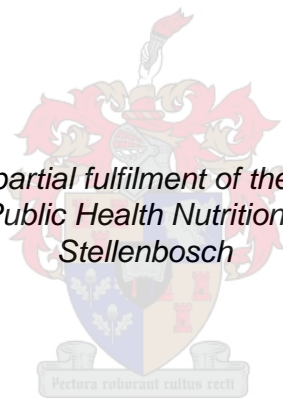


Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Harrismith, Free State Province, South Africa

by
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Thesis presented in partial fulfilment of the requirements for the degree Master of Public Health Nutrition at the University of Stellenbosch



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Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: March 2020

Summary- English

Aim: To identify strategies present among positive deviant (PD) caregivers of non-stunted children that influence complementary feeding (CF)¹ practices and allow them to function within individual, household and community-level factors to succeed in raising well-nourished children.

Design: A mixed-method design using a PD model.

Setting: Intabazwe Informal Settlement, Harrismith, Free State, South Africa

Subjects: Caregivers of stunted (non-positive deviant) and non-stunted (positive deviant) children aged 6-18 months. Of the caregivers selected for the quantitative population (n=28), 16 were non-positive deviants (NPD) and 12 were PDs. Six from each category additionally formed the qualitative population.

Methodology: Caregivers were purposively selected according to selection criteria. Height-for-age (HAZ) and weight-for-height (WHZ) Z-scores were used to classify children as PDs or NPDs. Quantitative questionnaires were administered to obtain data regarding demographic information, socioeconomic scores and World Health Organisation (WHO) Infant and Young Child Feeding (IYCF) indicators. Caregivers with similar socioeconomic scores, from both NPD and PD categories, were selected for qualitative interviews. The semi-structured interview aimed to gain further insight into feeding behaviours that were not captured by the WHO IYCF tool, various other components related to behaviour (attitude, subjective norms and self-efficacy) and barriers and enablers to intended behaviour. Analysis of both data sets were performed with the aim of identifying possible adaptive and emphasis growth-promoting behaviours of PD caregivers.

Results:

IYCF Practices: In general, IYCF practices were similar among the two categories with poor exclusive and continued breastfeeding (BF) practices and the early introduction of solids reported. Only 40% (n=10) of the children obtained a minimum acceptable diet. Sixty percent (n=16) of children obtained minimum dietary diversity. The inclusion of gravy or "soup of meat" (instead of 'flesh' of meat) was more common among NPDs. Consumption of non-recommended foods and liquids was high and more common amongst NPD children. Responsive feeding (RF) practices were more commonly reported among PD caregivers.

Child level: PDs tended to be younger, more likely female and had fewer hospital admissions. NPDs were more likely to have a low birth weight (LBW) and be premature. A strong theme identified amongst NPD caregivers was a child's preference, often resulting in the exclusion of certain foods.

Caregiver Level: Caregivers of PDs were older, more educated and more likely to be living with a partner. NPD caregivers ascribed higher value to foods that provided satiety and to infant foods. PDs more often explicitly expressed value for health care workers (HCWs). The most common advice received by both groups of caregivers pertained to the introduction of solids at six months and discontinuation of BF due to barriers or the mothers' HIV status. PD caregivers were more likely to report taking action in response to a lack of food or finance or poor appetite. Action was typically in the form of health seeking behaviours or financial strategy.

¹ Complementary feeding is defined as the transition from exclusive breastfeeding to family foods over the period from 6-24 months. This occurs due to breastmilk alone no longer being sufficient to meet the nutritional needs of growing child from six months onwards. (151)

Household/ Community Level: PDs had better living conditions and higher socioeconomic scores. Support was more often expressed by PD caregivers with a warmth and appreciation for the support provided helping to create the perception of truly supportive households. The practice of eating and sharing meals as a family was a common occurrence in PD households. NPDs expressed experiencing isolation and instability in support structures.

Discussion: The multifactorial and complex nature of stunting is highlighted by the lack of superior IYCF practices among PDs. Consideration needs to be given to the ability of indicators used to capture IYCF in the context of stunting and the effect of other risk factors, such as the prevalence of prematurity in the population, on nutritional status.

Despite these results, adaptive and emphasis growth-promoting behaviours of PD caregivers were identified. Emphasis PD behaviours identified included: more frequent inclusion of proteins, less frequent inclusion of non-recommended liquids and foods, RF practices and health seeking behaviours by caregivers. Adaptive PD strategies encompassed the inclusion of the 'flesh' of meats, financial strategies as a coping mechanism of caregivers, and family eating. The presence of social capital among PD caregivers was deemed a 'true but useless' behaviour due to the lack of replicability.

Conclusion: The poor feeding practices revealed by this study highlight the need for continued advocacy and promotion of BF and CF in South Africa. The presence of risk factors and non-nutritional PD behaviours within the study highlights the need for a multi-sectoral response, beyond the domain of HCWs and the health sector, in order to address stunting risk factors and improve IYCF practices.

The identification of these risk factors will aid in identifying and supporting at-risk caregivers. Key health promotional messages based on identified PD IYCF behaviours, such as RF practices and limiting intake of non-recommended foods, should be developed to be used within the community where the research was conducted. These messages are inherent to the South Africa Paediatric Food Based Dietary Guidelines (PFBBDG) which should be disseminated to the broader population.

Further research is needed to investigate the role of child's preference and caregivers' interpretation of feeding cues, and how these impact feeding practices; the influence of improving a caregiver's financial literacy on stunting; and gain a better understanding of the role of social capital and how it is developed.

Opsomming- Afrikaans

Doelwit: Om strategieë te identifiseer wat teenwoordig is onder positief afwykende versorgers van kinders met 'n normale groeikurwe wat hul komplimentêre voedingspraktyke beïnvloed en, met inagneming van individuele-, huishoudelike- en gemeenskapsfaktore, hul toelaat om wel-gevoede kinders groot te maak.

Ontwerp: 'n Gemengde metode ontwerp wat gebruik maak van 'n positiewe afwykingsmodel.

Ligging: Intabazwe informele nedersetting, Harrismith, Vrystaat.

Onderwerp: Versorgers van kinders met vertraagde groei (negatiewe afwyking) en kinders met 'n normale groeikurwe (positiewe afwyking) tussen die ouderdomme van 6-18 maande. Die kwantitatiewe populasie het bestaan uit 28 versorgers (n=28): 16 negatief afwykend (NA) en 12 positief afwykend (PA). 12 versorgers uit hierdie groep het die kwalitatiewe populasie gevorm: ses versorgers uit elke kategorie.

Metodologie: Versorgers was geselekteer op grond van keuringskriteria. Hoogte-teenoor-ouderdom en gewig-teenoor-hoogte Z waardes was gebruik om kinders as positief afwykend (PA) of negatief afwykend (NA) te klassifiseer. Kwantitatiewe vraelyste was gebruik om data rakende demografiese inligting, sosio-ekonomiese telling en WHO baba en jong kind voedings (IYCF) riglyne te bekom. Versorgers met soortgelyke sosio-ekonomiese tellings, uit die PA en NA groepe, was gekies vir kwalitatiewe onderhoude. Die semi-gestruktureerde onderhoude was daarop gemik om verdere insig te verkry oor: voedingsgedrag wat nie deur die WHO IYCF hulpmiddel vasgevang word nie; ander komponente wat verband hou met gedrag (houding, subjektiewe norme en selfdoeltreffendheid); en die hindernisse tot en aanmoediging vir die gewenste gedrag. Beide datastelle was geanaliseer om moontlike aanpassende- en beklemtoonde groei-bevorderende gedrag van PA versorgers te identifiseer.

Resultate:

IYCF Praktyke: IYCF voedingspraktyke, in terme van swak eksklusiewe en voortgesette borsvoedingspraktyke en die vroeë bekendstelling van vaste kosse, was oor die algemeen soortgelyk in beide PA en NA groepe.

Slegs 40% (n=16) van kinders het 'n minimum aanvaarbare dieët ontvang. Sestig persent (n=16) van kinders het 'n minimum verskeidenheid in dieët ontvang. Die insluiting van vleissous of vleissop (i.p.v. die vleis self) was meer algemeen vir NA kinders. Responsiewe voeding (RF) praktyke was gerapporteer as meer algemeen deur PA versorgers.

Kind vlak: PAs was geneig om jonger te wees, meer waarskynlik vroulik en was minder gereeld gehospitaliseer. NAs was meer waarskynlik van 'n lae geboortegewig en prematuur. Kindervoorkeur was 'n duidelike tema van NA versorgers; dit het dikwels die uitsluiting van sekere kossoorte tot gevolg gehad.

Versorger vlak: Versorgers van PAs was ouer, meer geleerd en meer geneig om saam met 'n maat te woon. NA versorgers het 'n hoër waarde aan versadigende kosse en babakos toegeskryf. PA versorgers het meer gereeld spesifiek uitdrukking gegee oor die waarde van gesondheidsorgwerkers. Die mees algemene advies wat beide stelle versorgers ontvang het was rakende die bekendstelling van vaste kos op ses maande en die staking van borsvoeding weens hindernisse of die HIV status van die moeder. PA versorgers was meer geneig om op te tree in

die geval van 'n gebrek aan voedsel of finansies of 'n swak eetlus. Hierdie optrede was normaalweg in die vorm van gesondheidsoekende gedrag of 'n finansiële strategie.

Huishoudelike/ Gemeenskapsvlak: PAs het beter lewensomstandighede en hoër sosio-ekonomiese tellings gehad. PA versorgers het meer gereelde ondersteuning genoem. Aangesien dit gedoen was met warmte en waardering, was die persepsie van werklik ondersteunende huishoudings geskep. NAs het uitdrukking gegee aan die isolasie en onstabiele in ondersteuningstruktuur wat hulle ervaar. Die gewoonte om maaltye as 'n gesin te eet en te deel was algemeen in PA huishoudings.

Bespreking: Die multifaktoriale en komplekse aard van vertraagde groei word beklemtoon deur die gebrek aan beter IYCF-praktyke onder PAs. Daar moet gekyk word na die vermoë van aanwysers wat gebruik word om IYCF vas te vang in die konteks van vertraagde groei en die effek van ander risikofaktore, soos die voorkoms van prematuriteit in die bevolking, op voedingstatus. Aanpassende en beklemtoonde PA praktyke was, ten spyte van die resultate, geïdentifiseer. Die beklemtoonde gedrag wat by PAs geïdentifiseer was sluit in: meer gereelde insluiting van proteïene, minder gereelde insluiting van onaanbevole vloeistowwe en voedsel en die gesondheidsoekende gedrag van versorgers. Aanpassende strategieë van PAs sluit in: die insluiting van die vleis self, responsiewe voedingspraktyke, gesinsetes en finansiële strategieë van versorgers as 'n hanterings meganisme. Weens die gebrek aan herhaalbaarheid was die teenwoordigheid van sosiale kapitaal onder PA versorgers geag 'waar maar nutteloos.' Gesondheidsorgwerkers se voorsiening van verouderde PMTCT (voorkoming van moeder tot kind oordrag) van MIV riglyne, swak ondersteuning vir borsvoeding en gebrekkige komplementêre voeding (CF) 2 riglyne, selfs in die geval van gesondheidsoekende gedrag, maak die noodsaaklikheid vir verdere opleiding van gesondheidsorgwerkers op die gebied van IYCF duidelik.

Gevolgtrekking: Die swak voedingspraktyke wat hierdie studie geopenbaar het, beklemtoon die behoefte aan voortgesette voorspraak en bevordering van borsvoeding en komplementêre voeding in Suid-Afrika. Die teenwoordigheid van risikofaktore in die studie en die PA gedrag wat nie met voedingswaarde verband hou nie, beklemtoon die behoefte aan 'n reaksie vanuit verskeie sektore – om daardie risikofaktore wat buite die domein van gesondheidsorgwerkers en die gesondheidssektor val aan te spreek om sodoende vertraagde groei aan te spreek en IYCF praktyke te verbeter.

Deur identifisering van hierdie risikofaktore kon versorgers (in die studie populasie) wat 'n risiko is geïdentifiseer en ondersteun word. Dit is dus nodig om sleutel gesondheidsbevorderings boodskappe gebaseer op die geïdentifiseerde PA IYCF gedrag (soos RF praktyke en die beperking van onaanbevole voedsel), te ontwikkel. Hierdie boodskappe moet dan toegepas word in die gemeenskap waarin die navorsing gedoen is. Hierdie boodskappe is inherent aan die Suid-

Afrikaanse pediatriese voedselgebaseerde dieëtriglyne (PFBDG) wat aan die breër bevolking versprei kan word.

²Komplementêre voeding word gedefinieer as die oorgang van eksklusiewe borsvoeding na gesinskos oor 'n tydperk van 6-24 maande. Dit kom voor as gevolg van borsmelk wat alleenlik nie meer voldoende is om aan die voedingsbehoefte van die groeiende kind te voldoen nie.

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List of abbreviations

BF: Breastfeeding

CF: Complementary feeding

DOH: Department of Health

EBF: Exclusive breastfeeding

HAZ: Height-for-age Z-Score

HCW: Health care worker

HIV: Human immunodeficiency virus

HREC: Health Research Ethics Committee

IYCF: Infant and young child feeding

KZN: KwaZulu-Natal

LAZ: Length-for-age Z-score

LBW: Low birth weight

LMIC: Low and middle income countries

MAD: Minimum accepted diet

MDD: Minimum dietary diversity

MMF: Minimum meal frequency

ND: Negative deviant

NPD: Non-positive deviant

PD: Positive deviant

PDM: Positive deviant model

PFBDG: Paediatric food based dietary guidelines

PMTCT: Prevention of mother to child transmission

RF: Responsive feeding

SADHS: South African Demographic and Health Survey

SD: Standard deviation

WHZ: Weight-for-height Z-Score

WHO: World Health Organisation

Contributions

The primary researcher (Kerry Pilditch) developed the idea and the protocol. The primary researcher planned the study, conducted the data collection (with assistance from fieldworkers), captured the data for analysis, analysed and interpreted the data sets and drafted the thesis. Prof. Lisanne Du Plessis and Prof. Scott Drimie provided input at all stages of this process and revised the protocol and thesis.

Chapter 1: General introduction

1.1 Problem statement

The first 1000 days of a child's life, defined as the period from conception to two years, is a unique opportunity to impact the future health and prosperity of a child (1). Unfortunately, many children face adversities during this time, negatively impacting on their growth and development (1,2).

Stunting is defined as a length/height-for-age Z-score that is below two standard deviations (SD) of the child growth standard median and is now recognised as the preferred indicator of healthy growth during childhood (1). Stunting carries consequences such as increased mortality, poor neurological development, reduced economic potential in adulthood and in the economic productivity of countries (1,3–5). Addressing stunting has therefore been identified as a global and national priority (5). Despite political commitment, economic growth and social change in South Africa, stunting rates have remained persistent over the last 40 years (6) and currently 27% of children under five in South Africa are stunted (7). By not successfully addressing persistent stunting, yet another generation will grow up with compromised physical capabilities and impaired cognitive development; another generation unable to meet their income potential which negatively influences the economic productivity of the country. The *Lancet Series on Maternal and Child Undernutrition* (2013) is a landmark series of publications compiled by a variety of experts in order to highlight the critical role of early nutrition and the need for global mobilisation in this area (5,8). These publications identified strategies that need to be scaled up in order to reduce stunting; with complementary feeding (CF) being one of these strategies identified (9). In South Africa, poor CF practices are common (10) and the promotion of CF practices often occurs in food insecure settings, which can negatively impact CF practices (11,12).

A complex set of risk factors, on a child, maternal, household and community level, contribute to stunting. However, there are children who are thriving in the midst of these stressors, showing resilience, and who are able to achieve optimal nutrition. These children can be seen as 'positive deviants' (PDs) — individuals who thrive within a disadvantaged environment when equally at-risk neighbours do not. A PD approach seeks to identify characteristics present among these children and their caregivers that allow them to thrive. It seeks to learn from adaptive feeding behaviours, to explore growth-promoting behaviours and to provide contextual insight into innovative strategies that enable PDs to 'prosper' within high-risk settings. This model sees the identification of PD behaviour as a possible enabler of change despite the presence of underlying risk factors of health that are not quickly or easily modifiable (13–15).

The positive deviant model (PDM) has been used to identify which infant and young child feeding (IYCF) practices were practiced by PDs and which IYCF practices are associated with a reduction in stunting (16,17). This has, however, there is limited research available providing insight into what enables these PD caregivers to practice optimal IYCF behaviours (16,17). Similarly, little is known about the barriers that prevent non-positive deviant (NPD) caregivers from exhibiting these behaviours. Insight is required that moves beyond describing feeding patterns and explores how PD caregivers function within their environments in order to achieve optimal nutritional statuses of their children.

1.2 Thesis outline

This thesis consists of six chapters. Chapter one provides a general overview of the thesis. Chapter two consists of a literature review, including the multifactorial causes and consequences of stunting, and evaluates interventions that address stunting, including those within a South African context. This review gives an explanation of a positive deviant research approach, its value and usage, and the motivation for this research project.

Chapter three is a description of the research methodology including aims and objectives, a description of the study design and population, explanation of data collection tools and process, and ethical considerations. Chapter four contains the results of data collection, chapter five provides a discussion of the findings in the context of existing literature. Chapter six reflects on conclusions and recommendations.

Chapter 2: Literature review

The first 1000 days, defined as the period from conception to two years, is a unique opportunity to impact the future health and prosperity of a child. For children under five, undernutrition causes 45% of child deaths (2). Mortality is considered merely the tip of the iceberg when the impact on growth and development and the link to non-communicable diseases later in life are considered (5,18). Previously, weight was used as a primary indicator of childhood nutritional status. Stunting, defined as a length/height-for-age Z-score that is below two SDs of the child growth standard median, is now recognised as the preferred indicator of healthy growth; offering a more stable index of long term malnutrition in early childhood (19).

2.1 Determinants of stunting

The WHO developed a conceptual framework (Figure 1) on childhood stunting. This framework identifies stunting as a complex problem with maternal and family factors, nutrition and recurrent infections identified as causes within the context of various community and societal factors (1). These determinants of stunting can be evaluated by assessing each at a different level, including that of the child, mother, household and community (20–23). The following sections will provide detail of each of these levels.

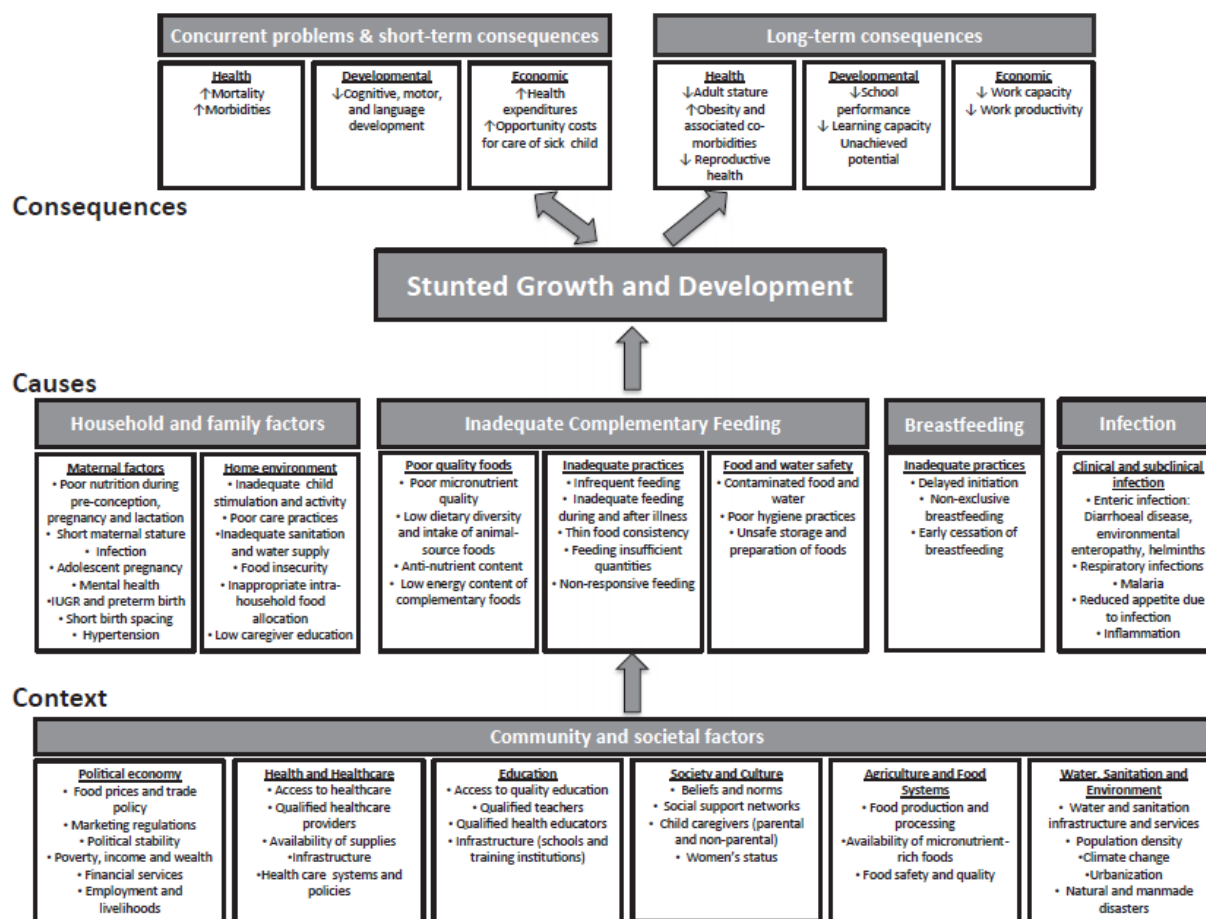


Figure 1: World Health Organisation conceptual framework on stunting (1)

2.1.1 Child level
Recurring infection is a significant contributor to stunting with a 25% increase in the risk of stunting attributed to five

or more episodes of diarrhoea (24). Environmental enteropathy, which results in abnormal structure and functioning of the gut, is proposed to account for a 43% variability in linear growth for children during the first 15 months of life (25).

Optimal IYCF is defined as: the early initiation of breastfeeding, exclusive breastfeeding (EBF) for six months, continued breastfeeding to the age of two years and beyond. Continued breastfeeding should be accompanied with safe, age appropriate foods (26). Both appropriate BF and CF practices are essential components of IYCF and child health. Stunted growth can be linked to a shorter period of BF (1). Optimal CF practices are essential to address stunting as the initiation of CF corresponds with the period (6-24 months) where sensitivity to stunting is high (1,20). CF practices consist of multiple behaviours including the timing of introduction of foods, quality of foods (dietary diversity and micronutrient content), and feeding and hygiene practices (1). Dietary diversity, meal frequency and minimal acceptable diet are essential aspects of CF as highlighted by the WHO (20,27). Significant reductions in stunting have been associated with improved dietary diversity (28). Children who did not meet minimum meal frequency per day were 60% more likely to be stunted (20,29,30). Low intake of proteins, dairy products and fruits and vegetables have been associated with higher stunting rates (20,29).

An essential component of appropriate CF practices is responsive feeding (RF). This is defined as “reciprocity between the child and caregivers” and includes: requests given by the child through various cues, such as facial expressions or motor actions; the caregivers recognising and responding to these cues; the child experiencing a predictable response to these cues; and the creation of a structured routine with clear expectations and emotional interaction (31,32). Non-responsive feeding is characterised as indulgent (the child is in control of feeding), uninvolved (the child is ignored by the caregiver during feeding) or controlling/ restricting (the caregivers dominates the feeding situation). Non-responsive feeding has been associated with the development of feeding problems (32). Caregivers in low-income countries and those of low birth weight (LBW) infants have been found to display more controlling feeding styles, which may influence the acceptance of foods in these high-risk populations (32). Controlling feeding practices have been associated with a lower body mass index. Including RF education in CF interventions improved the quality of diets and reduced stunting rates in comparison to interventions that included only BF and CF messages (31). This has also been found to improve the child’s acceptance of foods (33).

The impact of the nutrition transition² is becoming more prominent in low- to middle-income countries (LMIC) with, among others, trends of increased intake of salty and sugary snack foods and sugar sweetened beverages . District Health Survey data from nine African countries indicated that more than 20% of children aged 6-23 months had consumed a sugary snack the previous day (34) and 74.1% of these children had consumed a form of commercial snack food the previous day (34). A study conducted in Nepal reported 67% of participants had consumed a commercial snack the previous day (35). More worrying still, was that the consumption of sugary snacks was more common than nutrient-dense foods such as Vitamin A rich fruits or fortified infant cereals (34). Consumption of commercial snack foods was more common in wealthier households (36% of households) but still present in 3% of the poorest households (34). Local

² The nutrition transition is characterised by a shift in dietary patterns from a diet that is high in fibre, fruits and vegetables and low in fat, accompanied by a labour intensive lifestyle, to a diet that is high in total fat, cholesterol, sugar and refined carbohydrates. This is accompanied by an increase in sedentary lifestyles and results in an increase in the prevalence of obesity and non-communicable diseases. (134)

vendors in low-income communities reported that 68% all sales of food for children were 'junk' food (36).

2.1.2 Maternal level

Maternal short stature is not only a consequence but also a cause of stunting, with children born to stunted mothers having a higher risk of being stunted (24). One-fifth of all childhood stunting is estimated to be attributed to poor fetal growth and children who are born preterm or small for gestational age, are 2.5 times more likely to be stunted (20).

Improved maternal education has been linked to a reduction in stunting rates (21,24). Improvements in maternal education from 1971 to 1995 have been proposed to have resulted in a 43% reduction in child undernutrition in developing countries (37).

2.1.3 Household and community level

Children from households within the poorest quintile of society have a 2.47 times higher chance of being stunted compared to those from households in the richest quintile (24). The 2016 South African Demographic and Health Survey (SADHS) found that children in the lowest wealth quintile were twice as likely to be stunted compared to those in the highest quintile. However, even in the highest wealth quintile, 13% of children under age five were stunted (38).

Purchasing behaviours of households are dynamic and based on contextual decisions. Dimensions such as how food is fed, who feeds the child and cultural beliefs, knowledge and perceptions of families play a role in influencing feeding practices. The primary caregivers' beliefs regarding food and food preparation methods are influenced by other members of the household (1). Intra-household roles have been shown to impact the allocation of funds, with fathers and paternal grandmothers having more influence than the child's mother according to Aguayo et al. (20). For mothers who did not have purchasing power, their children were twice as likely to be stunted (39).

Evaluating purchasing behaviour provides insight into reasoning behind food choices. Convenience and the a child's preference are common reasons for the inclusion of commercial snack foods (35,40). Households appear willing to purchase locally available fortified foods but cited high cost and low convenience as barriers to their regular inclusion in diets. Money spent on purchasing junk food and commercial foods with low nutrient contents was identified as a "hidden resource" within households that could be redirected to more nutrient-dense complementary foods (40).

Higher stunting risk has also been associated with larger household size (16,41) and food insecurity. The socioeconomic status (SES) of households have been linked to stunting, although not consistently. One study conducted in Kenya found that stunting was significantly associated with SES but not food insecurity (42). When the same tool was used to assess food insecurity in Nepal it was found that 51% of children in severely food insecure households were stunted (43). This is supported by a study in Rwanda (using a different tool) that revealed that children from households with moderate food insecurity were 2.47 times more likely to be stunted (44).

An investigation into contaminated environments proposed an increase the risk of faecal-oral transmission and hygiene in these environments and have shown links to stunting prevalence. A study conducted to assess the impact of a contaminated household environment found that children in households with the highest contamination had a relative risk of stunting of 1.30 in comparison to those from households with the lowest risk. Classification of contamination was

based on a contaminated environment index that collected data related to access to water and sanitation, handwashing, presence of animals and yard cleanliness (22). Furthermore, clean households (with good water quality, access to sanitation and hygienic handwashing conditions) have been associated with improved height-for-age Z-scores (HAZ) (45) and access to sanitation is proposed to reduce the risk of stunting by 20% (31). However, recent evidence from studies evaluating the efficacy of WASH (water quality, sanitation and hygiene) interventions found that these interventions were unlikely to reduce stunting (46).

Other risk factors include living in an informal settlement such as a slum (22). According to the South African National Health and Nutrition Examination Survey (SANHNES) of 2012, South African children from urban informal areas had the highest incidence of stunting in comparison to children from urban formal, rural formal and informal areas (7). Children exposed to economic and environmental improvements in South Africa, Philippines and Brazil have had, on average, better heights than their mothers (3).

2.2 The consequences of stunting

The Black et al. (5) estimated that stunting alone is responsible for 17% of childhood deaths. A poor nutritional status increases the risk of infection which, in turn, reduces appetite and the usage of nutrients to mediate an immune response. In this way, a cyclic effect between re-occurring infection and poor nutritional status is established (18).

Poor linear growth poses short and long term risks and consequences, including peri and neonatal mortality and adult short stature (47), which increases the risk of obesity and metabolic syndrome (18) and a reduced earning capacity in later life (48). The first 1000 days of a child's life is a vital period for brain development. Chronic undernutrition during this period can contribute to poor neurological development (48). This, in turn, impacts higher cognitive function, the ability to complete schooling (36,47–49), and results in an estimated 20% reduction in earning capacity for adults who were stunted as children (40,50,51). HAZ at the age of two are considered the best predictor for human capital (24) and an estimated 1.4% of economic productivity is lost for every 1% loss in adult height (50). Addressing childhood malnutrition is therefore essential for economic growth and breaking the cycle of poverty (52).

2.3 Nutritional approach to address stunting

In order to address the multifaceted causes related to childhood malnutrition the *Lancet Series on Maternal and Child Nutrition* (2013) identified nutrition-sensitive and nutrition-specific programmes and approaches to this effect (53).

2.3.1 Nutrition specific interventions

Examples of nutrition-specific interventions include the promotion of BF and CF practices. The *Lancet series on Maternal and Childhood Nutrition* (2013) proposes the promotion of BF and appropriate CF as two of the ten interventions that should be scaled up to reduce stunting. However, the promotion of BF was found to impact infant survival rates but have little impact on stunting (9). In contrast, Stewart et al. (1) suggest that a shorter duration of BF can be linked to stunting. An explanation for these seemingly contrasting findings lies in the solid health foundation provided by EBF for the first six months of life.

Interventions to improve CF through education alone significantly improved HAZ and collectively improved stunting rates. For food insecure populations, the provision of complementary foods in combination with CF education impacted HAZ more significantly than education alone (54,55).

More significant results were found in projects that focused on messages emphasising the provision of animal-based proteins. Studies that provided only complementary foods produced mixed results (19). According to review by Bhutta et.al (9), the relative reduction in the prevalence of stunting, if coverage of feeding interventions (i.e. the promotion of CF and other supportive strategies) was at 99%, was calculated to be 19.8% at 12 months, 17.2% at 24 months, and 15% at 36 months.

2.3.2 Nutrition sensitive interventions

Nutrition sensitive interventions seek to address the underlying determinants of malnutrition and to serve as delivery platforms to improve coverage and the effectiveness of nutrition sensitive interventions, with the aim of addressing malnutrition in the long term (9,18). Social safety nets, an example of a nutrition sensitive intervention, are targeted at raising the income of vulnerable groups and are used as a means to ameliorate poverty and the financial burdens of households. These can be supplied in the form of cash transfers which are either conditional — the usage of funds is stipulated in order to increase household investment in health and nutrition of children — or unconditional where no such stipulation is present. Although shown to improve household food availability and dietary quality, there is little evidence reflecting the biological or clinical significance of these interventions (55). However, these interventions have been recommended by the *Lancet Series on Maternal and Child Nutrition* (2013) as a means to provide a safety net to protect households from food insecurity and reduced diet quality, while simultaneously citing the need for improvements in the quality and nutritional focus of such interventions (18).

Agricultural programmes that improve the production of food and are nutrition sensitive are required to impact nutrition. Women — their empowerment, their health and nutritional status — play a key role as a link between agricultural outputs and child nutrition. Although these programmes have value in supporting livelihoods and improving food security there is little evidence of the impact of these programmes on the improvement of a child's anthropometric status (18,56).

Similar risk factors are present for stunting and impaired cognitive development and it has been proposed that interventions that target both early child development and nutrition may have a synergistic effect on development. However, the evidence is inconclusive and there is little evidence on the effect on nutritional outcomes (18).

Disadvantaged households that exhibited optimal IYCF practices, against the odds, have been associated with lower stunting rates. Improved feeding behaviours were attributed to inherent behaviours exhibited by caregivers such as maternal information seeking behaviours, mothers acknowledging the value of maternal health and social support networks that allowed caregivers to deviate from expected poor CF practices (17,57). Optimal CF behaviours, such as longer BF frequency, introduction of CF at 6-8 months and thicker feed consistency, performed by 'deviant' caregivers in urban India, were associated with lower stunting rates of children in comparison to their neighbours (16). These households were able to deviate from expected poor nutritional outcomes despite their disadvantaged context. This phenomenon is referred to as "positive deviance" (58).

2.4 Positive deviant model

A PD is defined as an individual who thrives within a disadvantaged environment when equally at-risk neighbours do not. The term recognises the positive adaptability of individuals — whether social, behavioural or physiological — in response to nutritional stress (59).

The premise of the PDM is an asset-based approach, seeking to capitalise on the resilience of individuals who are thriving within a disadvantaged environment and identify what resources communities already have in order to leverage these to improve health (13). It recognises that malnutrition occurs within a complex environment, one where children are often exposed to poverty and inequality. While not negating the need to address these systemic issues, this approach recognises that solutions can be found within communities. It seeks to address malnutrition, without additional resources, by focusing on what individuals within communities are doing correctly as opposed to what they are doing wrong — the common approach of many top-down interventions (13,59). It aims to identify adaptive childcare and feeding behaviours of PDs, and the social networks that support these behaviours, in order to diffuse these practices among communities to create new subject norms (15) and influence policy and programmes (59).

This model seeks to offer an explanation for the presence of PDs and determine if the factors are behavioural, biological or environmental, and which of these factors are acquired by PDs and which are innately present. The PDM highlights the importance of understanding the context in which malnutrition occurs and how understanding this context aids in translating interventions into effective practice through the identification of nutrition strategies that are both feasible and acceptable (57). The integration of this model into nutritional interventions allows for alterations in programme implementations that have shown sustained positive outcomes (15).

One milestone success story was the adoption of a PD approach to address childhood malnutrition in Vietnam. When it was discovered that the disparities in wealth, income and resources were not the explanation behind the differences in nutritional status of children, caregivers of both well-nourished and malnourished children were observed to identify adaptive behaviours. Through these observations, it was revealed that unconventional foods offered to children (not traditionally included in diets), feeding behaviours (meal frequency and active management of child diets), and hygiene practices differed between the two groups. A hearth approach, where PD caregivers taught the caregivers of malnourished children, was adopted alongside community involvement (14,58). Of the children enrolled in the programme, 80% reached normal nutritional status and did not relapse. Younger siblings of those enrolled, not yet born during the time of intervention, were well-nourished. These results were not only sustainable, allowing for the creation of new social norms, but were also achieved without any additional resources added to communities (15).

Additionally, a PD approach has been used to identify the characteristics of participants and their environments and growth-promoting behaviours exhibited by PDs in the context of IYCF and stunting. Maternal characteristics, such as education, income, BF intention and higher self-efficacy of mothers have been associated with longer BF rates using a PDM (60). Optimal IYCF practices, such as EBF for six months, timely introduction of solids, CF with appropriate foods, active feeding and food consistency have been documented from PDs of non-stunted children in India (28,57). In one of these studies, maternal health seeking behaviours, value for maternal health and social support were also linked to non-stunted children (57).

The identification of PDs aims to identify appropriate, affordable, culturally acceptable, effective and sustainable behaviours that are currently practised by at-risk individuals (14). These practices may include 'emphasis' behaviours (such as EBF) or 'adaptive' behaviours (behaviours of households that make them unique) (13). However, why some caregivers follow these behaviours and others do not, even within the same context, is not well understood (16,17,57).

2.5 The South African context

The South African Government has expressed commitment to improving nutrition during the first 1000 days and improving IYCF practices through various policies. The *Roadmap for Nutrition* in South Africa for the period of 2013 – 2017 commits to tackling malnutrition during the first 1000 days (6). This policy and the IYCF policy (adopted in 2007) aim to address IYCF practices. The IYCF feeding policy was subsequently updated in 2012 and 2017 (61). The additions included health promotional CF messages and growth charts to assess HAZ scores in the *Road to Health Booklet* and the adoption of legislation regulating the marketing and distribution of breastmilk substitutes (56,57). There is, however, little focus or guidance in this policy regarding CF practices (61). Furthermore, there has been discussion on regulations pertaining to the marketing of commercially produced snack foods or sugary drinks to children, but it has not reached legal status yet (62,63).

Although the emphasis on feeding practices and the first 1000 days is present in these policies, strong commitment to addressing stunting, in particular, is missing. The 2012 National Development Plan Vision 2030 does not address stunting and limited attention is given to nutrition (64).

A further concern is that there is a lack of a multi-sectoral approach to stunting. However, this approach underpinned Brazil's success in significantly reducing stunting rates (65). Most policies regarding reducing the burden of stunting have their home in the Department of Health (DOH) and, although multi-sectoral collaboration is mentioned in policy, little evidence of this is seen (64).

Despite commitments made to childhood nutrition and improvements in the economic environment, stunting remains persistent in South Africa. South Africa is one of the countries that has higher than expected stunting rates for its income status (18). For children under five, the national stunting prevalence is 27% and severe stunting is 10%, with the highest prevalence of stunting between 18 and 23 months (42.6%). The rate of stunting in children aged 0-3 years is currently classified as medium prevalence (26.9% for boys and 25.9% for girls) (6,7).

Stunting prevalence in the Free State Province of South Africa, the setting in which this research was conducted, was reported as 19.4% for boys and 22% for girls, the highest figure in the country for girls according to the South African National Health and Nutrition Examination Survey (SANHANES) (2013). The overall prevalence of stunting in the Free State according to 2016 data was 33.5%. This was only second to Gauteng (34.2%), followed by KwaZulu-Natal (KZN) at 28.5% and the North West Province at 27.4% (38). For South Africa, stunting prevalence was the highest for girls within the urban informal demographic and this demographic presented the second highest stunting rate for boys (7).

Furthermore, poor CF practices persist. Continued BF rates are 47% among children aged 12-17 months and decreases to 19% for children aged 12-17 months (38). The early introduction of solid foods and liquids before the age of six months is common practice (66). A typical feeding pattern is one with the frequent inclusion of maize-based products, low nutrient density foods and low dietary diversity on account of the low intake of animal proteins, vegetables, fruits and omega 3 fatty acids (66). Only 23% of infants aged 6-23 months met the criteria for a minimum acceptable diet, according to SADHS (2016) (38). Further, adding to this problem is the inclusion of low nutrient-dense liquids, such as tea and coffee, and of high energy, sugary drinks and fruit juices and commercially produced snack foods high in fat, which displace nutrient-dense foods (62).

Due to concern regarding poor BF and CF practices, PFBDG have been developed (67). These guidelines support evidence-based BF and CF guidelines for aged 0-6 months, 6-12 months, 12-36 months and 3-5 years (62,67).

Due to the high prevalence of human immunodeficiency virus (HIV) in South Africa, guidelines for BF for the HIV positive mother are an important aspect of IYCF. Current guidelines (released in 2018) support six months of EBF with continued BF to the age of two years or beyond; the same BF guidelines that HIV negative mothers receive (68).

These guidelines differ from previous guidelines relating to infant feeding options for HIV positive mothers. The 2002 PMTCT (prevention of mother to child transmission) guidelines discouraged breastfeeding for HIV positive mothers due to the risk of transmission. IYCF guidelines developed in 2007 and PMTCT guidelines updated in 2010 recommend EBF for six months and continued breastfeeding until 12 months (61,69). The 2007 IYCF guidelines further dictated that if acceptable, feasible, affordable, sustainable and safe (AFASS) replacement feeding is available, the avoidance of breastfeeding is recommended. These guidelines discourage mixed feeding practices and provided free formula milk for six months for HIV positive caregivers who chose not to BF (61).

The adoption of these policies was based on guidelines developed by the WHO (70). The adoption of PMTCT guidelines which have been developed in one setting and implemented within other local settings has been criticized due to their lack consideration for local practice and cultural legitimacy and the narrow focus on HIV prevention at the expense of the established evidence of the role of BF on infant survival (71). Additionally, such guidelines do not adequately take into account the restraints of poverty and its influence on replacement feeding options (71). This has been seen in a South African context where a study by West et al. reported that mothers discontinued BF at six months due to PMTCT guidelines provided but then were unable to afford replacement feeding options (72).

In 2011 the Tshwane declaration was adopted in South Africa in support of BF -- declaring that the provision of free FM for HIV positive mothers should be phased out and the legislation of the International Code of Marketing of Breast-milk Substitutes (73). In response to this declaration the IYCF policy was updated in 2013 to encourage continued BF until 12 months and the provision of FM only due to medical reasons prohibiting breastfeed (74). Although encouraging that current guidelines are supportive of breastfeeding, frequently changing guidelines and the legacy of previous guidelines has led to inconsistent and outdated messages provided to mothers living with HIV and resulted in poor BF practices (72,75).

Stunting and CF practices in South Africa occur within a context of a high percentage of food-insecure households (26%), those at risk of hunger (28.3%) and a large portion of the population receiving no income (32.5%). Almost a fifth of urban informal residents and 27% of females reported social safety nets such as pensions, grants and unemployment insurance funds (UIF) as a sole source of income (31). The South African Child Support Grant is an example of an unconditional grant provided as a strategy to improve child health outcomes. However, an impact assessment of this grant found that the duration of child support grant receipt had no effect on stunting (6).

2.6 Motivation and impact

Addressing stunting has been identified as a global and national priority. The World Health Assembly has called for a reduction of 40% in the rate of stunting in children under five years by 2025 (76). However, the current global rate of stunting reduction would only translate to 25% by 2025, with Africa faring poorly in comparison to other regions (5,77). Despite political commitment, economic growth and social change present in South Africa, stunting rates have remained persistent over the last 40 years (6), and currently 27% of children under five are stunted (7). In order to meet the requirement, as prescribed by the WHO, South Africa would need to see a reduction in stunting to 14.2% (76) from the current 27% (38). Concerted action is needed if progress is to be seen.

