

Parental and caregivers' nutrition knowledge, attitudes, perceptions and practices on infant and young child feeding (aged zero to 24 months) in Mzimba-north district, Malawi

by

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Submitted in partial fulfillment of the requirements for the

Master of Science degree in Nutrition

In the

Faculty of Natural and Agricultural Sciences

University of Pretoria

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June 2017

DECLARATION

I hereby declare this is my original work and that it has not been submitted for any other degree or examination at this university or any other university or institution of higher learning.

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Signature.....Date.....2017

ACKNOWLEDGEMENTS

Thanks and praise be to the Lord for granting me the grace to undertake and complete this research.

This material is based upon work supported by the United States Agency for International Development, as part of the Feed the Future initiative, under the CGIAR Fund, award number BFS-G-11-00002, and the predecessor fund, the Food Security and Crisis Mitigation II grant, award number EEM-G-00-04-00013.

My sincere gratitude to the following people and organisations for their contribution to the successful completion of the study:

Ms Gerda J Gericke and Dr Jane W Muchiri, my study supervisors, for their consistent support, encouragement and expert guidance throughout the course of this study.

The Ministry of Agriculture and Water Development, Malawi, for granting me study leave to undertake my studies.

The administration and staff of Mzimba-north district Agriculture Office, Malawi, for their inputs and support throughout the data collection of the study.

The parents and caregivers of children, aged zero to two years, and local leaders from Mzimba-north district, Malawi, for participating in the study.

Prof Piet J Becker, University of Pretoria, for the statistical analysis of all the quantitative data for the study.

My colleagues, Justice Munthali, Chido Zambuko, Dr Debbie Kupolati and Temitope Bello for their moral support.

Mwabi Mkandawire, Jimmy Mkwinda, Moses Phiri, Mrs Mhango and field extension workers of Mzimba-north district for assisting in the data collection; and Glory Munthali, Alinafe Msiska and Estrida Nyirenda for assisting with the data entry.

Mr H Mzumala and Mr R C Lungu for their assistance in translating the questionnaires and interview guides.

Mr Raphael Msyali for encouragement and moral support.

Finally, my parents, Mrs N Ziba and Mr K Kumwenda, and brother, Wanangwa Kumwenda, for their love, concern, prayers, encouragement and support throughout the study.

ABSTRACT

Introduction: Adequate nutrition knowledge, positive attitudes and perceptions, and good practices of parents on infant and young child feeding (IYCF), among others, are essential for the optimal growth of children. Hence, the involvement of both parents in IYCF is essential.

Aim: To explore and describe the involvement of both biological parents and caregivers in IYCF in Mzimba-north district, Malawi by assessing their nutrition knowledge, attitudes, perceptions and practices, and identifying the factors that affected their involvement.

Study design: A cross sectional descriptive study employing quantitative and qualitative research methodologies.

Setting: Five agriculture extension planning areas in Mzimba-north district, Malawi.

Sampling technique: Stratified random sampling in the quantitative domain and purposive sampling in the qualitative domain.

Sample: Quantitative domain: Households [mothers (n = 154) and fathers (n = 127)] with children aged zero to 24 months and caregivers (n = 4) where the biological parents were absent. **Qualitative domain:** A different sample of fathers (n = 41), mothers (n = 53) and local leaders (n = 3).

Methodology: Quantitative domain: Participants were stratified into three groups based on the age of their children, i.e. <six months, six to 12 and >12 to 24 months. Data were collected using modified FAO nutrition knowledge, attitudes and practices (KAP) questionnaires. Data were analysed using Stata version 14.0 and Microsoft Excel 2013 version. The Chi-square, Fisher's exact and McNemar's tests were used to compare the nutrition KAP between males and females. Testing was done at 0.05 significance level. **Qualitative domain:** Eleven focus group discussions (FGDs): five with males and six with females, and three in-depth interviews with three local leaders were conducted using three interview guides (one for each group). Creswell's method of data analysis was used to identify themes and sub-themes.

Ethical approval was obtained from the Ethics Committee, Faculty of Natural and Agricultural Sciences, University of Pretoria (*Refno EC151204-26*) and the Ministry of Agriculture, Mzuzu Agriculture Development Division, Malawi.

Results: Quantitative domain: More than half of the participants knew the recommended IYCF practices. More than 80% of the participants showed positive attitudes on the appropriate IYCF practices. No significant differences were observed between the male and female participants' mean knowledge scores and their responses on the attitude statements ($P > 0.05$). All participants with children <six months reported having their children breastfed both during the previous day and night. Half of the children <six months were exclusively breastfed. Poor food diversity with low consumption of animal foods was observed for children aged six to 24 months. The majority of the participants reported to have given their children food from only two food groups out of seven food groups.

Qualitative domain: The participants identified the roles of mothers, fathers and local leaders in IYCF; mothers had direct roles while fathers and local leaders had supporting roles. The roles and influence of grandmothers on IYCF were also discussed. The participants identified the motivating factors and the factors limiting parental involvement in IYCF, and made recommendations on improving parental involvement in IYCF.

Conclusion: Findings from the qualitative study were in support of quantitative study findings. Both parents were involved in IYCF. However, mothers had direct roles while fathers had supporting roles. Good nutrition knowledge, positive attitudes and perceptions, and poor practices on IYCF were reported.

Recommendations: Participants in the FGDs made recommendations on improving parental involvement in IYCF. Recommendations are also made for future research and the implementation of IYCF practices in Mzimba-north district, Malawi.

Key words: *Infant and young child feeding, parental involvement, nutrition knowledge, Malawi, attitudes, perceptions, practices*

PRESENTATIONS ARISING FROM THE STUDY

Kumwenda W, Gericke GJ, Muchiri JW. Parental responsibilities, motivators and barriers in infant and young child feeding: Malawian fathers' perceptions. Poster presentation at Faculty Day, Faculty of Health Sciences, University of Pretoria. August 23-24, 2016; Pretoria, South Africa.

Kumwenda W, Gericke GJ, Muchiri JW. Parental responsibilities, motivators and barriers in infant and young child feeding: Malawian fathers' perceptions. Poster presentation at the 26th biennial Congress of the Nutrition Society of South Africa, and 14th Congress of the Association for Dietetics in South Africa. September 3-5, 2016; Cape Town, South Africa.

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LIST OF ABBREVIATIONS

DFID	Department for International Development
EPA	Extension Planning Area
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus group discussions
FICA	Flanders International Cooperation Agency
IYCF	Infant and young child feeding
IYC	Infant and young children
IQ	Intelligence Quotient
KAP	Knowledge, attitudes and perceptions
MDHS	Malawi Demographic and Health Survey
NGO	Non-Governmental Organization
UNICEF	United Nations International Children's Fund
WHO	World Health Organization

CHAPTER 1

1.1 Background to the study

Parental involvement in infant and young child feeding (IYCF) plays a significant role in the nutritional status of a child. Some studies in Europe, America and Africa suggest that involvement of both parents in child feeding improves the nutrition status of children (Thuita, 2011; Kuyper & Dewey, 2012; FAO, 2015).

The period from conception to 24 months in children is critical for their growth and development (WHO, 2009). It is important that adequate nutrition is provided during pregnancy and in the child's first two years of life (Black, Allen, Bhutta, Caulfield, De Onis, Ezzati, Mathers, Rivera, Maternal & Group, 2008; Adair, 2014; WHO, 2016). The World Health Organization (WHO) and the United Nations International Children's Fund (UNICEF) formulated the global strategy on IYCF to promote optimal breastfeeding and complementary feeding practices (WHO, 2003). Optimal breastfeeding, followed by the provision of safe and appropriate complementary foods introduced at the appropriate time (starting at six month), improves the growth and development of a child (WHO, 2003; WHO, 2016).

Despite having the global strategy on IYCF in place, the statistics for breastfeeding and complementary feeding practices in the developing countries are a cause for concern. For instance, it is documented that only about 39% of infants in the developing countries, and 25% in Africa, are exclusively breastfed in the first six months of life (Cai, Wardlaw & Brown, 2012). Moreover, 6% of infants in developing countries are never breastfed (Lauer, Betrán, Victora, De Onís & Barros, 2004). In Malawi, much as exclusive breastfeeding improved from as low as 53% in 2004 to 71% in 2010, complementary feeding continues to be a problem (Vaahtera, Kulmala, Hietanen, Ndekha, Cullinan, Salin & Ashom, 2001; NSO & ICF-International, 2011); only 8% of the children aged six to 24 months consumed a diet that met the minimum acceptable recommendations in 2015 (NSO & ICF-International, 2016).

In Kenya it was found that fathers and grandmothers are considered to have a major influence on the decision-making of women to attend antenatal clinics, breastfeed their children, when to start complementary feeding, and the type of complementary foods to provide to the child (Ezeh, 1993; Lasee & Becker, 1997; Thuita, 2011). Since both parents ought to participate in IYCF, it is essential that both the mothers and fathers have appropriate nutrition knowledge, positive attitudes and perceptions on IYCF to improve the feeding practices (Kuyper & Dewey,

2012). Improvement in the participation of both parents in IYCF suggests the need for assessing their involvement in IYCF.

1.2 Research problem

Despite efforts at global level, inappropriate feeding of infants and young children remains one of the major causes of malnutrition and death in children below the age of five years. It is estimated that over 1.4 million young children worldwide die before they reach the age of five years due to poor feeding practices (Black *et al*, 2008). Up to 161 million under-five children are stunted, 17 million are wasted and 99 million are underweight worldwide (UNICEF, WHO & World Bank, 2014). In Africa, the problem of malnutrition continues to persist. The UNICEF (2014) estimated that 60% of children under the age of five years are undernourished. For Malawi, the Demographic and Health Survey (MDHS) of 2016 revealed that 37% of the under-five children were chronically malnourished (stunted), 3% had acute malnutrition (wasting) and 12% were underweight (NSO & ICF-International, 2016).

