do they know which foods provide the nutrients referred to in the recommendations?
- Can they choose between different foods to identify the healthiest ones?
- Do they know what the health implications of eating or failing to eat particular foods are?

These aspects represented a comprehensive assessment of nutritional knowledge. Participants had to respond on a 3- or 4-point Likert scale ranging from 1 = No to 3 = Yes, 1 = Same to 4 = Not sure, or ticking the box they found appropriate. The alpha co-efficient for the GNKQ range between 0.70 and 0.97.

Additionally, the Parental Psychological Control (Barber, 1996) questionnaire was used to measure parental psychological control of both mothers and fathers. Barber's eight-item scale, a revised version of the Children's Report of Parental Behaviour Inventory (CRPBI) (Schaefer, 1965), was used in this study. Participants were asked to describe their mothers and fathers by choosing responses on a 3-point Likert scale with 1= "not like her"; 2 = "somewhat like her", and 3 = "a lot like her". The higher the scores the more controlling mothers and fathers are.

Adaptations to the use of certain American English words were made based on feedback by the pilot participants e.g. soda and pop were changed to South Africa terms such as cool drinks or fizzy drinks. The following suggestions were also addressed post the pilot study: the use of a save function so that one could come back to the survey later, and linking questions so if you say no to one question, it would take you to the next in line question automatically. If you opted to be part of the study but your children do not live at home or are older than the required age group, you can opt-out of the survey on the first page. Grammar and Likert scale numbering were also updated based on pilot participant feedback.

### **Data Analysis**

The data were coded, captured and analysed using the Statistical Package for The Social Sciences Version 22 (SPSS V22). Initially, 126 questionnaires were captured online; however, it soon became clear that there were missing items in 24 of the responses. These were excluded from the study as the participants closed the questionnaire before completion of the nutritional knowledge

questionnaires. The data was analyzed using descriptive statistics (frequencies and mean scores) for the sub-scales of parenting styles, child feeding practices, nutritional knowledge, and psychological control. Correlations were also done between parenting and feeding, and correlations between factors varied in magnitude and direction (the process is described in Chapter 5, Article 1).

## II. Stage 2: Narrative Review

Stage two of the study focused only on answering objective three:

**Objective 3:** Conduct a narrative review to identify best practice models and nutrition education programmes for primary caregivers/parents aimed at improving their children's nutritional status.

### Research Design

A narrative literature review was used for this study as they provide useful summaries, in-depth analysis of a specific topic and may describe the evolution of the subject over time (Mills et al., 2016). Narrative reviews are a “discussion of important topics on a theoretical point of view” (Jahan et al., 2016, p.864). Three types of narrative reviews of the literature exist: “editorials, commentaries, and overview articles” (Green et al., 2006, p.105). Narrative overviews, also known as an unsystematic narrative review, “are a comprehensive narrative composite of previously published works” (Green et al., 2006, p.105). These are distinguished from a “systematic review, in which all primary evidence that meets clear inclusion criteria is retrieved” and its “quality appraised using clear and reproducible methodology” (MacDonald., 2003, p.105). The unsystematic narrative reviews “do not always make clear the inclusion criteria or methods for appraisal” (MacDonald., 2003, p.105). In defense of narrative reviews, Collins and Fauser (2005) note narrative reviews can have the advantage over systematic reviews of tackling more comprehensive topics. These authors call for narrative reviews to be strengthened by adopting

some of the techniques of systematic reviews such as transparency in reporting methods. Therefore, this study used the RE-AIM framework as a means to support transparency. Using the RE-AIM framework for an intervention checklist provides a lens through which to evaluate the quality and impact of an intervention. It focuses on the extent to which the intervention attracts its targeted participants, the improvements or changes in the participants' lives, the setting/site/context of the intervention, its fidelity, transferability and adaptability as well as the intervention's evaluation and maintenance (Belza et al., 2006). Moreover, because parents serve as intervention agents, full reporting of the RE-AIM components can provide insight for the development of the types of interventions that are most likely to be adopted and implemented by parents (Schlechter et al., 2016).

### **Search Strategy**

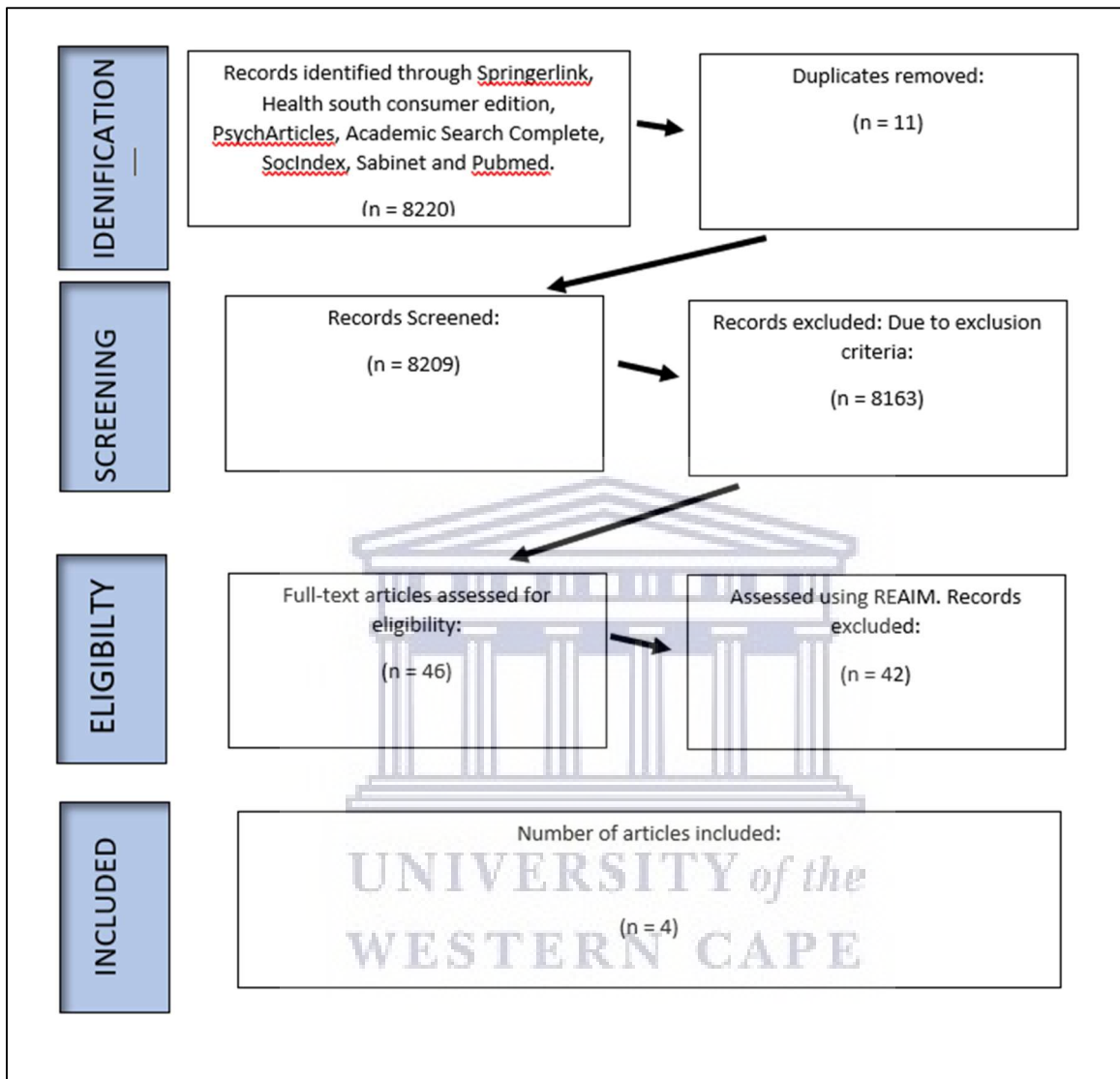
Between the period of August and October 2018 a comprehensive search was conducted in the following eight databases: Springerlink, Health South Consumer Edition, PsychArticles, Academic Search Complete, SocIndex, Sabinet, and Pubmed. These databases were chosen due to their content matter and accessibility to the primary author through the university. The following keywords were used in the order documented: "Feeding education programmes in Africa", "Nutritional programmes in Africa", "Parental programmes in Africa", "Feeding styles in Africa", "Nutrition education in Africa", and "Nutritional education programmes in Africa". Following this, these keywords were searched in academic journals: "Nutritional interventions in Africa", "Parental nutritional education programmes in Africa", "Feeding and parent practice programmes", "Parental feeding programmes", "Feeding and parent practice interventions", "Parent feeding programme". These keywords were searched for in quotation marks. The Boolean operator 'OR' was used between these phrases. Very few article hits were retrieved at this stage, with only the following countries receiving hits on articles: Angola, Lesotho, Ghana, Mozambique, Zimbabwe, Zambia, Namibia, Kenya, Swaziland, and Uganda. Due to the limited number of

articles found, the search was conducted again with the removal of the word Africa, but the use of all the same search words. From the results found, all published, English language, peer-reviewed studies within the last ten years (2008-April 2018) were considered for review, to ensure that only current and appropriate research was used.

### **Inclusion and Exclusion Criteria**

To be eligible, studies had to demonstrate that primary caregivers' involvement was relevant, as well as meet other inclusion criteria. Primary caregivers' relevance was defined as studies that: (1) included primary caregivers' involvement in interventions to improve child dietary intake; (2) addressed whether primary caregivers involvement enhances intervention effectiveness; and (3) addressed what type of involvement is most effective in achieving the desired outcome. Other inclusion criteria included studies that: (1) included a control/comparison group; (2) included an intervention focused on primary caregivers nutrition knowledge improvement, obesity prevention, chronic disease prevention, or health promotion intervention; (3) included a primary caregiver component, defined as an intervention that directly engaged primary caregivers to be intervention agents by supporting or assisting children or adolescents to achieve changes in dietary intake; (4) included child and family dietary intake as a behaviour change; (5) recruited primary caregivers with children (3–12 years), or adolescents (13–18 years) and included only humans; (6) were published in a peer-reviewed, English language journal between January 2008 – 2018; (7) used qualitative, quantitative and mixed methods studies; and (8) had case studies. Criteria for exclusion were: (1) studies without an intervention component; (2) intervention programmes designed solely to treat overweight or obese children; (3) programmes that enrolled children with a specific medical problem that could impact diet or weight; (4) studies for which statistical analysis of outcome data were not reported (e.g., trial protocols, unless complementary to a study that met eligibility criteria); (5) literature reviews or commentary; (6) studies with diet as a correlate and

not an outcome; and (7) programme evaluation or pilot studies. A flow diagram of the search process following the PRISMA statement is depicted in Figure 4.4 below.



**Figure 4.4: Flow Diagram based on the PRISMA Statement**

### Data Extraction and Analysis

Three levels of review were used. First a total record (n=8,220) was assessed and identified for eligibility in terms of their titles and abstracts (using the specified parameters). In the second level of review, the abstract was further assessed and articles which satisfied all inclusion criteria were deemed eligible for appraisal. From this review, 8,163 articles were removed due to the following reasons: the studies were out of the scope of the review (focusing on breastfeeding, first thousand

days of life, or HIV or a specific disease, etc.); were not published in English; they required payment and were not freely available; or were grey literature, systematic reviews or conceptual papers only. Duplicate articles across the different databases were deleted (n=12). From the retrieved articles' (n=46) interventions were screened as eligible. A further (n=42) were excluded based on the RE-AIM (reach, effectiveness, adoption, implementation and maintenance) approach with a series of “yes” or “no” questions. All three levels of the review were performed by both the primary researcher as well as a second reviewer. A final total of 4 articles were deemed relevant to the study.

The RE-AIM framework was used to disseminate results to allow for cross-comparison of core components inherent in health promotion interventions. The RE-AIM framework assists with facilitating development, delivery and evaluation of health interventions according to five elements, namely: 1) Reach – which refers to which target population the intervention will reach and was the intervention used on the intended target population; 2) Effectiveness – refers to the intervention achieving its objectives/outcomes; 3) Adoption – refers to the target staff or organization adopting the intervention; 4) Implementation – refers to consistency and adaption of intervention protocol to practice; 5) Maintenance – refers to intervention effects on participants over time (Matthews, Kirk, MacMillan & Mutrie, 2013).

A data extraction table was developed for the study (Table 6.1, displayed in Chapter 6 Manuscript 2).

### III. Stage 3: Qualitative Component of Nutritional Knowledge

Stage three of the study focused on answering objectives one and two:

**Objective 1:** Determine and explore the feeding styles and practices of primary caregivers/parents.

**Objective 2:** Determine the knowledge of primary caregivers/parents' regarding childhood nutrition including sources of nutrients and diet–disease relationships.

#### Site Selection and Study Population

The study was conducted in Manenberg, Cape Town, South Africa. The township of Manenberg was established in 1966 at the height of the apartheid regime's forced removal programme in South Africa. Manenberg is about 20km from Cape Town city centre and is currently identified as a place where gang members roam and wield enormous power over the community. Drugs are readily available, and unemployment is high (Du Toit, 2014). The 2011 census showed Manenberg had a population of over 61 000, of which 85% were identified as 'Coloured' (mixed ancestry) and 10% as African. Current research on men from mixed ancestry in South Africa has been limited, with a focus on the conception of the "Coloured" masculinity as "violent, uncaring, and absent" (Anderson, 2009; Moolman, 2004; Salo, 2011). 40 452 people fell into the 'working age' (15–64) category. Amongst this group, 35% (13 962) were classified as employed, 20% (7 923) as unemployed and 46% (18 567) as 'not economically active' (City of Cape Town, 2011). Of all households, 61% of them experience monthly income being less than R3200 (US \$186.50) and 38% had a monthly income of R1600 (US \$93) or less (City of Cape Town, 2011). The current South Africa food poverty line (FPL) is R561 (US \$33) per person per month, with the Upper-bound poverty line being R1227 (US \$72) per person per month (STATS SA 2019).

The study site was initially aimed at four purposefully selected schools in the area: two high schools and two primary schools. In the qualitative study, purposive sampling was used. A purposive sample, also commonly called a judgmental sample, is one that is selected based on the



knowledge of a population and the purpose of the study (Mujere, 2016). The subjects are selected because of specific characteristics. The individual characteristics are selected to answer necessary questions about a “certain matter or product” (MacNearly, 1999). This method of sampling is useful when a researcher wants to study “a small subset of a larger population in which many members of the subset are easily identified but the enumeration of all is nearly impossible” (Babbie, 1990). Purposive sampling was used during phase one of the study, when parents at schools from areas that were classified as low socio-economic were targeted to be part of the survey. This sampling method was also used during the phase three of the study when experts were selected to give expert input regarding the development of a primary caregivers’ nutritional knowledge programme. The schools were selected as they represented each sub-area in Mannenberg. Primary caregivers were asked to meet at one school in the area, which was regarded as a safe zone. On the day of the interviews, primary caregivers from only one school had presented as there was gang violence in the area and primary caregivers did not feel safe walking from one sub-area of the community to the other to conduct the interviews. As the negotiations to agree on a day for the interviews had been ongoing for more than three months, a call was made by the researcher and her supervisor to continue with the interviews on the set day with the primary caregivers who were available. The questionnaire used is included as Appendix B.

#### **4.3.3 Phase 2: Consensus Workshop, Focus Group Approach**

Phase two focused on achieving objective four:

**Objective 4:** Develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to possibly improve the nutritional status of their children.

##### **Research Design**

A primary caregivers’ workshop was held using a focus group discussion approach. The purpose of the workshop was to generate ideas based on participants’ expertise or personal experience of

parenting a child. A focus group discussion is perceived to be a cost-effective and promising alternative in participatory research, offering a platform for differing paradigms or worldviews (Nyumba et al., 2018). Focus group discussions can be utilized within a suite of techniques in a multi-method research design, as a principal research method in its own right, or as a form of participatory action research to empower participants and promote social change (Nyumba et al., 2018). Nyumba et al. (2018, p.22) identified five types of focus group discussions in the literature, and a further two which are emerging with the growth in access and variety of “online platforms”:

1. **Single Focus Group:** “The key feature of a single focus group is the interactive discussion of a topic by a collection of all participants and a team of facilitators as one group in one place. This is the most common and classical type of focus group discussion. It has been widely used by both researchers and practitioners across the field (e.g. Lunt & Livingstone, 1996; Morgan, 1996; Wilkinson, 1998).”
2. **Two-way Focus Group:** “This format involves using two groups where one group actively discusses a topic, whereas the other observes the first group. Usually, this type of focus group is conducted behind a one-way glass. The observing group and the moderator can observe and note the interactions and discussion of the first group without being seen. Hearing what the other group thinks (or by observing their interactions) often leads the second group to different conclusions than those it may have reached otherwise.”
3. **Dual Moderator Focus Group:** “Involves two moderators working together, each performing a different role within the same focus group. The division of roles ensures a smooth progression of the session and ensures that all topics are covered.”
4. **Dueling Moderator Focus Group:** “This involves two moderators who purposefully take opposing sides on an issue or topic under investigation. Proponents believe that the introduction of contrary views to the discussion by the moderators is critical to achieving more in-depth disclosure of data and information.”

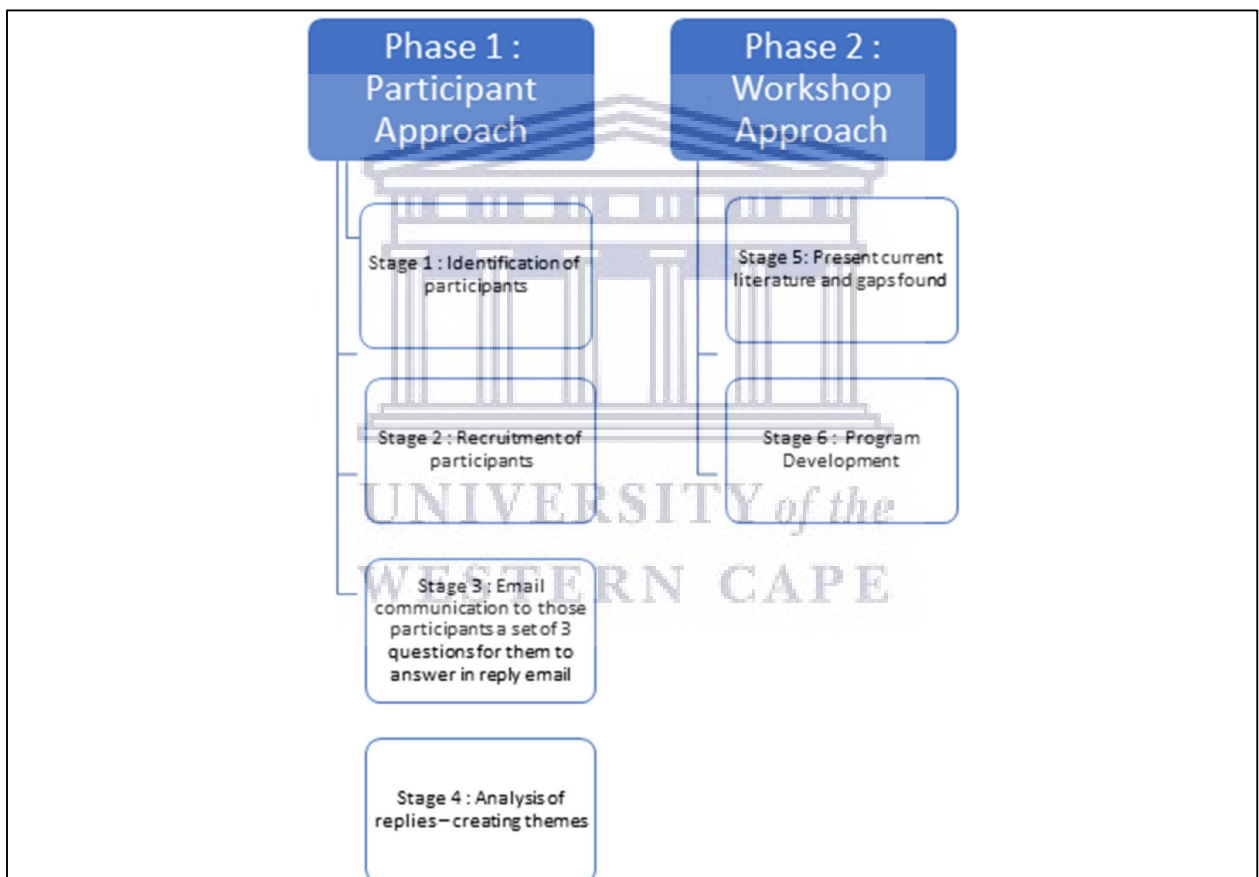
5. **Respondent Moderator Focus Group:** “In this type of focus group discussion, researchers recruit some of the participants to take up a temporary role of moderators. Having one of the participants lead the discussion is thought to impact on the dynamics of the group by influencing participants’ answers, thereby increasing the chances of varied and more honest responses.”
6. **Mini Focus Group:** “Researchers are usually faced with a situation where there is a small potential pool of participants that are difficult to reach, yet the research design requires that the topic must be discussed in a group. Under these circumstances, researchers can only convene a small group of between two and five participants. Such groups are usually made up of individuals with high level of expertise.”
7. **Online Focus Groups:** “Online focus groups are not a different type of focus group discussion per se but one borne out of the introduction of the Internet as an adaptation of traditional methods. It is applied within the online environment, using conference calling, chat rooms or other online means. Online focus groups boast an aura of dynamism, modernity and competitiveness that transcends classic problems with face-to-face focus group discussion. However, these discussion platforms are only accessible to participants with access to the Internet and are prone to technical problems such as poor or loss of connectivity and failure to capture non-verbal data.”

The current study used the “Single focus group approach”, which allowed participants to provide insight in developing a supportive programme to positively influence their own or other primary caregivers nutritional knowledge, while relying on the facilitator or moderator to guide the group’s discussion (Berg, 1989; Morgan.D, 1988). In this type of focus group discussion the facilitator must have the necessary skillset and be up to date with relevant techniques so as to fully address the discussions and lead the process (Nyumba et al., 2018). The facilitator must have strong speaking and communication skills, as well as knowledge of the topic of discussion. Having a base

understanding on the subject is important to probe different answers to allow for more in-depth discussion, but the facilitator should demonstrate some degree of “naïveté” to encourage participants’ responses.

### Approach

The workshop followed two clear distinct phases, each comprising separate stages that needed to be completed before being able to move to the next one. The following diagram provides an outline of the process followed:



**Figure 4.5: Flowchart of Workshop Phases and Stages**

**Participants:** Two cohorts made up this phase of the study. The first was a group of ten experts in their field of nutrition, medicine, teaching and early childhood development, (Mage = 39; SDage = 11.30). The second group was primary caregivers who were currently raising children or who had a family member in the household for whom they cook (Mage = 39; SDage = 15.13).

**Table 4.3: Expert Participant Details**

Participant No.	Gender	Age	Title	Specialty
1	Female	60	Dr.	Phytotherapist
2	Female	51	Dr.	Nutritionist, Naturopath, Former Teacher
3	Female	53	Dr.	Unan-Tibb Phytotherapist
4	Female	39	Dr.	Pediatrician
5	Female	39	Dr.	Homeopath
6	Female	35	Dr.	Primary health care clinic - General Practitioner
7	Female	27	RD	Primary Health care clinic - Registered Dietitian
8	Female	27	RD	Primary Health care clinic - Registered Dietitian
9	Female	32	Educator	Primary School Teacher
10	Female	27	Educator	Early Childhood Development

**Table 4.4: Primary Caregivers**

Participant No.	Gender	Age	Number of Children <17 Years Old	Number of Grandchildren <17 Years of Age
1	Female	66	3	5
2	Female	22	1	0
3	Female	19	0	0
4	Female	36	2	0
5	Female	37	2	0
6	Female	52	4	3
7	Female	41	4	2

Participants were recruited via bibliographic information (internet searches) as well as contacted via email and the social media platform Facebook via a search on Facebook for groups relating to parents and primary caregivers. Criteria for selection included knowledge on meal preparation, exercise, general health, and wellness of families. Participants expressed their interest in being part of the workshop through an RSVP mail. One-hundred and fifty (150) participants were identified. Of the 150, 35 (23%) participants identified themselves as experts, teachers, or allied health practitioners. Participants were sent two questions with a deadline date in return email: 1) Do they provide nutritional education support to parents and primary caregivers? and 2) If they had a desire to share their experiences within a group. Ten responded to the email in the specified time frame and were saved in a database for inclusion in the study. Following this, 125 participants were sent calendar reminders at the one-month mark, at the two-week mark, and finally, one week before the workshop. One week before the workshop, 25 participants accepted the calendar invite

to be part of the workshop. The 25 participants were a mix of health experts, primary caregivers, and teachers who had agreed to be involved in the study. They were emailed an information pack, which outlined the venue as well as the aim of the study. Additionally, they were sent the following three questions for which answers needed to be returned to the researcher five days before the workshop:

1. What is health?
2. What is nutrition?
3. What is nutritional knowledge?

It was noted in the email to respondents that their answers did not require to be referenced responses but only general first thoughts when reading the questions. The researcher received only 11 replies by the due date given. On the day of the workshop, only 17 participants were present, a 65% response rate based on the 25 interested participants. These participants were geographically, economically, and educationally diverse and therefore it was decided to continue with the workshop.

### **Workshop Process**

A PowerPoint presentation was given that provided details on the ways in which nutrition, parenting, parenting styles, and the nutritional knowledge of parents is understood according to the literature review from Phase Two of the methodology (Chapter 7, Article 4). Following this, the proposed draft programme was shared before moving into the programme development stage. The programme development stage shared a similar approach to the popular Delphi technique, however it was adapted for the needs of the study. The Delphi technique consists of the estimate-talk-estimate or nominal group technique, relating to experts providing individual, independent judgments, followed by group discussion, which is then followed by independent judgements drawn from the group discussion until consensus is reached (McMillan et al., 2016). In the current

study, the focus group were shown the planned intervention sessions and activities either in draft form or by having the activities demonstrated. Following this, experts and primary caregivers were asked to provide feedback regarding clarity of purpose, appeal, perceived feasibility, and barriers to implementation. Additionally, the following questions were posed to the group:

1. How will the programme participants be organized? Will it be families who are on their own or in groups?
2. When is a family high risk? How will this be determined? Who will they be sent to?
3. Where would this programme be best suited in location?
4. How can the programme be made more applicable to all?
5. Which facilitators should be used and how should they be chosen? What training should the facilitators receive?
6. How will one create buy-in from participants to attend a 7-week programme?

During the focus group discussions, the first author (researcher) was assisted by a co-facilitator in order to keep detailed notes to ensure an accurate reflection of the round-table discussions. The discussions are shown in Chapter 8, Article 5.

#### **4.4 Validity of the Study**

In mixed methods research it is important to establish validity as a priority before, during and after data collection as this allows for an increase in overall rigour of the design, procedures, implementation, and validity in mixed methods research (Zohrabi, 2013). This in turn increases the strength and validity of the research findings (Ivankova et al., 2006). McKim (2017) examined graduate students' perceptions of the value of mixed methods research. They believed that mixed methods research contributed validity to data since the data is collected using more than one method. Validity refers to "the extent to which the data" is 'believable or true' (Zohrabi, 2013,



p.258). Johnson and Onwuegbuzie (2004) noted that validity is an often-debated term, especially in qualitative research. These authors suggest the use of a different term for validity in mixed methods or mixed research, namely legitimation.

For the narrative review in phase 2, the use of the PRISMA-P was one way to ensure that proper protocol was followed (Moher et al., 2005). The PRISMA-P statement is a checklist of items that enhances due process for a complete systematic review. In addition, working with a second reviewer (peer examination) safeguarded the integrity of the process.

In the current study, triangulation was achieved through collecting data from more than one source using more than one method (Creswell & Miller, 2000). For example, in phase one, data was collected through an online questionnaire and one on one interviews. In phase three, data was collected by means of an email-based questionnaire, as well as gathering inputs from participants to the programme design in the workshop. Phase two's findings was also part of the discussion during the workshop.

#### **4.5 Trustworthiness**

Trustworthiness aims to support the argument that the qualitative enquiry's findings are "worth paying attention to". (Lincoln & Guba, 1985). Data trustworthiness focuses on four major components: credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985, p.97). Credibility refers to establishing confidence in the 'truth' of the findings. To allow for credibility to be addressed, the researcher invited all participating stakeholders to contribute fully to the study in order to collect data that would meet and efficiently cover the research topic. This technique did not meet the classical definition of 'triangulation' (Lincoln & Guba, 1985), however, it did provide a rounded and credible data set. To address transferability, the complete set of data analysis documents post filing are available upon request. To address the issues of dependability

and conformability, the supervisor filled the role of independent auditor, reviewing all research methods used in totality. This saw that all information provided was audited by the supervisor (data, data analysis, draft articles, editor feedback and the dissertation).

#### **4.6 Ethical Considerations**

Ethics has to do with making decisions. These decisions deal with situations where the researcher needs to choose between “right or wrong, proper or improper, good or bad” (McMillan & Schumacher, 2010). In considering the choices made, the researcher always kept the best interest of the participants in mind. To ensure that a high ethical standard was maintained throughout the study, the ‘principilism’ approach was applied. Principilism is applied when a research study is conducted with four philosophical principles in mind to ensure that it is conducted in an ethical manner (Terr et al., 2006). These four philosophical principals are: 1) respect for participants, 2) nonmaleficence, 3) beneficence and 4) justice.

1. **Respect for Participants:** Respect for participants was ensured in the research study by implementing the following:
  - a) Informed consent to participation in the research study by parents
  - b) Informed assent obtained by the participants
  - c) Maintained confidentiality and anonymity of both participants and the schools who partook in the study
  - d) Participants were also treated with the utmost respect and dignity throughout the research study

2. **Nonmaleficence:** Nonmaleficence is a philosophical principle based on causing no harm, both intended and unintended to the participants, by protecting the participant at all times.

This was ensured by implementing the following in the research study:

- a) The study proposal was submitted to the University of the Western Cape's Higher Degrees and Ethics committees and the Western Cape Education Department's research division to ensure that the proposed procedures, and those executed in the study were done in a manner that would not harm the participant, but rather that the participant be protected at each stage of the research study, in the event of any unforeseen circumstances.
- b) Participants were informed that they had the right to withdraw from the study at any time, without explanations or consequences, and that participation was completely voluntary.
- c) Anonymity was also maintained to protect the participants from any unforeseen harm; this was ensured by not requiring any participants to submit any personal information online while completing the survey.
- d) Further to this, the participants who were part of the qualitative study had their responses coded.

3. **Beneficence:** The principle of beneficence is based on the philosophical assumption that the research study will benefit the participants. Even though the study's benefits were not something that the participants directly benefited from, the dissemination of the research study findings will allow for more information to be generated on the topic and allow it to inform future project implementations. The participants in the study also received no incentives for their voluntary participation in the study.

4. **Justice:** The principle of justice allowed for the research participants to be treated in a non-discriminatory and just manner. This was ensured by implementing the following ethical considerations within the study:
- a) The sampling technique employed random selection, which allowed any individual as part of the identified population to have an equal opportunity for possible inclusion in the research study.
  - b) The information regarding the purpose of the study, consent and assent as well as questionnaires, were made available in the language which participants and parents understood best.

Ethical clearance was requested from the Research Ethics Committees and Higher Degrees Committees of the University of the Western Cape (Project number 14/10/34 Appendix C). During the needs assessment phase of the study, informed written consent was obtained from participants (Appendix D). All participants throughout the various phases of the study were informed that their participation was voluntary and that they could choose not to participate or withdraw at any stage during the study without any consequences. A detailed explanation of the purpose of the study was provided to each participant throughout the process (Appendix E).

## 4.7 Conclusion

In summary, the present study used one overarching design, namely intervention mapping, which stipulates three stages useful for intervention development. This chapter provided a detailed account of the steps and processes involved in conducting this multi-method study within its intervention-mapping frame. The results are provided in Chapters 5-8 and include the interpretations that can be made from the outcomes of the different phases.

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## CHAPTER FIVE

### **Nutritional Knowledge, Parenting Styles, and Feeding Styles and Practices of a Sample of South African Parents**

#### **5.1 Introduction**

The objective of this research study was to answer phase one, stage one of the overall study, the quantitative component of the nutritional knowledge programme. It answers Objective one: To determine and explore the feeding styles and practices of primary caregivers/parents; and Objective two: To determine caregivers/parents' knowledge of the sources of nutrients and diet-disease relationships. By assessing primary caregivers' parenting styles and nutritional knowledge, it helped further the development of the qualitative part of the study in relation to what a fathers' role is in the provision of care (as discussed in Chapter 7). This chapter therefore fulfils Phase 1, stage 1 of the intervention mapping design: defining specific intervention objectives. The author presents the publication process of the article entitled: *"Nutritional knowledge, parenting styles and feeding practices of a South African sample of parents"*.

#### **5.2 Ecology of Food and Nutrition Journal Article**

The manuscript was published in the Journal of Ecology of Food and Nutrition which has an impact factor of 1,343. The journal publishes peer-reviewed articles on all aspects of food and nutrition -- ecological, biological, and cultural. Ecology of Food and Nutrition strives to become a forum for disseminating scholarly information on the holistic and cross-cultural dimensions of the study of food and nutrition. The manuscript was submitted for peer review on the 15<sup>th</sup> February 2019. On the 28<sup>th</sup> March 2019 feedback from reviewers was received from the Editor in Chief. Reviewer

comments in (Appendix F) raised concerns with both the methodology and the write – up. Reviewer comments were addressed by the author and the manuscript was resubmitted. The article was accepted for publication and published in the journal on the 18 July 2019.

Permission was received from the editor of the journal on the 12<sup>th</sup> August 2020 to use the article in this thesis (Appendix F).






## Nutritional Knowledge, Parenting Styles and Feeding Practices of a South African Sample of Parents


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## Nutritional Knowledge, Parenting Styles and Feeding Practices of a South African Sample of Parents

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### ABSTRACT


Parenting can be considered as being an all-encompassing network of development for children. Children learn about eating not only through their own experiences but also by watching others. Mothers and children show similar patterns of food acceptance and food preferences. Children's intake of fruit and vegetables was positively related to parents' intake of fruit and vegetables. The current study used self-reported data from parents/primary caregivers' children aged 3-18 covering sociodemographic characteristics, feeding style dimensions ('control overeating', 'emotional feeding', 'encouragement to eat' and 'instrumental feeding') and parenting style dimensions ('involvement' and 'strictness'). The results suggest, that in general, parents were inclined to encourage balance and variety in the food intake of their children, modeling healthy eating behavior, as well as monitoring the food intake of children while restricting unhealthy foods. Further research is needed into whether parents' diets affect children's food choices feeding.

### KEYWORDS

Parenting; nutritional knowledge; parent psychological control; feeding practices

### Parenting

Parenting refers to child-rearing activities which aims to promote and support children's development (Jansen et al. 2014). One common approach has been to conceptualize parenting according to relatively enduring 'styles' of interaction (i.e., authoritative, authoritarian, permissive and neglectful). These styles of interaction are underpinned by two key behavioural dimensions – the extent to which parents are responsive to their children's needs and demands (parental 'responsiveness'), and the extent to which parents set clear limits around their children's behavior and consistently ensure compliance (parental 'demandingness' or 'control') (Jansen et al. 2014). Parenting can be considered as being an all-encompassing network of development for children (Davids, Roman, and Leach 2015). Parents affect the behavior, health, and well-being of their children (Roman 2015) and is an important predictor of children's social and emotional adjustment (Kiff, Lengua, and Zalewski 2011). It is a key element in the socialization and rearing of children, as parental nurturing contributes towards

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learning and early development. These aspects influence children's adjustment across the lifespan (Baumrind, 1967; Louw and Louw, 2007). The practice of parental warmth and support in the parent-child relationship includes the display of responsiveness, positive affect, and support (Carlo et al. 2010). This type of parenting often sees children and adolescents who have developed healthy attachment relationships as well as displaying pro-social behaviors (Carlo et al. 2010). Conversely, harsh, unresponsive, and neglectful parenting generally results in more negative outcomes (e.g., poorer social functioning) (Moran, Turiano, and Gentzler 2018).

### Parenting styles

Parenting style can be defined as a constellation of attitudes and beliefs towards the child that create an emotional climate in which parents' behaviors are expressed (Wang et al. 2017).

These behaviors are expressed through four types of parenting styles, varying along two dimensions (demandingness and responsiveness): (1) authoritative parenting, associated with a high level of demandingness and rules with high responsiveness to the child; (2) authoritarian parenting, linked to high demandingness but low responsiveness characterized by rules but with less influence from the child's needs; (3) indulgent parenting, combining low demandingness and high responsiveness with few rules but high engagement with the child's needs; and (4) uninvolved parenting, which is associated with both low demandingness and low responsiveness. An authoritative parenting style is generally associated with the most positive child outcomes, such as higher school performance (Shloim et al. 2015) and with a more positive home food environment (Johnson et al. 2012). The approach which parents use is an important determinant for how the child feels and behaves. For example, the use of parental warmth and support results in children's psychological adjustment. Parental warmth (associated with authoritative parenting) may, therefore, be more influential than parental control (the use of limit setting and support for children's autonomy) in the promotion of children's emotional and psychological adjustment (Schuman et al. 2007). Psychological control is the extent to which parents try to control the child's emotional state or beliefs. Parents may use guilt induction or make the child feel they will not be loved if they do not do what their parents want. Psychological control includes strategies and behaviors such as autonomy granting, over-control, and intrusive and overly attentive parenting (Kiff, Lengua, and Zalewski 2011). The core of psychological control is that it assaults the child's self. Behavior control refers to the extent to which parents ask kids to constrain their behavior to meet the needs of others. The application of behavior control may be viewed as a parent being strict; however, it is better conceptualized as the parents' expectation that the child conforms to high standards. It also captures the extent to which parents follow through on rules they set (Davids, Roman, and Leach 2015; Schuman et al. 2007). Parental behavior

control demonstrates behaviors and actions related to discipline, limit setting, and monitoring (Kiff, Lengua, and Zalewski 2011). Parents who practice styles that are generally warm and supportive are considered important contributors to pro-social and positive developmental outcomes, while parents who are too controlling will often create developmental outcomes which undermine positive outcomes (Carlo et al. 2010). Children's eating patterns and preferences are an outcome of the interaction of innate and learned factors embedded in the context of parent-child interactions (Lipowska et al. 2018).

### **Parenting, child weight status, feeding styles, and practice**

Previous research has suggested a relationship between particular parental feeding strategies and children's energy intake, diet quality and body weight (van der Horst and Sleddens 2017). As a result, parents and their parenting styles play an important role in shaping children's eating behaviors through the approaches and feeding styles they use (Wang et al. 2017). Feeding styles may be viewed as a sub-category of parenting styles that are specific to mealtimes and therefore the same dimensions of demandingness and responsiveness are applied in the feeding context (Blissett 2011; Hughes et al. 2005; Ventura and Birch 2008). Thus, with an authoritative feeding style, parents actively encourage their child to eat but achieve this through supportive behaviors, including rules explained in a sensitive way. With an authoritarian feeding style, parents encourage eating through parent-centric rules, e.g., parents permit their child freedom to eat when they wish, parents negotiate with children to eat well praising them, few meal routines or requires children to eat certain foods and avoid others, while punishing food-related transgressions. (Shloim et al. 2015). Feeding practices are specific techniques or behaviors usually used to facilitate or limit ingestion of foods. They include practices such as pressure to eat, restriction, monitoring of the child's food intake, or the use of rewards for food consumption. The two most commonly studied feeding practices are restriction and pressure to eat (Fisher and Birch, 1999; Galloway et al. 2006). Scaglioni et al. (2011) believe that the strategies parents use, such as over-control, restriction, pressure to eat and promise of rewards, all have negative effects on children's food acceptance. Parental feeding practices, particularly restriction of palatable foods and pressure to eat, have been related to children's body weight and energy intakes (Galloway et al. 2005, 2006)

Shloim et al. (2015) found associations between parenting styles and the BMI of children. Uninvolved, indulgent and highly protective parenting was associated with higher child BMI, whereas authoritative parenting was associated with a healthy BMI. Similarly, indulgent feeding was consistently associated with risk of obesity within cross-sectional studies. Specific feeding practices such as restriction and pressure to eat were linked to BMI,

especially within cross-sectional studies (Shloim et al. 2015). Shloim et al. (2015) found that here child traits were measured, the feeding practice appeared to be responsive to the child. Therefore, restriction was applied to children with a high BMI and pressure to eat applied to children with a lower BMI. However, studies from Australia and the United Kingdom have found no association between parental restriction and child weight (Webber et al. 2010; Campbell et al. 2010; Carnell and Wardle, 2007) and longitudinal studies have shown no association between pressure to eat and child adiposity measures (Spruijt-Metz et al. 2006; Webber et al. 2010). Although it has been theorized that parental beliefs and practices may be modifiable determinants to prevent pediatric obesity and excessive adiposity (Savage, Fisher, and Birch 2007), it is evident that the relationships between parental feeding practices and risk for obesity in children are complex, and do not appear to carry the same effect among all individuals. The public selects their foods from hundreds or even thousands of products, many of which are designed and marketed to maximize their appeal (Brown and Roman 2015). Parents are important agents through which food preferences and intake patterns are set, via both direct and indirect influences, from controlling the child's intake to passively modeling a healthy or unhealthy diet (Shloim et al. 2015). Parental pressure to eat has been associated with decreased preference and consumption of the pressured food, lower fruit and vegetable intake, picky eating, and lower weight in children (Galloway et al. 2005, 2006). Pressure to eat has been reported to cause chaos and stress during mealtimes and to negatively impact children's associations with food (Cardel et al. 2012).