Addressing IYCF practices has been identified as one of the strategies to be scaled up in order to address childhood malnutrition (50). Delivery strategies are crucial in order to ensure adequate coverage of these services, particularly to populations in need (18). In South Africa, poor CF practices are common (10) and the promotion of CF practices has not received adequate attention in relation to the protection, support and promotion of BF practices (66). Furthermore, the promotion of CF practices often occurs in food insecure settings, which can negatively impact CF practices (11,12).

A PD approach is proposed as a means of providing insight into how caregivers are succeeding in raising well-nourished children within the context of high stunting rates, resource-poor settings and poor IYCF practices present in South Africa. It seeks to identify characteristics and behaviours of these PD caregivers, moving beyond simply describing feeding patterns but attempting to gain insight into how and why caregivers make certain choices and how they function within their environments in order to achieve an optimal nutritional status' for their children. This strategy could aid in providing more specific and targeted health promotion and behaviour change messages, in order to improve CF practices. This falls in line with recommendations to make use of qualitative methods and behavioural analysis to develop context specific key messages to address CF practices (54,78). Lutter et al. (78) proposed this strategy as one of the key principles to improve CF interventions, particularly in overburdened health care systems. Furthermore, behaviour change messages that do not take barriers into consideration may have limited ability to affect change (1). The usage of the PD model aims to provide contextual insight that will translate into effective practice that can be adopted by at-risk communities and individuals to prevent stunting.

Stunting prevalence in the Free State is high, with the highest prevalence of stunting for girls in the country (7). In South Africa, the highest incidence of stunting is highest in urban informal areas (7). Understanding the context of stunting within urban informal areas in the Free State, such as an informal settlement in Harrismith, is therefore an important component of addressing stunting in the South African context.

Chapter 3: Research methodology

3.1 Study aims and objectives

3.1.1 Research question

What strategies are present among PD caregivers of non-stunted children that influence CF practices and allow them to function within individual, household and community-level factors to succeed in raising well-nourished children?

3.1.2. Aim

To identify how PD caregivers, compared to NPD caregivers, function within individual, household and community-level factors that influence CF practices.

3.1.3 Objectives

1. To describe infant feeding practices of stunted and non-stunted children.
2. Explore factors pertaining to attitudes, self-efficacy and intent among caregivers that are associated with recommended CF practices.
3. To explore household and community factors that influence CF practices.
4. To explore the utilisation and motivation for the inclusion of foods not recommended in IYCF guidelines.
5. To identify adaptive and emphasis growth-promoting behaviours utilised by PD caregivers.

3.2 Study design

The study followed a mixed-method design using a PD approach. Quantitative data were gathered through researcher-administered questionnaires to describe the study population and IYCF practices. Qualitative data were collected using semi-structured interviews.

The traditional PDM includes three stages- a behaviour influence analysis, intervention and scaling up. The initial behavioural analysis stage of the PDM traditional includes analysis through both observation and interviews with caregivers. Once these behaviours have been identified in the initial stage these practices are transferred, typically through the usage of 'hearths', and then scaled up once these behaviours have proved to impact the nutritional status of children. (15).

This research was intended to be explorative in nature and therefore diverted from traditional PDM in that it did not contain intervention or scaling up stages. Although diverting from the traditional PDM approach, this study did follow methodology used in PD research by Kananai et al. and Alimonte et al in India to identify possible PD behaviours amongst stunted and malnourished children (16,57) through the omission of the intervention stages of the PDM and through conducting the initial analysis stage using interviews only (and not through interviews and observations).

3.3 Study population

3.3.1 Setting demographics

The research was conducted in Harrismith, within the Maluti-a-Phofung municipality of the Thabo Mofutsanyana District Municipality. Intabazwe (population 4661) and 42nd Hill (population 16703) are two informal settlements that are located on the perimeter of Harrismith town. Intabazwe and 42nd Hill are low income, informal settlements within the Maluti-a-Phofung Ward. These two

informal settlements lie adjacent to each other and are serviced by one medical clinic. Research was conducted at this clinic (GPS: 28.252956,29.09786).

Fifty-one percent of the population of the Free State lives in poverty with 30% relying on grants. Income inequality, as measured by the Gini coefficient, has deteriorated since 1995 (16). This is relevant in the context of stunting as stunting can be seen as a measure of economic equality (24). Unemployment in Thabo Mofutsanyane is the second highest in the province at 31.5%. Only 38% of the district have access to appropriate sanitation (79).

Within the greater Thabo Mofutsanyane area, only a quarter of the population has obtained a Matric/ Grade 12 education with 22% receiving no schooling (79). Stunting is an important consideration in cognitive ability and school performance (24,77).

Within the Thabo Mofutsanyana District Municipality, Maluti-a-Phofung is characterised by high unemployment levels (41.8%) and poor household environments. Only one-third of households have flush toilets and piped water within their dwellings (79). A quarter of households have weekly waste removal. These characteristics are associated with a higher risk of stunting within the population (22).

Maluti-a-Phofung Local Municipality had the second-highest stunting rates in comparison to other local municipalities in the Thabo Mofutsanyane District, according to raw Integrated Management of Childhood Illness (IMIC) data provided by an Assistant manager of Nutrition for the Thabo Mofutsanyana Department of Health and Nutrition (80).

Several of the demographics listed above place this region at a high risk of stunting and so the population was deemed appropriate for the scope of the research.

Initially, the study population was to be obtained in Phuthaditjhaba, which falls within Maluti-a-Phofung region, with the assistance from the Nutrition directorate. Caregivers identified by South African Social Security Agency (SASSA) as at-risk for malnutrition and referred to the Nutrition Directorate were to be screened. However, a low response rate from caregivers and logistical difficulties with the Nutrition Directorate resulted in the study setting transferring to the informal settlements, Intabazwe and 42nd Hill, in the Harrismith area. Both of these areas fall within the Maluti-a-Phofung Local Municipality. An amendment request was submitted to Health Research Ethics Committee (HREC) of Stellenbosch University to effect this change (S17/10/196) (Addendum 1).

3.3.2. Sampling technique

The Intabazwe Clinic was *purposively sampled* as the site of the study due to the demographic characteristics of the population (generally low socioeconomic status), close proximity to the primary researcher, access to study population, the primary researcher's familiarity with the study setting and high stunting rates in the broader population.

Thereafter, *purposive sampling* of caregivers was conducted. Caregivers who attended the clinics for child health visits were screened and selected according to selection criteria (Table 1) and classified as a PD, NPD or negative deviant (ND) (see Section 3.3.4). Of these caregivers a further sample was *purposively selected* for qualitative interviews. Caregivers who had similar socioeconomic scores, according to quantitative data collection, were selected and asked to participate in interviews. This method of sampling for qualitative interviews according to socioeconomic status was used in a PD study in Mumbai (57).

Sampling was a combination of maximum variation sampling in order to obtain PDs and NPDs, and homogeneous sampling, to ensure that patterns and experiences within a group were obtained.

3.3.3. Selection criteria

3.3.3.1 Quantitative interviews

Screening of caregivers occurred according to the specific screening criteria (Table 1). These criteria were used to draft the screening form (Addendum 2). The usage of strict selection criteria of PD and NPDs aimed to ensure validity of results i.e. that PD caregivers identified were truly PD within their community.

Table 1: Selection criteria for screening of the study population

Level	Inclusion criteria	Exclusion criteria
Child	Child aged 6-18 months	Child aged below 6 months and above 18 months
Caregiver	The primary caregiver of the child	The caregiver who are not involved in purchasing food/decision making/preparing around food or feeding for the households Caregivers who do not consent to participation
Household	Households with an income of less than R10 009/annum (R835/month) excluding grants	Households with a total income of higher than R10 009 per annum (R895/month) excluding grants Households with only 1 child

Rationale for screening criteria

The WHO's conceptual framework recognises that the determinants of stunting occur at individual, maternal, household and community level (1). Screening children within the same community attempts to account for community-level determinants. Individual and household-level determinants are addressed below.

Age of child

A PD study conducted in urban India identified children between the ages of 6-11 months as less likely to be PDs in comparison to those of 12-18 months (16). In a South African context children between 18-23 months have the highest proportion of stunting (7).

The decision to exclude children aged 19-23 months was an ethical one. Children of the age of 18 months still have the opportunity to receive interventions to address stunting. However, according to available evidence, this window period for intervention is largely closed at the age of 24 months (5,77). In order for children to be appropriately referred and still have the opportunity to benefit from interventions that address stunting at a primary health care level, the cut-off age was selected at 18 months for this study.

Caregiver

Questions included in the IYCF practices questionnaire and qualitative interviews required caregivers to be familiar with the child's feeding practices and able to answer questions regarding

purchasing behaviours or food preparation. Therefore, caregivers not involved with purchasing of foods or feeding were excluded.

Households

Income brackets comprised of the lowest two wealth quintiles as defined by StatsSA (81). The decision to exclude income from grants as part of household income was made in consultation with study leaders and the Nutrition Directorate offices. Practical experience of the Nutrition Directorate offices indicated that many disadvantaged households would be excluded from participation due the high number of household members receiving grants; many of them more than one grant per household and therefore pushing them out of this income bracket.

Larger household size has been shown to be associated with an increased risk of stunting (30). Alimonte et al. (56) excluded households where participants did not have siblings in order to account for household size. Families larger than five have been associated with a NPD status (82). In South Africa it is common that multiple children who are not siblings live within the same household and so any child under five (not necessarily siblings) was included as a criterion.

During data collection, certain children were identified as stunted (see criteria in Section 3.3.4) and yet did not meet the above screening criteria. Such children were considered a ND (i.e. they are in a household that has a lower risk for stunting and yet are still stunted) and therefore selection criteria were amended in order to allow for the inclusion of these children in the study. This was done with the aim of identifying possible characteristics that may have contributed to the child being stunted even within a household at a lower risk of stunting. An amendment request was submitted to HREC to effect this change (S17/10/196) (Addendum 1).

3.3.3.2 Qualitative Interviews

The original protocol stated that all caregivers eligible for the quantitative study according to selection criteria would be deemed eligible for qualitative interviews. After initial data capturing and interviews with caregivers it became apparent that, despite screening criteria, differences in socioeconomic status were still present in the study population. It was noted during the first two interviews with caregivers that these differences in socioeconomic status impacted on the content of the discussions. Therefore, in consultation with study leaders, caregivers with similar socioeconomic status scores (as obtained from demographic questionnaires) were then contacted for qualitative interviews.

Caregivers who were eligible for inclusion in the initial qualitative study population but did not form part of the total qualitative study population were those who declined to participate in interviews or could not be contacted again telephonically after the initial qualitative interview conducted at the clinic.

3.3.4 Classification of positive deviants, non-positive deviations and negative deviants

The following definitions were applied from the literature:

Positive deviant: Children who met the screening criteria and with a HAZ and WHZ score above 0 SD (16,57) i.e. well-nourished children who belong to a poor household. (17,83)

Non-positive deviant: Children who met the screening criteria and with a HAZ <-2SD i.e. a malnourished child from a poor household in the same neighborhood as a PD child. (17,83)

Negative deviants: Children who did not meet the screening criteria and with a HAZ <-2SD i.e. a malnourished child of a non-poor household. (17,83)

WHO Growth Standards (Addendum 3) were used to classify anthropometric measurements. A classification form (Addendum 4) was used as a tool to assist in classification. According to the original protocol a WHZ < -2 SD was required for the classification of an NPD. However, during data collection, when WHZ were used to classify NPDs, it excluded children who are both underweight (low WHZ) and stunted (low HAZ) as in this instance WHZ appeared normal. Classification of NPD was therefore changed to include only HAZ as a means of classification of NPD. An amendment request was submitted to HREC to effect this change (S17/10/196) (Addendum 1).

3.3.5. Sample Size

A total of 121 caregiver-child pairs were screened for participation. Of the screened pairs, 29 were deemed eligible for participation. Quantitative questionnaires were used to gather data from these pairs. From these pairs 12 caregivers were selected to participate in qualitative interviews. Both quantitative questionnaires were not completed for one caregiver and an IYCF questionnaire for an additional caregiver due to caregivers leaving the clinic before interviews could be completed. These caregivers were unable to be contacted telephonically after the initial interviews. Table 2 below indicates a further breakdown of the study population. Although screening criteria for NPDs and NDs were different, they were classified together as NPDs for data capturing.

Table 2: Breakdown of the study population for quantitative and qualitative data collection

Classification	Quantitative population	Qualitative population
Positive deviant (PD) (Met screening criteria and classified as non-stunted)	12	6
Non-positive deviant (NPD) (Met screening criteria and classified as stunted)	10	4
Negative deviant (ND) (Did not meet screening criteria but classified as stunted)	6	2
Total	28	12

3.4 Data collection tools

Data collection consisted of three components: a demographic questionnaire, IYCF questionnaire and qualitative interviews. These components were used to describe the causal pathway to a desired health outcome, namely risk factors, behaviours and enablers (13,17). Risk factors are underlying determinants that are not easily modifiable. These were assessed by the demographic survey in the first section. The second section was a review of IYCF behaviours. Behaviours can be defined as evidence-based practices that have been shown to improve health and survival (13).

It must be noted that quantitative data collected by these tools was obtained to primarily provide a description of the study population, in terms of stunting risk factors and IYCF behaviour. This provided a baseline for qualitative data capturing. The purpose was thus not to obtain a statistically significant sample size, and as a result, inferential statistical analysis was not performed on the quantitative data.

Thirdly, determinants of behaviour were assessed using a semi-structured interview that sought to explore subjective norms, self-efficacy, attitude enablers and barriers to behaviours.

3.4.1 Sociodemographic information

The tool that was used to gather basic demographic information and information regarding other risk factors for stunting on a child, maternal and household level, was adapted from a demographic survey (see Addendum 5 for survey tool used in this study) (84). The usage of this pre-established tool previously used within the context of childhood malnutrition aimed to ensure validity of data. Caregivers information gathered included: maternal age, marital status and maternal birth spacing. Data collection pertaining to the child included gender, age, gestational age, birth weight, number of hospital admissions and the child's HIV status (Table 3). Caregivers could choose not to disclose the HIV status of the child. Demographic information included household income, employment rank, type of dwelling, household size, household assets and the number of children under five years of age in the household (Table 3). Data collected were used to rank socioeconomic status scores of households according to a ranking provided by the tool (see Addendum 6).

Table 3: Sociodemographic information collected during quantitative data collection.

Child *	Maternal	Household
Birth weight	Age	Income (combined household) [^]
Birth age	Employment [^]	Main source of income
Sex	Marital status	Father's employment status
Age	Education [^]	Employment rank [^]
Number of hospital admissions	Birth spacing	Type of dwelling [^]
HIV exposure (Caregiver could choose not to disclose)		Number of people sleeping in the same room [^]
		Household assets [^]
		Household size [^]
*The Road to Health Booklet was used to obtain this information. If not available, caregivers were asked to provide this information.		
[^] Information used to determine socioeconomic ranking using this information.		

Due to the high prevalence of LBW children in the stunted population, it was attempted to obtain an additional variable —maternal height— from the qualitative population (after initial interviews). However, due to the poor response from caregivers these values were not obtainable.

3.4.2 Infant and young child feeding practices

The tool for determining IYCF practises of caregivers was adapted from the WHO IYCF Indicators questionnaire (see Addendum 7 for the form used in this study) (85). The usage of a pre-established tool to measure IYCF practices aimed to ensure validity of the data. Only sections relevant to CF practices were included. Amendments were made to the original data collection

tool in the sections relating to liquid intake and solid intake. For the intake of liquids: *Motoho* (culturally common thin porridge made with maize meal) and sugar sweetened beverages were included. For the food frequency section, an additional category of crisps was included and foods made with palm oil and red palm nut oil (Q12 Q) were excluded due to lack of cultural relevance.

Indicator values, as provided by the WHO IYCF tool (85), were used to assess CF information collected by the questionnaire (Addendum 7). These values included:

- Continued BF above one year (if appropriate)
- Child ever breastfed
- Minimum dietary diversity (MDD)
 - Defined by the WHO as consuming a minimum of four of the seven food groups the previous day
- Minimum meal frequency (MMF)
 - Defined as a child consuming solid, semi-solid or soft foods the minimum number of times or more (according to age) the previous day
- Minimum acceptable diet (MAD)
 - Classified as breastfed children who obtained MDD and MMF the previous day or non-breastfed children who obtained MDD, MMF and a minimum of two milk feeds the previous day
- Consumption of iron-rich or iron-fortified foods
 - Defined as the consumption of an iron-rich or iron-fortified food the previous day.

3.4.3 Qualitative data tool

A semi-structured interview was used to gain further insight into feeding behaviours that were not captured by the WHO IYCF tool, as well as various other components that related to behaviour (namely attitude, subjective norms and self-efficacy), and barriers and enablers to intended behaviours.

There are various theories on behaviour change and decision making, however, there are common threads which run through these theories. These include aspects such as attitude, subjective norms, self-efficacy and intent (86). Attitude describe beliefs regarding the potential positive or negative consequences associated with a behaviour. Attitude has two components: cognitive (knowledge or information of the individual); and affective (feelings or emotions as to what is important) (86,87).

Self-efficacy is an individual's belief in their own capacity to execute a behaviour even if difficulties or barriers are present. Past experience of success or failure, vicarious experience, persuasion and emotional arousal are factors which can influence feelings of self-efficacy (87).

The concept of subjective norms encompasses the idea that individuals are affected by significant others and the motivation individuals have to comply with the expectation of others (86).

Both the theory of reasoned action and planned behaviour make a distinction between behaviour and intent. This important distinction determines whether an individual's failure to perform a behaviour is due to them not forming an intent or the fact that they are unable to follow through with their intent due to barriers. Factors such as subjective norms, attitude and self-efficacy influence intention for behaviour (86).

Data collection aimed to allow for the exploration of these components of behaviour change (Figure 2), based on a model developed by Barbosa et al. (88). An interview guide (Addendum 8) expands on these themes and questions used to explore attitude, subjective norms and self-efficacy, and barriers and enablers to intended behaviour. Questions regarding mealtimes and schedules, hunger and satiety cues, sources of information and advice, child's preference, and monthly income and spending formed some of the questions included. Further questions regarding BF, the introduction of solids and liquids, and current dietary intake provided further information on IYCF practices.

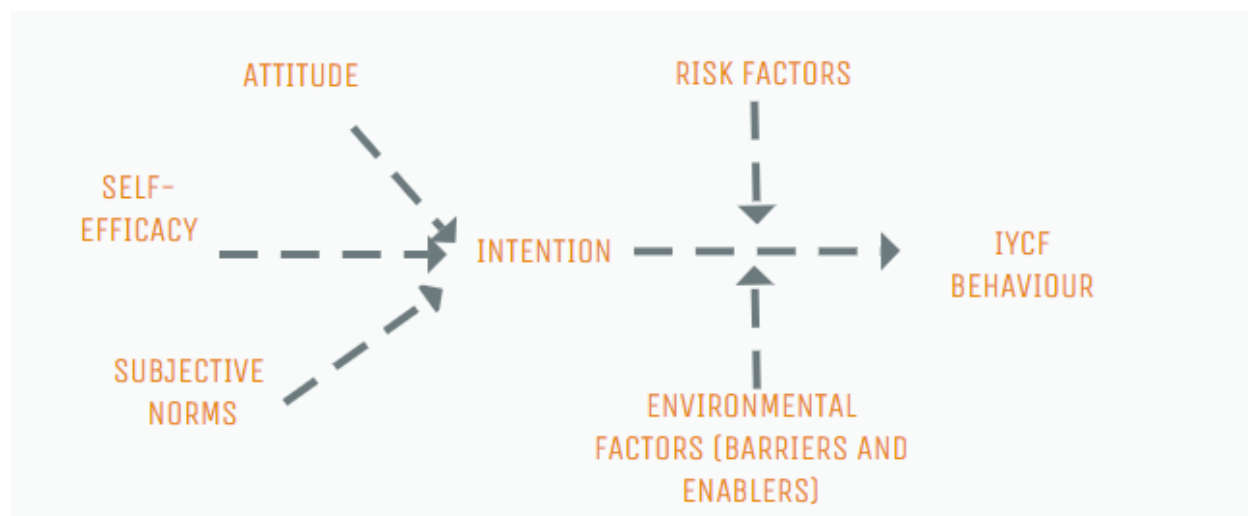


Figure 2: Components of behaviour change based on a model developed by Barbosa et al. (76).

3.5 Data collection

3.5.1 Ethical considerations

Ethical approval to conduct research was obtained from the HREC of Stellenbosch University (Addendum 1) and from the DOH from the recruitment of participants at the clinic (Addendum 10). Amendments made to setting, screening and classification criteria were first submitted to and approved by HREC before data collection procedures continued. Ethical principles specified by the Declaration of Helsinki, namely voluntary participation, informed consent and the right to withdraw (89), were all upheld and explained to caregivers when signed consent was obtained. All data collected were kept confidential and the only information disclosed was the child's stunting status. This information was disclosed, with consent from the participant, to the relevant personnel at the health care facility in order to provide treatment and support to the child. This disclosure of information was communicated to the caregiver prior to consenting to participate and is included in the consent form. Permission to record interviews was obtained in writing as a part of the informed consent forms. Additionally, oral permission to record the interview was obtained prior to each interview.

Although not active participants in the research, height and weight measurements still needed to be obtained from children whose caregivers met inclusion criteria. Consent was obtained from each caregiver before measurements were taken. Although assent is an essential part of childcare ethics it was not relevant in this situation as the children were too young to participate in the process of giving assent (90). However, no child was forced under distress into a position

to perform measurements. The primary researcher made sure that the children were calm, handled mostly by the caregiver or in close proximity of the caregiver to minimise crying/distress.

Disclosure of HIV status of the child was voluntary and not a condition of participation in the rest of the study. Caregivers were informed that they had the right to choose to not disclose their child's status.

Once data collection was concluded, participants identified as stunted (from both the quantitative and qualitative populations) were referred to the clinic. The details were provided to the pediatric nurse at the clinic in order to identify and support children on their next visit to the clinic. Caregivers who were able to be contacted and who attended a second interview were provided with the South African PFDBG in their language of choice (isiZulu or seSotho) and given a referral date for the district dietitian (Addendum 9).

Caregivers did not receive any monetary compensation for their participation. All caregivers who were screened (regardless of if they met criteria or not) were provided with a small gift and participants who participated in qualitative interviews received an age-appropriate educational toy. These interviews were conducted in a Community Work Programme building opposite to the clinic where screening occurred, making the venue easily accessible to caregivers resulting in very few caregivers incurring transport costs. Compensation for transport costs was provided for caregivers who needed transport to the clinic.

3.5.2 Training and standardisation of fieldworkers

Initially, one SeSotho speaking fieldworker (primary fieldworker) and DOH staff from the Nutrition Directorate were trained to work within Phuthaditjhaba. When the study setting was changed, DOH workers were no longer able to assist with data collection and an additional isiZulu speaking fieldworker was trained due to the change in language demographics of the population.

Initial and refresher training was performed by the primary researcher. Initial training occurred in July 2018 in Phuthaditjhaba with the primary fieldworker and DOH staff. After the change in the study setting, training was conducted with two fieldworkers in January 2019 in Harrismith. This served as a refresher session for the primary fieldworker. The primary fieldworker was responsible for most of the quantitative data collection.

The training was conducted by the primary researcher. Both sessions of training included training on screening, classification, informed consent procedures and quantitative questionnaires. Emphasis was placed on ethical aspects of research (i.e. obtaining informed consent and confidentiality). Methods for obtaining height and weight were demonstrated by the primary researcher (a qualified dietitian) during both training sessions, however, during data collection, weights and heights were conducted by the primary researcher with the assistance from fieldworkers if necessary. The classification of PDs and NPDs was discussed during training, but classification during data capturing was conducted by the primary researcher.

Difficulty in retaining fieldworkers (due to external circumstances) was experienced throughout the data collection process, particularly with retaining fieldworkers for qualitative interviews. Three fieldworkers assisted with interviews. Fieldworkers were trained, during informal training sessions, to familiarise them with content, asking open-ended questions and regarding ethical issues.

All transcribed interviews were reviewed by the primary researcher in order to assess for discrepancies between the two translations (i.e. translations during interviews and those during

transcriptions). When discrepancies were present the section was reviewed with the fieldworker in order to clarify meaning. Initially, an attempt was made to have one fieldworker assist with translations during the interviews and an additional fieldworker to translate and transcribe interviews, in order to standardise translations. This was not possible with all interviews due to the unavailability of fieldworkers. Where this was not possible, sections of the interviews were reviewed with the primary researcher and fieldworker present. This process was followed to aid in maintaining reliability of results.

3.6 Pilot study

The pilot study was conducted on two independent days in August 2018. The study populations on both occasions were conveniently sampled. The Thabo Mofutsanyane Nutrition Directorate, with permission from the DOH (Addendum 10), provided a list of caregivers with children at risk of malnutrition who are currently receiving food parcels from the South African Social Security Agency.

The initial pilot was conducted by a trained DOH worker, who tested screening, classification, informed consent and quantitative data collection questionnaire forms. Following this step, minor changes to correct the format of forms and structure of questions were made, such as the correction of grammatical errors.

The second day of the pilot study was conducted with the primary researcher and primary fieldworker. Screening and classification was conducted with five caregivers. One caregiver was identified as eligible and quantitative questionnaires were conducted. No changes were required on the forms. Weight and height measurement procedures were standardised.

3.7 Data collection process

3.7.1 *Informed consent*

Initial informed consent for the screening and classification process was obtained (Addenda 11-13). If a caregiver was found to be eligible, a second informed consent was obtained to conduct quantitative questionnaires and qualitative interview (Addenda 14-16). All informed consent forms were available in English, isiZulu and seSotho.

3.7.2 *Screening and classification*

Caregivers who attended the clinic for a routine child health visit were screened by the primary researcher, primary fieldworker and one additional fieldworker. Caregivers were screened according to Addendum 2. All participants had weight and height taken by the primary researcher. These values were plotted on gender-appropriate WHO growth standards (Addendum 3) and participants were classified according to anthropometric criteria as explained in Section 3.3.4.

Caregivers who met selection criteria and anthropometric criteria were classified as PD or NPD as per weight and height measurements. Caregivers who did not meet selection criteria but whose children were classified as stunted were included as ND.

3.7.1.1 Weight measurements

Weight measurements were conducted by the primary researcher. Weight was measured using a paediatric scale calibrated daily to ensure reliability of results. Children were weighed with minimal clothing and without a nappy. Children were not weighed naked due to research being conducted in the winter and to reduce the distress for the child. Measurements were taken twice and if there was a difference in measurements an average of the two measurements were used (for reliability). Weight was recorded to the nearest 0.1kg.

3.7.1.2 Height measurements

An infant length board was used to conduct the height measurement. The measurement was taken with the child in the recumbent (lying down) position. The board was placed on a flat surface and the child placed onto the board with the crown of their head placed against the headboard. The caregiver held the head against the headboard; the child's body and pelvis were straight. The primary researcher straightened their legs, held their feet and moved the footboard to a position against the child's feet. The child's heels were to be flat against the footboard. This measurement was taken by the primary researcher to the nearest 0.1cm. This measurement was repeated and an average of the two measurements obtained to ensure validity.

3.7.2 Quantitative collection

Demographic (Addendum 5) and IYCF questionnaires (Addendum 3) were administered during the clinic visit by either the primary researcher or fieldworkers. If the primary caregiver was the mother, maternal information was obtained using the Road to Health Booklet when available.

Researchers had difficulty obtaining birth weights and gestational ages of participants. Road to Health Booklets were held by the clinic administrators during the clinic visit and so researchers were not always able to obtain the information. Attempts were made to access the information during the clinic visits. Further attempts were made to telephonically contact caregivers whose information was not collected at the clinic but several caregivers could not be contacted.

3.7.3 Qualitative data collection

Interviews were conducted from March to June 2019 at a Community Work Programme building opposite to the clinic. Interviews were an average of 40 minutes each. The primary researcher and one fieldworker (to assist with translation) were present. Interviews were audio-recorded with permission. After interviews had been conducted, caregivers received an educational toy to thank them for their participation. Any children who were identified as stunted were referred to the clinic sister. Clinic visits were arranged for caregivers who were able to be contacted for a second interview. All interviews were conducted by the primary researcher to ensure validity of results.

3.7.5 Recording participant information

Participants' personal details were kept confidential and did not appear on any of the data collection forms. Once initial informed consent was obtained, each caregiver was assigned a caregiver number. This caregiver number appeared on all data forms for the duration of the data collection process. A participant information form (Addendum 17) was the only form used to capture each caregivers' name and cellphone number in order to protect confidentiality.

3.8 Data analysis

3.8.1 Demographic data

Demographic data were captured in Microsoft Excel. All entries were checked by the primary researcher. A small sample size (n=28) did not allow for in-depth data analysis beyond obtaining frequency tables.

3.8.2 Infant and young child feeding practices

Data collected from IYCF questionnaires were inputted into Microsoft Excel. All entries were checked by the primary researcher. Indicator values, as provided by the WHO IYCF tool (85), and detailed in Section 3.4.2, were used to assess CF information collected by this questionnaire. Along with these indicators, intake of proteins, Vitamin A rich foods and foods not recommended

in IYCF guidelines (namely tea, coffee, sugary drinks and high-sugar, high-fat salty snacks) were analysed.

Data regarding IYCF practices collected during interviews were analysed according to standards adapted from the South African PFBDG (67), and WHO guidelines regarding CF of the breastfed child (91). Certain guidelines, such as the amount of food and the volume of liquid intake, were not assessed due to the qualitative nature of the interview. The following aspects were assessed:

- Length of exclusive breastfeeding
- Length of continued breastfeeding
- Length of exclusive formula feeding
- Length of continued formula feeding
- Age of introduction of other liquids (not breastmilk or formula milk)
- Age of introduction of solids
- Weekly inclusion of the following:
 - Meat, poultry, fish or eggs
 - Milk and other dairy products
 - Legumes
 - Vitamin A rich food
 - Dark green leafy vegetables
 - Tea
 - Sugar sweetened beverages and fruit juices
 - High-sugar, high-fat salty snacks

3.8.3 Qualitative interviews

Content analysis was performed to analyse data from qualitative interviews, using an inductive approach (92) i.e. data were analysed to find patterns within the research and then possible explanations for these patterns were sought. Atlas Ti software was used to assist in this process.

Interviews were read by the primary researcher to create a list of preliminary codes. Preliminary codes were then defined and condensed or expanded and interviews reread in order to ensure consistency of usage. This process was repeated twice to ensure reliability. Once the primary researcher was satisfied with the consistency of code usage, a list of final codes was created (see Addendum 18 for a list of codes and definitions used). Themes were developed using two strategies. One strategy consisted of grouping codes together and combining these codes to form part of an over-arching theme e.g. the theme 'responsive feeding' was developed from the codes feeding practice, hunger cue, meal schedule, non-responsive feeding, satiety, responsive feeding and appetite. Other themes developed using this strategy include: source of knowledge and support (table 4). Alternatively, an existing code was used as the theme and then through the process of analysing co-occurring codes the theme was developed. The theme of child's preference is an example of this strategy. The co-occurrence of the code 'child's preference' and other codes including: inclusion of foods, restriction of food, caregiver ascribes values and purchasing behaviour were analysed to develop this theme. Other themes developed in this manner include: caregiver belief and attitude, action vs passivity and family eating (see table 5). For every theme a comparison between PD and NPD groups assisted in data analysis.

Table 4: List of themes developing using grouping of codes

Theme	Responsive feeding	Source of knowledge	Support
Codes used to develop theme	Appetite	Community advice	Care practices
	Consistency	Family Advice	Family support
	Feeding practice	HCW guidelines	Financial support
	Hunger cue	Labelling and marketing	Food provision
	Meal schedule		Generational knowledge
	Non-responsive feeding		Unsupportive family environment
	Portion size		Vicarious experience
	Age		Stability
	Satiety cue		Instability

Table 5: List of themes developing using the analysis of a pre-existing code and the co-occurrence of codes

Pre-existing code	Child's Preference	Caregiver ascribes value	Caregiver action and apathy	Family eating
Co-occurring codes	Inclusion of foods	Breastmilk	Appetite	Inclusion of foods
	Restriction of foods	Baby food	Barrier-self perceived	Restriction of foods
	Introduction of new foods	Formula milk	Barrier to breastfeeding	Introduction of new foods
	Caregiver action	Negative connotation to food	Finance perceived as a barrier	Purchasing behaviour
	Purchasing behaviour	Physical response to food	Financial strategy	Baby food
		Positive outcome linked to food	Employment	Labelling and marketing
		Satiety	Growth	Separate foods
		Strength	Health seeking behaviour	
			Health care worker	
			Intent	
			Lack of priority re child	
			Child priority	
			No caregiver response	
			Self-efficacy	
			Unemployment	
		Weight		
		Worry and concern		

3.9 Reliability and Validity

The usage of strict selection criteria of PDs and NPDs for quantitative data collection and the usage of socioeconomic status to select participants for qualitative interviews aimed to ensure validity i.e. that PD caregivers identified were truly PD within their community.

The usage of pre-established tools to collect demographic and IYCF data aimed to ensure validity of the data collected.

Training and standardisation of fieldworkers, the calibration of the paediatric scale and usage of the average of two weight and height measurements aimed to ensure reliability of results. The presence of the primary researcher during all stages of the research and for all qualitative interviews further adds to the credibility of the study by allowing for prolonged engagement. Constant reflection by the researcher and a clear description of data capturing steps aimed to reduce researcher bias.

Chapter 4: Results

The results below are presented in five main sections. The first section provides a brief description of the sample population. Following this are the results pertaining to demographic indicators. Section three is a combination of qualitative and quantitative data collected concerning IYCF practices. The intention of quantitative data reported in Section two and three is to provide a description of the study population, in terms of risk factors for stunting, and not to obtain statistical significance (Section 3.4 has reference). Section four is a presentation of the themes discovered from the analysis of qualitative data. These themes are outlined on three levels: child, caregiver and family/ community environment (see Addendum 19 for a full list of caregiver quotations). The last section serves as a summary of PD and NPD behaviours.

4.1 Sample population

A total of 121 caregiver-children pairs were screened for eligibility. Data on age and gender and anthropometric measurements were recorded for 105 of these children. The remaining 16 did not have data collected on account of being excluded from the study according to original criteria and protocol (prior to amendment-- see Section 3.3.4 for reference).

When considering anthropometric classifications (Table 6), 14% (n=17) of children in the sample population were stunted, 5.8% (n=7) were wasted (WHZ <-2SD), and 3% (n=5) overweight or obese (WHZ > +2SD).

The average age was 10.7 months with six months being the most commonly sampled age (n=21). Thirty-nine percent (n=41) of children were 6-8 months, 30% (n=32) 9-12 months, 14% (n=15) between the ages of 13-15 months, and 16% (n=17) were aged 16-18 months. Fifty-two percent were male (n=55) and 46% female (n=48). Two children did not have gender recorded on the classification form.

Table 6: Anthropometric classifications of the sample population in terms of two types of Z-scores (SD = Standard Deviation)

Z-Score	Frequency distribution of children					
	≤-3SD	≤-2SD	<0SD	≥0SD	≥+2SD	≥+3SD
Height-for-age Z-score	3	14	49	36	1	1
Weight-for-height Z-score	3	4	45	42	3	2

4.2 Demographic indicators

This section relates to information collected from demographic questionnaires administered (Section 3.4.1 and Addendum 5). A total of 12 PD caregivers and 16 NPD caregivers were interviewed.

4.2.1 Maternal and caregiver characteristics

Mothers of NPD children tended to be younger in comparison to mothers of PD children (Table 7) with mean ages of 28 and 38 years respectively. Most primary caregivers were also the mother of the child and so results for the age of primary caregivers were similar.

There was little difference in marital status but PD caregivers were more likely to be living with a partner (Table 7). Almost 60% of PD caregivers (n=7) were living with a husband or boyfriend compared to the 12.5% (n=2) of NPD caregivers. NPD caregivers were more likely to be living with their mothers (n=7), siblings (n=7) or alone with their children or grandchildren (n=4).

Fifty-seven percent (n=16) of all caregivers reported completing school between Grades eight to eleven (Table 7). Mothers in the PD group were more likely to have completed Grade twelve (33%, n=4) or received a tertiary education (17%, n=2). No caregivers in the NPD group had received tertiary education and only one had completed Grade twelve.

Table 7: Maternal and caregiver characteristics of the study population

Category	Non-positive deviant		Positive deviant		Total	
	n	%	n	%	n	%
Mother's date of birth						
After 2000	0	0.0	0	0.0	0	0.0
1993-1999	4	25.0	2	16.7	6	21.4
1988-1992	4	25.0	0	0.0	4	14.3
1983-1987	4	25.0	4	33.3	8	28.6
1978-1982	2	12.5	4	33.3	6	21.4
1974-1977	1	6.3	1	8.3	2	7.1
<1974	0	0.0	0	0.0	0	0.0
Do not know	1	6.3	1	8.3	1	3.6
Mother's age (years)						
<18	0	0.0	0	0.0	0	0.0
19-25	4	25.0	2	16.7	6	21.4
26-30	3	18.8	0	0.0	3	10.7
31-35	4	25.0	3	25.0	7	25.0
36-40	3	18.8	5	41.7	8	28.6
41-45	1	6.3	1	8.3	2	7.1
>45	1	6.3	0	0.0	1	3.6
Deceased	0	0.0	0	0.0	0	0.0
Do not know	0	0.0	1	8.3	1	3.6

Age of primary caregiver (years)						
<18	0	0.0	0	0.0	0	0.0
19-25	4	25.0	2	16.7	6	21.4
26-35	7	43.8	4	33.3	11	39.3
36-45	3	18.8	5	41.7	8	28.6
46-55	1	6.3	0	0.0	1	3.6
56-65	1	6.3	0	0.0	1	3.6
>65	0	0.0	1	8.3	1	3.6
Marital status						
Unmarried	14	87.5	8	66.7	22	78.6
Legally married	1	6.3	2	16.7	3	10.7
Traditionally married	1	6.3	1	8.3	2	7.1
Separated	0	0.0	0	0.0	0	0.0
Divorced	0	0.0	0	0.0	0	0.0
Widowed	0	0.0	0	0.0	0	0.0
Living together	0	0.0	0	0.0	0	0.0
Other	0	0.0	1	8.3	1	3.6
Caregiver currently living with						
Husband	2	12.5	4	33.3	6	21.4
Boyfriend	0	0.0	3	25.0	3	10.7
Mother	7	43.8	1	8.3	8	28.6
Siblings	7	43.8	3	25.0	10	35.7
Other family member	1	6.3	3	25.0	4	14.3
Friend	0	0.0	0	0.0	0	0.0
Other	3	18.8	2	16.7	5	17.9
Children/ grandchildren only	4	25.0	1	8.3	5	17.9
Maternal education						
No grades	0	0.0	0	0.0	0	0.0
Grade 1-6	3	18.8	0	0.0	3	10.7
Grade 7	1	6.3	1	8.3	2	7.1
Grade 8-11	11	68.8	5	41.7	16	57.1
Grade 12	1	6.3	4	33.3	5	17.9
Tertiary	0	0.0	2	16.7	2	7.1

4.2.2 Maternal birth spacing

Seventy percent (n=19) of all mothers had previous children: 75% (n=12) of NPD mothers and 58% (n=19) of PD mothers (Table 8). Of the mothers who had had previous children, the most common number of previous children were two (n=7) and three (n=6). Mothers of NPD children most commonly reported a spacing of more than 60 months (31%, n=5) between sequential children in comparison to the 33% (n=4) of PD mothers who most commonly reported a space of 49 to 60 months (n=7) (Table 8).

Table 8: Number of previous children and maternal birth spacing of the study population

Category	Non-positive deviant		Positive deviant		Total	
	n	%	n	%	n	%
Previous child						
No	3	18.8	5	41.7	8	28.6
Yes	12	75.0	7	58.3	19	67.9
Do not know	1	6.3	0	0.0	1	3.6
Number of previous children						
1	3	18.8	1	8.3	4	14.3
2	4	25.0	3	25.0	7	25.0
3	4	25.0	2	16.7	6	21.4
4	1	6.3	0	0.0	1	3.6
5	0	0.0	1	8.3	1	3.6
6 or more	0	0.0	0	0.0	0	0.0
Do not know	1	6.3	0	0.0	1	3.6
NA	3	18.8	5	41.7	8	28.6
Birth spacing (months)						
<12	0	0.0	0	0.0	0	0.0
12 to 24	3	18.8	1	8.3	4	14.3
25-35	1	6.3	0	0.0	1	3.6
37-38	0	0.0	0	0.0	0	0.0
49-60	3	18.8	4	33.3	7	25.0
>60	5	31.3	2	16.7	7	25.0
Do not know	1	6.3	0	0.0	1	3.6
NA	3	18.8	5	41.7	8	28.6

4.2.3 Income and employment

Annual income was evenly spread among income brackets with 21% (n=6) of caregivers receiving R5,553 or less per annum, 29% (n=8) receiving between R5,554 and R10,009, 21% (n=6) falling in the next income bracket of between R10,009 and R18,544 per annum and 23% (n=7) receiving between R12,454 and R44,948 (Table 9). Only one caregiver, who fell in the NPD group, received more than R44,948 annually.

The main source of income was child support grants; 56% (n=9) for the NPD group and 58% (n=7) for the PD group (Table 9). Following this, income from another grant, such as an old-age

pension, was reported as the most common source of income in both groups. Unemployment among primary caregivers was high with 93% of the total sample (n=26) reported as unemployed.

Half (n=8) of all NPD fathers did not contribute the care of the child (e.g. financial contribution or assistance with the purchasing of items such as nappies) compared to 17% (n=2) of PD fathers. Of fathers who were involved with the care of children (a total of 18), 67% (n=12) were unemployed. NPD fathers were more likely to be employed: 50% (n=4) of NPD fathers compared to 20% (n=2) of PD fathers (Table 9).