Most mothers in Malawi exclusively breastfed their children as reported in the MDHS of 2016; 61% of children under the age of six months were reported to have been exclusively breastfed in the first six months. However, the trend for exclusive breastfeeding decreased with age. Only 34% of infants aged four to five months were exclusively breastfed compared to 80% of infants aged zero to one month and 69% of infants aged two to three months. The trend for breast feeding in general also declined with increasing age from 91% among children aged 12 to 17 months, and 77% among children aged 18 to 23 months (NSO & ICF-International, 2016).

Poor diversity in complementary food among children aged six to 23 months was also reported in Malawi. About 93% of the children who were introduced to complementary foods at six months were given foods from grains and plant based sources, which do not sufficiently provide micronutrients such as iron, vitamin A and calcium (WHO/UNICEF, 1998; NSO & IFS Macro, 2011). Phiri (2013) and the FAO (2014) also reported sub-optimal IYCF practices in Malawi. These included delayed initiation of breastfeeding and early introduction of foods before six months for breastfeeding children and inappropriate complementary feeding (low frequency of meals per day, provision of thin porridge and meals that predominantly consist of plant foods of low nutrient quality).

Maternal malnutrition and malnutrition that happen in the child's first two years may have irreversible effects on the child's physical and mental development (Horton, Shekar,

McDonald, Mahal & Brooks, 2010). Poor nutrition during pregnancy can lead to miscarriages, low birth weight and other irreversible damages to the new born. Low birth weight babies also have a high risk of frequent infections and death. Infants and young children who are poorly nourished at this stage have an increased risk of impaired cognitive development and mortality. Other long term effects include diminished work capacity and chronic diseases (Martorell, 1999; DFID, 2012). Therefore, children who receive adequate nutrition from conception until they are two years old are less likely to die or be infected by diseases (Barker, 1997; WHO, 2009).

Adequate nutrition knowledge, positive attitudes and good feeding practices, among others, are essential for optimal IYCF. However, this requires concerted efforts from both the father and mother for the benefit of the child (Kuyper and Dewey, 2012). Fathers are also supposed to “play more responsible roles” in improving women’s and children’s nutrition status (Dewey & Brown, 2003). In many cases, IYCF is influenced by both relatives and household heads (most often males), especially on the options and modes of feeding (Kuyper and Dewey, 2012; FAO, 2014). There is some evidence that males do not clearly understand their roles in IYCF despite their actions having direct and indirect impact on the child feeding practices (UNICEF, 1998; Kuyper and Dewey, 2012). Unclear male roles on child feeding could be attributed to the fact that the community and health system standards do not sufficiently support their participation (Thuita, 2011). In most cases, only mothers are targeted with information on child health and nutrition (FAO, 2015).

An analysis of the 2009 Infant and Young Child Nutrition Policy and Guidelines in Malawi, which is the document currently in use, reveals that there is little mention of the father’s involvement. Up to 69.4% of the households in Malawi are male headed, but only mothers are mentioned as the caregivers for the young children in the guidelines. Kuyper and Dewey (2012) suggest that the father’s involvement in IYCF is vital as adequate shared knowledge on feeding practices between the spouses may assist in the development of the child. For instance, in a qualitative study conducted in Malawi, it was reported that in communities where spouses participated in IYCF nutrition education, fathers were able to purchase food ingredients (items) to prepare enriched porridge for the children and encouraged women to use those food ingredients. This benefited the infants and young children as enriched food was available to them. In contrast, in communities where there was no spouse participation in IYCF nutrition education sessions, mothers had to struggle to purchase the ingredients amidst discouragements from fathers and other family members (FAO, 2015).

While there have been studies conducted on the involvement of fathers in attending HIV counseling and testing, and the prevention of mother to child transmission initiative in Malawi (Kululanga, Sundby, Malata & Chirwa, 2012b), there have been few studies done to assess the involvement of both parents in IYCF (Kuyper and Dewey, 2012; FAO, 2015). A review of the literature also revealed that no such study had been conducted in Mzimba-north district in Malawi. To measure the participation of both parents in IYCF and the parents' IYCF practices, there is a need for assessing their nutrition knowledge, attitudes, practices and perceptions of IYCF, as well as their involvement in IYCF.

1.3 Research questions

The research questions for this study were:

What is the involvement of both biological parents and caregivers in IYCF of children aged zero to 24 months?

What is the nutrition knowledge, attitude and practices (KAP) of both biological parents and caregivers in IYCF of children aged zero to 24 months?

What are the factors that affect the parents' and caregivers' involvement in IYCF in Mzimba-north District?

How can the parents' and caregivers' involvement be improved in IYCF of children aged zero to 24 months?

1.4 Aim of the study

The aim of the study was to explore and describe the involvement of both biological parents and caregivers in IYCF of children aged zero to 24 months in Mzimba-north district in Malawi. This was done through an assessment of the parents' and caregivers' nutrition knowledge, attitudes, perceptions and practices, and the identification of factors that affected the parents' and caregivers' involvement in IYCF. The study also identified ways of improving the parents' and caregivers' involvement in IYCF of children aged zero to 24 months.

1.5 Significance of the study

This study contributes to the knowledge on IYCF through an in-depth understanding of parents' and caregivers' nutrition knowledge, attitudes, perceptions and their practices on IYCF for children aged zero to 24 months in Mzimba-north district, Malawi. This information is useful in designing intervention(s) that aim(s) at encouraging the involvement of both parents in IYCF and thereby contributing to optimal growth and development of infants and young children.

The information obtained from this study could also be used by policy makers and NGOs in promoting parental involvement in IYCF for children aged zero to 24 months.

1.6 Thesis outline

This section presents the outline of the dissertation.

Chapter 1

This chapter presents the background information on the study, the research problem, the questions this study is addressing, the purpose and significance of the study.

Chapter 2

The literature that was reviewed has been presented in this chapter. The literature review covered the following aspects: importance of child nutrition, IYCF practices, IYCF practices in Malawi, malnutrition and its effects, parental involvement in IYCF, parental and caregivers' nutrition knowledge, attitudes and perceptions, the factors that influence the involvement of parents and caregivers in IYCF, and assessment of KAP in IYCF.

Chapter 3

This chapter presents the methodology for both the quantitative and qualitative research domains of the study.

Chapter 4

This chapter presents the results from the quantitative part of the study.

Chapter 5

This chapter presents the results from the qualitative part of the study.

Chapter 6

This chapter presents the discussion of the results for both the quantitative and qualitative parts of the study.

Chapter 7

This chapter presents the executive summary, conclusions and recommendations for the study.

A reference list for the study is presented at the end of the report.

The Harvard (UP EMS) copy referencing style 2016, accessed from the University of Pretoria Library website, was used in this study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review for the study. The review gives a summary of the importance of child nutrition, infant and young child feeding (IYCF) practices, malnutrition, parental and caregivers' involvement in IYCF of children aged zero to 24 months, the factors influencing parental involvement in IYCF; parental knowledge and attitudes, education, age, economic status and cultural norms related to child nutrition. Finally, a review of the strategies that are used to promote the recommended IYCF practices and the assessment of parental involvement and nutrition knowledge, attitudes and practices (KAP) in IYCF is also be presented.

The information sources that were used for this literature review included books, journal articles, reports and documents from international organisations such as the WHO, FAO, UNICEF and Save the Children. PubMed, Google and Google scholar were the data bases used. The literature was limited to English materials dating from 1990 to 2016.

The following key words were used for the literature search: Infant and young child feeding, breastfeeding, complementary feeding, malnutrition, parental involvement, nutrition knowledge, attitudes, feeding practices, Africa, Sub-Saharan Africa, Malawi, fathers and mothers.

2.2 Child nutrition

Good nutrition is very important for everyone, especially for infants and young children because it is directly linked to all aspects of their growth and development. Adequate nutrition during infancy and early childhood is essential to ensure the growth, health, and development of children to their full potential (WHO, 2009). Studies have linked good nutrition to better school performance, being physically active, and eventually a healthy adulthood (WHO, 2005).

Optimal nutrition during the 1000-day period between the start of a woman's pregnancy and the child's second birthday is important to the future health and wellbeing of the child (WHO, 2016b). The first 1000 days of a child is a unique period of opportunity when the foundations of optimum health, growth, and neurodevelopment across the lifespan are established (Prado

& Dewey, 2014). It is therefore important for pregnant mothers and children below two years to have optimal nutrition to lay the foundation for the child's future cognitive, motor and social skills, school performance, success, and productivity (Save the Children, 2012; Rollins, Bhandari, Hajejbhoy, Horton, Lutter, Martines, Piwoz, Richter & Victora, 2016).

The period from birth to two years is also very critical for child growth and development and it is characterised by a high growth rate and increased vulnerability to infectious diseases and malnutrition that require appropriate feeding (Black, Victora, Walker, Bhutta, Christian, De Onis, Ezzati, Grantham-McGregor, Katz & Martorell, 2013).

2.3 Infant and young child feeding practices

Optimal IYCF is one of the most effective ways to improve child health (WHO, 2003; WHO, 2009). Appropriate feeding lowers morbidity and mortality in children and reduces the risk of chronic diseases later in life (WHO, 2015). Proper feeding during the period from birth to two years implies ensuring early initiation of breastfeeding and exclusive breastfeeding during the first six months, as well as the introduction of safe and nutritionally adequate complementary foods with continued breastfeeding for up to two years or beyond (UNICEF, 2011; Black *et al.*, 2013).