Parental feeding practices could influence the child's eating patterns, which leads to the development of impaired nutritional knowledge as well as nutritional choices which impact children later in life through an increase of non-communicable diseases (NCD) such as cardiovascular disease. A key modifiable risk factor for NCDs is overweight and obesity (Webber et al. 2012). Obesity in children aged 3–15 years relates to familial and environmental factors, including incorrect eating habits. It is projected that this trend will reach 9.1% or 60 million children in 2020. The estimated prevalence of overweight and obese children in Africa in 2010 was 8.5% and is expected to reach 12.7% in 2020 (De Onis, Blössner, and Borghi 2010). Obesity is a complex condition with serious social and psychological dimensions, that affects virtually all age and socio-economic groups and threatens to overwhelm both developed and developing countries (WHO, 2008). Obesity is related to many health-related conditions in children such as diabetes, joint disorders, difficulty breathing and heart disease (Paulis 2016). The interaction between parents and children at the family meal is bi-directional and informed by several different environmental factors (e.g., income and culture), parental attributes (beliefs, attitudes, behaviors), and child characteristics (temperament, eating traits and learned behaviors).

## The current study

To select a healthy diet for their children, parents must be able to ignore the advertiser's blandishments and the immediate appeal to the palate and draw on a complete technical and scientific knowledge – based on nutrients, food, and health (Paramenter, Waller, and Wardle 2000). At a minimum, parents need to know the prevailing nutritional recommendations, be able to apply those to the food products they are considering and combine recommendations to make the best food choices for their children (Brown and Roman 2014). This is particularly relevant to South Africa, which is undergoing socio-economic transformation, with increasing urbanization, coupled with attendant lifestyle habits to promote sedentariness and patronage of fast – food restaurants (Toriola et al. 2012). Previous studies have suggested a relationship between particular parental feeding strategies and children's energy intake, diet quality and body weight (van der Horst and Sleddens 2017). Parental demographic characteristics, including socioeconomic status and parental weight, have also been linked to children's dietary intake and body mass index (BMI). Thus, the purpose of this study was to examine the prevalence of nutritional knowledge, parenting styles and feeding practices of parents and primary caregivers with children aged 3–18 years old.

## Methodology

### Participants

The study followed a quantitative approach with a cross-sectional design. A sample of 102 South African parents and caregivers with a Mean Age of 38.48 ( $SD = 8.65$ ) years agreed to be part of the study. Of the participants 11.26% ( $N = 15$ ) were male and 88.74% ( $N = 87$ ) female. Of these parents and caregivers 52% ( $N = 53$ ) were Coloured, 13% ( $N = 13$ ) Black African, 22% ( $N = 22$ ) White, 13% ( $N = 13$ ) Indian/Asian and 1% ( $N = 1$ ) were Other.

### Data collection procedure

Parents and caregivers of children ages 3–18 years old were recruited via an online social media platform. A search on Facebook for groups relating to parents and primary caregivers was conducted. Criteria for selection included meal preparation, exercise, general health, and wellness of families. A list of four online groups on Facebook, specifically within South Africa, was identified. All four online groups consisted of members who met the criteria of parents and caregivers. The identified groups had their own Facebook group rules. They were closed groups, with each having their own administrator who was responsible for curating posts. In order to be accepted into the groups, a potential member had to answer three questions and adhere to group policy. Group policies included respect for one

another, not selling or advertising a service, and not offering a service to the members of the group. Some groups indicated that should the policy not be adhered to the offending member would be removed from the group. The Facebook group administration of each group was approached via email and the study abstract proposal was sent to them, along with further details asking if they were open to sharing a post or forum message on their wall to highlight the study and recruit study participants.

The research was given permission to join the closed groups by all four group administrators. On a selected day, a message was posted on the groups Facebook wall explaining the study purpose, design as well as if the members had children under the age of 18. The message requested if members would be free to participate in the current study. On the day of message posting, there were a total of 5020 followers across the four groups. In each group, it was not possible to see who were active group members; therefore, the researcher was unable to determine who was actively engaging with the groups' daily or weekly content. The Facebook post included a google link to the online questionnaire where a consent form was included as the first page of the questionnaire, participants needed to click accept as a means of consent and that they agreed to being either parents or primary caregivers of children between 3 and 18 years old. If they did not agree they were thanked for taking the time to participate in the study and their survey link closed. A total of four reminder posts were generated in order to remind users of the questionnaire stating clearly that it was for research purposes and not for any incentive. One hundred and two members of the four groups completed the questionnaire and were included in the study.

### *Measuring instrument*

Online Google questionnaire was created to collect the data which generated a link that was used in the Facebook post. The questionnaire contained a basic demographic section (age, gender, race), questions on current employment status, questions on household makeup (i.e., head of the household and family structure, including if there is a father in the home), as well as questions regarding participants education level as well as five specific sections as outlined (Parents as Social Context Questionnaire, Emotion-Related Parenting Styles, Comprehensive Child Feeding Practice Questionnaire, and the General Nutritional Knowledge Questionnaire). The Parents as Social Context Questionnaire (PASCQ) (Skinner, Regan, and Wellborn, 1986) was used. Additionally, the Emotion-Related Parenting Styles (ERPS) scale (Paterson et al. 2012) questionnaire was attached. The ERPS is a 20-item scale, based on meta-emotion theory (Gottman et al. 1997), which contained four subscales. Each subscale measures a different emotion-related parenting style – that is, PA (parental acceptance of negative emotions [emotion approving]), PR (parental rejection of negative emotions [emotion disapproving]), EC (emotion coaching of negative emotions [active socialization]),

and UI (uncertain/ineffective socialization of negative emotions [passive socialization]). Each subscale has five gender-neutral items. Examples include the following: PA ("I want my child to experience sadness"), PR ("Children act sad to get their way"), EC ("When my child is angry, it's time to problem solve"), and UI ("When my child is sad, I'm not quite sure what he or she wants me to do"). Responses were rated along a 4-point Likert-type scale from 1 (Not at all true) to 4 (Very true). Total subscale scores were calculated by summing the items of each subscale. High scores represented endorsement of the associated parenting style.

The Comprehensive Child Feeding Practice Questionnaire (CFPQ; Musher-Eisenman and Holub, 2007) and the General Nutritional Knowledge Questionnaire (GNKQ; Parmenter and Wardle, 2000) for adults were also included to gain a perspective on nutritional knowledge of parents. The CFPQ contained 12 items which indicate different feeding practices of primary caregivers: (1) child control (five items); (2) emotion regulation (three items); (3) encourage balance and variety (four items); (4) environment (four items); (5) food as reward (three items); (6) involvement (three items); (7) modelling (four items); (8) monitoring (four items); (9) pressure (four items); (10) restriction for health (four items); (11) restriction for weight control (eight items); and (12) teaching about nutrition (three items). Participants had to respond on a 5-point Likert scale ranging from 1 = Never to 5 = Always.

The General Nutritional Knowledge Questionnaire (GNKQ) covered current dietary recommendations, sources of nutrients, everyday food choices, and diet-disease relationships. This helped highlight the behavior of participants with regard to their food choices as it underlined the main aspects relating to knowledge about dietary behavior. These aspects are as follows: Do people know what the current expert dietary recommendations are? Do they know which foods provide the nutrients referred to in the recommendations? Can they choose between different foods to identify the healthiest ones? Do they know what the health implications of eating or failing to eat particular foods are? Responses to the GNKQ questions would be able to generate a representation of a comprehensive assessment of nutritional knowledge. Participants had to respond on a 3- or 4-point Likert scale ranging from 1 = No to 3 = Yes, 1 = Same to 4 = Not sure, or ticking the box which they found appropriate. Additionally, the Parental Psychological Control (Barber 2002) questionnaire was used to measure parental psychological control of both mothers and fathers. Barber's eight-item scale, a revised version of the Children's Report of Parental Behaviour Inventory (CRPBI; Schaefer, 1965), was used in this study. Participants were asked to describe their mothers and fathers by choosing responses on a 3-point Likert scale with "not like her" = 1; "somewhat like her" = 2 and "a lot like her" = 3. The higher the scores the more controlling mothers and fathers are.

### Data analysis

The questionnaires were electronically scored according to the requirements of the instruments. Data were analyzed using SPSS version 22. The data were analyzed using descriptive statistics (frequencies and mean scores) for the sub-scales of parenting styles, child feeding practices, nutritional knowledge, and psychological control.

### Ethical considerations

The research project was registered with the University of the Western Cape for ethical clearance as the current study was a part of a PhD study. Participants of the study were informed that the study was voluntary and by clicking on the link a pop-up message appeared on screen that stated that partaking in the study was anonymous and confidential as well as them being able to leave at any time.

### Results

Demographic characteristics of participants are presented in Table 1.

Of the 102 participants who completed the questionnaire, 87 (85.2%) of participants were female and 15 (14.8%) were males. Forty-two (39.9%) of respondents indicated that they are the head of the home, while 60 (56.1%) indicated their Spouse/Partner is 4 (3.7%) indicated their father is the head of the home, with 1 (0.9%) indicating that extended family (aunt/cousin/uncle) is the head. One hundred (98.0%) of the participants had post-matric education, with 60 (55.8%) of them having a degree. All participants had children between the ages of 3–18 years. Parents were alerted in the study when accepting to participant that they should think of a maximum of two children they had who feel into the age breakdown when reviewing the questionnaire. This is also addressed in the limitations of the study.

In Table 2, the results suggest that the most prevalent parenting approach was autonomy and supportive parenting ( $M = 3.72$ ,  $SD = .33$ ) followed by parental warmth ( $M = 3.70$ ,  $SD = 0.37$ ). Chaotic parenting was the least prevalent ( $M = 1.83$ ,  $SD = 0.52$ ).

**Table 1.** Demographic characteristics.

	Descriptive Statistics				
	N	Minimum	Maximum	M	SD
Age	102	26	72	38.48	8.65
Household income per month	93	577	150000	43232.01	28703.92
Number of children in the home	102	0	5	1.91	.95
Height in cm	101	105	190	163.30	10.36
Weight in kg	102	46	150	75.80	17.56

**Table 2.** Descriptive for parenting.

Parenting Styles and Practices *					
Variables	N	Minimum	Maximum	M	SD
Parental Warmth	81	2.40	4.00	3.70	.37
Parental rejection	80	1.00	3.40	1.85	.61
Structure in parenting	79	2.50	4.00	3.55	.37
Chaotic parenting	80	1.00	4.00	1.83	.52
Autonomy and supportive parenting	79	2.80	4.00	3.72	.33
Cohesive parenting	81	1.00	3.80	2.10	.62
Parental acceptance	81	1.20	4.00	2.81	.65
Parental rejection parenting	79	1.00	4.00	2.14	.65
Emotional coaching parenting	81	1.00	4.00	3.60	.54
Uncertain and ineffective	76	1.00	3.50	1.94	.65
Psychological control parenting	99	1.00	2.00	1.22	.22

In Table 3, Encouragement scored the highest in child feeding practices ( $M = 4.07$ ,  $SD = 0.71$ ), followed by Modelling ( $M = 3.66$ ,  $SD = .86$ ) while Emotional regulation scored the lowest ( $M = 1.74$ ,  $SD = .65$ ).

Table 4 presents the results of a regression analysis which assesses the effects of parenting practices on feeding style. The final model includes all the predictors accounting for 11% ( $\Delta R^2 = 0.11$ ) of the variance in teaching in feeding style. The results suggest that only parental acceptance in emotion-focused parenting ( $\beta = 0.36$ ,  $< p = .05$ ) significantly predicted teaching in feeding style.

Table 5 presents the results of a regression analysis which assesses the effects of parenting practices on feeding style. The final model includes all the predictors accounting for 21% ( $\Delta R^2 = 0.21$ ) of the variance in restrictions for weight feeding style. The results suggest that only psychologically controlling parenting ( $\beta = 0.49$ ,  $< p = .05$ ) significantly predicted weight in feeding style.

Table 6 presents the results of a regression analysis which assesses the effects of parenting practices on feeding style. The final model includes all the predictors accounting for 14% ( $\Delta R^2 = 0.14$ ) of the variance in restrictions for height feeding style. The results suggest that only psychologically controlling parenting ( $\beta = 0.36$ ,  $< p = .05$ ) significantly predicted restrictions for height feeding style.

**Table 3.** Comprehensive child feeding practice.

Comprehensive child feed practice**					
Variables	N	Minimum	Maximum	M	SD
Child Control	102	1.00	4.00	2.46	.56
Emotional regulation	102	1.00	3.33	1.74	.65
Encouragement	101	2.25	5.00	4.07	.71
Environment	100	1.50	4.00	3.10	.39
Rewarding	100	1.00	5.00	2.29	.90
Involvement	102	1.00	5.00	2.86	.90
Modelling	96	1.25	5.00	3.66	.86
Monitoring	99	1.50	5.00	3.74	.93
Pressure	98	1.00	4.50	2.74	.66
Restrict by height	96	1.00	5.00	3.23	.898
Restrict by weight	98	1.00	4.00	1.81	.81
Teach	101	1.00	5.00	3.00	.79



Table 4. Predicting teaching in feeding style.

Predicting Teaching in Feeding Style						
Variables	F	B	SE	$\beta$	t	p
Constant	1.661	3.25				
Psychologically controlling parenting		0.06	0.40	0.03	0.16	0.87
Parental warmth		0.11	0.18	0.11	0.62	0.54
Parental rejection		0.18	0.20	0.16	0.92	0.36
Structure in parenting		0.01	0.18	0.01	0.06	0.95
Chaotic parenting		0.02	0.27	0.01	0.07	0.95
Autonomy supportive parenting		-0.21	0.18	-0.22	-1.18	0.25
Cohesive parenting		-0.13	0.22	-0.10	-0.57	0.58
Parental acceptance		0.40	0.16	0.36	2.49	<b>0.02*</b>
Parental emotional rejection parenting		-0.36	0.21	-0.32	-1.73	0.09
Emotion coaching		-0.20	0.15	-0.25	-1.33	0.19
Uncertain and ineffective parenting		-0.01	0.18	-0.01	-0.06	0.95

$\Delta R^2 = 0.11$ ,  $p < .05$

Table 5. Predicting restrictions for weight feeding style.

Predicting Restriction for Weight Feeding Style						
Variables	F	B	SE	$\beta$	t	p
Constant	2.313	-0.33				
Psychologically controlling parenting		1.56	0.51	0.49	3.05	0.00*
Parental warmth		0.09	0.22	0.07	0.40	0.70
Parental rejection		0.24	0.24	0.16	0.10	0.33
Structure in parenting		0.16	0.22	0.12	0.72	0.47
Chaotic parenting		-0.52	0.34	-0.30	-1.52	0.14
Autonomy supportive parenting		-0.04	0.22	-0.03	-0.20	0.84
Cohesive parenting		0.15	0.28	0.09	0.54	0.59
Parental acceptance		0.26	0.20	0.18	1.32	0.19
Parental emotional rejection parenting		-0.12	0.26	-0.08	-0.47	0.64
Emotion coaching		-0.18	0.19	-0.17	-0.95	0.35
Uncertain and ineffective parenting		0.15	0.22	0.11	0.67	0.51

$\Delta R^2 = 0.21$ ,  $p < .05$

Table 6. Predicting restrictions for height feeding style.

Predicting Restriction for Height Feeding Style						
Variables	F	B	SE	$\beta$	t	p
Constant	1.829	1.87				
Psychologically controlling parenting		1.22	0.58	0.36	2.09	<b>0.04*</b>
Parental warmth		-0.29	0.27	-0.20	-1.07	0.29
Parental rejection		0.26	0.28	0.16	0.93	0.36
Structure in parenting		-0.37	0.25	-0.26	-1.47	0.15
Chaotic parenting		-0.26	0.39	-0.14	-0.67	0.51
Autonomy supportive parenting		0.36	0.27	0.25	1.36	0.18
Cohesive parenting		0.23	0.31	0.13	0.73	0.47
Parental acceptance		0.23	0.23	0.15	1.03	0.31
Parental emotional rejection parenting		-0.36	0.29	-0.22	-1.22	0.23
Emotion coaching		-0.06	0.22	-0.05	-0.27	0.79
Uncertain and ineffective parenting		0.14	0.25	0.10	0.58	0.57

$\Delta R^2 = 0.14$ ,  $p < .05$

Table 7 presents the results of a regression analysis which assesses the effects of parenting practices on feeding style. The final model includes all the predictors accounting for 28% ( $\Delta R^2 = 0.28$ ) of the variance in monitoring feeding style. The results suggest that psychologically controlling parenting ( $\beta = -0.34, < p = .05$ ) and cohesive parenting ( $\beta = -0.42, < p = .05$ ) significantly negatively predicted monitoring feeding style. Parental rejection ( $\beta = 0.24, < p = .05$ ) significantly positively predicted monitoring feeding style.

Table 8 presents the results of a regression analysis which assesses the effects of parenting practices on feeding style. The final model includes all the predictors accounting for 6% ( $\Delta R^2 = 0.06$ ) of the variance in modeling feeding style. The results suggest that parental warmth ( $\beta = -0.36, < p = .05$ ) significantly positively predicted modeling feeding style.

Table 9 presents the results of a regression analysis which assesses the effects of parenting practices on feeding style. The final model includes all the predictors accounting for 26% ( $\Delta R^2 = 0.26$ ) of the variance in involvement

**Table 7.** Predicting monitoring feeding style.

Predicting Monitoring Feeding Style						
Variables	F	B	SE	$\beta$	t	p
Constant	2.991	6.00				
Psychologically controlling parenting		-1.13	0.49	-0.34	-2.33	<b>0.03*</b>
Parental warmth		-0.20	0.24	-0.14	-0.83	0.41
Parental rejection		0.48	0.24	0.31	2.00	<b>0.05*</b>
Structure in parenting		-0.11	0.22	-0.08	-0.51	0.61
Chaotic parenting		0.44	0.33	0.25	1.36	0.18
Autonomy supportive parenting		-0.10	0.22	-0.08	-0.44	0.66
Cohesive parenting		-0.72	0.27	-0.42	-2.68	<b>0.01*</b>
Parental acceptance		0.16	0.20	0.11	0.83	0.41
Parental emotional rejection parenting		-0.34	0.26	-0.22	-1.32	0.19
Emotion coaching		0.04	0.18	0.04	0.22	0.83
Uncertain and ineffective parenting		-0.13	0.21	-0.09	-0.61	0.55

$\Delta R^2 = 0.28, p < .05$

**Table 8.** Predicting modeling feeding style.

Predicting Modelling Feeding Style						
Variables	F	B	SE	$\beta$	t	p
Constant	1.341	4.88				
Psychologically controlling parenting		-0.00	0.56	0.00	-0.00	0.10
Parental warmth		0.52	0.26	0.36	2.02	<b>0.05*</b>
Parental rejection		0.17	0.28	0.12	0.60	0.55
Structure in parenting		-0.01	0.25	-0.01	-0.06	0.96
Chaotic parenting		-0.24	0.38	-0.13	-0.63	0.53
Autonomy supportive parenting		-0.39	0.25	-0.29	-1.52	0.14
Cohesive parenting		-0.52	0.31	-0.29	-1.65	0.11
Parental acceptance		-0.10	0.23	-0.07	-0.44	0.66
Parental emotional rejection parenting		-0.31	0.30	-0.20	-1.05	0.30
Emotion coaching		0.13	0.21	0.12	0.63	0.53
Uncertain and ineffective parenting		0.16	0.25	0.11	0.64	0.53

$\Delta R^2 = 0.06, p < .05$

**Table 9.** Predicting involvement feeding style.

Variables	Predicting Involvement Feeding Style					
	<i>F</i>	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
Constant	2.959	4.19				
Psychologically controlling parenting		-0.11	0.55	-0.03	-0.20	0.85
Parental warmth		-0.53	0.24	-0.32	-2.16	<b>0.04*</b>
Parental rejection		0.60	0.27	0.34	2.27	<b>0.03*</b>
Structure in parenting		-0.17	0.24	-0.11	-0.69	0.49
Chaotic parenting		0.75	0.37	0.37	2.04	<b>0.05*</b>
Autonomy supportive parenting		-0.38	0.24	-0.26	-1.57	0.12
Cohesive parenting		-0.51	0.29	-0.27	-1.75	0.09
Parental acceptance		-0.01	0.21	-0.01	-0.04	0.97
Parental emotional rejection parenting		-0.23	0.29	-0.14	-0.81	0.42
Emotion coaching		-0.21	0.21	-0.17	-1.03	0.31
Uncertain and ineffective parenting		0.02	0.24	0.01	0.07	0.95

$\Delta R^2 = 0.26$ ,  $p < .05$

feeding style. The results suggest that parental warmth ( $\beta = -0.32$ ,  $< p = .05$ ) significantly negatively predicted monitoring feeding style. Parental rejection ( $\beta = 0.34$ ,  $< p = .05$ ) and chaotic parenting ( $\beta = 0.37$ ,  $< p = .05$ ) significantly positively predicted involvement feeding style.

#### **Knowledge of parents: dietary recommendations**

Participants were asked to indicate the extent to which they thought health experts recommended eating certain foods. Some results are presented in the tables while others are presented in narrative. The majority of participants stated that health experts recommend people should be eating more vegetables and less sugar, salty and fatty foods. It was also stated that health experts recommend cutting down on saturated fats as well (see Table 10).

#### **Knowledge: choices of food groups among primary caregivers**

The following tables focus on the choices that primary caregivers make based on their own nutritional knowledge.

A total of 97 (95.2%) of participants selected ice – cream as being high in added sugar (see Table 11). Sixty-six (63.7%) participants selected low fat spread to be low in fat. A total of 63 (60%) selected nuts as being high in fat with 49 (46.7%) selecting bread as also being high in fat. The majority of the participants 94 (89.5%) selected luncheon meat (processed meat, salami) as being high in fat. One hundred and three (99%) of participants selected pasta to be in the starchy food group. One hundred (95.2%) of participants selected frozen vegetables as being high in salt with 76 (72.4%) having selected cheese being low in salt. A total of 62% of participants selected cheese as being high in protein, with 52 (49.5%) selecting cornflakes as being low in fiber. Questions pertaining to food high and low in fat had 63 (60.3%) of participants correctly selecting olive oil as being low in

**Table 10.** Diet recommendations.

Diet Recommendations	
Diet Recommendations	Total sample N = 102 (%)
Do you think health experts recommend that people should be eating more, the same amount or less of these foods – Vegetables	More = 98 (96.0%) Same = 3 (2.9%) Less = 0 Not Sure = 1 (.9%)
Do you think health experts recommend that people should be eating more, the same amount or less of these foods – Fruit	More = 81 (79.4%) Same = 19 (18.6%) Less = 1 (.9%) Not Sure = 1 (.9%)
Do you think health experts recommend that people should be eating the same amount or less of these foods – Fatty Foods	Same = 7 (6.6%) Less = 95 (93.4%)
Do you think health experts recommend that people should be eating more, the same or less of these foods – High fibre	More = 73 (71.5%) Same = 24 (24%) Not sure = 4 (4%)
Which fat do experts say is the most important for people to cut down on: Mono-unsaturated, poly-unsaturated, saturated or not sure.	Mono – unsaturated = 6 (5.8%) Poly – unsaturated = 18 (17.6%) Saturated = 49 (48.0%) Not Sure = 29 (28.4%)
Do you think health experts recommend that people should be eating more, the same amount or less of these foods – Salty Foods	Same = 4 (3.9%) Less = 98 (96%)
Do you think health experts recommend that people should be eating more, the same amount or less of these foods – Sugar	Same = 2 (1.9%) Less = 100 (98.1%)

**Table 11.** Choices of food groups.

Choices of Food Groups	
Food Groups	Total sample N = 102 (%)
Ice-cream is high in added sugar	High = 97 (95.2%) Low = 2% (1.9) Not sure = 3 (2.9%)
Low-fat spread is low in fat	High = 32 (31.3%) Low = 66 (63.7%) Not sure = 5 (4.9%)

saturated fat and whole milk being high 53 (50.5%) in saturated fat. The results suggest that in general parents were inclined to encourage balance and variety in the food intake of their children ( $M = 4.07$ ,  $SD = 0.71$ ), model healthy eating behavior ( $M = 3.66$ ,  $SD = 0.86$ ), monitor the food intake of children ( $M = 3.74$ ,  $SD = 0.93$ ), restrict unhealthy foods ( $M = 3.23$ ,  $SD = 0.89$ ), as well as teaching about nutrition to encourage healthy food consumption ( $M = 3.00$ ,  $SD = 0.79$ ). Additionally, parents seem to not use food to regulate their children's emotions ( $M = 1.74$ ,  $SD = 0.65$ ) nor offer food as a reward ( $M = 2.26$ ,  $SD = 0.90$ ).

Current diet regime of parents and caregivers varied greatly as indicated by Table 12, with most selecting a low-fat diet as their preferred choice. This could suggest that many of the parents and caregivers are either trying to improve their personal diet choices, and therefore make perceived better choices by sticking to

**Table 12.** Diet regime of parents and caregivers.

Diet Regime of Parents and Caregivers	
Parent/Caregiver Diet	Percentage
Mediterranean diet	6.7
Low fat diet	69.5
High fat, low carb/Banting diet	7.6
High protein, low carb diet	11.4
Sugar free diet	4.8
<b>Total</b>	<b>100</b>

a low-fat diet. This is based on exposure to literature or advertising and the use of restrictive feeding behavior as a means to control their child's food intake to restrict weight ( $M = 1.94$ ,  $SD = 0.74$ ).

## Discussion

In this study, participants responded positively to the understanding of foods that should be minimally ingested, such as fats, sugars, and salt. Based on participants questionnaire responses they were also aware of the foods which needed to be increased in the diet, such as fiber, fruit, and vegetables. Given the complexity of the family meal structure, parenting style, feeding style, and feeding practices are defined within broad constructs to simplify research and to promote understanding. The general ways in which parents interact with their children (parenting style) and particularly during meals and snack times (feeding style) may influence parents' choice of feeding practices or the outcomes of these practices (Collins, Duncanson, and Burrows 2014; Larsen et al. 2015; Stang and Loth 2011). Actual knowledge of nutrition can be defined as habits involving regular eating patterns and vegetable intake (Brown and Roman 2015). The general public selects their foods from hundreds or even thousands of products, many of which are designed and marketed to maximize their appeal. The majority of the participants in the current study were however still able to select food that were balanced as well as limit consumption of unhealthy foods. It would seem that knowledge of nutrition or food choices plays a key role as part of a healthy lifestyle. (Swinburn et al. 2011). Parents are influential in shaping children's eating behaviors, including food preferences, food consumption, general diet quality and ultimately weight status (Boots et al. 2015). Based on parents' current dietary patterns of a low-fat diet it seems to be in alignment with the fact that they are practicing healthy food choices or trying to maintain their own weight. However, it must be stated that very little research has examined the relation between parent dieting and their food parenting (Robert, Goodman, and Musher-Eizenman 2018). Parental influence can be through modeling of food consumed as well as the availability and accessibility of food in the home (Boots et al. 2015). Parents can also influence children's eating behaviors by using deliberate feeding strategies, such as encouraging their children to eat

more of specific foods, keeping track of what their child eats, and controlling the consumption of certain foods by restricting access to these foods (Boots et al. 2015). A small amount of research has examined the relation between some aspects of socioeconomic status (specifically parental education level) and food parenting (Robert, Goodman, and Musher-Eizenman 2018). Findings suggest that parents with higher levels of education make sugar-sweetened beverages less available in the home and their children consume fewer snacks and sugar-sweetened beverages (Robert, Goodman, and Musher-Eizenman 2018). Similarly, parents with higher levels of education were found to monitor and restrict their children's food intake and were less likely to pressure their children to eat (Robert, Goodman, and Musher-Eizenman 2018). These findings are in agreement with previous literature (Robert, Goodman, and Musher-Eizenman 2018). The majority of parents in the current study were educated and had degree qualifications. The parents were found to be involved, supportive, as well as providing monitoring of their children and their choices of food in the current study, this being done through limiting and restricting unhealthy foods. Authoritative attempts to encourage eating (i.e., making high demands on children but in a responsive manner) may sometimes be associated with healthier eating styles and healthier body weights (van der Horst and Sleddens 2017). In order to select a healthy diet, an individual must be able to ignore the advertisers' blandishments and the immediate appeal to the palate, and draw on a complex, technical and scientific knowledge base concerning nutrients, foods, and health (Paramenter, Waller, and Wardle 2000). At a minimum, they need to know the prevailing nutritional recommendations, be able to apply those to the food products which they are considering consuming and combine recommendations to make the best food choices (Paramenter, Waller, and Wardle 2000). What and how parents feed their children shapes early eating habits and consequent risks for excess weight gain and obesity (Jansen et al. 2014). In this study, parents scored high in structure in parenting as well as having a strong correlation between autonomy supportive parenting and involvement. Jansen et al. (2014) states that healthy eating is promoted by parental responsibility for structuring the feeding environment – the what, when and where of food provision (i.e., 'demandingness' characterised in terms of 'limits' and 'structure' rather than 'control') – combined with supportive parental responses to children's cues of hunger and satiety, allowing the child to determine whether and how much to eat (i.e., responsiveness). Together these behaviors create a predictable, developmentally appropriate feeding environment, which allows children to attend to and recognize internal hunger and satiety cues and to maintain their capacity to self-regulate energy intake (Jansen et al. 2014). Child eating self-regulation develops across the lifespan from early childhood. The effect of this self-regulatory capacity would have a high impact on children's overall health and weight status.

### Strengths, limitations of the study and future directions

Although this study provides interesting findings, the results should be interpreted within limitations and should, therefore, be interpreted with caution. This study only focused on parents in parenting forums who were on social media; thus, the findings cannot be generalized to a larger sample of primary caregivers. In addition, most of those who participated in the study had higher education levels, which means that a sample of primary caregivers with lower education levels may provide different results. The data come with limitations inherent in using self-reported data (e.g., social desirability bias, self-selection). Conducting an online mode of data collection may not necessarily be the best option to conduct a study of this nature, as it is likely that if parents and primary caregivers were unsure of answers, they could Google it. The sample of the study was small, which may have been due to primary caregivers having children older than 18 years of age or younger than the age of 3. There is also the awareness that feeding styles would change across the span of children's ages, but the focus was on parental perceptions more than individual child's age. A larger sample could provide different results, especially with regard to statistical comparisons between groups. Another further limitation lies in the use of the CFQ. This measures highly controlling feeding strategies such as restricting the type and amount of certain food, using food as a reward and monitoring the intake of certain foods. Thus, it neglects to examine a wider range of potential strategies that parents may use to control their child's food intake. Parents who are employed at full time may have less time to devote to teaching children about nutrition and involving them in meal preparation and may instead resort to practices such as simply restricting portions of fattening foods. There is a shortage of data on the effectiveness of obesity prevention efforts targeting parents as the main risk factors due to obesity always being shown to be linked to familial and environmental conditions. Therefore, this can be applied in practice by addressing parents directly through educational means that take into account their lifestyle and time constraints which affect their sharing of nutritional knowledge with their children. Future research may also explore how the child's weight affects parent feeding strategies there is not enough research to show that there is an increase in children's weight status. Further research is required to study the effect of parent's BMI on food parenting practices as parents may currently be dieting to control their own weight status.

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## CHAPTER 6

# Using the RE-AIM Framework to Identify and Describe Nutritional Feeding Styles and Intervention Model Best Practices for Primary Caregivers in Africa: A Narrative Review

### 6.1 Introduction

Phase one, Stage two, set out to conduct a narrative review with the aim of identifying and selecting best practice models for use in developing a programme. Answering objective 3; Conduct a narrative review to identify best practice models and nutrition education programmes for primary caregivers/parents aimed at improving their children's nutritional status. A review of peer-reviewed, published articles was beneficial in the identification of important processes and guidelines when developing an intervention.

### 6.2 Manuscript Submission Process

The manuscript was submitted to the Ecology of Food and Nutrition Journal; however, it was declined as it did not meet the journal scope (Appendix G). Following this a submission to Sage Nutrition and Health Journal was made on the 30<sup>th</sup> August 2019. The journal was chosen due to it being open to publications of health narrative reviews, unlike other publications which only focused on systematic reviews. A follow up with the journal was made on the 18<sup>th</sup> June 2020, 18 August 2020 as no feedback had been provided post the submission on the 25<sup>th</sup> October 2019. The journal responded that they had not been successful in obtaining reviewers and asked for reviewer input. This went to the journal on the 5<sup>th</sup> September 2020. On the 8<sup>th</sup> October 2020 the journal sent a feedback from two reviewers reviewer one stating that it was an interesting article for the readership of Nutrition and Health. Reviewer two provided several comments for clarity on the

methodology, as they were not convinced by the rationale for the use of a narrative review (Appendix H). The article below was submitted in response to the comments.

## **Abstract**

**Background:** Current research shows that across the world people are eating poorly. This is leading to increased incidences of nutrition related health problems.

**Aim:** This paper aims to provide a synthesis of research on the nutritional feeding programs and nutritional models used by primary caregivers in Africa, in order to identify best practice models, programs and processes from the field of nutritional and feeding intervention development.

**Methodology:** The research used a narrative review methodology. The RE-AIM framework was used to disseminate results to allow for cross-comparison of core components inherent in health promotion interventions. We chose the RE-AIM framework as it facilitates the development, delivery and evaluation of health interventions.

**Results:** After screening a total of 8220 articles, four studies were deemed relevant for the purposes of this review. The selected studies were the only ones that discussed nutrition interventions or programs with a very clear aim and purpose, even though they did not include any information on implementation, review or evaluation of these interventions / program. No studies focusing on the African context were deemed relevant as none of them focused on best practice models for nutrition education interventions or programs.

**Conclusion:** Of a review of over 8220 articles, four studies were found that discuss nutritional feeding programs and nutritional models used by primary caregivers. Of these four, only one focused on enablers, barriers, and resources, all of which are essential for engaging in health behavior change. And only one focused on sustainability of the interventions.

**Keywords:** Nutrition program, feeding, parenting, parent feeding models, feeding interventions



## Introduction

Interest in the role that primary caregivers play in child food preferences, nutrition, and weight status has increased in recent years specifically due to the increase of childhood obesity and related conditions. Being overweight affects the social life, physiological state, and psychological health of the child in the long term (Cirak, 2018). Nutrition related health problems associated with obesity and overweight such as hypertension, type 2 diabetes, dyslipidemia, insulin resistance, sleep apnea, asthma, and non-alcoholic liver fatigues used to occur only in adults. However, these nutrition related health problems are now common in children due to obesity (Salk et al., 2017). These children also face psychological problems such as depression, anxiety, lack of self-confidence, and sometimes eating disorders. Obesity has a greater association with many chronic diseases than hunger, poverty, smoking and alcohol use (Hong and Peltzer, 2017). Obesity related to many unhealthy dietary behaviors (consumption of soft drinks, fast food, sweets and snacks, skipping breakfast, and caffeine) has been associated with unhappiness, perceived stress, mental or psychological distress, depression and poorer sleep (Hayward et al., 2016).

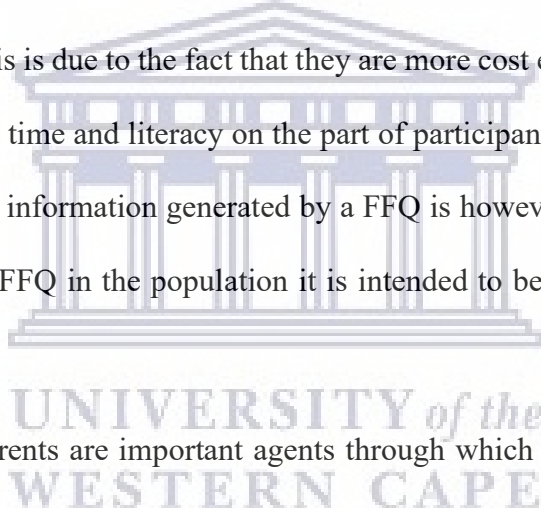


Nutritional data has increased in both quality and quantity therefore enabling us to develop a better understanding of what people are eating, as well as why what they eat matters. There has been a surge in efforts to collect, collate and analyze data on diets, thereby improving our understanding of what the world eats (Bhutta, 2017). Diets in all countries and wealth groups pose a significant threat to achieving nutrition targets (Bhutta, 2017). Data shows that the world is eating poorly regardless of factors such as wealth or current stage in life. School-age children, adolescents and adults are eating too many refined grains and sugary foods and drinks, and not enough foods that promote health such as fruits, vegetables, legumes and whole grains. About a third (30.3%) of school-aged children do not eat any fruit daily, yet 43.7% consume soda every day (Development

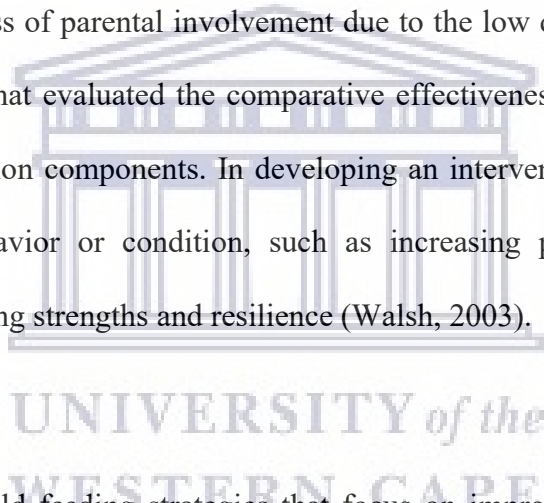
Initiatives, 2018). Research examining knowledge and use of national dietary guidelines suggests that parents have a good understanding of what they should be feeding their children (Cluss et al., 2013). However, dietary intake and diet quality are difficult to measure. Golan and Weizman, (2001) state that a review of prevention interventions for weight-related problems in children concluded that effective interventions should be approached from a health-centered rather than a weight-centered perspective, with the parents as central agents of change.

Despite some limitations, due to their accuracy Food Frequency Questionnaires (FFQs) are still considered the most efficient and feasible method to assess usual dietary intake (Romanos-Nanclares et al., 2018). This is due to the fact that they are more cost effective than large scale 24-hour dietary recalls, due to time and literacy on the part of participants ((Moghames et al., 2016). Accuracy of dietary intake information generated by a FFQ is however dependent on the validity and reproducibility of the FFQ in the population it is intended to be used for (Moghames et al., 2016).

Primary caregivers and parents are important agents through which food preferences and intake patterns are set, through both direct and indirect influences. This includes controlling the child's intake, to passively modeling a healthy or unhealthy diet (Shloim et al., 2015). Parental nutrition knowledge and attitudes have been described as important factors for children's healthy food knowledge (Romanos-Nanclares et al., 2018). Research has shown a strong correlation between parental food preferences and their child's food preferences, particularly with fruits, vegetables, sweetened beverages, and meats (Galloway et al., 2006; Yavorsky et al., 2015). Food parenting practices (FPPs) are defined as active techniques or behaviors used by parents to influence a child's food intake (Patel et al., 2018). FPPs have been found to be one of the environmental factors associated with the development of overweight and obesity in childhood and encompass the



behaviors used by parents to influence their child's behaviors, attitudes, or beliefs around food and eating. Parents determine what foods are offered to their children and provide an atmosphere in which children are eating (Galloway et al., 2006). Dietary habits established in youth have been shown to track throughout the lifespan (Craigie et al., 2011; Kelder et al., 1994), suggesting that youth dietary interventions should be pursued as a strategy to improve diet, and thereby combat obesity and decrease the risk of developing cancer, cardiovascular disease, and other chronic diseases (Schlechter et al., 2016). In a previous systematic review, Hingle et al., (2010) determined that parental involvement increased dietary intervention effectiveness and also determined which types of parent intervention strategies were most effective. Hingle et al., (2010) were limited in evaluating the effectiveness of parental involvement due to the low quality of reporting, and the small number of studies that evaluated the comparative effectiveness of interventions with and without parental intervention components. In developing an intervention, the ultimate aim is to disrupt or change a behavior or condition, such as increasing parenting skills, promoting connectedness, or promoting strengths and resilience (Walsh, 2003).



In sub – Sarah Africa child feeding strategies that focus on improving feeding practices lack relevance and applicability to caregivers' everyday life, and therefore do not produce the needed change (Ahishakiye et al., 2019). This can be the results of underlying determinants of nutrition which can include poverty, food insecurity and poor access to health care (Sanders D, 2017).

Referring to models we also refer to the processes and practices used in primary caregivers' nutritional and feeding intervention development as described in the articles found in the searches. This review paper aims to synthesize the research evidence to identify and describe best practice models, programs or processes in primary caregivers' nutritional and feeding intervention development in Africa.