Table 9: Income and employment of primary caregivers and fathers

Category	Non-positive deviant		Positive deviant		Total	
	n	%	n	%	n	%
Annual household income (R)						
<5553	3	18.8	3	25.0	6	21.4
5554-10009	4	25.0	4	33.3	8	28.6
10010-18544	3	18.8	3	25.0	6	21.4
185454-44948	5	31.3	2	16.7	7	25.0
>44949	1	6.3	0	0.0	1	3.6
Primary source of income						
Own salary	2	12.5	1	8.3	3	10.7
Income from father	0	0.0	1	8.3	1	3.6
Child grant	9	56.3	7	58.3	16	57.1
Other grant	4	25.0	2	16.7	6	21.4
Family contribution	1	6.3	1	8.3	2	7.1
Other	0	0.0	0	0.0	0	0.0
Employment levels of primary caregivers						
Yes	1	6.3	1	8.3	2	7.1
No	15	93.8	11	91.7	26	92.9
Employment levels of fathers						
Yes	4	25.0	2	16.7	6	21.4
No	4	25.0	8	66.7	12	42.9
NA	8	50.0	2	16.7	10	35.7

4.2.4 Living conditions

PD children tended to have better living conditions. Fifty-eight per cent (n=7) of PD children lived in freestanding houses and had toilets and running water inside the home (Table 10). In comparison with their NPD counterparts where 50% (n=8) lived in an informal dwelling and only 44% (n=7) had access to running water inside the home and 38% (n=6) had access to an inside toilet. Access to electricity was similar in both groups. Household assets recorded were: tap water and flush toilet inside the home, electricity, cellphone, television, computer and a car. Sixty-three per cent (n=10) of NPD households had three household assets or fewer; compared to 25% (n=3) of PD households. In comparison, more than half of PD households (n=8) who had five or more household assets (Table 10).

Fifty per cent of both NPD (n=8) and PD households (n=6) were sleeping with three or fewer people in the same room at night however, 25% of NPD (n=4) had more than five people (Table 10). There were no PD households with more than five people in the same room and only 2 (17%) with five people in one room.

Table 10: Household characteristics of the study population

Category	Non-positive deviant		Positive deviant		Total	
	N	%	n	%	n	%
Total number of household assets						
1	7	43.8	3	25.0	10	35.7
2	2	12.5	0	0.0	2	7.1
3	1	6.3	0	0.0	1	3.6
4	2	12.5	2	16.7	4	14.3
5	3	18.8	6	50.0	9	32.1
6	1	6.3	0	0.0	1	3.6
7	0	0.0	1	8.3	1	3.6
Access to tap inside the home						
Yes	7	43.8	7	58.3	14	50.0
No	9	56.3	5	41.7	14	50.0
Access to flush toilet inside the home						
Yes	6	37.5	7	58.3	13	46.4
No	10	62.5	5	41.7	15	53.6
Access to electricity						
Yes	10	62.5	9	75.0	19	67.9
No	6	37.5	3	25.0	9	32.1
Type of dwelling						
Shack	8	50.0	4	33.3	12	42.9
Wendy house	0	0.0	1	8.3	1	3.6
Tent/ traditional dwelling	1	6.3	0	0.0	1	3.6
Flat/ apartment	0	0.0	0	0.0	0	0.0
Town house	0	0.0	0	0.0	0	0.0
Freestanding	7	43.8	7	58.3	14	50.0
Other	0	0.0		0.0	0	0.0
Number of people living in the same room						
1	0	0.0	1	8.3	1	3.6
2	3	18.8	2	16.7	5	17.9
3	5	31.3	3	25.0	8	28.6
4	2	12.5	4	33.3	6	21.4
5	2	12.5	2	16.7	4	14.3
>5	4	25.0	0	0.0	4	14.3

4.2.5 Socioeconomic status scores

The average socioeconomic status score, as obtained from the demographic data (see Section 3.4.1 and Addendum 5), for the sample population was 19. Mean socioeconomic status scores of PDs were slightly higher, at 21, in comparison to 18 seen in the NPD group. As seen in Figure 4, half of NPDs (n=8) had a socioeconomic status score of 15 or less and only 19% (n=3) above 25. In comparison, only two PDs (17%) had a SES of less than 15, 60% (n=7) of 21 or above and 17% (n=2) above 25.

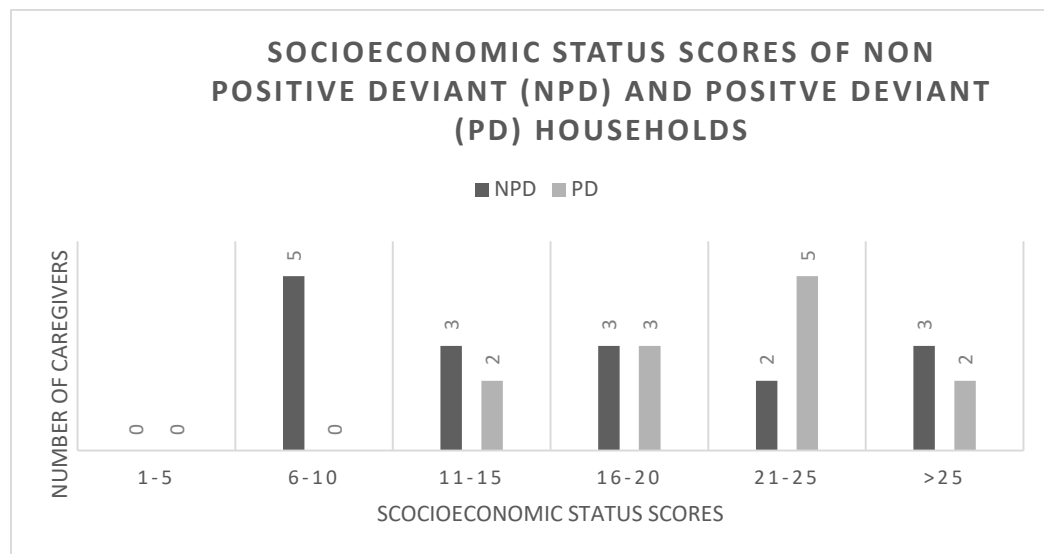


Figure 3: Socioeconomic scores of non-positive deviant and positive deviant households

4.2.6 Child characteristics

The ages of NPD children were more spread out across age groups in comparison to PDs. For both groups, the age group of 6-8 months was the most common age group however, nearly 60% (n=7) of PDs fell in this age category in comparison to the 31% (n=5) in the NPD group (Table 11). The average age for NPDs was 11 months and 10 months for PDs.

Seventy-five per cent (n=12) of NPDs were male compared to the 42% (n=5) in the PD group.

NPDs were more likely to be premature and LBW. None of the participants were born prior to 28 weeks however, six NPD participants (38%) were premature (gestational age 36 weeks or less). Fifty per cent (n=8) of NPD were LBW; most of these children (n=5) born between 2 and 2.499kgs. No PD children were reported to be premature or LBW (Table 11) It must be noted that for both groups this information was not always obtainable.

PD children had fewer hospital admissions —75% (n=9) had never been admitted to hospital compared to 56% (n=9) of NPDs. Of NPD children who had been admitted, most were only admitted once. No children were reported as being HIV positive.

Sixty per cent (n=17) of the study population did not live with other children under the age of five in the household.

Table 11: Characteristics of non-positive deviant and positive deviant children

	Non-positive deviants		Positive deviants		Total	
	n	%	n	%	n	%
Current age of child (months)						
6 to 8	5	31.3	7	58.3	12	42.9
9 to 12	4	25.0	2	16.7	6	21.4
13 to 15	4	25.0	0	0.0	4	14.3
16 to 18	3	18.8	3	25.0	6	21.4
Gender of child						
Boy	12	75.0	5	41.7	17	60.7
Girl	4	25.0	7	58.3	11	39.3
Birth weight (kg)						
<1.5	1	6.3	0	0.0	1	3.6
1.5-1.9	2	12.5	0	0.0	2	7.1
2.0-2.49	5	31.3	0	0.0	5	17.9
2.5-2.9	2	12.5	1	8.3	3	10.7
3.0-3.4	0	0.0	5	41.7	5	17.9
3.5-3.9	2	12.5	2	16.7	4	14.3
4.0-4.5	0	0.0	2	16.7	2	7.1
Do not know	4	25.0	2	16.7	6	21.4
Gestational age (weeks)						
<28	0	0.0	0	0.0	0	0.0
28-31	1	6.3	0	0.0	1	3.6
32-36	5	31.3	0	0.0	5	17.9
37-40	4	25.0	7	58.3	11	39.3
>40	0	0.0	1	8.3	1	3.6
Do not know	6	37.5	4	33.3	10	35.7
Number of hospital admissions since birth						
1	4	25.0	2	16.7	6	21.4
2	1	6.3	1	8.3	2	7.1
3	0	0.0	0	0.0	0	0.0
4	1	6.3	0	0.0	1	3.6
5	0	0.0	0	0.0	0	0.0
>5	1	6.3	0	0.0	1	3.6
Never	9	56.3	9	75.0	18	64.3
Other children under five in the household						
1	2	12.5	5	41.7	7	25.0
2	1	6.3	1	8.3	2	7.1
3	2	12.5	0	0.0	2	7.1
4	0	0.0	0	0.0	0	0.0

5	0	0.0	0	0.0	0	0.0
>5	0	0.0	0	0.0	0	0.0
None	11	68.8	6	50.0	17	60.7
Child's HIV status						
Yes	0	0.0	0	0.0	0	0.0
No	12	75.0	11	91.7	23	82.1
Chose not to disclose	1	6.3	0	0.0	1	3.6
Do not know	3	18.8	1	8.3	4	14.3

4.3 Infant and young child feeding practices

This section contains a combination of data collected from the IYCF questionnaire and qualitative interviews. A total of 12 PD and 15 NPD caregivers completed IYCF questionnaires.

The results below include BF and formula feeding practices, the introduction of solids, feeding indicators, the inclusion of foods groups and RF practices. Where applicable caregiver attitude was explored.

IYCF practices were evaluated against ideal practices as indicated by the South African PFBDG and WHO indicators (MMF, MAD and MMD) (62,85). Practices recommended by these guidelines include EBF for six months and continued BF until two years and beyond, with the introduction of solids at six months. Additionally, the inclusion of proteins daily, or as often as possible, and the daily provision of dark green leafy vegetables, orange coloured fruits and vegetables and dairy products (for infants above 12 months) is recommended. Avoidance of low nutrient dense foods such as tea and sugary drinks and high-sugar, high-fat salty snacks is advised. RF practices are encouraged (62).

4.3.1 Breastfeeding and formula feeding practices

BF practices as reported by IYCF questionnaire indicated that BF practices were similar among PDs and NPDs. (Table 12). Eight-five per cent of the sample population (n=23) reported having ever breastfed with only 44% (n=12) reporting to still be breastfed. Only four children, all of which were NPD, reported to be breastfed above the age of one year.

Table 12: Breastfeeding practices of the quantitative study population as reported by infant and young child feeding questionnaire

	Non-positive deviants		Positive deviants		Total	
	n	%	n	%	n	%
Ever breastfed						
Yes	13	86.67	10	83.33	23	85.19
No	1	6.67	2	16.67	3	11.11
Do not know	1	6.67		0.00	1	3.70
Current breastfeeding						
Yes	7	46.67	5	41.67	12	44.44
No	8	53.33	7	58.33	15	55.56
Continued breastfeeding						
Total children aged 12-18 months	8	53.33	5	41.67	13	48.14
Children aged 12-18 months still breastfeeding	4	NA	0	0	4	14.81

Qualitative interviews revealed low exclusive and continued BF rates combined with the early introduction of solids and liquids (Table 13).

Table 13: Breastfeeding and formula feeding practices and introduction of solids and liquids of the qualitative study population

	Current age	Length of total breastfeeding (months)	Length exclusive breastfeeding (months)	Formula milk inclusion (months)	Age of introduction of solids (months)	First food	Age of introduction of liquids (months)	First liquid
PD	6	6	4	Never	6	Pumpkin	4	Tea/ Water
NPD	6	1	0	1-current	3	Infant foods	0	Water
PD	6	1	1	1-current	3	Do not know	6	Tea
PD	6	3	3	3-current	6	Infant foods	3	Water
NPD	6	Never	NA	Birth-current	4	Infant foods	3	Water
NPD	8	5	0	5	5	Infant foods/ <i>Mot oho</i>	Birth	Water
NPD	10	6	Do not know	7-current	6	Infant foods/ soft porridge	<6	Tea
NPD	14	6	Do not know	Never	6	Do not know	Do not know	Do not know
PD	12	Do not know	Do not know	5-current	5	Infant foods	Do not know	Do not know
NPD	16	8/10	4	Never	4	Maize meal, sour milk, vegetables	4	Tea and water
PD	18	NA	NA	Birth-16	6	Infant foods	6	Tea
PD	18	6	0	Birth-12	6	Infant foods	Do not know	Do not know

Caregivers ascribing value to breastmilk and BF was not a prominent theme during interviews with only one NPD caregiver expressing explicit value for breastmilk stating:

“he [the child] going be healthy,” and “I was feeling good about it because it’s very, very, very healthy.” (Interview 0176, Pilditch, 07/06/19)

This caregiver was the only caregiver who reported to continue BF to eight months, however, did introduce tea, water and solids from four months due to concerns about the child’s weight.

Another NPD caregiver, although expressing value for BF, did not regard it as superior to formula milk and therefore relayed that formula milk was chosen to feed the child due to the mother going back to work. The father indicated:

“I think it’s ‘cause the breastmilk is the one the child can grow well, the strong bones. But the formula is the same one.” (Interview 0173, Pilditch, 24/06/19)

Barriers to initiating BF were employment, school attendance and “wounds” on the breasts. caregiver illness, a lack of milk production and the perception that breastmilk does not satisfy and should be replaced by food or formula milk to satisfy the child were themes as to the discontinuation of BF before six months. As one caregiver expressed in regards to her illness:

“So it [breastfeeding] took all my meat. I was a bit skinny and she was eating a lot. She was draining. She was taking food from me.” (Interview 0301, Pilditch, 11/03/19)

The underlying perception that formula milk is superior to breastmilk and provided more satiety was commonly expressed by the caregivers:

“I’ve been breastfeeding her for one month. Then I stopped breastfeeding ‘cause I see that she’s eating a lot then I use the formula milk.” (Interview 0046, Pilditch, 06/06/19)

“Because family said only breastmilk can be stopped but the formula milk is still ok.” (Interview 0011, Pilditch, 11/03/19)

Caregivers also expressed the perception that solids should replace breastmilk indicating:

“He just eat[s] many times so I didn’t see the need of, of giving him the [breast] milk.” (Interview 0143, Pilditch, 08/04/19)

Caregivers addressed barriers to feeding in different ways. Barriers present by schooling or work resulted in one PD caregiver deciding to mix feed (formula and breastmilk) from birth; another PD caregiver gave breastmilk for the three months she was home and then switched to exclusive formula feeding once returning to work; while a NPD caregiver fed exclusively with formula milk from birth and never breastfed. In general, PD caregivers were more likely to formula feed either as a replacement feed when encountering a barrier or accompanying BF.

As mentioned above, poor continued BF rates were present in the qualitative study population with only one NPD caregiver reporting continued BF beyond six months (Table 13). For those caregivers who were still BF at six months, advice from health care workers (HCW) was the most prevalent reason for discontinuing BF. HIV positive mothers were informed that they should discontinue BF at six months, as per the previous version of the IYCF policy (2007) (61).

Reported intake of formula milk (Table 14) was higher amongst PDs with 42% (n=5) reported giving formula milk the previous day in comparison to 33% of NPDs (n=5) according to IYCF questionnaire. The value for formula milk was more explicitly expressed than value for breastmilk,

with both groups of caregivers voicing value for formula milk for “the bones to be healthy and strong” and in providing satiety. As one caregiver expressed:

“I’m happy even though it’s expensive but at least she’s getting full.” (Interview 0046, Pilditch, 06/06/19)

Table 14: Reported intake of liquids of the quantitative study population as reported by infant and young child feeding indicators

Liquid	Non-positive deviant		Positive deviant		Total	
	n	%	n	%	n	%
Infant formula	5	33.33	5	41.67	10	37.04
Milk (fresh/ tinned)	6	40.00	3	25.00	9	33.33
Juice	7	46.67	6	50.00	13	48.15
<i>Motoho</i>	5	33.33	2	16.67	7	25.93
Tea	8	53.33	6	50.00	14	51.85
Sugar sweetened beverage	1	6.67	2	16.67	3	11.11

4.3.2 Introduction of liquids and solids

Introduction of solids was a topic explored during qualitative interviews. Early introduction of solids (less than six months) was common in both NPDs and PDs. PD caregivers more often included solids at six months (four PDs in comparison to two NPDs). Ages of introduction ranged from three to six months with six caregivers reporting introduction at six months. The most common foods introduced were iron-fortified infant cereals (referred to as ‘infant cereals’) (Table 13). Caregivers reported introducing solid foods in response to the child not appearing satisfied with the breastmilk or formula milk. Caregivers indicated:

“[He] cries not been satisfied [with] the milk. He is not satisfied so it is better I give him *Purity** (Infant Cereal).” (Interview 0101, Pilditch, 15/03/19)

**Purity Infant Cereal*: Iron fortified infant cereal available in South Africa

Another reason was due to concern for the general wellbeing of the child and poor weight gain. One caregiver reported:

“Because I have to take care of my kids so I decided now this is the right time for the baby to be introduced to solid foods.” (Interview 0115, Pilditch, 11/03/19)

Caregivers who waited to introduce solids at six months indicated that they did so on account of guidelines given at the clinic.

Early introduction of liquids was a common practice reported during qualitative interviews. PD caregivers tended to introduce liquids at a later age. Tea and water were most commonly reported as liquids included. In some cases, water was even included from birth. (Table 13). Reasons for inclusion varied and comprised of “to quench thirst”; as a replacement for formula milk or breastmilk or due to the perception of health benefits of water and teas as one NPD caregiver expressed:

“We just have water for we live and feel better.” (Interview 0173, Pilditch, 24/06/19)

The concept of replacement feeding, giving a liquid to directly replace previous intake, was practised by two NPD caregivers who indicated they provided *motoho* (due to child’s preference)

and water with sugar (due to caregiver being unable to afford formula). One PD caregiver indicated:

“When the baby stopped formula I had to give him the tea because he was used to drinking something inside the bottle, so I put tea instead” (Interview 0138, Pilditch, 08/03/19)

4.3.3 Feeding indicators

Only small differences were seen in feeding indicators, with NPDs doing slightly better than PDs. Only one child did not obtain MMF in comparison to 60% of children (n=16) who did not obtain MDD. Only 40% (n=6) of NPD and 33% (n=4) of PDs achieved MAD. Of the children who achieved MAD, only one was above 12 months. Two thirds (n=18) of participants were reported to have consumed an iron-rich food source the previous day (Table 15).

Table 15: Infant and young child feeding indicators of the quantitative study population as reported by infant and young child feeding indicators

	Non-positive deviant		Positive deviant		Total	
	n	%	n	%	n	%
Minimum dietary diversity (MDD)	9	60.0	7	58.3	16	59.3
Minimum meal frequency (MMF)	15	100.0	11	91.7	26	96.3
Minimum acceptable diet (MAD)	6	40.0	4	33.3	10	37.0
Iron-rich foods	10	66.7	8	66.7	18	66.7

4.3.4 Protein intake

In both populations, animal proteins such as meats (chicken, beef and pork) and eggs were the most common sources, however, protein consumption was generally low (Table 16). Nearly half (n=13) of the participants consumed meat the previous day and 22% (n=6) consumed eggs. Fish was only included twice, one in each of the populations, and plant proteins also only twice — both times in the PD population.

During qualitative interviews PD caregivers reported a higher weekly protein intake. These caregivers reported protein intake three to five times a week and even twice daily in some cases (Table 17). NPD caregivers included protein, but at a lower frequency — the highest frequency of inclusion being once a day. Eggs were a common protein source for both populations while beans were more frequently included in PD diets. The inclusion of the gravy or the “soup of meat” to accompany starch was more common in NPDs. Caregivers expressed using this “soup” from the prepared meal instead of including the ‘flesh’ of the meat (‘Flesh’ is a term used by the researcher to explain the concept of including the actual tissue of the meat). According to one NPD caregiver:

“Let’s say I’ve cooked; maybe I’ve cooked chicken I take the soup from the chicken relish and use it as soup.” (Interview 0176, Pilditch, 07/06/19)

Two NPD caregivers indicated that they only intended to include protein once the child had developed teeth indicating:

“Yes, the time when he start[s] to grow the teeth. Then I can see now you can give him the meat.” (Interview 0173, Pilditch, 24/06/19)

Table 16: Consumption of foods by the quantitative study population as reported by infant and young child feeding indicators

Food Groups	Non-positive deviant		Positive deviant		Total	
	n	%	n	%	n	%
Porridge, bread, rice, noodles, or other foods made from grains	15	100.0	12	100.0	27	100.0
Pumpkin, carrots, squash or yellow sweet potatoes	4	26.7	1	8.3	5	18.5
White potatoes, sweet potatoes, cassava, or any other foods made from roots	11	73.3	6	50.0	17	63.0
Any dark green leafy vegetables	3	20.0	3	25.0	6	22.2
Ripe mangoes, ripe papayas, grapefruit	1	6.7	0	0.0	1	3.7
Any other fruits or vegetables	10	66.7	6	50.0	16	59.3
Liver, kidney, heart, or other organ meats	0	0.0	0	0.0	0	0.0
Any meat, such as beef, pork, lamb, goat, chicken, or duck	7	46.7	6	50.0	13	48.1
Eggs	4	26.7	2	16.7	6	22.2
Fresh or dried fish, shellfish, or seafood	1	6.7	1	8.3	2	7.4
Any foods made from beans, peas, lentils, nuts, or seeds	0	0.0	2	16.7	2	7.4
Cheese, yogurt, or other milk products	9	60.0	8	66.7	17	63.0
Any oil, fats, butter, or foods made with any of these	3	20.0	2	16.7	3	11.1
Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits	7	46.7	5	41.7	12	44.4
Condiments for flavour, such as chilies, spices, herbs, or fish powder	5	33.3	4	33.3	7	25.9
High salt snacks (Chips)	8	53.3	4	33.3	12	44.4
Traditional foods	0	0.0	1	8.3	1	3.7
Infant cereals (<i>Nestum</i> , <i>Cerelac</i> , <i>Purity cereal</i>) and infant food	5	33.3	3	25.0	8	29.6
Supplements from the clinic	2	13.3	0	0.0	2	7.4

Table 17: Weekly inclusion of foods as reported by the qualitative study population

	Current age (Months)	Vegetables	Vitamin A rich vegetables	Fruit	Protein	Animal protein	Plant protein	Gravy	Dairy
PD	6	Daily	Daily	2	3	2	1	Do not know	Daily
NPD	6	2	2	2	0	0	0	Included*	Daily
PD	6	0	0	0	0	0	0	0	0
PD	6	4	2	When available	14	14	Included*	0	5
NPD	6	Included*	Included*	Do not know	Included*	Included*	0	Included*	Included*
NPD	8	3	None	0	9	9	0		Daily
NPD	10	2	2	2	1	1	0	Do not know	Daily
NPD	14	3	2	Included*	7	7	1	Do not know	6
PD	12	4	2	3	7	6	1	Do not know	2
NPD	16	1	1	0	6	6	1	4	6
PD	18	3	2	Daily	14	14	1	Included*	Daily
PD	18	Daily	1	Included*	3	3	0	Do not know	Daily

* Included: Caregiver indicated that the food was part of the child's diet but did not quantify the frequency of inclusion

4.3.5 Dairy intake

Both cow's milk and other dairy products, such as cheese and yoghurt, were frequently consumed with 33% (n=9) of participants reporting consumption of milk the previous day (Table 14) and 63% (n=17) reporting consumption of other dairy products; this was most commonly sour milk (Table 16). Six (40%) of NPDs included cow's milk compared to 25% (n=3) of PDs according to reported liquid intake (Table 14). Qualitative interviews revealed that the daily inclusion of milk and/ or sour milk (*Amaasi*) was a common practice among most caregivers (Table 17).

4.3.6 Fruit and vegetable intake

Half of the PD population (n=6) and two-thirds of the NPD population (n=10) reported intake of other fruits and vegetables (Table 16). Total intakes of dark green leafy vegetables were low (22%, n=6), as was the intake of Vitamin A rich vegetables (n=5). Intake of Vitamin A rich vegetables was slightly better in the NPD than the PD population; with 27% (n=4) of participants reporting consumption in comparison to one (8%) in the PD population.

PD caregivers reported a higher weekly vegetable intake during qualitative data collection, reporting vegetable intake daily or three to four times a week. NPDs most commonly reported intake two to three times a week. Spinach, pumpkin and cabbage were the most common vegetables consumed (Table 17).

4.3.7 Intake of non-recommended liquids and foods

Consumption of tea and juice was common among all caregivers — with half of all caregivers indicating that their child had received these liquids the previous day (n=14 and n=13 respectively). NPDs included *motoho* twice as often as PDs. Consumption of sugar sweetened beverages was uncommon. Only three caregivers — one NPD and two PDs— reported the consumption of these drinks the previous day (Table 14).

The inclusion of tea and juice among the qualitative sample was similar and reflected quantitative results. Some caregivers indicated daily inclusion, usually throughout the day, some reporting weekly inclusion and others reporting that these liquids were seldom consumed. PDs were, however, less likely to consume juice (fruit or concentrate juice) while NPDs were more likely to consume juice more than once a day. Only one PD caregiver included the weekly inclusion of sugar sweetened beverages (Table 18).

The consumption of sugary foods (chocolates, sweets, biscuits etc.) and chips were both reported at 44% (n=12) for the total population. In both categories, NPDs were more likely to consume these foods. Notably, one in three PDs (n=4) reported consumption of chips in comparison to the one in two NPDs (n=8) (Table 16).

Table 18: Intake of non-recommended foods and liquids by qualitative population

	Current age (months)	Chips	Sweets	Biscuits	Tea	Juice	Sugar-Sweetened Beverages
PD	6	1/ week	Daily	Do not know	Weekly	0	0
NPD	6	Frequent	0	Included	0	Daily (3/day)	0
PD	6	0	0	0	Daily	0	0
PD	6	0	0	0	Seldom	Seldom	0
NPD	6	Included	Y	0	Seldom	Included	0
NPD	8	1/week	0	Do not know	0	0	0
NPD	10	0	1/week	Do not know	0	0	0
NPD	14	Daily	Daily	Do not know	Do not know	Daily (2/day)	0
PD	12	0	0	Included	Daily (3/day)	0	0
NPD	16	3/week	Seldom	1/week	Daily	1/week	0
PD	18	Daily	Seldom	Daily	Daily	2/week	0
PD	18	Seldom	Daily	Do not know	Daily	Do not know	1/week

*Included: Caregiver indicated that the food was part of the child's diet but did not quantify the frequency of inclusion
 **Seldom: Items were rarely included in the child's diet

Practices around the consumption of these foods included giving the food as “just a snack”, due to convenience, “when he sleeps” or after meals. One NPD caregiver commented on when she included snacks:

“... the sweets and snacks I only give him when he’s full because if I give them to him first he would not eat his food.” (Interview 0114, Pilditch, 15/03/19)

Sweets, chips and tea were reported to be included or introduced to PD children as a result of them being consumed by the caregiver. These caregivers indicated

“He [the child] sips a bit from mine.” (Interview 0131, Pilditch, 23/05/19)

“I just gave her, because when I ate the *Simba** the baby would come and eat them.” (Interview 0138, Pilditch, 08/03/19)

**Simba*: South African chip brand

On some occasions in PD households, these foods were provided by or shared with other community or family members such as siblings. PD caregivers indicated that children were given money by the grandmother:

“so they go buy chips or sweets for the child at that time.” (Interview 0111, Pilditch, 11/03/19)

4.3.8 Intake of infant foods

Thirty per cent of the study (n=8) population reported including infant foods (iron-fortified cereals and pureed infant foods) the previous day (Table 16) and it was the most common first food introduced by caregivers of the qualitative study population (Table 17).

Both PD and NPD caregivers expressed value for infant foods (including baby teas) several times during interviews. A common value shared by NPD caregivers was that these foods were of superior value for children expressing beliefs such as:

“It is important for the baby.” (Interview 0143, Pilditch, 08/04/19)

“I think he’ll be excited about it because its baby food that he is supposed to eat unlike what I’ve given him before,” (Interview 0176, Pilditch, 07/06/19)

One caregiver commenting on her concern regarding her inability to include infant cereals due to expense expressed:

“...but at his age and from his baby times I was supposed to have started with the right food which is *Cerelac**and *Purity*. ** So it’s like I jumped a certain stage.” (Interview 0176, Pilditch, 07/06/19)

**Cerelac*: Iron fortified infant cereal available in South Africa

***Purity*: Processed jarred food marketed for infants older than 6 months, available in South Africa

The belief that the inclusion of these foods due to softer texture and age-appropriateness was shared by all caregivers. NPD caregivers also believed that these foods to be more digestible for young children stating:

“Because the stomach is going to digest right.” (Interview 0046, Pilditch, 06/06/19)

Another belief held by caregivers was the belief that infant foods produced satiety. Overall, NPD caregivers tended to express more value for infant food.

4.3.9 Responsive feeding practices

RF was a theme more common among PD caregivers. These caregivers affectionately described mealtimes as a time where children were allowed to play with their food, where verbal cues were present and where caregivers exhibited patience at meal times. These attributes of mealtimes are expressed in the quotes below:

“She will be playing with her food when I’m feeding her so I think she’s happy with it.” (Interview 0310, Pilditch, 11/03/19)

“Come let’s eat together. Come share.” (Interview 0115, Pilditch, 11/03/19)

“But now I’ve learnt that she has to, I have to give her a spoon and relax and then she will play and then I will give her and she will play and then she finishes her food that way.” (Interview 0301, Pilditch, 15/03/19)

One PD caregiver described mealtimes as a time where:

“After when she’s finished when I see that she’s now alright in the stomach then I’ll say ‘Take it.’ Then she’s like throwing it on the floor. Playing with it. Eating it.” (Interview 0115, Pilditch, 11/03/19)

These caregivers were more responsive to the child’s hunger and satiety cues and were able to identify hunger cues other than crying and spitting, which were common cues expressed by all caregivers. These caregivers responded to hunger cues such as sound effects (for younger children), pulling or tugging at the caregivers and fetching feeding utensils (for older children).

One PD caregiver expressed:

“I know by her actions. She’ll come and pull me by the dress or tap the dish, or whatever the bowl she took. So I now know she’s hungry then I’ll get out the meal.” (Interview 1005, Pilditch, 11/03/19)

PD caregivers further showed responsiveness to appetite by providing the opportunity for children to request additional food and indicating adaptability in portion sizes. One caregiver expressed:

“I usually pour three spoons and I know it’ll be enough for the baby, if it is not enough I pour more (Interview 0501, Pilditch, 21/06/19)

PD caregivers further indicated that the child had the opportunity to go to other family members and ask for food.

In contrast, fewer NPD caregivers listed hunger or satiety cues other than crying or spitting. Signs of satiety included the length of mealtime and playing with food.

For both groups of caregivers, following a predictable meal schedule was common; with many caregivers indicated specific times for feeding throughout the day and even consistency in the foods provided at those times:

“Like in the morning maybe 8 o’clock I gave her cooked porridge or instant... After an hour or two I cook maybe a mash and gravy for her to feed her. After an hour snack. Boil some fruit for her. Just give her some water and then I make a bottle for her.” (Interview 0115, Pilditch, 11/03/19)

RF feeding practices were present in NPD caregivers but to a lesser extent. NPD caregivers expressed patience upon refusal of foods, allowing children to self-feed and to play with their food:

“I feel happy; even though she grab[s] the dish and try to make, make herself, to eat herself.” (Interview 0046, Pilditch, 06/06/19)

Controlling feeding practices were reported in both groups; force-feeding, in response to refusal or poor appetite, was the most common practice.

“When he does that I carry him out of his chair and carry him, hold his hands and feed him.” (Interview 0138, Pilditch, 08/03/19)

4.4 Themes from qualitative interviews

Themes from interviews were categorised into three levels: child, caregiver and family/ community level.

The only theme present on a child level was child's preference: the inclusion or exclusion of foods based on the caregivers' perception of the child's likes or dislikes. On a caregiver level, three themes are presented: source of information, caregiver attitude and beliefs and caregiver action versus passivity. The section pertaining to family/ community environment discusses themes of family eating and support — exploring the kind of support, stability and isolation in the absence of support.

4.4.1 Child level: Child's preference

A common reason for the restriction, and to a lesser extent inclusion, of foods was often due to the child's preference, particularly in NPD caregivers. As one NPD caregiver explained:

“While giving him what he doesn't like, he spits it out so I cannot force him to eat. That's why I end up giving him what he prefers.” (Interview 0131, Pilditch, 25/05/19)

Signs of dislike included spitting and refusing to open the mouth. One NPD caregiver indicated that playing and meal length indicated dislike. Spitting had a strong link to a child's preference and the exclusion of foods. Signs of acceptance included smiling, dancing and finishing meals.

Refusal to accept foods was a reason for discontinuing BF and more commonly formula feeding, with both PD and NPD caregivers expressing that the infant's refusal to continue drinking indicating:

“...even he himself at five months he stopped [breastfeeding].” (Interview 0131, Pilditch, 25/05/19)

“He spat it [formula milk] out.” (Interview 0111, Pilditch, 11/03/19)

One NPD caregiver expressed that preference for one food (sour milk) resulted in the restriction of vegetables. NPD caregivers more often reported the exclusion of foods due to preference. Non-recommended foods such as tea and sweets were also more often excluded than included based on preference.

Value for preference also linked to value for variety. One caregiver communicated:

“I think it's important because the child gets irritated by one thing all them, which leads them to not eating or finishing the food. The child will not like the food.” (Interview 0131, Pilditch, 25/05/19)

In contrast, one caregiver expressed concern in including a variety of foods.

“I'm afraid that if I give her more food or different food that I don't have she might want that and I won't be able to provide for her.” (Interview 0301, Pilditch, 11/03/19)

PD children were reported to be less fussy, more accepting of new foods and preference was indicated as a reason for inclusion more often than NPDs. Quotes by caregivers relating to these responses are as follows:

“I like it because the baby eats whatever is there.” (Interview 0138, Pilditch, 08/03/19)

“He doesn't have a problem trying out new foods.” (Interview 0501, Pilditch, 21/06/19)

“...he likes the meat.” (Interview 0111, Pilditch, 11/03/19)

One PD caregiver expressed value for developing a child's preference, stating:

"Because if he becomes choosy, you'd find I don't have the food he prefers. So I have to get him used to food that is different." (Interview 0138, Pilditch, 08/03/19)

Caregivers further indicated value for preference by expressing the importance of including foods that the child enjoyed and expressed that good feeding practices were defined by complying to the child's preference. This value was more often expressed by NPD caregivers. The intention to continue to comply to the child's preference was expressed by NPD caregivers by indicating that they will "go with the flow of what the baby wants" and the future introduction of foods would be dependent on the child's preference.

A child's preference was more influential in purchasing decisions for NPD caregivers. This was not expressed by PD caregivers. When asked to describe monthly spending one NPD caregiver expressed:

"I buy all the food stuff for her because I know what she eats and what she doesn't eat." (Interview 0046, Pilditch, 06/06/19)

4.4.2 Caregiver level

This section discusses themes identified in interviews pertaining to knowledge, attitude and actions of caregivers.

4.4.2.1 Source of knowledge

4.4.2.1.1 Health care worker guidelines

Breastfeeding practices

Advice quoted as commonly received from HCWs was to discontinue BF. Caregivers who sought advice from the clinic regarding BF practices indicated that they were informed to discontinue BF in the presence of illness (of the mother), when returning to work and due to the HIV positive status of the mother. HIV positive mothers were advised to discontinue BF after six months because of being "on treatment." One caregiver discontinued BF at six months and did not begin formula feeding due to the advice provided by HCWs. They stated:

"They [the HCW] said it shouldn't be mixed. If he was drink[ing] formula milk it should be it for six months, if it's breastmilk it should be it for six months. So I didn't use formula milk". (Interview 0114, Pilditch, 15/03/19)

Introduction of solids

Several caregivers indicated that they were informed by HCWs to only include solid foods from six months indicating:

"I started at six months as I was told." (Interview 0138, Pilditch, 08/03/19)

This was expressed as motivation to not comply with other advice received from family or community members to introduce foods earlier.

Other health care worker advice

Other advice provided to caregivers from HCWs was varied and ranged from meal frequency to the inclusion of soft foods and foods such as eggs, pumpkin and maize meal. One caregiver indicated that she included fish on account of advice given by HCW stating:

"...because I didn't know the child can eat fish. Whether it's the hake or the tinned fish." (Interview 0115, Pilditch, 11/03/19)

While another caregiver expressed that HCWs advised her to:

“Give that [pap, eggs, pumpkin] because it'll strengthen him.” (Interview 0114, Pilditch, 15/03/19)

One NPD caregiver expressed confusion regarding the advice from an HCW due to poor weight gain of her child communicating:

“She asked if the baby eats meat or not, and then I told her not every day but only if we have meat. And she advised me that he should eat meat more often.” (Interview 0114, Pilditch, 15/03/19)

4.4.2.1.2 Food labels and marketing

Following guidelines as indicated on food labels of infant foods and formula, milk was common in both groups. For two NPD caregivers, the inclusion of infant cereals and ‘baby’ teas were based on marketing strategies. They explained:

“Because I see from the shops the *Nestum* and *Cerelac* is the baby's food. And it's right for them.” (Interview 0046, Pilditch, 06/06/19)

“Because the tea tells you for the baby like, zinc, iron. Just so the bones can get strong... Just read the instruction there.” (Interview 0173, Pilditch, 24/06/19)

PD caregivers were less likely to express the usage of labels for the inclusion of foods and more likely as a source of instruction providing guidance on portion size, consistency, discarding uneaten foods, the age for introduction of solids and discontinuation of infant cereals. Caregivers expressed:

“I throw it away... Because it's written there on the box that you mustn't keep it.” (Interview 0301, Pilditch, 11/03/19)

“I used to go with the instructions so I just knew [how much to feed].” (Interview 0501, Pilditch, 21/06/19)

4.4.2.2 Caregiver beliefs and attitudes

4.4.2.2.1 Value for satiety and appetite

Foods that were perceived by caregivers to provide satiety to their child were deemed to be of higher value. Value for these foods appeared to form a barrier to BF and a reason for the inclusion of formula milk and the introduction of foods (particularly infant cereals). Satiety was a theme that was more present among NPD caregivers.

One NPD caregiver expressed that formula milk provided more satiety than breastmilk stating:

“She wasn't getting satisfied with the breast,” and then later, “I see when I give her the formula milk she was getting full.” (Interview 0046, Pilditch, 06/06/19)

The perception that children were “not satisfied” on formula milk or breastmilk alone was expressed as a reason for the early introduction of solids. Caregivers stated reasons for introducing foods as:

“He doesn't get full if I give him the breastmilk alone so I decided to give him food a bit.” (Interview 0176, Pilditch, 07/06/19)

Caregivers further expressed value for being able to provide satiety by expressing her desire to:

“... provide more than what the children already have so they would be satisfied.” (Interview 0131, Pilditch, 23/05/19)

Another caregiver expressed her desire to send her child to crèche:

“... because when the first-born comes back from school she comes back and says she’s full and she’s good.” (Interview 0176, Pilditch, 07/06/19)

Caregivers associated good feeding practices with children finishing their meal and having a good appetite. In response to a question on what signs indicate that a child is growing well one caregiver stated:

“I see by how much food he eats,” (Interview 0173, Pilditch, 24/06/19)

Another caregiver expressed that she was no longer concerned about her child’s weight because his appetite had improved. These views regarding appetite were more often communicated by NPD caregivers.

4.4.2.2.2 Positive and negative beliefs associated with food

The association of a positive outcome as a result of the inclusion of a specific food or food group was associated with the inclusion of that food. The perception that certain foods make the child “strong” was common among both groups of caregivers. Common foods included to “give strength” were vegetables and dairy (often sour milk). Caregivers also expressed value for these foods in explaining that they:

“That [vegetables] prevents the child from getting disease.” (Interview 0143, Pilditch, 08/04/19)

“...the cow’s milk helps the body so the bones can be strong.” (Interview 0173, Pilditch, 24/06/19)

Other foods valued were meat “to strengthen us” and water and tea for strong bones. Formula milk and infant foods were also indicated to be included due to the value associated with them, as discussed previously (Section 4.3.1). Caregivers also expressed value for variety and ascribed growth and weight gain to the inclusion of a varied diet. One caregiver responded that variety was important by stating:

“Well, eating the same food is not right for the baby. Just try some other food.” (Interview 0173, Pilditch, 24/06/19)

Caregivers indicated the exclusion of certain foods due to a negative attitude towards these foods. In this instance, caregivers either restricted the intake of foods or avoided inclusion completely. Caregivers had concerns regarding the inclusion of foods such as beans, sour milk and fish. Concerns included allergic reactions to fish, difficulty in digesting beans, that food contains worms (potatoes and sour milk) and that meat “is bad for the baby” because the child had not yet developed teeth.

Caregivers indicated the restriction of sweets due to concerns regarding a loss of appetite, the high sugar content, that they will “ruin the teeth” and the belief that sweets and chips will cause illness. One caregiver expressed:

“I just think about the chests, all those coughs.” (Interview 0138, Pilditch, 08/03/19)

Beliefs about positive and negative outcomes associated to the inclusion of certain foods were expressed by both sets of caregivers.

4.4.2.2.3 Attitude towards health care workers

Both PD and NPD caregivers indicated receiving, following and valuing guidelines from the clinic. However, PDs more often explicitly expressed value for HCW by stating that HCWs could be trusted and had more knowledge regarding children. PD caregivers more often displayed health seeking behaviour through seeking advice or support from the clinic. One PD caregiver specifically indicated that HCW guidelines should be followed because:

“She’s [the HCW] saving your child.” (Interview 0301, Pilditch, 11/3/19)

One PD caregiver indicated that:

“They tell us at the clinic that the baby looks healthy, he looks good. So I trust the clinic’s opinion.” (Interview 0501, Pilditch, 21/06/19)

In comparison, a NPD caregiver who, after communicating that the clinic gave guidelines on providing food from the age of six months, then indicated that she included foods from four months due to concern regarding the child’s weight.

4.4.2.3 Action vs passivity

Passivity is defined as an “acceptance of what happens, without active response or resistance” (93) in comparison to action — “the process of doing something, especially when dealing with a problem or difficulty” (94). Caregivers displayed these characteristics in two areas: in their response to current problems (such as insufficient food or finances) and in their intent — their desire, intention or purpose to do something.

Although adaptability was present in all caregivers, PD caregivers did not express apathy in response to lack and were able to act in order to address circumstances more often than NPD caregivers and proposed a wider variety of solutions.