Optimal breastfeeding is at the top of the list of effective preventive interventions for child survival (Bartle, 2013; Rollins *et al.*, 2016). It was estimated in 2015 that about 800 000 children's lives in low-income and middle-income countries could be saved every year among children under the age of five years, if breastfeeding was scaled up to near universal levels (Black *et al.*, 2013; Victora, Barros, Franca, Horton, Krasever, Murch, Sanar, Walker & Rollins, 2016). Optimal breastfeeding and appropriate complementary feeding have a more positive impact on the child's health than that achieved with immunisation, safe water and sanitation (Bartle, 2013). To ensure optimal IYCF, the WHO and the UNICEF recommend the following practices: early initiation of breastfeeding within one hour of birth, exclusive breastfeeding for the first six months of life and the introduction of nutritionally adequate and safe complementary foods at six months together with continued breastfeeding up to two years of age or beyond (WHO, 2003, WHO, 2015).

2.3.1 Breastfeeding

Breastfeeding is important for the infants to achieve optimal growth as it gives both short-term and long-term benefits to the child. Breastfeeding reduces infections and mortality among infants, improves mental and motor development, and protects against obesity and metabolic

diseases that can occur later in life (Kimani-Murage, Madise, Fotso, Kyobutungi, Mutua, Gitau & Yatch, 2011; Rollins *et al.*, 2016). Breast milk carries antibodies from the mother that help combat diseases, protecting babies from diarrhoea and acute respiratory infections (Dòrea, 2009). It has been estimated that about half of all diarrhoea episodes and a third of respiratory infections would be avoided by breastfeeding (Victora *et al.*, 2016). There is an increased risk of diarrhoea and other infections in infants who are either partially breastfed or not breastfed at all (WHO, 2010). Breast milk provides the baby with anti-bacterial, anti-viral and anti-parasitic agents and strengthens the infant's developing immune system. Breastfeeding also stimulates an infant's immune system and response to vaccination (Dòrea, 2009) and it has been characterised as a personalised medicine for infant (Victora *et al.*, 2016). In addition, colostrum, which is the first milk produced, is rich in antibodies and high in anti-infective properties that it is considered to be “the first immunisation” an infant receives (Bartle, 2013; WHO, 2010). Breastfeeding also improves the child's intelligence quotient (IQ) (Kramer & Kakuma, 2004), and is associated with higher income in adult life (Victora, Bahl, Barros, França, Horton, Krasevec, Murch, Sankar, Walker & Rollins, 2016). Breastfeeding enhances neurological, visual and motor development, and protects the infants against allergies, skin disease and asthma. Moreover, breastfeeding supports infants' immune systems and may protect them later in life from chronic conditions such as obesity and diabetes (UNICEF, 2011). Exclusive breastfeeding also contributes to the health and well-being of mothers; it reduces the risk of ovarian and breast cancer and leads to more rapid maternal weight loss after birth. It is also a method of birth control, known as the lactation amenorrhoea method, and therefore helps in spacing pregnancies (Labbok, Clark & Goldman, 2004; Rollins *et al.*, 2016).

2.3.1.1 Initiation of breastfeeding

There is growing evidence that suggests early initiation of breastfeeding, that is within one hour after birth, protects the new born from acquiring infections and reduces new born mortality (WHO, 2015). A study in rural Ghana (Edmond, Zandoh, Quigley, Amenga-Etego, Owusu-Agyei & Kirkwood, 2006) showed that early initiation within the first hours of birth could prevent up to 22% of neonatal deaths, and initiation within the first day could prevent 16% of deaths. Another study done in Nepal (Mullany, Katz, Li, Khatry, LeClerq, Darmstadt & Tielsch, 2008) found that approximately 19.1% of all neo-natal deaths could be avoided with initiation of breastfeeding within the first hour of life. Furthermore, early initiation of breastfeeding also serves as the starting point for a bond between mothers and new borns that

can have long lasting effects on the child's health and development (WHO, 2010). Therefore, it is imperative to initiate breastfeeding within the first hour of life.

2.3.1.2 Exclusive breastfeeding

It is important that infants be fed on breast milk alone during the first six months of life. During this time, breast milk alone with no water, is enough to provide adequate nourishment for the infant as it provides all the nutrients, antibodies and immune factors an infant needs (WHO, 2003). Exclusive breastfeeding also help in reducing mortality in children (Kramer & Kakuma, 2004). It has been estimated that exclusive breastfeeding could prevent up to 1.4 million deaths every year out of the 10 million annual deaths among under-five children (Black, Allen, Bhutta, Caulfield, De Onis, Ezzati, Mathers, & Rivera, 2008; UNICEF, 2011). Breastfeeding has to be done on demand, whenever the infant wants and it is usually done eight to 12 times in a 24 hour period (WHO, 2009).

By the age of six months, a baby has at least doubled his or her birth weight, and becomes more active. At this age, the infants have high nutritional needs for rapid growth. Exclusive breastfeeding is then no longer sufficient to meet the infants' energy and nutrient requirements, hence complementary feeding should be introduced (Jones, Steketee, Black, Bhutta & Morris, 2003). However, breastfeeding should continue with complementary feeding up to two years of age or beyond, and it should be done on demand; as often as the child wants. This is because breast milk provides high quality nutrients (WHO,2003; WHO & UNICEF, 2008). Moreover, breast milk can provide one half or more of a child's energy needs between six and 12 months of age, and one third of energy needs between 12 and 24 months (Dewey & Brown, 2003). This is an important contribution to the child's nutritional requirements, especially in resource constrained settings. It is therefore important that infants continue to breastfeed up to two years or more, even after the introduction of complementary foods (WHO, 2009).

2.3.2 Complementary feeding

At the age of six months, infants enter a period of complementary feeding during which they make a gradual transition to eating family foods (Dewey & Brown, 2003). Due to inadequate feeding, this period is often characterised by a decline in children's nutritional status, especially in low and middle income countries. The deficits that occur are difficult to compensate for later in life (Dewey & Brown, 2003; FAO, 2015). Poor breastfeeding and inadequate complementary feeding practices, coupled with high rates of infectious diseases, are the principle proximate causes of malnutrition during the first two years of life (WHO, 2009).

Infants are particularly susceptible to malnutrition if the complementary foods given are of low nutrient density, have a low bioavailability of micronutrients and are introduced too early or too late in small amounts or not frequently enough (WHO, 2003). In addition, premature cessation or low frequency of breastfeeding in infants below six months also contributes to insufficient nutrient and energy intake, hence further compromising the infants' nutritional status (WHO, 2009).

Infants are particularly vulnerable to malnutrition during the transition period, when complementary feeding is introduced. There is need to ensure that children's nutritional needs are met during this time and this requires complementary feeding to be timely, adequate and safe. Providing complementary foods timely means that the food should be introduced when the energy and nutrient needs of the infants exceed what can be provided through exclusive breastfeeding usually around six months of age. Adequate and safe complementary feeding is when the food given provides sufficient energy, protein and micronutrients to meet the growing infant's nutritional needs. The food has to be hygienically prepared and stored, and fed with clean hands using clean utensils and not bottles and teats. The child has to also be properly fed, during which the infant is given food consistent with their signals of appetite and satiety. The meal frequency and feeding method should be suitable for the child's age; while also encouraging the child to eat sufficient food even during illness (WHO, 2003, WHO, 2005).

2.3.2.1 Principles for complementary feeding

Adequate complementary feeding with the right quality and quantity of food is essential for the growth and development of infants and young children (Jones *et al.*, 2003). To ensure adequate complementary feeding, the WHO developed guiding principles for complementary feeding of children (WHO, 2003, WHO, 42009; WHO, 2015). The principles are as follows:

- (i) Introducing complementary foods at six months of age while continuing to breastfeed. At six months, breast milk alone is not enough to provide all the required nutrients for the infant hence it is important to introduce complementary food. Inappropriate timing, where the foods are introduced too late or too early, deprives the infants of optimum nutrition resulting in undernutrition and increased morbidity and mortality (Senarath, Agho, Akram, Godakandage, Hazir, Jayawickrama, Joshi, Kabir, Khanam & Patel, 2012). Complementary feeding before the child is six months old is also discouraged because it may inhibit breastfeeding and expose the infant to illness. At six months, breast milk should be complemented by other

liquids, and eventually by solid or mushy food to provide adequate nourishment (WHO, 2003; WHO, 2015).

- (ii) Continued breastfeeding on-demand until two years of age or beyond. Continued breastfeeding protects the child's health by delaying maternal fertility postpartum and hence allowing longer breastfeeding for the child (Victora & Barros, 2000). Longer duration of breastfeeding has been linked to reduced risk of childhood chronic illnesses (Davis, 2001) and obesity (Butte, 2001). Breast milk is an important source of energy and nutrients in children aged six to 24 months, especially during illness. Breast milk also reduces mortality among children who are malnourished (WHO, 2003).
- (iii) Providing safe and adequate complementary foods starting with small amounts and increasing the quantity as the child grows older while maintaining breastfeeding frequency. Since the energy requirements of the child increases during this time, there is need to provide complementary foods that will meet the energy needs of the child to ensure optimum child growth. The energy needs of an infant are 600 kilocalories (2520 kilojoules) per day for a child six to eight months, 700 kilocalories (2940 kilojoules) per day for a child nine to eleven months and 900 kilocalories (3780 kilojoules) per day for a child 12 to 23 months. To ensure that the energy needs are met, food should be offered to the child based on the principles of responsive feeding, while ensuring that energy density and meal frequency are adequate (WHO, 2003; WHO, 2009).
- (iv) Practising responsive feeding
Optimal complementary feeding depends not only on what is fed but also on how, when, where and by whom the child is fed (Pelto, Levitt & Thairu, 2003), as such, responsive feeding is important. Responsive feeding is a technique in which infants are fed when they express hunger, instead of being forced to keep to a feeding schedule. Using this technique, the infant is fed directly while being sensitive to their hunger and satiety cues. It is the caregiver's responsibility to watch for and respond to an infant's cues for hunger, and to be responsive to the infant's cues for satiety. Infants should be fed until they indicate that they are full and to never be forced to eat. The child should be fed slowly and patiently and be encouraged to eat. If they refuse many foods, the caregiver has to experiment with different food

combinations, tastes and methods of encouragement while talking with the child during feeding with eye to eye contact (WHO, 2003; WHO, 2005).