## Method

### Research Approach

A narrative literature review was employed as they provide useful summaries, in-depth analysis of a specific topic, and may describe the evolution of the subject over time (Mills et al., 2016). Narrative reviews are a discussion of important topics on a theoretical point of view (Jahan et al., 2016). There are three types of narrative reviews of the literature: editorials, commentaries, and overview articles. Narrative overviews, also known as an unsystematic narrative review, are comprehensive narrative syntheses of previously published information (Green et al., 2006). Commonly, these are distinguished from a systematic review in which all primary evidence that meets clear inclusion criteria is retrieved and its quality appraised using explicit and reproducible methodology. Narrative reviews do not always make clear what the inclusion criteria or methods for appraisal are (MacDonald, 2003). In defense of narrative reviews, Collins et al., (2005) notes they can have the advantage over systematic reviews with respect to tackling comprehensive topics in a much wider way, while systematic reviews are more favorable for specific questions being answered (Baethge et al., 2019). These authors call for narrative reviews to be strengthened by adopting some of the techniques of systematic reviews, such as transparency in reporting methods (Collins et al., 2005). Therefore, the current review used the RE-AIM framework as a means to support transparency. The RE-AIM is an intervention checklist that provides a lens through which to evaluate the quality and impact of an intervention. It allows the researcher to focus on the extent to which the intervention attracts its targeted participants, the improvements or changes in the participants' lives, the setting/site/context of the intervention, its fidelity, transferability and adaptability, as well as the intervention's evaluation and maintenance (Belza et al., 2006). Moreover, because parents serve as intervention agents (Faith et al., 2012), full reporting of the RE-AIM components can provide insight for the development of the types of parental interventions that are most likely to be adopted and implemented by parents (Schlechter et al., 2016).

## **Search Strategy**

Between the period of August and October 2018, a comprehensive search was conducted by the reviewer in the following eight databases: Springerlink, Health South Consumer Edition, PsycArticles, Academic Search Complete, SocINDEX, Sabinet, and Pubmed. These databases were chosen due to their content matter and accessibility by the primary author. The following keywords were used in the order documented: “Feeding education programs in Africa”, “Nutritional programs in Africa”, “Parental programs in Africa”, “Feeding styles in Africa”, “Nutrition education in Africa”, and “Nutritional education programs in Africa”. The following keywords were then searched in academic journals: “Nutritional interventions in Africa”, “Parental nutritional education programs in Africa”, “Feeding and parent practice programs”, “Parental feeding programs”, “Feeding and parent practice interventions”, “Parent feeding program”. These keywords were searched for in quotation marks. The Boolean operator ‘OR’ was used between these phrases. Very few article hits were retrieved at this stage, with only the following countries receiving hits on articles: Angola, Lesotho, Ghana, Mozambique, Zimbabwe, Zambia, Namibia, Kenya, Swaziland, and Uganda. Due to the limited number of articles being retrieved the search was conducted again with the removal of the word Africa, but the use of all the same search words. All published, English language, peer-reviewed studies within the last ten years (2008-April 2018), were considered for review as the authors wanted to ensure that the information was current and appropriate.

## **Study Selection**

To be eligible to be included in the research, studies had to demonstrate the relevance of the primary caregivers’ involvement, as well as meet inclusion criteria. Primacy caregivers’ relevance was defined as studies that: (1) included primary caregivers’ involvement in interventions to improve child dietary intake; (2) addressed whether primary caregivers’ involvement enhances

intervention effectiveness; and (3) addressed what type of involvement is most effective in achieving the desired outcome. Studies were included if they: (1) included a control/comparison group; (2) included an intervention focused on primary caregivers nutrition knowledge improvement, obesity prevention, chronic disease prevention, or health promotion intervention; (3) included a primary caregiver component, defined as an intervention that directly engaged primary caregivers to be intervention agents by supporting or assisting children or adolescents to achieve changes in dietary intake; (4) included child and family dietary intake as a behavior change; (5) recruited primary caregivers with children (3–12 years), or adolescents (13–18 years) and included only humans; (6) published in a peer-reviewed, English language journal between January 2008 – 2018; (7) included qualitative, quantitative and mixed methods studies, and (8) included case studies. Criteria for exclusion were: (1) studies without an intervention component (n =5325); (2) intervention programs designed solely to treat overweight or obese children (n=1020); (3) programs that enrolled children with a specific medical problem that could impact diet or weight (n=1065); (4) studies for which statistical analysis of outcome data were not reported (e.g., trial protocols, unless complementary to a study that met eligibility criteria) (n=152); (5) literature reviews or commentary (n=275); (6) studies with diet as a correlate and not an outcome (151); and (7) program evaluation or pilot studies (n=175). A flow diagram of the search process is depicted in Figure 6.1.

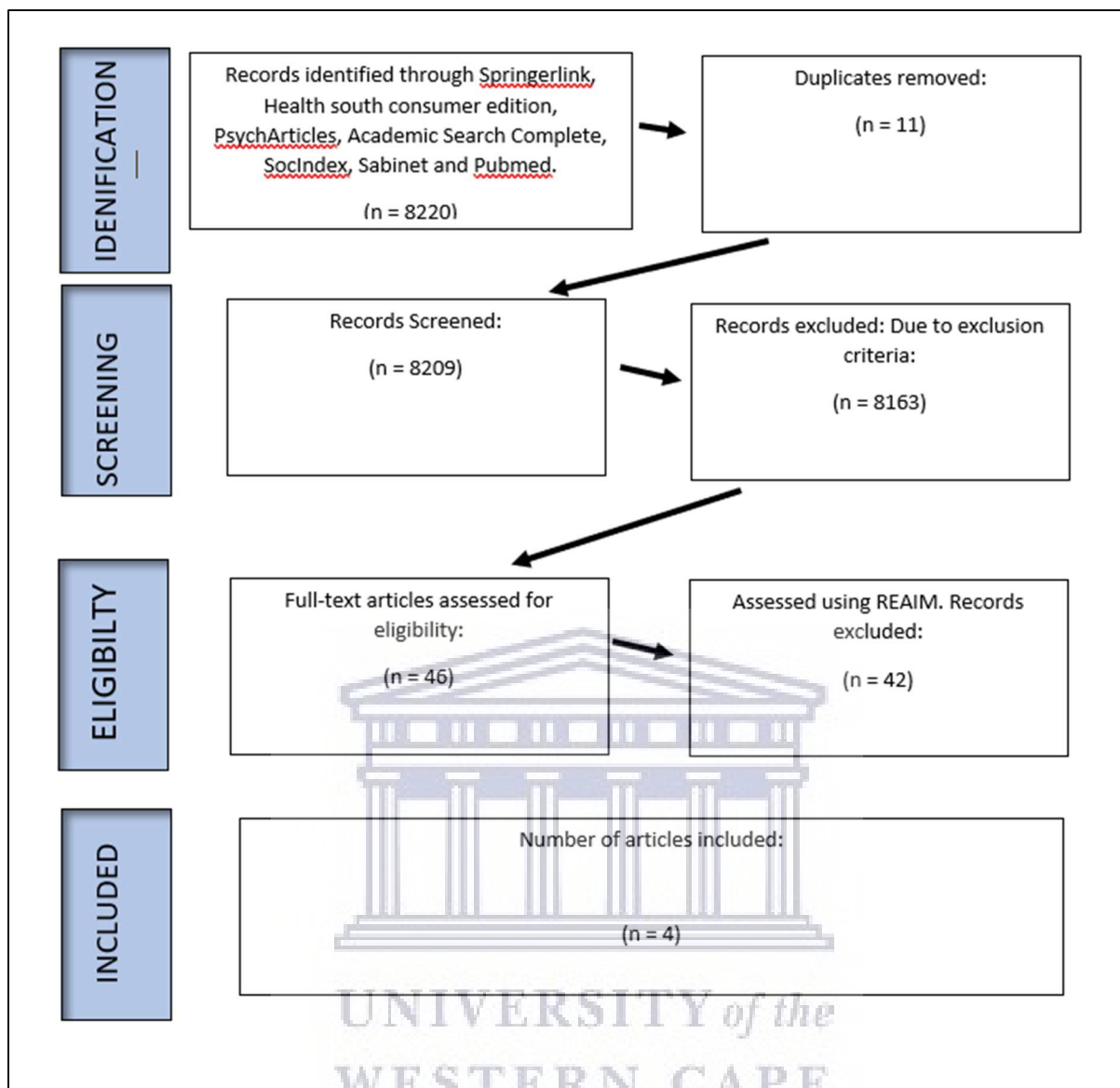


Figure 6.1: Flow diagram of identified records

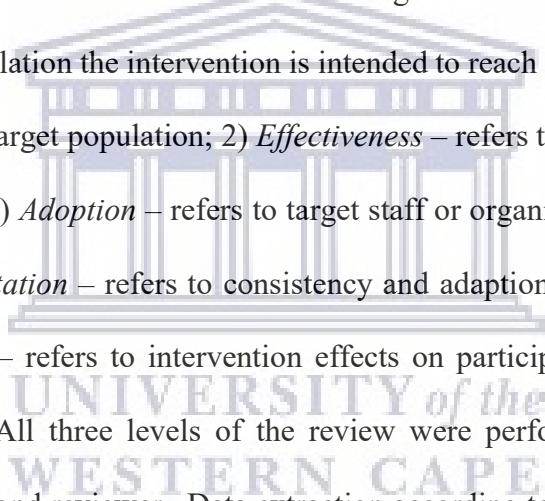
### Procedure

The review was conducted on three levels. The first was to screen the titles of all identified records (n=8220) to assess whether the article was within the parameters of the review. At the second level of review the abstract was further assessed and articles which satisfied all inclusion criteria were deemed eligible for appraisal. Eight thousand one hundred and sixty three (n=8163) articles were deemed unsuitable due to the following reasons: (1) the studies were out of the scope of the review (focusing on breastfeeding, first thousand days of life, or HIV or specific disease focus etc.); (2) articles were not published in English; (3) articles required payment and were not freely available;

and (4) studies were grey literature, systematic reviews or conceptual papers only. Duplicate articles across the different databases were deleted (n=12). Forty-six (n=46) of the retrieved articles' interventions were deemed eligible and 42 (n=42) were excluded based on the RE-AIM approach with a series of "yes" or "no" questions. In the end, a total of four articles (n=4) were included in the study.

### **Using the RE-AIM framework**

The RE-AIM framework was used to allow for cross-comparison of core components inherent in health promotion interventions. The framework is widely used to facilitate the development, delivery and evaluation of health interventions according to five elements, namely 1) *Reach* – refers to which target population the intervention is intended to reach as well as if the intervention was used on the intended target population; 2) *Effectiveness* – refers to the intervention achieving the objectives/outcomes; 3) *Adoption* – refers to target staff or organization that would adopt the intervention; 4) *Implementation* – refers to consistency and adaption of intervention protocol to practice; 5) *Maintenance* – refers to intervention effects on participants over a period of time (Matthews et al., 2014). All three levels of the review were performed by both the primary researcher as well as a second reviewer. Data extraction according to these elements is shown in Table 6.1.



**Table 6.1: Data Extraction**

<b>Authors</b>	<b>Kerith Duncanson, Tracy Burrows and Clare Collins (2012)</b>	<b>Liselotte Schäfer Elinder, Emma Patterson, Gisela Nyberg and Åsa Norman (2018)</b>	<b>Philip J Morgan, David R Lubans, Ronald C Plotnikoff, Robin Callister, Tracy Burrows, Richard Fletcher, Anthony D Okely, Myles D Young, Andrew Miller, Victoria Clay, Adam Lloyd, and Clare E Collins (2011)</b>	<b>Helen Skouteris, Marita McCabe, Boyd Swinburn and Briony Hill (2010)</b>
<b>Reach</b>	Parents of pre - school aged children. Parents need to be aged 18 years or over (mother, father or primary care giver). Eldest child in the family should be aged between two and five years. Parents from designated study localities or surrounding areas.	The Healthy School Start Plus study used a simple randomization of schools to an intervention or control group with a 1:1 allocation ratio was done using a computer-generated randomization procedure by a statistician not involved in the study. 352 children and 17 school nurses from 17 schools were involved. Parents were recruited by the research team face-to-face or by telephone. Data was collected 6 months after the baseline at the end of the intervention in April–May 2018 (T1) and at follow-up in April–May 2019 (18 months post baseline, T2). As an incentive to retain participants, each family received a coupon for a healthy meal at a shopping center restaurant.	Overweight and obese fathers (18 - 65 years) with a child aged between 5 - 12 years were recruited from the local communities. Fifty fathers were recruited from one LGA (Maitland) and randomized to either the Health Dad's Health Kids (HDHK) program or a 6-month wait-list control group. Fathers (and their children) were stratified by BMI category (overweight [25-29.9 kg/m <sup>2</sup> ], obese class 1 [30-34.9 kg/m <sup>2</sup> ], obese class 2 [35-40 kg/m <sup>2</sup> ]) and randomized using a computer-based random number-producing algorithm, to either an intervention or control group	A total of 240 parents of 2-4-year-old children were recruited at baseline to allow for a final sample size of 200 parents. Eligible parents had to provide informed consent, were 18 years of age or older, and had to be able to read and write in English. Control group parents were assessed (same measures as intervention group) at baseline and did follow-up assessments at the same time as the intervention group (10 weeks, 6 months and 12 months post baseline assessment).
<b>Effectiveness</b>	The aim of this study was to describe the study protocol of a randomised controlled trial designed	The intervention consisted of four components : 1) A health information brochure to	The 3-month HDHK programme consisted of three major stages; 1. Programme refinement and recourse	The MEND (Mind, Exercise, Nutrition, Do It!) 2-4 program was designed to address the need for

	to determine the efficacy of providing self-directed nutrition education resources to rural parents. Efficacy of the intervention was not explored as the article only describes the intervention and had not been carried out yet. So, limitations, attrition and specific outcomes weren't yet reported.	parents; 2) one or two Motivational interviewing (MI) sessions with parents according to family needs and performed by the school nurse; 3) nine classroom activities performed by teachers with home assignments to be completed by children together with their parents; and 4) a web-based self-test of T2D risk for parents with feedback concerning the level of risk.	development; 2) Community randomized controlled trial, and 3) Community effectiveness trial. The authors study aimed to evaluate the effectiveness of the HDHK programme in a community setting.	a healthy lifestyle program in the early years of childhood, as well as a secondary obesity prevention initiative. Objectives had not yet been achieved at time of reporting. No limitations were listed either.
<b>Adoption</b>	In rural areas of Australia there is reduced availability of, and access to, paediatric nutrition health services. Therefore, a self-directed nutrition program is an attractive option for parents and health care providers who reside in rural areas. Recruitment took place primarily from Children's Services (Long Day Care Centres, Pre-schools, Family Day Care, in-home care, Playgroups) and by early childhood health professionals who have direct contact with parents of children in target age group, and work in the study locations.	Parents and school nurses were recruited for the program. All school nurses had to undergo training in MI. Allocation of schools to intervention or control was only revealed to headmasters, school nurses and the project leader, until baseline measurements were done by research assistants. A weakness from the study was that schools were randomized to intervention and control groups before the baseline measurement was performed. This was necessary as nurses in intervention schools had to undergo a training period and because the intervention had to follow the school year.	The HDHK program targeted male facilitators with relevant discipline knowledge and experience. Although experienced physical education (PE) teachers are not specifically targeted, they are ideally suited to deliver the program. All practical sessions were conducted in local school halls and delivered by two trained facilitators.	Programme-leaders trained extensively by MEND Australia prior to starting with a group, were monitored and evaluated by MEND Australia staff to ensure their practice was in accordance with MEND 2-4 guidelines; parental feedback on program leaders was also obtained. Each session involved 30 minutes of guided active play, where parents could learn how to play with their children; 15 minutes of healthy snack time based on an evidence-based exposure-based technique to promote acceptance and increased intake of fruit and vegetables, and 45 minutes where the children participated in supervised crèche-style, creative play activities and concurrently the parents attended an interactive education and skills development session, based on evidence based group-based parent-training principles.
<b>Implementation</b>	Intervention was through survey: Parents completed a self-report, 31-item Child Feeding Questionnaire (CFQ) at	Parents with an elevated risk were encouraged via the website to visit primary health care for a health consultation	The 3-month HDHK program involved fathers attending seven face-to-face group sessions (90 minutes each). Four group	MEND 2-4 was a 10-week community-based, multi-component healthy lifestyle program offered free to families with young children aged

	<p>baseline, three and 12 months to identify whether the provision of resources influenced child feeding practices. The CFQ was designed for use by parents of children aged 2 to 12 years. Dietary intake was assessed using the Australian Toddler Eating Survey (ATES), a 120-item semi-quantitative food-frequency questionnaire (FFQ).</p>	<p>according to existing procedures, including testing, counselling and yearly follow-up, if diabetes or prediabetes was established. In this way, high-risk families were motivated to improve health-related behaviours for the whole family. Mediators were also measured on one occasion during the intervention, in February 2018 (TM).</p>	<p>sessions were for fathers only, and three sessions involved both the fathers and their children.</p>	<p>2-4 years, irrespective of weight. The program aimed to encourage healthy habits around diet and activity from an early age. It was a highly structured group program allowing parents to be supported in establishing healthy habits and making healthy behaviour changes at their own pace.</p>
<b>Maintenance</b>	<p>At the trial conclusion participants were sent an order form for a range of free resources for participating in the study. These include the Tummy Rumbles CD and Raising Children DVD (for control group participants), and a recipe book and supermarket pocket guide. The order form also contained a section to be completed by participants if they were willing to be involved in further studies related to the Feeding Healthy Food to Kids RCT. No long-term follow-up was explicitly stated.</p>	<p>After the T2 measurement the control schools were offered the intervention, including MI-training of the school nurses.</p>	<p>The project is based on the principles of community consultation and actively sought the ideas and opinions of the communities in which the project ran, including via community forums and leadership from a community advisory panel. A clear sustainability plan with a staged focused was outlined for the project intervention.</p>	<p>The study reports that the intervention would provide information to parents and support them to establish and/or maintain healthy behaviours and attitudes around diet and physical activity for themselves and their preschool child(ren).</p>



## **Results**

The results of the search strategy did not yield any studies that answered the study selection criteria of being specific to Africa. It yielded four studies that met the selection criteria but focused outside of Africa. These studies are assessed according to the RE-AIM framework below.

### ***Reach***

The interventions recruited parents via day care centers, pre-schools, and family day cares that dealt directly with parents. In some studies recruitment was done by the actual facility staff who ran the facilities or playgrounds, as well as by early childhood health professionals who have contact with parents of children in the target group (Duncanson et al., 2012; Elinder et al., 2018; Morgan et al., 2011; Skouteris et al., 2010). Parents of children who were aged 2 - 4 were recruited to be part of one of the four studies (Skouteris et al., 2010). Others were recruited by the school nurse or directly by the research team during school term meetings (Elinder et al., 2018). One study specifically focused on overweight and obese fathers (Morgan et al., 2011). Overweight or obese (BMI between 25 and 40 kg/m<sup>2</sup>) fathers (aged 18-65 years) with a child aged between 5 and 12 years (i.e. primary school age) were recruited from the local communities using the following strategies: local media releases (print, TV and radio), school newsletters items, school-based presentations, fliers distributed through community notice boards and local businesses, paid advertisements in local newspapers, local networks of sports clubs, service clubs, local government, and community health facilities (Morgan et al., 2011). Once selected fathers came forward, they were then screened for eligibility via telephone. Duncanson et al., (2012) also used a focused recruitment strategy disseminating flyers and newspaper advertisements in order to

maximize recruitment. The success rate of various strategies was not provided as the articles reviewed only focused on the intervention and not on implementation.

### ***Effectiveness***

The reviewed studies each had a clear aim and purpose. The Duncanson et al., (2012) study described the study protocol of a randomized controlled trial that was designed to determine the efficacy of providing self-directed nutrition education resources to rural parents. This would be achieved by measuring the impact of providing parents of pre-school aged children with self-directed nutrition and parenting resources on selected dietary and child feeding factor variables, following intention-to-treat principles, with secondary per-protocol analysis (Duncanson et al., 2012). All the interventions had clear inclusion and exclusion criteria and aimed for more than 100 participants. Participants were required to be fathers or parents older than 18 years, who have children within the required age range of the study (Duncanson et al., 2012; Elinder et al., 2018; Morgan et al., 2011; Skouteris et al., 2010). Duncanson et al., (2012) provided a clear description of the theoretical framework for the study and placed focus on the aspect that changing the dietary intake of children requires a change in the feeding practices of parents. Therefore, the Theory of Planned Behavior (TPB), could be used for effective change due to the fact that it was originally developed to predict human behavior change. The Elinder et al., (2010) Healthy School Start Plus study's purpose was to compare the effect of the program to standard care outcomes related to diet, physical activity and weight development of children. Morgan et al., (2011) The Healthy Dads, Healthy Kids (HDHK) study is a trial that consists of three stages: *Stage 1* - Program refinement and resource development; *Stage 2* - Community randomized controlled trial (RCT); and *Stage 3* - Community effectiveness trial. The focus of the trial was on areas in Australia which are considered to be involved in the mining manufacturing industries. Fifty-two percent (52%) of men

in Australia who work in the mining industry are engaged in shift work, which is associated with increased health issues compared with working daytime hours and is an independent predictor of increased body mass index (Morgan et al., 2011). The Mind Exercise Nutrition Do It! (MEND) program aims to encourage healthy habits around diet and activity from an early age. It is a highly structured group program allowing parents to be supported in establishing healthy habits and making healthy behavior changes at their own pace (Skouteris et al., 2010).

### ***Adoption***

Most of the interventions made use of trained facilitators (Elinder et al., 2018; Morgan et al., 2011). The HDHK program targeted male facilitators with relevant discipline knowledge and experience, which allowed for an easier process of engaging with fathers (Morgan et al., 2011). MEND used 2-4 leaders that were provided with comprehensive training by MEND Australia. These participants received a leader's manual together with a full resource kit (Skouteris et al., 2010). One intervention provided a resources folder to participants and would follow-up with participants through telephonic reminders; this meant the intervention was home-based or wherever the participant was able to review the resource material (Duncanson et al., 2012).

### ***Implementation***

The intervention layouts varied across studies with either face to face workshops provided by the school nurse, prepared material (CD, electronic, resource file) that needed to be reviewed by the parents, or the use of a web-based testing tool (Skouteris et al., 2010; Duncanson et al., 2012; Elinder et al., 2018; Morgan et al., 2011). Each study had a number of face to face sessions as outlined: The 3-month HDHK program involves fathers attending seven face-to-face group sessions (90 minutes each), four group sessions are for fathers only, and three sessions involve both the fathers and their children (Morgan et al., 2011). The MEND 2-4 program involves 10

weekly 90 minute workshops relating to general nutrition, physical activity and behaviors, that are typically held at community health and maternal and child health centers, where parents and their preschool-aged children attend together (Skouteris et al., 2010). Each program group consisted of 6-10 child-parent dyads and a MEND 2-4 trained program leader. It included classroom activities and home assignments. Nine manual-based classroom sessions of approximately 30 minutes in duration were delivered by the teacher. Various pedagogic materials were provided for the sessions, including a workbook for the children. In order to retain families in the study and to achieve a high level of adherence to the intervention components, two of the four studies implemented e-mails, calls and text messages to parents and participants (Elinder et al., 2018; Morgan et al., 2011).

### ***Maintenance***

All four studies reported that the intervention would be followed up. This would occur through direct calls with participants where an offering of resources would be made available online (Duncanson et al., 2012). This would allow parents to have access to up-to-date research on child nutritional needs or parent feeding. One study stated that after the end of the intervention, semi-structured interviews with parents, school nurses and head teachers would be performed to explore their views on the acceptability and feasibility of the intervention (Elinder et al., 2018). However, the studies did not indicate when the interviews would be conducted after the completion of the intervention. The HDHK project was based on the principles of community consultation and actively sought the ideas and opinions of the communities in which the project ran and in some cases was funded as well. Community advisory panel members represented a broad range of areas including education, local government, health, sports groups and service clubs (Morgan et al., 2011). This community forums approach allowed for maintenance of the program as a whole.

## Discussion

This review paper aimed to synthesize recent research evidence to identify and describe best practice models, programs or processes in primary caregivers' nutritional and feeding intervention development in Africa. This was done through a narrative review. No studies that were conducted in Africa met the inclusion criteria, therefore, studies that met all the other criteria were selected.

The interventions reviewed provide a varied approach to implementation, focusing on the interventions being provided by trained facilitators, to a specific target audience, while being conducted either face to face in workshops or with the use of online resources (Skouteris et al., 2010; Duncanson et al., 2012; Elinder et al., 2018; Morgan et al., 2011). In the review, only one article focused on the enablers, barriers and resources with respect to engaging health behavior change in primary caregivers and families as a whole (Duncanson et al., 2012). This is a limitation of the other reviewed articles, as in order to develop similar interventions, it is necessary to have a grasp on the enablers and barriers involved, to increase positive uptake of the intervention and determine its sustainability. A strength of each article reviewed is that they clearly focus their interventions on providing information to primary caregivers. This information is intended to provide support to the caregivers with respect to maintenance, as well as in some cases establishing, health behaviors and attitudes to diet and physical activity for both themselves and children. Kiefner-Burmeister et al., (2016) states that the future health of children is based, in part, on the behaviors that parents engage in. Therefore, parental education on healthy feeding behaviors and parenting styles may contribute to the health of future generations.

The said behavior change needs to be mediated through the development of implementation interventions which draw on theory, evidence, and in some cases, practical issues. Theory can be used to understand the factors that might influence the clinical behavior change which is being targeted, as well as to underpin possible techniques that could be used to change positive and negative health behaviors (Michie et al., 2005). Theory was clearly expressed for the formulation of interventions in three of the four reviewed articles, such as the theory of planned behaviour TPB, social cognitive theory (SCT), family systems theory (FST), as well as systematic reviews forming the basis of different intervention idea groupings. Duncanson et al., (2012), states that changing the dietary intake of children requires change to the feeding practices of parents as well as through the use of TPB. The key components of the TPB are proposed to predict the child feeding practices or behaviors of parents. TPB was originally developed to predict and explain human social behavior and is being used in The Feeding Healthy Food to Kids program to serve as a framework for behavior change interventions. The HDHK program was envisioned to help fathers achieve their weight loss goals, become healthy role models, and promote healthy behaviors for their children. The HDHK is based on both FST and SCT while the Health School Start Plus (Elinder et al., 2018) is only based on the latter. The SCT constructs should be targeted and operationalized: self-efficacy, goals/intention, outcome expectations, perceived facilitators and barriers to change, and social support (Morgan et al., 2011). FST postulates a complex theoretical framework of reciprocal relationships among family members. That is, when a parent changes his or her physical activity and dietary behaviors this will be reflected in the child's behavior (Morgan et al., 2011). This is a weakness in the Skouteris et al., (2010) study which does not provide the reader with a clear basis of intervention theory.

The HDHK intervention (Morgan et al., 2011) was the only one of the four articles reviewed that outlined both primary and secondary outcomes of the intervention. The primary intervention involved recording the intake at home of a composite score of indicator foods of importance for energy balance and health, namely fruit and vegetables (healthy foods), unhealthy foods (sweets, ice cream, buns/ cakes, crisps), and unhealthy drinks high in added sugar (sugar-sweetened beverages) (Morgan et al., 2011). Previous studies have found that the use of indicator food in comparable population samples showed that diet was a discriminating factor between different socioeconomic and ethnic groups and also improved as a result of the intervention (Nyberg et al., 2016). This would make the HDHK intervention more appropriate for low socioeconomic environments. Those designing interventions in low socioeconomic communities will need to give considerable thought to the affordability and accessibility of their interventions, especially with the use of CDs and electronic sessions for implementation, since lower socioeconomic communities will have less access to computers. However, in comparison with web-based interactive interventions have been found to offer personalized advice, education and feedback messages about health behavior. They also served as attractive features for people to continue using the websites long after the official program has ended (Maon et al., 2012). A preferred consideration for intervention developers in selected studies was using local facilitators e.g. school nurses, community workers, or peers of potential participants (Duncanson et al., 2012; Elinder et al., 2018; Nyberg et al., 2016).

Two studies highlighted ways they would fill their research gaps. Feeding Healthy Food to Kids stated that it would address issues by analyzing the dietary intake of two to five-year-old children, using a validated food frequency questionnaire completed by parent proxy. As such, this study

provided additional insight into the potential for a parent-focused nutrition intervention to influence the dietary intake of rural pre-school aged children (Duncanson et al., 2012). The Healthy School Start Plus intervention stated that it was a multi-disciplinary theory-based program which would fill a large knowledge gap regarding evidence-based practice within school health services to promote health-related behaviors and prevent overweight and obesity in children. The program was designed to be fully integrated into normal school routines, making it highly sustainable once the necessary support from the school management is secured (Elinder et al., 2018). Some weaknesses from the study design though are that the primary outcome (dietary intake of indicator foods in the home environment) is based on self-reporting, as are the theory-based mediators (Elinder et al., 2018). In self-reporting, individuals could fail to disclose the true portions consumed. The article did mention that measures to mitigate this include the use of photos to validate the estimated selected food items and quantity that children were consuming. This makes this intervention a cost-effective approach that can be adaptable in many settings, and easily replicated.

### **Recommendations**

None of the reviewed interventions were evaluated and therefore no information is available on the interventions' uptake. It is recommended that a follow up articles are conducted to analyze the outcomes over a period. If this review is a microcosm of the larger society, it can be premised that not only is clinical and academic input needed to develop more nutrition interventions and programs in Africa, and on other continents, but that political and policy influence is also required to provide the funding mechanisms needed for implementation and sustainability of these interventions. It is recommended that further investigation is conducted, using other search criteria



possibly using Double-Duty actions for malnutrition in Africa, as these may yield more studies that are focused on primary caregivers' development of nutritional and feeding interventions.

### **Limitations**

A limitation of the research article is that the search criteria was initially focused on Africa. Unfortunately, there were no studies that met the inclusion criteria for Africa, and therefore the inclusion criteria was amended to include all countries. The interventions reviewed were limiting as they only focused on the intervention stage and not on implementation or evaluation. However, the inclusion criteria could be too strict, or they would not have yielded any results at all. A narrative review was used for this study due to the limited number of published articles found on the topic and therefore a systematic review was not achievable. Narrative overviews are effective in that they allow you to easily synthesize information to keep up to date, receive continuing education credits, or challenge your way of thinking. However, there is a belief they are not a form of evidence that should be used frequently when making decisions regarding how to solve specific clinical patient problems.



### **Ethics**

Ethical clearance was received for this study from the University of the Western Cape, Senate ethics committee with clearance number 14/10/34.

### **Consent for publication**

Not applicable

### **Availability of data and materials**

All data generated or analysed during this study are included in this published article.

### **Declaration of Conflicting Interests**

The authors declare that there is no conflict of interest.

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### **Authors' contributions**

Not applicable



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## CHAPTER 7

# Primary Caregivers' Perceptions of the Role of Fathers in the Provision of Nutritional Care in a Resource Constrained Environment in Cape Town, South Africa

### 7.1 Introduction

Chapter 7 relates to two objectives of this research study: Objective one - to determine and explore the feeding styles and practices of primary caregivers/parents and Objective two – to determine the knowledge of primary caregiver/parents' sources of nutrients and diet – disease relationships. This chapter also fulfils the phase one stage three of the intervention mapping design: defining specific intervention objectives. The author presents the manuscript submission process of the article entitled: *Primary Caregivers' Perceptions of the Role of Fathers in the Provision of Nutritional Care in a Resource Constrained Environment in Cape Town, South Africa*.

### 7.2 Manuscript Submission Process

The manuscript was submitted to the BMC Public Health journal with impact factor 2.05, article influence factor of 0.91. BMC Public Health is an open access, peer-reviewed journal that considers articles on the epidemiology of disease, as well as the understanding of all aspects of public health. The journal has a special focus on the social determinants of health, the environmental, behavioural, and occupational correlations of health and disease, as well as interventions which impact the community at large. The Editor responded on the 15<sup>th</sup> September 2019, after submission on the 22 August 2019, with the advice to review the background and discussion sections and provide more of the authors own words and less direct references – the

Vancouver referencing style is used (Appendix I). The article was resubmitted on the 25 October 2019 after numerous system errors on the BMC website which did not allow me to upload a resubmission. Once technical assistance was received from the BMC team the manuscript upload was successful. The manuscript was rejected by BMC public health on the 15th December 2019 citing that the paper seemed to lack focus and the methods were somewhat lacking. The full report is included as Appendix I.

The paper was reworked and submitted to the African Journal of Food, Agriculture and Nutrition Development (AJFAND) on 23<sup>rd</sup> August 2020. The following article is presented as submitted to the journal.



## ABSTRACT

The role of fathers has traditionally been defined as a breadwinner or provider, with men generally having lower levels of engagement in childcare tasks, especially with young children. Mothers therefore being defined as the caretaker to the family providing the nurturing as well as the main meals and food choices. The involvement of fathers has important consequences for child well-being, especially with regards to issues of diet/nutrition, exercise, play, and parenting behaviours. Currently there is little knowledge on the relationship between father's involvement and child nutrition measurements. This paper seeks to explore the perceptions of primary caregivers on fathers' role in the provision of nutritional care, and the limitations thereof, in a resource constrained community in South Africa. Data was collected through in-depth face to face interviews, with a sample of ten primary caregivers in a resource constrained mixed – heritage community in Cape Town, South Africa. A thematic analysis was carried out and two prominent themes were highlighted namely, 1) mothers' perceptions of the care and resource provision for nutritional support by fathers, 2) knowledge on healthy diets. The findings reveal that there is a lack of financial involvement from fathers which dramatically affects the participating family's food security since only one member in the household is earning, and this is usually below the South African minimum wage. This means that the dietary needs of the family are not being met, with the family consuming fewer nutritional foods, and more high fat and high sugar content foods. The findings also highlight that primary caregivers want to be taught about health and nutritional food choices for a limited budget. The lack of involvement from fathers through limited engagement, including in the provision of nutritional care, affects mothers and grandmothers who then have to provide both physical and emotional care to the children. These findings are based on the perspective of mothers and grandmothers and their perceived roles in the family.



**Key words:** Nutrition, food, feeding, caregivers, fathers, parenting, mixed-heritage, parental-influence

## INTRODUCTION

There is a lack of studies on the influence of fathers on young children's health behaviours [1]. This is likely the result of older and traditional ideas of parental roles, where mothers are considered caretakers and fathers are seen as the breadwinners and head of the house [1]. Most studies concentrate on the influences of maternal responsibilities, or that of both parents together [1].

The involvement of fathers in parenting has been associated with greater positive outcomes in children's development on both a cognitive and socio-behavioural level. Positive improvements have been seen in preterm infants' weight, breastfeeding rates, higher receptive language skills and higher academic achievement [2]. However, it must be noted that there is a global increase in the lack of involvement of fathers in children's lives, and the impact thereof needs to be highlighted [3]. Absent fathers create problems ranging from broken families, aggressive behaviour among children, economic and social problems, and in some cases, extreme poverty [4].

In South Africa, a large proportion of children do not have their father involved in their care and support. As of 2013, 7.3 million (39.5%) of South Africa's 18.6 million children lived only with their mothers, while only 3.3% resided only with their fathers [4]. Statistics South Africa (2014) estimated the number of fathers not residing in the same household as their children, and who are not present in their lives, to be about 46.2%. The same report indicated 4.1 million (22%) of children in South Africa did not live with either parent. There are numerous reasons why fathers

do not live with their family, including unemployment, poverty, income inequality, gender power, consequences of intimate partner violence, masculinity ideologies, migration, and abandonment [5]. However, it is not just in South Africa that women bear most of the responsibility for childcare. Globally, it is estimated that the average time women spend daily in caring for the home and children is three times what men spend, but this varies dramatically across settings [6].

An analysis of statistics from around the world determined that the ratio of women's time spent on unpaid work (own family caregiving) to men's is a significantly greater in low- and lower-middle income nations [6]. This difference shows that poverty dramatically increases gender inequalities in unpaid care, with the poorest women spending the most time in unpaid care giving tasks [6]. The role of father's as care givers in the context of unpaid care needs more examination [7].

In South Africa, the catering of childcare needs has been described quantitatively using data collected in Time Use Surveys (TUS) conducted in 2000 and 2010 [7]. Both surveys showed that women spent considerably more time on childcare than men [7]. The 2000 TUS reported that “among adults (aged 21–55) who live with at least one child, women spend an average of 5.9 hours per week on childcare compared with 0.6 hours spent by men” [7]. Similar results were seen in the 2010 survey which stated that the “average amount of time that women spend on childcare is more than eight-times greater than the time spent by men” [8].

Payment of child maintenance is also low in South Africa, and there are distressing rates of gender-based violence, especially that of neglect and abuse of children by men [9]. South Africa has one

of the highest rates of violence against women in the world, and the second highest rate of father abuse in Africa [10].

Racial dynamics also come into play regarding fathers' absence from the household [10]. Across South Africa, Black African fathers have the highest rate of absence from their households at 41.92% [8]. In the Western Cape Province specifically, (where this study took place), 20.91% of Mixed-heritage fathers are not present or living in the household, followed by Black African fathers (14.46 %) and then White fathers (2,21%) [9]. With fathers being absent, most households are run by single mothers and grandparents who often have to rely on social security [10]. The number of social grants in South Africa has increased exponentially over the past twenty-three years, from an estimated four million in 1994 to 17,4 million by October 2017 [11].

Socioeconomic inequalities in childhood are linked to inequalities in both childhood and adult health [12]. These inequalities correlate with deficiencies in nutrition caused by poor diet quality [13]. Poor diet quality is consistently associated with poor health outcomes such as obesity, type II diabetes, cardiovascular disease and several cancers [14]. Furthermore, recent research highlights the high cost of nutrient-rich foods and the low cost of nutrient-poor foods, which impacts diet quality and health. Parents are forced to negotiate food purchases on a limited budget [13], which then lays the foundation for the types of feeding practices parents then adopt.

The interrelation between parental feeding practices and children's eating patterns, as described in the literature, applies to the attitudes and practices of mothers as the primary caregiver, with minimal attention given to the role of fathers [15]. Mothers generally have a major impact on

children's eating behaviour as they are more involved in food-related activities, while fathers are not part of this decision-making process and preparation [15]. Mother's unhealthy food preferences (such as, fast foods, sweets and higher-energy fluids), as well as the availability of non-nutritional foods in the home, influence children's preferences when it came to selecting and eating unhealthy foods [15]. In fact, maternal obesity provides a significant predictor of childhood obesity [15]. It is important to recognise though, that fathers' attitudes and practices may also lead to an increase in a child's desire for unhealthy eating habits and a decrease in general well-being, although mothers and fathers may differ in their approaches [15].

Feeding strategies used by mothers and fathers are based on many elements, ranging from personal weight-related experiences, perception of their child's BMI, or the parent's beliefs about gender differences regarding dieting and physical attractiveness [15]. Child obesity research shows greater focus on the role of mothers and mothering, with less attention on the influence, roles and responsibilities of fathers in the provision of the family's food availability and choices [16].

A landmark survey conducted in 2012 by the South African National Health and Nutrition Examination Survey (SANHANES) shed considerable light on the nutritional status of children in South Africa. The study showed that as many as 28% of South African households were at risk of hunger, while 26% actually experienced hunger [17]. It also found that undernutrition was high, with 27% of children under three showing stunting [17]. Children under 14, (who made up 16% of the study population), were underweight, and of these children, about one in a hundred were severely underweight [17]. Conversely, 19% of children aged between two and five were found to be overweight, and 5% classified as obese [17]. The results dropped slightly in the age groups of six to nine years, but 17% of children ages 10 to 14 years were overweight and nearly 6% were

obese [17]. Pivotal to this research, the SANHANES study concluded that women do most of the grocery shopping, and that the deciding factor on purchasing is the price of food and the travel distance to the shops. Health played less of a deciding factor for most shoppers, especially when men were doing the shopping [17].

Because there is limited research on the role of men in the nutritional care of children, this current research study focuses on this key issue. The study looked at the perceptions of mothers and grandmothers about the provision of nutritional care provided by fathers to their children in a resource constrained community.

## **MATERIALS AND METHODS**

This study selected a qualitative approach to gain deeper insight into the lives of our target group. A qualitative interpretivist research method was used [18] to explore how the mothers and primary caregivers experience fathers' provision of nutritional care in a resource constrained environment. This allowed for understanding and interpretation, to which the researcher's personal experiences and knowledge could be applied. The interpretations of the researcher are vital to bring "objectivity to the fore, as well as quality of arguments, instead of statistical exactness" [19].

### **Participants**

Study participants were mothers and primary caregivers from the suburb of Manenberg in the Western Cape Province, South Africa, who care for children between the ages of 3 - 18 years old. The township of Manenberg, 20km from Cape Town city centre, was chosen because it is a

resource constrained environment. Established in 1966 at the height of the apartheid regime's forced removal programme, it struggles with gangs, drugs and high unemployment [20]. The 2011 census shows its population at over 61 000, of whom 85% were identified as Mixed-heritage and 10% as African. Of this population, 40 452 are 'working age' (15–64). Amongst this working age group, 35% (13 962) were classified as employed, 20% (7 923) as unemployed, and 46% (18 567) as 'not economically active.' Sixty-one percent (61%) of households have a monthly income of less than R3200 (US \$186.5), and 38% a monthly income of R1600 (US \$ 93) or less [21].

To recruit participants for the study, letters were sent to three local schools regarded as safe zones by the community, with less likelihood of gang related violence. Of these, one school reported within the required period that mothers and caregivers were willing to attend interviews. On the day, 15 mothers/ caregivers (grandmothers) arrived, however, five participants had to leave early, so their inputs were not used. Therefore, a total of six grandmothers and four mothers were interviewed.



**Table 7.1: Participant Characteristics**

Interviewees (n = 10)	
Gender	Female: 10
Grandmothers	6
Mothers	4
Mean age	45.5
Participants highest qualification	Grade 11
Participants lowest qualification	Grade 9
Number participants (mother / grandmothers) employed	7

Number with fathers living at home	3
Number with fathers employed	3
Number with fathers providing financial care	3
Maximum number of people living in the home	8 - 11 (family and extended family)

Table 7.1 provides a breakdown of the participants, showing the employment status of the mothers and primary caregivers. The households consist of a minimum of eight and a maximum of 11 occupants, including family and extended family, usually with around 5-7 children in the household. Of the ten interviewees, only three fathers were currently providing financial care to their children. Family composition, living arrangements and parental practices did not vary significantly across the participant sample.