4.4.2.3.1 Action in response to current difficulties

Caregivers displayed action or apathy in response to current or past areas of concern or in response to insufficient finance or food supply. Actions by caregivers were seen in the area of health seeking behaviours, financial strategy and in adaptations to address poor appetite.

Response to insufficient resources

Lack of finance was the most common barrier to inclusion of foods indicated by caregivers. Caregivers were able to mitigate a lack of finance through a variety of strategies: seeking temporary employment, borrowing money from family members or asking neighbours to assist in the provision of food. These actions were strongly linked to either family or community support. In addition to these strategies, caregivers prioritised their children in response to a lack of food stating:

“It’s better if we don’t have food but the child has to have food.” (Interview 0173, Pilditch, 24/06/19)

“Even though you don’t have much food in the house you must make sure the child gets the meal.” (Interview 0115, Pilditch, 11/03/19)

NPD caregivers were more prone to expressing apathy in reaction to want, indicating that they would “just sit and do nothing” when there was not enough food in the house or not prioritising the child’s needs.

“It is everyone in the house [who is without food].” (Interview 0131, Pilditch, 23/05/19)

The theme of action and passivity could be seen when a comparison between PD and NPD caregivers' responses to lack was made between households with a similar socioeconomic score.

Comparing one NPD caregiver and one PD caregiver with low socioeconomic scores (of 11 and 12 respectively) both expressed that food insecurity was present expressing that food "doesn't last the whole month". The PD caregiver expressed that it was sometimes difficult to find the money for food but, in response to lack, she sought assistance from her mother. Finance was not perceived as a barrier by the NPD caregiver and no action was expressed.

Comparing three households with socioeconomic scores of between 17 and 20, the PD caregiver addressed food insecurity through seeking assistance from friends and exhibiting financial strategy such as seeking part-time employment. If part-time employment was not available, she sought further assistance from a neighbour. The remaining two NPD caregivers, although identifying lack of finance as a barrier, expressed apathy stating that:

"At times I can't see what really happens to the money." (Interview 0114, Pilditch, 15/03/19)

"If I don't have money I wouldn't buy anything at all." Or she would "just sit" when there was no food in the house. (Interview 0131, Pilditch, 23/05/19)

One NPD caregiver, however, did express action in seeking support through the provision of food from a community outreach programme.

PD caregivers with higher socioeconomic scores adopted financial strategies such as buying in bulk, drafting a budget as a family, buying cheaper alternatives and investing money in a 'stokvel' stating:

"We are trying to make it grow like, when we need something for the future." (Interview 0115, Pilditch, 11/03/19)

NPD caregivers with similar socioeconomic scores displayed action through seeking assistance from family members or friends, buying "cheaper items" or clothes on lay-bye.

Response to poor appetite

Poor appetite was the most common area of concern and reason for action among caregivers. Action expressed by NPD caregivers included: checking the mouth, giving a bottle while the child is sleeping, attempting to anticipate what the child would like to eat and taking the child to the clinic. PD caregivers expressed more varied and frequent action in response to poor appetite including caregivers changing foods offered to the child, offering foods again later in the day, offering snacks, giving glucose (boiled water with brown sugar), assessing for sores in the mouth or teething and seeking assistance from the clinic.

Apathy towards poor appetite was only expressed by NPD caregivers. Responses to poor appetite offered by these caregivers were:

"I don't know [what I would do]." (Interview 0131, Pilditch, 23/05/19)

"I will just leave him." (Interview 0143, Pilditch, 08/04/19)

Health seeking behaviour

Health seeking behaviours are defined as "any action undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy" (p 3, second paragraph, reference 95) (95). These practices were more prevalent in PD caregivers. These caregivers not only responded to poor appetite by attending the clinic but also

used the clinic as a source of knowledge. One PD caregiver, dissatisfied with the service from the clinic, even paid to see a private doctor when her child was sick. These PD caregivers communicated seeking assistance from the clinic:

“And unfortunately, the food was not enough at home so that I can eat more so I can have more [breast] milk so I asked the sister when I was here [at the clinic].” (Interview 0301, Pilditch, 11/03/19)

Two NPD caregivers demonstrated health seeking behaviours by taking their child to the clinic in response to poor appetite and to seek advice regarding formula milk by stating:

“There at the clinic can tell her which formula you can use for the child.” (Interview 0173, Pilditch, 24/06/19)

However, a lack of health seeking behaviours were also exhibited when caregivers did not seek advice regarding the introduction of solids or advice when breastmilk supply was diminished.

4.4.2.3.2 Action related to intent

Intent is a property of action and was displayed by all caregivers although PD caregivers and NPD caregivers expressed intent in different ways.

4.4.2.3.2.1 Inclusion of foods

NPD caregivers more often expressed their desire to include infant foods and to include, or continue to include, formula milk. This desire was indicated by communicating:

“Like I think if he could try out *Purity* or *Cerelac* with flavours he would be enjoy them unlike a real apple or fruit, so if I had the power to buy that I would.” (Interview 0176, Pilditch, 07/06/19)

“If he ate the formula milk, I would continue buying it regardless of the expense.” (Interview 0173, Pilditch, 24/06/19)

In comparison PD caregivers expressed intent to include vegetables, proteins and a variety of foods. One PD caregiver indicated:

“... the vegetables would be there. Eggs. The beans. The fruits. You know. I would even have a blender when I can just make her the juice with those fruits myself.” (Interview 0301, Pilditch, 11/03/19)

4.4.2.3.2.2. Intent related to change in the current financial situation

When prompted as to what their response would be to a reduction in current income PD caregivers provided a variety of strategies that included seeking additional income, purchasing cheaper proteins, the intention to “spend the money on food only” or prioritising the child’s needs stating:

“I would buy the food that he eats, I would rather starve as long as he got the food that he eats.” (Interview 0101, Pilditch, 15/03/19)

NPD caregivers suggested the exclusion of fortified infant cereals and reducing portion sizes stating:

“I will buy those smaller things.” (Interview 0131, Pilditch, 23/05/19)

In response to an increase in income, NPD caregivers predominantly expressed intention to include larger portion sizes. In addition to an increase in portion size, PD caregivers expressed a larger variety of intentions relating to improving the quality of diet, planting a garden to grow vegetables, including “meat” and a larger variety of proteins. Other intentions included starting a business, saving money and the intention to:

“...build an extra section onto the house so the children could have their own beds.”
(Interview 0501, Pilditch, 21/06/19)

4.4.3 Family and community environment

This section looks at themes relevant to a family/ community level. The first theme discussed is family eating — how the practice of sharing a meal as a family influences feeding behaviour. This is followed by an exploration of the theme of support explaining the types of support provided (advice, food, finance or care practices) and the contrasting experiences of certain caregivers’ isolation or instability of support structures.

4.4.3.1 Family eating

The practice of eating as a family and including foods consumed as a family (with little distinction between child and family eating patterns) was a common occurrence in PD households. Caregivers indicated:

“We give him what we eating for example if we eating pap and *morogo* (spinach) with meat. That is what he eats.” (Interview 0111, Pilditch, 11/03/19)

The process of involving children in family meals was described as “easy”. Family eating was associated with the inclusion of new foods. PD caregivers indicated the desire to include foods on the family “menu” and that:

“When we ate the baby would want the food we eating, so I had to involve the child in family meals.” (Interview 0501, Pilditch, 21/06/19)

Caregivers responded to children’s interest in foods at family meal times expressing:

“In the household when we are about to eat meat I would see that he wants it and so I would give him his own dish.” (Interview 0101, Pilditch, 15/03/19)

These caregivers expressed value for the child accepting foods common in family eating practices by indicating that children:

“...must get used to the other foods that we eat.” (Interview 0115, Pilditch, 11/03/19)

One caregiver, in response to a question on the introduction of new foods, indicated that the inclusion of foods eaten by the family was important:

“...so he [the child] won’t get used to one thing but can eat everything that we eat in the house.” (Interview 0111, Pilditch, 11/03/19)

Family eating affected purchasing behaviours. Caregivers reported including foods such as starch, proteins, vegetables and dairy products on account of the fact that these foods were consumed by family members, often siblings. Family eating was more strongly linked to the inclusion of proteins than the positive value ascribed by caregivers to proteins. One caregiver expressed:

“They are the foods [chicken and eggs] that are in the house daily, and I buy them always.”
(Interview 0501, Pilditch, 21/06/19)

Non-recommended foods such as muffins, water, sugar sweetened beverages and chips were also included due to the child showing interest in these foods when eaten by a caregiver or family member. One caregiver introduced tea at four months due to child interest:

“When I used to drink water the baby would want the cup I was drinking from so I decided to put water or tea in her bottle.” (Interview 0138, Pilditch, 08/03/19)

The presence of children at meal times was less common among NPD households and the actual inclusion or introduction of foods, although present in NPD household, was not a strong theme, with caregivers indicating:

“No, no. I give her own food.” (Interview 0046, Pilditch, 06/06/19)

4.4.3.2 Support

Support was classified as either family or community support (support from a neighbour or friend) and further categorised as either: financial support, food provision, care or advice.

4.4.3.2.1 Advice

PD caregivers expressed receiving advice from family, friends or neighbours more frequently than NPD caregivers. Both NPD and PD caregivers indicated that a family member (mother and grandmother) had advised them to breastfeed or had given advice about formula milk usage or the introduction of solids (at three and six months respectively). One PD caregiver explained how her mother had advised her:

“My mother told me it was good for the child, she’s the one who made pumpkins and potatoes.” (Interview 0501, Pilditch, 21/06/19)

Other advice included providing infant foods, providing juice or being attentive to the child’s preference. Caregivers seldom indicated receiving advice from community members. For the most part, caregivers followed advice given, but occasionally caregivers expressed that they did not follow advice given by friends or family because they were “following instructions from the clinic.” These incidents were related to the introduction of solids prior to six months.

4.4.3.2.2 Food provision

Support through the provision of food was less common than other forms of support and was present in both NPD and PD caregivers. Caregivers indicated receiving food from neighbours and family members, children eating at neighbours houses or even through community programmes. Caregivers communicated:

“If the child is next door and finds them eating, they share with him.” (Interview 0111, Pilditch, 11/03/19)

“There is somewhere where I go for food. I go with a bowl and they pour food for me.” (*Regarding community food programmes) (Interview 0114, Pilditch, 15/03/19)

4.4.3.2.3 Financial assistance

Financial assistance was provided by partners, family members and in one instance, a community member. Both PD and NPD caregivers expressed receiving support from partners, in the form of income or items (such as nappies), from family members, borrowing money from their mothers or sisters or the family relying on grant money from their grandmother. One PD caregiver expressed:

“So she’s [sister in law] like, ‘Don’t worry about that I will help you out.’” (Interview 0115, Pilditch, 11/03/19)

“If there is something we did not afford to buy my sister will help out.” (Interview 0101, Pilditch, 15/03/19)

One PD caregiver, who had no family to support her, received part-time employment doing laundry for an elderly community member. Financial support was more often indicated by PD caregivers.

4.4.3.2.4 Care

“It makes me happy because I can see they do love me.” (Interview 0111, Pilditch, 11/03/19)

This quote from one PD caregiver captures many PD caregivers’ experiences of family support. PD caregivers expressed not only assistance more often than NPD caregivers but conveyed warmth and appreciation for the support provided by family members, creating the perception of truly supportive households. These caregivers described how family members played with children, assisted with feeding and bathing, taught them RF practices and elaborated on how decisions were made in consultation with other family members when introducing new foods. One caregiver was currently looking after her sister-in-law’s child. She explained her decision:

“She didn’t have anyone to look after the child. After the maternity leave. So I volunteered to her that I would take care of the child because for now I’m not working.” (Interview 0115, Pilditch, 11/03/19)

Support in the form of care practices was more prevalent among PD caregivers. NPD caregivers expressed support less often but did indicate support in decision making, feeding and taking care of the child:

“He [the husband] also looks after the baby. Like Sundays when I go to church he just stay with the baby.” (Interview 0143, Pilditch, 08/04/19)

4.4.3.3 Isolation

Isolation was expressed by caregivers when support was either absent or limited. One caregiver described her journey from isolation to support by explaining that she felt scared during her pregnancy,

“I thought there was nobody who would help me.”

Her feelings of anxiety disappeared when,

“... there was a person who said they will help.” (Interview 0131, Pilditch, 08/03/19)

NPD caregivers expressed experiencing isolation more often, stating there was no one to ask for advice or provide assistance. One NPD caregiver voiced that raising her child is:

“... difficult because I’m on my own.” (Interview 0114, Pilditch, 15/03/19)

One caregiver indicated isolation as a barrier by communicating:

“But at times I don’t have money because I’m unemployed. I have no parents and there is no one else to maintain me because, even myself, I’m living of the grant money which is for the kids.” (Interview 0176, Pilditch, 07/06/19)

4.4.3.4 Instability

One PD caregiver articulated the value of stability in support by expressing:

“I won’t say I would doubt her [her aunt] because she been there since my mom passed away. She’s been there as support and she’s never the wrong. So with my child why should I ... [doubt?].” (Interview 0301, Pilditch, 11/03/19)

Although instability in support structures was expressed by both groups of caregivers, NPD caregivers indicated that they encountered instability more often. Instability was present in food provision and financial support. Both PD and NPD caregivers encountered instability in food supply either indicating that certain foods, such as meat, fruit or infant cereals, were not always present in the household or caregivers indicated that providing food, in general, “was difficult”. For example, one caregiver indicated:

“I usually buy food, but it doesn’t last the whole month.” (Interview 0501, Pilditch, 21/06/19)

Instability was provided as a motivation for both the inclusion and exclusion of a variety of foods with one caregiver indicating that her fear of being unable to constantly supply a food caused her to limit the variety of foods offered to her child. Another caregiver indicated that instability in food supply motivated her to include a larger food variety.

NPD caregivers were more likely to express instability in support structures. When comparing two caregivers who indicated that they addressed food insecurity through seeking assistance from neighbours, stability was present in the support received by the PD caregiver. This PD caregiver expressed certainty in assistance from her neighbour:

“At times they don’t have pumpkin but they would give me potatoes.” (Interview 0138, Pilditch, 08/03/19)

She then stated that if she was unable to find part-time work, the same neighbour would provide support.

This is in comparison to the NPD caregiver who indicated:

“Sometimes. They only help if they have what I ask for.” (Interview 0176, Pilditch, 07/06/19)

Another NPD caregiver further expressed instability in financial support by communicating that the income of the household varied due to the part-time nature of her partners' job and:

“When I’m short my mother *maybe* gives me some.” (Interview 0046, Pilditch, 06/06/19)

Instability in financial support was not expressed by PD caregivers.

4.5 Summary of results

Section four aimed to display the results from all three data sources including results pertaining to IYCF practices, the characteristics and behaviours of children and their caregivers and the characteristics of household and community environments. Differences in characteristics and behaviours of PDs and NPDs were presented. Table 19 provides a summary of the characteristics and behaviours seen amongst PD caregivers. Due to small sample size characteristics of PDs indicated are to serve as a description of the study population and should not be seen as statistically significant.

Table 19: Summary of positive deviant characteristics and behaviours

	Quantitate data	Qualitative data
Infant and young child feeding practices	Higher usage of formula milk Less frequent inclusion of non-recommended foods	Responsive feeding practices More frequent inclusion of protein More frequent inclusion of fruits and vegetables Inclusion of 'flesh' of meat Less frequent inclusion of non-recommended foods
Child level	Female Younger (mean age 10 months) Normal birth weight and gestational age Fewer hospital admissions	Smaller role of child preference in food choices
Caregiver level	Older maternal age Caregivers living with a partner Higher maternal education	Lower value for: <ul style="list-style-type: none"> • Child preference • Satiety • Infant foods Higher value for health care workers Action in response to lack of resources Health seeking behaviours
Household/ community level	Higher socioeconomic scores Improved living conditions: <ul style="list-style-type: none"> • Freestanding house • Higher number of household assets • Improved sanitation Lower number of people sleeping in the same room	Higher levels of social support in food provision, financial support, advice and care of children

In general, IYCF feeding practices were similar among the two groups with poor BF practices and the early introduction of solids commonly reported. Few children achieved MAD. Differences in the frequency of inclusion of fruit and vegetable, proteins and of non-recommended foods between NPD and PD children were found in qualitative data. RF practices were more common among PDs.

Results from qualitative interviews indicated that a child's preference for food was a strong theme in IYCF decisions, particularly among NPD caregivers. Caregivers ascribed value to food according to if it was a food deemed to satisfy children and if a positive outcome or negative connotation was linked to foods. PD caregivers more often explicitly expressed value for HCWs. PD caregivers were more likely to report action and adaptability in response a lack of food or finance or poor appetite.

Support was more often expressed by PD caregivers with a warmth and appreciation for the support provided, creating the perception of truly supportive households. NPD caregivers expressed experiencing instability in support structures or isolation. Additionally, the practice of eating and sharing meals as a family was a common occurrence in PD households.

Chapter 5: Discussion

An expectation of this research was to find optimal and superior IYCF practices among PD children, as seen in previous PD research investigating IYCF behaviours and stunting (16,57). The factors contributing to caregivers practising these behaviours would then have been explored. However, clearly superior practices were not exhibited by PD caregivers. This reemphasises the complexity of CF and the multifactorial and chronic nature of stunting.

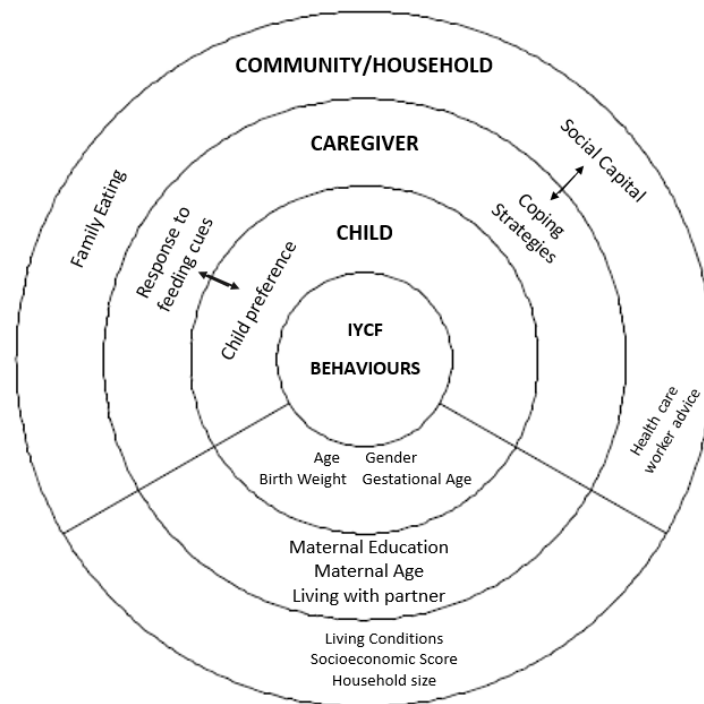
IYCF practices, as seen in this research, can be described as a combination of BF practices, the introduction of solids and liquids and the inclusion or exclusion of foods. After a brief discussion on the anthropometric indicators of the sample population, this discussion will comment on general IYCF practices and discuss the differences between PD and NPD populations. Thereafter the influence of child, caregiver and community/ household level factors will be discussed. Figure 4 provides an illustration of these factors. This includes:

1. RF and feeding cues (interaction on child and caregiver level)
2. Coping Strategies (caregiver level)
3. Social Support (interaction on a community and caregiver level)
4. Family Eating (interaction between community and child)
5. HCW Advice (Community Level)

Certain characteristics, such as maternal age or prevalence of LBW, were highlighted during quantitative interviews which, although do not hold statistical significance, were noteworthy characteristics of the PD and NPD populations. These characteristics did not explicitly influence IYCF practices in this study but may have possible links to IYCF behaviours and stunting as seen in other literature. This are discussed further in Section 5.7.

The last section will aim to categorise characteristics of the PD population as adaptive or emphasis PD behaviours.

Figure 4: Proposed positive deviant behaviours and characteristics



5.1 Anthropometric status of sample population

Anthropometric status' of children, as reported by the SADHS (2016), are reported for children under the age of five. In comparison, these results captured the stunting rates for children aged 6-18 months. Thus a direct comparison cannot be made. However, the period of 6-18 months is regarded as being high risk for stunting. Therefore it was surprising that the stunting prevalence reported in this study (17%) was low when considered against the national (27%) and provincial prevalence (33.5%) (38). Although these results are encouraging, they should be interpreted with caution due to the small sample size.

5.2 Infant and young child feeding practices

5.2.1 General comment

The poor BF practices reported add to the body of evidence accounting for poor BF habits in the South African population (38,62,75).

EBF rates, as reported by qualitative interviews, were low with not a single caregiver exclusively breastfeeding for the recommended full six months. These rates are lower than reported in other South African studies. EBF rates, as reported by the 2016 SADHS, were 32% (38). A study conducted by Siziba et al. (96) to assess EBF rates in four provinces, including the Free State, found EBF rates dropped over time with rates for six month olds reported at 13%. Identified barriers to BF were similar to those by Siziba et al. (96): the mother returning to work, school attendance and caregivers' perception of insufficient breastmilk production (96). In addition to low EBF rates, continued BF rates were very low, 14% in comparison to the 50% as reported by the SADHS (38). This is concerning as stunting has been linked to a shorter period of BF (1). Although the study population was small it raises concerns for BF support and advocacy within the Harrismith area and the need for continued advocacy and support of BF in order to improve BF practices — not only on a national level but at a grassroots level.

Caregivers in this setting followed the common South African trend of early introduction of solids and liquids (38,62,66,96). This contrasts findings from other PD studies investigating IYCF and stunting, which found that PD caregivers exclusively breastfed for six months (16) and practised the timely introduction of solids (57). The most common first food included was iron-fortified infant cereal, which is in contrast to maize meal as reported by Sayed et al. (66) in a review of CF practices in South Africa. PD caregivers, in qualitative interviews, were more likely to introduce solids timeously and introduced liquids later than NPD caregivers. A larger study size is, however, needed to confirm the validity of these findings in a South African context.

The percentage of children receiving MAD (40%) was higher than the rates reported by a nationwide survey (SADHS), which reported rates of 23% (38). However, this was similar to those reported by Du Plessis et al. (97) studied at district level in the Western Cape. Although performing well in indicators such as MMF, MDD and inclusion of iron rich foods, the failure to obtain MAD and poor performance in individual categories (such as intake of Vitamin A rich foods, proteins such as eggs) suggests poor IYCF practices in the population. The feeding patterns reflected in individual intakes reported in the qualitative interviews indicated a typical South African infant feeding pattern: maize-based and low in vegetables, fruits and foods from animal sources (62,66). These poor feeding patterns highlight the critical need to address and improve CF practices in South Africa.

5.2.2 Responsive feeding

RF was a strong theme present among PD caregivers. This will be discussed further under Section 5.2.

5.2.3 Protein inclusion

Although quantitative results showed little difference in protein intake between the two groups, qualitative interviews reflected a higher protein intake for PD children. The distinction between gravy from meat (“soup of meat”) and the actual ‘flesh’ of the meat was only made upon clarification from the interviewer and this lack of distinction may have influenced results from IYCF data collection.

The perception that gravy is considered as a protein source is concerning as current feeding guidelines (62) do not specifically address the need to include the ‘flesh’ of the meat. Whether this perception is specific to this community or held by a larger portion of the population should be established. The inclusion of the “soup of the meat” suggests that meat is present in the household and so finance may not be the main barrier to protein inclusion in households. Negative connotations to protein inclusion or the concerns of caregiver around the inclusion of meat for young children, as reported by NPD caregivers, may play a larger role. Investigation into caregivers’ perceptions and practices regarding the inclusion of proteins is necessary due to the value of protein inclusion and their possible link to stunting reductions (29).

5.2.4 Inclusion of fruits and vegetables and dairy

Poor intakes of dairy, fruit and vegetables have been associated with stunting (20). Minimal difference was seen in dairy intake in both data sets. Consumption of fruits and vegetables in quantitative data set reflected that NPD children consumed fruits and vegetables more often. However, higher weekly intake of vegetables among PDs, as reflected in interviews, suggests that this may be a possible emphasis PD behaviour. A larger study population is needed to confirm these findings.

5.2.5 Formula milk usage

All caregivers experienced barriers to practicing optimal BF practices. PD caregivers reported using formula milk more often in response to these barriers, in contrast to NPD caregivers who reported the usage of other liquids such as *motoho*, tea or water. Quantitative results indicated higher formula milk usage among PD caregivers and higher usage of *motoho* and juice among NPD caregivers.

Breastmilk remains the superior feeding choice with increased risk of diarrhoea and mortality associated with formula milk usage (98,99). Although formula milk may be nutritionally superior to other liquid choices (such as tea and juice), incorrect preparation methods and poor hygiene associated with formula milk preparation, and the presence of these practices in the South African population (100), raises concerns around its usage. The higher usage of formula milk among PD caregivers could suggest that formula milk was used to mitigate the effects of poor BF practices present in the population. However, investigation into the preparation and hygiene practices surrounding its usage is needed before this statement can be confidently stated. Even in this light, the protection and promotion of BF remains the highest goal.

Although the influence of marketing on developing caregivers’ attitudes towards infant foods was more explicitly expressed than that of formula milk, the presence of marketing and the high value

for formula milk ascribed by caregivers suggests the possibility of the role of marketing in influencing caregiver attitude towards formula milk and breastmilk.

5.2.6 Non-recommended foods

It is concerning that just under 50% of the study population reported including sugary treats and salty snacks the previous day. Inclusion of sugary treats is higher than reported by Huffman et al. (34) in a study conducted in 18 LMIC in Africa and Asia, in which it was reported at 20%, although in these studies the inclusion of a 'commercial snack' was higher at 75%. The inclusion of these foods was higher than the inclusion of eggs and dark green leafy vegetables as well as the intake of Vitamin A rich foods and fortified infant cereals, which is similar to findings by Huffman et al. (34). The reported intake of juice and tea was higher than that of formula milk. This is contrasting to a South African study conducted by Siziba et al. (96), which found formula milk was more often included than juice and tea.

Reasons for inclusion of these foods differed. NPD caregivers more commonly reported inclusion due to convenience (35,40) while PD caregivers expressed inclusion based on family eating patterns and the child displaying interest in foods. Although, in the context of the nutrition transition, it is concerning that these foods are included due to family eating patterns, PD caregivers indicated the inclusion of these foods less often in both data sets. This 'shared' inclusion may have resulted in a smaller amount of non-recommended foods and liquids actually being consumed by children and so intake may have been less likely to replace the intake of nutrient dense foods. PD caregivers also expressed receiving these foods from other family or community members — suggesting that these foods might not be competing for income that could be used as a "hidden resource" (40) for the purchasing of nutrient-dense foods. The inclusion of these foods based on family intake highlights the importance of role modelling of dietary patterns by caregivers and families (as opposed to considering IYCF behaviours in isolation from family eating patterns) and warrants research into the relationship between the consumption of these foods in relation to family eating patterns.

5.2.7 Feeding indicators

Differences were present in the reported intakes of proteins, fruits and vegetables when data from IYCF questionnaires and qualitative interviews were compared. Although differences in results were expected between the tool that assessed the intake from a single day compared to the tool that assessed of foods weekly intake; the large variations in results from these tools may suggest that the usage of a more appropriate tool may have been more beneficial, especially considering the chronic nature of stunting. Possible inaccuracies in using a single day indicator were reflected in the common practice of including a larger Sunday meal. This meal often included proteins and vegetables (sometimes the only day of the week that these foods were included). Therefore, interviews conducted on a Monday may result in a perception of a higher quality diet than if the interview was conducted on another day of the week. The accuracy of reporting by caregivers and the possibility of recall bias also need to be considered as a possible explanation of the difference in these results.

A review of the association between WHO IYCF indicators and child anthropometry was conducted by Jones et al. (101) across data from eight Demographic and Health surveys. This review found that MMF and the inclusion of iron rich foods were not associated with stunting; MDD was an indicator of stunting in India alone and MAD was associated with stunting in

Zimbabwe but not in any other context (101). A study conducted in Ghana found WHO indicators were better associated with WHZ than length-for-age Z-scores (LAZ) (102). The WHO IYCF indicators were developed as sample indicators to monitor changes in dietary quality in large data sets. They may, therefore lack the ability to capture the complexity of CF or lack the sensitivity needed to measure aspects of dietary quality linked to child growth. These factors may account for the inconsistencies in measuring anthropometric status reported by Jones et al. (101).

Dietary diversity has been more consistently associated with linear growth. Data from 11 demographic health surveys (Benin, Cambodia, Colombia, Ethiopia, Haiti, Malawi, Mali, Nepal, Peru, Rwanda and Zimbabwe), which controlled for confounding factors such as household wealth, found that dietary diversity was significantly associated with HAZ (28). Dietary diversity was also found to impact the child anthropometric status in Ethiopia and India as well as in a review of dietary diversity in African communities (103–105). Although dietary diversity is recognised as an essential component of healthy diets there are a lack of standardised tools to measure it. The tools used in these studies differ in the number of food groupings, the consistency in using food groups or individual foods and varying reference periods. There are few studies that have validated dietary diversity tools against nutritional adequacy. The standardisation of a dietary diversity tool and evaluation in its sensitivity in assessing stunting is recommended (106).

PDs did not outperform NPDs in any of the WHO IYCF indicators. This raises the question whether or not IYCF practices were adequately captured due to the indicators used, highlighting the lack of a validated IYCF tool to assess IYCF practices in populations with high stunting levels. IYCF practices are widely recognised as a determinant of stunting (1,101). However, in this context, the lack of difference in the IYCF indicators between the two groups may indicate the presence of other non-nutritional stunting risk factors that contributed to the nutritional status of children.

5.3 Responsive feeding and understanding feeding cues

PD caregivers tended to display RF practices, showed less value for satiety and child preference and were less likely to list child preference as a reason for exclusion of foods. The opposite was present in the NPD population. This raises the question as to how the interaction between caregivers and children — in terms of the child expressing feeding cues and the caregiver responding to these cues — and the development of taste preferences influences feeding decisions.

Research aiming to understand factors influencing the introduction of solids suggests that caregivers respond to two types infant cues: physical (appetite and growth) and behavioural (showing interest in foods). For these caregivers, beliefs about addressing infants' immediate needs were prioritised over following infant feeding guidelines (107). This supports the results of this study as appetite and poor growth (physical cues) were given as reasons for the introduction of solids and the discontinuation of formula feeding and BF, even in the presence of HCW advice to the contrary. These actions were present in both populations and suggests support is needed for caregivers' understanding of feeding cues in the context of BF and addressing anxieties regarding infant hunger (96).

Successful feeding, according to research by Harrison et al. (107), is deemed by caregivers as practices that satisfy infant needs and use resources to gratify infant needs. This was seen more strongly amongst NPD caregivers where feeding choices were more often based on physical cues of infants, such as crying or spitting, and listed these cues as signs of hunger and dislike. This

value displayed by caregivers for providing foods that provided satiety and complied to child preference was more frequently expressed by NPD caregivers. A strong intention to comply with child preference and the influence of child preference on purchasing behaviour was also reported. NPD mothers in India found challenges in CF practices due to child preference (57).

This calls into question the role of taste development in IYCF practices. The development of taste preferences is complex and, although innate in nature and influenced by in utero and early exposure to flavours, they are also modifiable through repeated exposure, conditioning and family feeding practices (32,108,109). Repeated exposure to foods in a positive social environment has been linked to preference and the increased willingness to try new foods (32,108). PD children were more likely to exhibit these behaviours and were reported to be less fussy and more willing to try new foods. NPD caregivers more strongly held the belief that separate 'special' foods should be prepared for children; expressed value for infant foods more often and were less likely to include foods eaten by the family.

In contrast, PD caregivers expressed child preference as a reason for inclusion and through RF practices, identified behavioural cues (such as fetching bowls and tugging on clothing) as signs of appetite that served as a motivation for feeding. RF comprises of interaction between the child and caregiver and consists of a variety of behaviours such as meal length, responding to hunger cues, feeding styles etc. (32,110). RF practices may have played a role in the development of preference and understanding of feeding cues and therefore may help to explain why child preference appeared to play a smaller role in food decisions in PD households and when it did play a role, it was more likely to be associated with inclusion of foods.

RF practices are associated with higher food acceptance but research linking RF practices and growth is limited (31,111). Children of caregivers who were fed slowly were found to be less likely to stunted, with this likelihood more present in children over one year (112). PD caregivers exhibited patience at mealtimes during interviews, even implicitly expressing the need to take longer to feed their child in comparison to NPD caregivers who expressed longer meal times as a sign of dislike or poor appetite. Verbal cues were present in the PD population and these have been found to increase food acceptance (33). An important component of RF, displayed by PD caregivers, is the ability of children to express hunger cues and receive a predictable response (32).

RF has been recognised as a valuable component of IYCF (62) and has been identified as a behaviour practised by PD caregivers in the context of stunting (17). The misinterpretation and lack of knowledge regarding infant cues has been proposed to lead to non-responsive feeding styles (1) and inappropriate feeding practices (107). Non-responsive feeding practices may lead to poor food choices and the development of poor food preference (32). This suggests that PD caregivers may have a better understanding and response to behavioural infant feeding cues.

It must be noted that the cross-sectional nature of this study places limitations on understanding the development of child preferences and the role of RF. The high prevalence of prematurity in the NPD population may have contributed to fussiness (36) or indulgent feeding styles (32). This begs the question as to if development of fussy tendencies created an environment where caregivers were more sensitive to child preference or if the environment created by caregivers allowed for the adaption of preference to produce less fussy eaters.

"It is one thing to recommend how parents should feed their infants; it is another thing to provide effective tools for them to facilitate healthy eating early in life" (p 43, third paragraph, reference

113). This quote by Mennela et al. (113) highlights the need to emphasise the promotion of RF as part of IYCF guidelines. Recommendations regarding RF practices form part of PFBDG, stating “Feed slowly and patiently, and encourage your baby to eat, but do not force them” (32). However, this guideline has not been included in the most recent update to the Road to Health Booklet that was launched in 2018 (114). This raises concerns of an oversight of the recognised value of RF by key stakeholders in government.

In addition to the emphasis of RF practices, better understanding of the development of child preferences and the link between fussy eaters and stunting should be explored.

5.4 Coping strategies

A coping strategy is defined as “an action, a series of actions, or a thought process used in meeting a stressful or unpleasant situation,” (115) and can be seen as the way in which caregivers interact with their environment to influence feeding behaviours and address risk factors for stunting (such as food insecurity). These strategies can be classified as a caregiver characteristic and seen as a way in which caregivers function within their environment (Fig. 4). PD caregivers displayed this characteristic through: financial strategy, seeking employment, health seeking behaviour and higher levels of self-efficacy.

PD caregivers more often listed a wider variety of financial strategies in response to current or proposed financial difficulties. Financial literacy has been linked to improved usage of child support grants (116) and a lower risk of food insecurity (117), both of which could influence stunting incidence and the quality of CF practices. Improved financial literacy among South African caregivers receiving the child support grant have been found to improve growth trajectories of children in South Africa, however this was not seen to affect height (116). In the context of high grant usage in this community, improving financial literacy may be an effective way to improve the efficacy of the child support grant (116) or food security and therefore impact CF practices. Addressing the social and psychological barriers that prevent caregivers from making good financial decisions needs to accompany these interventions. Research in how to effectively improve financial literacy is needed (116,117).

Health seeking behaviour and RF practices were strategies listed, more often amongst PD caregivers, in response to poor appetite or concerns regarding child health. Health seeking behaviour has been shown to reduce the risk of stunting (118–120). Higher value for HCWs or higher maternal education could be proposed as reasons for health seeking behaviour among PD caregivers. Research aimed at understanding maternal health seeking behaviour in accessing antenatal care (121) or in response to child illness (122) has been conducted, however, understanding health seeking behaviour in terms of childhood malnutrition is limited.

Differences in PD and NPD behaviour was seen in NPD caregivers suggesting coping mechanisms less often and expressing inaction towards difficulties. Action was often enabled by support, which raises the question as to whether NPD caregivers’ lack of response to difficulties was a result of a lack of social capital. Or if this was due to caregivers adopting an external locus of control or due to low levels of self-efficacy. Higher levels of self-efficacy among caregivers has been shown to improve BF practices (88), improve infant diets among infants aged 1-3 years (123) and improve access to health services which, in turn, impact stunting levels (124).

PD caregivers displayed self-efficacy more often in their responses to proposed changes in financial situation. Both sets of caregivers suggested negative coping mechanisms such as reducing child portion sizes as well as reducing maternal food intake, which negatively impacts maternal health (125) and therefore, in the long run, negatively impacts child health. These proposed strategies are similar to those adopted by other South African families (126). However, PD caregivers expressed self-efficacy in their act of proposing positive coping strategies such as seeking employment or adjusting spending habits. Higher education levels among PD caregivers may have contributed to higher levels of self-efficacy (123).

5.5 Family eating

The practice of family eating was more present in PD households. This practice was linked to the introduction of new foods, the inclusion of proteins and the motivation behind purchasing behaviour. There is growing evidence suggesting that children who eat with their families, or in companionship, have healthier dietary patterns although most evidence concerning meal environments has been done in the context of childhood obesity (107).

The role of family eating is proposed to have two possible influences on PD eating behaviours: the development of child preference and the acceptance of foods or the creation of more opportunities for families to respond to hunger cues.

Parents modelling healthy eating behaviours to children has been shown to play a role in developing a child's preference and acceptance of foods. Children have been found to be more likely to try new foods if they have seen an adult, especially their mother, eat the food (107,109,127). PD children were given the opportunity to not only witness but also taste foods eaten by families, in comparison to NPD children who were present at mealtimes less often and did not share meals. Repeated exposure to foods develops preference, the acceptance of foods and can overcome dislike (107,109). In this way, family eating may have resulted in PD children acting less fussy with a higher tolerance for different foods.

PD caregivers indicated that mealtimes were a time when children were given the opportunity to eat again or when additional food was given in response to hunger cues. Family eating may, therefore, create more opportunities for caregivers to respond to hunger cues thereby helping to facilitate optimal IYCF practices such as increasing meal frequency and RF practices. Meeting meal frequency has been linked to reduced stunting levels (29,30).

It is interesting to note that protein, in particular, was listed as a food introduced to children at family mealtimes. This is noteworthy in the context of the proposed role of protein in addressing stunting (20,29,128). It would be interesting to know if this resulted in a higher intake of protein due to more frequent exposure to protein or due to encouraging a child's acceptance of proteins.

Children tend to show a preference for foods that are readily available at home (107). Therefore, following family eating patterns could have a potential negative influence when the impact of the nutrition transition on dietary intake and rising child obesity rates (7) are taken into consideration. Family eating resulted in the intake of non-recommended foods for PD children. However, these foods were generally included less frequently than in NPD diets. A more in-depth discussion regarding these practices is reflected in Section 5.1.6.

PD caregivers' value for facilitating family eating was explicitly expressed and inferred when given as a motivation for purchasing behaviour. NPD caregivers, in contrast, expressed a higher value for infant foods. Although infant cereals were a common first food for all children and their usage was reported to be similar for both groups, PD caregivers expressed value in terms of age-appropriateness and consistency in contrast to NPD caregivers who expressed the opinion that these foods held superior value for children. This belief could have resulted in the caregiver being more reluctant to introduce 'family foods'. A study conducted in rural KZN found that the cost of infant cereals, in comparison to monthly income, was high and portion sizes used by caregivers was a quarter of recommended quantity — making it unlikely that these cereals met the nutritional needs of infants in this context (129). The high cost of these cereals is concerning as these

households may prioritise the usage of these foods at the expense of other, lower-cost items, that could assist in meeting nutritional needs.

The perception of the superiority of infant cereals and teas is concerning and the role of marketing CF must be considered. Inappropriate promotion of commercially produced complementary foods is proposed to undermine optimal BF practices through the promotion of the early introduction of solids and interference with continued BF due to recommending an excessive daily ration (130,131). In this research, PD caregivers referred to marketing as a source of information pertaining to usage (age of introduction, portion size etc.). This was in comparison to NPD caregivers who used labels to ascribe value to these foods. The usage of product labels as a source of instruction (and not inclusion) is encouraging and suggests the possibility that companies are in line with guidelines as laid out in South Africa's regulations that relate to foodstuffs for infants and young children (R991) (132). However, research by Sweet et al. (131) evaluating corporate compliance of commercially produced complementary foods labels in four countries (Cambodia, Nepal, Senegal and Tanzania) found few labels to be compliant. Product labels did not provide daily portion size recommendations, lacked age recommendations or provided an inappropriate age recommendation and did not promote exclusive or continued BF. When recommendations for portion size were included they exceeded the energy recommendations for a breastfed child (131). In a South African context, field testing of industry compliance with these standards was found to be low. It must be noted that this study was conducted in 2012 (133).

This research suggests that there is value in developing the practice of eating as a family with possible advantages in improving the acceptance of new foods and protein inclusion through the development of taste preferences and RF practices. However, more research is needed to establish this link. This suggestion is made cautiously as the role of the nutrition transition (134), its impact on the quality of South African diets and the increase in childhood obesity rates (38) needs to be considered. Therefore, the promotion CF practices should occur in the context of promotion of healthy eating for caregivers.

The perception of the superiority of infant foods may be a barrier to the development of family feeding practices. The role of infant cereals usage in conjunction with other appropriate complementary foods should be highlighted and the usage of these foods and the role of marketing in influencing caregivers' opinions warrants further investigation.

5.6 Social capital

Social capital can be defined as the shared norms, values, networks and associations that facilitate co-operation between or within groups (135) and can be seen as a characteristic of households and communities (Figure 4). Social capital can be considered to be structural (a measure of what people do such as being members of networks) or cognitive (a measure of how people feel) (136). PD caregivers not only expressed support in either advice, food provision, financial support or assistance with childcare, but did so with warmth and certainty — giving the impression of truly supportive households and communities that were rich in cognitive social capital. PD caregivers' action in seeking assistance or advice from family members or neighbours or from HCWs can be seen as a form of structural capital

In a study conducted by De Silva et al. in Peru, India, Ethiopia and Vietnam, in households with mothers who had higher levels of social cognitive capital, the effect of poverty on HAZ was much less pronounced (135). Social support has been proposed to influence child nutrition in a variety of ways: insulating households from shocks; increasing maternal access to health services and assets and improving maternal mental health and therefore improving child growth (136). Idiosyncratic shocks have been found to influence child nutrition in a study conducted in KZN. This study found that social capital acted as a buffer against household economic shocks on negative impacts on HAZ scores (137).