(v) Food consistency

Food consistency and variety should be increased as the infant gets older while adapting to the infant's requirements and abilities. Infants can eat mashed and semi-solid foods at six months and by eight months they can eat finger foods. Finger foods are snacks that can be eaten by the child alone. At 12 months, most children can eat the same types of food consumed by the rest of the family, while ensuring that the food provided is nutrient dense. It is important to include a variety of foods when preparing complementary food for infants to ensure that their nutritional needs are well provided for (WHO, 2005; WHO, 2009).

(vi) Meal frequency and energy density

The number of times that the child is fed complementary foods should be increased as the child gets older. The appropriate number of feedings depends on the energy density of the foods and the usual amounts consumed at each feeding. For an average healthy breastfed infant, complementary meals should be provided two to three times per day from six to eight months of age, and increasing to three to four times per day from nine to eleven months and 12 to 24 months of age, while providing additional nutritious snacks one to two times per day, as desired. Snacks are the foods that are eaten between meals and are usually self-fed by the child. They are generally convenient and are easy to prepare. Examples of nutritious snacks for the child are fruits or bread with peanut paste (Brown, Dewey & Allen, 1998; WHO, 2003).

For an average non-breastfed infant, meals which includes milk only feeds, other foods and combinations of milk feeds and other foods should be provided four to five times per day with additional nutritious snacks offered one to two times per day as desired. The appropriate number of feedings depend on energy density of the food. If the energy density of the food or the amount of food per meal is low, more frequent meals are required (WHO, 2005).

(vii) Providing a variety of nutrient-rich foods

Due to the rapid rate of growth and development during the first two years of life, nutrient needs per unit body weight of infants and young children are very high. As

such, attention should also be paid to the nutrient content of the food for complementary feeding to ensure that the infant's nutrient requirements are met. Providing fortified complementary food or vitamin-mineral supplements for the infants and young children as needed is also encouraged (WHO, 2009).

Breast milk has relatively low amounts of several minerals, such as iron and zinc. Therefore, the child needs to eat meat, poultry, fish or eggs daily or as often as possible, because they are rich sources of these minerals. Milk and milk products are rich sources of calcium and they should also be consumed often. A diet that does not contain animal source foods cannot meet all nutrient needs of the child at this age (WHO, 2003; WHO, 2005).

If milk products and other animal source foods are not eaten in adequate amounts, both grains and legumes should be consumed daily if possible within the same meal to ensure adequate protein quality. Similarly, if milk products are not consumed in adequate amounts, other foods that contain relatively large amounts of calcium such as fish should be consumed. Other foods such as soybeans, cabbage, carrots, papaya, dark green leafy vegetables, guava and pumpkin are also useful additional sources of calcium (WHO, 2003; Owino, Amadi, Sinkala, Filteau & Tomkins, 2008).

The diet also needs to have an adequate fat content. Consumption of foods or paste made from ground nuts and other nuts and seeds is important. The child's daily diet should also include vitamin A rich foods (dark coloured fruits and vegetables, vitamin A fortified oils, cow's milk & eggs) and vitamin C rich foods consumed with meals to enhance iron absorption (WHO, 2003).

(viii) Practising good hygiene and proper food handling

Ensuring safety of complementary foods provided to the child is also important to prevent infections and diarrhoea. This can be done by washing caregivers' and children's hands before food preparation and eating, storing foods safely and serving foods immediately after preparation; using clean utensils to prepare and serve food; using clean cups and bowls when feeding children, and avoiding the use of feeding bottles which are difficult to keep clean (WHO, 2003, WHO, 2005).

(ix) Appropriate feeding during child illness

It is also important to increase fluid intake of the child during illness and frequent breastfeeding. The child should also be encouraged to eat soft foods and their favourite foods so that they are able to replace the nutrients loss. After illness, the infant and child should be given food more often than usual and be encouraged to eat more (WHO, 2005).

Following these principles will ensure that a child is adequately breastfed and receives adequate, nutritious and safe complementary foods, hence reducing incidences of malnutrition.

2.3.3 Infant and young child feeding in Malawi

Globally, many infants and young children do not receive optimal feeding. For instance, worldwide, only 39% of children aged between zero and sixth months were breastfed exclusively in 2014 (Cai *et al.*, 2012; International Food Policy Research Institute, 2016). Providing age appropriate complementary feeding also remains a challenge, especially in low income countries (Bhutta, Ahmed, Black, Cousens, Dewey, Giugliani, Haider, Kirkwood, Morris & Sachdev, 2008). This is evidenced by a remarkable increase in the levels of child undernutrition from the age of six to 24 months in developing countries (UNICEF, 2011). In many countries less than a fourth of infants aged between six to 24 months meet the criteria of dietary diversity and feeding frequency that are appropriate for their age (Black *et al.*, 2013).

Sub-optimal IYCF practices have been reported in Malawi that include delayed initiation of breastfeeding, early introduction of foods before six months for breastfeeding children and inappropriate complementary feeding (low frequency of meals per day, provision of thin porridge and giving of meals that predominantly consist of plant foods of low nutrient quality) (Mtimuni, Bader, Palma & Dop, 2008).

In Malawi about 76% of the children were reported to have been initiated on breastfeeding within the first hour of birth in 2015 (NSO & ICF-International, 2016). Exclusive breastfeeding is widely practised with up to 61% of infants under six months of age being exclusively breastfed in 2015. However, the proportion of children who are exclusively breastfed decreased sharply with age from 81% for infants zero to one month to 69% for infants two to three months, and 34% in infants aged four to five months (NSO & ICF-International, 2016). Inappropriate complementary feeding is also wide spread in Malawi with poor food diversity and low food frequencies. This was reported in the MDHS of 2010 (NSO & ICF Macro, 2011) where only 29% of children were fed according to minimum standards with respect to food

diversity (three or more food groups for breastfed children and four or more food groups for non-breastfed children) and just over half of children (54%) were fed at least the minimum number of times. Only 8% of the children six to 23 months of age met the criteria for the minimum acceptable diet in 2015 (NSO & ICF-International, 2016).

2.4 Malnutrition

Inappropriate IYCF results in malnutrition (Grantham-McGregor, Cheung, Cueto, Glewwe, Richter, Strupp & Group, 2007). The World Food Programme (2000) defines malnutrition as “a condition in which the physical function of an individual is impaired to the extent that it is difficult for an individual to maintain adequate bodily performance processes such as growth, pregnancy, lactation, physical work and resisting and recovering from disease”. Elia (2000) adds in the aspects of deficiency and excess of a wide range of nutrients that result in measurable adverse effects on body composition, function and clinical outcome. Malnutrition can therefore be defined as the condition of the body resulting from an imbalance of energy and nutrients. This can either be undernutrition, where the body is receiving less nutrients than is required, or over nutrition, where the body is receiving more energy than is required. For this study, the term malnutrition has been used to refer to undernutrition. This is a type of malnutrition that is caused by inadequate intake of good quality and safe foods (Burgess & Glausauer, 2004). For infants and young children, malnutrition is caused by sub-optimal breastfeeding (specifically non-exclusive breastfeeding) and complementary feeding that is limited in quantity, quality and variety (Bhutta et al, 2008; WHO, 2012).

2.4.1 Effects of malnutrition

Malnutrition that develops in during the first 1000 days of a child’s life, which is the period from conception through the first two years of life, has negative and long lasting effects on the child (Bartle, 2013; Black *et al.*, 2013). Maternal malnutrition affects the growth and development of the foetus, hence it is important that women get optimal feeding throughout pregnancy to ensure adequate nourishment of the foetus (Black *et al.*, 2013). When a mother is malnourished during pregnancy, there is a deficiency of nutrients that are required to support the embryo’s growth. The cells of the embryo may not divide properly, resulting in impaired foetal development. For instance, folate deficiency in early pregnancy is associated with deficits in the development of the neural tube in the foetus, resulting in conditions such as spina bifida (Allen, 1994). Iron deficiency during pregnancy is associated with restricted foetal growth and low birth weight (Viteri, 1994). Malnutrition during pregnancy also results in the child being born at a low birth weight, which may result in severe cognitive and developmental

deficits. The other consequences of maternal malnutrition include premature birth, brain damage and still birth (Allen, 1994; Muthayya, 2009).

Inappropriate feeding during the period from birth to two years can also result in chronic undernutrition, a condition referred to as stunting (low height for age). After the age of two years, stunting is an irreversible condition and is associated with poorer cognitive performance and lower school achievement in middle childhood (Grantham-McGregor *et al.*, 2007). The effects of stunting include impaired brain development, lower IQ, weakened immune system, and greater risk of serious diseases such as diabetes and cancer later in life (WHO, 2009). While the effects of stunting last a lifetime, the condition can also be passed on from one generation to another. Girls who are born malnourished and become stunted as children end up growing up to become malnourished mothers, who in turn give birth to malnourished babies, and the cycle repeats itself (Black *et al.*, 2013).

Evidence suggests that adults who were malnourished during the period from birth to two years have an impaired intellectual performance and a reduced capacity for physical work (Black *et al.*, 2013; WHO, 2009 & Walton & Allen, 2011), therefore optimal IYCF is important.

Malnutrition is also linked to an estimated 45% of deaths in children under the age of five years worldwide (Black *et al.*, 2013). Nearly half of all deaths in children under the age of five are attributable to undernutrition (Black *et al.*, 2013; International Food Policy Research Institute, 2016).