### **Data collection**

An interview schedule was set up to guide the interview process. Interviews included open-ended questions about respondents' perception of care, difficulties, and barriers to parenting, grocery shopping and meal patterns, food-provisioning priorities, fathers' constraints and ideals, and the role of fathers in their children's lives. Questions focused on the children in the target age range (3- 18 years old). If children fell outside this age range, questions centred on the child closest to it (this happened three times). The questionnaire included a set of questions on parent/caregiver-child relationships and parental/caregiver involvement in personal matters. The interviews were conducted in Afrikaans and English and were recorded in English, with translation done by the interviewer. The recordings were later transcribed verbatim by the interviewer, allowing this transcription to be analysed.

## **Data analysis**

A manual thematic analysis was carried out on the transcribed interviews to identify patterns or themes [22], with the findings sorted according to their themes. A table was used for the grouping of main themes as well as proposed sub – themes [22]. Additional information was presented using direct quotes from participants and from supporting literature.

## **RESULTS AND DISCUSSION**

The results in this study focus on mothers and grandmothers' perceptions of fathers' provision of care in relation to nutritional care. Two themes were identified: 1) mothers' perceptions of the care and resource provision for nutritional support by fathers, 2) knowledge on healthy diets. The participants were vocal in the interviews, highlighting the effect of gangsterism and drugs on their family environment. Through their participation in the current study, two primary caregivers received information for social services in the area that could provide support to the families.

### **Understanding of Care**

The results show that all ten participants were able to provide a thorough understanding of what constitutes adequate care for children. For example, one mother stated:

“Supporting him on different levels: financial support, social support, emotional support, listening to him, sitting down when he needs to talk to me. Not just him, but all my children. One also needs to build trust with your children so that they are able to have freedom to come and speak to you.”

(Mother: age 48, Participant 9, five children - ages 14, 19, 21, 25, and 28 years old.)



Similar responses were received from all participants, with the common focus being on food, shelter and clothing as part of care. However, only one mother expressed that love was part of caring for their child. Barriers to the provision of good care were also noted, including money, the environment, or having to raise the children alone.

### **Father's Involvement in Care and Nutritional Provision**

Participants reported that fathers' involvement in providing nutritional care and support for their children was limited. This is due to many of the fathers being unemployed or not living with the children. When this occurred, they did not make any provisions for financial support. This lack of financial support often means that mothers and grandmothers need to borrow money or go to bed hungry, which had occurred more than once in the last six months of the interviews being conducted. Some participants highlighted food insecurity in the communities as an everyday reality. Other participants became emotional and angry when speaking of the lack of support from the fathers.

“No child support. There is no role of the father being fulfilled. He is not there where the son stays. The son lives with his grandmother, so I send money to her. He just left us all and I couldn't have all the children, so I sent my son to live with his grandmother. But I still send money for his food.”  
(Mother: age 30, Participant 4, two children - ages 5 and 10 years old.)

“There is no money at times, he is not working so we have gone to other family members or somebody, we try and make a plan. Sometimes if there is not enough, we will go without as long as the children eat something and not go to bed hungry. But there were times when we had nothing

to eat because we did not have any work and we couldn't ask any more people. I felt bad. The children eat at school in the morning at the feeding scheme. I just eat what I get, or eat a packet of cheap biscuits with tea, as long as the children eat a meal. But everyone is suffering and always saying there is no food or just a little in the house, there are so many people in the area borrowing money and food that at the end of the month you have to pay so much back to those you borrowed and you have to borrow again. I do not even know where some of the children's fathers are. So maybe they do not care.”

(Grandmother: age 57, diabetic, Participant 10, seven children - ages 7, 10, 12, 15, 17 and 21 years old.)

Two mothers noted that their husbands, although unemployed, cooked, did the household shopping, or made an effort to find food and care for them, while they were at work:

“My husband is not working so it is almost like he is standing in for me at home. He takes care of the house work and cleaning while I go to work, so it is like we changed roles for the last few months, but you can see it is taking its effect on him, as he always used to provide for the family. Now my husband buys the food, but not really a big shop, not a monthly shop. Just when there is something that is needed at the corner shop. There is not really money for a big shop.”

(Mother: age 39, Participant 6, three children - ages 7, 10 and 16 years old.)

The need for fathers to be supportive and discipline their children in order to instill work ethic and provide encouragement for their children to function well at school was commonly highlighted by mothers and grandmothers.

### **Knowledge of healthy diet**

The majority of the women interviewed claimed to assume primary, if not complete responsibility, for managing their family's diet with fathers playing very little of a role. Most of the participants indicated a need to understand what a healthy diet is, and how to cook on a limited budget while still making sure their children get enough nutrients. This included budgeting meals, shopping, preparing and serving meals, and getting the children to eat healthier food options. One mother described the challenges:

“How to make good healthy food choices and why. But also a course for everyone in the family so the children also understand why they are being given the food they are given. It is maybe important to know when to buy foods in season and the quantity of food to buy for a family and how then to make sure they are eating enough or too little”

(Mother: age 30, Participant 4, two children - ages 5 and 10 years old).

Within the participant group, based on the mother's reports, the children's weight seemed to be within the healthy range. However, the mothers and caregivers themselves were suffering from diseases and were observed to be obese. As research shows, this could have a future effect on their children, who may end up with similar weight and health problems.

In South Africa, many parents face considerable barriers to accomplish the tasks of parenting [13]. Poverty increases parents' difficulties in providing for and protecting their children, and makes emotionally distant, harsh and inconsistent parenting more likely [13]. Parents living in poverty are likely to be less educated therefore limiting their ability to support their children's educational development, and in some cases, demanding nutritional needs [13]. This is the case with the participants in this study, where the highest qualification held by parents in the group was Grade 11.

Poverty also reduces the ability of parents to provide enough and appropriate nutrition for their children [13]. Many food insecure communities have been found to eat less nutritious food, limit portion sizes, and skip meals to deal with food shortages in the household [23]. Low education levels paired with the presence of food insecurity may impact not only the quantity of available food, but also diet intake patterns, as people choose not to eat as regularly in an attempt to save meals [24]. This can be seen in the study group, where some of the caregivers went without food so the children could eat.

A psychosocial link between food insecurity, obesity and malnutrition along with further metabolic diseases, such as diabetes, has been found. A report by the Food & Agricultural Organization (FAO) noted the presence of physiological adaptations in response to "feast-and-famine" cycles. These adaptations have been associated with an increase in body fat, decrease in lean muscle mass and more rapid weight gain when food becomes plentiful [25]. For many in impoverished communities, the experience of not having certain or adequate access to food often causes feelings of anxiety, stress and depression. This in turn leads to behaviours that increase the risk of becoming

overweight and obese. Inherent in these behaviours are patterns of bingeing or overeating when food is available (as continued availability is uncertain), or choosing low-cost, energy-dense “comfort foods” rich in fat, sugar and salt [26]. This is evident in the current study, with primary caregivers’ consumption of high sugar snacks, white bread and black coffee, so their children and grandchildren have enough to eat. Some of these primary caregivers are diagnosed diabetic and on medication to control their blood sugar. This finding aligns with previous studies showing how low income contributes to low dietary diversity, which in turn leads to poor dietary intake and micronutrient deficiencies [23,27].

In this study, the participant's perception of fathers’ provision for their children's dietary needs were strikingly similar. In all cases, the father was either not present or present but unemployed. The mothers were responsible for everyone's care in the house. Therefore, as well as being breadwinners, the provision of emotional support to children remained the women’s responsibility. The fathers had very little, to no involvement in emotional support, reconfirming women’s role as caregivers. Where the fathers were not present, mothers provided for the nutrition and dietary needs both financially and physically. These articulations of men's contributions to food provision offer crucial insights into the power dynamics that produce and sustain the gendered responsibilities of nutritional care work in the family [28].

Research shows that mothers see their daily routines of nutritional care as a sense of ‘morality of responsibility’, which is generally the opposite of descriptions of fathers' approaches [28]. This was echoed by the primary caregivers in the current study, who felt the responsibility to care for all the children’s needs but reporting that only a two of the fathers felt this responsibility. The

findings align with what is already known about the gendered division of family-food-work in societies, where men's fulfilments of fatherhood does not necessitate participation in either feeding the family or managing children's routines, and broad conventional masculinity norms discourage fathers from engaging in healthy behaviours, including healthy eating [29,30].

Research has shown the benefit of parental nutrition education in improving children's health outcomes [31]. Providing information on healthy eating practices can support communities to alleviate poor health and fight against household food and nutrition insecurity in South Africa [32]. Members of the community involved in this study strongly requested specific guidance regarding food-related practices. This can be provided through workshops or practical demonstrations, as existing literature notes that workshops and demonstrations can benefit communities in pursuit of healthy diets [33]. Additionally, such communities require guidance in understanding how to provide healthy meals on a budget, and ways to encourage children to eat the healthy meals provided.



## **CONCLUSION**

This study found that fathers had a very limited influence on the nutritional provision of their families. This concurs with other studies - although limited research exists on the role of fathers on the provision of specific nutritional care in South Africa, and specifically in resource constrained environments, precluding an understanding of the independent effects of fathers on young children's health behaviours [34]. While mothers and female primary caregivers may continue to largely structure these practices, fathers can nonetheless help shape what families eat by providing financially and by the meals they prefer to eat.

This study provides evidence that highlights the limitations of nutritional and dietary care fathers play in a low resource family setting. It also raises the express need that mothers, and caregivers have in wanting to provide nutritional meals for their families, as part of their understanding of their care responsibility. Limitations of the study include a small sample size only focused on Mixed-heritage mothers and grandmothers, which could present just one viewpoint on food choice and selection. A further limitation is that fathers were not interviewed in order to understand their point of view. This was not for lack of trying, the study was not set to exclude them, however, no fathers reported on the day of the study interview. Future research should have a bigger sample size, explore these practices across geographies, and with diverse socio-demographics and family characteristics.

### **Ethics approval and consent to participate**

Ethical clearance was received for this study from the University of the Western Cape, Senate ethics committee with clearance number 14/10/34. Informed written consent was obtained from all participants in the study.

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**Availability of data and materials**

All data generated or analysed during this study are included in this published article.

**Competing interests**

The authors declare that they have no financial or personal relationship that may have influenced them writing this article.





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## CHAPTER EIGHT

### **Primary caregivers' practices for a healthy diet in a resource constrained environment in South Africa.**

#### **8.1 Introduction**

This chapter presents the article entitled *Primary caregivers' practices for a healthy diet in a resource constrained environment in South Africa* that was submitted to the Ecology of Food and Nutrition Journal. This article explores the phase one, stage three qualitative component of nutritional knowledge of primary caregivers that focused on answering objectives one and two: to determine and explore the feeding styles and practices of primary caregivers/parents; and to determine the knowledge of primary caregivers/parents' regarding childhood nutrition including sources of nutrients and diet–disease relationships.

#### **8.2 Manuscript Submission Process**

The manuscript was submitted on the 31st August 2019 to BMC Nutrition. The journal was chosen as it is open access, and considers articles on all aspects of nutritional sciences, including public health nutrition and global interventions with a clear focus on nutritional programmes and interventions over the lifecycle. These areas align to the current study objective. The manuscript was declined for submission on the 30th April 2020. The main areas of concern raised by the examiner were the study sample size and whether the sample was sufficient to support the conclusions drawn. The reviewer mentioned that the aim of the study was not clear and that the results focused more on perceptions rather than practices. Applying a mixed-methods approach

would have provided richer data; and triangulation of data would have strengthened the results. Another concern raised was on the wide age range of the children of the caregivers / parents that participated in the study, as the caregiver's control of the child's food intake will differ substantially depending on the age of the child. The full report is provided as Appendix J. Changes were made to the article based on the examiner's comments and the comments made by the BMC Journal reviewer. The article was then submitted to the Ecology of Food and Nutrition Journal on the 14<sup>th</sup> July 2020.



## ABSTRACT

Primary caregivers constantly receive mixed messages about healthy eating making it difficult for them to know what constitutes healthy and nutritionally dense eating. This lack of understanding, especially amongst low income families in South Africa, has not been investigated before. We conducted a qualitative, cross-sectional study and found that caregivers' food choices were based on the availability of resources, including cost and the ability to access quality food nearby. The consumption of processed foods and refined carbohydrates was high, while that of fruits and vegetables was low. Caregivers do want to learn how to provide a healthy diet for their families.

**Key words:** primary caregiver, healthy, nutritional diet, low- income, unemployment.

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## INTRODUCTION

Primary caregivers frequently hear mixed messages about healthy eating, however, it's imperative that they have a clear understanding of what healthy eating is. Primary caregivers strongly influence the environment in which food is prepared, consumed, celebrated, resisted and or refused (Francis-Granderson et al., 2018; Zerfu et al., 2016). And parental feeding practices to control how much, and when, their children eat, plays a significant role in the development of children's eating behaviours (Khandpur et al., 2014). Furthermore, parental beliefs and knowledge of 'child health' is often influenced by cultural and social norms, which on occasion, oppose institutionally communicated health recommendations (Gussy et al., 2008). It appears that parents tend to be more concerned about the short-term health benefits than long-term health consequences. For example, more focus is placed on getting the child to eat, sleep and stop crying, and less thought is given to the long-term consequences of poor nutrition, such as disease and obesity (Khandpur et al., 2014). In addition, parental feeding practices may vary depending on numerous factors such as ethnicity and socioeconomic status (Zarnowiecki et al., 2014).

Furthermore, studies show that children and adolescents of a low socioeconomic position (SEP) are more likely to consume poor diets consisting of a higher intake of cheap, nutrient-poor snacks, fast foods, and sweetened drinks, and very little fruit and vegetables (Zarnowiecki et al., 2014). Although South Africa is regarded as a food secure country, a large number of South African households are food and nutrition insecure, with 26% of South African households, (approximately 13-15 million people), having inadequate or severely inadequate access to food (Statistics South Africa, 2014). The South African government employs numerous strategies and interventions to alleviate poverty and address food and nutrition related challenges, including social support grants, school feeding schemes, and free access to health services for children, pregnant and breastfeeding

women (Agriculture, 2002). However, social grants by themselves are not enough to meet the nutrition needs of families as the money provided is less than what is needed to stay above the South African poverty line (Chakona and Shackleton, 2019). And one in five South Africans reduce the size of their meals and/or skip meals at least five days each month (Statistics South Africa, 2016).

Since primary caregivers are key players in children's health it is important that their understanding and perceptions of healthy diets be studied in more detail. Thus, an examination of their actions and how they navigate food choices is necessary. The aim of this study is to explore primary caregivers' practices of a healthy diet, including factors that influence these, in a low-income community in Cape Town, South Africa.

## **METHODS**

### **Research Location**

The study was conducted in Manenberg, Cape Town, South Africa, a predominantly Colored community created in 1966 through the apartheid government's forced removal program (Mullagee and Bruce, 2015). The community is located on the Cape Flats approximately 20km from the Cape Town city center and is a lower-income community where gangs wield enormous power over the community. Drugs are readily available, and unemployment is high (Mullagee and Bruce, 2015). Manenberg's population at the last national census (2011), is over 61 000 people. Of this, 40 452 are of 'working age' (15–64). Amongst this group, 35% (13 962) are classified as employed, 20% (7 923) as unemployed and 46% (18 567) as 'not economically active' (City of Cape town, 2011).

Primary caregivers from three high schools in the area were invited to meet at one of the schools to participate in the study interviews. On the day, caregivers from only one of the three schools were present as there was gang violence in the area. It was decided to continue with the parents who presented on the day as it was not known when it would be appropriate and safe to conduct interviews in the area again.

### **Population and Research Design**

A cross-sectional qualitative research design was used for this study. The researchers' main intention in using this design was to better understand the phenomenon by analyzing individuals' first-hand experiences, and to appreciate their unique viewpoints regarding the phenomenon studied (Castleberry and Nolen, 2018). A total of 10 in-depth interviews were conducted with primary caregivers who presented on the day. These caregivers had children between the ages of 3–18 years old, the age-range the study was focusing on. A description of the purpose of the research was provided to the participants, and all participants provided consent to participate in the study. Interviews were conducted by the first author using open-ended questions set in an interview schedule that was guiding the interviewer. Information was also audio recorded and transcribed verbatim. Interviews took place in both English and Afrikaans (which was the main language of some of the participants). Interviews in Afrikaans were transcribed in Afrikaans and then translated to English by the interviewer, who is bilingual. Questions focused on healthy food provision, fast food meals, challenges to providing a healthy diet, and the perceptions of primary caregivers' regarding their children's weight.

### **Data Analysis**

Each transcript was read at least twice, once by the first researcher and then by the second research, to prevent transcriber bias. The core concepts were then identified, and a thematic analysis used

to manually analyze the data. The thematic analysis comprised looking at the interpretation of the numerous experiences, histories, and beliefs of participants, and then identifying thematic patterns from the data. By extracting themes from the data, the researcher was able to obtain the essence of the phenomenon as it relates to the research aim and questions (Castleberry and Nolen, 2018).

### **Ethical considerations**

Ethical clearance was received for this study from the University of the Western Cape Senate ethics committee, clearance number 14/10/34, as part of a PhD study. Informed written consent was obtained from all study participants.

### **RESULTS**

A total of 10 interviews were conducted, each between 45 – 60 minutes, allowing for in-depth discussion. Table 8.1 below provides a breakdown of the socio-demographic and basic information of the study group. All the participants were female, with the lowest level of education being Grade 7, and the highest Grade 11. Nine out of ten mothers were working, and therefore earning an income. Additionally, all the participants carried out all the shopping and cooking for their families.

**Table 8.1: Socio-demographic and Basic Information of Qualitative Study Participants (All Female Participants)**

<b>Participant Code</b>	<b>Age</b>	<b>Education Level</b>	<b>Primary Caregiver to No. of Children</b>	<b>Employed</b>	<b>Does the Cooking and Shopping for the Household</b>	<b>Husband or Partner Employed</b>
1	50	Grade 9	4	Volunteer	Themselves	Yes

2	39	Grade 11	7	Yes	Themselves	No
3	62	Grade 9	1	Yes	Themselves	No
4	50	Grade 7	3	Yes	Themselves	Yes
5	57	Grade 7	7	Yes	Themselves	Yes
6	39	Grade 8	3	Yes	Husband	No
7	45	Grade 8	3	Yes	Themselves	Yes
8	48	Grade 10	5	Yes	Themselves	No
9	30	Grade 11	2	Yes	Themselves	No
10	55	Grade 10	2	Yes	Themselves	No

As the primary caregivers were not earning the monthly minimum wage, this may have a significant impact on their family as it hinders their ability to provide a diet that is both healthy and nutritious.

Six themes emerged from the data analysis: ability to access food daily; unemployment hindering the provision of healthy nutritional meals; fast food meals as part of the family mealtime; changes in diet from weekdays to weekend; and understanding their children's weight status. Findings regarding these six themes are presented in the section below.

## Themes identified from data analysis

### *Ability to access food daily*

This theme is important as it highlights the family's food preferences and the food choices that are made daily, based on the available financial resources. Daily access to food was not chosen for its health benefits but rather to fill the hunger need.

Results show that challenges exist with regards to accessing a healthy diet. These challenges include limited resources - such as money, or that the mother is out working, and that fathers were unemployed. This was prevalent in six of the ten interviews. As reported by the mothers:

“There have been many times where there is no food or money in the house. We then need to ask friends to share with us and when we have, we give to them. Money is split for everything, like school fees, transport, electricity, and we have a monthly food budget. Sometimes it does not last the month as things are expensive, so then we have to borrow and pay that money back again.”

(Caregiver – grandmother: age 57, Participant five, seven children – ages 7, 10, 12, 14, 15, 17, and 21 years old. Different fathers who are drug addicts and only one mother of two of the children is present, but she is unemployed).

“The father makes sure that if there is no food in the house that he goes out and looks to borrow or ask somebody else so that the children are able to eat at least. We do get a grant for one of the children as they are disabled but it is not a lot. Things are so expensive, but I make sure that he eats everyday even if I must go without something.”

(Mother: age 39, Participant two, seven children – ages 3, 6, 10, 13, 19, and 22 years old all living at home).

“As I am the one who is working, my husband is the one that goes to the shop and decides what we can buy. He [does] most of the cooking at the moment and it is just quick things as he is not a good cook, but he is trying. He likes to fry things or just a lot of tin food things with bread.”

(Mother: age 39, Participant six, three children – ages 7, 10, and 16 years old, father unemployed but at home.)

“We make a lot of cooked food that will also stretch – rice with potatoes and a little meat mixed with soy, so more people can eat with a gravy. So, it is like you have a full plate of food. And then there is a little food left for the next day. I do try and buy fruit but not every week – maybe just around the time of payday, and frozen veg because then it lasts longer.”

(Mother – age 30, Participant nine, two children – aged 10 and 16.)

Not much focus was placed on the use of various vegetables in cooking other than potatoes, carrots, and butternut which are then mashed in the food to make a gravy or used to add bulk to a stew that does not have many other vegetables in it. When asked about the use of green vegetables the participants indicated that broccoli was not cooked often, if at all, because it is not something that is readily available in the community corner shops but rather in a bigger supermarket. Other green vegetables such as green peppers are used to “start” a pot of food, along with an onion. Two participants mentioned that avocados were bought only in season from the community corner shop, as they were cheaper then. However, they never bought prepackaged foods from a supermarket as they were too expensive.

### *Unemployment hinders the provision of healthy nutritional meals*

It is important to understand how unemployment affects the nutritional needs of the family. Within this context, it is necessary to determine who is responsible for the nutritional needs of the family, as well as how this affects the family. In the interviews with the primary caregivers, unemployment of one or more family members resulted in a large amount of stress when it came providing for the family, as this responsibility largely falls on one main member. This stress is amplified when it is a large family. In most cases, the mother or the grandmother is the main provider. Adding to the financial responsibility of caring for the family, the caregivers still need to continue the normal provision of care for the family like washing, cleaning, cooking and walking children to school.

“Their father does not work now. And so, I am the only one who is working. I make about R750 a month which does not stretch very far into the month.”

(Mother: age 39, Participant six, three children – ages 7, 10, and 16 years old. Father unemployed but at home).

“No child support from the father. There is no role of the father being fulfilled. He is not there where the son stays. The son lives with his grandmother, so I send money to her. He just left us all and I couldn’t have all the children, so I sent my son to live with his grandmother. But I still send money for his food.”

(Mother: age 30, Participant nine, two children – ages 5 and 10 years old.)



“I don’t even know where some of the children’s fathers are. So maybe they do not care. So, we need to borrow money all the time to cover us for the month when we run out of money. My one grandchild and I are the only ones working. He is earning a weekly wage helping on a building site. So, it is just us providing money for 10 people in the house.”

(Caregiver – grandmother: age 57, diabetic, Participant 10, seven grandchildren – ages 7, 10, 12, 15, 17, and 21 years old. Different fathers who are drug addicts, only one mother of two of the children is present but she is unemployed and suffers from epilepsy.)

The primary caregivers explained the process they follow when undertaking food shopping. The first step is to check how much money they have for the month. Often this is a challenge if they had outstanding debts from borrowing money for food the month before. They then examined any sales that were being advertised from bigger food shops outside of their area. Having more than three to four items on special at shops near to one another was a relief as this meant they would not have increased transport costs. If their debts were too high from borrowing money the previous month, they would shop less and go to the small corner community grocer. For a bigger shop, they would make sure that an older family member was able to join them who would then be able to assist with carrying the goods. The participants also indicated that they prevented taking the younger children with them as they would often want items not on the shopping list and make the shopping much more stressful.

Questions that were specific to understanding what comprised a healthy diet were interpreted by some as a question on whether they understood words that describe healthy foods. Some participants indicated that they had trouble understanding healthy words used on packaging, while

others did not read food packaging at all. Results highlight that at times nutritional knowledge decisions are made when buying food and at other times the cost of food played a factor in food choice. For example, if the food was cheap and the packaging said anything along the lines of it being healthy, natural, good for you, high in fiber and enriched with vitamins, they would buy the food; or if food was being sold in the bargain bin or fridge due to it expiring on the day of purchase.

“I check just for expiry dates, sometimes the food is cheaper because the next day it is expired. I do not know what all the information on the label means. I do look for things that say healthy, natural, added vitamin C, D or calcium as he needs that for his bones.”

(Mother: age 30, Participant nine, two children – ages 5 and 10 years old).

“I sometimes buy things that say they are sugar free if it is cheap, sometimes they have specials on it. [I] look at foods that say low fat, cholesterol free, or trans-fat free, I then buy those because fat is not healthy. Or packets that say good for children – Cornflakes and oats, Rice Krispies.”

(Mother: age 39, Participant six, three children – ages 7, 10, and 16 years old.)

“[I look at] expiry dates. [I] check for Halaal stickers, also if there is soya in the food as nobody in the house wants to eat soya. I try to buy what is on my husband’s diet sheet that he got from the hospital, but the food is expensive.”

(Caregiver – grandmother: age 57, diabetic, Participant 10, seven children – ages 7, 10, 12, 15, 17, and 21 years old. Different fathers who are drug addicts, only one mother of two of the children is present but she is unemployed and suffers from epilepsy.)

One of the caregiver’s husbands did the shopping, and she was not sure what he looked at when selecting food.

“I do not know if my husband reads the labels, I don’t go to the shop. But not really a big shop, not a monthly shop. Just when there is something that is needed at the corner shop. There is not really money for a big shop”.

(Mother: age 39, Participant six, three children – ages 7, 10 and 16 years old.

### *Changes in diet from weekdays to the weekend*

In understanding food preferences and preparation styles, it was important to ask primary caregivers if there was any difference or changes between their week and weekend meals, especially relating to their consumption of nutrient dense foods such as fruit, vegetables, and meat. Participants were also asked if there was an increase in the consumption of less nutrient dense foods such as processed lunch meat, carbonated sugary drinks, and chips. However, even with probing questions such as “how many fruit and vegetables are eaten per week?”, it was not always clear in the interview as to the actual fruit and vegetable consumption by the children. All families noted that their children consumed carbonated drinks, especially since a preferred brand is sold in the area at a much cheaper price. Bulk potato crisps were bought on the way to school if there was

no time for breakfast. These chips had no brand name and were sold in clear packets at the corner shop.

“I do not always have breakfast for the children because it is a rush to get them all done. So, while we walk to school we stop at the shop and buy small freshly made pies, chips and a cooldrink to share. On the weekend, we will have bread and scrambled eggs if there is. I always try and cook a big meal on a Sunday like roast chicken and potatoes.”

(Caregiver – grandmother: age 55, Participant 10, two children – ages 7 and 10 years old).

“[On] weekdays we try [to eat] everything – fish (frozen and crumbed), chicken, but a lot of red meat it is very expensive. They have luxuries like chips and cooldrinks because they are children and they are very active. They don’t really like vegetables, so I do not buy it otherwise they waste it. They like potatoes and then I cut it into chips on a Friday evening. If one has a pocket of potatoes it goes a long way to feed them all.”

(Mother: age 48, Participant eight, five children = ages 14, 19, 21, 25, and 28 years old).

“During the week the children love pasta, they will eat pasta every night if they could. I can mix the pasta with anything – cold meats or some chicken. They do love fruit, so it is bought as well. They buy luxuries for themselves, and I also buy some to keep in the house. [On the] weekend they eat differently. She goes to friends, so she will eat take away – I do not buy a lot of takeaways as my husband didn’t like it, he wanted home cooked food every day. But since he is gone, she

just wants to eat pizza and different things. If she does not like what I make she will eat noodles and bread every day.”

(Mother: age 45, Participant seven, three children – ages 16, 18, and 22 years old.)

The aforementioned mother was the only one out of the sample that was able to highlight her child’s preference for fruit. However, she was not able to quantify how many servings of fruit per day or week they have. It was indicated that it was likely one child would eat more fruit than the other children when coming home from school, or that it was being shared with friends.

#### ***Fast food meals as part of the family mealtime***

Looking at the perspectives and behaviors regarding fast food or take way meals. This was asked to note if there was more time for meal preparation especially with regards to whether they were inclined to have fast food or takeaways, if the whole family was at home at various meal times, and if Sunday was seen as a special day for bigger meals to be shared. For some families, fast food meals were seen as a reward or brought into the household as part of a celebration. However, none of the families had fast food on a weekly basis as it was cited as being expensive for a large family and was not able to stretch into another meal for the next day. When asked if how often they bought fast foods, the participants said the following:

“Maybe occasionally, not even [once] per week. Maybe just once a month. Or when it is a child’s birthday. But then it is a parcel of fish and chips with rolls always close to payday.”

(Caregiver – grandmother: age 57, Participant 10, seven children – ages 7, 10, 12, 15, 17 and 21 years old.)

“Maybe three times a month – a Gatsby or a special occasion on a birthday.”

(Caregiver – grandmother: age 55, Participant 10, two children – ages 7 and 10 years old).

“No takeaway during the week. Maybe there is a special for KFC and then we buy it, or we make a KFC kind of chicken.”

(Mother: age 48, Participant eight, five children – ages 14, 19, 21, 25, and 28 years old).

“There is no difference from the week and weekend food – we just have to eat what there is. Dahl, tin fish, curry anything that stretchers with rice to feed a lot of people. No takeaways, there is no money for that.”

(Caregiver – grandmother: age 57, Participant five, seven children – ages 7, 10, 12, 15, 17 and 21 years old.)

### ***Understanding the child's weight status***

The above theme is important to highlight as it allows the researcher to understand if primary caregivers are able to notice physical differences in their children due to their dietary needs not being met, or being over met, due to available food sources. During questioning, the primary caregivers were willing to share their understanding of their children's weight status, with a few caregivers stating that they thought of themselves as fat, while their children as not. However, this

perception was based on the other children in their class or street, and therefore was not necessarily a true reflection of weight status. None of the primary caregivers were able to share the weight of their children in kilograms or when last they had a weigh in at the clinic or school nurse.

“Normal weight. He is tall for his height. Taller than the other children his age in his class.”

(Mother: age 30, Participant nine, two children – ages 5 and 10 years old.)

“My daughter is overweight, we went to the doctor when her father died, and they did some tests and they told her she is big for her age and needs to start watching what she is eating. I do not know what her weight is, but you can see she is bigger than the other children who are 16 years old. She is bigger than I am.”

(Mother: age 45, Participant seven, three children – ages 16, 18, and 22 years old.)

“Just the 6-year-old she is very thin and tall based on the build of the other children. She also does not want to eat a lot. So, one has to beg her to eat food at times.”

(Mother: age 39, Participant two, seven children – ages 3, 6, 10, 13, 19, and 22 years old, all living at home).

“She is normal weight, she also does dance at school, so she does exercise.”

(Mother: age 48, Participant eight, five children – ages 8, 10, 12, 16, and 19 years old.)

“They [are] all normal weight, they are not fat children, they can wear each other’s clothes.”  
(Caregiver – grandmother: age 57, Participant five, seven children – ages 7, 10, 12, 15, 17 and 21 years old.)

### *Nutritional skills and understanding of mothers and primary caregivers*

The children’s weight, based on the descriptions of primary caregivers, seems to be normal at their relevant stages of development. However, the caregivers themselves are suffering from nutrition related - diseases and obesity. Most of the women interviewed claimed that they were responsible for managing the family’s diet, including budgeting meals, shopping, preparing, as well as serving meals. While questioning the mothers and grandmothers on what they provide for their children in relation to food selection, many indicated that there was a need to understand what is healthy, what is a healthy food (e.g. they asked what is a carbohydrate and is it health?), and how to cook on a limited budget but still make sure they as a family are all getting enough nutrients.



“How to feed children, because you can make the food but then they do not want to eat what is healthy. I am diabetic and the hospital they gave me a list of what to eat. I cannot buy all those things. It will be too expensive, so I try to buy some of the things, then we can all eat healthy, but they do not want to eat a lot of veg. They say it doesn’t taste nice. Maybe I need to know how to make it differently. Classes where you learn, not just pieces of paper that you throw away. How do I as a diabetic buy good food if it is so expensive?”



(Caregiver – grandmother: age 57, Participant five, seven children – ages 7, 10, 12, 14, 15, 17, and 21 years old. Different fathers who are drug addicts and only one mother of two of the children is present, but she is unemployed).

“How to make good healthy food choices and why. They tell you sometimes you must eat less salt but there is salt in everything. Maybe a course for everyone in the family so the children also understand why they are being given the food they are given. It is maybe important to know when to buy foods in season and the quantity of food to buy for a family and how then to make sure they are eating enough or too little.”

(Mother: age 30, Participant nine, two children – ages 5 and 10 years old.)

“Yes, I dish the food and say they can have a little first and if they finish it and want more, they can have so that we do not waste. I eat whatever there is left or just a lot of white bread and coffee, but I take my medication for my diabetes. But how do I make the food with a little money?”

(Mother: age 39, diabetic, Participant two, seven children – ages 3, 6, 10, 13, 19, and 22 years old, all living at home.)

“I shop, one of the boys will take me to the shop with a car. I will then cook all the food. I love cooking, so I sometimes read in magazines what I can make for us all.”

(Mother: age 48, Participant 8, five children – ages 14, 19, 21, 25, and 28 years old).

“I prepare all the food and dish for them in the evening, if you do not want to eat what is made there is no replacement, so they know this. I am teaching them how to make food also as they help me in the kitchen. If I get older one of them must then take over the cooking.”

(Caregiver – grandmother: age 57, Participant five, seven children – ages 7, 10, 12, 15, 17 and 21 years old.)

## DISCUSSION

Research suggests that the poor are exposed to an unhealthy diet such as foods high in refined grains, added fats and sugars, as these cost less than healthy foods such as lean meats, fresh fruits and vegetables (Dammann and Smith, 2009). This seems to be consistent with the findings in the current study, as primary caregivers opted for meals which are high in refined carbohydrates such as bread, white rice, and packets of soup to make gravy in order to feed a larger family. The BRICS group of countries (Brazil, Russia, India, China and South Africa), considered emerging economies, account for 40% of the world's shift towards more processed and higher value – added food products, leading to a change in the world's food map (Nations, 2016).

Despite the social, economic, and cultural rights included in the 1996 South African constitution, South Africa has high levels of poverty – of a total population group of 55.9 million people, 29.73 million people live below the Upper Bound Poverty Line of R1 036.07 (Treasury, 2015). Thus, more than half of the population has insufficient income and as a result, they are unable to supply their basic needs such as food, education, transport and shelter. Furthermore, it is estimated that more than 12 million people live below the poverty line (Treasury, 2015) - an indication of the cost required for one person to meet their daily calorie requirement of 2,100 calories. In South Africa, this cost is R445.55 per month (Treasury, 2015). This was echoed by the study participants who

highlighted challenges in providing food to the household throughout the month, due to insufficient household income.

Families require both social and economic support for them to function adequately (Walsh, 2003). When families live in conditions which are not structurally conducive to a socially and economically supportive environment, nutrition-related health disparities remain a challenge. This is shown by the fact that in addition to having insufficient funds to buy healthy and nutritious food, people in low-income communities often live farther from grocery stores which sell healthy foods, which exacerbates the problem (Kroll, 2016). Therefore, factors that influence food choices, include the price of food, corporate marketing and expansion, and the effect of physical infrastructure and spatial patterning of settlements (Kroll, 2016). This is borne out in this study as participants indicated that the distance to grocery stores that sold nutritious food was sometimes long and costly to access.

Those living in lower socioeconomic status groups are more likely to have a diet which are high in fats, low in micronutrient density, with a lower intake of fruits and vegetables (Hardcastle and Blake, 2016), and will most likely choose foods such as starchy vegetables, refined grains, fatty meats and sweets (Darmon and Drewnowski, 2008). Families in this study did not place large emphasis on fruit and vegetable consumption because their children did not enjoy it. Vegetable preparation was mostly limited to potatoes as it was cheaper to buy in large quantities and can feed more people. They indicated that it was expensive to buy a variety of fruit and vegetables for large households. Another factor which reduces dietary diversity is the rising cost of living which leads to an increase in the price of basic food items; thus more money is spent on staple foods such as bread and maize meal leaving very little left to spend on other food groups (Statistics South Africa, 2014). Many poor families are dependent on social grants which contribute 42% of household

income and wages only contribute 32% (Statistics South Africa, 2014). However, social grants are not enough to eradicate food insecurity mainly because the increases in grant payments have not kept up with inflation (Devereux, 2017). The grants are not spent only on food but used on many needs (Devereux, 2017). This was evident in the current study where primary caregivers spend their grants on food, transport and electricity.

All but one family in the current study had access to their own family vehicle. All other participants used public transport, which limited the amount of food they could buy at a time. Access to transportation (public and private) is associated with access to healthy food choices, particularly in low-income communities.

There are still questions regarding whether an increase in access to healthy foods would in fact improve not only people's diets, but also their health (MacNell, Elliott, Hardison-Moody, and Bowen, 2017). On the one hand, research shows that people who shop at small convenience stores, tend to buy and consume more fruits and vegetables (Cutler and Lleras-Muney, 2010). For the current study, this is true for some primary caregivers who opted to use public transport to leave the area and go to their preferred shops in order to bulk buy food items. This allowed them to have more control over spending, as well as plan out meals for the month. On the contrary, numerous studies have found no correlation between fruit and vegetable consumption and supermarket proximity (Manios et al., 2015). This may need to be further explored through health behavior analysis.

The impact socio-economic status has on health behavior is complex, as various factors come into play. Knowledge, and personality are two such factors which have been proposed to explain the relationship between SES and a variety of health behaviors (MacNell et al., 2017). This includes primary caregivers' ability to accurately know the weight status of their child. A barrier to

behavioral change is underestimation, and the mother's ability to recognize when the child is becoming overweight is regarded as the key to childhood obesity prevention (Cutler and Lleras-Muney, 2010). When parents compare the weight of their child to that of other children, a shift in social norms regarding body weight may occur (Manios et al., 2015). Studies have shown that between 50% and 95% of parents fail to identify that their child is overweight, whereas 65% of parents of underweight children fail to identify their child as being underweight (Juliusson et al., 2011). In this study, primary caregivers were not able to accurately provide their children's weight status as they did not know what it was, and instead based it on observation of how they physically compared to others in their school class, family, or neighborhood street. Parents' perception of their child's weight status can influence their decision to have their child participate in a weight control program that focuses on exercise and correct eating (Sugiyama et al., 2016). While parental support on healthy behavior can positively influence children's weight status, there is a dissonance between parental perceptions and the actual weight status of their children (Almoosawi et al., 2016).

In addition, many middle- and low-income countries, such as South Africa, are often faced with the burden of malnutrition where being overweight can contribute to the burden caused by undernutrition and communicable diseases. As a result of undernutrition, children are often faced with stunted growth and underdevelopment, whereas being overweight can lead to non-communicable diseases like cardiovascular illnesses and problems (Rossouw, Grant, and Viljoen, 2012). In some countries such as India, it is claimed that people link being overweight with wealth and happiness and also illustrates social mobility to a higher status, although there are no studies to support this (Haff, 2009). Therefore, supporting parents from a resource constrained environment to increase their knowledge on nutrition and diet, could lead to improved nutritional

outcomes. The current study confirms MacNell et al., (2017) findings that there is a disconnect between health and diet among low-income women and therefore there is a need for nutrition interventions that educate low-income families on inexpensive, healthful eating in a structured environment, as well as on the relationship between diet and disease. This study confirmed findings from previous studies - (Omar, Coleman, and Hoerr, 2001) - that participants clearly expressed the desire for information on food choices, and how to provide nutritional meals on a budget. Devereux, 2017 states that good nutrition requires “enough food, or enough cash to buy enough food, but also good health and good feeding and care practices”. Therefore, the beliefs held by primary caregivers are also important to consider when attempting to modify caregivers’ behaviors regarding food provision, specifically around how much food should be provided for the children’s specific age and growth needs, as well as the types of food which should be eaten.

#### **STRENGTHS, LIMITATIONS OF THE STUDY AND FUTURE DIRECTIONS**

Several limitations were considered while interpreting the findings in the study. A primary limitation is that while the participants came from the community being studied, they may not represent the community fully. Thus, the findings cannot be generalized to a larger sample of primary caregivers as the sample of the study was small. Applying a mixed-methods approach would have possibly provided more comprehensive data.

Further questions could have broadened the study to gather data on the environment in which the participants live and how the environment affects the availability of food for their families, and the degree to which they consider their diet, weight, and health status influenced by their socioeconomic status. Further to this, there needs to be an exploration of the involvement of fathers in the selection and preparation of a healthy diet.

A deeper exploration into shopping habits is recommended as this is a relatively new area within the public health arena. This should be conducted with a marketing research focus as it could provide detail as to the selection habits of primary caregivers when healthy options are available.

The results of this study are useful to identify the specific areas where interventions need to be focused in order to improve dietary choices and food preparation skills when primary caregivers are faced with limited resources.



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## **CHAPTER NINE**

### **The Development of a Nutritional Education Programme for Primary Caregivers using a Consensus Workshop Approach**

#### **SECTION A**

##### **9.1 Introduction**

This chapter focuses on the consensus workshop and outlines the process involved in the development of the nutrition programme (Section A). It fulfils the aim of the study: to develop a nutrition education programme to enhance primary caregivers parental feeding styles and practices to improve the nutritional status of their children. The consensus workshop built on the findings from the previous chapters. Section B presents the nutrition programme aimed at primary caregivers that was developed.