PD caregivers displayed higher access to assets when they expressed receiving financial support more often and more consistently than NPD caregivers. This additional income may not have been reported as part of annual household income by caregivers and so resulted in slightly higher socioeconomic status of some PD households. A lack of support as well as instability in support in NPD households may have resulted in these households being more exposed to food insecurity. Stability is one of the four dimensions needed to achieve food security (138). A reduced risk of household hunger has been linked to community and household level social support (135) and households' food security status has been identified as a risk of stunting (43,126).

Social connectedness has been proposed to enable mothers to know more, think differently and do things differently (135). PD caregivers expressed receiving advice more often, generally encouraging appropriate IYCF feeding practices, which may have resulted in them knowing more about childcare practices. No clear links were indicated between social connectedness and caregiver attitudes, beliefs or practices. Although one PD caregiver indicated that she followed RF practices after being taught by her sister. The role of social connectedness in establishing coping strategies and the practice of family eating requires more research.

Action taken by caregivers was associated with social support and so it needs to be considered if the isolation and instability present among NPD caregivers contributed to the apparent presence of apathy and lack of coping mechanisms in this population or if these were characteristics of NPD caregivers. An understanding of how PD caregivers access social capital is needed to understand if these caregivers were able to obtain this capital as a result of their own resourcefulness or due to the benevolence of communities. It should be asked that if, through their own resourcefulness, what strategies can be adopted to assist NPD in gaining social capital? If it is due to community benevolence, then research is needed to determine how to identify and support individuals at risk of isolation.

5.7 Health care worker advice

Both PD and NPD caregivers indicated receiving and following advice from HCWs. It is positive to note that in some instances, caregivers chose to follow HCW instruction pertaining to the timely introduction of solid foods even in the presence of other contradicting advice. This highlights the important role of HCWs as a primary source of infant feeding information (75). However, findings by Harrison et al. (107) indicating that meeting an infant's perceived needs takes priority of HCW advice in caregivers' decisions to introduce solids (as discussed in Section 5.2) must be noted.

It is concerning to note that advice given by HCW to HIV positive mothers to discontinue BF at six months is in line with the outdated 2007 PMTCT policy (75). Current guidelines promote adherence to anti-retroviral therapy and six months of EBF and continued BF until two years; this is the same BF guidelines as for HIV negative mothers (68). Training of HCWs on the updated HIV and IYCF guidelines has been reported to be low- with a study conducted in 2019 amongst primary health care nurses in Limpopo reporting that two thirds of nurses had not been trained on the revised IYCF guidelines of 2013 (75). Confusion among HCWs in a primary health care clinic in Johannesburg, South Africa, was reported around PMTCT guidelines- specifically pertaining to the continuation of BF after six months and misunderstanding regarding the definition of mixed feeding (72). Similar confusion was reported among HCWs in this research. Previous PMTCT guidelines that focus on allowing the mother to make an informed choice regarding her infant feeding option and placed the onus on provision of knowledge and skill to be able to assist the carer in making a decision (139). There is concern that HCWs may not have the capacity and skills to adequately counsel HIV positive mothers to make an appropriate feeding choice (72,75). In light of this and the uncertainty among HCWs regarding infant feeding in the context of PMTCT urgent training is needed among HCWs to ensure promotion and adherence to the most recent PMTCT guidelines.

Caregivers indicated receiving a variety of messages regarding CF practices although these messages were communicated less frequently than advice pertaining to BF and the introduction of solids. It is encouraging that these messages are present in the population but more emphasis needs to be placed on the provision of IYCF messages beyond six months of age. Barriers such as time and staff constraints have been listed in a South African context as barriers to the implementation of Road to Health Booklet health promotion messages (140) and so strategies to address these barriers in addition to a key set of messages (54) should be developed. South African PFBDG (62) serve as an example of such messages. These messages should become mainstreamed in all relevant documentation to assist in its implementation in health care facilities.

5.8 Demographic characteristics

Differences in demographic characteristics are discussed in the section below. It must be noted that this is intended to be viewed as a description of this specific population.

5.8.1 Birth weight and gestational age

The high percentage of LBW and premature NPDs is a significant finding of this research, although it must be noted that not all data pertaining to this could be collected due to difficulties in obtaining this information from the study population (see Section 3.7.3).

LBW and prematurity have links to stunting and low HAZ scores (20,44,141). This is supported by a review by Kishna et al. (142) who found that height deficits among LBW infants were the greatest during the first years and then halved after the period of infancy. A review by Belbasis et al. (143) supports the link between LBW infants and stunting in LMIC.

When the link between LBW and premature infants and stunting is considered, the importance of maternal nutrition and antenatal care in addressing stunting becomes apparent. Interventions such as sufficient protein and calorie intake, micronutrient supplementation and antenatal care attendance are valuable in supporting healthy pregnancies (141). Antenatal care attendance has been associated with reduced stunting (102). The high prevalence of these risk factors among this study population highlights the need to prioritise antenatal care in South Africa, as valuable intervention to address persistent stunting rates.

Due to the high prevalence of LBW and premature children in the population, results should be interpreted with caution as IYCF practices may not have been sufficient to mitigate the influence of these factors on NPD children. This highlights the value of ensuring that premature and LBW infants are highlighted as at risk for stunting and are assisted to achieve optimal nutrition and development. To the researcher's knowledge there are currently no such programmes in place to specifically assist caregivers of LBW or premature infants.

5.8.2 Age and gender

Although the mean age of NPDs was only one month older than PDs (11 in comparison to 10 months), a higher percentage of PDs were aged six to nine months. Higher stunting rates have been associated with older children (41,42) however, a PD study conducted to identify factors associated with stunting found that PDs were more likely to be older (16). A hypothesis for the high percentage of six to nine-month-old PDs (60%) in this research may have been optimal BF practices among the PD population. However, these practices were not present in the population and so the protective effect of good nutrition during pregnancy and the higher prevalence of normal gestational age and birth weight infants may serve as a possible explanation.

NPD children were more likely to be male. This is consistent with data from studies in Nigeria and Zambia identifying risk factors for stunting that found male children to be at a higher risk (118,144). However, it is unexpected considering the Free State's stunting rates for girls were reported to be slightly higher than for boys at 22% in comparison to 19% (7).

5.8.3 Caregiver characteristics

Lower maternal education levels is a well-established risk factor for stunting (5,21,145). Lower maternal age shows links to an increased risk of stunting but this link is not as well established (146). One review of stunting and CF practices found maternal education more important than protein intake in its effect on stunting (147). This is significant in the context of this study as PDs

did not have clearly superior IYCF behaviours, as indicated by WHO IYCF indicators, however caregivers of PDs were more likely to have obtained a higher level of education. One investigation proposed that maternal education reduces the risk of stunting though facilitating better intrauterine growth (148). The low incidence of LBW children and higher maternal education present in the PD population supports these findings.

PD caregivers were, on average, a decade older than NPD caregivers. Maternal birth spacing and number of children (which may have resulted in more childcare experience) did not differ much between these two groups and so alternative explanations for maternal age playing a role in stunting needs to be found. One possible explanation is that, although PD caregivers may not have more childcare experience, they may have had more life experience — allowing for the development of coping strategies such as financial planning that could contribute to better childcare practise.

5.8.4 Living conditions

PDs tended to have better living conditions. Little difference was reported in annual income. This is an interesting result, as children in lower-income households have been shown to be more likely to be stunted (24). This opens questions about the possibility of inaccurate reporting by caregivers or if true PDs were found within this context — children that had access to the same financial resources but were able to attain a favourable outcome. Financial strategies suggested and adopted by PD caregivers may support this theory.

Grants, specifically the child support grant, were listed as the main source of income in most households and could provide a reason for similar household incomes among caregivers. Taking into account the high dependency on grants and the high unemployment levels of caregivers and fathers, the value of this social safety net as a nutrition-sensitive intervention is suggested. The unconditional nature of these grants should be relooked and a nutritional focus of these interventions needs to be developed (9,53).

With income similar amongst households, differences in living conditions may have accounted for the differences in socioeconomic status scores. PDs were more likely to be living in free-standing houses, most often Reconstruction and Development Programme (RDP) houses. Caregivers access to household assets, such as sanitation and electricity, was often linked to residency in these houses. This is an encouraging indication of the impact of Reconstruction and Development Programme on improving sanitation services which have shown to impact stunting (3,27,42). This finding highlights the value of a multi-sectoral response to address stunting.

Differences in household size could also be proposed as a characteristic of NPD households that placed children at risk of stunting (16,149).

5.8.5 Socioeconomic status

Socioeconomic status was measured as combination of maternal education, income, employment, living conditions and household size and although differences were seen in these individual factors (with the exception of income and employment) small differences were seen in socioeconomic status scores. Differences in socioeconomic status scores have been shown to impact stunting but not consistently (27). Due to the small sample size, no deduction can be made as to if this difference is significant.

5.9 Positive deviant practices

PD practices have been categorised differently by literature. PD behaviours have been defined as being emphasis (emphasis of well-known practices such as EBF) or adaptive (local adaptations to key behaviours or to address barriers). Table 20 lists emphasis and adaptive behaviours as found in this study.

Emphasis behaviours displayed by PD caregivers included the more frequent inclusion of proteins, less frequent inclusion of non-recommended foods, following RF practices and health-seeking behaviour. These were classified as emphasis behaviours that are known to impact IYCF practices but were more prevalent and valued in the PD population. The inclusion of the ‘flesh’ of meat, family eating and financial strategies were adaptations made by PD caregivers within their current environment that influenced IYCF behaviours.

Table 20: Proposed adaptive and emphasis positive deviant practices

Emphasis positive deviant behaviours	Adaptive positive deviant practices
Infant and young child feeding practices <ul style="list-style-type: none"> • More frequent inclusion of proteins • Less frequent inclusion of non-recommended foods • Responsive feeding Practices 	Infant and young child feeding practices <ul style="list-style-type: none"> • Inclusion of the ‘flesh’ of meat
Coping strategies <ul style="list-style-type: none"> • Health seeking behaviours 	Coping strategies <ul style="list-style-type: none"> • Financial strategy
	Family eating

Lapping et al. (17) suggests that PD behaviours should be transferable to other households in order to be classified as PD behaviour and if not replicable are classified as “true but useless” behaviours. It is for this reason that social capital has not been classified as an adaptive or emphasis behaviour due to questionable replicability of creating social support within a community (as discussed in Section 5.7).

5.10 Summary

The presence of poor IYCF practices and poor performance in WHO IYCF indicators in both groups were unexpected in the context of other PD research into IYCF behaviours that found clearly superior IYCF practices among PD populations (15,16,57,150). This raises the question as to if there is an indicator to assess IYCF practices that is more sensitive to stunting. Another explanation is that these results highlight the multifactorial nature of stunting and that other risk factors, such as high prevalence of LBW infants and differences in maternal age and education, had a more profound impact on stunting than poor IYCF practices.

Even in light of these results, adaptive and emphasis PD practices were identified. RF was identified as an emphasis PD behaviour. The misinterpretation and lack of knowledge regarding infant cues has been proposed to lead to non-responsive feeding styles (1) and inappropriate feeding practices (107). RF practices need to be prioritised in IYCF messages.

Coping strategies of caregivers displayed how caregivers interacted with their environment to influence IYCF behaviours. Financial strategies displayed and suggested by PD caregivers are an example of adaptive PD practices and suggests the possible improved financial literacy of these caregivers. Health seeking behaviours are proposed as an emphasis PD behaviour, however, research in the area of health seeking behaviours regarding childhood malnutrition is limited.

The practice of family eating is suggested as an adaptive PD behaviour. This practice was linked to the introduction of new foods, the inclusion of proteins and the motivation behind purchasing behaviour. A high value for and perception of the superiority of infant foods may be a barrier to family eating in NPD households. The recommendation for the adoption of the practice of family eating should be made cautiously as the role of the nutrition transition (134), its impact on the quality of South African diets and the increase in childhood obesity rates (38), needs to be considered. Promotion of CF practices should occur in the context of promotion of healthy eating for caregivers.

Social capital present in PD households could be a strategy to insulate households against shocks and improve access to assets and therefore improve household socioeconomic status or food security status. Due to the lack of replicability of this characteristic of PD households, social capital was classified as a “true but useless” PD practice. Better understanding of how PD caregivers obtain social capital and if and how it can be transferred to NPD caregivers is needed.

5.11 Limitations

The PD approach, although valuable in capturing complex behaviours that other methodologies may miss (57), is limited to local context and the context in which this research was conducted should be considered before determining transferability of data to other settings. In addition, the exploratory and qualitative methodology of this study aimed to develop a hypothesis regarding PD behaviours in the context of stunting and IYCF practices and therefore, results should be used to inform further research areas. This is particularly pertinent when considering quantitative results that aimed to provide a description of this specific sample and so they cannot be extrapolated to other populations without first establishing these trends within a larger sample size.

Prolonged engagement, transparency in the research process and researcher reflections were present within the data capture process with the aim of ensuring trustworthiness of data. The presence of triangulation during data capturing, for example through observation of caregivers, would have added to the trustworthiness of data.

WHO IYCF indicators have not consistently been linked to stunting rates and the nature of the indicator may have resulted in IYCF behaviours of the population not being accurately captured (as discussed in Section 5.1.7). The small sample size and the informal tool used in qualitative interviews limits the validity of these results in the larger population. Challenges surrounding language and possible recall bias of caregivers may have influenced accuracy of results. Repeating the IYCF tool with caregivers may have helped to reduce possible inaccuracies in IYCF data and improve reliability of data. Following the traditional PDM and including observation of caregivers and their feeding practices as part of data collection could also have assisted in reducing possible inaccuracies in reporting by caregivers however, does introduce other possible confounding factors such as the possibility that caregivers may act differently due to observation. Recall bias during qualitative interviews regarding feeding practices from birth could only have been addressed by changing the cross sectional nature of the study.

A key characteristic of the PDM is the selection of individuals exposed to the same disadvantaged environment. Selection criteria (Section 3.4.1 and Addendum 5) and the selection of children from the same community aimed to include children who were exposed to similar risk factors in order to identify true PDs and PD behaviours. The small difference in mean socioeconomic scores suggests that these methods were, to some extent, effective. However, these approaches could not control all differences in exposure to risk factors in the population (as seen in differences in other demographic characteristics such as maternal age and education). Therefore, the impact of CF practices, in isolation from other risk factors, cannot be determined. It must be noted that the numerous and multifactorial risk factors for stunting would make it challenging to control all risk factors and obtain a study population that was exposed to all of the same risk factors. This is a challenge recognised by other PD research studies (57).

The cross-sectional nature of this research is limited in its ability to adequately capture the chronic nature of stunting. The impact of maternal nutritional status, antenatal practices and gestational age and birth weight could not be adequately captured and their influence on stunting status of the child is therefore undetermined in this study.

Chapter 6: Recommendations and conclusions

6.1 Recommendations

6.1.1 Dissemination of positive deviant behaviours

The recommendations for this study fall in line with the strategy suggested by Lutter et al. (78) in addressing CF practices: the development of “key messages that address principle challenges of target populations” (pg 104, paragraph 4, reference 78). Key messages identified in this study include: the inclusion of the ‘flesh’ of meat, the practice of RF and eating meals as a family. RF is a complex set of behaviours and so the ability to convey this as a targeted message may be challenging. However, the South African PFBDG’s provide a single targeted message regarding RF that could be adopted by HCWs. Although the PD approach is context specific, and so the messages identified in this study aid in addressing CF practices within this community, the identified messages are all inherent to the PFBDGs that could be disseminated to the broader population.

Although the methodology used in this research is based on other PD studies (16,17,57) the methodology diverged from the traditional PDM in that there was no community collaboration to assist in identifying and defining the problem and setting benchmarks for progress (15). However, the adoption of the traditional PDM in implementing the adoption of PD practices within the study community is recommended. This involves designing interventions, in collaboration with the community, for the adoption of PD behaviours through ‘hands-on’ activities. One example of these activities is the Hearth Model where PD caregivers meet in the homes of NPD caregivers in order to transfer PD skills and knowledge. This could be particularly useful in the transfer of more complex practices such as RF and financial strategies; overcoming the negative perceptions NPD caregivers may have regarding the inclusion of proteins at a young age or family eating practices. Monitoring and evaluation is the final step within the PDM that needs to be adopted to evaluate the effectiveness of interventions.

6.1.2 Health care system

HCWs need to be educated regarding the most recent version of the PMTCT guidelines and, to ensure consistent messages, a standardised set of CF guidelines needs to be given to caregivers. Emphasis should be placed on educating caregivers on the exclusion of both liquids and solids until the age of six months and continued BF until two years. HCWs should also be capacitated by the DOH with skills to address the barriers and anxieties of caregivers with regards to BF.

The high prevalence of premature and LBW infants in the study population suggest that research into antenatal care services and attendance within the Harrismith area is warranted to ensure that adequate support is given to pregnant women during this vital period, as advocated for in the first 1000 days initiative. Interventions supporting healthy pregnancies- such as improved antenatal care and micronutrient supplementation should be strengthened. The development of programmes supporting LBW and premature infants in optimal growth should be developed.

6.1.3 Multi-sectoral Collaboration

This research highlights the multi-factorial nature of stunting, and so therefore the need for response from sectors beyond the health care sector to address the challenge of stunting.

One such response could include a revaluation of the usage of the child support grant by caregivers. The usage social safety nets, such as the child support grant, has been advocated as a nutrition sensitive intervention to address malnutrition while simultaneously advocating the need

to improve the quality and nutritional focus of these interventions(18). This is true within a South African context where the usage of child support grants has not been linked to improvement in nutritional status (6) . A reevaluation of the unconditional nature of this grant by the South African Social Support Agency could be a means of improving the usage of this grant. Alternatively, the incorporation of a programme to assist in improving the financial literacy of caregivers using the grant by this agency could be considered.

The low level of access of appropriate sanitation in Thabo Mofutsanyane (79), the improved living conditions reported by PD caregivers and the link between improved living conditions and stunting (22,41) highlights the need for poor living condition to be addressed. Prioritisation of improvements in living conditions is needed from departments such as water and sanitation and housing and the local municipality. Additionally, low rates of graduation from high school in Thabo Mofutsanyane (79) and the difference in maternal education reported by caregivers highlights the need for the department of education to address education levels within this community in order to impact future stunting prevalence.

Response from industry is required in order to address the influence of marketing on the usage of complementary foods such as infant cereals and teas. Clearer guidance for defining appropriate and inappropriate marketing of these foods is needed and commitment from industry to change practice and comply to such guidelines.

6.1.4 Further research

The nature of this research was explorative and descriptive and aimed to aid in identifying possible PD behaviours to drive further research.

Questions raised by this research include:

- What is the role of RF and caregivers' responses to feeding cues in the development of child preference?
- What is the current industry compliance to labelling and marketing of commercially produced complementary foods in South Africa?
- How do caregivers obtain social capital? Is social capital a result of the caregivers' characteristics or is it a characteristic of their communities? Can social capital be obtained by isolated caregivers?
- Are differences in financial literacy present among caregivers of stunted and non-stunted children?
- Due to the chronic nature of stunting, would longitudinal research investigating CF practices and RF for stunting produce different results?

6.2 Conclusion

Poor IYCF practices were present in both PD and NPD populations with poor BF practices, early introduction of liquids and solids, poor performance in WHO IYCF indicators and high inclusion of non-recommended foods present. Despite generally poor IYCF practices, practices such as RF, more frequent inclusion of proteins and the 'flesh' of meat (as opposed to including only the gravy) and less frequent inclusion of non-recommended foods and liquids were displayed by PD caregivers. These are proposed as key health promotional messages that can be relayed within the local community in which this research was conducted. These messages are all inherent to the PFB DGs that could be disseminated to the broader population.

Although the methodology and the PD approach aimed to control risk factors in the population, the multifactorial and complex nature of stunting made it challenging to control all risk factors and differences present within the population. Most notably was the prevalence of LBW and premature infants, differences in maternal age and education and in living conditions. The influence these risk factors present in the NPD population need to be considered when interpreting these results. The identification of these risk factors aids in identifying and supporting at risk caregivers within the study population. Specifically, the high prevalence of LBW infants and prematurity within the NPD population highlights the chronic nature of stunting and the value of antenatal care.

Behaviours and characteristics of caregivers and community factors that influenced how PD caregivers interacted with their environment were identified in qualitative interviews. These included RF practices and the caregivers' response to infant cues, coping strategies of caregivers (health seeking behaviour behaviours and financial strategy), family eating and social capital of caregivers. Outdated PMTCT guidelines, poor BF support and a lack of CF guidelines provided by HCWs, even in the presence of health seeking behaviours, identified the need for the capacitating of HCWs in the area of IYCF.

The diffusion of these PD practices can be used to empower caregivers within the local community to overcome the challenges of raising well-nourished children within the disadvantaged context they find themselves in. More research is required to understand the role that child preference plays and how caregivers' interpretation of feeding cues impact feeding practices, the influence of improving caregivers' financial literacy on stunting and how best to facilitate this skill amongst caregivers. A more in-depth understanding of social capital is also needed — whether it is a result of the caregivers' characteristics or a characteristic inherently present in their communities.

Poor feeding practices revealed in this study are similar to those found in other South African studies and highlight the need for continued advocacy and promotion of BF and CF in South Africa. The presence of risk factors and both nutritional and non-nutritional PD behaviours highlights the need for a multi-sectoral response to addressing stunting and improving IYCF practices. Improvements in living conditions among PDs as a result of residency in Reconstruction and Development Programme houses highlights the value and positive impact of a multi-sectoral approach. As highlighted by Piwoz et al. (128), improving CF requires such response as CF is, "bound up with all the other big problems and challenges of development" (p42, second paragraph, reference 122).

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Addenda

Addendum 1: Health Research Ethics Committee of Stellenbosch Approval letters

Approved with Stipulations

New Application

14/11/2017

Project Reference #: 1588

HREC/UREC Reference #: S17/10/196

Title: Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Phuthaditjhaba, Free State

Dear Miss Kerry Pilditch

The **New Application** received on 08/10/2017 21:42 was reviewed by members of the **Health Research Ethics Committee** via Minimal Risk Review procedures on 14/11/2017 and was approved with stipulations.

Please note the following information about your approved research protocol:

Protocol Approval Period: This project is approved for a period of 12 months from the date of this letter.

The stipulations of your ethics approval are as follows:

1. Name of participants should not appear on addendum A – may use a unique ID
2. Specify the place where the interviews will be conducted

Please remember to use your project reference number (**1588**) on any documents or correspondence with the HREC/UREC concerning your research protocol.

Translation of the consent document(s) to the language(s) applicable to your study participants should now be submitted to the HREC.

Please note that this decision will be ratified at the next HREC full committee meeting. HREC reserves the right to suspend approval and to request changes or clarifications from applicants. The coordinator will notify the applicant (and if applicable, the supervisor) of the changes or suspension within 1 day of receiving the notice of suspension from HREC. HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review:

Please note you can submit your progress report through the online ethics application process, available at: <https://apply.ethics.sun.ac.za> and the application should be submitted to the Committee before the year has expired. Please see [Forms and Instructions](#) on our HREC website for guidance on how to submit a progress report.

The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility, permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in

the protocol. Please consult the Western Cape Government website for access to the online Health Research Approval Process, see: <https://www.westerncape.gov.za/general-publication/health-research-approval-process>.

Page 1 of 2

Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

For standard HREC forms and instructions, please visit: [Forms and Instructions](https://www.sun.ac.za/healthresearchethics) on our HREC website (www.sun.ac.za/healthresearchethics)

If you have any questions or need further assistance, please contact the HREC office at 021 938 9677.

Yours sincerely,

Mr. Franklin Weber

Coordinator

Federal Wide Assurance Number: 00001372

Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No. 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles, Structures and Processes 2015 (Department of Health).



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Progress Report Approval Letter

13/09/2018

Project Reference #: 1588

Ethics Reference #: S17/10/196

Title: Complementary Feeding Practices and Behaviours of Positive Deviants of young

children at risk of stunting Dear Miss Kerry Pilditch,

Your request for extension/annual renewal of ethics approval dated 12/09/2018 14:38 refers.

The Health Research Ethics Committee reviewed and approved the annual progress report you submitted through an expedited review process.

The approval of this project is extended for a further year.

Approval date: 13 September 2018

Expiry date: 12 September 2019

Kindly be reminded to submit progress reports two (2) months before expiry date.

Where to submit any documentation

Kindly note that the HREC uses an electronic ethics review management system, *Infonetica*, to manage ethics applications and ethics review process. To submit any documentation to HREC, please click on the following link: <https://applyethics.sun.ac.za>.

Please remember to use your **Project ID** [1588] and Ethics Reference Number on any documents or correspondence with the HREC concerning your research protocol.

National Health Research Ethics Council (NHREC) Registration Numbers: REC-130408-012 for HREC1 and REC-230208-010 for HREC2

Federal Wide Assurance Number: 00001372

Institutional Review Board (IRB) Number: IRB0005240 for HREC1

Institutional Review Board (IRB) Number: IRB0005239 for HREC2

The Health Research Ethics Committee complies with the SA National Health Act No. 61 of 2003 as it pertains to health research and the United States

Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles, Structures and Processes 2015 (Department of Health).

Yours sincerely,

Mrs. Ashleen Fortuin

Health Research Ethics Committee 1



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Amendment Approval Letter

15/10/2018

Project Reference #: 1588

Ethics Reference #: S17/10/196

Project Title: Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Harrismith, Free State

Dear Miss Kerry Pilditch,

Your amendment request # 1 dated 4 September 2018 refers.

The Health Research Ethics Committee (HREC) reviewed and approved the amended documentation through an expedited review process.

Where to submit any documentation

Kindly note that the HREC uses an electronic ethics review management system, *Infonetica*, to manage ethics applications and ethics review process. To submit any documentation to HREC, please click on the following link: <https://applyethics.sun.ac.za>.

Please remember to use your **Project ID** [1588] and ethics reference number S17/10/196 on any documents or correspondence with the HREC concerning your research protocol.

National Health Research Ethics Council (NHREC) Registration Numbers: REC-130408-012 for HREC1 and REC-230208-010 for HREC2

Federal Wide Assurance Number: 00001372

Institutional Review Board (IRB) Number: IRB0005240 for HREC1

Institutional Review Board (IRB) Number: IRB0005239 for HREC2

The Health Research Ethics Committee complies with the SA National Health Act No. 61 of 2003 as it pertains to health research and the United States

Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles, Structures and Processes 2015 (Department of Health).

Yours sincerely,

Mrs. Ashleen Fortuin

Health Research Ethics Committee 1 (HREC1)

Addendum 2: Screening form

Date: _____

Caregiver Number: _____

Please complete the following:

	Yes/ No
What is the child's age: (Is the child between the ages of 6-18 months? = YES)	
What is your relationship with the child (Caregiver = YES)	
Who does the purchasing or preparing food for your child or feeding your child? (If they are involved = YES)	
Are there two or more children in your household? (Not necessarily your children =YES)	
How many children are there in your household? (Not necessarily your own children) (more than 5 children in your household = NO)	
What is your monthly income EXCLUDING GRANTS? (If household less than R895 EXCLUDING GRANTS = YES)?	

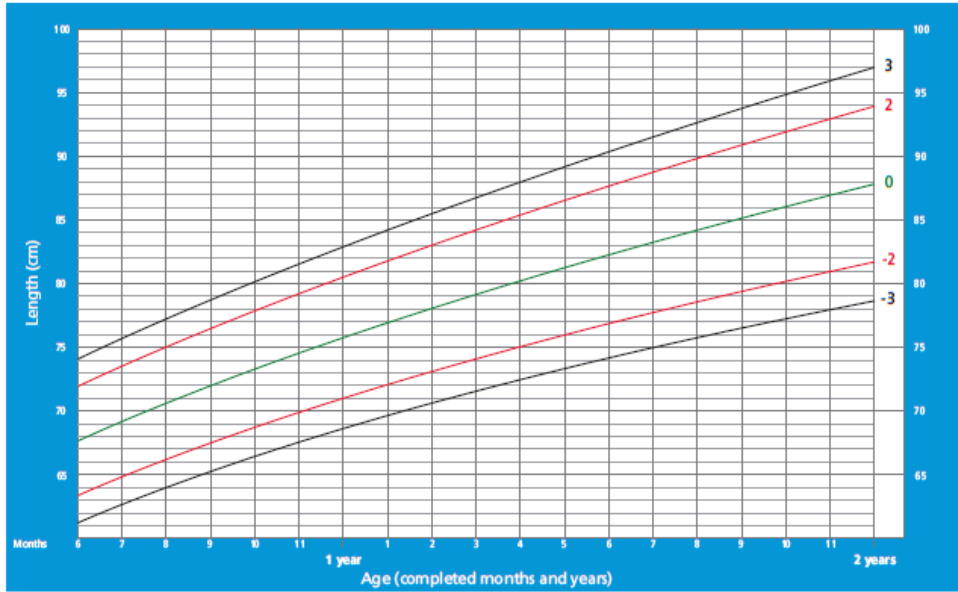
If the answer to any of the above questions is "No," then the participant is not eligible for the study.

If the answer to all the above questions is "Yes," the participant is eligible.

Addendum 3: Growth charts

Length-for-age BOYS

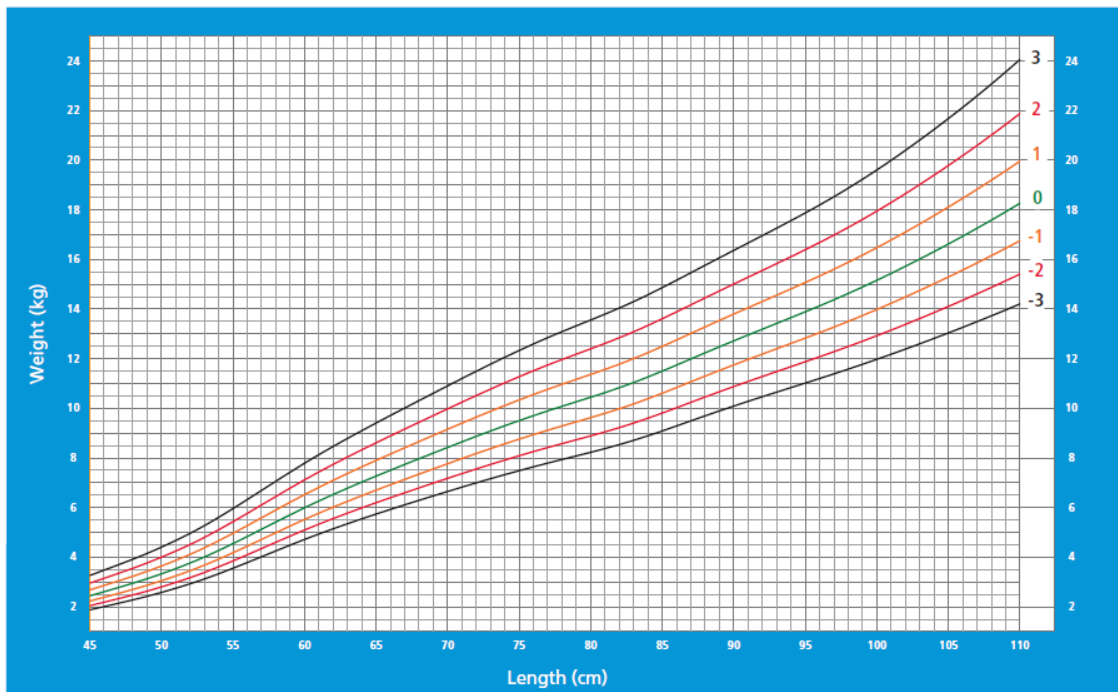
6 months to 2 years (z-scores)



WHO Child Growth Standards

Weight-for-length BOYS

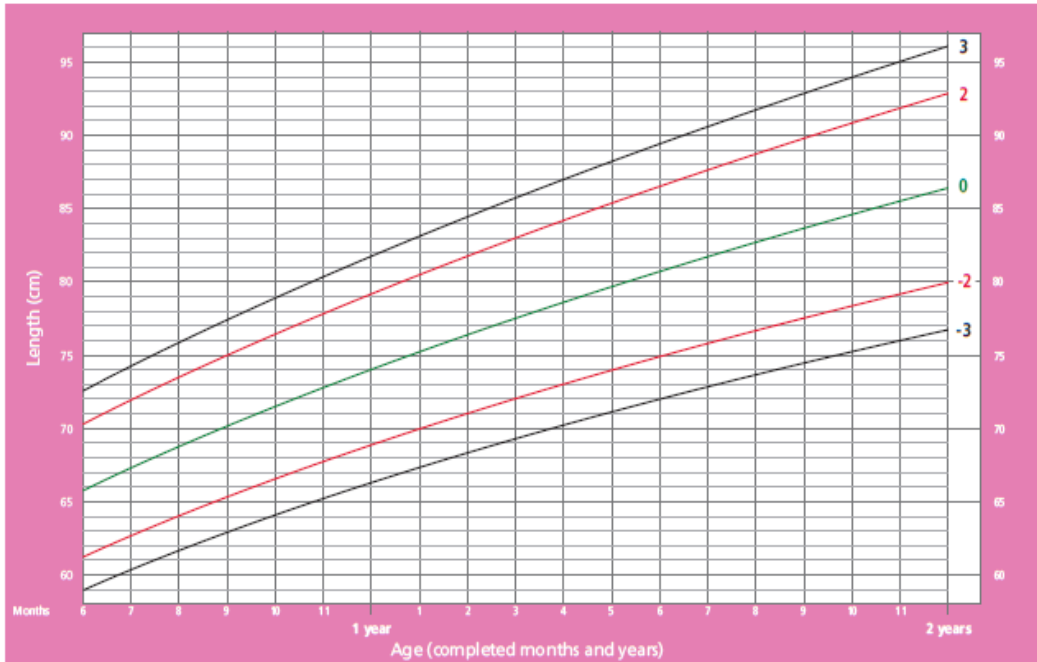
Birth to 2 years (z-scores)



WHO Child Growth Standards

Length-for-age GIRLS

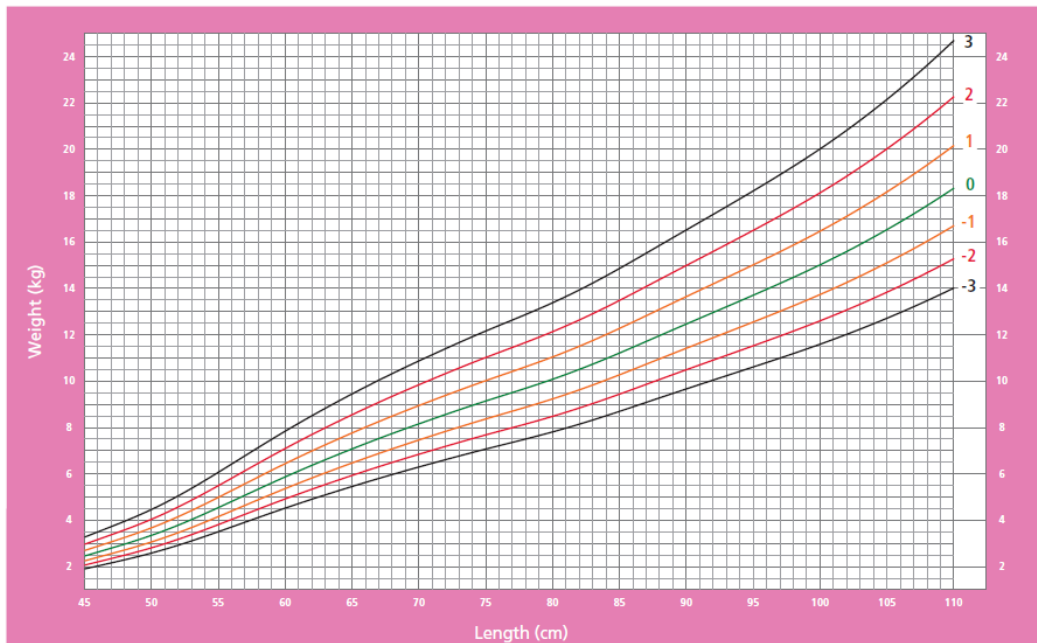
6 months to 2 years (z-scores)



WHO Child Growth Standards

Weight-for-length GIRLS

Birth to 2 years (z-scores)



WHO Child Growth Standards

Addendum 4: Classification form

Classification of Eligible children

Caregiver Number: _____

Age			
Gender			
	Measurement 1	Measurement 2	Average
Weight			
Height:			
Classification:			
	Less than or equal to -2SD	Between -2SD on 0 SD	More than or equal to 0SD
	Non Positive Deviant	Not Eligible	Positive Deviant
Height for age score:			
Weight for Height Score:			

Please complete the following:**Classification:**Positive Deviant Non-Positive Deviant Not Eligible Addendum 5: Demographic questionnaire

This questionnaire needs to be completed by a trained field worker after obtaining written informed consent from the mother of an infant eligible for inclusion in the study.

Caregiver Number: _____ PD or NPD:

Date of Interview (dd/mm/yy) : _____

A.MOTHER'S/CAREGIVER'S INFORMATION	RESPONSE
A1. What is the mother's birth date? (this information can be verified from records in the child's Road-to-Health booklet)	____ / ____ / ____ dd/mm/yyyy
A2. How old is the child's mother currently? (this information can be verified from records in the child's Road-to-Health booklet)	____ years ____ Deceased
A3. How old is the primary caregiver currently ?	____ years
A4. What is your (primary caregiver) marital status?	____ Unmarried ____ Legally Married ____ Traditionally Married ____ Separated ____ Divorced ____ Widowed ____ Living together ____ Other Please Specify:

<p>A5. Who do you stay with?</p> <p>Tick all the appropriate responses.</p> <p>If other, please provide further details</p>	<p><input type="checkbox"/> husband</p> <p><input type="checkbox"/> boyfriend</p> <p><input type="checkbox"/> mother</p> <p><input type="checkbox"/> siblings</p> <p><input type="checkbox"/> other adult family members</p> <p><input type="checkbox"/> friend</p> <p><input type="checkbox"/> other</p> <p>Please specify:</p>
<p>Maternal Birth Spacing</p> <p>If the participant is not the mother of the child- please ask the questions for the mother of this child.</p>	
<p>A6.1 Is this your first child?</p>	<p><input type="checkbox"/> Y</p> <p><input type="checkbox"/> N</p> <p><input type="checkbox"/> Don't know</p>
<p>A6.2 If no, how many babies have you had before? (including still births)</p>	
<p>A6.3 How many months passed between giving birth to your previous child and giving birth to this child?</p>	<p><input type="checkbox"/> Less than 12 months</p> <p><input type="checkbox"/> 12-24 months (1-2 years)</p> <p><input type="checkbox"/> 25-36 months (2-3 years)</p> <p><input type="checkbox"/> 37-48 months (3-4years)</p> <p><input type="checkbox"/> 49-60 months (4-5 years)</p> <p><input type="checkbox"/> More than 60 months (>5 years)</p> <p><input type="checkbox"/> Don't know</p>

B. SOCIOECONOMIC STATUS		Score
<p>B1.1 Income: What is your combined household income (before tax deductions) PER YEAR?</p>	<p><input type="checkbox"/> R5 553 or below (<i>R462 per month</i>)</p> <p><input type="checkbox"/> R5 554 – R10 009 (<i>R462-R834 per month</i>)</p> <p><input type="checkbox"/> R10 010 – R18 544 (<i>R834-R1545 per month</i>)</p> <p><input type="checkbox"/> R18 545 – R44 948 (<i>R1545 -R5291 per month</i>)</p>	<p>(1-5)</p>

	<input type="checkbox"/> R44 949 and above (<i>R3745 per month</i>)	
B1.2. What is the main source of income for your household? If other, please provide further details	<input type="checkbox"/> your salary <input type="checkbox"/> income from baby's father <input type="checkbox"/> child grant <input type="checkbox"/> Other grant <input type="checkbox"/> contribution by other family members <input type="checkbox"/> other	
B2.1 Employment: Are you currently employed? B2.2 If yes, please indicate the nature of your employment (e.g. teacher, nurse, student, factory worker, manager)	<input type="checkbox"/> yes <input type="checkbox"/> no _____	
If the baby's father is providing you with an income (see question B1.2), answer questions B2.3 and B2.4: B2.3 Is the baby's father currently employed? B2.4 If yes , please indicate the nature of his employment (e.g. teacher, nurse, student, factory worker, manager)	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> not applicable _____	(1-9)
B3. Education: What is your highest level of education reached?	Circle one response as follows: <input type="checkbox"/> No Grades / Standards = <i>Never went to school</i> (1) <input type="checkbox"/> Grades 1-6 / Sub A-Std 4 = <i>Didn't complete primary school</i> (2) <input type="checkbox"/> Grade 7 / Std 5 = <i>Completed primary school</i> (3) <input type="checkbox"/> Grades 8-11 / Stds 6-9 = <i>Didn't complete high school</i> (4) <input type="checkbox"/> Grade 12 / Std 10 = <i>Completed senior school</i> (5) <input type="checkbox"/> Tertiary education (.13 years) = <i>University/ technikon / college</i> (6) <input type="checkbox"/> Don't know	(0-6)
B4. Assets: Which of these items do you have in your home? (mark as many as necessary)	<input type="checkbox"/> Tap water inside home <input type="checkbox"/> Flush toilet inside home	(0-7)

	<input type="checkbox"/> Electricity <input type="checkbox"/> Cellphone <input type="checkbox"/> Television <input type="checkbox"/> Computer <input type="checkbox"/> Car	
B5. Housing: How would you describe your dwelling?	<input type="checkbox"/> Shack (1) <input type="checkbox"/> Wendy house or backyard dwelling (2) <input type="checkbox"/> Tent or traditional dwelling (3) <input type="checkbox"/> Flat / apartment (4) <input type="checkbox"/> Town house / semi-detached house (5) <input type="checkbox"/> Freestanding brick house (6) <input type="checkbox"/> Other. Specify _____ _____	(1-6)
B6. How many people sleep in the same room with you at night when you are at home?	<input type="checkbox"/> one (6) <input type="checkbox"/> two (5) <input type="checkbox"/> three (4) <input type="checkbox"/> four (3) <input type="checkbox"/> five (2) <input type="checkbox"/> more than five (1) <input type="checkbox"/> none (7)	(1-7)

C. Child Information	
Some information can be obtained from the <i>Road to Health Booklet</i>	
C.1 How old is the child? (in months)	_____ months
C2. Is it a boy or a girl?	<input type="checkbox"/> boy <input type="checkbox"/> girl
C3. What was the child's birth weight?	_____ kg's
C4. At how many weeks was the child born?	_____ weeks
C5. How many times has the child been admitted to the hospital since birth?	<input type="checkbox"/> once <input type="checkbox"/> twice <input type="checkbox"/> three times <input type="checkbox"/> four times <input type="checkbox"/> five times <input type="checkbox"/> more than five times <input type="checkbox"/> never

<p>C6. How many other children under 5 (not necessarily siblings) are living in the household?</p>	<p> <input type="checkbox"/> one <input type="checkbox"/> two <input type="checkbox"/> three <input type="checkbox"/> four <input type="checkbox"/> five <input type="checkbox"/> more than five <input type="checkbox"/> none </p>
<p>C7. Is your child HIV positive?</p>	<p> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I chose not to disclose my child's status </p>

Socio-Economic Status Score: _____

Addendum 6: Socioeconomic score calculator

A total socio-economic status score can be calculated for each participant by summing the category scores for each of the 6 domains:

- family income (1–6),
- reversed employment category of participant's parent with the highest employment rank (Hollingshead reversed) (1–9),
- parent education (0–6),
- total assets (0–7),
- dwelling type (1–6),
- bedroom cohabitation (1–7),

Maximum score = 41

Scores increase as indicators of socio-economic status increase, thus a higher score is associated with a higher SES.