2.5 Parental involvement in infant and young child feeding

To ensure optimal breastfeeding and complementary feeding, there is need to promote the involvement of both parents in IYCF. Parental involvement is the one-to-one interaction that happens between a parent and a child in activities such as feeding, where the parents assume responsibility for child care and welfare (Lamb, Pleck, Charnov & Levine, 1987).

Much as the involvement of both fathers and mothers is essential in the feeding and caring of infants and young children, mothers are the ones mostly involved especially in feeding infants. As reported by Hossain, Roopnarine, Ismail, Hashmi & Sombuling (2007), mothers spend more time feeding and playing with the children than fathers. Traditional family roles typically place the responsibilities related to food (planning meals, cooking and feeding) and child care on the mother, whereas the father's primary responsibilities are focused on ensuring financial security (Thuita, 2011). It is deemed natural for mothers to breastfeed and to provide complementary feeding to the infants and young children. However, IYCF does not just involve

a mother or caregiver providing nourishment to the child, it also involves the relationship between the child and caregiver involved. Infants start to signal their hunger to mothers shortly after birth with irritability and sucking at a level depending of the infant's own hunger and rate of supply of food from the mother (Wells, 2003).

In most cultures childcare is regarded as a shared responsibility. However, the roles of men and women are distinctly different (Mukuria, Thuita, Martin & Egondi, 2012). Men are not involved in direct care and nurturing of children younger than two years in the community, because culturally it is considered women's work. A father's role in such cases is to provide support to the mothers in the feeding of infants and young children (Thuita, 2011). Mothers do not always make "executive decisions" on child feeding; grandmothers and husbands also have an influence on the decisions that are made.

2.5.1 Father's involvement in infant and young child feeding

A father's involvement with a child begins after the child's birth, in new born care by means of verbal instructions, support and supervision to the child's mother (Dumbaugh, Tawiah-Agyemang, Manu, Asbroek, Kirkwood & Hill, 2014).

In Kenya, the culturally the roles defined for fathers include providing for the family (food, clothing, shelter, money for health care, security) and the moral upbringing of children as disciplinarians in the home (Thuita, 2011). In most cases, the father of the child provides the main source of financial and moral support pertaining to infant feeding (Katepa-Bwalya, Mukonka, Kankasa, Masaninga, Babaniyi & Siziya, 2015). This also includes providing adequate food for breastfeeding mothers. In a qualitative study done in Kenya, men agreed that to breastfeed successfully, mothers require a well-balanced diet that will help them to produce breast milk and to have enough energy to do her work, and that it was the father's role to provide the food (Mukuria *et al.*, 2012). For the exclusively breastfed child, fathers participate in the breastfeeding process by offering emotional support to the mothers, accompanying the mothers to antenatal clinics, and assisting the mothers with household chores so that they have ample time to breastfeed the infants (Bhatta, 2013).

During complementary feeding, fathers become more actively involved in child feeding. However, their involvement is mostly by participating in feeding the children, purchasing food for the children and providing support to mothers to prepare adequate complementary foods (FAO, 2015). Fathers have strong control over what foods are purchased in the home and the women most times recommend the foods the fathers should buy (Saha, Bamezai, Khaled,

Subandoro, Rawat & Menon, 2011). Providing adequate knowledge regarding IYCF to the fathers could therefore result in improved feeding practices. A study in Baltimore where fathers were randomly assigned to participate in a class on either infant care only (control) or infant care and breastfeeding (intervention) observed that the breastfeeding initiation rate for infants whose fathers participated in the intervention group was higher than among those whose fathers were in the control group (Wolfberg, Michels, Shields, O'Campo, Bronner & Bienstock, 2004).

However, the involvement of fathers' in feeding children below two years is limited in most cases. It has been suggested that many fathers traditionally give little thought to IYCF practices, and their practices are often determined by cultural norms (Thuita, 2011; Aubel, 2012). In most cases the fathers participate in IYCF indirectly by providing food for the family and resources to finance logistical and other costs associated with both routine and emergency health care for children and women (Thuita, 2011). This was evident in a study in rural Mexico (Aubel, 2012) where men's involvement in new born care was very limited.

In Malawi, Waltensperger (2001) found that in both patrilineal and matrilineal societies, new born feeding and child care practices adopted by women were strongly influenced by grandmothers' advice. Men were found to have relatively limited influence on the care and feeding practices of infants during the child's first months of life. This could be because in most cases the fathers are not clear about their roles/responsibilities in IYCF beyond providing food (Thuita, 2011).

2.5.2 Family members' involvement in infant and young child feeding

Grandmothers and other adult females residing in the same household with the mothers also participate in IYCF. Grandmothers are highly esteemed by communities as knowledgeable and experienced in child care. They are powerful decision-makers and influencers of feeding practices for infants and young children in the family (Thuita, 2011). While mothers are the primary caregivers involved in making decisions on child feeding, grandmothers also play a substantive role in caregiving, especially in the feeding of young children. Across cultures, grandmothers are involved in advising and caregiving related to multiple aspects of infant and child nutrition, including breastfeeding initiation, techniques, and duration, feeding during illnesses, timing and types of complementary foods to provide and diet of pregnant and breastfeeding mothers (Aubel, 2012).

This was evident from a study in Kenya by Thuita (2011) where the findings showed that grandmothers were primary caregivers to young children, and powerful influencers of

decisions related to their general care and feeding. They were the main alternative caregiver in the mother's absence. They provided general oversight and care for infants and young children in the community, ensuring that the children are safe, bathed and well fed. Grandmothers were also identified to be central in decision making on issues related to food preparation and feeding young children, health care (recognising signs of illness and advising on the course of action when children are sick), family livelihood (food production), and spiritual nurturing. However, it was reported that many grandmothers had inadequate knowledge on recommended complementary feeding practices, especially related to quantity, dietary diversity, and timing of the introduction of complementary foods.

In addition to fathers and grandmothers, other family members and friends are also central in providing support and advice about breastfeeding, particularly if they have frequent and ongoing contact with the mother (Abel, Park, Tipene-Leach, Finau & Lennan, 2001; Chezem, Friesen & Clark, 2001). This was evident in a study by Evans, Dick, Lewallen & Jeffrey (2004) where it was found that women whose family members had a positive opinion about breastfeeding or who had previously breastfed were more likely to breastfeed their infants and to breastfeed longer.

Much as mothers take the central role in infant and young child feeding, the support they get from fathers, grandmothers and other family members and friends also has an influence on their IYCF practices. In order to improve IYCF practices, it is essential that mothers, caregivers, and family members have accurate information, as well as support to overcome barriers. When mothers receive proper counselling and ongoing social support, evidence shows that there is improved internalisation of optimal feeding practices (Green, 1999).

2.6 Factors influencing parental involvement in infant and young child feeding

Different theories on behaviour are useful in predicting or explaining behaviour. The Bronfenbrenner's ecological systems model and the Theory of planned behaviour have been used in this study to explain human behaviour. In order to understand human behaviour, there is need to understand the context in which the behaviour occurs, and the intertwined relationship between an individual and their surrounding environment (McLeroy, Bibeau, Steckler & Glanz, 1988; Stokols, 1996). Bronfenbrenner's ecological systems model defines spheres of influence from individual factors to society and environment, affecting health behaviour (Bronfenbrenner & Urie, 1994). Although in the model different levels are separated

in order to illustrate how they individually contribute to each behaviour, the levels overlap and influence each other.

Figure 2.1 provides a graphical representation of Bronfenbrenner's ecological systems model as applied to parental involvement in IYCF. The four categories of levels emerging from this model are the macro system, exo system, micro system and the individual level.

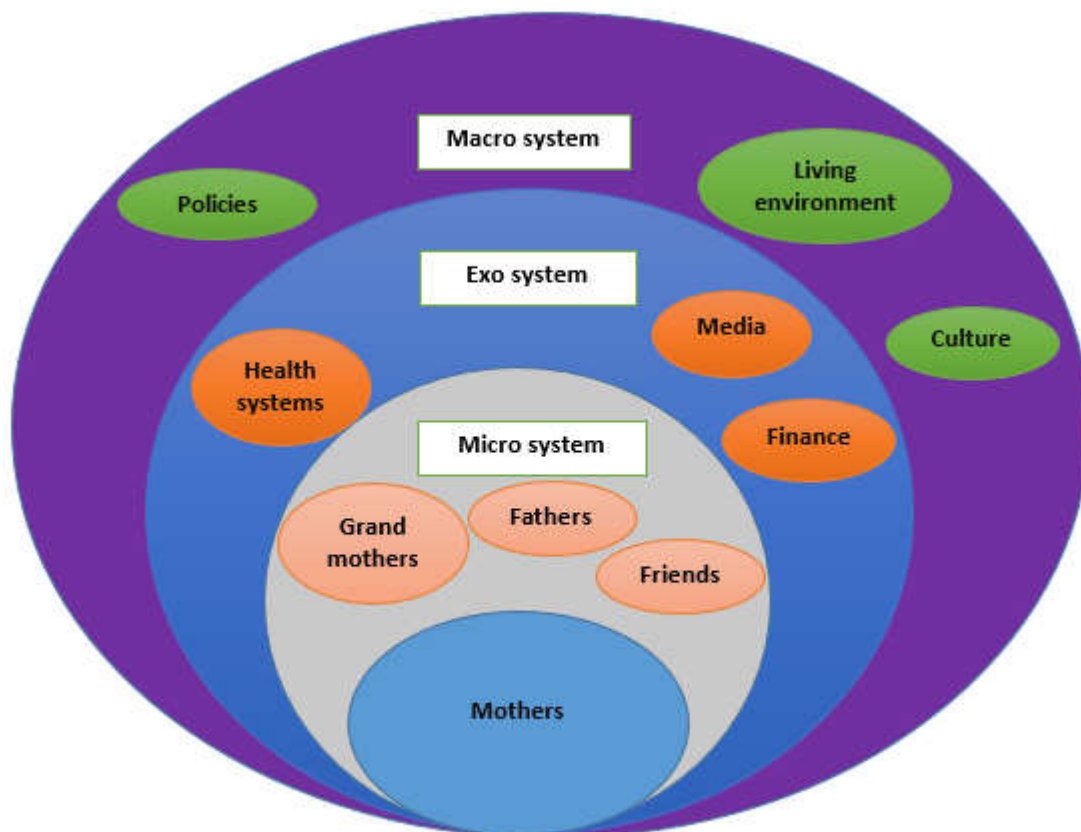


Figure 2-1: Ecological framework for the factors influencing parental involvement in infant and young child feeding (modified from Bronfenbrenner & Urie, 1994).