##### **9.2 Manuscript Submission Process**

This part of the thesis was submitted to The Health SA Gesondheid Journal. This journal was chosen because it is interdisciplinary and interprofessional in its focus, with the main aim of promoting communication and collaboration across professions within the health sciences. It facilitates the gathering and critical testing of insights and viewpoints on knowledge from different disciplines involved in health service delivery within South Africa, but also Africa in general. The manuscript was submitted on the 30<sup>th</sup> October 2019. However, the journal declined the article on the 27<sup>th</sup> February 2020 (Appendix K) stating that work was needed in the methodology as the paper

drifted between a narrative review and a qualitative research paper. The suggested changes were affected to the manuscript and was submitted to the Food and Nutrition Bulletin on the 28<sup>th</sup> October 2020. The submitted manuscript is presented below.

## **ABSTRACT**

### **Background**

Globally nutrition has been identified as a priority, with a strong focus on maternal and child undernutrition, obesity and overweight. Interventions to target the immediate determinants of poor diet and illnesses, typically delivered through community-based nutrition programmes or health systems, called ‘nutrition-specific’ interventions, have been viewed as the most appropriate to improve nutrition with the support of primary caregivers.

### **Aim**

To outline the development, in collaboration with medical practitioners and allied health practitioners, of a programme that supports primary caregivers across socioeconomic status groups to grow their nutritional knowledge to possibly improve the nutritional status of their children.

### **Setting**

A consensus workshop was held, with a focused group discussion approach. Inputs into the programme development was gained from both primary caregivers, and nutrition and health experts.

### **Methods**

The participants were recruited via Facebook by approaching the group administrators of four groups focused on parenting. Emails were also sent to health experts identified through internet

searches in the Western Cape, South Africa. A workshop was held with participants from the parents' groups and experts, where the proposed programme was presented and discussed.

## **Results**

Participants suggested the programme have a primary consultation followed by weekly sessions. With their input the programme design was developed - it covers a seven-week, family orientated lesson structure, with a pre-test, that focuses on nutritional topics, cooking on a budget, and meal planning. They also highlighted that the programme should be combined with other social and health departmental initiatives to allow for sustainability and the use of resources that are already in place.

## **Conclusion**

This study is significant as the nutritional programme layout was designed based on extensive research. This included examining factors that influence caregivers/parents feeding styles and practices, and research on current nutrition programme best practices. Input was gained directly from primary caregivers and nutritional experts into the design of the programme. This makes the programme a strong design that should help caregivers/parents who want assistance with food choices and meal planning, and to help their families achieve and maintain positive health outcomes.

**Key words:** Nutritional knowledge, education programme, focused group workshop; programme development

## INTRODUCTION

Over the last decade, nutrition has been globally highlighted as a priority, and although maternal and child undernutrition have received increased attention, the changing prevalence in worldwide overweight and obesity has also been highlighted (Bhutta et al., 2017). Akseer et al., (2017) reported that the prevalence of overweight and obesity among girls younger than 20 years in 2013 was highest in the eastern Mediterranean region (28%), western Pacific region (25%), North and South America (25%), and Europe (21%). The median prevalence however was found to be much lower in Africa (15%) and South Asia (9%) respectively.

The World Health Assembly (WHA) declared 2016–25 as the “decade of nutrition”, and as such set targets that have been integrated into the Sustainable Development Goal 2 (SDG 2): “ending hunger, achieving food security, improving nutrition, and promoting sustainable agriculture” (Bhutta, 2017). Strategies for improving nutrition included a set of interventions aimed at immediate determinants of poor diet and disease, typically delivered through community-based nutrition programmes or health systems, called ‘nutrition-specific’ interventions (Bhutta et al., 2013). Interventions are also advised to strengthen the fundamental determinants of food insecurity, homelessness, women’s status, and sanitation, called nutrition sensitive interventions, but less evidence is available on their efficacy (Ruel et al., 2008).

It has been proposed that effective interventions that focus on nutrition and behaviour need to be started in early adolescence. Therefore, there is a need for better understanding of nutrition actions among school age children—i.e. ages 5–10 years (Bhutta et al., 2013). It is widely accepted that parents are pivotal to the development of their children’s eating behaviours, especially in the early years (Ventura & Birch, 2008). Parenting is described as encompassing feelings of responsibility in ensuring the nurturing of children and consists of the child receiving compassionate guidance

and affection by the parent (Kerby, 2007). There are four types of parenting styles as described by Shloim et al., (2015,p 1849): “(1) authoritative parenting, associated with a high level of demandingness and rules with high responsiveness to the child; (2) authoritarian parenting linked to high demandingness but low responsiveness characterized by rules but with less influence from the child's needs; (3) indulgent parenting combining low demandingness and high responsiveness with few rules but high engagement with the child's needs; and (4) uninvolved parenting which is associated with both low demandingness and low responsiveness”. Children’s eating patterns and nutritional wants, and requests are an outcome of the interaction of innate and learned factors which are foundational in the parent–child relationship (Lipowska et al., 2018).

Zarnowiecki et al., (2014) states that parental interest and recognition of the importance of nutrition are related to the amount of nutritional information parents discuss with children. In this, parents have the power to influence their children’s levels of nutritional knowledge (Zarnowiecki et al., 2014). A key challenge is how to go about supporting and encouraging families to make sustainable changes to healthier eating, despite the challenges posed within contemporary society. Healthy changes to an individual child’s eating patterns will be reinforced if the family also shares the same influences and models the changes in behaviour (Epstein et al., 2001).

The South African National Food Consumption Survey states that South Africa is a society in nutrition transition, as evidenced by the coexistence of under- and overnutrition within the same population (Hendricks et al., 2007). Nutrition transition is defined by Vorster, (2010) as the changes in dietary patterns and nutrient intakes when populations adopt modern lifestyles during economic and social development, urbanisation and acculturation. Changes to diets are happening at a much faster rate in low and middle-income countries and at earlier stages of economic and social development (Vorster et al., 2011). Poverty and inequity are major contributors to

malnutrition, both of which are alarmingly high in South Africa (Van de Poel et al., 2008). It was found that school and community nutrition programmes undertaken in disadvantaged communities were as effective as interventions in other settings and thus should impact dietary intake sufficiently to improve health outcomes in these populations. The evidence suggests that child nutrition programmes are beneficial for all children irrespective of socioeconomic status (SES), although it is important to consider strategies to maximize disadvantaged families' participation in effective family-based nutrition programmes (Black et al., 2017). Therefore, in creating a programme that supports and encourages improvement in the nutritional knowledge of primary caregivers across SES groups, it was imperative to engage not only with medical practitioners and allied health practitioners, but with primary caregivers themselves.

## **METHODS**

### **Research Design**

A workshop as a qualitative research approach was used. Current literature states that workshops allow for engagement as there is collaborative discussion as well as “constructive feedback” between the facilitator and the participants (Ahmed & Ashraf, 2018). Workshops also allow the researcher to draw rich information from the group who are selected through the “purposive sampling technique” (Creswell & Poth, 2017). Furthermore, they allow different participants from various backgrounds to learn from each other ((Ørngreen & Levinsen, 2017), and serve as a space where those who volunteered to be part of the study to meet (Ahmed & Ashraf, 2018).

In the current study, a primary caregivers consensus workshop was held, using a focused group discussion approach. The purpose of the workshop was to generate ideas based on participants'



expertise or personal experience of parenting a child. A focus group discussion is thought to be cost-effective and provides a promising alternative in participatory research, offering a platform for differing paradigms or worldviews (Nyumba et al., 2018). Focus group discussions can be utilized within a suite of techniques in a multi-method research design, as a principal research method in its own right, or as a form of participatory action research to empower participants and promote social change (Nyumba et al., 2018). In the current study the focused group discussion allowed participants to provide insights in developing a supportive programme to positively influence their own or other primary caregivers nutritional knowledge, while relying on the facilitator or moderator to guide the group's discussion (Berg, 1989; Morgan, 1996). According to Morgan (1988) and Titosseliti (2004) the facilitator must have a set of skills and techniques to ensure that the issues under discussion are addressed comprehensively. For this study, the facilitator had to have strong communication skills, in this case had to be bilingual (English and Afrikaans speaking), and be knowledgeable in diet and nutrition, children and family behaviour; health and wellbeing; and complementary medicine; as taught at a recognized training institution, in order to effectively lead the topic of discussion. Having this base understanding on the subject was important so the facilitator could probe different answers to allow for more in-depth discussion. The facilitator also needed to demonstrate some degree of "naïveté" to encourage participants' responses.

## **WORKSHOP APPROACH**

The workshop followed two clear distinct phases, each comprising separate stages that needed to be completed before being able to move to the next one. Each stage needed its own preparation

time, which was integrated into each stage. The following diagram provides an outline of the process followed:

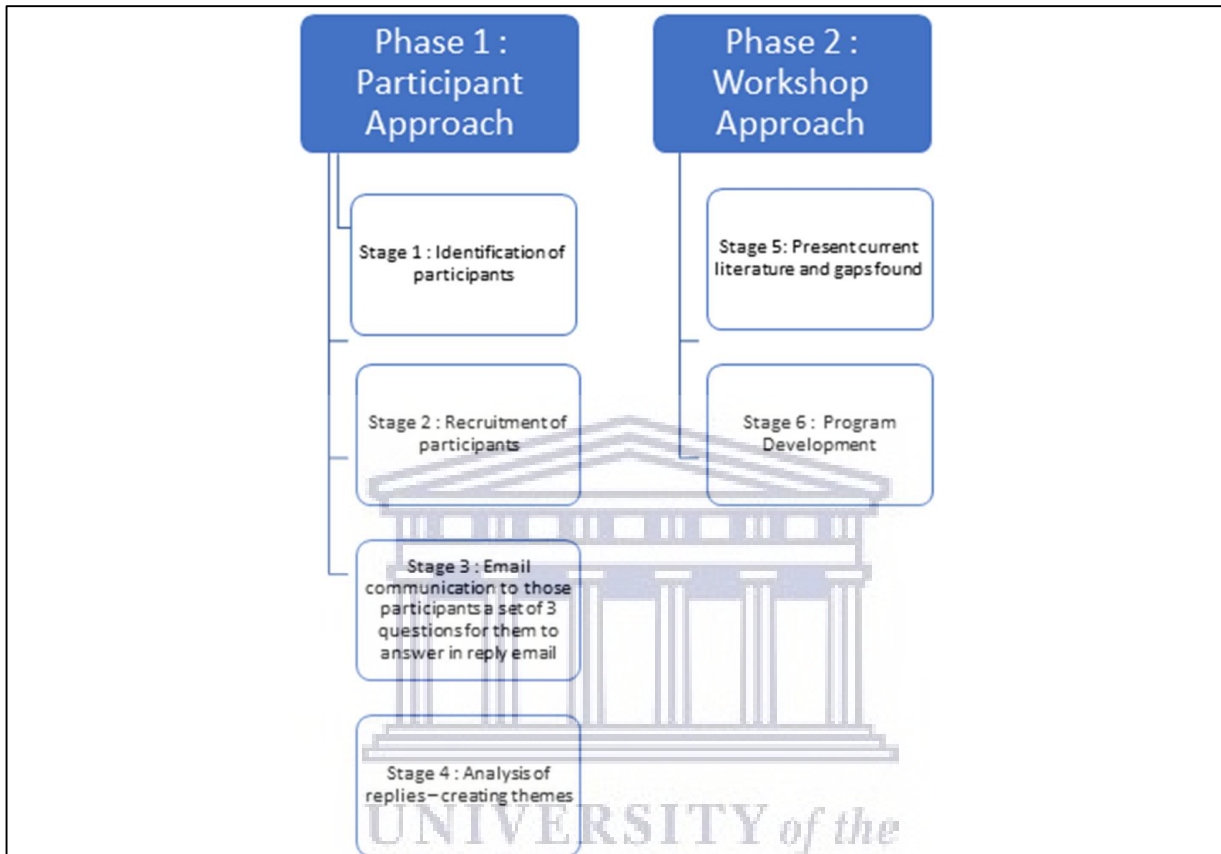


Figure 9.1: Flowchart of Workshop Phases and Stages

### Phase 1: Participant Approach

#### Stage 1: Identification of Participants

Participants were identified from parenting groups found on the social media platform Facebook and were contacted via the Facebook, as well as by email. A search on Facebook for groups relating to parents and primary caregivers was conducted. Using the selection criteria of parents and caregivers who were interested in meal preparation, exercise, general health, and wellness of families, four online groups on Facebook, specifically within South Africa, were identified. The

identified groups were closed groups, with each having their own administrator who was responsible for curating posts. In order to be accepted into the groups, the researcher needed to answer three questions and adhere to group policy. Group policies included respect for one another, not selling or advertising a service, and not offering a service to the members of the group. The Facebook group administrators of each group were contacted via email, and sent the study abstract proposal and further details asking if they were open to sharing a post or forum message on their wall to highlight the study and recruit study participants. Permission was granted by all four administrators and the researcher posted a message on the Facebook wall explaining the study purpose, the specific selection criteria, the date of the workshop, and requested interested participants get in contact by the RSVP date. The medical experts, allied health practitioners, and teachers that participated in the study were purposefully selected by use of social and medical groups found online in the Western Cape area. This was to ensure that there would be different groups in the workshop. Experts and lay people together increase the variety of perceptions and can add depth to the information being gathered (Rowe & Wright, 2011).

## **Stage 2:**

### **Recruitment of Participants**

150 participants indicated interest in participating in the workshop from the participant searches. Of these, thirty-five participants who identified themselves as being experts, teachers, or allied health practitioners were sent two questions with a deadline date in return email. The questions were as follows: 1) Do they provide nutritional education support to parents and primary caregivers and 2) If they had a desire to share their experiences within a group. Ten responded to the email in the required time frame and were saved in a database for inclusion in the study. From the 150, 125 participants were sent calendar reminders about the workshop at the one-month mark, the two-

week mark, and then again at one week before the workshop date. One week before the workshop, 25 participants had accepted the calendar invite to take part. However, on the day, only 17 participants (ten experts and seven primary caregivers) were present. These participants were geographically, economically, and educationally diverse and therefore it was decided to continue with the workshop.

The expert panel consisted of a group of educators, primary health care practitioners, and complementary health practitioners all registered with a statutory board in South Africa. The other participants were primary caregivers that were currently raising children, or who have a family member in the household they cook for (for example the 19-year-old participant cooks for the family). Details of the participants are shown in Table 9.1 and Table 9.2 below.

**Table 9.1: Expert Participants Details**

Participant No.	Gender	Age	Title	Specialty
1	Female	60	Dr.	Phytotherapist
2	Female	51	Dr.	Nutritionist, Naturopath, Former Teacher
3	Female	53	Dr.	Unan-Tibb Phytotherapist
4	Female	39	Dr.	Pediatrician
5	Female	39	Dr.	Homeopath
6	Female	35	Dr.	Primary Health Care Clinic - General practitioner

7	Female	27	RD	Primary Health Care Clinic - Registered Dietitian
8	Female	27	RD	Primary Health Care Clinic - Registered Dietitian
9	Female	32	Educator	Primary School Teacher
10	Female	27	Educator	Early Childhood Development

**Table 9.2: Primary Caregivers**

Participant no.	Gender	Age	Number of children <17 years old	Number of Grandchildren < 17 years old
1	Female	66	3	5
2	Female	22	1	0
3	Female	19	0	0
4	Female	36	2	0
5	Female	37	2	0
6	Female	52	4	3

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7	Female	41	4	2
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### **Stage 3: Email Communication**

The 25 participants who agreed to be involved in the study formed a mix of health experts, primary caregivers, and teachers. They were emailed an information pack which outlined the venue the aim of the study. Additionally, they were sent the following three questions which they needed to return to the researcher five days before the workshop.

What is health?

What is nutrition?

What is nutritional knowledge?

It was noted in the email that the researcher was not looking for referenced responses to the questions, but rather general first thoughts when reading the questions.

### **Stage 4: Analysis of Answers from Participants**

Of the 25 emails sent to participants, only 11 replied. Some of the participants who did not reply, stated that they do not regularly check their email. One grandparent stated she thought the questions sent via email would be discussed within the group workshop.

### **Phase 2**

#### **Stage 5: Present Current Research Findings and Show Programme Layout**

At the workshop, a PowerPoint presentation was given that provided the aim of the programme, and details on the ways in which nutrition, parenting, parenting styles, and the nutritional

knowledge of parents is understood according to literature. It also outlined the outcomes that a programme of this kind could have, namely: to provide support and information to primary caregivers to make them rethink what meals they prepare for their children, what kinds of snacks they provide, create an understanding of why food groups are important, and how their feeding styles and practices influence the home food environment.

Following this, the researchers showed participants a draft programme layout, which included programme sessions and the expected outcomes. This was done to evoke discussion and allow for input. The draft programme included five steps to be implemented within a group setting. It focused on behaviour change, through the process of communicating nutrition messages. The process of developing the nutrition programme requires five steps (Corresponding to stages 1–3), which are outlined below:

Referral and screening – (Stage 1: Screening)

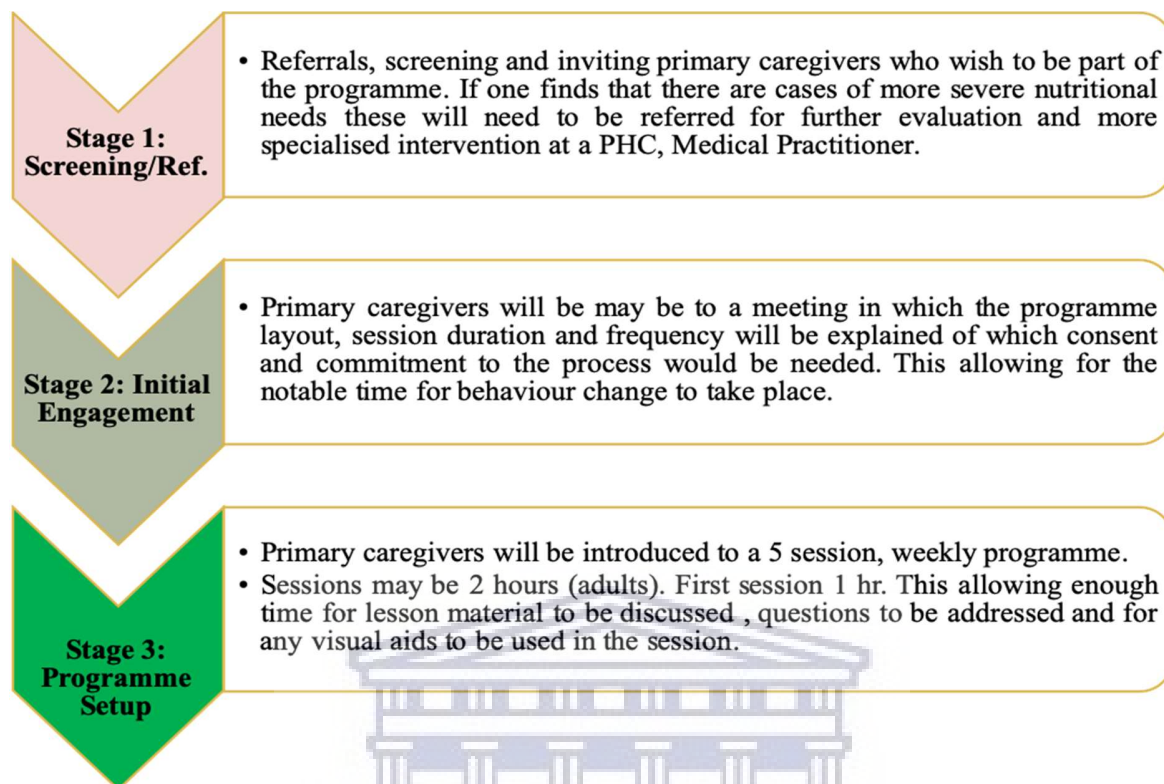
Initial session (assign to a group) – (Stage 2: Initial engagement)

Logistical prep – (Stage 2: Initial engagement)

Programme attendance – (Stage 3: Programme setup)

Follow up – (Stage 3: Programme setup)

A proposed layout of the programme is illustrated in Figure 9.2.



**Figure 9.2: Proposed Programme Layout**

The programme includes holding seven face-to-face sessions (as part of stage 3). Each session contains a theme and session objectives (see Table 9.4 later in the chapter). Sessions 3 - 5 have a pre-test, based on the previous sessions' material covered.

### **Stage 6: Programme Development**

Stage six shares a similar approach to the popular Delphi technique. The Delphi technique consists of the estimate-talk-estimate or nominal group technique, relating to experts providing individual, independent judgments, followed by group discussion, which is then followed by independent judgements drawn from the group discussion until consensus is reached (Rowe & Wright, 2011). During Stage 5, the workshop focus group had been shown the planned sessions and planned activities. In stage six, the experts and primary caregivers were asked to provide feedback



regarding clarity of purpose, appeal, perceived feasibility, and barriers to implementation. Additional questions to illicit further information were posed to the group as a whole (there was insufficient time to do smaller breakout group discussions). These specific questions were:

1. How will the programme participants be organized when the programme is implemented (Family's with primary caregivers on their own or in groups)?
2. When is a family high risk? How will this be determined? Who will they be sent to?
3. Where would this programme be best suited to be implemented – which locations?
4. How can the programme be made more applicable to all?
5. Which facilitators should be used and how should they be chosen? What training should the facilitators receive?
6. How will one create buy-in from participants to attend a 7-week programme?

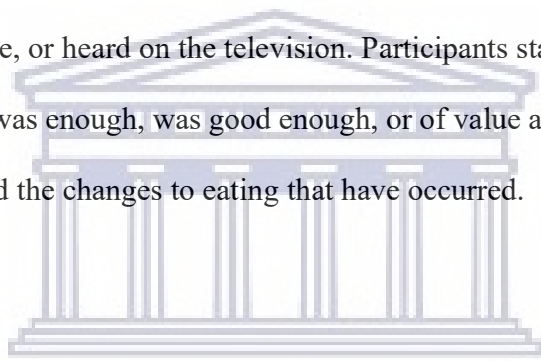
During the discussions of the focus group, the first author (researcher) was assisted by a co-facilitator in order to keep detailed notes to ensure an accurate reflection of the round-table discussions.

## **RESULTS**

At the start of the workshop, a warm - up exercise was performed with participants. The three questions posed in the initial email were again presented to the participants. Discussion was had for about 15 minutes on the various personal perceptions on health, nutrition, and nutritional knowledge. Participants were asked to write down their short answers on three separate cards and stick it on the wall of the venue. After the workshop only 12 sets of Post-its were on the wall. It wasn't possible to separate the responses between experts and primary caregivers as no identity

was used on the card, so participants did not feel judged if they thought they knew less information than another participant. The participant's responses to the questions are shown in Table 9.3 below.

The responses in Table 9.3 highlighted that participants knew the basic concepts of health as being either a vital state of being, or as being simply free of injury or disease. Additionally, there was a difference in understanding the term nutrition, which then further influenced the defining of nutritional knowledge. Nutrition was seen as a life force, and not just nutrients. In the session, primary caregivers went into personal, descriptive definitions of relaying their understanding of nutritional knowledge. This provided focused discussion. They focused on what they either learnt at school, read in a magazine, or heard on the television. Participants stated clearly that they were not sure if what they knew was enough, was good enough, or of value anymore due to all the new ideas about food, health, and the changes to eating that have occurred.



**Table 9.3: Responses of participants who pasted it on the venue wall**

No.	What is health?	What is nutrition?	What is nutritional knowledge? You may answer this from a personal or academic point of view
1	Health is to be active and happy or content at the same time, it is about looking after yourself mentally / emotionally as well as physically.	Nutrition is to eat the proper foods and to have the right portions but also eat foods that have benefits for your mind.	Is to be aware of what you buy and put into your system. To read the information of the goods/products you buy.
2	Health is how I am feeling in my body, no aches and pains.	Food Vitamins and fruit	Knowing what the meanings of the labels on foods are, how many calories are in it. Knowing how much

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food you should eat in a day to not be fat.

- |   |  |   |   |
|---|--|---|---|
| 3 | It is the way that you look after your body, living healthy and exercising.                              | Food, fruit and vitamins.   | Knowing food quality.   |
| 4 | Health is a complex of spiritual, social wellbeing. It is not just the absence of disease.               |   | It is an understanding of nutritional concepts – food groups, nutrient groups etc. As well as knowing it is more than just biochemistry as there are individual needs of a patient of client. Taste is also involved through genetic variability. |
| 5 | What is good for your body, what is a benefit for your body to allow it to function at an optimal level. | Nutrition is the complex biochemistry in all we consume often called “food” but we encompass liquids as well.   | Being aware or have knowledge on what your body needs to sustain itself. Being aware of what you are consuming.<br>Knowing what your body needs and consuming it.   |
| 6 | Health entails physical, mental and spiritual sphere, as well as being free of pain.                     | Science of food, how it is process and utilized in the body and the role of nutrients in the body.              | Based on scientific facts. Must be able to distinguish whether nutrition concepts are a myth or not. Must also be evidenced based.  |
| 7 | Overall well-being.  | Nutrition is that which we consume, that is wholesome and beneficial to our bodies for it to perform optimally. | The understanding of what is nutritionally good or bad that one should take head of to obtain health.   |

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8	Good health is when you are in a good space emotionally, mentally and physically. Your energy is good, you feel optimistic about life and have minimal chest pains.	Nutrition is eating to maintain and improve your health and wellbeing.	Health and nutrition are interrelated because without good nutrition that provides the nutrients you need to function well. Your health will be poor – mentally and physically.
9	Optimum vitality and wellbeing of everyone.	Nourishment needed daily to continue being healthy.	Knowing what and how to provide nourishment to facilitate health.
10	Health is not just the absence of disease but a balance of body systems, mind and body harmony.	<p>Taking in of food that provide elements of energy and health:</p> <ul style="list-style-type: none"> <li>• That nourish the systems of the body</li> <li>• That provides essential nutrients for cellular/ DNA development</li> </ul>	Knowing various food groups, understanding about other elements, such as fibre and phyto- elements which are essential for health.
11	Overall wellness of mind body and spirit.	Interaction of foods and vitamins. Whole process, eating and digesting, absorption and excretion.	What foods to eat for certain disease prevention, as well as assisting with current ailments. Knowing what foods to eat that will benefit the body and how much to eat of it.
12	Being happy, alive and without pain.	All things which you eat and that nourish your body. Not all of it is good food.	Knowing how to cook, make food that tastes good and your children will eat.

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After the warm-up the discussion on the development of the nutrition programme took place. Results from these discussions are presented according to overarching themes, as in some instances responses to the set questions were highly consistent across experts and primary caregivers. Two distinct thematic categories emerged, with each category consisting of two themes each.

### **Programme Outcome Considerations (Theme: Participant selection, Barriers to participation)**

Participants highlighted that a one-on-one consultation process needs to be held with the head of the family as well as the main meal provider in the household. The distinction was made as this was not necessarily the same person. It was indicated that participants should be able to come from any background and the programme should not just cater to those in the lower socio-economic bracket of the community, “as just because you have money does not mean you understand nutrition for your family”.

The participants identified the family as the center for learning eating habits - children eat what primary caregivers provide most times, and the way in which the food is prepared has an impact. Possible barriers to food knowledge identified by participants included factors such as not being taught this information in school; lack of interest; and that people prepared food in a similar manner to their parents or other family members. Therefore, activities to shape food classification and provide nutritional breakdown was highlighted as being important. A general understanding of the makeup of food groups was highlighted as being needed.

## **Programme Format and Logistics (Theme: Programme format and Resources and Sustainability)**

During the group discussion, primary caregivers were asked for input into the programme format, any perceived barriers to the proposed programme format, and alternative suggestions. One suggestion was to extend the programme to 12 weeks, but this was rejected immediately. Participants felt 12 weeks was too long a commitment. It was finally decided that the programme should be made up of seven face-to-face sessions. A further suggestion was made to schedule a check-in with participants three months after programme completion. This would allow for any follow up questions and learning, and also enable programme participants to suggest changes to the programme as they would have had time to implement what they had learnt.

Some blended session with both children and primary care givers were suggested by participants as an important means of accountability for both parties, e.g. children agreeing in the session to eat more fruit and vegetables, as well as parents agreeing to try and provide variety in meals.

Participants also suggested that the nutritional health programme should not only be situated at schools, but expanded to early childhood development centres, primary health care facilities, and libraries.

Participants indicated that a structured questionnaire was necessary to gain a good understanding of those taking part in the programme. The questionnaire should address aspects such as eating habits, who prepares food, and how food is prepared. Additionally, it should address components such as household finances and if applications for social support grants are needed and how to support the application process. Finally, the questionnaire should also include questions around mental health, which could assist with referrals outside of the programme if necessary.

Participants also highlighted that certain skills and activities (such as communication, problem solving, conflict management, family support, and parenting focus) would be good to add as a separate session. By adding such components, primary caregivers would be assisted if they were struggling with parenting skills or the necessary skills required to influence positive behaviour in their children.

The question of programme sustainability and training of facilitators who would run the programme were highlighted as two main barriers by the experts. The experts asked if the programme was envisioned to be funded, or form part of a programme at school, or whether it would be included into an already existing wellness programme. Concerns were expressed that an externally funded programme, which is totally reliant on donors, is not sustainable. The use of the train the trainer system was suggested, as well as creating a general training database. Ultimately, participants decided that the most effective approach would be to include the provincial government in design and implementation, as this would allow access to multiple departments for programme implementation. Government departments such as Social Development, Education Department, Sports and Recreational Departments were listed as being the first to be targeted, understanding that financial resources could be limited.

**Table 9.4: Session Themes**

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<b>No.</b>	<b>Session Theme</b>	<b>Session Objective</b>
1	Introduction	Explain what the programme aims to do, what the programme sessions will entail, establish ground rules, explore what participants expectations are in what they would like to take from the programme.
2	Primary Caregivers Influence on Child/s Eating Habits	To describe and identify primary care givers parental style as well as food choices and preferences.
3	Knowledge and Perceptions of Health Eating and Nutrition	To describe and identify health and nutrition concepts. Healthy eating for children at different ages.
4	Dietary Diversification	Becoming aware of food diversity, traditional diets, food preparation methods and food processing.
5	Cost-effective Meal Planning	Becoming aware of food choices on a limited family budget.

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6	Benefits of Physical Activity	To introduce the benefits of physical activity for all family members.
7	Recap	To highlight concepts as well as unpack the need for further support

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Once discussion around the contents of the nutritional health programme was concluded, participants weighed in on a name for the programme, settling on the Primary caregiver's nutritional knowledge education programme (PNKEP).

### **Discussion**

The aim of the study was to develop a nutritional education programme to support and encourage primary caregivers' nutritional knowledge, with the aim of positively influencing children's nutritional status by building on parents' knowledge of nutritional concepts. The study had primary caregivers and experts suggest ways in which caregivers, as well other others, could learn nutritional knowledge for the betterment of their family, based on their current level of knowledge and experience. Suggestions included providing specific lessons on food preparation, combinations of food groups, and meal planning on a budget; recommending activities that could be followed in the programme; and making use of programmes already in place at schools or in communities to assist with costs and sustainability of the programme.

Research has suggested that children's ingesting patterns are strongly influenced by characteristics of both the physical and social environment (Souza et al., 2018). In the home environment, children are more likely to eat foods that are available and easily accessible, they also tend to eat greater quantities when larger portions are provided. In general, children choose to eat the foods that they are served most often, and they tend to prefer to eat foods that are readily available in the home. Primary caregivers' own preferred dietary practices and availability of foods in the home have been shown to affect the dietary behaviours of children (Fleary & Ettienne, 2019). Fleary & Ettienne (2019) use the example of parents/caregivers' consumption of healthy and or energy-dense foods being predictive of these foods being available in the home and thus their children's diet are most likely the foods which are served to them in the home.

Characteristics of the social environment include a number of socioeconomic and sociocultural factors, such as parents' education, time constraints, and ethnicity that have an impact on the types of foods children eat (Patrick & Nicklas, 2005). In the current research, this proved to be correct, as primary caregivers understood themselves to be the ones that provide and shape food preferences in the household and indicated that if they knew why something was healthy to eat, they would try incorporating it into their diet and that of their children's. Furthermore, primary caregivers' and adolescents' dietary behaviours are more highly correlated than that of adolescents and peers. Thus, despite increased independence in decision-making for health, adolescents' dietary behaviour choices have been shown to still be sensitive to the family food environment, including food availability and modelling of behaviours by primary caregivers (Story et al., 2002). Jackson and Dickson, (2009) posit that engaging parents in public health interventions not only creates the opportunity to modify child socialization processes within the family but also has the potential, via programme-guided parenting activities, to modify children's exposure to and

interpretation of social influences originating beyond the home environment (e.g. mass media, peers). Further to this, is the notion that increasing the involvement of parents creates the opportunity to provide children with sustained exposure to pro-health socialization (Jackson & Dickinson, 2009). Therefore, ongoing exposure is key to a child's internalization of social norms that protect health (Jackson & Dickinson, 2009). This was evident from the discussion in the workshop. Primary caregivers would like to influence children's meal selection to improve health, wanting food selection to be based on knowing what foods to eat, portion size, and how to prepare it for their children and the family in general within a budget.

Food prices pose a significant barrier for many primary caregivers who are trying to balance good nutrition with affordability. Even though South Africa is food secure countrywide, a large number of South African household's experience food and nutrition insecurity (Regber et al., 2013). Primary caregivers indicated that a key challenge to making sustainable changes to healthier eating was the high cost of food. They raised the need for the programme to include activities around healthy meal preparation on a budget.

Finally, one of the main challenges in developing public health interventions is determining how to proceed from a theory to an intervention that is ready to be delivered, implemented and evaluated. It has been noted that interventions are not at the offset intended to achieve the final goal directly but have short-term and intermediate outcomes that are expected to lead to the long-term outcomes (Wight et al., 2016). To address this, the researcher and the focus group worked on the development of a logic model to clearly outline the outcomes and possible impact if the programme was adhered to.

## **Limitations**

Like other researchers have found, there are many different types of group-based methods which can also be applied in studies of this kind (such as group concept mapping, nominal groups, focus groups etc.). Group-based methods have a number of limitations, some of which were experienced during this study. Focus groups are at times subject to the biases that are commonly encountered in any group setting. The facilitator had to use her experience to try to mitigate these. A further challenge with group-based approaches is arranging for participants to meet at one place, at a time convenient for each participant. This challenge led to a lower than expected number of participants showing up for the workshop. Additionally, participants may need to leave early due to other commitments which also happened in this study.

Having both experts and lay persons in one workshop could mean that the experts dominate the conversation and do not allow the caregivers to bring about their viewpoints. This had to be mitigated by the facilitator. In future, experts could be separated from other participants and provide inputs to validate content. A further limitation was in the fact that the sample size for this study was too small to fully outline the activities for the nutritional knowledge programme as more primary caregivers were needed. A final limitation was that in using the social media platform there was no representation of all SES, as truly poor people do not have access to Facebook.

## **Ethics**

The University of the Western Cape ethics review board provided ethics approval for the project, with Ethical clearance number 14/10/34. Informed consent was obtained from all participants involved in the workshop, which were signed on the day and returned to the researcher who collected them herself. Continuous professional development points were also applied for through

the various medical councils in an attempt to allow medical practitioners to gain points for attendance. Certificates with a CPD number PBHNP 15: 2018 – Level 1.A.3 was issued by Allied Health Professionals Council and provided to each expert. Other participants were presented with a voucher for free attendance at the University of the Western Cape School of Natural medicine clinic, for any therapy of their choice including acupuncture, massage, or a dietary consultation. Participants were also free to withdraw from the process at any time.

## SECTION B

### **Nutritional knowledge education programmes from a Self-Determination Theory and Social Learning Theory approach**

The science of behaviour change, specifically that of health behaviour, has focused more on the use of theory – based approaches to interventions (Patrick & Williams, 2012). As discussed in Chapter 2, this current research is grounded in both Self-Determination Theory (SDT) and Social Learning Theory (SLT). To fully understand what would create behaviour change in people, an understanding of the motivation to engage in the needed healthy behaviour is important (Leblanc et al., 2016). Deci & Ryan (1985) proposed that self-determination is the regulation of a behaviour, which may take many different forms, that correspond to two behavioural regulatory styles 1) autonomous - the extent to which behaviours originate from the self, and 2) controlled - the extent to which behaviours are pressured or coerced by intrapsychic or interpersonal forces. Effective self-regulation can be gained by fostering autonomous forms of motivation for behaviours through environmental supports that foster autonomous reasons (Hagger et al., 2014). Providing a means

to primary caregivers to affect behaviour change through learning and understanding nutritional concepts, could bring about more effective parenting styles and practices. If the programme affects their self-regulation, that is, their capacity to make and maintain changes to their behaviour in the absence of external prompting, incentive, or reinforcement, it could be effective. However, interventions that use incentive or force, such as manipulating and changing the environment the individual is in (e.g. food subsidizing) could be too costly, or unpopular (e.g. increasing sugar tax, and alcohol costs), and therefore make those interventions ineffective in the long run (Hagger et al., 2014). However as humans we are not always driven by one type of motivation, therefore, it is best to view motivation as a continuum as presented in the self – determination continuum by Deci & Ryan (2000), which represents the regulatory styles and the forms of motivation.

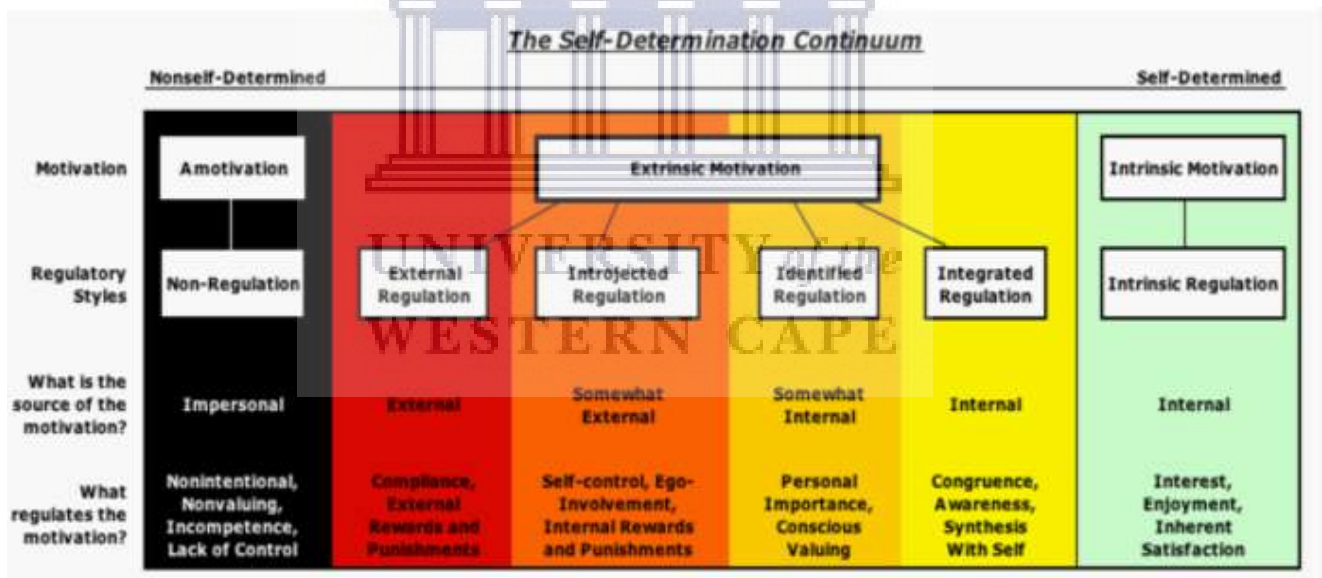


Figure 9.3: The Self Determination Continuum, (Deci & Ryan, 2000)

A self-determined or autonomy orientation reflects an individual's propensity to experience environmental contingencies and actions as autonomous and supporting psychological needs. In contrast, a control orientation reflects the tendency to interpret situations and behaviours as

controlled by external events and not able to satisfy, or even address, psychological needs (Hagger et al., 2014). The current study was focused on being supportive in its approach, thereby creating a programme that would facilitate intrinsic motivation rather than extrinsic.

The use of SLT focuses on the interaction between individual, behavioural and environmental factors, with much of its application popular for school-based interventions that promote changes in physical activity and healthy eating (Magarey et al., 2011).

Summerbell et al., (2003) conducted a systematic review that focused on interventions for treating obesity in children and found that many of the nutrition education programmes that showed the best clinical outcomes and positively resulted in behaviour change, “used teaching strategies based on the SLT which suggests that most health behaviours are learned in a social context”. However, they did caution that increasing knowledge should only be one of the aims. Although this intervention did not target children but their caregivers, one would still need to apply the same level of caution. However, the programme still does promote autonomy supporting parenting practices as they are crucial for the development of self-regulation and the internalisation of healthy behaviours in their children (Fuller et al., 2019).

Fuller et al. (2019) advocates that in order to successfully use autonomy supporting parenting practices, parents require skills and knowledge, and the confidence to use them. A study of Jenkins and Horner (2005) conducted in the United States of America showed that parents’ increased knowledge about appropriate dietary needs and patterns of their adolescent children was effective in increasing the consumption of healthy foods, including fruits and vegetables.

Other theoretical perspectives that may be suitable in creating the programme include: 1) Social Cognitive Theory, which was developed from SLT in 1986 (Bandura, 1986), and which focuses on social influences as well as self-efficacy. Self-efficacy refers to the level of a person's confidence in his or her ability to successfully perform a behaviour. Self-efficacy is unique to SCT, although other theories have added this construct at later dates, including the theory of planned behaviour. Self-efficacy is influenced by a person's specific capabilities and other individual factors, as well as by environmental factors (barriers and facilitators).