Domains and category scores:

Family income (1-6) per year

R44 949 and above

R18 545 – R44 948

R10 010 – R18 544

R5 554 – R10 009

Up to R5 553

Hollingshead (reversed) (1-9)

1 = H9: student, disabled, no occupation

2 = H8: homemaker

3 = H7: unskilled

4 = H6: semi-skilled

5 = H5: skilled manual

6 = H4: clerical, sales, technician

7 = H3: administration, small business owner, minor professional

8 = H2: manager, medium-sized business owner, lesser professional

9 = H1: higher executive, large business owner, major professional

Parental education (1-6)

1 = no formal education

2 = some primary education

3 = completed primary education

4 = some secondary education

5 = completed secondary education

6 = tertiary education

Total number of assets (1-7) (1 point each)

- Tap water inside
- Flushing toilet inside
- Electricity
Telephone (landline)
- TV
- Computer
- Car

Dwelling type (1-6)

1 = shack/informal dwelling

2 = tent/traditional dwelling

3 = wendy house/backyard dwelling

4 = flat/apartment

5 = townhouse/ semi-detached house

6 = free-standing brick house

Bedroom cohabitation (1-7)

1 = > five people

2 = five people

3 = four people

4 = three people

5 = two people

6 = one person

7 = no person sharing, own bedroom

Addendum 7: Adapted World Health Organisation infant and young child feeding tool

Caregver Number _____

PD or NPD: _____

Date of Interview (dd/mm/yy) : _____

Question 1 and 2

No	Questions and Filters	Coding Categories
1	Has (NAME) ever been breastfed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I don't know
2	Was (NAME) breastfed yesterday during the day or at night? (Either on the breast or breastmilk from a bottle/cup)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> I don't know

Questions 3 and 4

Read the questions below. Read the list of liquids one by one and mark yes or no, ACCORDINGLY. After you have completed the list, continue by asking question 4 (see far right hand column) for those ITEMS 3B, 3C, And/or 3f) where the respondent replied 'yes'.

No.	Questions and Filters	Coding Categories			Questions and Coding
3	Next I would like to ask you about some liquids that (NAME) may have had yesterday during the day or at night. Did (NAME) have any (ITEM FROM LIST) : Read the list of liquids starting with 'plain water'.	Yes	No	Don't Know	4. How many times yesterday during the day or at night did (NAME) consume any (ITEM FROM LIST) ? Read Question 4 for items child consumed the item. Record 'DK' for Don't Know.
	Plain Water	A			A: Times _____
	Infant formula such as Nan or Infacare	B			B: Times _____
	Milk such as fresh, tinned or powdered	C			C: Times _____
	Juice or juice drinks	D			D: Times _____
	Clear broth	E			E: Times _____
	Yoghurt	F			F: Times _____
	Motoho/ Thin Porridge	G			G: Times _____
	Tea	H			H: Times _____
	Sugary drinks such as coke, Iron brew etc.	I			I: Times _____
	Any other liquids Please Specify:	J			J: Times _____

Question 5:

Please describe everything that **(NAME)** ate yesterday during the day or night, whether at home or outside the home.

1. Think about when **(NAME)** first woke up yesterday. Did **(NAME)** eat anything at that time? *If yes: Please tell me everything **(NAME)** ate at that time. Probe: Anything else? Until respondent says nothing else. If no, continue to Question b).*

2. What did **(NAME)** do after that? Did **(NAME)** eat anything at that time? *If yes: Please tell me everything **(NAME)** ate at that time. Probe: Anything else? Until respondent says nothing else.*

3. *Repeat question b) above until respondent says the child went to sleep until the next day. If respondent mentions mixed dishes like a PORRIDGE, sauce or stew, probe: What ingredients were in that **(MIXED DISH)**? Probe: Anything else? Until respondent says nothing else.*

4. *As the respondent recalls foods, underline the corresponding food and circle '1' in the column next to the food group. If the food is not listed in any of the food groups below, write the food in the box labeled 'other foods'. If foods are used in small amounts for seasoning or as a condiment, include them under the condiments food group.*

5. *Once the respondent finishes recalling foods eaten, read each food group where '1' was not circled, ask the following question and Circle '1' if respondent says yes, '2' if no and '8' if don't know:*

Yesterday during the day or night, did **(NAME)** drink/eat any **(FOOD GROUP ITEMS)**?

Question 5:

No.	Questions and Filters	Coding Categories	Coding Categories		
			Yes	No	Don't Know
A	Porridge, bread, rice, noodles, or other foods made from grains	A			
B	Pumpkin, carrots, squash or yellow sweet potatoes	B			
C	White potatoes, sweet potatoes, cassava, or any other foods made from roots	C			
D	Any dark green leafy vegetables	D			
E	Ripe mangoes, ripe papayas, grape fruit	E			
F	Any other fruits or vegetables	F			
G	Liver, kidney, heart, or other organ meats	G			
H	Any meat, such as beef, pork, lamb, goat, chicken, or duck	H			
I	Eggs	I			
J	Fresh or dried fish, shellfish, or seafood	J			
K	Any foods made from beans, peas, lentils, nuts, or seeds	K			
L	Cheese, yogurt, or other milk products	L			
M	Any oil, fats, or butter, or foods made with any of these	M			
N	Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits	N			
O	Condiments for flavor, such as chilies, spices, herbs, or fish powder	O			
P	Grubs, snails, or insects	P			
Q	Simba chips/ Nik Naks/Other chips	Q			
R	Traditional foods...?	R			

OTHER FOODS: PLEASE WRITE DOWN OTHER FOODS IN THIS BOX THAT RESPONDENT MENTIONED BUT ARE NOT IN THE LIST BELOW:

e.g. Bones

Question 6-8

No.		
6	Did (NAME) eat any solid, semi-solid, or soft foods yesterday during the day or at night? IF 'YES' PROBE: What kind of solid, semi-solid, or soft foods did (NAME) eat?	Yes _____ Go back to 5 and record foods eaten. No _____ (Go to Q8) Don't Know _____ (Go to Q8)
7	How many times did (NAME) eat solid, semi-solid, or soft foods other than liquids yesterday during the day or at night? (i.e. how many meals per day)	Number: _____ Don't Know: _____
8	Did (NAME) drink anything from a bottle with a nipple yesterday during the day or night?	Yes: _____ No: _____ Don't Know: _____

Question 9-12

No.		
9	I would like to ask you about some particular foods (NAME) may eat. I am interested in whether your child had the item even if it was combined with other foods. Yesterday, during the day or night, did (NAME) consume any infant cereals such as Nestum/ Cerelac.	Yes: _____ No: _____ Don't Know: _____
9A	Please indicate the name of the infant cereal consumed	
10	Yesterday, during the day or night, did (NAME) consume any food given by the clinic/ NGO? [Immunut/ F75/F100/ Philani or other]	Yes: _____ No: _____ Don't Know: _____

Addendum 8: Interview guide

Interview Guide

Section	Question
Intro	How did you feel when you fell pregnant?
Breastfeeding and formula feeding	<p>Can you describe how you fed your child from birth until now? How did you make a decision to breastfeed/ formula feed? For how many months did you Breastfeed/ formula feed? At what age did you start giving:</p> <ul style="list-style-type: none"> • water? • Tea? • Solids? <p>If mom is no longer breastfeeding: What made it difficult for you to continue breastfeeding? Have you ever given formula milk? If yes, why did you decide you include?</p>
Feeding Practices	<p>And what age did you introduce solids? How did you decide when was the right time to into solids? What was the first food that you included? Describe a normal day of feeding Frequency (weekly inclusion of):</p> <ul style="list-style-type: none"> • Pumpkin • Carrots • Spinach • Other veg • Fruit • Meats • Fish • Chicken • Eggs • Beans • Processed meats • Organ meats • Cereals • Pap • Bread • Potato • Other grains • Milk (cow's) • Maasi • Cheese • Yoghurt • Tea • Water • Juice • Sugar sweetened beverages • Chips • Sweets • Cookies • Other snacks

	<ul style="list-style-type: none"> • Purity • Other foods
Responsive feeding	<p>Describe a normal meal time</p> <p>How do you know if your child is hungry/ full?</p> <p>What do you do if your child doesn't want to eat?</p> <p>How do you feel if they refuse food?</p> <p>Do you allow your child to feed themselves?</p> <p>How do you introduce new foods?</p>
Knowledge/ Attitude	<p>Do you ever feel unsure of what to feed your child?</p> <p>Where do you go to get more info about how to feed your child?</p> <p>Have you received information/ guidelines from the clinic? How do you feel about these guidelines?</p> <p>What do good feeding practices look like?</p> <p>What are the signs that a child is growing well?</p> <p>Are there foods that are important to include in the diet? Why?</p> <p>Are there foods that shouldn't be included too often? What foods are these?</p>
Self-efficacy/ Barriers	<p>How do you feel about what you are feeding your child?</p> <p>Do you know of someone who's feeding their child well?</p> <p>If you had a previous child- does that influence how you are raising your child now? How?</p> <p>What are the things that prevent you from being able to feed your child the way you would like?</p> <p>What do you do if there isn't enough money for food?</p> <p>If you had twice the amount of money to spend a month; what would you buy? And half?</p> <p>How do you decide how to spend your money each month?</p>
Purchasing behaviour	<p>How do you decide how to spend your money each month?</p>

Addendum 9: Adapted paediatric food based dietary guidelines

English

6-12 months

At six months, start giving your baby small amounts of soft foods, while continuing to breastfeed to two years and beyond. If giving formula milk continue until at least one year.

Gradually increase the amount of food, number of feeds and variety as your baby gets older.

Feed slowly and patiently and encourage your baby to eat, but do not force him or her.

From six months of age, give your child meat, chicken, fish or eggs every day, or as often as possible. If the child has not yet developed teeth- mashed fish, beans or chicken or scrambled eggs can still be given. Be sure to give meat pieces along with the gravy of the meat.

Give your baby dark-green leafy vegetables and orange coloured vegetables and fruit every day.

Start spoon feeding your baby with thick foods, and gradually increase to the consistency of family food.

Hands should be washed with soap and clean water before preparing or eating food.

Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks (like chips, sweets and cookies) to your baby.

12-36 months

Continue to breastfeed to two years and beyond.

Gradually increase the amount of food, number of feedings and variety as your child gets older.

Give your child meat, chicken, fish, beans or eggs every day, or as often as possible. If the child has not yet developed teeth- mashed fish or chicken or scrambled eggs can still be given. Be sure to give meat pieces along with the gravy of the meat

Give your child dark-green leafy vegetables and orange coloured vegetables and fruit every day.

Avoid giving tea, coffee and sugary drinks and high-sugar, high-fat salty snacks to your child.

Hands should be washed with soap and clean water before preparing or eating food.

Encourage your child to be active.

Feed your child 5 small meals during the day

Make starchy foods part of most meals.

Give your child milk, maas or yoghurt every day.

Dietitian: 4 July/ 18 July

Sesotho:

Likhoeli tse 6-12

- Ka likhoeli tse tšeletseng, qala ho fa ngoana oa hao lijo tse nyenyane tse bonolo, ha u ntse u tsoela pele ho anyesa ho fihlela lilemo tse peli le ho feta. Haeba ho fana ka lebese la motsoako o tsoela pele ho fihlela bonyane selemo se le seng.
- Butle-butle eketsa bongata ba lijo, palo ea lijo tsa lijo le mefuta-futa ha ngoana oa hao a ntse a hōla.
- Fepa butle-butle le ka mamello le ho khothalletsa ngoan'a hao hore a je, empa u se ke ua mo qobella.
- Ho tloha likhoeli tse tšeletseng, fa ngoan'a hao nama, tlhaho, tlhapi kapa mahe letsatsi le leng le le leng, kapa hangata ha ho khoneha. Haeba ngoana a e-s'o hlahise litlhapi tse entsoeng ka meno, linaoa kapa khoho kapa mahe a pholileng a ntse a ka fuoa. Etsa bonnete ba hore o fana ka likotoana tsa nama le nama ea nama.
- Fana ka lesea la hao le meroho e makhasi a lefifi le meroho e mebala e mongobo le litholoana letsatsi ka leng.
- Qala khaba ho fepa lesea la hao ka lijo tse teteang, 'me butle-butle u eketse ho fihlela lijo tsa lelapa li tsitsitse.
- Matsoho a lokela ho hlatsoa ka sesepa le metsi a hloekileng pele o lokisetse kapa a ja lijo.
- Qoba ho fana ka tee, kofi le lino tse tsoekere le tsoekere e phahameng, lijo tse monate tsa letsoai tse nang le mafura a mangata (joaloka likopi, lipompong le li-cookie) ho lesea la hao.

Likhoeli tse 12-36

- Tsoela pele ho anyesa ho fihlela lilemo tse peli le ho feta.
- Butle-butle eketsa lenane la lijo, palo ea lijo le mefuta-futa ha ngoana oa hao a ntse a hōla.
- Fana ka ngoana oa hao nama, khoho, tlhapi, linaoa kapa mahe letsatsi le letsatsi, kapa hangata kamoo ho khonehang. Haeba ngoana a e-s'o hlahise litlhapi tse entsoeng ka meno kapa khōhō kapa mahe a pholileng a ntse a ka fuoa. Etsa bonnete ba hore o fana ka likotoana tsa nama le nama ea nama
- Fa ngoana oa hao meroho e makhasi a lefifi le meroho e mebala e mebala ea litholoana le litholoana letsatsi le leng le le leng.
- Qoba ho fana ka linoe tsa tee, kofi le tsoekere le tsoekere e phahameng, lijo tse monate tsa letsoai tse nang le mafura a mangata.
- Matsoho a lokela ho hlatsoa ka sesepa le metsi a hloekileng pele o lokisetse kapa a ja lijo.
- Khothalletsa ngoana oa hao hore a sebetse.
- Fepa ngoana oa hao lijo tse nyenyane tse 5 motšehare
- Etsa lijo tse matlafatsang karolo ea lijo tse ngata.
- Fa ngoana oa hao lebese, maas kapa yoghurt letsatsi le leng le le leng.

ZULU

Izinyanga ezingu-6-12

- Ezinyangeni eziyisithupha, qala ukunikeza ingane yakho ukudla okuncane okuncane, ngenkathi uqhubeka ukondla iminyaka emibili nangaphezulu. Uma unikeza ubisi lwefomula uqhubeka kuze kube yilapho unyaka owodwa.
- Khulisa kancane kancane inani lokudla, inani lokudla nokuhlukahluka njengoba ingane yakho ikhula.
- Yondla kancane futhi ngesineke futhi ukhuthaze ingane yakho ukuba idle, kodwa ungamcindezeli.
- Kusukela ezinyangeni eziyisithupha ubudala, unike ingane yakho inyama, inkukhu, inhlanzi noma amaqanda nsuku zonke, noma njalo ngangokunokwenzeka. Uma ngabe ingane ingakabikho izinhlanzi ezinamazinyo, ubhontshisi noma inkukhu noma amaqanda aqhephukile angakanikezwa. Qinisekisa ukuthi unikeza inyama izingcezu kanye ne-gravy yenyama.
- Nika ingane yakho imifino eluhlaza okwesibhakabhaka nemifino e-orange nsuku zonke.
- Qala i-spoon ukondla ingane yakho ngokudla okugqinsi, futhi ukwandise kancane kancane kube ukuhambisana kokudla komndeni.
- Izandla kufanele zihlanjwe nge-sese namanzi ahlanzekile ngaphambi kokulungiselela noma ukudla ukudla.
- Gwema ukunikeza itiye, ikhofi kanye neziphuzo zoshukela kanye noshukela ophezulu, ukudla okunamafutha amaningi okusawoti (njengama-chips, amaswidi namakhukhi) kumntanakho.

Izinyanga ezingu-12-36

- Qhubeka ukondla iminyaka emibili nangaphezulu.
- Khulisa kancane kancane inani lokudla, inani lokudla kanye nokuhlukahluka njengoba ingane yakho ikhula.
- Nika ingane yakho inyama, inkukhu, inhlanzi, ubhontshisi noma amaqanda nsuku zonke, noma njalo ngangokunokwenzeka. Uma ngabe ingane ingakabikho izinhlanzi ezinamazinyo noma inyamazane noma amaqanda aqhephukile angakanikezwa. Qinisekisa ukuthi unikeza inyama izingcezu kanye ne-gravy yenyama
- Nika ingane yakho imifino eluhlaza okwesibhakabhaka nemifino eluhlaza okwesibhakabhaka kanye nezithelo nsuku zonke.
- Gwema ukunikeza itiye, ikhofi kanye neziphuzo zoshukela kanye noshukela ophezulu,
- ukudla okulula okumanoni okusawoti kumntwana wakho.
- Izandla kufanele zihlanjwe nge-sese namanzi ahlanzekile ngaphambi kokulungiselela noma ukudla ukudla.
- Khuthaza ingane yakho ukuba isebenze.
- Yondla ingane yakho ukudla okungenani 5 emini

- Yenza ukudla okune-starchy okuyingxenywe yokudla okuningi.

Nika ingane yakho ubisi, i-maas noma i-yoghurt nsuku zonke

Addendum 10: Free State Department of Health approval letters



health
Department of
Health
FREE STATE PROVINCE

05 February 2018

Miss. K. Pilditch
University of Stellenbosch

Dear Miss. K. Pilditch

Subject: Complementary Feeding Practices and Behavior of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Harrismith, Free State

- Permission is hereby granted for the above – mentioned research on the following conditions:
- Participation in the study must be voluntary.
- A written consent by each participant must be obtained
- Serious adverse events to be reported and/or termination of the study.
- Ascertain that your data collection exercise neither interferes with the day to day running of the selected facilities, nor the performance of duties by the respondents or health care workers.
- Confidentiality of information will be ensured and no names will be used.
- Research results and a complete report should be made available to the Free State Department of Health on completion of the study (a hard copy plus a soft copy).
- Progress report must be presented not later than one year after approval of the project to the Ethics Committee of University Stellenbosch and to Free State Department of Health.
- Any amendments, extension or other modifications to the protocol or investigators must be submitted to the Ethics Committee of the University Stellenbosch and to Free State Department of Health.
- Conditions stated in your Ethical Approval letter should be adhered to and a final copy of the Ethics Clearance Certificate should be submitted to lithekoms@fshealth.gov.za or sebecelats@fshealth.gov.za before you commence with the study
- No financial liability will be placed on the Free State Department of Health
- Please discuss your study with the institution managers/CEOs on commencement for logistical arrangements
- Department of Health to be fully indemnified from any harm that participants and staff experiences in the study
- Researchers will be required to enter in to a formal agreement with the Free State department of health regulating and formalizing the research relationship (document will follow)
- You are encouraged to present your study findings/results at the Free State Provincial health research day

Trust you find the above in order.

Kind Regards

Dr D Motau
HEAD: HEALTH
Date: 7/2/18



17 January 2019

Miss. K Pilditch
University of Stellenbosch

Dear Miss, K Pilditch

Subject: Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Phuthaditjhaba, Free State

- Permission is hereby granted for the above - mentioned research on the following conditions:
- Participation in the study must be voluntary;
- A written consent by each participant must be obtained
- Serious adverse events to be reported and/or termination of the study.
- Ascertain that your data collection exercise neither interferes with the day to day running of selected facilities nor the performance of duties by the respondents or health care workers.
- Confidentiality of information will be ensured and no names will be used.
- Research results and a complete report should be made available to the Free State Department of Health on completion of the study (a hard copy plus a soft copy).
- Progress report must be presented not later than one year after approval of the project to the Ethics Committee of the University of Stellenbosch and to Free State Department of Health.
- Any amendments, extension or other modifications to the protocol or investigators must be submitted to the Ethics Committee of the University of Stellenbosch and to Free State Department of Health.
- Conditions stated in your Ethical Approval letter should be adhered to and a final copy of the Ethics Clearance Certificate should be submitted to lithekom@fshealth.gov.za or sibecelats@fshealth.gov.za before you commence with the study
- No financial liability will be placed on the Free State Department of Health
- Please discuss your study with the institution managers/CEOs on commencement for logistical arrangements
- Department of Health to be fully indemnified from any harm that participants and staff experiences in the study
- Researchers will be required to enter in to a formal agreement with the Free State department of health regulating and formalizing the research relationship (document will follow)
- You are encouraged to present your study findings/results at the Free State Provincial health research day.

Trust you find the above in order.

Kind regards,

Dr D Motso
HEAD: HEALTH

Date: 24/01/19

Addendum 11: Informed consent of screening (English)

Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Harrismith, Free State

REFERENCE NUMBER: S17/10/196

PRINCIPAL INVESTIGATOR: Kerry Pilditch

ADDRESS:

Faculty of Medicine and Health Sciences

Stellenbosch University

Francie van Zijl Drive

Tygerberg, 7505

Cape Town

CONTACT NUMBER: Kerry Pilditch 082 369 1635

Dear Caregiver

My name is Kerry Pilditch and I am a Master of Public Health Nutrition student. I would like to ask you to allow us to measure your child's weight and height to see if we are able to invite you to participate in a research project. This project aims to investigate the complementary feeding practices and behaviours of children (6-18 months) who are growing well, as well as those who are not.

Declaration by participant

By signing below, I allow the researchers to weigh and measure my child to see if we can participate in a research project entitled *Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Harrismith, Free State*.

Caregiver Number:

Signed at (*place*) on (*date*) 2019.

.....
Signature of participant

.....
Signature of witness

Declaration by investigator

I (*name*) declare that:

- I explained the information in this document to

Signed at (*place*) on (*date*) 2019.

.....
Signature of investigator

.....
Signature of witness

Addendum 12: Informed consent for screening (SeSotho)

PAMPITSHANA YA TLHAHISOLESING YA BANKAKAROLO

Mekgwa ya thoholetso ya ho ja le maitshwaro a fetohang a lokileng ho bahlokamedi ba masea a kotsing a ya kgodiso e sa lokang Harrismith, ho la Foreisitata.

Nomoro ya boitshupo: S17/10/196

MoFUPUTSI E MOHOLO: Kerry Pilditch

ATERESE:

Faculty Medicine and Health Sciences

Stellenbosch University

Franci van Zyl Drive

Tygerberg, 7505

Cape Town

NOMORO YA MOHALA Kerry Pilditch 0823691635

Ho mohlokamedi

Lebitso la ka ke Kerry Pilditch ke badile lengolo la Master la Public Health Nutrition. Ke rata ha le ka ntumella ho bekga le ho kalamasea a lona, hore re bone le ka le dumella ho nka karoto dipatlisong tsa porojeke. Porojeke ena e hatela dipatlisiso tsa "Complimentary feeding practices le behaviours ba bana (Ba kgwedi tse 6-18) baholang hantle, le ba saholeng hantle.

Boitlamo bo honka karolo:

Ka ho tekena ka tlase, ke dumela hore ba dipatlisiso ba bekge ba shebe boima ba ngwana hore ba netefatse hore re ka nka karolo ho dipatlisiso tsa porojeke ena ya "Complementary feeding practices le behaviours ba positive deviants hara bahlokamedi ba masea a kotsing e sa lokang ka hare Harrismith, Foreisitata.:

Caregiver Number:

Tekene (sebaka)..... ka (letsatsi)..... 2019

.....
Letshwao la participant

.....
Letshwao la paki

Tlaleho ya radipatlisiso

Nna (lebitso) ke dumela hore:

- Ke tlaositse ditaba ka bohlalo lengolong lena.....

*Tekene (sebaka)..... ka (letsatsi).....
2019*

.....
Letshwao la radipatlisiso

.....
Letshwao la paki

Addendum 13: Informed consent for screening (isiZulu)

UCwano olubizwa i-**Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting** eHarrismith ,

REFERENCE NUMBER: S17/10/196

PRINCIPAL INVESTIGATOR: Kerry Pilditch

ADDRESS:

Faculty of Medicine and Health Sciences

Stellenbosch University

Francie van Zijl Drive

Tygerberg, 7505

Cape Town

CONTACT NUMBER: Kerry Pilditch 082 369 1635

Mnakekeli,

Mina nginguKerry Pilditch, ngiyisitshudeni esifundela iMaster of Public Health Nutrition. Bengicela ukuthi usivumele sikale isisindo nobude bomntanakho ukuze sibone ukuthi sizokwazi yini ukukumema ukuba ubambe iqhaza emkhankasweni wocwano. Lomkhankaso uhlose ukuphenya izinqubo nemikhutshana yokondla nokufunza, kanye nokuziphatha kwabantwana (bezinyanga ezingu 6 ukuya kwezingu 8), abakhula kahle, nalabo abangakhuli kahle.

Isethulo salowo ozobamba iqhaza

Ngokusayina lapha ngenzansi, mina u..... ngivumela abacwano ukuthi bakale isisindo nobude bengane yami, ukuze kutholakale ukuthi ngingamenywa yini ukuthi ngingenele ucwano olubizwa nge *Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting* eHarrismith, eFree State.

Caregivers Number:

Ngisayine e (*indawo*) ngomhlaka (*usuku*) 2019

.....

Isayini yomcwano

Isayini yomuntu ongufakazi

Isethulo sikamcwano

Mina u (*igama*) ngiyafakaza ukuthi:

- Ngimchazele ulwazi oluqokethwe kulombhalo u

Ngisayine e (*indawo*) ngomhlaka (*usuku*) 2019.

.....

Isayini yomcwano

Isayini yomuntu ongufakaz

Addendum 14: Informed consent for participation (English)

Caregiver Number:

Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Harrismith, Free State

REFERENCE NUMBER: S17/10/196

PRINCIPAL INVESTIGATOR: Kerry Pilditch

ADDRESS:

Faculty of Medicine and Health Sciences

Stellenbosch University

Francie van Zijl Drive

Tygerberg, 7505

Cape Town

CONTACT NUMBER:

Kerry Pilditch 082 369 1635

Dear Caregiver

My name is Kerry Pilditch and I am a Master of Public Health Nutrition student. I would like to invite you to participate in a research project that aims to investigate the complementary feeding practices and behaviours of children (6-18 months) who are growing well, as well as those who are not.

Please take some time to read the information presented here, which will explain the details of this project and contact me if you require further explanation of any aspect of the study. Also, your participation is **entirely voluntary** and you are free to say no if you do not want to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the Health Research Ethics Committee (HREC) at Stellenbosch University and will be conducted according to accepted and applicable National and International ethical guidelines and principles, including those of the international Declaration of Helsinki October 2008.

What is this research study all about?

Growth during the first 2 years of a child's life is very important. It influences the health and development of children during the early years and it also has an impact once the child becomes an adult. Poor growth during this period; specifically, poor growth in the height of a child, can decrease their ability to finish school and the amount that they might earn as an adult. Ensuring that children grow well during this period is therefore very important. One way to measure this growth is to look at the height at the child for their age; using a growth chart. Children who are not achieving the height for their age are classified as stunted. Children between the ages of 6-24 months are at risk of becoming stunted.

Complementary feeding are the foods that we give to children when breastmilk is no longer enough to meet all their needs and we need to start adding solids and other liquids to the child's diet. These are the kinds of foods we give children between the ages of 6-24 months. Ensuring that children are receiving a good diet is one way to ensure that children are growing well. A diet that does not have enough food or enough of the right kind of foods can lead to a child being stunted.

This research aims to look at what kinds of foods children between the ages of 6-18 months are eating, as well as some of the reasons caregivers might have for including these foods. Caregivers of children who are growing well, as well as those who are not growing well (those who are stunted) will be included in the study.

This study will include weighing and taking the height of children included; in order to determine if they are stunted or growing well. There will be 2 questionnaires to complete and 1 interview of 1 hour. These questionnaires will be done by the researchers.

Why have you been asked to participate?

You have been asked to participate because you are the caregiver of a child who is between the age of 6-18 months.

What will your responsibilities be?

We would like to take the height and weight of your child to determine if they are growing well or not growing well.

We would like to ask you complete 2 questionnaires - general questionnaires with questions about topics such as your schooling, work, your child's health and household characteristics and questionnaire about your child's diet. Your child's Road to Health booklet will be used, with your permission, to obtain some of this information. You will also be asked about your child's HIV status. You do not have to answer this question if you don't want to and still be part of the study.

The research also includes one, one-hour interview with you, the caregiver, about your child's diet and how you and your family make decisions about feeding your child. This interview will be recorded with a tape recorder by the researcher but your name will not be included in the recording.

Will you benefit from taking part in this research?

If your child is identified as stunted, we will refer you to a community health worker, a health care worker or social worker who will help you get assistance in order to help improve your child's growth.

By participating in this research you will help towards improving the diets of young children and work towards addressing stunting in the Free State province.

Are there in risks involved in your taking part in this research?

No, there are no risks involved.

If you do not agree to take part, what alternatives do you have?

Participation is entirely optional and it is completely up to you. If you refuse to take part in this study, you will not be negatively affected in any way. Additionally, you are free to withdraw from the study at any given time.

Who will have access to your information?

Your name and details will not be recorded in the research results. Only the researchers will have access to your personal details and all other details provided will remain a secret. The results of this research will be written up in a report and published in an academic magazine, but not names or any identification will be made known.

If your child is identified as stunted, or not growing well, then their name, your name and contact details will be given to a community health worker, health worker or social worker so that they can help to

improve your child's growth. This will be the only information given to them; all other information will remain a secret.

Will you be paid to take part in this study and are there any costs involved?

After the research your child will be provided with an educational toy to thank you for your time.

Any transport costs will be paid for but you will not receive any payment for participating in the study.

Is there anything else that you should know or do?

- You can contact the researchers should you have any further queries or encounter problems (numbers listed above).
- You can contact the Health Research Ethics Committee at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by your study doctor.
- You will receive a copy of this information and consent form for your own records.

If you are willing to participate in this study, please sign the attached Declaration of Consent and give it to the investigator.

Yours sincerely

Kerry Pilditch (Principal Investigator)

Declaration by participant

By signing below, I agree to take part in a research study entitled *Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Harrismith, Free State.*

Caregiver Number:

I declare that:

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I agree that the interview with the researcher may be recorded with a tape recorder.
- I may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) on (*date*) 2019.

.....
Signature of investigator

.....
Signature of witness

Declaration by investigator

I (*name*) declare that:

- I explained the information in this document to
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above

- I did/did not use a interpreter. (*If a interpreter is used then the interpreter must sign the declaration below.*)

Signed at (*place*) on (*date*) 2019.

.....
Signature of investigator

.....
Signature of witness

Declaration by interpreter

I (*name*) declare that:

- I assisted the investigator (*name*) to explain the information in this document to (*name of participant*) using the language medium of Sesotho.
- We encouraged him/her to ask questions and took adequate time to answer them.
- I conveyed a factually correct version of what was related to me.
- I am satisfied that the participant fully understands the content of this informed consent document and has had all his/her question satisfactorily answered.

Signed at (*place*) on (*date*)2019

.....
Signature of interpreter

.....
Signature of witness

Addendum 15: Informed consent for participation (seSotho)

Caregiver Number:

PAMPITSHANA YA TLHAHISOLESEDING YA BANKAKAROLO

Mekgwa ya thoholetso ya ho ja le maitshwaro a fetohang a lokileng ho bahlokamedi ba masea a kotsing ya kgodiso e sa lokang Harrismith , ho la Foreisitata.

Nomoro ya boitshupo: S17/10/196

MOFUPUTSI E MOHOLO: Kerry Pilditch

ATERESE: Faculty of Medicine and Health Sciences

Stellenbosch University
Francie van Zijl Drive
Tygerberg, 7505
Cape Town

NOMORO YA MOHALA: Kerry Pilditch (082 369 1635)

Mohlokamedi

Lebitso la ka ke Kerry Pilditch, ke moithuti ya entseng lengolo la masters. Ke rata ho le memela ho tlo nka karolo porojekeng ya dipatlisiso tseo sepheo sa tsona e leng ho batlisisa mekgwa ya thoholetso ya ho ja le maitshwaro a bana (6-18) ba hodileng hantle, le bao ba sa holeng hantle.

Ka kopo, ke kopa hore o nke nako ho bala tlhahisoleseding e ngotsweng mona, e tla hlalose tsa porojeke ena mme le ka ntetsetsa mohala ha le hloka tlhaloso e batsi ka ntho e nngwe le e nngwe ya thuto ena. Ntlha e nngwe ke hore ho nka karolo ha hao **ha o qobellwe**, ke kgetho ya hao ho hana ha o sa batle ho nka karolo. Ha o re ha o nke karolo, seo ha se no o ama hampe ka mokgwa ofe kapa ofe. Hape o lokolohile ho ikhula nako efe le efe le ha o ile wa dumela hore o tla nka karolo.

Thuto ena re e tliseditswe ke ba Health Research Ethic Committee (HREC) e Stellenbosch University mme e tla tsamaiswa ho ya ka mekgwa le tsamaiso ya se amohelehileng le tse sebetsang le Naha le tsa Matjhaba, ho kenyeleditswe le tsa boitlamo ba matjhaba tsa Helsinki, October 2008.

Thuto ee ya dipatlisiso ke eng?

Kgolo dilemong tse pedi tse qalang bopheleng ba nqwana ke ntho ya bohlokwa. E na le kgahlamelo bophelong le kgolong ya bana dilemong tse tlase mme e be le sekgahla hape ha ngwana a hola e ba motho e moholo. Kgolo e mpe nakong ena; haholoholo kgolo e mpe ha ngwana ya holang a sa be molelele hantle sekolo le tjelete eo a ka e kolang ha e se e le motho e moholo. Ho etsa bonnete ba hore bana ba hola hantle nakong ena ke ntho ya bohlokwa. Mokgwa o mong wa ho hlokomela kgolo ena ke ho sheba bolelele ba ngwana kgahlano le dilemo tsa hae; o sebedisa thate ya kgolo. Bana ba sa fihleng bolelele bo lokelang dilemo tsa bana, ba nkuwa e le bana ba kgodisong e sa tsweleng pele. Bana ba dikgwedi tse 6-24 ba kotsing ya ho ba kgodisong e sa tswelang pele.

Dijo tsa tlatseliso ke dijo tse fuwang bana ha lebesa la letswela le se le sa kgone ho fihlela ditlhoko tsa ngwana mme re tlameha ho eketsa dijo tse tiileng le tse mokedikedi dijong tsa ngwana. Tsena ke mofuta ya dijo eo re e fang bana ba kgwedi di 6-24. Ho etsa bonnete ba hore bana ba tima dijo tse lokileng ke yana tiiseketso ya hore bana aba hole hantle. Ha ngwana a sa fepuwe dijo tse hantle kapa a sa fumane mofuta o loketseng wa dijo, ho ka lebiswa hore ngwana a be kotsing ya ho ba kgodisong e sa tswelang pele.

Sepheo sa dipatlisiso tsena ke ho sheba hore bana ba dikgweding tsa 6-18 ba ja mefuta e jwang ya dijo, le hore ke mabaka afe ao bahlokamedi ba fanang ka ona hore hobaneng ba fa bana dijo tseo. Bahlokamedi ba bana ba holang hantle, le ba bao ba sa holeng hantle (ba kotsing ya ho ba kgodisong e sa tsweleng pele) ba tla kenyeletswa thutong ena.

Thuto ena e tla kenyelletsa ho bekga le ho sheba bolelele ba ngwana; ho re ho hlokomelwe/elellwe hore ngwana o hola hantle kapa o kotsing ya ho ba kgodisong e sa tsweleng pele. Ho tla ba le dipotsopatlisiso tse 2 tse lokelang ho tlatswa le inthaviwu ya hore e le. Dipotsopatlisiso tsena di tla etswa ke babatlisisi.

Hobaneng o kopilwe ho nka karolo?

O kopilwe ho nka karolo hobane o mohlakamedi wa ngwana ya pakeng tsa dikgwedi tse 6-18

Maikarabello a hao e tlo ba afe?

Re tla kopa ho nka bolelele le boima ba ngwana wa hao ho sheba hore o hola hantle kapa ha a hole hantle.

Re tla o kopa ho tlatsa dipotsopatlisiso tse 2- dipotsopatlisiso kakaretso tse nang le dipotso ka dihlooho tse ka reng sekolo, mosebetsi, bophelo bo botle ba ngwana wa hao, maitshwaro ka tlung le potsopatlisiso ka mokgwa wa ho ja hwa ngwana. Buka ya ngwana wa hao ya Tsela ya Bophelo bo Botle e tla sebediswa, ka tumello ya hao, ho fumana tlhahisoleseding e itseng. O tla boela o botswa ka maemo a HIV a ngwana wa hao. Ha ho ntho e o tlamang ho araba potso ena ha o sa batle mme o tla nne o be karolo ya thuto ena.

Dipatlisiso tsena di kenyelletse inthaviwu e le 1 ya hora le wena, mohlakamedi, ka moo ngwana wa hao a jang le hore wena le lelapa la hao le etsa digeto jwang ka ho jesa ngwana. Inthaviwa ena e tla rekotwa ka theipi rekodara ke mmatlisisi empa lebitso la hao ha le no hlahiswa moo ho rekotilweng.

Ana ho na le seo o tla se una ha o nka karolo ho dipatlisiso tsee?

Ha ngwana wa hao a ka hlwauwa hore o kotsing ya ho ba kgodisong e sa tsweleng pele, re tla o romella ho mosebeletsi wa bophelo bo botle wa setjhaba, mohlakamedi wa bophelo bo botle kapa ho mosebeletsi wa setjhaba ya tla o thusa hore o thole thuso hore kgolo ya ngwana wa hao e ntlafale. Ho nka karolo dipatlisisong tsena e tlo o thusa ho ntlafatseng phepong ya bana ba banyane mme o sebeletse ho thusa phedisong ya kotsi ya ho ba kgodisong e sa tsweleng pele porofensing ya Foreisitata.

Ana ho na le kotsi tse teng ha o nka karolo dipatlisisong tsee?

Tjhe, ha ho na kotsi tse teng.

Ha o sa dumele ho nka karolo, ke sefe se seng seo o ka se etsang?

Ho nka karolo ha ho tlame ka hohlehohle, ho wena ho nka qeto. Ha o sa batle ho nka karolo thutong ena, ha ho le lebe le tla o hlahela ka tsela efe kapa efe. Hape, o na le bolokolohi ba ho ikhula thutong ena nakong efe kapa efe.

Ke mang ya tla kgona ho finyella ho tlhahisoleseding la ka

Lebitso le ntlha tsa hao ha di rekotwa diphethong tsa dipatlisiso. Ke ba dipatlisiso fela a_ba tla finyella ho dintlha tsa hao mme tsohle dintlha tseo ho fanweng ka tsona e tla dula e le sephiri. Diphetho tsa dipatlisiso tsena di tla ngolwa raporotong mme di phatlalatswe makasineng wa dithuto, empa ha ho mabitso kapa boitsebiso bofe kapa bofe bo tla etswa hore bo tsejwe.

Ha ngwana wa hao a thotswe e le ya kotsing ya ho ba kgodisong e sa tsweleng pele, kapa a sa hole hantle, mabitso a bona, lebitso la hao le dintlha tsa kgokahano di tla fuwa mosebeletsi wa bophelo bo botle wa setjhaba, mosebeletsi wa bophelo bo botle kapa mosebeletsi wa setjhaba hore ba o thusa hore

kgolo ya ngwana wa hao e ntlafale. E tla ba tlhahisoleseding ena feela eo ba tla e fuwa; e nngwe tlhahisoleseding e tla dula e le sephiri.

Ana o tla lefuwa ha o nka karolo thutong ee mme ebe ho na le ditjeho tse keneletseng

Ka mora dipatlisiso ngwana wa hao o tla fuwa sebakadiswa sa thuto ho o leboha ka nako ya hao. Ditjeho tsa dipalangwang di tla patallwa empa ha o fumana tefo ya ho nka karolo thutong ena.

Ana ho na le seo o batlang ho se tseba kapa ho se etsa

- O ka iteanya le babatlisisi ha o na le dipotso kapa o kopana le mathata (dinomoro di ngotswe ka tlase qetellong)
- O ka letsetsa Health Research Ethics Committee ho 021 938 9207 ha ona le dingengoreho kapa ditlitlebo tse sa kang tsa lokiswa hantle ke ngaka ya thuto
- O tla fumana 'copy' ya tlhahisoleseding ena le foromo e tiisang hore le wena o be le direkoto tsa hao

Ha o batla ho nka karolo thutong ena, ka kopo saena Declaration of Consent mme o e fe mofuputsi.