The microsystem includes interactions experienced by the individual; in this case the mother's interactions and influences of fathers, friends, grand mothers and other relations that have an influence of the mother and infant interactions. The exo system includes the influence of the health systems (counselling, IYCF support), the media and finances, the community as a whole including the workplace (Rollins *et al.*, 2016). The macro system includes the environment in which the parents live in, policies and the culture that the parents follow. This review discusses some of the factors that influence parental involvement in IYFC based on the ecological model.

These factors include the parent’s knowledge and attitudes, their education status, age, economic status and other cultural norms.

2.6.1 Parental knowledge and attitudes on infant and young child feeding

According to the Theory of planned behaviour (Ajzen, 1985; Ajzen, 1991), antecedents of intention and actual behaviour are subjective norms, perceived behavioural control and attitudes towards that behaviour, which in turn are based on underlying beliefs of advantages and disadvantages of the behaviour. Identifying the parents’ attitudes and their beliefs could help to improve IYCF practices. The Knowledge-Attitude-Behaviour model by Kemm & Close (1995) adds that knowledge affects one’s attitudes which leads to change of behaviour. Figure 2.2 shows a diagrammatical presentation of how knowledge interacts with attitudes and perceived behaviour control to influence change in behaviour.

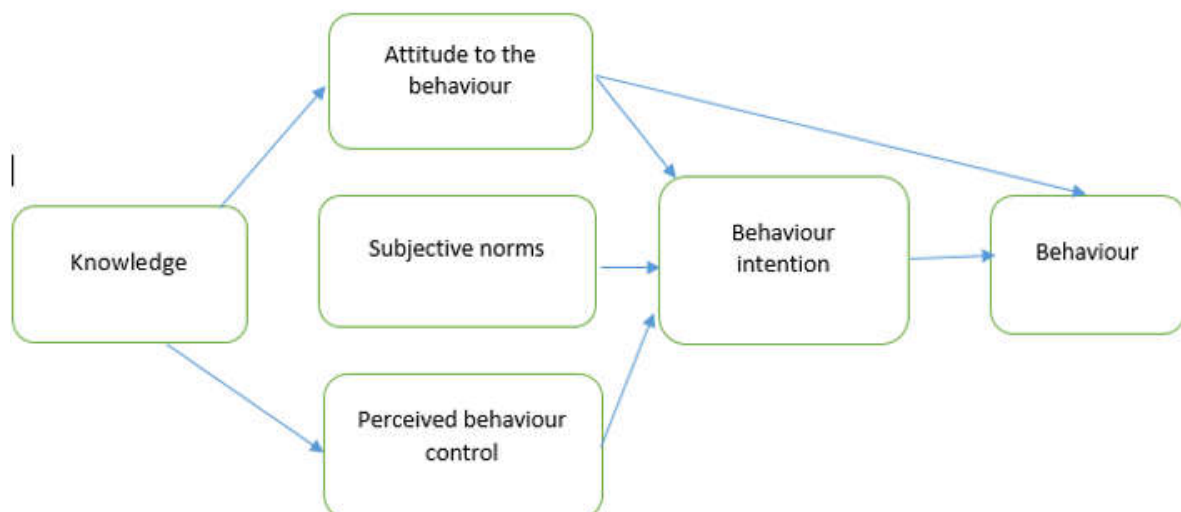


Figure 2-2: Theory of planned behaviour (modified from Ajzen, 1991 and Kemm & Close, 1995)

Behavioural intention is a direct predictor of behaviour, while one’s attitude to the behaviour, subjective norms and perceived behaviour control are predictors of intention. However, attitude can also directly influence behaviour. Knowledge affects the attitudes and perceived behaviour control (Vaarno, 2016). However, the knowledge and attitudes of an individual, other environmental factors also have an influence on the mothers IYCF practices.

2.6.1.1 Parental knowledge of infant and young child feeding practices

The knowledge that parents and caregivers have on the recommended IYCF practices have an influence on their feeding practices (behaviour). As such, improving parental knowledge on

appropriate IYCF practices may have a beneficial effect on the actual feeding practices. In some studies, prenatally given breastfeeding information to mothers has been positively associated with breastfeeding confidence (Chezem, Friesen & Boettcher, 2003; Kronborg, Maimburg & Væth, 2012), initiation of breastfeeding (Stuebe & Bonuck, 2011), and breastfeeding duration (Chezem *et al.*, 2003).

Women's knowledge and self-efficacy on breastfeeding have also been associated with high breastfeeding rates (Khoury, Mitra, Hinton, Carothers & Sheil, 2002). Maternal knowledge appears to have a beneficial influence on the initiation of complementary feeding (Semahegn, Tesfaye & Bogale, 2014), and the quality of complementary foods (Negash, Belachew, Henry, Kebebu, Abegaz & Whiting, 2014; Fahmida, Kolopaking, Santika, Sriani, Umar, Htet & Ferguson, 2015). However, it has been observed that mothers have higher levels of knowledge about the recommendations related to breastfeeding in comparison to their knowledge on complementary feeding (Thuita, 2011).

In Australia it has been found that fathers have an important role of supporting mothers in IYCF (Tohotoa, Maycock, Hauck, Howat, Burns & Binns, 2009), and a concept analysis has found that their knowledge about breastfeeding has been identified as one of the main attributes related to their support to breastfeeding (Sherriff, Hall & Panton, 2014). However, it has been found that fathers' knowledge of and involvement in maternal and child nutrition and health issues is limited compared to that of mothers (Aubel, 2012). This could be because the fathers are not extensively involved in child feeding and therefore they do not accumulate significant knowledge. Wolfberg, *et al.* (2004) in the United States of America found that breastfeeding initiation was significantly increased when expectant fathers attended a two hour antenatal class on infant care and breastfeeding compared to only one class covering infant care. In Malawi, IYCF is mostly regarded as the mother's responsibility and as such, fathers are not included in IYCF programmes. Similarly, in antenatal and under-five clinics, it is mostly the mothers who participate.

A father's perception on the IYCF practices have also been linked to the mother's breastfeeding decisions. It has been reported that in families where the fathers perceived breastfeeding as a good practice, mothers were more likely to initiate breastfeeding than in families where fathers did not favour breastfeeding (Freed & Fraley, 1993; Giugliani, Caiaffa, Vogelhut, Witter & Perman, 1994; Arora, McJunkin, Wehrer & Kuhn, 2000; Mithani, Premani, Kurji, & Rashid, 2015). Other studies suggest that since fathers often have misperceptions of and limited

knowledge on IYCF, they would benefit from interventions to enhance their knowledge (Taşpınar, Çoban, Küçük & Şirin, 2013; Brown & Davies, 2014; Sherriff *et al.*, 2014). Providing education to fathers has been found to positively influence the actual feeding practices. For instance, in Brazil it was found that fathers' better knowledge on breastfeeding increased changes of infants being exclusively breastfed at the end of the first and third month (Susin, Giugliani, Kummer, Maciel, Simon & Da Silveira, 1999). Similar benefits of paternal education were also reported in a Turkish study (Özlüses & Çelebioglu, 2014).

The beliefs and attitudes that parents have towards breastfeeding and complementary feeding also have an influence on the actual feeding practices. It is even suggested in some studies that attitudes may be even better predictors of feeding intention and behaviour than knowledge (Losch, Dungy, Russell & Dusdieker, 1995; Marrone, Vogeltanz-Holm & Holm, 2008).

2.6.1.2 Parental attitudes, perceptions and beliefs on infant and young child feeding

Benefits of breastfeeding seem to be well known, but positive attitudes towards breastfeeding are needed for successful outcomes in infant feeding. Positive attitudes towards breastfeeding have been associated with the intention to breastfeed, longer duration of both exclusive and any breastfeeding (Mitchell-Box, Braun, Hurwitz & Hayes, 2013), and the introduction of complementary foods (Newby, Brodribb, Ware & Davies, 2014). In a study by Mossman, Heaman, Denis & Morris (2008) on mothers' breastfeeding attitudes on breastfeeding initiation and duration it was found that mothers with high prenatal attitudes on breastfeeding were significantly more likely to initiate breastfeeding than those with poor attitudes. In addition, adolescent mothers who had more positive attitudes toward breastfeeding also had higher prenatal breastfeeding self-efficacy scores. In an Australian study, mothers who did not initiate breastfeeding, had significantly lower levels of breastfeeding confidence than those who initiated breastfeeding and continued to six months postpartum (Turner & Papinczak, 2000). In another study, women with lower breastfeeding confidence were three times more likely to prematurely discontinue breastfeeding when compared to more confident women (O'Campo, Faden, Gielen & Wang, 1992).