This study however applied SDT and SLT theoretical perspectives to develop the primary caregivers' nutritional knowledge education programme, as these were deemed the most appropriate and effective for the circumstances.

## **The Proposed Primary Caregivers Nutritional Knowledge Education Programme (PNKEP)**

### **THE PURPOSE, OBJECTIVES, AND OUTCOMES**

#### **Purpose**

As discussed in Section A, the purpose of the programme was to increase primary caregivers' nutritional knowledge to enhance their parenting styles and feeding practices to improve their children's nutritional status. This would be done through a series of face-to-face sessions where they would be empowered and provided with support to positively impact their food selection choices and understand the use of food combinations to decrease their, and their children's risk for becoming overweight, obese and developing non-communicable diseases. The programme assumes that positive behaviour change will be achieved through the process of communicating



nutrition messages as well aligning primary caregivers with needed social supportive structures. The programme does not intend to replace other programmes they may be part of already or negate any support they are receiving from their community, but rather contribute and compliment any existing programmes.

### **Objective**

To provide primary caregivers with information and tools so they understand nutritional concepts, the importance of providing nutritious meals to their families, and how they influence their children's weight.

### **Outcomes**

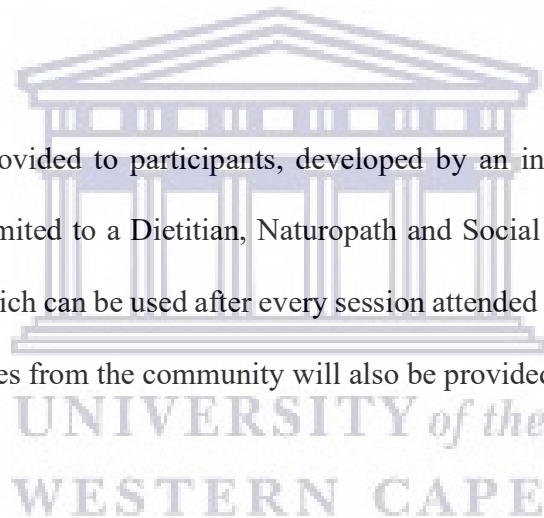
- Capacitate primary caregivers with nutritional knowledge to create a balanced diet.
- Support and provide information that is relevant, effective in its messaging, and has practical application in the home.
- Support primary caregivers in their own personal growth by allowing them to understand what their feeding styles and practices are, and how to change them.
- Support parents in modelling and encouraging to be physically active.
- How to budget and plan meals efficiently.

This overview focuses on the programme, providing a description of the sessions, who it is aimed at, as well as who should facilitate the programme.

## **Implementation**

The face-to-face sessions will run weekly in the morning. It will be conducted by trained facilitators, who could potentially be from the community such as community health workers, community organisations focused on nutritional care, social services, faith based organisations, or if held at schools, they could possibly teachers who are interested in the programme. The day of the week can be decided by the establishment where the programme will be facilitated, therefore allowing it to be more accessible to the community, and cost effective, if sharing space with another intervention programme.

Course material will be provided to participants, developed by an interdisciplinary group that would include but is not limited to a Dietitian, Naturopath and Social Worker. Participants will receive course materials which can be used after every session attended and for reference at a later stage. Social support services from the community will also be provided.



The facilitators will lead the discussions with a small group of no more than 12 participants at a time in order to prevent participants and trainers from feeling overwhelmed. This will also serve to overcome any language barriers and to ensure that the correctly translated course material is selected based on the needs of the participants. During these sessions, the course objectives and activities will be taught to participants. A test will be held at the beginning of sessions 4 – 6 to measure recall of information. It is important to explain to primary caregivers that a negative mark will not affect their ability to come back to the session or be used to judge their performance. Instead, it will be used to rethink the ways in which information is being shared and how to

improve on that. The sessions will be held at either a school or form part of the afterschool programme, as interventions with the support of parents and the use of the school environment seem to show positive intervention outcomes for the family (Elinder et al., 2018; Nyberg et al., 2016).

This proposed programme requires five steps, which are outlined below:

1. Referral and screening (Screening)
2. Initial session (Assign to a group)
3. Logistical preparation (Engagement)
4. Programme attendance
5. Follow up

These five steps are intersected with set session themes and session objectives.



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**Table 9.5: PKNEP Session Themes and Objectives**

No.	Session Theme	Session Objective
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Session 1	<b>Introduction</b>	<b>Explain what the programme aims to do, what the programme sessions will entail, to establish ground rules, and explore participants' expectations with respect to what they would like to take from the programme.</b>
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### **Participants selection**

Participants in the focus group suggested that for change to occur with potential participants, as many of the family members or the heads of the household as possible should participate in the PKNEP (Article 5). This allows for the full family to be on board with the changes that would take place in the household, even if the intervention is not directly focused on children. It would also help to keep primary caregivers accountable if they are aware of the programme. And it would mean that the programme is not being pushed by one family member, but that goal setting could take place at the first session with the family being included in the programme objectives.

### **Activities: Ice – breaker, creating a space for participants to feel comfortable, discussions.**

In this session, the primary caregiver or head of the household who agreed to be part of the study would reflect firstly on their role within the family: as the breadwinner, or the family cook/meal provider; and secondly on their own nutritional knowledge strengths and weaknesses. Information on whether they receive financial support from the state, and family medical history can also be gleaned so the programme can be further tailored to their budget needs and their family history of non-communicable disease.

The challenges they have and how they could be addressed needs to be considered, which will then be supported through linkages to other community support organisations that could assist with more social aspects of the family.

**Session 2 Primary caregivers influence on child/s eating habits**

**To describe and identify primary caregivers' parental style as well as food choices and preferences**

**Activities: Ice – breaker, questionnaire completion, group discussion and sharing**

Activities around communication in the household and conflict management would also be explored to allow further support if needed through other organizations in the area.

This will be followed by coursework presentation on the influence of different parenting styles and food preferences of parents (Article 1) to assist parents with understanding how their food behaviour affects their children and themselves. This is to ensure that parents understand that children model themselves on their parents eating behaviour and eating related attitudes, which in many cases leads to body image satisfaction or dissatisfaction (Scaglioni et al., 2011; Scaglioni et al., 2018). The family system that surrounds a child's domestic life is thought to have an active role in establishing and promoting behaviours that will persist throughout his or her life. Fathers and mothers act differently towards their children; fathers generally act in a more indulgent way and exert less active control on food intake (Rollins et al., 2016).

Participants will be presented with various questionnaires during this session in order to determine their parenting style and food choices, with clear explanations of what it means. In some cases they would also be asked what they could do to change any negatively perceived parenting behaviour. The session would therefore explore creating a learning environment for addressing this behaviour pattern.

**Session 3 Knowledge and perceptions of health eating and nutrition**

**To describe and identify health and nutrition concepts, and healthy eating for children at different ages**

**Activities: Guided discovery – workshops on food groups, discussions on nutritional composition of certain foods, strong focus in the sessions on recall, review, and recap.**

The focus group highlighted that there could be possible barriers to food knowledge. This included factors such as not being taught this information in school, lack of interest, or simply preparing food in a similar manner to their parents or other family members. Therefore, a session pertaining to food classification and nutritional breakdown is important (Article 5). These key messages need to be shared a few times in the sessions, as well as follow up sessions, with primary caregivers in order to determine if they can recall it to memory. It has been noted that if key messages are only stated once during the training course there is less than a 10% chance of the participant recalling that key message when needed. On the other hand, if key messages are given six times in different ways, then there is a 90% chance of the participant being able to recall the messages when needed (Wyse, 2014).

**Session 4 Dietary diversification**

**Becoming aware of food diversity, traditional diets, food preparation methods, and food processing**

**Activities: Test on previous session, recap on test questions, discussion focused on traditional diets, information sharing on family members roles**

The recommendation from the focus group was that families need to be made aware of traditional diets at their disposal and to remove food preparation methods that are adding to the disease burden, such as deep-fried food that is low in nutrients. The focus needs to be on whole foods and cooking for the whole family. There was mention in the focus group that owing to mothers having to work full time, family roles and dynamics are changing, and this therefore needs to be taken into account. There should be encouragement and support for all roles in the

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family, and that household chores should not be the responsibility of the “mother figure” alone. There is a need to positively change the current views of parental roles, where mothers are considered family caretakers and fathers the breadwinner (Walsh et al., 2017). The teaching would also involve the explanation and resources to understand food labels in order for primary caregivers to learn what to look for on cheaper food items which tend to be higher in substances such as sodium and sugar.

**Session 5    Cost effective meal  
                  planning**

**Becoming aware of food choices on a limited family  
                                  budget**

**Activities: Ice – breaker, information sharing, discussions, recap test**

Cost effective meal planning was mentioned by every participant interviewed (Articles 2 and 3), as primary caregivers want to learn how to cook healthy meals with the limited budget they have. The recommendations by the nutrition experts was that of food combinations in order to receive adequate amounts of protein and food variety. This session would therefore be an interactive session, with matching food groups, explaining the role of food gardens for the community, and how they can be started, etc. As there are high levels of poverty and unemployment across South Africa, the sentiment was not to preach to primary caregivers about what they should be providing, but rather use the known South African social security agency’s known monthly allowances and create food basket choices within that allowance, guided by the dietitian in the course creation group. The learnings from session 3 and 4 will be useful for session 5.

**Session 6 Benefits of physical activity**

**To introduce the benefits of physical activity for all family members**

**Activities: Ice – breaker that involves physical movement, role playing, discussions, use of course material developed, recap test**

This session encourages primary caregivers to be active with their whole family. It provides them with various exercises in brochure form (as well as demonstrations in class) that can be done in the home. This is particularly important if they live in violent areas where working out in the neighborhood is not advised. Group activities are encouraged – such as walking community groups on a Saturday (park runs) or joining exciting programmes at sports centers. The session will explain the benefits of exercise on both the physical and psychological level and the potential it has for the reduction of family stress. All types of exercise have positive benefits, such as stress reduction, improved breathing, and improved quality of sleep (Jackson et al., 2013).

**Session 7 Recap**

**To highlight concepts as well as unpack the need for further support**

**Activities: Ice – breaker, recap, question and answer discussion**

A recap session will allow participants to bring questions to the group / facilitator one last time. It allows for discussion on how to continue with the programme, as well as how to encourage others to attend the programme if they feel that it's worth their time investment. It also allows the group to determine if further check-ins are needed, which could be done on a quarterly basis. Some recommendations from the focus group were to have further health days or a group support if primary caregivers suffered from any non-communicable diseases. The session will also highlight to participants the possibilities of social protection interventions (Article 3) if the community considered engaging in these (F. Walsh, 2003). The focus group felt that it was important that the programme is not a stand-alone and unsustainable but that it be interwoven



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with other programmes in the community (Article 5). Therefore, information of other programmes will be shared with the participants.

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## **Conclusion**

This programme has been designed for primary caregivers to facilitate their learning and understanding of what nutrition is, how their parenting styles and feeding practices affect food choice and availability in the household, and how they are shaping their children and family's nutritional behaviour and status. The programme was designed by health practitioners and primary caregivers and took into consideration that the lowest level impact of the intervention was the individual, and its effect on the household and community. It is therefore focused on primary caregivers and facilitators working collaboratively, sharing information, and fostering a more encompassing view of health. It also aims to provide linkages for those who need it to services outside of the programme on offer and assist when a treatment specific intervention is needed.



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# CHAPTER TEN

## DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

### 10.1 Introduction

The current work presented is fixed within a set of basic assumptions that parents and primary caregivers shape the eating habits of their children through observational learning and modelled behaviour (Bandura, 1977). Additionally, parental attitudes through purchasing, preparing and serving foods, also indirectly affects children's food habits and preferences (Wardle, 1995).

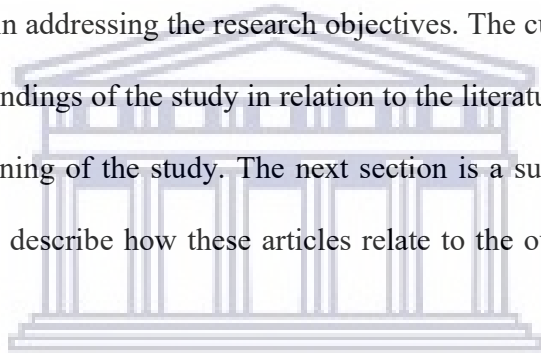
The current study aimed to develop a nutrition education programme to enhance primary caregivers parental feeding styles and practices to improve their children's nutritional status. It aimed to enhance current knowledge they may already have as primary caregivers, as well as creating a deeper understanding and improvement of their current feeding styles and practices with their children. The study employed a sequential, exploratory, mixed methodology within a two-phase intervention mapping framework that used 1) cross sectional qualitative and quantitative data, and 2) a narrative review. Each of the chapters previously presented (Chapters 5-9) addressed the objectives of the study in an attempt to satisfy the overall aim.

The objectives of the study were to:

1. Determine and explore the feeding styles and practices of primary caregivers/parents.
2. Determine the knowledge of primary caregivers/parents' regarding childhood nutrition including sources of nutrients and diet-disease relationships.

3. Conduct a narrative review to identify best practice models and nutrition education programmes for primary caregivers/parents aimed at improving their children's nutritional status.
4. Develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to possibly improve the nutritional status of their children.

The phases of the study presented in Chapter 4 build upon each other sequentially. Chapters 5-9 describes how each phase and stage of the study was conducted as well as their findings, discussion, and conclusion in addressing the research objectives. The current chapter provides an in-depth discussion of the findings of the study in relation to the literature, theoretical framework and epistemological positioning of the study. The next section is a summary of journal articles depicted in chapter 5-9 and describe how these articles relate to the overall development of the programme.



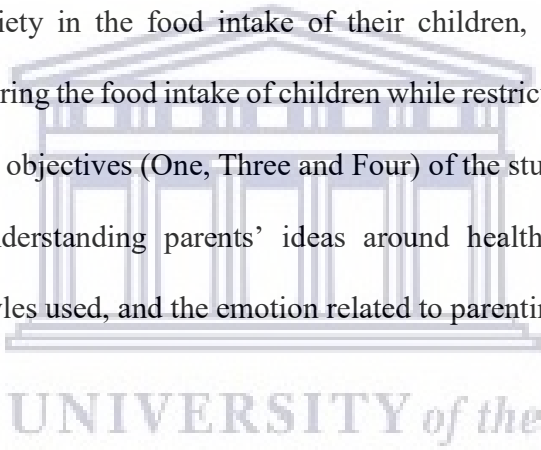
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## **10.2 Summary of Results Chapters**

### **10.2.1 Nutritional Knowledge, Parenting Styles and Feeding Practices of a South African Sample of Parents. (Chapter 5, Article 1)**

The aim of this article was to examine the prevalence of nutritional knowledge, parenting styles and feeding practices of parents and primary caregivers with children aged 3-18 years old. This was important in fulfilling the objective of phase one, stage 1 of the study: Determine and explore the feeding styles and practices of primary caregivers/parents; and Determine caregivers/parents' knowledge of the sources of nutrients and diet-disease relationships. Parenting can be considered

as being an all-encompassing network of development for children. Children learn about eating not only through their own experiences but also by watching others. Mothers and children show similar patterns of food acceptance and food preferences. Children's intake of fruit and vegetables was positively related to parents' intake of fruit and vegetables. The current study used self-reported data from parents/primary caregivers' of children aged 3–18, covering sociodemographic characteristics, feeding style dimensions ('control over eating', 'emotional feeding', 'encouragement to eat', and 'instrumental feeding'), and parenting style dimensions ('involvement' and 'strictness'). The results suggest that in general, parents were inclined to encourage balance and variety in the food intake of their children, modelling healthy eating behaviour, as well as monitoring the food intake of children while restricting unhealthy foods. This article therefore allowed the objectives (One, Three and Four) of the study to be answered clearly as it sets the tone for understanding parents' ideas around healthy food, their nutritional knowledge, their feeding styles used, and the emotion related to parenting used when feeding.



**10.2.2 Using the RE-AIM Framework to Identify Nutritional Feeding Styles and Intervention Model Best Practices for Primary Caregivers in Africa: A Narrative Review (Chapter 6, Article 2)**

The aim of this article in Chapter 6 was to provide a synthesis of recent research evidence of nutritional feeding programmes and nutritional models for primary caregivers in order to identify best practice models, programmes, and processes in the field of nutritional and feeding intervention development. This study answered Objective 3 - conduct a narrative review to identify best practice models and nutrition education programmes for primary caregivers/parents aimed at

improving their children's nutritional status. The RE-AIM framework was used to disseminate results to allow for cross-comparison of core components inherent in health promotion interventions. The RE-AIM framework was used since it facilitates the development, delivery, and evaluation of health interventions. From a screening of 8,220 articles, four studies were deemed relevant for the purposes of this review. The studies selected provided clear aims and purpose to their planned intervention. The reviewed interventions focused on the use of group-based learning at school with parents/primary caregivers, and the use of learning material developed for the purpose. A programme that consisted of several weeks that built on skills and knowledge development: action-based activities, exploring a topic, conducting a learning session with support from a facilitator either in person or via email / telephone, leading to a practical activity. In some cases, a follow-up session to review learning occurred or there was use of electronic course material. The studies also only focused on the intervention /programme but did not focus on implementation, review, or evaluation. One of the four articles did note the importance of engagement with the community, relevant stakeholders, and the importance of sustainability for the programme. Only one study placed focus on enablers, barriers, and resources, all of which are essential for engaging in health behaviour change, if it is to be sustainable. The findings of this Stage two and the previous Stage one laid the foundation of Phase two of the study: designing a nutritional education programme for primary caregivers. It was also impactful as it influenced Stage three of the study by enabling a level of understanding of the needs of a nutritional knowledge programme in low- and high-income socioeconomic environments. It also created the basis for the survey questions, including parents' understanding of health or healthy food provision in general.

### **10.2.3 Primary Caregivers' Perceptions of the Role of Fathers in the Provision of Nutritional Care in a Resource Constrained Environment in Cape Town, South Africa. (Chapter 7, Article 3)**

This article did not start with the aim of only having mothers and grandmothers providing perceptions of fathers. However, it developed into that due to fathers not being able to be present at the time of interview or not being present as a participating family member at all. The theme of fathers comes through very strongly in the qualitative stage of the study. This further shaped this article as being important to draw on. The role of fathers has traditionally been defined as a breadwinner or provider, with men generally having lower levels of engagement in childcare tasks, especially with young children. The involvement of fathers has important consequences for child well-being, especially with regards to issues of diet/nutrition, exercise, play, and parenting behaviours. This article explored the perceptions and limitations that primary caregivers have on fathers' provision of care in an already resource constrained community. Data was collected through in-depth face-to-face interviews, which allowed for a level of honesty to be brought forward by the use of day to day examples of mothers and grandmothers struggles with providing for the family, while the men in the household were not around, not working, or on drugs. The findings revealed that there was a lack of involvement from fathers in the provision of nutritional care and that this affects mothers and grandmothers who then need to provide both the physical and emotional care to their children. These findings are based on the perspective of mothers and grandmothers and their perceived roles in the family. Families food security is therefore affected, as one family member earning below the minimum wage needs to support the entire household. This has therefore meant that the dietary needs of the family are not being met with nutritional

foods, but instead by high fat and high sugar content foods. Participants did share that they wanted to be taught about healthy nutritional food choices on a limited budget.

#### **10.2.4 Primary Caregivers Provision of a Healthy Diet in a Resource Constrained Environment in South Africa. (Chapter 8, Article 4)**

Following from the previous article and trying to gain a perspective of fathers' role in the provision of nutritional care, it was important to understand and further explore primary caregivers' provision of a healthy diet. This also drew on the researcher's understanding gained through the narrative review. The aim of this article was to explore the understanding of what constitutes healthy and nutritionally dense eating by parents in a low socio-economic environment. In-depth interviews were conducted with participants who were purposefully selected. Primary caregivers struggled to provide daily access to food for their children, and at times, would turn to family and friends for assistance in meal provision either through actual food or short-term financial assistance. For caregivers, limited resources impacted the ability to provide a healthy diet. However, it was indicated that while shopping, caregivers looked for foods that were stated to be healthy and low in fat, and full of vitamins. These items were only accessible if they were cheap. Unemployed and absent fathers placed a great burden on mothers and grandmothers in the study group as this meant they needed to provide the nutritional, financial, emotional, and physical care of the family. Within low income families, primary caregivers' food choices were based on the availability of resources, the cost, as well as access to quality food in the surrounding areas. It was also limited to what they were able to carry by hand back home. Based on the reflection of primary caregivers, it was indicated that the consumption of processed foods and refined carbohydrates

was high, while that of fruits and vegetables was low. Primary caregivers wanted the opportunity to learn about what a healthy diet is and how to be able to provide one for their family with their limited financial resources. This phase highlighted an important process to note and to consider in the intervention development: parental nutritional behaviour. Therefore, the intervention should not only focus on food preparation skills or learning, but food selection based on the family budget available, and nutritional modelling by parents which shapes children's food preferences as well.

### **10.2.5 The Development of a Nutritional Education Programme for Primary Caregivers using a Consensus Workshop Approach. (Chapter 9, Article 5)**

This article was the culmination of the previous phases and addresses the overall aim of the study: to develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to improve their children's nutritional status. This aim was in alignment with the third stage of the intervention mapping: To develop a nutritional knowledge education programme for primary caregivers using a consensus workshop using a focus group approach. The findings of the research were presented and through discussions, participants made suggestions for the programme development. They suggested the programme should take the form of a primary consultation followed by weekly sessions with a main family member and children. A seven-week, family orientated lesson structure with a pre-test, that focused on nutritional topics, cooking on a budget, primary caregivers' influence on children's eating and meal planning was developed. Participants highlighted that the programme needed to be combined with other Social and Health Departmental initiatives to allow for sustainability and a use of resources which are already in place. The participants also provided ideas on a programme name, the primary caregivers

nutritional knowledge education programme (PNKEP). This study provided insight into the collaborative space that can be set up as the programme was designed by primary caregivers, nutritional experts, and medical doctors. Even if there were limited number of experts, it allowed for discussion to take place amongst verified professionals that provide dietary advice to their patients or clients. The main driver was primary caregivers wanting assistance with food choices, showing better food selection behaviour, meal planning, and allowing their families to maintain positive health outcomes based on discussions with their primary health care provider. From the perspective of the nutritional experts and medical doctors, the programme layout would be supportive to their disease preventive care objectives and not just focus on a curative model of care.

### **10.3 Discussion on Overall Findings**

The following section is a presentation of the findings of the study in relation to the current literature, and the theoretical and epistemological frame of the study. This is followed by a discussion of the influences of the socioeconomic challenges / food insecurity on primary caregivers both within the South African and global contexts. Thereafter, a brief discussion is presented on the implications of developing a nutritional education programme for primary caregivers in South Africa.



### **10.3.1 Proposed Intervention: Primary Caregivers Nutritional Knowledge Education Programme (PNKEP)**

The PNKEP is a nutrition behavioural based intervention, which uses a skill-based, hands-on learning and experiential approach. The current understanding is that public health strategies should start focusing more on parents' healthy eating attitudes and less on simply educating them about what to feed their children (Romanos-Nanclares et al., 2018). The performance objectives of each module of the PNKEP are aligned with Social Learning Theory (SLT) and Self-Determination Theory (SDT) as outlined in Chapter 2 and 9 (Section B). The programme is the amalgamation of efforts from Phases 1–2 and answers the research questions: “What are the feeding styles and practices of primary caregivers?”; “What is the nutritional knowledge of primary caregivers?”; “What are the best practice and nutritional feeding programmes and models for primary caregivers?”; and “What are the best practice and nutrition education programmes and models for primary caregivers/parents at improving their children’s nutritional status?”.

The findings of each study phase; a needs assessment through a quantitative study, the narrative review, a qualitative study and the consensus focus group workshop resulted in the development of the PKNEP, a proposed nutrition behavioural - based intervention.

Evidence of this approach is found in each phase and stage of the study. Primary caregivers and nutritional and medical experts who were active participants in the group workshop ensured that the programme objectives suited the needs of the Western Cape province, as well as South Africa in general.

### **10.3.2 The Intersection of Theory, Research Design and Findings in Developing the PKNEP Programme**

SDT and SLT are the theories which underpin this study, therefore the outcomes of the programme align with the theory. The full effect of SDT will only be established should the programme be implemented and evaluated allowing that the new health - related behaviour is maintained over a period. SDT asserts that cultivating a sense of autonomy and competence are critical to the processes of internalisation and integration, through which a person comes to self-regulate and sustain behaviours conducive to health and wellbeing (Ryan et al., 2008). Thus, providing primary caregivers with an educational programme which at a cognitive level allows them to integrate the material through several sessions on selected topics, and make it practical to their daily lives, would cultivate this sense of autonomy and competence. By supporting autonomy through learning, one is allowing the individual to set their own goal. In the current study this would be supporting the individual to create meals which are nutritious to their family based on their learning of nutritional concepts. This may not be for a weight loss goal but a personal goal they have set themselves to improve the family's health state. In the same way they could potentially influence their families behaviour by encouraging relatedness, allowing them to facilitate a collaborative understanding in the home around food, and nutrition. Those who undertake and complete the programme will feel a sense of competence as they have learnt a new skill. The principle of SDT emphasizes a relationship between the three "basic needs" (autonomy, relatedness, and competence) (Niemic, 2009).

SDT constructs which are relevant in a nutritional intervention would include observational learning, reinforcement, self - control and self - efficacy (Glanz, 2001), which parents would be

learning through their weekly guided learning sessions. In previous chapters, the effect of nutritional programmes was highlighted through the literature. These programmes have a greater positive effect on the household if they identified the family as the center for learning eating habits. This is done through feeding styles, practices, and modelling behaviour of parents (Bandura, 1977; Birch et al., 1987; Duncanson et al., 2012; Faith et al., 2004; Hayward et al., 2016; Romanos-Nanclares et al., 2018). The SLT also highlights that for a change in health behaviour there needs to be a guided process for it to happen with the provisions of new structures or resources (i.e. environmental change) which then can enable and/or facilitate desired behaviors (Glanz et al., 2008). It is important to note that as the current study was not implemented and evaluated, which would complete the full intervention mapping process, further correlation to the theories could not be made.

The identification of the family as being pivotal to behaviour change is also found to be evident in other nutritional education programmes. It is supported through the framework for optimum nutrition through the life cycle, as well as various current interventions that are being supported by the South African Department of Health through the Roadmap of Nutrition 2013 - 2017. This is further promoted through the NOURISHING framework and addressed through the food - based dietary guidelines, which inform the public and provide nutrition counselling and advice.

Additionally, the current study aligns with the aspects of the work by Gribble and colleagues who used a curriculum based on SLT that emphasized fruit exposure and positive parent child-feeding strategies (Gribble et al., 2003). Although eating behaviours and child weight are difficult to modify directly, if the intervention focus is on parental feeding practice, they are generally a good target for interventions to prevent unhealthy eating patterns and develop excess weight in children (Finnane et al., 2017). Children's food preferences are predicted by early intake patterns but can

change with learning and exposure, with parents being the main source of continued food exposure (Johnson, 2016).

#### 10.4 South Africa and Significance of the Study

The attention of the global nutrition community is moving away from its focus on hunger but to that of the Sustainable Development Goals, specifically those that focus on nutrition as a whole and reducing malnutrition in all forms (WHO, 2017). The world is currently affected by the burden of malnutrition as shown in figure 10.1.

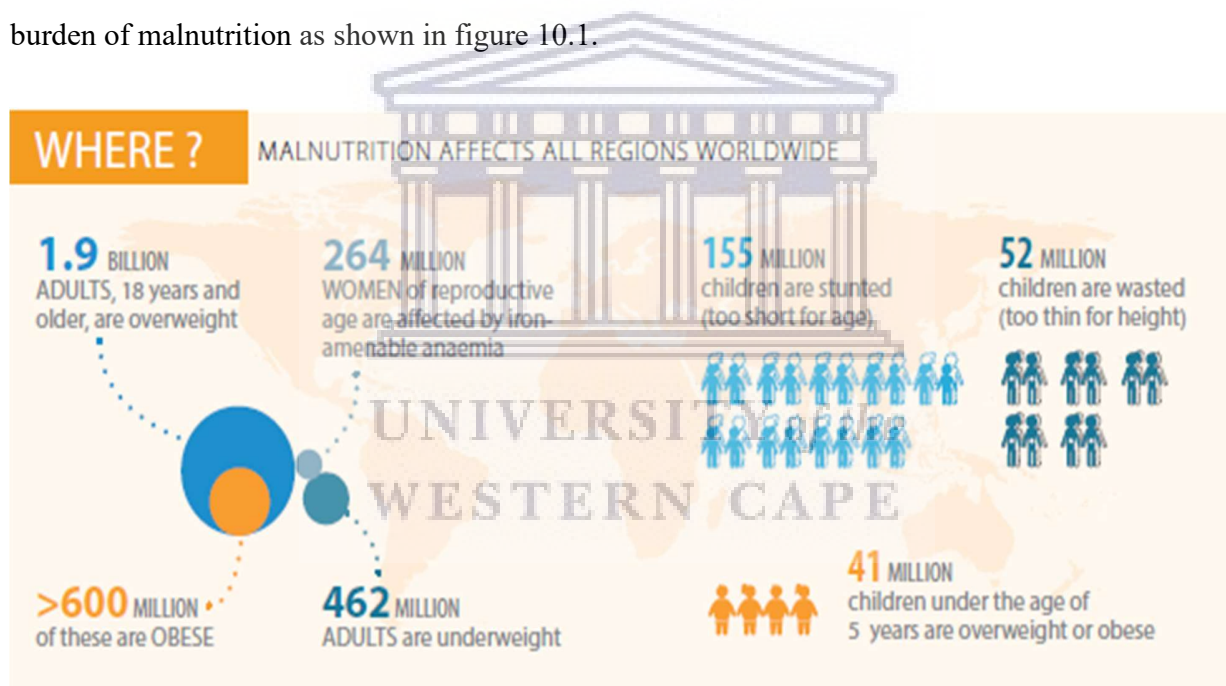
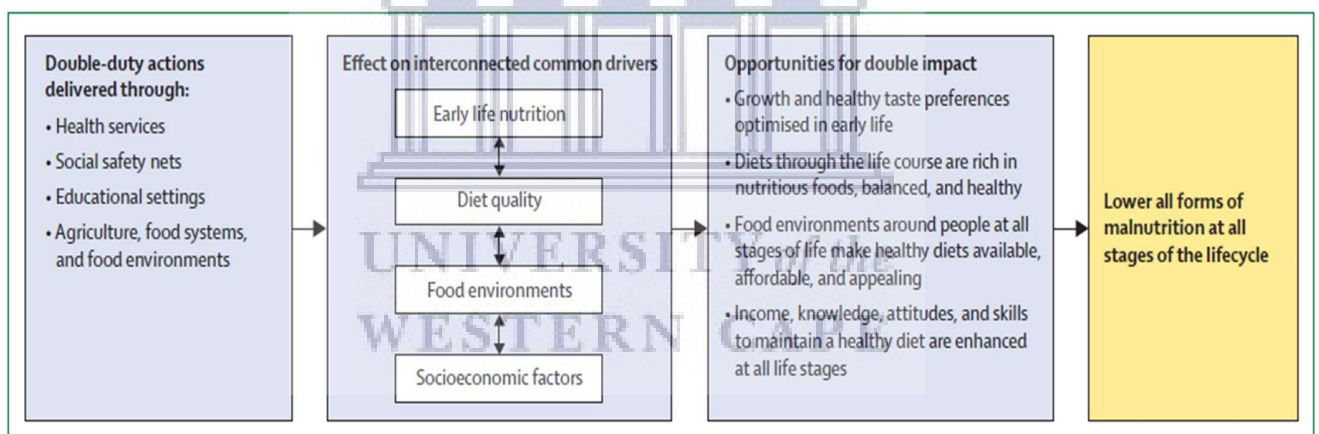


Figure 10.1: Global burden of malnutrition (WHO, 2017)

Addressing the different forms of malnutrition has meant at times that separate communities, agencies, policies, programmes, governance structures and funding streams made decisions and created action plans (Hawkes et al., 2020). The Decade of Nutrition calls for more focus on single interventions that have the opportunity to address multiple targets and goals at the same time

allowing more resources (human, fiscal and time) to be better spent (IFPRI, 2016). This has meant that interventions to address the burden of malnutrition both undernutrition and problems of overweight, obesity, and diet-related non-communicable diseases should have a double-duty actions (Hawkes et al., 2020). These include shared biological, environmental (early life nutrition, diet - diversity, food - environments) and socioeconomic factors that contribute to the risk or prevalence (Hawkes et al., 2020; WHO, 2017). This means that instead of focusing on one issue at hand, the actions aim to focus on maximizing the benefits to address the risks of any form of malnutrition. The term triple burden is also used at times to draw in the focus of climate change (Hawkes et al., 2020). Hawkes et al. 2020 also provides a framework that shows the specific actions and the effect on the common drivers of all forms of malnutrition.



**Figure 10.2: Framework to assess opportunities for double-duty effect of nutrition actions (Hawkes, 2020)**

Further to this WHO, 2017 has highlighted shared platforms as well as potential candidates for the double-duty actions. Shared platforms being national dietary guidelines, health systems, national - level policies for obesity, NCDs and nutrition, urban food policies, social policies and humanitarian aid and emergency nutrition programmes. While the potential candidates would be protection and promotion of exclusive breastfeeding, actions to optimise early nutrition, maternal

and antenatal care programmes, school food policies and programmes, and marketing regulations (WHO, 2017).

South Africa, like many other low middle-income countries, is undergoing nutrition and lifestyle transitions, with an increasing trend of over-nutrition at population level, despite persistent undernutrition among children (Modjadji & Mabiba, 2019).

The South African National Health and Nutrition Examination Survey (SANHANES-1) reported a combined overweight and obesity prevalence of 13.5% in children aged 6–14 years, which is higher than the 10% global prevalence in schoolchildren (Shisana et al., 2013). The South African Primary School's Anthropometric and Health Survey (1994) and the Health of the Nation Study (2001/2004) estimated an increase in overweight individuals from 1.2% to 13% and obesity from 0.2% to 3.3% from 1994 to 2004, respectively (Armstrong et al., 2011). It has become clear therefore that although the prevalence of stunting has decreased over the period, the trend of being overweight and obese has increased (Sanders et al., 2019).

According to Sanders et al., 2019, South Africa has placed a focus on addressing all forms of malnutrition and have put in place key policies and programmes to improve nutrition in children, including: support for the nutrition of pregnant women; breastfeeding promotion, protection and support (Tshwane Declaration); infant and young child feeding; growth monitoring and promotion; social protection and food provisioning programmes; the National School Nutrition Programme; vitamin A supplementation; fortification of food staples with micronutrients; and introducing a sugar tax to reduce the amount of sugar in sugary beverages. These policies would form the basis for double-duty actions delivered through the health system and education system. However, it does not clearly address the food system action needed.

Globally, household food and nutrition security has received increasing attention recently as the impact of climate change and tough economic conditions puts new and additional stress on food systems (Insights, 2019). The Food and Agriculture Organization (in collaboration with FAD et al., 2018) warned that the world is not on course to eradicate hunger by 2030, as envisioned in the Sustainable Development Goals. Additionally, many countries now recognise the need to expand the measurement of food and nutrition security and its importance in informing, planning, and monitoring of progress towards achieving the 2030 targets (Insights, 2019). Food security exists when all people at all times have physical, social, and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (IFRI, 2017).

The South African context is wide-ranging in its disparity of resources in both rural and urban areas, with rural communities often suffering the most exclusion and benefitting the least from social policy (Poverty Trends in South Africa, 2017). It must be noted that efforts have been made by the South African government to promote food security and to domesticate international indicators on food security to monitor development in the country. An inter-ministerial National Food Security and Nutrition Plan (South African Government, 2014) has been developed by the South African government, with its coordination occurring at the Presidency, along with the country's National Development Plan (NDP). The plan recognises agricultural productivity and rural development as essential priorities. This approach allows for the creation of employment, economic growth, reducing poverty, and addresses food security. The Food and Nutrition Security Policy is key in achieving the objectives of the NDP and that of the global SDGs (specifically Goal 2 as outlined in Chapter 3).

The NDP has six clear objectives, those of which are specific to this study being 1) scale up of high impact nutrition interventions targeting women, infants and children, and 2) develop an integrated communication plan to influence people across the life cycle to make informed food and nutrition decisions. South Africa has remained one of the countries with the highest rates of inequality in the world. This is evident from the consumption expenditure Gini coefficient of 0.63 in 2015 (Timeslive, 2019). The Gini coefficient is the measure of income inequality, ranging from 0 to 1, with 0 representing a perfectly equal society and 1 representing a perfectly unequal society (Creamer, 2018). Inequality has been persistent, having increased from 0.61 in 1996 (Timeslive, 2019). The effect of inequality is the continued exclusion and nature of economic growth, which means that not enough jobs are generated and not quickly enough. Inequality in wealth is even higher: the richest 10 percent of the population held around 71% of net wealth in 2015, while the bottom 60 percent held 7% of the net wealth. Compounded is the aspect of intergenerational mobility being low; meaning inequalities are passed down from generation to generation with little change in inequality over time (Timeslive, 2019).

There is a clear link between politics, poverty, and family wellbeing (Makiwane et al., 2017). It is significant to understand the above context of the country in the presentation of the current research as any intervention designed for South Africa needs to take inequality into account. It has a negative influence on health outcomes for families and generations to come.

In the study, there is focus on the micro-environmental home setting that primary caregivers create for their children by their own food intake and the food parenting practices they use to socialize their children. The study did not focus on specific dietary requirements per age group of children, as this was not the study aim, but rather on the parents and primary caregivers as the primary focus for behaviour a change intervention.



Therefore, parenting styles were investigated as having an influence on child nutritional provision, not considering disciplining a child or changing other behaviour traits. Distinctions are highlighted and potential areas of overlap in literature on parent–child dietary behaviour and food parenting practices are presented. Based on the literature review, it is evident that there are few primary caregivers’ nutritional knowledge, feeding practices, and style interventions in Africa that are not focused on breastfeeding. The first 1000 days of life have specific interventions which target this period of caregiving. Additionally, this kind of primary caregiver nutritional knowledge intervention research in South Africa is sparse. The study also highlighted that one cannot look at nutritional concepts for the family without viewing the family, how it is defined in the household, and the state of the environment the family resides in. A ‘family’ could include divorced (heterosexual, homosexual or polygamous) families living separately and co-parenting successfully because it is healthier for their family than “staying together in a ‘stable’ unit” (Rabe, 2016). The study is significant at this time as it presents an intervention that has the potential to be a double-duty action as it could be targeted to address both forms of malnutrition under and over nutrition (obesity). The decision to base the intervention on either form of malnutrition would be driven by the need at individual and community level.

## **10.5 Limitations of the Study**

The intention of this study was the development of a programme to improve parents and primary caregivers’ nutritional knowledge to influence their children’s and family feeding behaviour in a positive way. This was done by first trying to understand what they already know about the subject as well as how they present these ideas to their children through examining their parenting feeding styles and practices. It was not intended to create a programme that was age specific, but rather

understanding of general nutritional concepts, and how to share those with their children, to be an empowering process for the entire family. By focusing the study from age three years (young child) and up it meant the focus was on the age group of school readiness within the life course. However, this could also have provided a limitation as it is possible that some feeding practices may have a greater impact at particular periods of child development, whereas they may have different effects at other time points. As a child increases in their autonomy they do not need as much guidance.

### **The Design**

Using social media in Phase one, Stage one of the study could have excluded a large group of potential primary caregivers that could have provided a different perspective on nutritional knowledge, if this part of the study had been conducted face-to-face. It also meant that only a certain parent and primary caregiver was targeted, as those in low socioeconomic households may not have had access to the online platform of Facebook. Opting for the online survey meant data was captured immediately, however as it was self-reported, parents could potentially Google answers for the most accurate nutritional information in answer to the questions, therefore skewing the results. The initial access point of the Phase one, Stage one qualitative study was to be in at least 10 schools within the Western Cape district and would allow for a varying degree of parents and primary caregivers from different backgrounds. However, not receiving replies from the Department of Education at the needed time in the PhD journey slowed the process down by almost eight months. Therefore, a decision needed to be made to move forward with the project. Being a sequential study, Stage one needed to be started so as to provide guidance for the next stages of the study. Furthermore, only having replies from four school governing bodies in low socio-economic schools meant that there was not another socio-economic level for inclusion in the study.

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The number of participants could be too low to conclusively define nutritional knowledge of primary caregivers. Also, the narrative review was limiting as a narrative review was seemingly not done before in this specific domain or rather to answer the current study research questions. The researcher also found while reviewing literature, that the inclusion criteria for the literature review may have been too strict, therefore limiting the number of articles selected. The choice to complete a narrative review was driven by the limited number of studies in the field. This meant that a lot of fore thought was needed so that there was a clear distinction between a narrative review and systematic review.

### **Workshop**

The initial study design was to have a Delphi. However, having to gather experts in a room for extended periods of time, as well as being able to get timely feedback from them, proved to be problematic, as most have high patient loads in private practice, or failed to respond to requests to be part of the expert panel even after several attempts at contacting them. The use of searching for experts may have been better directed through associations, which was done for the Allied Health experts but not the Health Professional Council registered experts. The use of a dietitian as a co-supervisor for undertaking this study may have been useful at this time to facilitate the discussions at the Association level.