Ka boikokobetso

Kerry Pilditch (Mofuputsi a Moholo)

Ditlamo:

Caregiver Number:

Ho tekeneng ta tlase, ke le..... Ke dumela ho nka karolo thutong ya dipatlisiso tsa “*Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Phuthaditjhaba, Foreisitata,*”

Ke dumela hore:

- Ke badile kapa ke ipalletse ditaba tsena le promo ya tumellano e ngotsweng ka puo eo ke nang le bokgoni ebile ke e utlwisissa.
- Ke ne ke na le nako ya ho botsa dipotso mme dipotso tsohle tsa ka di arabilwe ka nepo
- Ke utlwisisa hore ho nka karolo thutong ena ke boikgethelo le hore ha ka qobellwa ho nka karaolo
- Nka tlhela thuto ena ka nako nngwe le nngwe mme nkeke ka tuwa kotla kapa ka hatellwa ka tsela enngwe
- Nka kapawa ho tlhela thuto ena pele e fela ha e ba ngaka ya thuto ena kapa radipatlisiso a nahana hore e ka makgabaneng a diketso tsa ka, kapa ke sa latele dithero tsa thuto, jwaloka ha ke dumetse.
- Nkana ka kupuwa ho tlwela dithuto pele ke qeta ha ebe ngaka ya dithuto kapa radipatlisiso a bona hore ke tlamele ho yetsa jwalo, kapa ha sa latele dithuto, ho ya ka dumelano.

Tekene (sebaka) ka(letsatsi) 2019.

.....
Boitlamo ba honka karolo

.....
Letshwao la paki

Tlaleho ya radipatlisiso

Nna (lebiso).....ke hlapanya:

- Ke tlalositse ditaba tsa document ena.....
- Ke kguthaditsee motona/ emotshehadi ho botsa dipotso le ho diaraba ka botlalo.

- Ke kgotsofetse ha e motona/mme/ntate a utlwisitse hantle tsohle tse boletsweng k era diphupatse jwalo ka ha di hlalositse ka hodimo.
- Ke sebedisitse/ ha ka sebedisa toloko. Ha ebe toloko e sebedeitse, toloko o tlameha ho tekena ditlamo e ka tlase.

Tekene (sebaka) ka(letsatsi) 2019.

.....
Letshwao la radipatlisiso

.....
Letshwao la paki

Toloko:

Nna lebitso) dumela hore:

- Ke thusitse radipatlisiso (lebitso) ho hlaltosa ditaba tse tokomaneng yena ho (lebitso la **participant**) Ke sebidisa puo ya SeSotho.
- Re mokgothaletsa emote/emotshedadi ho botsa dipotso le ho araba ka botlalo ka nako ya hae.
- Ke betefatsa kabotlalo hore tsohle tse boletsweng ka semelo s aka dinepahetse ka botlalo.
- Ke kgotsofetse hore motho a nkang karolo o utlwisisa ditaba kabotlalo tse boletsweng tsa lengolo lena le hore emotional/emotshehadi dikarabo tsa bona diarabile ka botlalo.

Tekene (sebaka) ka(letsatsi) 2019.

.....
Letshwao la radipatlisiso

.....
Letshwao la paki

Addendum 16: Informed consent for participation (isiZulu)

Caregiver Number:

UCwangingo olubizwa i-**Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting** eHarrismith , Free State

REFERENCE NUMBER: S17/10/196

PRINCIPAL INVESTIGATOR: Kerry Pilditch

ADDRESS:

Faculty of Medicine and Health Sciences
Stellenbosch University
Francie van Zijl Drive
Tygerberg, 7505
Cape Town

CONTACT NUMBER:

Kerry Pilditch 082 369 1635

Mnakekeli,

Mina nginguKerry Pilditch, ngiyisitshudeni esifundela iMaster of Public Health Nutrition. Bengicela ukukumema ukuthi ubambe iqhaza emkhankasweni wokucwanginga ohlose ukuphenya izinqubo nemikhutshana yokondla nokufunza, kanye nokuziphatha kwabantwana (bezinyanga ezingu 6 ukuya kwezingu 8), abakhula kahle, nalabo abangakhuli kahle.

Sicela ukuthi uzinike isikhathi ufunde lolulwazi olwethulwe lapha, oluzochaza imininingwane yalomkhankaso, bese uxhumana nami uma udinga nanoma yiluphi olunye ulwazi oluphathelele nalolucwangingo. Futhi-ke, ukubamba kwakho iqhaza kungukuzikhethela kwakho, uvunyelwe ukwala uma ungathandi ukuzibandakanya kulona. Uma ngabe uthi cha awuthandi, loko kungeke kukuphazamise nanganoma yiluphi uhlobo. Unelungelo lokuhoxa nganoma yisiphi isikhathi kulolucwangingo, noma ngabe ubusuvumile ukubamba iqhaza.

Lolucwangingo lugunyazwe yi-Health Research Ethics Committee (HREC) eStellenbosch University, futhi luzoqhutshwa ngokulandela imigomo nemitheshwana evumelekile ebizwa amaNational and International ethical guidelines and principles, sekuhlangene naleyo ye International Declaration of Helsinki October 2008.

Lolucwangingo lumayelana nani?

Ukukhula, eminyakeni emibili yokuqala yempilo yomntwana, kubaluleke kakhulu. Kuba nomthelela empilweni nasekuthuthukeni kwabantwana eminyakeni yabo yokuqala empilweni, futhi kuba negalelo lapho ingane isiba ngumuntu omdala. Ukukhula ngomcacamezelo kulesisigaba; ikakhulu ukuphazamiseka kokukhula komntwana aye phezulu, kunganciphisa ithuba lakhe lokufunda agogode esikolweni, nemali angahle ayihole lapho esemdala. Ngakho-ke ukuqinisekisa ukukhula kahle kwezingane kulesisigaba kubaluleke kakhulu. Enye indlela yokukhula okunjena, ukubheka ubude bengane uqhathanise neminyaka yayo yobudala; ngokusebenzisa ishadi lokukhula. Izingane ezingazange zifinyelele ebudeni bazo obulindelekile ngeminyaka ethile yobudala, ziyaye zithathwe njengeziphazamisekile. Abantwana abanezinyanga ezingu 6 ukuya kwezingu 24 basengozini yokuphazamiseka ekukhuleni kwabo ngobude. Uma sikhuluma ngokondla okuyisengezo sisho ukudla esikunika abantwana bethu uma ubisi lwebele lulodwa lungasenele ukufeza zonke izidingo zomntwana, lapho sekufanele khona ukuthi sinezezele ngokudla okuqinile nezinye izinhlobo zokudla okuluketshezi. Lezi yizinhlobo zokudla esizinika abantwana uma sebenezinyanga ezingu 6 ukuya kwezingu 24. Ukuqiniseka ukuthi izingane zithola isondlo esifanele sokudla ngenye indlela yokwenza isiqiniseko sokuthi izingane zikhula kahle. Uhlelo lokudla oluntula ukudla okufanele, noma oluntula uhlobo lokudla okulungile, lungaholela ekukhuleni okuphazamisekayo komntwana.

Lolucwangingo luhlose ukubhekisisa ukuthi yiziphi izinhlobo zokudla ezidliwa ngabantwana bezinyanga ezingu 6 ukuya kwezingu 18, kanye nezizathu ezinganikwa ngabanakekeli babantwana mayelana nokuthi

kungani bezifaka lezizinhlobo. Abanakekeli bezingane ezikhula kahle, kanye nalezo ezingakhuli kahle (eziphazamisekile ngokukhula), bazofakwa kulolucwaningo.

Ucwaningo luzobandakanya ukukalwa kwesisindo nobude bezingane eziqokiwe; ukuhlola ukuthi ngabe zikhula kahle yini noma ziphazamisekile. Kuzoba nezinhlala ezimbili zemibuzo okuzofanela ukuthi zigcwaliswe, kanye ne-interview yehora elilodwa. Loluhla lwemibuzo luzobuzwa ngabacwaningi.

Kungani wena ucelwe ukuthi ungenele lolucwaningo?

Ucelwe ukungenela lolucwaningo ngoba ungumnakekeli wengane ephakathi kwezinyanga ezingu 6 nezingu 18.

Yini elindeleke kuwena?

Sifisa ukukala ubude nesisindo sengane yakho ukuze sihlale ukuthi ngabe ikhula ngokufanelekile yini noma mhlawumbe iphazamisekile.

Sizokucela ukuthi uphendule izinhla ezimbili zemibuzo - imibuzo nje jikelele ephathelene nezihloko ezifana nemfundo yakho, umsebenzi wakho, impilo yengane yakho, nezimpawu ezithile nje zasekhaya bese kuba nohla lwemibuzo ephathelene nohlelo lokudla komntanakho. Kuzosetshenziswa ibhukwana elibizwa i-Road to Health lomntanakho, kodwa sizocela imvume yakho kuqala, ukuze sithole olunye lwalolulwazi. Uzophinde ubuzwe ngesimo sengane yakho malungana ne-HIV. Awuphoqiwe ukuwuphendula lombuzo uma ungathandi, kodwa uzoqhubeka nokuba yingxenye yocwaningo.

Ucwaningo luzoba nengxenye eyi-interview eyodwa, edonsa ihora elilodwa kanye nawe wena mnakekeli wengane, ephathelene ne-diet (ukudla) yengane, nokuthi wena nomndeni wakho nizithatha kanjani izinqumo zokuthi nomupha kudla kuni umntwana. Le-interview izoqoshwa ngumcwaningi nge-tape recorder, kodwa igama lakho ngeke lifakwe kulengxoxo ezoqoshwa.

Ngabe uzozuza ngokubamba iqhaza kulolucwaningo?

Uma umntanakho kutholakala ukuthi kuphazamisekile ukukhula kwakhe, sizokwedlulisela kumuntu osebenza ngezempilo emphakathini, noma osebenza ngokunakekela abantu ngezempilo, noma osebenza ngezenhlalakahle, okunguyena ozokusiza akutholele usizo ukuze uthuthukise ukukhula kwengane yakho. Ngokuzibandakanya kulolucwaningo uzosiza ngokuthuthukisa uhlelo lokudla lwezingane ezincane, usize nasekubhekaneni nenkinga yokukhula okuphazamisekile esifundazweni saseFree State.

Ngabe kukhona izingozi ezithile ezihambisana nokubamba kwakho iqhaza kulolucwaningo?

Cha, akukho zingozi ezihambisana nalolucwaningo.

Uma ungavumi ukungenela lolucwaningo, ngabe yiziphi ezinye izinto ongazenza?

Ukubamba kwakho iqhaza kuya ngokuzikhethela kwakho, futhi kuya ngokuthanda kwakho. Uma ungavumi ukubamba iqhaza kulolucwaningo, akukho mbizane ozohlangabezana nayo noma inkinga ezokwehlela. Ngaphezu kwalokho, unelungelo lokuhoxa kulolucwaningo noma ngasiphi isikhathi othanda ngaso.

Ngubazi ozokwazi ukuthola lolulwazi lwakho?

Igama neminingwane yakho ngeke iqoshwe noma ibhalwe emiphumeleni yalolucwaningo. Ngabacwaningi kuphela abazokwazi iminingwane yakho, kanti-ke konke okubhalwe kulolucwaningo kuzohlala kuyimfihlo. Imiphumela yalolucwaningo izobhalwa embikweni othile ozoshicilelwa ephephabhukwini lezempilo, kodwa nalapho akukho magama abantu azokhishwa, noma kudalulwe izinto ezibucayi nanoma iyiphi indlela.

Uma kutholakala ukuthi ingane yakho ikhula ngendlela ephazamisekile, ayikhuli ngemfanelo, igama layo, negama lakho neminingwane yakho - kuzonikezwa isisebenzi sezempilo emphakathini noma sezenhlalakahle, ukuthi sona sisize ekuthuthukiseni ukukhula kwengane yakho. Lolulwazi kuzoba yilona kuphela abazolunikwa; lonke olunye luzogodlwa, lugcinwe luyimfihlo.

Ngabe uzokhokhelwa yini ngokubamba iqhaza kulolucwaningo, futhi-ke, ngabe zikhona yini izindleko ozobhekana nazo?

Ngemuva kocwaningo, ingane yakho izohlinzekwa ngethoyizi eliphathelene nemfundo, ukukubonga nje ngesikhathi sakho.

Zonke izindleko zokugibela zizokhokhwa, kodwa wena uqobo ngeke ukhokhelwe ngokungenela lolucwaningo.

Ngabe kukhona okunye okudingeka ukwazi, noma ukwenze?

- Ungaxhumana nabacwaningi uma ngabe uneminye imibuzo, noma mhlawumbe uma uhlangabezana nezinkinga (izinombolo zabo zibhaliwe ngenhla).
- Ungaxhumana ne-Health Research Ethics Committee ku 021-938 9207 uma kukhona okukukhathazayo, noma unezikhalazo ezingazange zixazululwe kahle ngudokotela wakho owengamele ucwaningo.
- Uzonikwa ikhophi yalolulwazi, kanye nefomu lemvume, okufanele uzigcinele lona.

Uma ngabe uyavuma ukubamba iqhaza kulolucwaningo, sicela usayine lencwajana enanyekwe kulomqulu ebizwa nge Declaration of Consent, bese uyinika umcwaningi.

Ozithobayo,
Kerry Pilditch (Principal Investigator)

Isethulo salowo ozobamba iqhaza

Ngokusayina lapha ngenzansi, mina u ngiyavuma ukubamba iqhaza kulolucwaningo olubizwa i-*Complementary Feeding Practices and Behaviours of Positive Deviants among Caregivers of Young Children at Risk of Stunting in Phuthaditjhaba, Free State*.

Caregiver Number:

Ngiyakufakazela ukuthi:

- Sengilufundile lolulwazi, noma ngifundelwe lolulwazi nefomu lokuvuma, futhi lubhalwe ngolimi engilwazi kahle nengilugondisisayo.
- Ngilitholile ithuba lokubuzwa imibuzo, futhi yonke imibuzo yami iphendulwe ngokugculisayo.
- Ngiyakuqonda kahle ukuthi ukulungenela kwami lolucwaningo **akuphoqiwe**, futhi angizange nakancane ngifakwe ngaphansi kwengcindezi yokuthi ngilungenele.
- Ngingegunya lokuhoxa kulolucwaningo nganoma yisiphi isizathu engisithandayo, futhi ngingeke ngijeziswe noma ngihlawuliswe nganoma iyiphi indlela.
- Ngiyavuma ukuthi i-interview engizoyenza nomcwaningi ingaqoshwa nge-tape recorder.
- Kungenzeka ngicelwe ukuthi ngihoxe kulolucwaningo ngaphambi kokuba luphele, uma ngabe udokotela walo noma umcwaningi ebona ukuthi yikona okungilungele, noma-ke uma ngingalulandeli kahle uhlelo locwaningo, njengokwesivumelwano.

Ngisayine e (*indawo*) ngomhlaka (*usuku*) 2018.

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Isayini yomcwaningi

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Isayini yomuntu ongufakazi

Isethulo sikamcwaningi

Mina u (*igama*) ngiyafakaza ukuthi:

- Ngimchazele ulwazi oluqokethwe kulombhalo u

- Ngimkhuthazile ukuthi abuze imibuzo, ngazinika isikhathi sokumchazela nokuphendula yonke imibuzo yakhe.
- Ngigculisekile ngokuthi yena uwaqonda ngokugculisayo onke amaphuzu amqoka alolucwaningo, njengoba luchazwe ngenhla.
- Ngisebenzise/Angizange ngisebenzise umhumushi. (*Uma ngabe kusetshenziswe umhumushi, lowomhumushi kudingeka asayine isifungo sakhe esingenzansi*).

Ngisayine e (*indawo*) ngomhlaka (*usuku*) 2018.

.....
Isayini yomcwaningi

.....
Isayini yomuntu ongufakaz

Isethulo somhumushi

Mina u (*igama*) ngiyafakaza ukuthi:

- Ngisize umcwaningi ongu (*igama*) ukuba achaze lonke ulwazi oluqkethwe kulombhalo, achazele u (*igama lomuntu ongenele ucwaningo*) ngokusebenzisa ulimi lwesiZulu.
- Simkhuthazile ukuthi abuze imibuzo, sazinika isikhathi sokumchazela nokuphendula yonke imibuzo yakhe.
- Ngedlulise incazelo eshaya emhlohlweni neyiqiniso njengoba yethulwe kimina.
- Ngenelisekile ngokuthi umuntu ozobamba iqhaza uluqonda ngokuphelele lonke ulwazi oluqkethwe yifomu lokuvuma ngemuva kwencazelo, futhi yonke imibuzo yakhe iphendulwe ngokugculisayo.

Ngisayine e (*indawo*) ngomhlaka (*usuku*) 2018.

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Isayini yomcwaningi

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Isayini yomuntu ongufakazi

Addendum 16: Participant information form

Caregiver Number	Caregiver Name	Cell phone Number	Address	Form 1/2/3 ICF (Y/N)	Form 5 Screening (Y/N)	Form 6: PD/NPD/ Not Eligible	Form 7/8/9 Consent (Y/N)	Form 10 (Y/N)	Form 11 IYCF (Y/N)

Addendum 18: Coding list

Code	Description
Age	Age of the child mentioned as motivation for inclusion/ exclusion of foods
Appetite	Reference to appetite (good/ bad/ general)
Baby food	Commercially produced baby foods (purees), infant cereals, baby teas or juices. (excl. formula milk)
Barrier- self perceived	Caregiver identifies a barrier to achieve intent or situation where caregiver indicates they are unable to do what they want
Barrier to breastfeed	Situation/ Attitude that resulted in a discontinuation of BF/ inability to EBF
Breastmilk	Any mention
Care practices	Playing/ school/clothing/ medication/ hygiene
Caregiver Action	Action/ adaptation to problem. Actual action not just intent
Caregiver apathy	No adaptation/ action to barrier/ challenge (Lack of interest, enthusiasm, or concern). Absence of any action or inaction undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy
Caregiver ascribes value	Caregiver ascribes worth, usefulness, importance to something
Caregiver control	Caregiver in control of feeding practices. Controlling feeding practice. Part of non-responsive feeding
Caregiver preference	Food inclusion/ exclusion based on caregiver preference and not the child
child preference	child shows a greater liking for one alternative over another or others
child priority	Child's needs are regarded as more important than the family/ Caregiver
community	Any indication of interaction with community
community advice	Advice given by community
Worry and Concern	worry/ concern/ anxiety shown expressed by caregiver. Not necessarily action linked
confidence/ Certainty	Caregiver has belief/ faith/ confidence in their decision/ behaviour
consistency	Mention of consistency of food
crying	Any mention (influence action/ decision making)
Dairy	Cow's milk, yoghurt or sour milk.
Desire to comply to subjective norms	Expectations/ pressures/ perception of 'normal' from others (family, community, HCW) that influence caregiver action or intent. Explicit or implied
employment	Mention of employment (desire or action to obtain/ as source of income) for caregiver or household
experience from prev children	Caregiver mentions other children as reason for decision making
family advice	Advice from any family member
family eating	Practice of eating as a family/ including foods consumed as a family. No distinction between child and family eating patterns/ behaviours
Family Support	Assistance, help, support from family whether financial, emotional, provision of food or assistance with care of child.
Feeding Practice	Habitual way of feeding, preparing food
finance perceived as a barrier	Lack of money reason for not achieving intent
Financial Strategy	Plan of action regarding the usage of money, or lack of money. How to decide on general usage of money
financial Support	Any form of financial assistance (family, community or other)
food provision	Supply or providing food
formula milk	Any mention of formula milk
Fruit	Any mention

garden	Any mention
generational knowledge	Knowledge/ Practice that has been transferred from previous generations. Different to family advice in that cultural/ multi-generational connotation
grant	Any mention of grant usage
gravy food	Inclusion of a sauce made by mixing the fat and juices exuded by meat during cooking with stock and other ingredients.
growth	Any mention of growth usage
HCW Guidelines	Advice/ Information given by a health care worker
HCW/ HCF	Interaction with health care worker of facility
health seeking behaviour	any action or inaction undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy
HIV Status	Mention of HIV status re. decision making
Hunger cue	Sign of hunger
inclusion of foods	Mention of reason for food/ food group being included in the diet
Instability	Lack of stability in finance, food provision, support etc.
intent	Caregiver desire, intention or purpose to do something. Action not necessarily performed
introduction of new foods	Mention of the introduction of new foods to the child. How, why, when etc.
introduction of solids/ liquids	Mention of the introduction of solids to the child. How, why, when etc.
Isolation	Lack of support; feeling of being alone
Labelling and Marketing	Information from media or food labels
Lack of caregiver control	Caregiver not primary decision maker
Lack of priority re. child	No preferential treatment for child. Child treated as important as the rest of the family re. decision making, purchasing or food provision
Love/ Nurture	Caregiver shows signs of love, nurture, enjoyment of child
Meal Schedule	Structured meal patterns according to times/ activities
negative connotation to food	Negative association with the inclusion of food/ food group
No Caregiver response	Caregiver does not provide an answer/ reason
No desire to follow subjective norm	Expectations/ pressures/ perception of 'normal' from others (family, community, HCW) DO NOT influence Caregiver action or intent
No perceived barriers	Caregiver indicates that nothing hinders their ability to act on intent
Non recommended foods	Mention of tea, coffee and sugary drinks and high-sugar, high-fat salty snacks)
non responsive feeding	Lack of meal schedule. (?Controlling feeding separate)
Physical response to food	Response such as constipation, allergic reaction, upset stomach etc.
Portion size	Quantity of food eaten
position during feeding	Where the child sits during feeding
Positive outcome linked to food/ feeding	Specific positive outcome linked to food/ food groups e.g. strong bones, lack of illness
Protein	Any mention of chicken, meat, eggs, beans, fish, processed meats or "protein"
purchasing behaviour	Buying behaviour of the Caregiver / family. What, when etc.
Replacement foods	Indication of a food included to replace another food e.g. FM instead of BM/ Food instead of BM

Responsive feeding Practice	Mention of feeding practices that are responsive to feeding cues, appropriate meal environment, pace of eating, schedule, appropriate foods
Restriction/ Exclusion of food sacrifice	Foods excluded/ limited Caregiver had to give up desire/ something for child
satiety	Child satisfied/ full
Satiety Cue	Indication/ sign of fullness
self-efficacy	Caregiver belief in their ability to succeed/ accomplish task/ act on intent. Caregiver indicates that nothing hinders their ability to act on intent
separate foods	Idea that there is a distinct difference between baby foods and 'adult' foods / separate meal times
stability	Constant/ dependable support/ resource/ environment
starch	Maize meal, cereal (Weetbix, oats), potatoes, bread, rice
strength	Any mention
teeth	Any mention
Uncertainty	Caregiver unsure of their behaviour/ guidance provided. "Am I doing the right thing?"
Unemployment	Any mention of absence of employment either for caregiver or household
Unsupportive family environment	Tension in family environment. caregiver feels unsupported
Variety	Any mention of 'variety' or a variety of foods mentioned
Vegetables	Any mention of 'vegetables' or actual vegetables
vicarious experience	Experience gained through other's experience/ knowledge
Weight	Any mention

Addendum 19: Caregiver Quotations from Qualitative Interviews

Table List:

Table 1: Caregiver quotations related to breastmilk, formula milk and breastfeeding barriers

Table 2: Caregiver quotations related to the introduction and solids and liquids

Table 3: Caregiver quotations related to their beliefs regarding infant foods

Table 4: Caregiver quotations related to responsive and non-responsive feeding practices of caregivers

Table 5: Caregiver quotations related to child preference

Table 6: Caregiver quotations related to their value for satiety and appetite

Table 7: Caregiver quotations related to negative and positive caregiver beliefs associated with food

Table 8: Caregiver quotations relating to their opinions of health care workers

Table 9: Caregiver quotations related to caregiver action, apathy and intent

Table 10: Caregiver quotations relaying their response to the proposed change in their current financial situation

Table 11: Caregiver quotation related to the practice of family eating

Table 12: Caregiver quotations related to support received by caregivers, lack of support and instability in support

Table 13: Caregiver quotations related to advice received from health care workers (HCWs) and information from labelling and marketing

Table 2: Caregiver quotations related to breastmilk, formula milk and breastfeeding barriers

Quotation theme	Caregiver quotations
	Barriers to breastfeeding
Employment and school attendance	<p>“Yes, because I was at school I was giving him the milk.” (Interview 0111, Pilditch, 11/03/19)</p> <p>“...because again it’s the circumstance that led me to that. I had already gone back to work but a few weeks later my mother passed away.” (Interview 0115, Pilditch, 11/03/19)</p> <p>“If she gave the breastfeeding when times go on because she’s working. So at the midday, he cannot breastfeed him. So her mother is not there. That’s why we gave him the Lactogen each and every day and night.” (Interview 0173, Pilditch, 24/06/19)</p>
Illness and wounds	<p>“If I had more milk I would have continued to breastfeed her.” (Interview 0046, Pilditch, 06/06/19), Pilditch, 06/06/19)</p> <p>“Yes, I stopped, because how would I have milk, I did not have any.” (Interview 0101, Pilditch, 15/03/19)</p> <p>“It’s because... I’m not... like I’m not...in my body, I’m not... like... well.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“So it took all my meat. I was a bit skinny and she was eating a lot. She was draining. She was taking food from me.” (Interview 0301, Pilditch, 15/03/19)</p> <p>“...my breasts have problems they have things like wounds.” (Interview 0501, Pilditch, 21/06/19)</p>
The perception that breast milk does not satisfy	<p>“Because, I saw him, he liked to eat so I decide to give him formula milk also BM so that he must leave my... (breast).” (Interview 0114, Pilditch, 15/03/19)</p> <p>“...even he himself at 5 months he stopped.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“She wasn’t getting satisfied with the breast.” (Interview 0046, Pilditch, 06/06/19)</p> <p>“Because family said only breastmilk can be stopped but the formula milk is still ok.” (Interview 0111, Pilditch, 11/03/19)</p>
The perception that food should replace breastmilk	<p>“As I told you because he eats too much.” (Interview 0143, Pilditch, 08/04/19)</p> <p>“Because he’s all grown and is supposed to eat.” (Interview 0111, Pilditch, 11/03/19)</p> <p>“I’ve been breastfeeding her for 1 month. Then I stopped breastfeeding ‘cause I see that she’s eating a lot then I use the formula milk.” (Interview 0046, Pilditch, 06/06/19)</p> <p>“He doesn’t get full if I give him the breastmilk alone so I decided to give him food a bit.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“He just; he just; he just eat many times so I didn’t see the need of, of giving him the milk.” (Interview 0143, Pilditch, 08/04/19)</p> <p>“Because he was eating.” (Interview 0111, Pilditch, 11/03/19)</p> <p>“Cries not been satisfied. the milk he is not satisfied so it is better I give him purity.” (Interview 0101, Pilditch, 15/03/19)</p>
HIV IYCF guidelines	<p>“Yes, they said I can give foods and not breastfeed any further.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“Because I am HIV positive.” (Interview 0114, Pilditch, 15/03/19)</p> <p>“Because when I went to the clinic I found that I am positive.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“...then I was told to stop because I am on treatment.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“A.a they said I shouldn’t be mixed. If he was drink formula milk it should be it for six months, if it’s breastfeeding it should be it for six months. So I didn’t use formula milk.” (Interview 0114, Pilditch, 15/03/19)</p>
Value for formula milk	<p>“the baby has to get (formula) milk for the bones to grow and be strong.” (Interview 0301, Pilditch, 15/03/19)</p> <p>“The formula milk is) ...for the calcium...For the bones.” (Interview 0115, Pilditch, 11/03/19)</p> <p>“Ya I’m happy even though it’s expensive but at least she’s getting full.” (Interview 0046, Pilditch, 06/06/19)</p> <p>“I wanted the child to keep on eating, because he didn’t want to eat, so I thought the milk would help him.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“Formula milk, ah, the good things for that it’s when you, when you the. If you pour for the child like they say how many, how many millilitres you can feed for the child with the formula. And how many spoons you can put there. With the breastfeeding you just feed him, feed him.” (Interview 0173, Pilditch, 24/06/19)</p>

Table 2: Caregiver quotations related to the introduction and solids and liquids

Introduction of solids	
Caregiver belief	Caregiver quotation
Crying and appetite	<p>“Because now she was crying a lot. She was crying like. I couldn’t and then she said to me try one spoon (1 teaspoon) of Cerelac.” (Interview 0301, Pilditch, 15/03/19)</p> <p>“Cries not been satisfied. the milk he is not satisfied so it is better I give him purity.” (Interview 0101, Pilditch, 15/03/19)</p> <p>“He doesn’t get full if I give him the breastmilk alone so I decided to give him food a bit.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“Cause the dummy (referring to bottle) he eat lots to the dummy. So let’s try to put some porridge; let’s see how it goes.” (Interview 0173, Pilditch, 24/06/19)</p>
In response to advice	<p>“I started at six months as I was told.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“Yes, they said I can give foods and not breastfeed any further. (In response to HIV status).” (Interview 0138, Pilditch, 08/03/19)</p> <p>“Because in hospital they told me after 6 months.” (Interview 0111, Pilditch, 11/03/19)</p> <p>“Because the box said at 6M the child can stop then try food after six months.” Interview 0501, Pilditch, 21/06/19</p>
For the health/ wellbeing of the child	<p>“Because I wanted her to grow healthy. She must get used to it. Not that I must start to introduce it late.” (Interview 0115, Pilditch, 11/03/19)</p> <p>“Because I have take care of my kids so I decided now this is the right time for the baby to be introduced to solid foods.” (Interview 0115, Pilditch, 11/03/19)</p> <p>“Because I... I wasn’t happy with the weight.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“We saw with the first child when we put the food he just eat it. So we must put the food so the baby can grow. If we don’t put that, the baby it will feed the child, the baby won’t grow.” (Interview 0173, Pilditch, 24/06/19)</p>
Introduction of water and tea	
	<p>“Because water is the, is the, we just have water for we live and feel better. Because water is so important for the person and (Inaudible) human beings” (Interview 0173, Pilditch, 24/06/19)</p> <p>“I went to the hospital and reported that I’m going back to work, and to stop giving breastmilk so they advised me to give water, milk and a bit of tea.” (Interview 0101, Pilditch, 15/03/19)</p> <p>“But the baby is not stressful when it comes to juice, I just give him to quench the thirst.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“It’s because the child craves for water so I give tea instead and it quenches the thirst.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“When I used to drink water the baby would want the cup I was drinking from so I decided to put water or tea in her bottle.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“When the baby stopped formula I had to give him the tea because he was used to drinking something inside the bottle, so I put tea instead.” (Interview 0501, Pilditch, 21/06/19)</p> <p>“Because the tea tells you for the baby like, zinc, iron. Just so the bones can get strong. (Interview 0173, Pilditch, 24/06/19)</p>

Table 3: Caregiver quotations related to their beliefs regarding infant foods

Caregiver belief	Caregiver quotation
Consistency and digestibility	<p>“Because they are soft for the baby because he was too young. (Purity in comparison to Mabelle).” (Interview 0143, Pilditch, 08/04/19)</p> <p>“Because the stomach is going to digest right when she’s going to put, eat right.” (Interview 0046, Pilditch, 06/06/19)</p> <p>“Because it was soft.” (Interview 0501, Pilditch, 21/06/19)</p>
Value for foods specifically produced for babies	<p>“Because it is important for the baby.” (Interview 0143, Pilditch, 08/04/19)</p> <p>“Because I see from the shops the Nestum and Cerelac is the baby’s food. And it’s right for them.” (Interview 0046, Pilditch, 06/06/19)</p> <p>“Because I know with baby’s food.” (Interview 0046, Pilditch, 06/06/19), Pilditch, 06/06/19)</p> <p>“And it’s healthy.” (Interview 0046, Pilditch, 06/06/19), Pilditch, 06/06/19)</p> <p>“But at his age and from his baby times I was supposed to have started with the right food which is Cerelac and purity. So it’s like I jumped a certain stage.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“The Purity for the baby is too soft and the tummy for the baby is too small, the intestine.” (Interview 0173, Pilditch, 24/06/19)</p> <p>“I think he’ll be excited about it because its baby food that he is supposed to eat unlike what I’ve given him before.” (Interview 0173, Pilditch, 24/06/19)</p> <p>“The best,” (Interview 0301, Pilditch, 15/03/19)</p> <p>“...for the month that she, she was 3 months. I think it’s much better.”(Interview 0301, Pilditch, 15/03/19)</p>
Satiety	<p>“So he could be full.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“Cries not been satisfied. the milk he is not satisfied so it is better I give him purity.” (Interview 0101, Pilditch, 15/03/19)</p> <p>“He ate the other foods but didn’t finish. He could finish purity which meant that he enjoyed it.” (Interview 0501, Pilditch, 21/06/19)</p>
Other	<p>“...like I think if he could try out purity or Cerelac with flavours he would be enjoy them unlike a real apple or fruit, so if I had the power to buy that I would.” (Interview 0176, Pilditch, 07/06/19)</p>

Table 4: Caregiver quotations related to responsive and non-responsive feeding practices of caregivers

	Caregiver quotation	
	Non-positive deviants	Positive deviants
Responsive meal environment	<p>"I feel happy; even though she grab the dish and try to make, make herself, to eat herself." (Interview 0046, Pilditch, 06/06/19)</p> <p>"...the food but he can't feed himself but then he tries." (Interview 0176, Pilditch, 07/06/19)</p> <p>"Play with him with food. Sometimes when he opens his mouth, just put him. Sometimes he play back. He (Spitting noise)." (Interview 0173, Pilditch, 24/06/19))</p> <p>"I wait for to burp then try feeding him again." (Interview 0114, Pilditch, 15/03/19)</p>	<p>"But now I've learnt that she has to, I have to give her a spoon and relax and then she will play and then I will give her and she will play and then she finishes her food that way. She will be playing with her food when I'm feeding her so I think she's happy with it." (Interview 0301, Pilditch, 15/03/19)</p> <p>"I play with him." (Interview 0111, Pilditch, 11/03/19)</p> <p>"She plays with him." (Interview 0111, Pilditch, 11/03/19)</p> <p>"Yes. I do. After when she's finished when I see that she's now alright in the stomach then I'll say 'Take it.' "Then she's like throwing it on the floor. Playing with it. "Eating it (affection in her voice) When she doesn't want it any more she she'll just leave it like that or throw it outside to the floor." (Interview 0115, Pilditch, 11/03/19)</p> <p>"Yes I keep trying to give him about 2 spoons or 3 to eat." (Interview 0101, Pilditch, 15/03/19)</p> <p>"No. I just fed her like, 'Come let's eat together. Come share.'" (Interview 0115, Pilditch, 11/03/19)</p> <p>"No, if like I have fed her and we are eating she'll and come like, 'Ah. Ah" (makes like she is looking for food). When you give her she'll just like (gestures spitting out food)." (Interview 0115, Pilditch, 11/03/19)</p>
Caregiver response to hunger or satiety cues	<p>"I just do it, I'm not sure (in response to how many times she should feed?)". (Interview 0131, Pilditch, 23/05/19)</p>	<p>"I know him when he is hungry, I know his sign when he is now hungry then I know it's time." (Interview 0101, Pilditch, 15/03/19)</p> <p>"No. But when she's really hungry she'll just open the mouth. And then you know... I know that I didn't give her enough or just give her the snacks." (Interview 0115, Pilditch, 11/03/19)</p> <p>"I usually pour 3 spoons and I know it'll be enough for the baby, if it is not enough I pour more." (Interview 0501, Pilditch, 21/06/19)</p> <p>"I prepare her meal because I know that she's hungry." (Interview 0301, Pilditch, 15/03/19)</p> <p>"We see on how he's full." (Interview 0111, Pilditch, 11/03/19)</p> <p>"(The child) cries not been satisfied. the milk he is not satisfied so it is better I give him purity." (Interview 0101, Pilditch, 15/03/190)</p>
Hunger cues (other than crying)	<p>"I touch and feel his stomach." (Interview 0131, Pilditch, 23/05/19))</p> <p>"He wakes up at times. When he is sleeping." (Interview 0173, Pilditch, 24/06/19)</p> <p>"He's just (makes sucking sound)." (Interview 0176, Pilditch, 07/06/19)</p> <p>"She's a little bit nagging." (Interview 0046, Pilditch, 06/06/19)</p> <p>"He's tired." (Interview 0173, Pilditch, 24/06/19)</p>	<p>"She hasn't started speaking but her actions, I know by her actions. She'll come and pull me by the dress or tap the dish, or whatever the bowl she took. So I now know she's hungry then I'll get out the meal." (Interview 0115, Pilditch, 11/03/19)</p> <p>"The sound effects." (Interview 0101, Pilditch, 15/03/19)</p> <p>"If he's still hungry he goes to anyone who is still eating and asks for food/" (Interview 0115, Pilditch, 11/03/19)</p> <p>"He pulls me to the kitchen." (Interview 0111, Pilditch, 11/03/19)</p> <p>"The eating of the hand. She started at a very young age of eating the hand. But now, after eating and drinking the bottle she will just leave her hand. But now continuously</p>

		<p>when she's hungry she'll start by eating the fingers and then cry." (Interview 0115, Pilditch, 11/03/19)</p> <p>"He pulls me or cries." (Interview 0111, Pilditch, 11/03/19)</p> <p>"I know him when he is hungry, I know his sign when he is now hungry then I know it's time." (Interview 0101, Pilditch, 15/03/19)</p>
Satiety cues (other than spitting)	<p>"I think he lost the appetite because he's taking long time." (Interview 0143, Pilditch, 08/04/19)</p> <p>"He just throw the food." (Interview 0143, Pilditch, 08/04/19)</p> <p>"Because you see if he didn't want it he just close his mouth and cry." (Interview 0173, Pilditch, 24/06/19)</p> <p>"Once he is full, he starts crying." (Interview 0131, Pilditch, 23/05/19)</p> <p>"She was sleeping right." (Interview 0046, Pilditch, 06/06/19)</p> <p>"Like playing." (Interview 0173, Pilditch, 24/06/19)</p> <p>"Because you see if he didn't want it he just close his mouth and cry." (Interview 0173, Pilditch, 24/06/19)</p>	<p>"Once he's full he stops eating at any time." Interview 0501, Pilditch, 21/06/19</p> <p>"When she doesn't want it any more she she'll just leave it like that or throw it outside to the floor." (Interview 0115, Pilditch, 11/03/19)</p> <p>"She makes 'pleww'. She doesn't want to." (Interview 0301, Pilditch, 15/03/19)</p> <p>"She just. When you hold it like this she will just... or just swing her head and then she will just burp." (Interview 0301, Pilditch, 15/03/19)</p> <p>"She doesn't open the mouth." (Interview 0115, Pilditch, 11/03/19)</p>
Non responsive feeding Practices	<p>"I think he lost the appetite because he's taking long time." (Interview 0143, Pilditch, 08/04/19)</p> <p>"But when he's not hungry he just playing when I feed him so that I see he doesn't like the food." (Interview 0143, Pilditch, 08/04/19)</p> <p>"It doesn't sit well (response to playing at meal times)." (Interview 0143, Pilditch, 08/04/19)</p> <p>"I also hold him." (Interview 0143, Pilditch, 08/04/19)</p> <p>"I give the child the food forcefully it happens mostly when his teething." (Interview 0131, Pilditch, 23/05/19))</p> <p>"He won't eat it even if I hold him and force him to eat. So I force him and hold him, then I give him a spoon take a break and give him another spoon." (Interview 0131, Pilditch, 23/05/19))</p> <p>"Yes, I'm giving her by force." (Interview 0046, Pilditch, 06/06/19)</p>	<p>"I force her." (Interview 0301, Pilditch, 15/03/19)</p> <p>"When he does that I carry him out of his chair and carry him, hold his hands and feed him." (Interview 0138, Pilditch, 08/03/19)</p> <p><i>"How do you know when to take the dish and feed him?"</i></p> <p>When playing with food or pours in on himself." (Interview 0111, Pilditch, 11/03/19)</p>
Meal schedule	<p>"I feed him at 7 and then again at past 1, then at 3. He eats sometimes at 3." (Interview 0131, Pilditch, 23/05/19))</p> <p>"In the morning she eats around 6; 6 o' clock... Then around 1 o'clock or 12 I give her the pap and sour milk. Yes. Then... around 3 I give her...purity or Cerelac...then I give her and maybe a snack-cheese curls. And then I give her water. Then in the, in 4 o'clock then I give her pap maybe with gravy, ya. Chicken gravy. Then around 7 o'clock then she eats soft porridge. The she sleeps around 8 o'clock." (Interview 0046, Pilditch, 06/06/19)</p> <p>"I just know and the baby has also gotten used to the routine." (Interview 0176, Pilditch, 07/06/19)</p>	<p>"Now I have the schedule, She's eating at 9 o'clock in the morning. She's eating at 1 o'clock. She's eating at... sometimes it's between 6 and 7. Then she's fine. Now I'm using the time." (Interview 0301, Pilditch, 15/03/19)</p> <p>"He wakes up around 9, when he wakes up I give him food, and then around 1 I give him food, and then in the evening I give him food." (Interview 0101, Pilditch, 15/03/19)</p> <p>"Bottled milk, after eating, I give it to him 3 time, like I said eating in the morning, midday and in the evening." (Interview 0101, Pilditch, 15/03/19)</p> <p>"Like in the morning maybe 8 o'clock I gave her cooked porridge or instant...After an hour or two I cook maybe a mash and gravy for her to feed her. And then after that I give her snack. Boil some fruit for her. Just give her some water and then I make a botte for her." (Interview 0115, Pilditch, 11/03/19)</p> <p>"He eats porridge at 8, and eats again at 11 and eats Weetbix. Then when we eat lunch at around 1 o'clock we give him what we eating, then again at 4pm. He eats 5 times a day." (Interview 0501, Pilditch, 21/06/19)</p>