In addition to the mother's attitudes, the father's attitudes on IYCF also have an influence on the feeding practices. Rempel & Rempel (2011) found that fathers' prenatal beliefs influenced the strength of mothers' breastfeeding intention and predicted breastfeeding behaviour even over and above the mothers' intention. In a study by Giugliani *et al.* (1994) mothers' perception of fathers' attitudes was the main reason associated with breastfeeding shortly after birth. It has

been observed that mothers who perceived their partner having negative attitudes regarding breastfeeding planned to formula-feed (Freed & Fraley, 1993; Freed, Fraley & Schanler, 1993; Shaker, Scott & Reid, 2004) and chose formula-feeding as the feeding method (Arora *et al.*, 2000; Wolfberg *et al.*, 2004). Other studies in both high- and low-income settings have also reported that a father's positive beliefs and knowledge about breastfeeding are associated with increased maternal intentions to breastfeed, as well as successful breastfeeding initiation and increased breastfeeding duration (Kessler, Gielen, Diener-West & Paige, 1995; Rempel & Rempel, 2004; Pontes, Osório & Alexandrino, 2009; Abu-Abbas, Kassab & Shelash, 2016).

However, not all the studies have found positive attitudes to be associated with initiation of breastfeeding (Holbrook, White, Heyman & Wojcicki, 2013) or exclusive breastfeeding duration (Yu, Thomas, Owais, Tirmizi, Faruque, Das, Rahman, Schwartz & Stein, 2015). Negative attitudes are also associated with child feeding, more specifically negative attitudes towards breastfeeding in public have been found to be associated with earlier discontinuation of breastfeeding in many European countries (Scott, Kwok, Synnott, Bogue, Amarri, Norin, Gil & Edwards, 2015).

2.6.2 Education

Education is one of the factors that has an influence on parental involvement in IYCF. Studies have shown that younger parents and caregivers with high levels of education have a better understanding of the importance of child feeding and therefore are more likely to be involved in IYCF than parents with low levels of education (Hasnain, Majrooh & Anjum, 2013; Katepa-Bwalya *et al.*, 2015). This is also evidenced from the results of a study conducted in Zambia that reported that mothers' compliance with recommended IYCF practices increased with the mothers' level of education. In the Zambian study, 48% of children whose mothers attended secondary school were fed according to the recommended IYCF practices, compared with 32% of children whose mothers had no education (Katepa-Bwalya *et al.*, 2015). Studies done in Malawi also found that education improved adherence to IYCF recommendations and reduced childhood morbidity (Ziyane, 1999; Vaahtera, Kulmala, Hietanen, Ndekha, Cullinan, Salin & Ashorn, 2001). High levels of mothers' education have been related most clearly with positive feeding behaviours. The mother's level of education was also linked to both exclusive breastfeeding and total breastfeeding in Finland, where it was reported that 42% of mothers with high levels of education were exclusively breastfeeding at four months, and 88% were breastfeeding at six months, whereas among mothers with the lowest education level only 18% of the mothers were exclusively breastfeeding at four months, and 33% were breastfeeding at

six months respectively (Vaarno, 2016). In Malawi, primary education is attended by more than half of the population. The MDHS of 2016 reported that 67% of women and 65% had attended primary education. Only 5% of females and 9% of males were reported to have completed secondary education or gone beyond secondary school (NSO & ICF-International, 2016).

The father's level of education also has an influence on IYCF. Results from a study in Nepal found that fathers/ males who had higher levels of education showed greater involvement in encouraging their spouses to breastfeed their children (Bhatta, 2013). Another study in Equatorial Guinea had similar findings where younger married men with secondary education were significantly more willing to encourage their wives to exclusively breastfeed than older men with little education (Jimoh, 2004).

For complementary feeding, a low maternal educational level has been related to early introduction of solid foods (Betoko, Charles, Hankard, Forhan, Bonet, Saurel-Cubizolles, Heude & De Lauzon-Guillain, 2013; Andrén Aronsson, Uusitalo, Vehik, Yang, Silvis, Hummel, Virtanen & Norris, 2015), delayed (beyond six months) introduction of complementary foods (Senarath *et al.*, 2012) and a low quality of complementary foods (Betoko *et al.*, 2013).

2.6.3 Age

The age of the parents also has an influence on how they are involved in IYCF. For breastfeeding, older mothers have been reported to have more positive attitudes and to initiate and maintain breastfeeding longer than younger mothers (Mossman, Heaman, Dennis & Morris, 2008). Some studies also found maternal age as being positively associated with appropriate timing and quality of complementary foods; where older women provided quality complementary foods at the right time than younger mothers (Betoko *et al.*, 2013; Andrén Aronsson *et al.*, 2015). The father's age has also been observed to have an influence on feeding practices. A study by Huus, Ludvigsson, Enskär & Ludvigsson, (2008) found that short term (< 4 months) exclusive breastfeeding was less common if the father was more than 37 years old than when the father was younger.

2.6.4 Economic status

The parents' economic status also has an influence on their involvement in IYCF. Traditionally financial provision is considered to be one of the primary contributions of fathers (Kenney, 2008). This may lead to poor involvement from low income fathers since they may not have a

lot of money to provide for the child's feeding needs (Gavin, Black, Minor, Abel, Papas & Bentley, 2002). On the other hand, fathers who provide steady household income for their families may feel that their most important role has been fulfilled through their work (Heymann, Raub & Earle, 2013), and this may discourage them from being more directly involved.

Even though recommended IYCF practices, especially breastfeeding, are generally cost-saving, it has been observed that infants in low socio-economic families breastfeed for shorter periods and introduce solid foods earlier than infants in families having better socioeconomic status (Lauer *et al.*, 2004; Mukuria *et al.*, 2012). A qualitative study that was conducted in Kenya found that a mother's food insecurity and hunger led to her experiencing milk insufficiency and anxiety about infant hunger. The mothers had the perception that their intake of food was not sufficient for successful breastfeeding, which then resulted in the mothers introducing solid food before the child was six months old (Webb-Girard, Cherobon, Mbugua, Kamau-Mbuthia, Amin & Sellen, 2012). Economic status may also influence the quality of foods provided for the children. A study in four South Asian countries found that the prevalence of children having a diversified diet (receiving foods from four or more food groups) was the lowest in the poorest families (Senarath *et al.*, 2012). Foods high in protein and micronutrients are often expensive, which makes it impossible for low income families to purchase them for their children (Darmon & Drewnowski, 2015). Similarly in Malawi, the low consumption of protein foods (fish, beans, eggs, flesh foods), mostly during the rainy season, which is also the hunger period, is attributed to high prices of such foods (FAO, 2014). As such, parents may have knowledge on the foods needed for complementary feeding, but may fail to practise sound complementary practices when they do not have adequate financial resources to purchase the appropriate foods (FAO, 2015).

2.6.5 Cultural norms

Culture determines the parents' involvement in the feeding of infant and young children. Cultural norms dictate that the roles of younger women and men are gender specific, as are the roles played by senior women (grandmothers) and senior men (grandfathers). Male family members are primarily responsible for providing the financial resources for basic household activities, including food provision, while women are responsible for managing the household and managing the daily tasks of raising children, which include dealing with nutrition and health issues (Aubel, 2012). This division of roles may sometimes hinder men to be directly

involved in IYCF. A study in Kenya found that the pressure to embrace this cultural definition of masculinity hindered most men in actively participating in child care (Thuita, 2011).

Culture can positively influence parental involvement in IYCF practices when the cultural patterns are supportive of the appropriate feeding practices. For example, in rural Thailand, breastfeeding on demand, strong family support, and traditional practices that encouraged close contact between mother and her new born enabled mothers to breastfeed even when they had no previous experience (Amatayakul, Wongsawasdi, Mangklabruks, Tansuhaj, Ruckphaopunt, Chiowanich, Woolridge, Drewett & Baum, 1999). However, cultural practices can sometimes negatively influence parental involvement in IYCF. In Malawi some cultural norms and beliefs in relation to taboos were found to negatively influence IYCF practices. For example, eggs were perceived to be harmful for young children, while herbal tonics and thin porridges were believed to offer protective qualities (Vaahtera *et al*, 2001; FAO, 2014). In other Sub-Saharan African countries mothers are not allowed to be involved in sexual activities during the breastfeeding period because of the belief that intercourse would spoil the breast milk (Arts, Geelhoed, De Schacht, Prosser, Alons & Pedro, 2010; Mbekenga, Lugina, Christensson & Olsson, 2011). Such a taboo may increase pressure on mothers to terminate breastfeeding earlier than they would otherwise do. In some cultures, breastfeeding in public is considered a taboo due to exposing of breasts and this may hinder women from exclusively breastfeeding their children. For instance, a study in Malaysia found that women had positive attitudes towards exclusive breastfeeding and were willing to practise exclusive breastfeeding. However, breastfeeding in public was considered a taboo, which resulted in most mothers being unable to exclusively breastfeed (Tan, 2009).

2.7 Improving infant and young child feeding practices

Achieving optimal IYCF is an important public health goal and helps in ending malnutrition and preventing deaths of children under the age of five, thereby contributing to achieving the Sustainable Development Goals (Goal number 2: to end hunger, achieve food security and improved nutrition and promote sustainable agriculture and number 3: to ensure healthy lives and promoting wellbeing for all ages (United Nations, 2015). Several types of interventions have been implemented in various settings to improve breastfeeding and complementary feeding practices. These interventions are working solutions for improving feeding practices. However, no intervention fits all contexts. The interventions can be implemented in many different settings; health systems and services, home and family environment, community environment and work environment (Sinha, Chowdhury, Sankar, Martines, Taneja, Mazumder,

Rollins, Bahl & Bhandari, 2015). It is important to adapt the interventions to meet the unique characteristics of each setting to have the most influence (Vaarno, 2016).