The one limitation that stands out is that all the experts were women who were present on the day. There were three male experts who responded in the first email invitation that was sent but closer to the time they declined. Having only women's perspective on the programme may have influenced the programme. Gender roles, and gender relations can influence the way in which an implementation strategy works, and even though this programme has not been implemented yet, discussions as to the best implementation were had.

The small numbers of primary caregivers who were part of the workshop may also have limited the discussion. Furthermore, having experts and lay persons in the same workshop may have influenced active participation from the primary caregivers. The focus on South African practitioners may also have limited the study, as well as only having a sole focus in the Western Cape and Cape Town area. This may have presented a bias in the discussion as it meant only an understanding of the Western Cape provincial needs was highlighted. This could be solved through a more purposeful selection process across all provinces, as well as a concerted effort to address the larger academic community through conferences and presentations. A wider representation of parents from different socioeconomic backgrounds could be achieved by addressing them through parent teacher meetings and other community focused and family focused environments such as sports clubs, music schools and faith based centres. Working through government organisations or departments that are focused on the nutritional programmes and interventions that are highlighted through the NOURISHING, and Optimum nutrition through the life cycle framework could also prove to be a beneficial approach. Access to a larger pool of interested experts, through registered platforms, that are governed by professional association or statutory bodies, and who may already have community research focus areas, could provide a wealth of knowledge and information that can potentially be tapped into.

## **10.6 Recommendations**

### **Policy influence**

A primary caregivers' nutritional knowledge education programme should focus around the fact that inequality is high and therefore use that knowledge to implement a programme that is effective

enough to meet that need. At least three approaches would be required to cover the low, middle, and high socioeconomic bands exist across South Africa. However, this is why the usefulness of this current education programme lends itself well as part of a double-duty action for malnutrition as discussed, having one intervention which has multiple targets, in this case multiple target groups, but with the overall effects of curbing all forms of malnutrition. The use of this intervention means that it has a shared platform for action as it will use the national prescribed dietary guidelines, as well as national level policies for obesity, NCDs and nutrition, as well as reflect on social policies that are needed to curb the drivers of malnutrition. It was evident that even parents who fall within the middle to upper class are requesting nutritional knowledge support in order to better improve their family's health outcomes. A revival of the national policies already in place from 2014 and an assessment of the impact to date should be done. As it is not clear how the nutritional policy is being implemented, and by whom, in which areas, this leaves one not able to clearly outline linkages to care and actional steps at grassroots level. However, this may be based on the criteria used by the researcher for reviewing the policy and its implementation. The obesity strategies which are already in place in the country seem to be only known to certain groups, which indicates that awareness is lacking. Therefore, campaigns are required to boost overall participation as well as awareness of strategies that have been put in place by the government. Several barriers to implementation (Chapter 3) have been highlighted by the Government; furthermore, Khulisa Management Services found in their evaluation of nutrition interventions in 2014 that "South Africa has placed emphasis on food security that is not linked to nutrition and consumption of nutritious foods". This finding in part has led the country to define A National Food and Nutrition Security Plan 2018 - 2023 (DAFF, 2019) with an overall implementation budget of R86.8 billion (DAFF, 2019). The strategic objectives (SO) and costing presented in

figure 10.3 below, showing that SO2 would account for more than 70% of the budget with SO4 having less than 10% of the overall budget. This shows that the South African government wants its people to have more access to nutritious foods.

R millions	2018/19	2019/20	2020/21	2021/22	2022/23	Total	% of total
SO1: Establish a multi-sectoral governance and leadership structure for coordinating FNS policies and programmes	R2.38	R3.31	R3.80	R4.34	R4.93	R18.76	0.02%
SO2: Establishment of inclusive local food value chains to support access to nutritious affordable food	R3 955.23	R10 277.92	R14 459.41	R17 627.40	R21 559.43	R67 879.39	78.20%
SO3: Expand targeted social protection measures and sustainable livelihood programmes	R626.84	R1 403.28	R2 193.70	R2 940.63	R3 991.73	R11 156.17	12.85%
SO4: Scale up high impact nutrition interventions targeting women, infants & children	R392.91	R816.23	R1 335.34	R1 908.11	R2 572.33	R7 024.92	8.09%
SO5: Influence people across the life-cycle to make informed food and nutrition decisions through an integrated communications strategy	R94.37	R108.41	R142.35	R157.38	R201.28	R703.79	0.81%
SO6: Establish the NFNS Plan M&E Unit	R5.71	R3.25	R5.18	R3.77	R5.78	R23.70	0.03%
Total	R5 077.43	R12 612.40	R18 139.79	R22 641.63	R28 335.48	R86 806.72	

**Figure 10.3: National Food and Nutrition Security Plan 2018 – 2023 Strategic Objectives and Costing (DAFF, 2019)**

To support SO2, SO4 and SO5 more policy guidelines will need to be in place in South Africa to address the negative influences of the Big Food (packaged food, soft drinks, food service outlets, retailers, and importers). This has started and has been highlighted as a potential candidate for achieving double-duty action as listed by WHO - that food marketing influences children's food preferences and diet-related behaviours and outcomes, with implications for obesity and diet-related NCDs. Regulating the sale of unhealthy food, as well as creating more awareness of labels of unhealthy food and the need for front labeling of food packaging, will allow consumers to

become more aware of the nutritional value of what they are buying and find labels easier to understand.

Recommendations for future research includes a focus on primary caregivers' knowledge and understanding of what is being sold to them as healthy, nutritious or as weight loss aids. If they understand basic nutritional concepts, they would be able to better understand food marketers use of language on packaging. Also, since the sugar tax is already in place, studies are needed to determine if this has had any effect on the buying patterns of primary caregivers, or if they are even aware of the added sugar tax on “luxury” food items. Studies that focus on the food value chain and allowing access to more healthy and nutrient dense foods needs to be done, including how these can be translated into accessibility for all.

## **Community**

A review of socio-economic resources and accessibility structures for primary caregivers in low socio-economic communities is needed. Known family support services that can address the community, not just by providing a grant, but through other means such as social work services, community discussion forums, and safe spaces for children are needed. There is a need to make sure that projects in communities are continued, and do not unreliably stop and start, so they can develop a feeling of community upliftment. Further focus is also needed on the family context in the community in an attempt to draw fathers into the dialogue around the provision of adequate, quality nutrition for their children. This could be led by current research on the role of fathers in the family, and their participation in meal planning, food selection and provision. It should also bear in mind that the roles within the family are changing and that general assumptions for the provision of care only being provided to by the “mother” in the household can no longer be made.

High socio-economic communities will also benefit from this study as it means that they would be able to gain nutritional knowledge that is based on their family needs and not simply work off an assumption of what the best advertiser is providing them. It also means that even if the primary caregiver is not the one providing meals, as it may be an outsourced activity to the in house assistance, they are able to provide feedback and support to the person who makes the family meals. At the same time, they could encourage the person who is making the family meals to also attend the seven-week programme. Further research is required to provide an in-depth understanding of the family dynamics of high socio-economic families. Focusing on the provision of cooked meals as well as who prepares them could provide valuable insight into why there has been an increase in obesity. Research is required that is focused on family and work life balance, while providing adequate nutrition for the family. Future research could also focus on the national food and security plan's individual strategic objective 5: Influence people across the life cycle to make informed food and nutrition decisions through an integrated communications strategy. These are already underway through various departments which are using many forms of communication, (for example MomConnect uses mobile phones to send messages to expectant mothers to present for their antenatal visits, nutritional messages, HIV testing reminders as well as post-natal care appointments). Pamphlets, posters and radio are all means that are currently being used for effective communication, and studies have already been conducted on the effect of communication strategies at community level.

The current study could potentially provide further understanding of the limitations which primary caregivers experience in trying to provide optimal nutritional support for their children. Apart from the budgetary constraints, it is also important to understand and address further reasons for primary caregivers not providing sound nutritional meals for their children. In the Western Cape a booklet



already exists which is provided to primary caregivers at Early Childhood (ECD) Centres in low - income communities, however it is only available to registered centres. This study could support this process to affect a larger group of participants that are not affiliated to a registered ECD but instead be presented through the wider community forums. As it is not age specific it has the potential to be a supportive programme to what is already in place.

## **Family**

The family dynamic needs to be reviewed in the respective low and high socio-economic communities. Family dynamics are different in these communities and therefore it is important to first understand the context within South Africa. Further collaboration and support is needed with studies that focus on the role of fathers, as well as further exploration of connections between absent fathers, the nutritional needs of children, and whether they are being met. The effect of violence, crime, substance abuse, as well as teenage pregnancy, within the context of family and the effect it has on its structure, needs to be focused on. This is also pertinent for the provision of adequate nutritional care. There should not be a separation of the reality that many families face daily while trying to create a nutritional education programme. The family focus should be based on wanting to support early investment in child and adolescent health drivers which allow for a richer and more balanced life course, allowing children to thrive and have greater potential. Therefore, policy with action, through community engagement, would be needed to support the implementation of the programme. It would be good for future research to focus on the effect of the nutritional education programme on the primary caregivers BMI as well as that of their children. This however has the potential of being a much longer study, but it would provide insight into behavior change interventions. Further to this, a study which looks at the effect of the

behaviour change on weight loss over a long-term period is recommended, as many studies are focused on short - term weight loss goals and a social desirability of thinness, which is not sustainable at times for those who are overweight and obese. Success in encouraging consumers to make healthy dietary choices is likely to require society-wide changes that reduce the attractiveness and availability of energy-dense, nutrient-poor foods.

### **Practice**

Teachers, community health care workers, medical practitioners, and health care professionals will benefit from this programme by understanding the limits in nutritional knowledge experienced by primary caregivers. By being defined as a double-duty action, the programme is supportive of the current global and South African need to address malnutrition. This programme allows for the intersect of social (family and community) and nutritional support. It therefore has the potential to align with other supportive mechanisms, and can be a feeder into other programmes such as a school feeding programme, social support grants, improvement of parental education; and linkages with social services. This has the potential to assist the whole family. Utilizing the specific modules in the programme will ensure that the needs of primary caregivers can be met. This in turn would allow for a more hands-on approach to the family, specifically if there is a focus on regular engagement. It's also recommended that in practice there are closer links to service providers who could offer the programme or practitioners who want to train in providing the programme to their patients. This could allow practitioners to actively engage their patients or clients on their nutritional knowledge needs. Focusing the programme for a private practitioner opens the potential to turn the programme into an online course. This was not the focus of the current study but is in keeping with the current trends in educational technology. An online programme would allow

patients to gain the knowledge from the course even if they are not able to physically complete a seven-week face-to-face programme. Training on the programme would need to be provided to facilitators/health care professionals/medical practitioners/NGOs who are focused on families, children, and the community. They could be targeted if they have a specific activity which is aligned to the objectives of the national food and security plan. Monitoring and evaluation of best practice approaches that are currently being used and promoted in government for intervention programmes should be conducted to allow a closer evaluation of double-duty actions. This would also allow for a focus on quality improvement and service delivery and building a skilled workforce that allows for monitoring and implementation of programmes at individual, community and national level.

### **Intervention Adoption and Implementation**

For implementation to be successful, it is recommended that a training manual be developed. Clear outlines as to who needs to be part of the development of the programme have to be set. This group will need to be an interdisciplinary group to provide the broadest range of content, an understanding of best practice, and understanding the current barriers to taking an intervention programme to scale. These members could potentially be a dietitian, social worker, naturopath (Allied Health Professional), a nurse, community healthcare worker, an education specialist, as well as members of the community that are already involved with nutrition intervention programmes. They would provide input into the basis of the programme, as well as to any programmatic changes, as required, since in any development phase of a programme there are always changes. A pilot of the programme should be done to assist in clearly understanding if the programme has the potential to affect change in nutritional knowledge behaviour of primary

caregivers. The pilot programme should include an evaluation to ensure that any required changes needed in the PNKEP are identified and implemented.

## **10.7 Conclusion**

The current study aimed to develop a nutrition education programme to enhance primary caregivers/parental feeding styles and practices to improve their children's nutritional status. Through this process the study brought to light the implication that parental feeding practices could have a domino effect on the future quality of life of their children. Through assessing their own nutritional knowledge and their relationship with their children, could help parents acquire more favourable parenting feeding styles and practices. This study also highlighted the gap that exists in the role of the father in providing nutritional support, especially in low - socioeconomic communities. Through the development of the nutritional programme, the study addressed at the entry level, the use of a single intervention that will have an effect on more than one form of malnutrition, therefore having the potential to be a double-duty action.

The development of the nutrition programme was supported and met with openness by primary caregivers and medical experts who expressed that they would like to see the implementation of the programme and would support its use in their own environment.

The sustainability of the dietary improvements of successful nutrition programmes is vital to achieving long-term health benefits. However, the sustainability of the nutrition programme must be weighed against the cost of funding a programme long term. Therefore, it must be noted that the overall programme will have an impact on dietary intake through optimum food selection within reason and availability of resources to the primary caregiver. The programme has the

potential to support optimum nutrition over the life course, and therefore aligns with funding streams that are currently focused on strategy objective 5 of the South African National Food and Security plan.

It is also important to understand that the programme alone may not be enough to mitigate the many changes needed to address a healthy lifestyle. Other factors need to be explored, such as creating a supportive environment that promotes health and nutrition as a goal for all. Among other things, limiting the advertising of high sugar and fat foods, increasing the availability of affordable healthy foods, food security and economic access would go a long way in providing a positive impact for nutrition programmes.



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## APPENDICES

### Appendix A: Parenting Questionnaire



## UNIVERSITY OF THE WESTERN CAPE

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The questionnaire is suitable for parents or caregivers with children ages 3 - 18 years old. If this does not apply to you, I thank you for your time in being willing to complete the questionnaire.

### PARENTING AND FAMILY CARE QUESTIONNAIRE

#### SECTION A

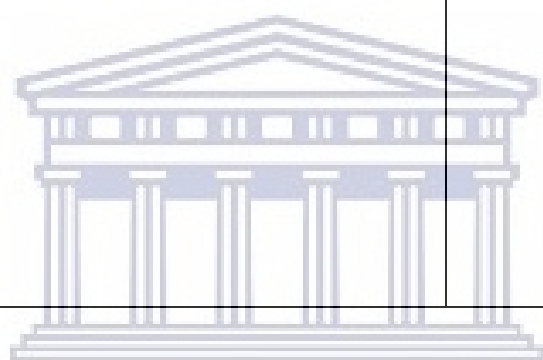
#### DEMOGRAPHICS

D.1 What is your Nationality?				
D.2 What country do you currently reside in?				
Gender	Male		Female	
Age				

Highest education level completed	Primary school	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12
Post matric education or training	None	Certificate	Diploma		Degree	
Race	Coloured	Black African	White	Indian / Asian		
				Other		
Home language	Afrikaans	English	isiXhosa	Other		
Who is the head of your home?	Me My spouse or partner My mother My father My grandmother/ grandfather Member of extended family (aunt/uncle/cousin)					
What is the structure of your family?	Married	Living together but not married	Single, do not live together and are not married	Single because he / she is widowed	Single because he / she is divorced	Extended family
Is there a father / father figure present in your home?	Father			Father figure		
	Yes			Yes		
	No			No		
If there is a father present, is he:	Present but does not interact with the children	Present and interacts with the children	Absent but interacts with the children		Absent does not interact with the children	
Household income per month						
How many children in the home?						

Are you currently working?	Yes		No	
What is your occupation?				
Do you receive a grant?	Yes		No	
Which grant do you receive?	Disability Grant	Child grant	Foster Child grant	Care dependency grant
Do you receive a pension?	Yes		No	
What is your height and weight	Height in cm :		Weight in kg:	
Do you know the height and weight of your children	Yes		No	
Do you know the height and weight of your children	Yes		No	
Can you recall the height and weight of your first 3 children you care for?	Child 1: H =    cm Child 2: H =    cm Child 3: H =    cm		Child 1 :W =    kg Child 2: W =    kg Child 3: W=    kg	
When was the last time that you took your child for a nutritional assessment or health check?				
As a parent or caregiver are there areas of nutritional information that you would like to know about to help you influence your				

child/children's nutritional status?	
	If yes, what would they be? If no, why?
Do you think there is value in parents / caregivers learning about nutritional concepts?	
Would you find benefit in a nutritional programme dedicated to yourself to support you and your child/ren?	



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## **SECTION B**

**If you have one or more children older than 5 years old please answer the following questions**

### **PARENTING STYLES AND PRACTICES**

ITEMS	Not at all true	Not very true	Sort of true	Very true
I know a lot about what takes place in my child/s life				
I really know how my child feels about things				
I do special things with my child				

I set aside time to talk to my child about what is important to him/her				
I let my child know I love him/her				
I don't understand my child very well				
Sometimes my child is hard to like				
At times, the demands that my child makes feel like a burden				
My child needs more than I have time to give him/her				
Sometimes I feel like I can't be there for my child when he/she needs me				
I make it clear what will happen if my child does not follow our rules.				
I expect my child to follow our family rules				
When I tell my child I'll do something, I do it				
If my child has a problem, I help him/her figure out what to do about it				
I let my child get away with things I really shouldn't allow				
When my child gets in trouble, my reaction is not very predictable				
My child doesn't seem to know what I expect from him/her				
I change the rules a lot at home.				
I can get mad at my child with no warning				
I encourage my child to express his/her feelings even when they're hard to hear				
I encourage my child to express his/her opinions even when I don't agree with them				
I trust my child				
I encourage my child to be true to her/himself				
I expect my child to say what he/she really thinks				
My child fights me at every turn				



To get my child to do something, I have to yell at him/her				
I can't afford to let my child decide too many things on his or her own				
I sometimes feel that I have to push my child to do things.				
I find getting into power struggles with my child				
I want my child to experience sadness				
I want my child to experience anger				
I think it's good for kids to feel angry sometimes				
A child's anger is important				
Children have a right to feel angry				
Children acting sad are usually just trying to get adults to feel sorry for them				
Children often act sad to get their way				
I don't mind dealing with a child's sadness, so long as it doesn't last too long				
When my child gets sad, I warn him or her about not developing a bad character				
When my child gets angry, my goal is to get him or her to stop				
When my child is sad, I try to help him or her figure out why the feeling is there				
When my child is angry, it's time to solve a problem				
It's important to help the child find out what caused the child's anger				
When my child is sad, I'm not quite sure what he or she wants me to do				
When my child is angry, I'm not quite sure what he or she wants me to do				
When my child gets angry with me, I think, "I don't want to hear this"				

When my child gets angry, I think, "If only he or she could just learn to roll with the punches"				
When my child gets angry, I think, "Why can't he or she accept things as they are"?				

## SECTION C

### Parent/ General Nutritional Knowledge Questionnaire

Questions					
1	Do you think health experts recommend that people should be eating more, the same amount, or less of these foods?				
	Vegetables	More	Same	Less	Not sure
	Sugary foods ( sweets, chocolates)	More	Same	Less	Not sure
	Meat	More	Same	Less	Not sure
	Starchy foods(potatoes, rice)	More	Same	Less	Not sure
	Fatty foods ( burgers, fried chips)	More	Same	Less	Not sure
	High fibre foods	More	Same	Less	Not sure
	Fruit	More	Same	Less	Not sure
	Salty foods(processed meats/cold meats/polony)	More	Same	Less	Not sure
2	How many servings of fruit and vegetables a day do you think experts are advising people to eat? (One serving could be, for example, an apple or a handful of chopped carrots)				
	1	2	3	4	5 Or more
3	Which fat do experts say is most important for people to cut down on?				
	1. mono-unsaturated fat		2. poly-unsaturated fat		
4	What version of dairy foods do experts say people should eat?				
	1. full fat		2. low fat		

	3. mixture of full fat and low fat 4. neither, dairy foods should be cut out			
	5. not sure			
5	Do you think these are high or low in added sugar?			
	Bananas	High	Low	Not Sure
	Unflavored yoghurt	High	Low	Not Sure
	Ice-cream	High	Low	Not Sure
	Orange juice	High	Low	Not Sure
	Tomato sauce	High	Low	Not Sure
	Tinned fruit in natural juice	High	Low	Not Sure
6	Do you think these are high or low in fat?			
	Pasta (without sauce)	High	Low	Not sure
	Low fat spread	High	Low	Not sure
	Baked beans	High	Low	Not sure
	Luncheon meat (processed meat, salami)	High	Low	Not sure
	Honey	High	Low	Not sure
	Scrambled egg	High	Low	Not sure
	Nuts	High	Low	Not sure
	Bread	High	Low	Not sure
	Cottage cheese	High	Low	Not sure
	Polyunsaturated margarine	High	Low	Not sure
7	Do you think experts put these in the starchy foods group?			
	Cheese	Yes	No	Not sure
	Pasta	Yes	No	Not sure
	Butter	Yes	No	Not sure
	Nuts	Yes	No	Not sure

	Rice	Yes	No	Not sure
	Porridge	Yes	No	Not sure
8	Do you think these are high or low in salt?			
	Sausages	High	Low	Not sure
	Cheese	High	Low	Not sure
	Frozen vegetables	High	Low	Not sure
	Red meat	High	Low	Not sure
	Gherkins	High	Low	Not sure
	Pasta	High	Low	Not sure
9	Do you think these are high or low in protein?			
	Chicken	High	Low	Not sure
	Cheese	High	Low	Not sure
	Fruit	High	Low	Not sure
	Baked beans	High	Low	Not sure
	Butter	High	Low	Not sure
	Cream	High	Low	Not sure
10	Do you think these are high or low in fibre?			
	Cornflakes	High	Low	Not sure
	Bananas	High	Low	Not sure
	Eggs	High	Low	Not sure
	Red Meat	High	Low	Not sure
	Broccoli	High	Low	Not sure
	Nuts	High	Low	Not sure
	Fish	High	Low	Not sure
	Baked potatoes with skins	High	Low	Not sure
	Chicken	High	Low	Not sure
	Baked beans	High	Low	Not sure

1 1	Do you think these fatty foods are high or low in saturated fat?			
	Mackerel	High	Low	Not sure
	Whole milk	High	Low	Not sure
	Olive oil	High	Low	Not sure
	Red meat	High	Low	Not sure
	Sunflower margarine	High	Low	Not sure
	Chocolate	High	Low	Not sure
1 2	Some foods contain a lot of fat but no cholesterol.	Agree	Disagree	Not sure
1 3	Do you think experts call these a healthy alternative to red meat?			
	Liver pate	Yes	No	Not sure
	Luncheon meat (processed meat, salami)	Yes	No	Not sure
	Baked beans	Yes	No	Not sure
	Nuts	Yes	No	Not sure
	Low fat cheese	Yes	No	Not sure
	Quiche	Yes	No	Not sure
1 4	A glass of unsweetened fruit juice counts as a helping of fruit.	Agree	Disagree	Not sure
1 5	Brown sugar is a healthy alternative to white sugar.	Agree	Disagree	Not sure
1 6	There is more protein in a glass of full cream milk than in a glass of skimmed milk.	Agree	Disagree	Not sure

17	Polyunsaturated margarine contains less fat than butter.	Agree	Disagree	Not sure
18	Which of these breads contain the most vitamins and minerals? 1. White 2. Brown 3. Wholegrain 4. not sure			
19	Which do you think is higher in calories: butter or regular margarine? 1. Butter 2. Regular margarine 3. both the same 4. not sure			
20	There is more calcium in a glass of whole milk than a glass of skimmed milk.	Agree	Disagree	Not sure
21	Which one of the following has the most calories for the same weight? 1. Sugar                      2. Starchy foods                      3. Fibre                      4. Fat 5. Not sure			
22	Which would be the best choice for a low fat, high fibre light meal? 1. Grilled chicken 2. Cheese on wholewheat toast 3. Beans on wholewheat toast 4. Quiche			

2 3	If a person wanted to reduce the amount of salt in their diet, which would be the best choice?	
	<ol style="list-style-type: none"> <li>1. Ready made frozen shepherd's pie</li> <li>2. Gammon with pineapple</li> <li>3. Mushroom omelette</li> <li>4. Stir fry vegetables with soy sauce</li> </ol>	
2 4	Which of these would be the healthiest pudding?	
	<ol style="list-style-type: none"> <li>1. Baked apple</li> <li>2. Strawberry yoghurt</li> <li>3. Wholewheat crackers and cheddar cheese</li> <li>4. Carrot cake with cream cheese topping</li> </ol>	
2 5	Which kind of sandwich do you think is healthier?	
	1. two thick slices of bread with a thin slice of cheddar cheese filling	2. two thin slices of bread with a thick slice of cheddar cheese filling
2 6	Many people eat spaghetti bolognese (pasta with a tomato and meat sauce). Which do you think is healthier?	
	1. A large amount of pasta with a little sauce on top	2. A small amount of pasta with a lot of sauce on top
2 7	If a person wanted to reduce the amount of fat in their diet, which would be the best choice?	
	<ol style="list-style-type: none"> <li>1. Steak, grilled</li> <li>2. Sausages, grilled</li> <li>3. Turkey, grilled</li> <li>4. Pork chop, grilled</li> </ol>	

28	Which one of these is more likely to raise people's blood cholesterol level?		
	1. Antioxidants	2. Polyunsaturated fats	
	3. Saturated fats	4. Cholesterol in the diet	5. not sure
29	Have you heard of antioxidant vitamins?	YES	NO
30	If YES to question 29, do you think these are anti-oxidant vitamins? (answer each one)		
	1. Vitamin A	YES	NO
	2. B Complex Vitamins	YES	NO
	3. Vitamin C	YES	NO
	4. Vitamin D	YES	NO
	5. Vitamin E	YES	NO

Diet related question: Are you currently following any of the following diets.

Please select one of the following:

Mediterranean diet

Low fat diet

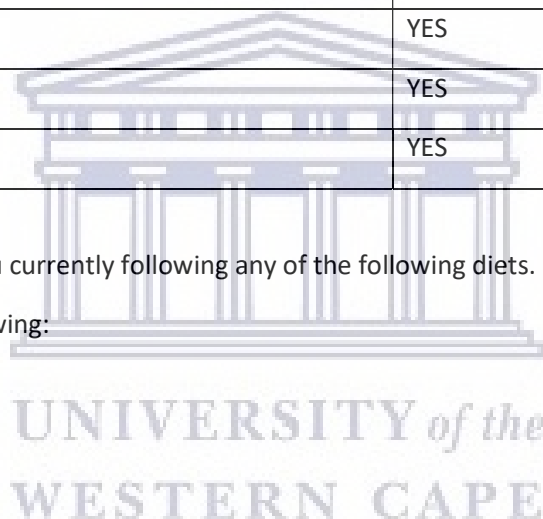
High fat, low carb/Banting diet

High Protein, Low carb diet

Sugar free diet

Gluten free diet

No Diet





**SECTION D**

**Child Control**

	Question	Never	Rarely	Sometimes	Mostly	Always
1	Do you let your child eat whatever s/he wants?	1	2	3	4	5
2	At dinner, do you let this child choose the foods s/he wants from what is served?	1	2	3	4	5
3	If this child does not like what is being served, do you make something else?	1	2	3	4	5
4	Do you allow this child to eat snacks whenever s/he wants?	1	2	3	4	5
5	Do you allow this child to leave the table when s/he is full, even if your family is not done eating?	1	2	3	4	5
	<b>Emotion regulation—Parents use food to regulate the child’s emotional states.</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Mostly</b>	<b>Always</b>
6	When this child gets fussy, is giving him/her something to eat or drink the first thing you do?	1	2	3	4	5
7	Do you give this child something to eat or drink if s/he is bored even if you think s/he is not hungry?	1	2	3	4	5
8	Do you give this child something to eat or drink if s/he is upset even if you think s/he is not hungry?	1	2	3	4	5

	Encourage balance and variety—Parents promote well-balanced food intake, including the consumption of varied foods and healthy food choices.	Never	Rarely	Sometimes	Mostly	Always
9	Do you encourage this child to eat healthy foods before unhealthy ones?	1	2	3	4	5

10	I encourage my child to try new foods.	1	2	3	4	5
11	I tell my child that healthy food tastes good.	1	2	3	4	5
12	I encourage my child to eat a variety of foods.	1	2	3	4	5
	<b>Environment—Parents make healthy foods available in the home.</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Mostly</b>	<b>Always</b>
13	Most of the food I keep in the house is healthy.	1	2	3	4	5
14	I keep a lot of snack food (potato chips, Doritos, cheese puffs) in my house. R	1	2	3	4	5
15	A variety of healthy foods are available to my child at each meal served at home.	1	2	3	4	5
16	I keep a lot of sweets (candy, ice cream, cake, pies, pastries) in my house. R	1	2	3	4	5
	<b>Food as reward—Parents use food as a reward for child behaviour.</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Mostly</b>	<b>Always</b>
17	I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behaviour.	1	2	3	4	5
18	I withhold sweets/dessert from my child in response to bad behaviour.	1	2	3	4	5
19	I offer my child his/her favourite foods in exchange for good behaviour.	1	2	3	4	5
	<b>Involvement—Parents encourage child's involvement in meal planning and preparation.</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Mostly</b>	<b>Always</b>
20	I involve my child in planning family meals.	1	2	3	4	5
21	I allow my child to help prepare family meals.	1	2	3	4	5

22	I encourage my child to participate in grocery shopping.	1	2	3	4	5

	<b>Modeling—Parents actively demonstrate healthy eating for the child.</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Mostly</b>	<b>Always</b>
23	I model healthy eating for my child by eating healthy foods myself.	1	2	3	4	5
24	I try to eat healthy foods in front of my child, even if they are not my favourite foods.	1	2	3	4	5
25	I try to show enthusiasm about eating healthy foods.	1	2	3	4	5
26	I show my child how much I enjoy eating healthy foods.	1	2	3	4	5
	<b>Monitoring—Parents keep track of child’s intake of less healthy foods.</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Mostly</b>	<b>Always</b>
27	How much do you keep track of the sweets (candy, ice cream, cake, pies, pastries) that your child eats?	1	2	3	4	5
28	How much do you keep track of the snack food (potato chips, Doritos, cheese puffs) that your child eats?	1	2	3	4	5
29	How much do you keep track of the high-fat foods that your child eats?	1	2	3	4	5
30	How much do you keep track of the sugary drinks (soda/pop, kool-aid) this child drinks?	1	2	3	4	5
	<b>Pressure—Parents pressure the child to consume more food at meals.</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Mostly</b>	<b>Always</b>
31	My child should always eat all of the food on his/her plate.	1	2	3	4	5
32	If my child says, “I’m not hungry,” I try to get him/her to eat anyway.	1	2	3	4	5

33	If my child eats only a small helping, I try to get him/her to eat more.	1	2	3	4	5
34	When he/she says he/she is finished eating, I try to get my child to eat one more (two more, etc.) bites of food.	1	2	3	4	5

	Restriction for Health—Parents control the child’s food intake with the purpose of limiting less healthy foods and sweets.	Never	Rarely	Sometimes	Mostly	Always
35	If I did not guide or regulate my child’s eating, s/he would eat too much of his/her favourite foods.	1	2	3	4	5
36	If I did not guide or regulate my child’s eating, he/she would eat too many junk foods.	1	2	3	4	5
37	I have to be sure that my child does not eat too much of his/her favorite foods.	1	2	3	4	5
38	I have to be sure that my child does not eat too many sweets (candy, ice cream, cake, or pastries).	1	2	3	4	5
	Restriction for weight control—Parents control the child’s food intake with the purpose of decreasing or maintaining the child’s weight.	Never	Rarely	Sometimes	Mostly	Always
39	I have to be sure that my child does not eat too many high-fat foods.	1	2	3	4	5
40	I encourage my child to eat less so he/she won’t get fat.	1	2	3	4	5
41	I give my child small helpings at meals to control his/her weight.	1	2	3	4	5

42	If my child eats more than usual at one meal, I try to restrict his/her eating at the next meal.	1	2	3	4	5
43	I restrict the food my child eats that might make him/her fat.	1	2	3	4	5
44	There are certain foods my child shouldn't eat because they will make him/her fat.	1	2	3	4	5
45	I don't allow my child to eat between meals because I don't want him/her to get fat.	1	2	3	4	5
46	I often put my child on a diet to control his/her weight.	1	2	3	4	5

	Teaching about nutrition— Parents use explicit didactic techniques to encourage the consumption of healthy foods.	Never	Rarely	Sometimes	Mostly	Always
47	I discuss with my child why it's important to eat healthy foods.	1	2	3	4	5
48	I discuss with my child the nutritional value of foods.	1	2	3	4	5
49	I tell my child what to eat and what not to eat without explanation. R	1	2	3	4	5
	Items marked with an R were reverse coded.					

## SECTION E

### PSYCHOLOGICAL CONTROL SCALE

Response scale: 1 "Not like me," 2 "Somewhat like me," 3 "A lot like her me."

		<b>Not like me</b>	<b>Somewhat like me</b>	<b>A lot like me</b>
<b>1</b>	<b>As a parent/caregiver I am</b> always trying to change how my child/children feel or think about things.	<b>1</b>	<b>2</b>	<b>3</b>
<b>2</b>	<b>As a parent/caregiver I am</b> always changing the subject whenever my child/children have something to say.	<b>1</b>	<b>2</b>	<b>3</b>
<b>3</b>	<b>As a parent/caregiver I am</b> often interrupting my child/children	<b>1</b>	<b>2</b>	<b>3</b>
<b>4</b>	<b>As a parent/caregiver I</b> blame my child/children for other family members' problems.	<b>1</b>	<b>2</b>	<b>3</b>
<b>5</b>	<b>As a parent/caregiver I am</b> bring up past mistakes when my child/children criticizes me.	<b>1</b>	<b>2</b>	<b>3</b>
<b>6</b>	<b>As a parent/caregiver I am</b> less friendly with my child/children if they do not see things my way.	<b>1</b>	<b>2</b>	<b>3</b>
<b>7</b>	<b>As a parent/caregiver I</b> will avoid looking at my child/children when they have disappointed me.	<b>1</b>	<b>2</b>	<b>3</b>
<b>8</b>	<b>As a parent/caregiver I am</b> if my child or children have hurt my feelings, I stop talking to them until they please me again.	<b>1</b>	<b>2</b>	<b>3</b>

**Thank you for your participation in this study**

## Appendix B: Qualitative Questionnaire

<b>Participant number:</b>	
----------------------------	--

Parenting, nutritional knowledge and feeding practice

**What is your:**

<b>Gender:</b>	
<b>Age:</b>	
<b>Education level:</b>	
<b>Age of your child:</b>	
<b>Gender of your child:</b>	

1. What does support and caring for your child mean to you?
2. What are the kinds of things that you do every day as a parent to ensure that your child is cared for and happy?
3. What makes it hard for you to support and care for your child? Probing: any obstacles that they can think of that impact or affect the parenting of their child.
4. What has been the most difficult part of parenting for you? Probing: what worries or concerns you about your ability to fulfil your parenting role?
5. How do you describe the role of your child/ren's father in your child/ren's life or in parenting? Probing: Does he pay attention to the children? In their schoolwork or take them out? Does he contribute to the household? If not a live-in father - Is he often around? Do the children visit him? Does he pay maintenance? How much does he pay per child?
6. Can you describe what you do when there is no food or no money for food in the house?
7. Would you consider your child to be normal weight, underweight or overweight?
8. As a parent do you feel you have to decide what your child/children should eat?
  - a) What would be a normal weekday evening meal as well as a meal on a Saturday night?
  - b) Do you eat take away meals, do you decide to buy them or do your children request them? Probe - what kind of take away is preferred? how many times a week?
  - c) As a parent do you feel your child needs to obey your decisions about the amount of food they should be eating.
  - d) Do you ever get angry if your child decides to not eat what you have prepared or suggested should be eaten?

**9. Do you read the labels of food when you shop? How do you understand what the labels mean?**

**10. What, do you think, would be important things to consider when developing nutrition interventions or solutions to address nutrition/food concerns in your community?**

**11. What additional assistance, support or resources do you require to be able to provide a nutritious diet for your children?**



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## Appendix C: Ethics Letter



### DEPARTMENT OF RESEARCH DEVELOPMENT

27 February 2017

#### To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape, at its meeting held on 05 December 2014, approved the methodology and ethics of the following research project by: Ms M Brown (Social Work)

Research Project: The design of a nutrition education programme for parental feeding styles and practices to improve child BMI scores.

Registration no: 14/10/34

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

The Committee must be informed of any serious adverse event and/or termination of the study.

A handwritten signature in black ink, appearing to read 'P. Josias'.

*Ms Patricia Josias  
Research Ethics Committee Officer  
University of the Western Cape*

Private Bag X17, Bellville 7535, South Africa  
T: +27 21 959 2983/2948 . F: +27 21 959 3170  
E: [pjosias@uwc.ac.za](mailto:pjosias@uwc.ac.za)  
[www.uwc.ac.za](http://www.uwc.ac.za)

A place of quality,  
a place to grow, from hope  
to action through knowledge

## Appendix D: Participants consent form



# UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-9592277,

E-mail: [nroman@uwc.ac.za](mailto:nroman@uwc.ac.za)

### CONSENT FORM FOR PARTICIPANTS

#### Title of Research Project:

The design of a nutrition education programme to improve parental feeding practices, feeding styles and nutritional knowledge.

The study has been described to me in a language that I understand, and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

Participant's name.....

Participant's signature.....

Date.....

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name: Prof. N. Roman

University of the Western Cape

Private Bag X17, Belville 7535

Telephone: 0219592277

Email: [nroman@uwc.ac.za](mailto:nroman@uwc.ac.za)

## Appendix E: Information sheet



# UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

*Tel: +27 21-9592277,*

**E-mail:** nroman@uwc.ac.za

### INFORMATION SHEET

**Project Title:** The design a nutrition education programme to improve parental feeding practices, feeding styles and nutritional knowledge.

#### **What is this study about?**

This is a research project being conducted by Melissa Brown at the University of the Western Cape. We are inviting you to voluntarily participate in this research project to provide us an understanding of parental feeding practices and to improve nutritional knowledge. The purpose of the study is to design, a nutrition education programme to improve parental feeding practices, feeding styles and nutritional knowledge.

#### **What will I be asked to do if I agree to participate?**

You will be asked to complete a questionnaire. This questionnaire will ask you questions about your feeding practices and how your family functions. Completion of the questionnaire will be 60 minutes.

#### **Would my participation in this study be kept confidential?**

We will do our best to keep your personal information confidential. To help protect your confidentiality, the information you provide will be totally private; no names will be used so there is no way that you can be identified as a participant in this study. The information will be treated with anonymity and confidentiality. Your name will not be reflected on the questionnaire. The information obtained from the survey will be collated with the information from other completed surveys. Therefore, there will be no way to connect you to the survey questionnaire.

### **What are the risks of this research?**

Any research has risks but in this research study we will try to minimise the risk of being harmed in any way. If there are any painful memories of experiences or experiences which may evolve during the research process, we will refer you for the necessary support. If at any time there is disclosure of any incidents of risks or harm in the family, we are legally compelled to report the information.

### **What are the benefits of this research?**

The results of the study could have implications for (1) parents, (2) children, (3) clinic staff, (4) practitioners, (5) communities. (1) Parents and (2) children will benefit directly from this programme as it assists them in being able to make better health decisions: Allowing parents and children to be healthier as a family. (1) The implication that parental feeding practices could have a domino effect on the future quality of life and relationships of their children could help parents realise that need to acquire more favourable parenting approaches. (3) Clinic staff may find that if parents understand the nutritional needs of their children better they would see a decrease in unhealthy children presenting to the clinic. (4) Practitioners will find this study useful since they would be able to know that the interventions they use for parents and children are evidence based. Helping practitioners to make a stronger connection, with their patients in the context of family wellness. Healthy or health conscious families make for a better community as they can put their energies into community growth and development for the better.

**Do I have to be in this research, and may I stop participating at any time?**

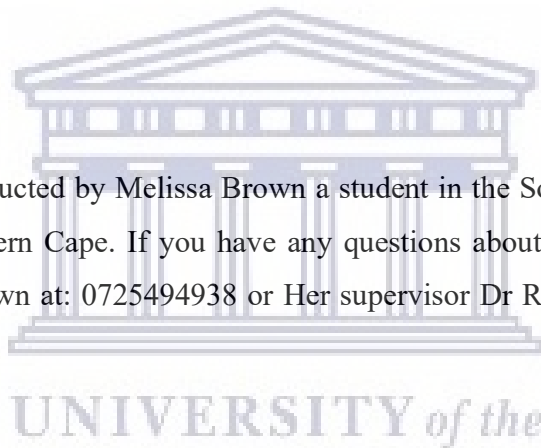
Your participation in this research is completely voluntary. You may choose not to take part in the study. If you decide to participate in this research study, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalised or lose any benefits to which you otherwise qualify.

**Is any assistance available if I am negatively affected by participating in this study?**

Every effort has been taken to protect you from any harm in this study. If, however, you may feel affected you can be referred to your nearest community resource for assistance.

**What if I have questions?**

This research is being conducted by Melissa Brown a student in the Social Work Department at the University of the Western Cape. If you have any questions about the research study itself, please contact Melissa Brown at: 0725494938 or Her supervisor Dr Roman on 021-9592277 or email: nroman@uwc.ac.za.



Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

**Professor Jose Frantz – Dean of the Faculty of Community and Health Sciences**

**Tel No: 021 959 2631/2746**

**Email address: jfrantz@uwc.ac.za**

*This research has been approved by the University of the Western Cape's Senate Research Committee and Ethics Committee.*

## Appendix F: Manuscript review process – Chapter 5

Ecology of Food and Nutrition <onbehalf@manuscriptcentral.com>

Thu, Mar 28,  
8:57 PM

to me

28-Mar-2019

Dear Dr Brown:

Your manuscript entitled "Nutritional knowledge, parenting styles and feeding practices of a South African sample of parents", which you submitted to Ecology of Food and Nutrition, has been reviewed. The reviewer comments are included at the bottom of this letter, along with those of the editor who coordinated the review of your paper.

The reviewer(s) would like to see some revisions made to your manuscript before publication. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript.

When you revise your manuscript please highlight the changes you make in the manuscript by using the track changes mode in MS Word or by using bold or colored text.

To submit the revision, log into <https://mc.manuscriptcentral.com/gefn> and enter your Author Center. Click on the purple 'Click here to submit a revision' link to start the revision process. If you have more than one manuscript awaiting revision, this will take you to a list of those papers and you can click on the 'Create a Revision' link for the paper you want to revise. Your manuscript number has been appended to denote a revision. Please enter your responses to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you made to the original manuscript. Please be as specific as possible in your response to the reviewer(s).

Alternatively, once you have revised your paper, it can be resubmitted to Ecology of Food and Nutrition by way of the following link:

\*\*\* PLEASE NOTE: This is a two-step process. After clicking on the link, you will be directed to a webpage to confirm. \*\*\*

[https://mc.manuscriptcentral.com/gefn?URL\\_MASK=d2dbdcfc8e074b3f959db6c16e3b7186](https://mc.manuscriptcentral.com/gefn?URL_MASK=d2dbdcfc8e074b3f959db6c16e3b7186)

**IMPORTANT:** Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted

to Ecology of Food and Nutrition, your revised manuscript should be uploaded as soon as possible or within 14 calendar days from the receipt of this notification. If it is not possible for you to submit your revision in this time period, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to Ecology of Food and Nutrition and I look forward to receiving your revision.

Sincerely,  
Professor Sunil Khanna  
Editor in Chief, Ecology of Food and Nutrition  
[efn.editor@oregonstate.edu](mailto:efn.editor@oregonstate.edu)

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author

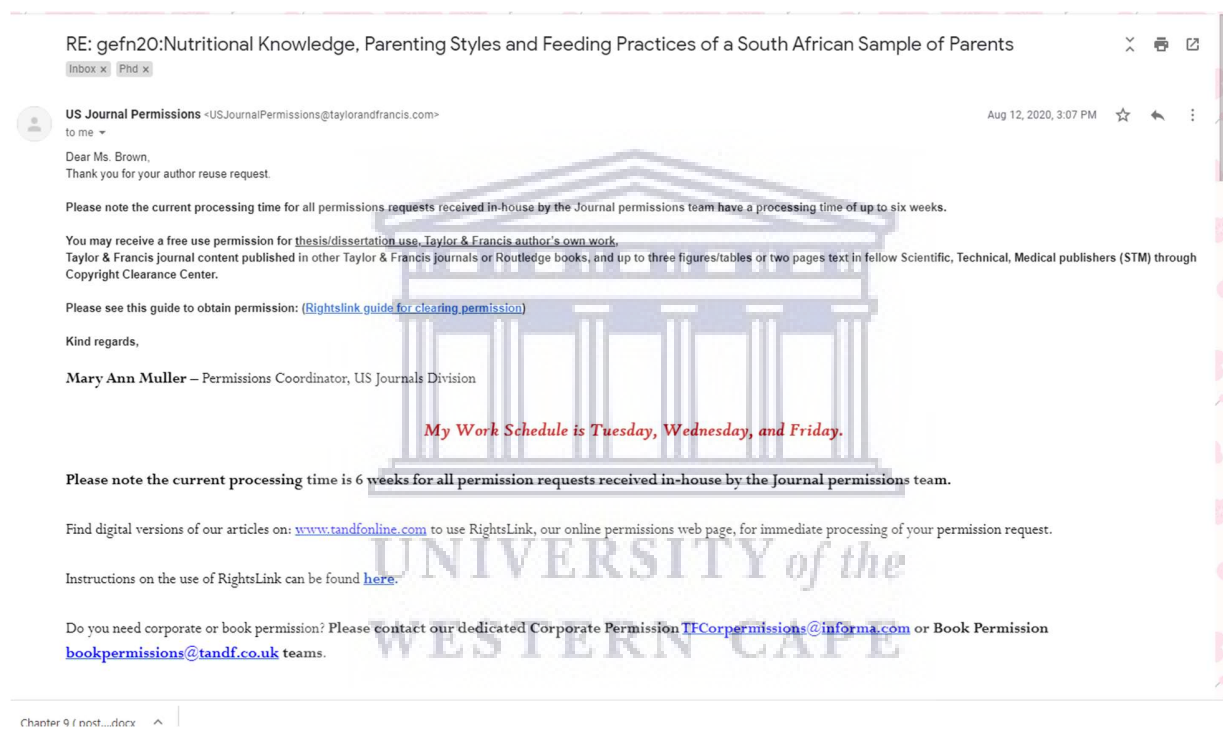
This article explores feeding styles and practices in South African parents. Although this topic is worthy of exploration, as there is a gap around parenting practices for feeding in Africa, I have some concerns with both the methodology and write-up that prevent me from recommending the manuscript for publication in its current form.

From a content perspective, I have three main concerns:

- 1) The authors sometimes mix up "feeding styles" and "feeding practices" in the text, almost using the terms interchangeably, whereas they have distinct definitions (as explained in the introduction). Feeding practices are concrete (and observable) behaviours within the feeding context, which may be modifiable through intervention. Feeding styles are broader approaches to feeding, and may be more difficult to change. Then within these categories, many individual feeding practices/styles are mentioned without definition (e.g., an explanation is needed of what the "authoritative" style is, and how it relates to responsiveness and control). Then this terminology needs to be used consistently throughout the text to make it easier for the reader to follow.
- 2) The participants selected have children with a wide age range (3-18), making the results very difficult to interpret. Feeding practices change with child age, as the child gains more feeding skill and autonomy. Feeding practices that are appropriate with a 3 year-old may be inappropriate with a 15 year-old. Thus, combining these age ranges for the analysis is problematic. In fact, the age of the children is never reported, so the distribution within this wide range is unknown.
- 3) The methods section is missing many details, making it difficult to evaluate. For example, more details about how the recruitment was conducted via Facebook: how many people were in the groups contacted? How many were contacted? How many responded? (i.e., response rate) If

participants had multiple children within the age range, how was a target child selected for response? Were participants compensated? Further, the statistical analysis section is missing the majority of the analyzes mentioned in the results section: correlations, regressions, etc. With such a small sample size (approx 100), I also have concerns about the number of comparisons made between the large number of variables included in the study.

In addition, the paper could benefit from substantial revisions both in terms of structure (e.g., building to a hypothesis in the introduction; reducing redundancies across sections) and for English language. The paper is difficult to understand in its current format.





## Appendix G: Manuscript review process – Chapter 6

Ecology of Food and Nutrition <onbehalf@manuscriptcentral.com>

Tue, Aug  
27, 8:00  
AM

to me

27-Aug-2019

Dear Dr Brown:

I regret to inform you that after careful consideration the editor has decided that your above referenced paper, entitled "Using the RE-AIM Framework to Identify and Describe Best Practice Nutritional Feeding Programmes and Intervention Models for Primary Caregivers: A Narrative Review", which you submitted to Ecology of Food and Nutrition is not appropriate for publication in this journal and we must therefore decline to consider it further.

Thank you for considering Ecology of Food and Nutrition for the publication of your research. I hope the outcome of this specific submission will not discourage you from the submission of future manuscripts.

Sincerely,  
Professor Sunil Khanna  
Editorial Office, Ecology of Food and Nutrition  
[efn.editor@oregonstate.edu](mailto:efn.editor@oregonstate.edu)



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## Appendix H: Manuscript review process – Chapter 6 (2)

10/26/2020

Gmail - Nutrition and Health - Decision on Manuscript ID NAH-19-0141



Melissa Brown <melissajudithbrown@gmail.com>

### Nutrition and Health - Decision on Manuscript ID NAH-19-0141

5 messages

**Nutrition and Health 1** <onbehalf@manuscriptcentral.com>  
Reply-To: craig.sale@ntu.ac.uk  
To: melissajudithbrown@gmail.com, drmjbrown@gmail.com

Thu, Oct 8, 2020 at 9:25 PM

08-Oct-2020

Dear Dr. Brown:

Manuscript ID NAH-19-0141 entitled "Using the RE-AIM Framework to Identify and Describe Best Practice Nutritional Feeding Programs and Intervention Models for Primary Caregivers: A Narrative Review" which you submitted to Nutrition and Health, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

The reviewer(s) have suggested major revisions to your manuscript, as detailed below. Please respond to the reviewer(s)' comments and revise your manuscript, providing a point by point list of corrections and/or rebuttal comments. Please note, that resubmission does not guarantee final acceptance in the journal.

To revise your manuscript, log into <https://mc.manuscriptcentral.com/nah> and enter your Author Center, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.

You may also click the below link to start the revision process (or continue the process if you have already started your revision) for your manuscript. If you use the below link you will not be required to login to ScholarOne Manuscripts.

\*\*\* PLEASE NOTE: This is a two-step process. After clicking on the link, you will be directed to a webpage to confirm. \*\*\*

[https://mc.manuscriptcentral.com/nah?URL\\_MASK=ad1d260bf6d34907b2c5293c3138e98a](https://mc.manuscriptcentral.com/nah?URL_MASK=ad1d260bf6d34907b2c5293c3138e98a)

You will be unable to make your revisions on the originally submitted version of the manuscript. Instead, revise your manuscript using a word processing program and save it on your computer. Please also highlight the changes to your manuscript within the document by using bold or colored text.

Once the revised manuscript is prepared, you can upload it and submit it through your Author Center.

When submitting your revised manuscript, you will be able to respond to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s).

**IMPORTANT:** Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted to Nutrition and Health, your revised manuscript should be uploaded as soon as possible. If it is not possible for you to submit your revision in a reasonable amount of time, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to Nutrition and Health and I look forward to receiving your revision.

Sincerely,  
Professor Craig Sale  
Editor-in-Chief, Nutrition and Health  
[craig.sale@ntu.ac.uk](mailto:craig.sale@ntu.ac.uk)

Reviewer(s)' Comments to Author:

Reviewer: 1

<https://mail.google.com/mail/u/0?ik=d56a3a277d&view=pt&search=all&permthid=thread-f%3A1680012879694470918&simpl=msg-f%3A1680012...> 1/4

Comments to the Author

Important information and discussion points which will open up more increased research and programmes to impact families and more specifically the ability to impact the lives of children.

Reviewer: 2

Comments to the Author

Overall an interesting and well written article that should be of interest to the readership of Nutrition & Health. However, my main criticism of the paper is that lack of clarity in approach and description around the focus of the paper and its rationale, which sometimes seems at odds with the methods employed and the results of the review. If this review is to be published there needs to be a far more joined up, focussed and clear narrative throughout the manuscript.

The opening sentence in the abstract needs re-wording, the syntax is off

Line 36: can remove 'today'

Line 46: can remove 'Currently'

Line 53: should read '...of what they should...'

Line 54: should read 'state'

Line 58: it would be useful to include some criticality here, since there are, of course, some major issues with the use of FFQs.

Line 86: what is meant by 'recent' in this context. It needs to be made clear how this article will extend the systematic review by Hingle et al mentioned by the authors.

Line 90: It is nice to see some justification of the approach in the method, although I am not completely convinced by the rationale. If the objective was to identify a best practice model, why was't a systematic review approach taken to the question? This would seem better placed to achieve such an aim. Surely it would have been more powerful to have added the RE-AIM framework on to such a systematic based review? Couldn't these two options have been combined? In some respects, it almost seems to me that this is what the authors have started to try to do.

Line 102: I am really not sure about this at all. Systematic reviews are well placed to tackle comprehensive topics provided they are within relatively tight parameters. Where they suffer somewhat is when the topic area is broad, perhaps with multiple approaches taken by the available literature to answer a similar question. Perhaps the description can just be tidied up a bit here.

Line 114: The search strategy almost seems to come from a completely different paper! All of a sudden there seems to be a distinct focus upon Africa without any clarification of this in the manuscript up to that point. There is nothing in the title, the rationale or the aims of the review that indicate this is the focus. This raises a number of questions relating to the manuscript focus and why this was developed? Whilst this still perhaps remains of relevance there needs to be a far clearer and more focussed development of this aspect of the paper throughout. This doesn't seem to come through in the results or discussion either. It is only right at the end of the manuscript that this is discussed in the limitations. There needs to be a clearer chronology of events that underpin the review right from the start.

Line 155: It seems somewhat strange that the authors have produced a section that explains why they didn't take a systematic review based approach but then include a line relating to the PRISMA statement, which is evidence-based minimum set of items for reporting in systematic reviews and meta-analyses. To my mind, the authors perhaps need to be a little clearer in relation to exactly what the manuscript intends to be. The section leading up to this point also suggests a desire to complete a systematic rather than narrative review.

L215: change 'have' to 'had'. There are a number of cases through the manuscript where the incorrect tense seems to have been used and a thorough proof-read should help to clear this up. Or, it is possible that the review is of study protocols rather than study outcomes? This doesn't seem to be clear and, if this were the case, it seems somewhat incongruous with the aims of the study which is to 'review evidence'.

Line 216: should read '...older than 18 years, who...'

Line 283-284: this sentence isn't quite clear.

Line 294: (Kiefner-Burmeister et al., 2016) should read Kiefner-Burmeister et al. (2016).

Line 298: should read '...and in some cases..'

---

Line 301: what is meant by 'clinical behaviour' here?

is://mail.google.com/mail/u/0?ik=d56a3a277d&view=pt&search=ali&permthid=thread-f%3A1680012879694470918&siml=msg-f%3A1680012... 2

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26/2020

Gmail - Nutrition and Health - Decision on Manuscript ID NAH-19-0141

Line 318: should read '(2010)'

I think this manuscript would benefit from a clear seprate section section on recommendations.

The whole manuscript would benefit for a thorough proof-read just to iron out a few minor issues with grammar, structure and syntax.

---



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## Appendix I: Manuscript review process – Chapter 7

Thu, Oct 24, 2019  
at 6:05 PM

**BMC Public Health Editorial Office** <em@editorialmanager.com>  
Reply-To: BMC Public Health Editorial Office <victorino.silvestre@biomedcentral.com>  
To: Melissa Judith Brown <melissajudithbrown@gmail.com>

PUBH-D-19-03630

Primary caregivers perceptions of the role of fathers in the provision of nutritional care in a resource constrained environment in Cape Town, South Africa  
Melissa Judith Brown, MACFS; Nicolette Roman, PhD  
BMC Public Health

Dear Ms Brown,

Your manuscript "Primary caregivers perceptions of the role of fathers in the provision of nutritional care in a resource constrained environment in Cape Town, South Africa" (PUBH-D-19-03630) has been assessed.

Per our previous correspondence, please find Dr. Joan Bentzen's requests below:

During the automated similarity check of your manuscript it appears that large parts of the Background and Discussion sections are copied directly (word for word) from the referenced papers.

I would therefore ask you to rephrase your Background and Discussion section so that it captures the essence from the articles, you wish to reference, but in your own words.

Once you have made the necessary corrections, please submit a revised manuscript online at:

<https://www.editorialmanager.com/pubh/>

If you have forgotten your password, please use the 'Send Login Details' link on the login page at <https://www.editorialmanager.com/pubh/>. For security reasons, your password will be reset.

A point-by-point response letter must accompany your revised manuscript. This letter must provide a detailed response to each reviewer/editorial point raised, describing exactly what amendments have been made to the manuscript text and where these can be viewed (e.g. Methods section, line 12, page 5). If you disagree with any comments raised, please provide a detailed rebuttal to help explain and justify your decision.

At this stage, we ask that you submit a clean version of your manuscript and do not include track changes or highlighting.

Please also ensure that your revised manuscript conforms to the journal style, which can be found at the Submission Guidelines on the journal homepage.

Please note, if your manuscript is accepted you will not be able to make any changes to the authors, or order of authors, of your manuscript once the editor has accepted your manuscript for publication. If you wish to make any changes to authorship before you resubmit your revisions,

367

please reply to this email and ask for a 'Request for change in authorship' form which should be completed by all authors (including those to be removed) and returned to this email address. Please ensure that any changes in authorship fulfil the criteria for authorship as outlined in BioMed Central's editorial policies (<http://www.biomedcentral.com/about/editorialpolicies#authorship>).

Once you have completed and returned the form, your request will be considered and you will be advised whether the requested changes will be allowed. By resubmitting your manuscript you confirm that all author details on the revised version are correct, that all authors have agreed to authorship and order of authorship for this manuscript and that all authors have the appropriate permissions and rights to the reported data.

Please be aware that we may investigate, or ask your institute to investigate, any unauthorised attempts to change authorship or discrepancies in authorship between the submitted and revised versions of your manuscript.

A decision will be made once we have received your revised manuscript, which we expect by 31 Oct 2019.

We look forward to receiving your revised manuscript and please do not hesitate to contact us if you have any questions.

Best wishes,  
Kevin Zhu,  
on behalf of,  
Joan Bentzen  
BMC Public Health  
<https://bmcpublichealth.biomedcentral.com/>



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WESTERN CAPE

PUBH-D-19-03630

Primary caregivers perceptions of the role of fathers in the provision of nutritional care in a resource constrained environment in Cape Town, South Africa  
Melissa Judith Brown, MACFS; Nicolette Roman, PhD  
BMC Public Health

Manuscript response:

Thank you for allowing me the opportunity to review the comments and affect changes to the article. No track changes were used as the comments highlighted by Dr Joan were as follows:

1) During the automated similarity check of your manuscript it appears that large parts of the Background and Discussion sections are copied directly (word for word) from the referenced papers.

I would therefore ask you to rephrase your Background and Discussion section so that it captures the essence from the articles, you wish to reference, but in your own words.

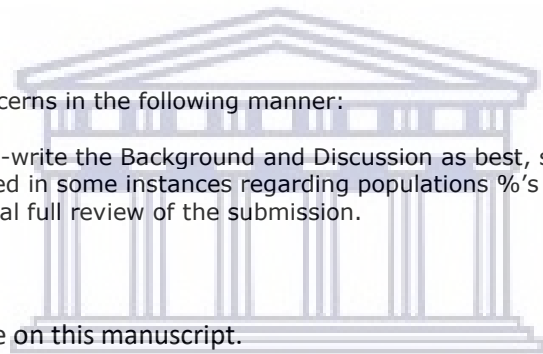
I have addressed content concerns in the following manner:

1) I therefore attempted to re-write the Background and Discussion as best, still keeping to much of the factual statistics which I quoted in some instances regarding populations %'s etc. Therefore, my response is not line by line rather a general full review of the submission.

Again, thank you for the time on this manuscript.

Kind regards,

Melissa Brown



UNIVERSITY *of the*  
WESTERN CAPE

## Decision on your submission to BMC Public Health -PUBH-D-19-03630R2

2 messages

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**BMC Public Health Editorial Office** <em@editorialmanager.com>

Sun, Dec 15, 2019 at 2:24 PM

Reply-To: BMC Public Health Editorial Office <victorino.silvestre@biomedcentral.com>

To: Melissa Judith Brown <[melissajudithbrown@gmail.com](mailto:melissajudithbrown@gmail.com)>

PUBH-D-19-03630R2

Primary caregivers perceptions of the role of fathers in the provision of nutritional care in a resource constrained environment in Cape Town, South Africa

Melissa Judith Brown, MACFS; Nicolette Roman, PhD

BMC Public Health

Dear Ms Brown,

Thank you for considering BMC Public Health for your manuscript "Primary caregivers perceptions of the role of fathers in the provision of nutritional care in a resource constrained environment in Cape Town, South Africa". Peer review of your manuscript is now complete and, based on the reports, I am sorry to say that we cannot consider the manuscript for publication and are closing your file.

The reviewers' reports are included at the end of this email. Please also take a moment to check our website at

<https://www.editorialmanager.com/pubh/> for any additional comments that were saved as attachments. Please note that as BMC Public Health has a policy of open peer review, you will be able to see the names of the reviewers.

Please note that this decision applies across the BMC-series journals (<http://www.biomedcentral.com/authors/bmcseries#journalist>).

I wish you every success with your research and hope that you will consider us again in the future.

Best wishes,

Joan Bentzen, PhD

BMC Public Health

<https://bmcpublichealth.biomedcentral.com/>



Editor Comments:

Dear Dr. Brown

After reviews of your manuscript I am sorry to inform you that both the assigned reviewers and myself find the manuscript and the study it describes unsuitable for publication in a scientific journal.

As the reviewers point out the paper seems to lack focus, the methods are somewhat lacking and the results and conclusions therefore not scientifically substantial.

I refer you to the reviewers' detailed comments below.

Reviewer reports:

Nicole Thualagant (Reviewer 1): The subject of the article is relevant for the journal. However, the paper has some severe challenges as it stands out now and is not ready for publication.

The objective of the paper, but also the study, is unclear. The authors state several objectives within this paper. In the abstract, the authors claim that the objective is to "explore the perceptions and limitations that primary caregivers have on father's provision of care". It is unspecified here what is meant by "limitations". Moreover, the term "caregivers" is used in order to emphasize both mothers and grand-mothers, which should be mentioned. The presented results in the abstract are not coherent with the claimed objective. The objective was an exploration of perceptions and the results mention that "there is a lack of involvement from fathers in the provision of nutritional care and that this affects mothers and grandmothers". It is unclear how the authors came to this conclusion from their qualitative analysis. The presented results would perhaps suggest another objective than an exploration of perceptions. The conclusion is not coherent with the objective either. The

authors state that the "level of lack of financial involvement from fathers has dramatically affected the participation family's food security.." Here the involvement of fathers is reduced to a lack of financial involvement and the conclusion does not conclude anything on the perceptions. This leads to another crucial point: namely care or involvement. How is care approached in the study? Different understandings of care appear in the paper which perhaps also could be said to be a result. The fact that your informants seem to have different understandings of care is perhaps not unimportant in relation to your study? How do you, from your field of research, approach or define care? Is care, in this study, only about giving the right nutritional food? Moreover, it is unclear what type of "involvement" is explored. Is it a financial involvement? Is it a lack of involvement?

On page 8, you mention that the objective of your research was to develop nutritional guidelines to improve knowledge and feeding practices. How does this relate to the question of father's involvement?

Your "background" is built up on several statements with a single reference. As a reader, I am in doubt of to which field of research you wish to address your paper, how your paper is thought to contribute with new knowledge on care or father's role or involvement in vulnerable families. Said differently, why is it important to know about the caregivers' perceptions of father's involvement and to whom is this knowledge important? You point at existing studies about young children's health behavior, father's

positive influence on the child development with respect to the cognitive development and socio-behavior of children. Finally, you stress a global increase in the lack of involvement of fathers in children's lives. From a historical and another cultural perspective, scholars would perhaps not agree on this. In welfare societies, for instance, political initiatives have increased father's possibilities of being more involved in early childhood. My suggestion would be to

start your paper with the statistical points you address from the bottom of page 4 to page 8. The problems you address are not global and are very different in the different cultural contexts. The statistical data your present illustrate the specific problems you wish to address.

The section on methodology is very short and quite unclear. You mention that you work with a "qualitative interpretivist research method", but little is said about what this method entails. You also write that you supply with the "researcher's personal experiences and knowledge" but little is said about what this kind of experiences or knowledge entail? Why is the researcher's experiences and knowledge relevant and is it legitimate for a scientific work to analyze from this "point of view" as well? Finally, the last sentence is quite unclear. In relation to the data collection, you mention both an "interview schedule" and a "questionnaire". Are these different words for an "interview guide"? It is unclear why a limitation of age was set to 3 to 18 years for the children. Is this limitation set on the base of former research showing the relevance of father's involvement in child development specifically in that age group? Finally, it is unclear how many informants you ended

up interviewing. Were they 8 (p.9, l. 185) or 10 (p.10, l.189)?

The results are interesting, however as I reader I would suggest you to synthetize your findings by also integrating some of your analytical points. The section on "results" is composed of a range of interesting quotations from the women, but besides the title of the under-section, it is unclear what is interpreted from the quotations. Some analytical meta-textual sentences from you, as researchers would sharpen your results. What do you read out of the quotations? What would you emphasize from the quotations?

The discussion is highlighting relevant aspects of your study and focus is set on the nutritional aspect of father's missing involvement as well as on the participants search for information on nutritional food. In order to strengthen the objective of the paper, the authors could elaborate on how an exploration of perceptions has led to these findings. The authors conclude that the "study clearly provides evidence that highlights the limitations of nutritional and dietary care fathers play in a low resource family setting". I disagree, the study highlights the challenges these women meet with respect to father's involvement in their wish for giving their children nutritional care.

Finally, the paper needs some proof-reading since the language is unclear in some parts of the text.

Mark Kirven Addison, M.D., M.P.H. (Reviewer 2): Overall, the intended topic would likely be of interest to readers. I am sure that the current submission does not meet this goal. I have listed some concerns below.

Page 3 of 29 Line 33 - "limitations" - I am not sure what this means. Do you mean that fathers are not primary caregivers ever? How do primary caregivers 'limit' fathers?

Page 3/29 Line 35 - "a sample of 10 primary caregivers"

Here you enumerate 10 participants.

On Page 9 Line 185 you state that 6 grandmothers and two mothers were interviewed. Pardon my arithmetic if I am mistaken, but

6 grandmothers

+2 mothers

---

8 interviewees.

Help me understand this.

Page 3/29 Lines 43-44 - Poor financial resources do not necessarily dictate eating high fat -high sugar foods. While that is likely the statements from participants, your next line then begs the question, "Does limited financial means limit ones food selections to high fat-high sugar foods? Can people of limited resources be taught to make healthier wiser choices when shopping for food with limited resources?" So, actually, poor financial resources have not "meant" anything other than people are financially poor.

Page 4 Line 58 - "lack of studies" - There are perhaps less studies on fathers' personal involvement in nutrition and health behaviours than that of mothers; however, one might not say there is a 'lack'. A PUBMED search for "father +child health behavior" provided 4117 items.

Page 4/29 Line 59 - "vaires" - I am not fluent in English as spoken in South Africa; however, this appears to be a misspelling of "various".

Page 4/29 Lines 65-66 - I think there has been substantial awareness generated on the importance of a father in the home especially the many problems that result from a father being absent or less involved. I am not sure this needs to be highlighted any further. Perhaps what needs to be highlighted is the beneficial effects the presence of a father might provide, not only to the children, but to their mother as well.

Page 5/29 Line 80 = "a great deal greater" - perhaps one can be a bit more specific. Might their be a number associated with this - a rate, a ratio, a period of time?

Page 5/29 Line 86 = "students" - perhaps this should be 'studies'?

Page 5/29 Lines 94-95 - Is child neglect and abuse by men really "gender-based violence"? I think not. Is child neglect or abuse by mothers or grandmothers "Gender-Based violence"? I think this assertion sadly misses the problem of a child being neglected or abused.

Page 7/29 Lines 123-124 = So mothers have a "major" impact on a child's eating behaviour, but a father has NONE? Perhaps fathers have less impact than mothers. It seems naive to say a preponderance of influence is provided by some group and not discuss the smaller influence of other groups. One would hope this is inexperience and not bias.

Page 7 Lines 132-134 - this is not a sentence.

Page 8/29 Lines 149-151 - I do not see what the preamble has to do with asking "10" women their perceptions of fathers who do not provide for their children.

How does the perception of "10" women start to provide a representative sampling of how absent men are perceived by the women they have left? One might be able to receive a larger just as well designed sample in line at a supermarket, at the office where one applies for governmental subsidies. Does one have an a priori assumption that these women will perceive these men as kind, supportive, nurturing, self-less? It seems literature or film may have beat you to the story.

Page 8/29 Lines 159-162 - Please refine your statements. How does the researcher enter into this narrative? Please develop your reasoning further.

Page 8/29 Line 164 - I appreciate the small size sample often used in qualitative research. However, your sample seems to be a hastily contrived CONVENIENCE SAMPLE. I offer the following reference for your perusal: Julius Sim, Benjamin Saunders, Jackie Waterfield & Tom Kingstone (2018): Can sample size in qualitative research be determined a priori?, International Journal of Social Research Methodology.

You may link to it at:

<https://www.researchgate.net/deref/https%3A%2F%2Fdoi.org%2F10.1080%2F13645579.2018.1454643>

Page 9/29 Line 185 = Is this not EIGHT people, ( unless it is less since each grandmother is also a mother)? How do we come to 10 participants?

Page 10 Line 189 - "ten"?

Page 10/29 Lines 192-193 = no variance; however, the ranges reflect variance. Please elaborate.

Page 10/29 Line 196 Please refer to Page 29/29 Table 1 - This table lists the number of mothers as 4. Did you count the grandmothers as mothers? Where did these two women come from?

Page 10/29 Line 201 - This is not a sentence.

Page 10/29 Line 206 - Please provide a copy of the survey questionnaire in an appendix or chart.

Has the survey tool been evaluated previously? How was it devised?

Page 12/29 Lines 244-245. Is the lack of a mother's love not a poignant place from which to begin a qualitative study? It is prevalent in 90% of your sample. Is this finding true for all the 61 000 people who live in Manenberg?

Page 18-Lines 374-376 - Perhaps subject verb agreement is a concern. Sentence does not seem complete.

Page 18/29 Lines 379-380 - "enough" what? How much is 'enough'?

Page 18/29 Lines 380-381 - Incomplete sentence.

Page 18/29 Lines 382-383 - Do all people always choose not to eat? There is evidence for this?

Page 18/29 Lines 383-384 - an awkward sentence - if it is a sentence.

Page 20/29 Lines 413-415 - Is it surprising to hear the story of the remaining parent describe themselves as morally integral and that of the abandoning parent as morally deficient? While this is their assessment, is there any validity to this? Are these women not at all responsible for their position in life? 90% of these women seem not to love their children. Did their inability to love also affect the children's fathers?

Page 20/29 Lines 419-422 - In fairness to the reader, these assertions need to be more fully developed.

Page 21/29 Lines 438-440 This sentence reads poorly. Please clarify your intent.

Page 21/29 Lines 442-443 - The opinions of 8-10 women "clearly provides evidence"? Maybe in journalism; not in a scientific journal. Please rethink your assertion.

In general, this submission is not ready for publication.

There seems no focus.

If this were a clearly conceived study one would have thought that subjects might be recruited until there was saturation regarding themes. Perhaps the questions would have been more directed to a particular question that science needed to explore. The personal opinions of 8 or 10 women who feel abandoned by their children's father is hardly the purview of a peer-reviewed scientific journal, nor is the current work likely to be deemed scholarly, viz., incomplete sentences, conclusions not supported by the body of evidence presented, a dearth of focused and balanced inquiry.

The author is referred to the following article: PLoS One. 2017;12(6):e0179210. There are similar recommendations for qualitative research in sociology and in other fields, such as public health.

If improvements to the English language within your manuscript have been requested we recommend that you address this before submitting to another journal. We recommend that you either get your manuscript reviewed by someone who is fluent in English or, if you would like professional help, you can use any reputable English language editing service. We can recommend our affiliates Nature Research Editing Service ([http://bit.ly/NRES\\_BS](http://bit.ly/NRES_BS)) and American Journal Experts ([http://bit.ly/AJE\\_BS](http://bit.ly/AJE_BS)) for help with English usage. Please note that use of an editing service is neither a requirement nor a guarantee of publication. Free assistance is available from our English language tutorial (<https://www.springer.com/gb/authors-editors/authorandreviewertutorials/writinginenglish>) and our Writing resources (<http://www.biomedcentral.com/getpublished/writing-resources>). These cover common mistakes that occur when writing in English.

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## Appendix J: Manuscript review process – Chapter 8

**BMC Nutrition Editorial Office** <em@editorialmanager.com>

Thu, Apr 30, 2020 at 5:41 PM

Reply-To: BMC Nutrition Editorial Office <vayne.talusik@springernature.com>

To: Melissa Judith Brown [melissajudithbrown@gmail.com](mailto:melissajudithbrown@gmail.com)

NUTN-D-19-00210

Primary caregivers's provision of a healthy diet in a resource constrained environment in South Africa.

Melissa Judith Brown, MACFS; Nicolette Roman, PhD

BMC Nutrition

Dear Ms Brown,

Thank you for considering BMC Nutrition for your manuscript "Primary caregivers's provision of a healthy diet in a resource constrained environment in South Africa.". Peer review of your manuscript is now complete and, based on the reports, I am sorry to say that we cannot consider the manuscript for publication and are closing your file.

/the reviewers' reports are included at the end of this email. Please also take a moment to check our website at <https://www.editorialmanager.com/nutr/> for any additional comments that were saved as attachments. Please note that this decision applies across the BMC-series journals (<http://www.biomedcentral.com/authors/bmcseries#journalist>).

I wish you every success with your research and hope that you will consider us again in the future.

Best wishes,

Tillie Cryer

Editor, BMC Nutrition

<https://bmcnutr.biomedcentral.com/>

Editor Comments:

We have concerns over the sample size included in your study and whether the sample size is sufficient to support the conclusions drawn from your data, it is not clear if data saturation was reached. We therefore do not feel that your article qualifies as a robust contribution to the literature and therefore must decline to consider it further for publication.

Reviewer reports:

Reviewer 1: The aim of the study is not clear. According to the title, the focus of the study is on caregivers' provision of a healthy diet, while according to line 88-89, the aim is to explore caregivers' perceptions of a healthy diet. In fact, the results are more focused on practices, rather than perceptions.

The manuscript is focused on the caregiver, and literature is cited on the role of the caregiver in controlling the child's food intake. Yet, the term "child" is never defined, and caregivers who had children aged 3 - 18 years were included in the study. This is a very wide age range; as the caregiver's control of the child's food intake will differ substantially depending on the age of the child. As a result, the Introduction, Results and Discussion lack focus.

The authors should be careful not to generalize small localized studies.

The study design is very limited, and in-depth interviews were done with 10 caregivers only. Applying a mixed-methods approach would have provided richer data; and triangulation of data would have strengthened the results.

The authors should ensure that appropriate references are cited, and that literature is cited within context. For example:

Line 55-56: the authors cite a qualitative study in Ethiopia to support the statement that access to food is a basic human right. Citing, for example, the SA Constitution or literature focused on the human right to food would have been more appropriate.

Line 65-66: this review article was focused on fathers only, information available was very limited, and information available was mostly for white educated fathers

Line 70-72: the connection between this sentence and the previous sentence is not clear. The statement, that in developing countries little is known on the impact of child feeding practices on children's nutritional status seems to be inaccurate, as various literature is available on the topic. It should further be noted that ref 7 (which the authors cite to support their statement) is on responsive feeding in children under 5

Line 73: ref 8 is on parental perceptions of the child's body weight in European countries; this reference is therefore not appropriate to support the statement on food security in South Africa

Line 79: it is suggested that the authors provide a more holistic view of current policies, plans and strategies address food and nutrition security in the country (from both an undernutrition, overnutrition and micronutrient malnutrition perspective)

Line 83: a 2001 reference (no 11) is cited to describe typical food choices in South Africa; citing more-current literature will be more appropriate

Line 88: it is not clear how the authors assessed "perceptions of a healthy diet"

Line 104: the original plan was to include caregivers from three schools; eventually caregivers from only one school were interviewed. The authors provide no information on whether information provided by 10 caregivers only is sufficient.



Line 120: what does "nutritional diet provision" mean?

Line 122-123: this is not clear, as caregivers who had children age 3 - 18 years were interviewed

Line 125: it is not clear whether the interviews were transcribed by one researcher only, or by two independent researchers. If the former, what measures were in place to avoid transcriber bias?

Line 142 - 150: this is not results

Line 160: it is not clear how the authors interpret "access to food"; it seems as if they consider "access to food" the same as food preferences?? ["Daily access to food was not chosen for its health benefits but rather to fill the hunger need experienced"]

Line 198 and 200: why are broccoli and avocado highlighted?

Line 241: what is meant by "they would then conduct a much smaller shop"?

Line 242: what is meant by "For a bigger shop"?

The information on "Understanding the child's weight status" is of little value, as actual weight status of the children is not known; there is South African literature available on perceptions of weight status, indicating that being overweight is often perceived as normal weight.

Line 373: what does "nutritional skills" mean?

Line 374-375: there is South African literature available on perceptions of weight status

Line 420: citing a South African reference would be more appropriate

Line 421: what is meant by "refined white carbohydrates"?

Line 423: "involvement of processed food" does not make sense

Figure 1 seems to be out of place in the Discussion

Most of the Discussion is not focused on the results of the study; neither are the main results critically discussed within the context of what is known on food consumption, food choices and food procurement in South Africa.

If improvements to the English language within your manuscript have been requested we recommend that you address this before submitting to another journal. We recommend that you either get your manuscript reviewed by someone who is fluent in English or, if you would like professional help, you can use any reputable English language editing service. We can recommend our affiliates Nature Research Editing Service ([http://bit.ly/NRES\\_BS](http://bit.ly/NRES_BS)) and American Journal Experts ([http://bit.ly/AJE\\_BS](http://bit.ly/AJE_BS)) for help with English usage. Please note that use of an editing service is neither a requirement nor a guarantee of publication. Free assistance is available from our English language tutorial (<https://www.springer.com/gb/authors-editors/authorandreviewertutorials/writinginenglish>) and our Writing resources (<http://www.biomedcentral.com/getpublished/writing-resources>). These cover common mistakes that occur when writing in English.

As a result of the significant disruption that is being caused by the COVID-19 pandemic we are very aware that many researchers will have difficulty in meeting the timelines associated with our peer review process during normal times. Please do let us know if you need additional time. Our systems will continue to remind you of the original timelines but we intend to be highly flexible at this time

This letter contains confidential information, is for your own use, and should not be forwarded to third parties. Recipients of this email are registered users within the Editorial Manager database for this journal. We will keep your information on file to use in the process of submitting, evaluating and publishing a manuscript. For more information on how we use your personal details please see our privacy policy at <https://www.springernature.com/production-privacy-policy>. If you no longer wish to receive messages from this journal or you have questions regarding database management, please contact the Publication Office at the link below. \_\_\_\_\_

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## Appendix K: Manuscript review process – Chapter 9

### HSAG External Review Decision 1379 - Rejection

1 message

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**aosis@hsag.co.za** <aosis@hsag.co.za>

Thu, Feb 27, 2020 at 9:53 PM

Reply-To: Prof Charlene Downing <charlened@uj.ac.za>

To: Ms Melissa Judith Brown <melissajudithbrown@gmail.com>

Cc: Nicolette Roman [nroman@uwc.ac.za](mailto:nroman@uwc.ac.za)

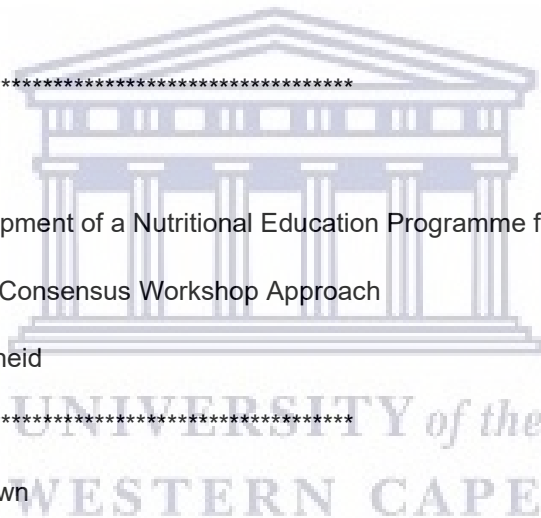
\*\*\*\*\*  
Ref. No.: 1379

Manuscript title: The Development of a Nutritional Education Programme for  
Primary Caregivers using a Consensus Workshop Approach

Journal: Health SA Gesondheid

\*\*\*\*\*  
Dear Ms Melissa Judith Brown

We thank you for the submission of your manuscript. The peer review process of your manuscript has now been completed and we have reached a decision regarding your submission. I regret to inform you that the journal is unable to publish your manuscript. We hereby release your manuscript from consideration so you may submit it elsewhere.



Reviewer A:

13. Summary of major findings and shortcomings?:

Dear Authors

Thank you for the manuscript. Nutrition is indeed a current global topic of discussion.

The literature at the beginning indicates a need for such a study. However, the methodology fails to identify properly- that is, even though a workshop was conducted, the focus group discussion approach was utilized. Hence there has to be a sound methodology as it is a qualitative paper. This is not coming through correctly. The paper drifts between a narrative review and bits of a qualitative research paper.

The methodology should inform the results, which in turn informs the discussion:

1. training and experience of staff to conduct FGD
2. Research team have to develop study guidelines with questions that will guide the FGD
3. Conduct the FGD
4. Transcription and translation (required if not in English)
5. Emerging themes
6. literature that supports the themes or disagrees and why
7. conclusion that draws the information obtained and strongly advocates for such a way to conduct nutrition research and/or recommendations

The paper has to have a specific identity and right now the confusion for the readership is what type of paper is this and what is it trying to tell us?

14. Major points that must be addressed?

Please provide a numbered list to facilitate responses with page and/or line numbers and detailed information on specific recommendations.:

Please address all the amendments and suggestions given. Much work is needed in the methodology

15. Minor points or recommended revisions?

Please provide numbered list to facilitate responses with page and/or line numbers and detailed information on specific recommendations.:

Again, as the paper requires major revisions, until then I cannot point out minor revisions as amendments must be enforced to shape the paper into something proper