Table 5: Caregiver quotations related to child preference

Caregiver Quotation		
	Non-positive deviants	Non-positive deviants
As a reason for inclusion	<p>"Because he used to eat the one she bought on the streets" (Interview 0131, Pilditch, 23/05/19)</p> <p>"(on the reason for the inclusion of motho) because he eats them." (Interview 0114, Pilditch, 15/03/19)</p> <p>"To see, to see if she's going to eat it (the reason for the inclusion of new foods)." (Interview 0046, Pilditch, 06/06/19)</p>	<p>The baby is used to it (tea)." Interview 0501, Pilditch, 21/06/19</p> <p>I like it because the baby eats whatever is there "he likes meat" (Interview 0111, Pilditch, 11/03/19) because he likes pumpkin with sugar (Interview 0111, Pilditch, 11/03/19)</p> <p>he eats everything, pap and Maasi, pap and relish too, all kinds (05010)</p> <p>he doesn't have a problem trying out new foods (0501)</p> <p>And was there another food that when you introduced it to her she didn't like? She's not that kind. (Interview 0115, Pilditch, 11/03/19)</p>
As a reason for restriction	<p>"...even he himself at 5 months he stopped (breastfeeding)." (Interview 0131, Pilditch, 23/05/19)</p> <p>"I just take time to look; whether he like them or not. That, I just give him again so that I must see if he's still doing that same thing I just stop giving him." (Interview 0143, Pilditch, 08/04/19)</p> <p>"He didn't want it (formula milk) all even if I tried to." (Interview 0131, Pilditch, 23/05/19)</p> <p>"I try to give it to him but if he keeps on spitting it out, I leave him." (Interview 0114, Pilditch, 15/01/19)</p> <p>"The baby just stopped. He refused to open his mouth (formula milk)." (Interview 0131, Pilditch, 23/05/19))</p> <p>"...because the child loves amaasi (reason for exclusion of vegetables)." (Interview 0131, Pilditch, 23/05/19))</p> <p>"The tea she doesn't want." (Interview 0046, Pilditch, 06/06/19)</p> <p>"He doesn't like the juice. But I give him maybe once a week." (Interview 0176, Pilditch, 07/06/19)</p> <p>"I will leave the pumpkin." (Interview 0143, Pilditch, 08/04/19)</p> <p>"...he doesn't like the surgery things." (Interview 0131, Pilditch, 23/05/19))</p>	<p>"Eggs (on what foods baby spits out)." (Interview 0111, Pilditch, 11/03/19)</p> <p>"He spat it out (reason for stopping formula milk)." (Interview 0111, Pilditch, 11/03/19)</p> <p>"He doesn't like it he spits them (pap, rice and gravy) out." (Interview 0111, Pilditch, 11/03/19)</p> <p>"he doesn't really like chips." (Interview 0111, Pilditch, 11/03/19)</p> <p>"But the ones that you use with the water. She didn't like them.(infant cereals)." (Interview 0115, Pilditch, 11/03/19)</p> <p>"He didn't like it (reason for excluding formula milk)." Interview 0501, Pilditch, 21/06/19</p> <p>"When I give her the Motho she isn't happy." (Interview 0138, Pilditch, 08/03/19)</p>
Caregiver indicates value for preference	<p>"While giving him what he doesn't like, he spits it out so I cannot force him to eat. That's why I end up giving him what he prefers." (Interview 0131, Pilditch, 23/05/19))</p> <p>"I don't decide. Whenever I just give what is in my mind I just give her. And see if she likes it I think it's important because the child gets irritated by one thing all them, which leads them to not eating or finishing the food. The child will not like the food." (Interview 0131, Pilditch, 23/05/19)</p>	<p>"He ate the other foods but didn't finish. He could finish purity which meant that he enjoyed it." (Interview 0501, Pilditch, 21/06/19)</p> <p>"Pap is not good for children...(because) most children don't like pap." (Interview 0501, Pilditch, 21/06/19)</p> <p>"Because if he becomes choosy, you'd find I don't have the food he prefers. So I have to get him used to food that is different." (Interview 0138, Pilditch, 08/03/19)</p>

	<p>“He likes those foods (on which foods are important).” (Interview 0111, Pilditch, 11/03/19) “Because he won’t be happy about the same thing daily, too much of a thing is no good.” (Interview 0176, Pilditch, 07/06/19) “But when he’s not hungry he just playing when I feed him so that I see he doesn’t like the food.” (Interview 0143, Pilditch, 08/04/19) “I won’t allow that, what will the baby eat if I don’t give him what he wants.”(Interview 0131, Pilditch, 23/05/19))</p>	<p>“Looking at my child, I feel like Weetbix is one of them (an important food).” (Interview 0501, Pilditch, 21/06/19) “It all depends on what the baby wants, whether they like the foods or not.” (Interview 0501, Pilditch, 21/06/19) “Because my kids will be like other kids and eat different things at the times they want to eat them.” (Interview 0111, Pilditch, 11/03/19)</p>
<p>Caregiver intention to comply to preference</p>	<p>“That food that he might like; I will change them.” (Interview 0143, Pilditch, 08/04/19) “The mother just knows what to do and goes with the flow of what the baby wants.” (Interview 0143, Pilditch, 08/04/19) “When times goes on he will tell you if he’s done, if he just want food now. But baby just want dummy and day not and dummy only once.” (Interview 0173, Pilditch, 24/06/19) “Then I wouldn’t give him the beans meal because he won’t even swallow.” (Interview 0131, Pilditch, 23/05/19)</p>	<p>“I’m afraid that if I give her more food/ different food that I don’t have she might want that and I won’t be able to provide for her.” (Interview 0301, Pilditch, 15/03/19)</p>
<p>As a motivation for purchasing behaviour</p>	<p>Because he eats them on reason for purchasing.” (Interview 0114, Pilditch, 1”5/03/19) “I buy all the food stuff for her because I know what she eats and what she doesn’t eat.” (Interview 0046, Pilditch, 06/06/19), Pilditch, 06/06/19) “It depends on what the baby eats the most. I compare monthly then I either buy more or less.” (Interview 0131, Pilditch, 23/05/19)) “If you put the one he eat (s) lots- that one he put on the list that one not.” (Interview 0173, Pilditch, 24/06/19)</p>	

Table 6: Caregiver quotations related to their value for satiety and appetite

Caregiver quotation	
Non-positive deviants	Non-positive deviants
<p>“She wasn’t getting satisfied with the breast/ I see when I give her the formula milk she was getting full.” (Interview 0046, Pilditch, 06/06/19)</p> <p>“I would provide more than what the children already have so they would be satisfied.” (interview 0131, Pilditch, 23/05/19)</p> <p>“So he could be full reasons for including baby food).” (Interview 0131, Pilditch, 23/05/19)</p> <p>“She wasn’t getting satisfied with the breast.” (Interview Pilditch, 06/06/19)</p> <p>“I see when I give her the formula milk she was getting full (Interview 0046, Pilditch, 06/06/19)</p> <p>“I’m happy even though it’s expensive but at least she’s getting full.” (Interview 0046, Pilditch, 06/06/19)</p> <p>“Because I see now she’s no longer eating the, when I gave her the Purity she, when she was 3 months she wasn’t finishing. Now she’s finishing the whole bottle. I see that she’s not getting full so I try giving her pap and it stays in the stomach.” (Interview 0046, Pilditch, 06/06/19)</p> <p>“I will buy the food to satisfy them both.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“He doesn’t get full if I give him the breastmilk alone so I decided to give him food a bit.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“Well it’s because when the 1st born comes back from school she comes back and says she’s full and she’s good.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“I see by how much food she eats.” (Interview 0173, Pilditch, 24/06/19)</p> <p>“It’s because of the way he carried on eating” (Interview 0176, Pilditch, 07/06/19)</p>	<p>“He ate the other foods but didn’t finish. He could finish purity which meant that he enjoyed it.” (Interview 0501, Pilditch, 21/06/19)</p> <p>“By giving the baby the food and him finishing the food. (a sign of satiety)” (Interview 0101, Pilditch, 15/03/19)</p> <p>“Maize meal is important because if you do not have it you will starve”. (Interview 0138, Pilditch, 08/03/19)</p> <p>“(The child) cries not been satisfied. the milk he is not satisfied so it is better I give him purity.” (Interview 0101, Pilditch, 15/03/19)</p> <p>“And fortunately when I gave that cereal to her... she was fine” (Interview 0301, Pilditch, 15/03/19)</p> <p>“To see him eating (is important).” (Interview 0111, Pilditch, 11/03/19)</p>

Table 7: Caregiver quotations related to negative and positive caregiver beliefs associated with food

	Caregiver quotation	
	Non-positive deviants	Positive deviants
Positive outcomes associated with foods	<p>"to protect the body from the disease. Also to build the body. (dairy and veg)," (Interview 0143, Pilditch, 08/04/19)</p> <p>"Because I see she's growing (formula milk (Interview 0046, Pilditch, 06/06/19)</p> <p>"Because the tea tells you for the baby like, zinc, iron. Just so the bones can get strong." (Interview 0173, Pilditch, 24/06/19)</p> <p>"To protect the body from the disease. Also to build the body. (sour milk and vegetables)." (Interview 0173, Pilditch, 24/06/19)</p> <p>"Because the cow's milk helps the, the, the body so the bones can be strong." (Interview 0173, Pilditch, 24/06/19)</p> <p>"I know the water is healthy for her/ Because water is the, is the, we just have water for we live and feel." (Interview 0173, Pilditch, 24/06/19)</p> <p>"Because It's going to help her be strong (fruits and veg)." (Interview 0046, Pilditch, 06/06/19)</p> <p>"He can eat cause pap and Maasi (sour milk) make him to feel strong." (Interview 0173, Pilditch, 24/06/19)</p>	<p>"Because it will give him strength. (pumpkin)." (Interview 0138, Pilditch, 08/03/19)</p> <p>"Because his bones, I want to be strong (reason for breastfeeding)." (Interview 0111, Pilditch, 11/03/19)</p> <p>"Because the baby has to get (formula) milk for the bones to grow and be strong." (Interview 0301, Pilditch, 15/03/19)</p> <p>"Because I wanted her to grow healthy (introduction of solids)." (Interview 0115, Pilditch, 11/03/19)</p> <p>"For the calcium...For the bones (formula milk)." (Interview 0115, Pilditch, 11/03/19)</p> <p>"When I think of the pumpkin I think like the proteins." (Interview 0115, Pilditch, 11/03/19)</p> <p>"They strengthen us (veg, meat and fruits)." (Interview 0111, Pilditch, 11/03/19)</p>
Restriction of foods due to a negative connotation of caregiver	<p>"Because I heard someone, some other person saying that, it causes too much phlegm. (yoghurt)." (Interview 0173, Pilditch, 24/06/19)</p> <p>"Meat is bad for the baby...Yes the time when he starts grow the teeth. Then I can see now you can give him the meat." (Interview 0173, Pilditch, 24/06/19)</p> <p>"Yes, its fish, because it causes the body to swell." (Interview 0114, Pilditch, 15/03/19)</p> <p>"Only two times (a week) because potatoes cause worms." (Interview 0173, Pilditch, 24/06/19)</p> <p>"I don't like it (dairy)." (Interview 0173, Pilditch, 24/06/19)</p> <p>"Because even me I don't like it (fish)." (Interview 0143, Pilditch, 08/04/19)</p> <p>"I don't like (milk)." (Interview 0143, Pilditch, 08/04/19)</p>	<p>"The things I don't feed much is amaasi. Because I think of the worms." (Interview 0115, Pilditch, 11/03/19)</p> <p>"Because, now, um, what I think is because of her weight and giving her pap and uhkommaasi (sour milk) is not a good thing because now she is going to go (puffs up)." (Interview 0301, Pilditch, 15/03/19)</p> <p>"The food clogs up in the stomach (beans) (still includes)." (Interview 0138, Pilditch, 08/03/19)</p> <p>"But now I'm allergic. So I won't know whether she would be. I will wait for her to grow a bit (to include fish)." (Interview 0301, Pilditch, 15/03/19)</p> <p>"Maybe when I give him things like beans he would show me by having a rash that it does not agree with him." (Interview 0138, Pilditch, 08/03)</p>
Restriction of non-recommended foods due to a negative connotation of caregiver	<p>"Because they, they have a lot of sugar (sweets and chocolate). I think he will lose the appetite when he is eating the sweets." (Interview 0143, Pilditch, 08/04/19)</p> <p>"I don't like the sweets.... because I think they make him sick." (Interview 0176, Pilditch, 07/06/19)</p> <p>"I don't want her to get used to only sugar things They (sweets) will ruin the teeth. Maybe once a week." Interview 0101, Pilditch, 15/03/19</p>	<p>"Too much sweetness, the foods that are having a lot of sugar. Salty foods. That kind of food." (Interview 0301, Pilditch, 15/03/19)</p> <p>"The foods with a lot of salt is this artificial snacks that they are buying with R1 on the corner, the little ones and everything and the, um, the potato chips, the fried chips. Those ones with the oil in them." (Interview 0301, Pilditch, 15/03/19)</p> <p>"But not too much (juice) because it has sugar" (Interview 0138, Pilditch, 08/03/19)</p> <p>"They make him dirty." (Interview 0501, Pilditch, 21/06/19)</p> <p>"No it's just that I just don't like it when the child has (sweets and chips). I just think about the chests, all those coughs." (Interview 0138, Pilditch, 08/03/19)</p>

Table 8: Caregiver quotations relating to their opinions of health care workers

Caregiver quotation	
Non-positive deviants	Non-positive deviants
<p>"I think they know more about the baby than me." (Interview 0143, Pilditch, 08/04/19)</p> <p>"I think I can ask the sisters at the clinic." (Interview 0143, Pilditch, 08/04/19)</p> <p>"Yes, according to me but the clinic disagrees." (Interview 0114, Pilditch, 15/03/19)</p> <p>"Because sometimes when the scale of the baby is down they say that you don't give the baby the food." (Interview 0143, Pilditch, 08/04/19)</p> <p>"I was following the orders from the clinic (instead of listening to community advice)." (Interview 0114, Pilditch, 15/03/19)</p>	<p>"I think it's because of her profession- she knows better." (Interview 0301, Pilditch, 15/03/19)</p> <p>"Yes. I think it's the best. Because maybe I will doubt that and do the wrong thing. Do you understand. Because as the mother's we feel pity for our children sometime. Why can't they add a bit of potato to add? That is a small portion. That's how we are. But now if a professional says to you, 'Now that's the amount you have to give to her,' She's saving your child." (Interview 0301, Pilditch, 15/03/19)</p> <p>"They know better about kids." Interview 0111, Pilditch, 11/03/19</p> <p>trust them because they are educated." (Interview 0101, Pilditch, 15/03/19)</p> <p>"The doctor from the hospital who helped me when I was sick I would go to him and ask." (Interview 0101, Pilditch, 15/03/19)</p> <p>"Yes. I am happy but it shows that there is food I can't provide mentioned by the clinic." (Interview 0138, Pilditch, 08/03/19)</p> <p>"Because they (HCW) tell what to give to babies or not." (Interview 0111, Pilditch, 11/03/19)</p> <p>"His scale is okay and they told me at the clinic." (Interview 0501, Pilditch, 21/06/19)</p> <p>"They tell us the clinic that the baby looks healthy, he looks good. So I trust the clinics opinion." (Interview 0501, Pilditch, 21/06/19)</p>

Table 9: Caregiver quotations related to caregiver action, apathy and intent

Caregiver quotation		
	Non-positive Deviant	Positive deviant
Caregiver response to lack	<p>“There is somewhere where I go for food. I go with a bowl and they pour food for me.” (Interview 0114, Pilditch, 15/03/19)</p> <p>“I borrow (money).” (Interview 0173, Pilditch, 24/06/19)</p> <p>“I try and ask someone else like the neighbours</p> <p>“It’s better if we don’t have food but the child has to have food. But it usually happens when the month is about to end but only the adult’s food.” (Interview 0176, Pilditch, 07/06/19)</p>	<p>“I go to friends that have pumpkin to go ask for pumpkin for the baby.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“I try to have temporary jobs.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“I would buy the food that he eats, I would rather starve as long as he got the food that he eats.” (Interview 0101, Pilditch, 15/03/19)</p> <p>“Even though you don’t have much food in the house you must make sure the child gets the meal.” (Interview 0115, Pilditch, 11/03/19)</p>
Caregiver apathy regarding lack	<p>“It is everyone in the house (that has no food).” Interview 0131, Pilditch, 23/05/19)</p> <p>“I just sit.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“I just sit and do nothing.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“If I don’t have money, I wouldn’t buy anything at all.” Interview 0131, Pilditch, 23/05/19)</p>	
Current financial strategy	<p>“So that’s why at times I settle for cheaper things.” (Interview 0176, Pilditch, 07/06/19)</p> <p>then I lay-be clothes for the children.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“It’s because of the foods I can afford which are budgeted.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“I still need to choose cheaper things too.” (Interview 0176, Pilditch, 07/06/19)</p>	<p>“She’ll buy the food in bulk for her to use.” (Interview 0301, Pilditch, 15/03/19)</p> <p>“I would buy the eggs and potatoes because now it will be cheaper for me because we are using at home. All of those we are going to eat.” (Interview 0301, Pilditch, 15/03/19)</p> <p>“I know when I buy potatoes I buy in bulk, and buy bulk pumpkin and buy spinach, put it in the fridge and buy chicken.” (Interview 0101, Pilditch, 15/03/19)</p> <p>“No. Because the money that we get is like a stokvel, a food stokvel, a money stokvel. We are trying to make it grow like, when we need something for the future, maybe next year we just decide on that.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“No, cause even when we do the budget we’ll sit down, draft it down, then we decide, no, let’s make like half of this a... let’s put it here.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“Because it’s cheap.” (Interview 0501, Pilditch, 21/06/19)</p>
Action for poor appetite	<p>I look at the child and check his tongue.” Interview 0143, Pilditch, 08/04/19</p> <p>I just play with him. When he sleeps he will say (sucking sound) like he wanting a dummy. I just give him.” (Interview 0176, Pilditch, 07/06/19)</p> <p>I’m starting to think maybe what would she like to eat? What she would like to eat when she doesn’t want to eat Mabella.” (Interview 0046, Pilditch, 06/06/19), Pilditch, 06/06/19)</p>	<p>“I become worried, I take him to the clinic.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“I get so worried, you know. Because she loves her food. So when it’s the little amount that I made for her and she’s eating. I’m like maybe there’s something wrong. I decided I should give her some glucose; you know? Maybe there’s something wrong in the tummy.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“If he ate at 8:30 then I give it to him at 11 again You see I have to look- maybe there is something wrong? Look in the mouth? Are there any sores? Is</p>

	<p>Yoh, I take him to the clinic because when he's teething he refuses to eat." Interview 0114, Pilditch, 15/03/19</p>	<p>she coming out some teeth?" (Interview 0115, Pilditch, 11/03/19) "I change the food and give him something else." (Interview 0501, Pilditch, 21/06/19) "I change the foods and give him something else to see if he doesn't like it or not." (Interview 0501, Pilditch, 21/06/19) "I'm just asking myself what is going on. But what I do. I just give her water, stop all those the milk and the what. Just to give her time to get hungry and when she's hungry that's when I make food for her and then to give to her." (Interview 0301, Pilditch, 15/03/19) "No. But when she's really hungry she'll just open the mouth. And then you know... I know that I didn't give her enough or just give her the snacks." (Interview 0138, Pilditch, 08/03/19)</p>
Inaction re. appetite	<p>"Nothing (when asked what is he response to poor appetite)." (Interview 0143, Pilditch, 08/04/19) "Uh, I don't know." (Interview 0131, Pilditch, 23/05/19) "I will just leave him." (Interview 0143, Pilditch, 08/04/19)</p>	
Health seeking behaviours	<p>"I take him to the clinic because sometimes he losses weight." (Interview 0131, Pilditch, 23/05/19) "She just went to the clinic and there at the clinic can tell her which formula you can use for the child." (Interview 0176, Pilditch, 07/06/19)</p>	<p>"I would come back to the clinic and ask (in response to poor weight)." (Interview 0101, Pilditch, 15/03/19) "And unfortunately the food was not enough at home so that I can eat more so I can have more milk so I asked the HCW when I was here." (Interview 0301, Pilditch, 15/03/19) "He was eating small portions, let me see how many days was it, Wednesday and Thursday, 2 days. (thereafter she took him to the clinic). (Interview 0101, Pilditch, 15/03/19) "I won't say I don't need more information. But, like, when we as women are get together we speak, "Ha, my baby is growing like this. I am giving her this, "then I will ask why is that so? I know that ok, ohh... "This is what I'm doing." (Interview 0115, Pilditch, 11/03/19) "Yes, I did, but I didn't get help so I took him to the doctor." (Interview 0501, Pilditch, 21/06/19) "I went to the hospital and reported that I'm going back to work, and to stop giving BF so they advised me to give water, milk and a bit of tea." (Interview 0101, Pilditch, 15/03/19)</p>

Table 10: Caregiver quotations relaying their response to the proposed change in their current financial situation

Caregiver quotation		
	Non-positive deviant	Positive deviant
Caregiver intent expressed in response to reduction in income	<p>"I will stop buying Cerelac and purity. Milk." Interview 0143, Pilditch, 08/04/19</p> <p>"Especially (restrict) Cerelac and...and purity's." 1073</p> <p>"I would buy the smaller things." Interview 0131, Pilditch, 23/05/19)</p> <p>"I will try and go look for work." (Interview (Interview 0046, Pilditch, 06/06/19), Pilditch, 06/06/19)</p>	<p>"I would try to keep finding piece jobs. Interview 0138, Pilditch, 08/03/19</p> <p>"Maas, Russians. All these cheap goods." Interview 0111, Pilditch, 11/03/19</p> <p>"I would only spend the money on food." Interview 0501, Pilditch, 21/06/19</p> <p>"I would buy the food that he eats, I would rather starve as long as he got the food that he eats. Then we would then try to find how we can eat." Interview 0101, Pilditch, 15/03/19</p>
Caregiver intent expressed in response to increase in income	<p>"I'll try to buy food that will satisfy them both." (Interview 0176, Pilditch, 07/06/19)</p> <p>"...and buy clothes, you know lay-byes I wouldn't lay-bye but I would buy the clothes cash." (Interview 0176, Pilditch, 07/06/19)</p> <p>"I think I will buy more than the food I buy every month." (Interview 0143, Pilditch, 08/04/19)</p> <p>"I would provide more than what the children already have so they would be satisfied." (Interview 0131, Pilditch, 23/05/19)</p> <p>"...buy a lot of food and other different foods to see if the child would like it or not." (Interview 0173, Pilditch, 24/06/19)</p> <p>"I could buy the same but more things, but in bigger sizes." (Interview 0131, Pilditch, 23/05/19)</p> <p>"I would still buy the same things, so I he can be able to eat." (Interview 0114, Pilditch, 15/03/19)</p>	<p>"I am going to buy the food that I was not able to buy like meat." (Interview 0101, Pilditch, 15/03/19)</p> <p>"I would double thing same foods." (Interview 0111, Pilditch, 11/03/19)</p> <p>"I would start poultry." (Interview 0138, Pilditch, 08/03/19)</p> <p>"Maybe beans and to have my own spinach garden in the yard." (Interview 0138, Pilditch, 08/03/19)</p> <p>"Ok, ah, things like chicken sometimes pork. (include more)." (Interview 0111, Pilditch, 11/03/19)</p> <p>"Like build an extra section onto the house so the children could have their own beds." (Interview 0501, Pilditch, 21/06/19)</p> <p>"Not really. I would decide to save the money." (Interview 0115, Pilditch, 11/03/19)</p>

Table 11: Caregiver quotation related to the practice of family eating

Caregiver quotations		
	Non-positive deviant	Positive deviant
Reference to family eating	<p>"We eat that the most (on the inclusion of foods)." (Interview 0131, Pilditch, 23/05/19)</p> <p>"Only when I eat in the morning I just take a small slice of bread (and share with the child)" (Interview 0046, Pilditch, 06/06/19)</p> <p>"At midday or afternoon (on family meal times)." (Interview 0176, Pilditch, 07/06/19)</p> <p>"No this child sleeps late so it's something that happens often and he eats with us." (Interview 0176, Pilditch, 07/06/19)</p>	<p>"It's not different, when they eat milk they both eat it the same meal." Interview 0138, Pilditch, 08/03/19</p> <p>"Whenever I cook spinach I feed the baby." Interview 0138, Pilditch, 08/03/19</p> <p>"Because it's the food we eat and it's healthy." (Interview 0111, Pilditch, 11/03/19)</p> <p>"We give him what we eating for example if we eating pap and morogo (spinach) with meat that is what he eats." (Interview 0111, Pilditch, 11/03/19)</p> <p>"That is what my younger sibling eats when he's about to go to school." (Interview 0111, Pilditch, 11/03/19)</p> <p>"It would be the food I had cooked there and then for the whole family, when I have cooked for the family then we must all eat the same food." (Interview 0101, Pilditch, 15/03/19)</p> <p>"No, if like I have fed her and we are eating she'll and come like, 'Ah. Ah" (makes like she is looking for food).</p> <p>"When you give her she'll just like (gestures spitting out food." (Interview 0115, Pilditch, 11/03/19)</p> <p>we give him what we eating." (Interview 0501, Pilditch, 21/06/19)</p> <p>"When we ate the baby would want the food we eating, so I had to involve the child in family meals, because he was already eating what we were eating so it was easy." (Interview 0115, Pilditch, 11/03/19)</p> <p>"No. It's something that, like on our menu. So when she hasn't tried anything from our menu I just introduce to her." (Interview 0115, Pilditch, 11/03/19)</p> <p>"In the household when we are about to eat meat I would see that he wants it and so I would give him his own dish." (Interview 0115, Pilditch, 11/03/19)</p> <p>"She must get used to the other foods that we eat and all that. She must know the differences between the foods that she's getting." (Interview 0115, Pilditch, 11/03/19)</p> <p>"it's how we taught him." (Interview 0111, Pilditch, 11/03/19)</p> <p>"So he won't get used to one thing but can eat everything that we eat in the house." (Interview 0111, Pilditch, 11/03/19)</p>
Inclusion of non-recommended foods (on the basis of family eating)		<p>"Because I have a child who's like going to school. Sometimes I bake the muffins, sometimes I use apples to bake scones." (Interview 0115, Pilditch, 11/03/19)</p> <p>"When I used to drink water the baby would want the cup I was drinking from so I decided to put water or tea in her bottle." (Interview 0138, Pilditch, 08/03/19)</p> <p>"I just gave her, because when I ate the Simba the baby would come and eat them." (Interview 0138, Pilditch, 08/03/19)</p>
Separate meal times	<p>"No, no. I give her her own food." (Interview Pilditch, 06/06/19)</p> <p>"I eat only when she's sleeping." (Interview Pilditch, 06/06/19)</p>	
Family eating relate to purchasing behaviour	<p>"Maybe it's because I have two children, so I have to buy things that are convenient for them both." (Interview 0176, Pilditch, 07/06/19)</p>	<p>"They are the foods that are in the house daily, and I buy them always (on daily inclusion of chicken and eggs)." (Interview 0501, Pilditch, 21/06/19)</p>

	<p>"I'll try to buy food that will satisfy them both (referring to both children)." (Interview 0176, Pilditch, 07/06/19)</p>	
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Table 12: Caregiver quotations related to support received by caregivers, lack of support and instability in support

	Non-positive deviant	Positive deviant
Support: advice		
Family advice	<p>"My mother advised me to, to give her the breast." (Interview 0176 Pilditch, 06/06/19)</p> <p>"Like when the child's sick I should take her to the clinic." (Interview 0176 Pilditch, 06/06/19)</p> <p>"My sister-in-law told me to buy Infacare for her." (Interview 0176 Pilditch, 06/06/19) "Because my sister-in-law told me I should (change consistency of foods)". (Interview 0176 Pilditch, 06/06/19)</p>	<p>"But because my mom once told me something: She told me that I mustn't do abortion- a child is a gift from God. Because she was not that rich also but she raised us with my brother, my younger brother, so she didn't do, she didn't decide to, make abortion, she raised us. Because she doesn't believe in that I have to, you know, stand on my own be tough rather than take the easy way out." (Interview 0301, Pilditch, 15/03/19)</p> <p>"And your aunt told you at 3 months you must start to give her? Yes" (Interview 0301, Pilditch, 15/03/19)</p> <p>"My grandmother (told her to breastfeed)." (Interview 0111, Pilditch, 11/03/19)</p> <p>"Because family said only BF can be stopped but the formula milk is still ok." (Interview 0111, Pilditch, 11/03/19)</p> <p>"They said the kids can only after 6 months but we agreed we moved on to 6 months. Then we decided to do what we were told to." (Interview 0111, Pilditch, 11/03/19)</p> <p>"She tells me to give the child what he wants and not what he doesn't like." (Interview 0111, Pilditch, 11/03/19)</p> <p>"My sister said I should give him Nestum." (Interview 0111, Pilditch, 11/03/19)</p> <p>"My mother told me it was good for the child, she's the one who made pumpkins and potatoes." Interview 0501, Pilditch, 21/06/19)</p> <p>"My mother told me to give him -it's (juice) right for him." (Interview 0501, Pilditch, 21/06/19)</p>
Community Advice	<p>"A friend (who told her to introduce foods at 6months)." (Interview 0176 Pilditch, 06/06/19)</p>	<p>"It is pap and milk and motoho." (Interview 0138, Pilditch, 08/03/19)</p> <p>"No she (elderly lady) said I should give the child eggs." (Interview 0138, Pilditch, 08/03/19)</p>
Advice not followed	<p>"They use to tell me at home but I refused (to introduce foods at three months) ... I was following orders from the clinic." (Interview 0114, Pilditch, 15/03/19)</p> <p>"It was my friend; they said that I must give the baby the food before 6m. I said, 'No, I can't because he's too young'/ I didn't want to listen to her because I heard some things from the radio also from the clinic" (Interview 0143, Pilditch, 08/04/19)</p>	<p>"Yes, there were people that said so (to introduce foods at three months). (I didn't introduce foods because) ... Because I did not trust them." (Interview 0138, Pilditch, 08/03/19)</p>
Support: food provision		
	<p>"There is somewhere where I go for food. I go with a bowl and they pour food for me." (Interview 0114, Pilditch, 15/03/19)</p> <p>"Sometimes they help me. Ya, sometimes... they only help if they have what I ask for (food)." (Interview 0176, Pilditch, 07/06/19)</p> <p>"I'm only asking her (the mother) to buy maasi for her." (Interview 0176 Pilditch, 06/06/19)</p>	<p>"If the child is next door and finds them eating, they share with him." Interview 0111, Pilditch, 11/03/19</p> <p>"I go to friends that have pumpkin to go ask for pumpkin for the baby." Interview 0138, Pilditch, 08/03/19</p> <p>"At times they don't have pumpkin but they would give me potatoes." Interview 0138, Pilditch, 08/03/19</p> <p>For now, it's regular Cerelac because my aunt buys me those 12 ones. The 12 ones. They are trying to help me to get through." Interview 0301, Pilditch, 15/03/19</p>
Support: financial support		

	<p>The other one (income) is from the husband." 143 Her father maybe buys the diapers for her; the pampers." (Interview (Interview 0046, Pilditch, 06/06/19), Pilditch, 06/06/19) When I'm short my mother maybe gives me some." (Interview (Interview 0046, Pilditch, 06/06/19), Pilditch, 06/06/19)</p>	<p>"She will pay that for me (to see a dietitian)." (Interview 0301, Pilditch, 15/03/19) "The grant (from grandmother)." (Interview 0111, Pilditch, 11/03/19) "The sister tries. Sometimes she borrows money from work/ there is something we did not afford to buy my sister will help out." (Interview 0101, Pilditch, 15/03/19) "My husband is doing from the part time job." (Interview 0115, Pilditch, 11/03/19) "So she's like, "Don't worry about that I will help you out." (Interview 0115, Pilditch, 11/03/19) "My mother is able to provide the money to assist me." (Interview 0501, Pilditch, 21/06) "The same lady would sometime call me to come work do her laundry." (Interview 0138, Pilditch, 08/03/19)</p>
Support: Child care		
	<p>"We just speak to each other (regarding food decisions) so that one, that one, that one for the child. Because the first child she was eating the same one." (Interview 0173, Pilditch, 24/06/19) "He (the husband) also looks after the baby like Sundays when I go to church he just stay with the baby." (Interview 0143, Pilditch, 08/04/19)</p>	<p><i>"There will not be problems in the house? (If there is a disagreement about food)</i> (Indicates no) Laughter." (Interview 0111, Pilditch, 11/03/19) "They said the kids can only after 6 months but we agreed we moved on to 6 months. Then we decided to do what we were told to." (Interview 0111, Pilditch, 11/03/19) "She (the grandmother) plays with him." (Interview 0111, Pilditch, 11/03/19) "It makes me happy, because I can see they do love me." (Interview 0111, Pilditch, 11/03/19) <i>"Who taught you to feed your child like that? My sister."</i> (Interview 0111, Pilditch, 11/03/19) "She didn't have anyone to look after the child. After the maternity leave. So I volunteered to her that I would take care of the child because for now I'm not working." (Interview 0138, Pilditch, 08/03/19) "It's her, the grandmother or sometimes it's me (feeding her)." (Interview 0111, Pilditch, 11/03/19) "Every time when I introduce something to her I just tell the mother, 'Look now I have introduced this to her.' So each and every time during this time you must give her this, during this time you must..." (Interview 0138, Pilditch, 08/03/19) "Not the he, she doesn't agree. He would ask like, "Why are you doing this?" And I will be like, I will explain to him and he will be like. "Have this one, add this one." (Interview 0138, Pilditch 08/03/19) "(the grandmother helps with...) Feeding him, bathing him and taking care of him." (Interview 0111, Pilditch, 11/03/19) "Because now I won't say. (Pause). I won't say I would doubt her because she been there since my mom passed away. She's been there as support and she's never the wrong (crying). So with my child why should I ... (doubt?)." (Interview 0301, Pilditch, 15/03/19)</p>
Isolation		
	<p>"There is no one... (to ask when she feels uncertain)." (Interview 0114, Pilditch, 15/03/19) "It's (raising her child) difficult because I am alone." Interview 0114, Pilditch, 15/03/19 "I stay indoors almost the whole day; I don't usually go out" (Interview 0114, Pilditch, 15/03/19) "There's no one to help me." (Interview 0131, Pilditch, 23/05/19)</p>	<p>"Because I thought there was nobody who would help me." (Interview 0138, Pilditch, 08/03/19) "I don't have a mother anymore, I only have a sister, I don't have a mother or a grandmother." (Interview 0101, Pilditch, 15/03/19) "I usually stay indoors; I'm not an outside person." (Interview 0501, Pilditch, 21/06/19)</p>

	<p>“Uh, my mother and family live far away they don’t even come to see me. So no one gives me advice.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“Because I no longer have parents, and I have no other person to ask than my neighbours.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“But at times I don’t have money because I’m unemployed I have no parents and there is no one else to maintain me because even myself I’m living of the grant money which is for the kids.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“Because she’s the only person I’m left with.” (Interview 0176, Pilditch, 07/06/19)</p>	<p>“Because again it’s the circumstance that led me to that. I had already gone back to work but few weeks later my mother passed away.” (Interview 0101, Pilditch, 15/03/19)</p>
Instability related to support		
Instability in Support	<p>“Sometimes they help me. Ya, sometimes they only help if they have what I ask for.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“Her father maybe buys the diapers for her; the pampers.” (Interview 0046, Pilditch, 06/06/19)</p> <p>“When I’m short my mother maybe gives me some.” (Interview 0046, Pilditch, 06/06/19)</p>	
Instability in Provision of foods	<p>“Yes, if we have (sour milk).” (Interview 0143, Pilditch, 08/04/19)</p> <p>“I can’t always have meat.” (Interview 0114, Pilditch, 15/03/19)</p> <p>“Only if they there, but if they not there no (carrots).” (Interview 0114, Pilditch, 15/03/19)</p> <p>“Only when we have them (potatoes).” (Interview 0131, Pilditch, 23/05/19)</p> <p>“Only if we have meat, but it’s not every day that we have it.” (Interview 0114, Pilditch, 15/03/19)</p> <p>“I only bought the purity when I had money only, if I had no money I didn’t.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“It’s because we don’t have what he likes on a daily basis or if we don’t have money to buy the food.” (Interview 0131, Pilditch, 23/05/19)</p> <p>“It may happen once in a month.” (Interview 0131, Pilditch, 23/05/19)</p> <p><i>“Is there a time where you not having money for food? Yes.”</i> (Interview 0176, Pilditch, 07/06/19)</p>	<p>“Maybe spinach because we get spinach after sometimes.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“I am saying so because I get that food only sometimes.” (Interview 0138, Pilditch, 08/03/19)</p>
Instability related to Variety		<p>“I’m afraid that if I give her more food/ different food that I don’t have she might want that and I won’t be able to provide for her.” (Interview 0301, Pilditch, 15/03/19)</p> <p>“Because if he becomes choosy, you’d find I don’t have the food he prefers. So I have to get him used to food that is different.” (Interview 0138, Pilditch, 08/03/19)</p>

Table 13: Caregiver quotations related to advice received from health care workers (HCWs) and information from labelling and marketing

Caregiver quotation		
HCW Advice	Non-positive Deviant	Positive deviant
Supportive of breastfeeding	<p>“Because; what can I say? Because even in hospital while pregnant they advise us to breastfeeding instead of using formula milk.” (Interview 0176, Pilditch, 07/06/19)</p> <p>“They just told us that the breastmilk is important for the baby.” (Interview 0143, Pilditch, 08/04/19)</p>	
HIV guidelines	<p>“Then I was told to stop because I’m on treatment.” (Interview 0131, Pilditch, 23/05/19)</p>	<p>“Because when I went to the clinic I found that I am positive (and was told to stop BF).” (Interview 0138, Pilditch, 08/03/19)</p> <p>“It was the clinic (who told her to stop breastfeeding at six months due to HIV positive status).” (Interview 0501, Pilditch, 21/06/19)</p>
Unsupportive of continued breastfeeding	<p>“They (the clinic) say... the sister say I must stop to give him some...(breastmilk) (due to mom’s illness)” (Interview 0176, Pilditch, 07/06/19)</p> <p>“Because the nurse, also the doctor, told us that we have to give the baby the breastmilk for six months.” (Interview 0101, Pilditch, 15/03/19)</p>	<p>“And she told me, she gave her some medicine and then she said you can go for the milk, the formula milk (due to mother’s illness).” (Interview 0301, Pilditch, 15/03/19)</p> <p>“They (HCW) told me to stop (breastfeeding) at the clinic (due to the presence of ulcers).” (Interview 0501, Pilditch, 21/06/19)</p> <p>“I went to the hospital and reported that I’m going back to work, and to stop giving BF so they advised me to give water, milk and a bit of tea.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“Yes, they said I can give foods and not breastfeed any further (after 6 months).” (Interview 0111, Pilditch, 11/03/19)</p> <p>“The doctor told me (to give formula when returning to work).” (Interview 0111, Pilditch, 11/03/19)</p> <p>“<i>And then when she lost your job, then you decided to stop BF and to give the Lactogen- why?</i> The doctor told me.” (Interview 0101, Pilditch, 15/03/19)</p>
Introduction of solids	<p>“I was following the orders from the clinic (regarding the introduction of foods at 6months).” Interview 0114, Pilditch, 15/03/19</p> <p>“Six months (introduction of solids).” (Interview 0176, Pilditch, 07/06/19)</p>	<p>because in hospital they told me after 6 months.” Interview 0111, Pilditch, 11/03/19</p> <p>I was told by doctor (to introduce solids at 6months).” Interview 0101, Pilditch, 15/03/19</p> <p>I started at six months as I was told.” Interview 0138, Pilditch, 08/03/19</p> <p>it’s the clinic; the sister at the clinic the child could eat foods (at 6 months).” Interview 0501, Pilditch, 21/06/19</p>
Other advice	<p>“They (HCW)said it shouldn’t be mixed. If he was drink FM it should be it for 6 months, if it’s breastmilk it should be it for 6months. So I didn’t use formula milk.” (Interview 0114, Pilditch, 15/03/19)</p> <p>“They say that the kids supposed to eat pumpkin mostly and that shouldn’t cook the food with fish oil (cooking oil) but with Rama (butter/margarine).” (Interview 0114, Pilditch, 15/03/19)</p> <p>“They said I should give that because it’ll strengthen him (pap, eggs, pumpkin).” (Interview 0114, Pilditch, 15/03/19)</p> <p>“They just told me to give him solid foods ongoing.” (Interview 0114, Pilditch, 15/03/19)</p> <p>“Then they said after some time I should come back and they will check the weight. If his weight remains</p>	<p>“Um...Because at the clinic they said 8 times a day. Yes. “I did that.” (Interview 0301, Pilditch, 15/03/19)</p> <p>“Yes, because I didn’t know the child can eat fish. Whether it’s the hake or the tinned fish.” (Interview 0115, Pilditch, 11/03/19)</p> <p>“Only the posters on the wall... Like from 6 months to 1 months the daily meal, hours of the meal.” (Interview 0115, Pilditch, 11/03/19)</p> <p>“Yes, they say I should give him soft food.” (Interview 0138, Pilditch, 08/03/19)</p> <p>“Things like pumpkin, mash potatoes, Mthoho, soft foods.” (Interview 0111, Pilditch, 11/03/19)</p>

	<p>then it means that is how it's supposed to be- it's not affected by the maize meal, the diet." (Interview 0114, Pilditch, 15/03/19)</p> <p>"I heard from the hospital they told us to give the baby water with a bit of sugar and salt." (Interview 0131, Pilditch, 23/05/19)</p> <p>"She asked if the baby eats meat or not, and then I told her not every day but only if we have meat. And she advised me that he should eat meat more often." (Interview 0114, Pilditch, 15/03/19)</p>	
<p>Labelling and marketing</p>		
	<p>"(The radio) It said that in the first 6m we have to breastfed the baby." (Interview 0143, Pilditch, 08/04/19)</p> <p>"I didn't want to listen to her because I heard some things from the radio also from the clinic." (Interview 0143, Pilditch, 08/04/19)</p> <p>"Because I see from the shops the Nestum and Cerelac is the baby's food. And it's right for them." (Interview 0046, Pilditch, 06/06/19)</p> <p>"The, the, they just write the millilitres there. The scoop you can read there." (Interview 0176, Pilditch, 07/06/19)</p> <p>"Because the tea tells you for the baby like, zinc, iron. Just so the bones can get strong... Just read the instruction there and look for which, which tea can he drink." (Interview 0176, Pilditch, 07/06/19)</p>	<p>"I throw it away. I don't know. Because it's written there on the box that you mustn't keep it." (Interview 0301, Pilditch, 15/03/19)</p> <p><i>"And you use the amount that they tell you on the box? Yes."</i> (Interview 0301, Pilditch, 15/03/19)</p> <p>"Because of the one, the information on the box (regarding consistency)." (Interview 0301, Pilditch, 15/03/19)</p> <p>"...right recommendation from the box because she's over 6 months (to introduce solids)" (Interview 0301, Pilditch, 15/03/19)</p> <p>"I used to go with the instructions so I just knew (regarding portion size)." (Interview 0501, Pilditch, 21/06/19)</p> <p>"Because the box said at 6 months the child can stop then try food after 6 months." (Interview 0501, Pilditch, 21/06/19)</p> <p>"I couldn't afford it and that the baby is supposed to eat purity until 12 months, that's what's written." (Interview 0501, Pilditch, 21/06/19)</p> <p>"They are ok because they are written there 'No sugar added.'" (Interview 0301, Pilditch, 15/03/19)</p>