Counselling and education delivered by health staff have been found to increase the odds of breastfeeding initiation (Sinha *et al.*, 2015). It has also been found that combining individual and group counselling has a greater effect than either alone (Haroon, Das, Salam, Imdad & Bhutta, 2013). In societies, where food insecurity is common, nutrition education combined with provision of appropriate complementary foods has been proven to reduce the risk of stunting in children under two years of age (Imdad, Yakoob & Bhutta, 2011; Lassi, Das, Zahid, Imdad & Bhutta, 2013).

Peer support, counselling and education or support by the father or significant others are part of home and family environment interventions. Interventions based on peer support have been found to increase breastfeeding continuation (Ingram, MacArthur, Khan, Deeks & Jolly, 2010; Jolly, Ingram, Khan, Deeks, Freemantle & MacArthur, 2012; Sudfeld, Fawzi & Lahariya, 2012; Sinha *et al.*, 2015). However, context seems to influence the effectiveness of the intervention. The effect of peer support was smaller in communities that had a high rate of formula-feeding (Sudfeld *et al.*, 2012), and in developed countries compared with low- or middle income countries (Jolly *et al.*, 2012).

Community environment includes group support and counselling, social mobilisation and mass media. Interventions in communities have been found to influence early initiation of breastfeeding, promotion of exclusive breastfeeding and continued breastfeeding (Zamawe, Banda & Dube, 2015; Sinha *et al.*, 2015). Community based interventions have been reported to improve exclusive breastfeeding duration in low and middle income countries (Hall, Collins, Morgan, Burrows, Lubans & Callister, 2011). Fairbank *et al.* (1999) also suggested that group health education would be effective in improving breastfeeding practices. Sinha *et al.* (2015) also suggested that increasing awareness of whole communities would be more beneficial than educating mothers only.

Maternity leave, workplace support and employment status of the mother, which often influence infant feeding practices, are categorised here as the work setting. Interventions in the work setting may include facilitating longer maternity leaves, expressing breastmilk at work or having breastfeeding breaks during workday. Interventions in the work environment have been found to have no influence on initiation of breastfeeding, had small insignificant influence on

probability of exclusive breastfeeding, but had significant positive effects on breastfeeding duration and prevalence of breastfeeding in general (Sinha *et al.*, 2015).

In addition, policies and legislation, related to breast feeding, child nutrition and health policies, also have an influence on IYCF practices (Moran, Morgan, Rothnie, MacLennan, Stewart, Thomson, Crossland, Tappin, Campbell & Hoddinott, 2015; Sinha *et al.*, 2015).

2.8 Assessment of parental involvement in infant and young child feeding

Parental involvement in IYCF can be assessed by determining the parents' participation in feeding infants and young children and their IYCF practices (Thuita, 2011; Dumbaugh *et al.*, 2014). Assessing parents' and caregivers' nutritional knowledge, attitudes, practices (KAP) and perceptions on IYCF is important in gaining insight into the determining factors of their IYCF behaviour (Lindsay, Sussner, Kim & Gortmaker, 2006; Savage, Fisher & Birch, 2007). Nutrition knowledge, attitudes, practices and perceptions can be assessed both quantitatively and qualitatively (Vijayapushpam, Menon, Rao & Antony, 2003; Macías, Glasauer & Macias, 2014), and the parents' participation in IYCF can be assessed qualitatively (Thuita, 2011).

2.8.1 Quantitative assessment

Quantitative assessment of nutrition KAP that uses questionnaires enables for the collection of data that can be generalised to a wider population (Kumar, 2014), and for comparisons to be made between different individuals' nutrition KAP (Macías *et al.*, 2014). The FAO developed questionnaires on the assessment of nutrition related KAP, including the assessment of nutrition KAP on IYCF, which were developed based on the WHO recommendations on IYCF (Macías *et al.*, 2014).

The FAO nutrition KAP questionnaire assesses knowledge by using open ended questions that require participants to provide short answers in their own words (Macías *et al.*, 2014). Nutrition knowledge can also be assessed using multiple choice questions and true/false questions (Nazni & Vimala, 2010). However, the use of multiple choice and true/false questions is not recommended because the participants' responses can be a result of guessing and therefore give a false impression of their knowledge (Macías *et al.*, 2014).

Nutrition attitudes can be assessed by using attitude questions that offer three response options; a positive response, a negative response and a "middle option", which captures attitudes that are still uncertain. Adding open ended questions after the three response options also helps to gain a better understanding of why participants gave a specific answer. Assessment of nutrition attitudes is mostly done on the following areas: one's attitudes towards an ideal nutrition

practice, following nutrition recommendations (the perceived importance of following a nutrition recommendation), food preferences and attitudes towards food taboos (Macías *et al.*, 2014).

The participants' responses to the knowledge and attitude questions can be reported in terms of numbers, percentages and scores.

Nutrition practices are assessed in terms of dietary diversity, intake of specific foods, frequency of intake of specific foods and specific behaviours related to nutrition practices (Macías *et al.*, 2014). Dietary diversity measures the quality of the diet and it is a proxy for the macro and micronutrient adequacy of the diet. For IYCF it consists of a simple count of food groups that the child consumed over the previous 24 hours. The minimum dietary diversity indicator is then calculated as the percentage of children aged 6-23 months who receive foods from four or more food groups from seven food groups. The seven food groups include grains, roots, and tubers; legumes and nuts; dairy products (milk, yoghurt, cheese); flesh foods (meat, fish, poultry, and liver/organ meat); eggs; vitamin A rich Fruits and vegetables; and other fruits and vegetables (WHO, 2010).

Intake of specific foods is measured by using a food intake check list which is a simplified 24-hour dietary recall. It asks whether a particular food or list of foods was consumed within the previous 24 hours, with the answer being a simple "yes" or "no" (Thompson & Byers, 1994; Macías *et al.*, 2014). The list of foods used should consist of locally available foods for accurate assessment. The frequency of intake of specific foods is measured using food-frequency questionnaires (McPherson, Hoelscher, Alexander, Scanlon & Serdula, 2000). Participants are asked to report frequency of consumption of a particular food or list of foods over a particular period of time; which can be in the previous 24 hours or the last seven days. However, the food frequency questionnaires tend to overestimate intakes and therefore do not provide a reliable estimate of actual intake (Contento, 2007). Specific observable behaviours aim at identifying dietary habits of the population that are relevant for nutrition (Shannon, Kristal, Curry & Beresford, 1997), for instance, using iodized salt or adding a specific food item to a meal (Thompson & Byers, 1994; Yaroch, Resnicow, Petty & Khan, 2000; Townsend, Kaiser, Allen, Joy & Murphy, 2003). These behaviours are assessed using checklists that has "yes" or "no" questions related to a practice, and categorised questions accompanied by a list of statements related to the practices (Macías *et al.*, 2014).

2.8.2 Qualitative assessment

Parents' nutrition knowledge, attitudes, practices and perceptions on IYCF, and their involvement can also be assessed by using qualitative methods (Thuita, 2011; Aubel, 2012). The use of qualitative methods allows for the collection of richer data since the participants express themselves fully (Naidoo, Ehrlich & Jouber, 2015). In qualitative assessment, the focus is generally on understanding the individuals' perception of issues. The questions asked are open ended, flexible and may be modified to obtain more information (Draper, 2004).

Focus group discussions (FGD) and/or in-depth interviews are some of the ways that have been used to assess parental involvement (Thuita, 2011). A focus group discussion is a technique involving the use of in-depth group interviews in which participants are selected because of the purpose and are not necessarily a representation of a specific population. The main aim of FGD is to initiate discussion between the group members, so as to understand, and explain the meanings, beliefs and cultures that influence the feelings, attitudes and behaviours of individuals (Hennink, 2013; Kumar, 2014). An in-depth interview is a technique that involves conducting intensive individual interviews with a small number of participants to explore their perceptions on an idea or issue. In-depth interviews are useful for obtaining detailed information and when aiming at obtaining individual opinions as opposed to group opinions (Boyce & Neale, 2006; Naidoo *et al.*, 2015).

2.9 Summary

Adequate nutrition during the first two years of a child's life is essential to ensure the growth, development and health of children to their full potential. Children's feeding practices have a direct impact to their nutritional status, thus ensuring optimal IYCF is important.

Both mothers and fathers play important roles in the feeding of infants and young children. Therefore involving both parents (mother and fathers) in IYCF is important to ensure optimal IYCF practices. Adequate nutrition knowledge, positive attitudes and perceptions of parents on IYCF are also important in improving their IYCF practices. There are several factors that influence parents' involvement in IYCF, including the parents' level of education, age, spouse perceptions of the appropriate IYCF practices, as well as socio-economic and cultural factors. Parental involvement and their nutrition KAP can among others be assessed quantitatively using questionnaires and qualitatively using focus group discussions and in-depth interviews.

CHAPTER 3

METHODOLOGY OF THE STUDY

3.1 Introduction

This chapter presents the methodology of the study. The study was executed by using a mixed methods research approach. This approach mixes quantitative and qualitative research designs and methods. This method was chosen because it allows for a compensation of inherent quantitative and qualitative method weaknesses and capitalise on inherent method strengths (Greene, 2007), where one method could neutralise the biases of other methods. In addition mixed methods allows for the mixing of different types of data, where one method can inform or develop another method (Creswell, 2003). The methodology used in the quantitative part of the study has been presented first, followed by the methodology used in the qualitative domain.

3.2 Research approach

Kumar (2014) defines a research design as the road map that is followed during the research journey to find answers to research questions that have been formulated in a valid, objective, accurate and economic way. Polit and Beck (2008) further describe a research design as the overall detailed plan for addressing a research question that includes the specifications for enhancing the study's integrity.

The quantitative domain was chosen because it allows one to quantify the specific phenomena under study. Quantitative techniques were used in this study to determine the proportion of fathers, mothers and caregivers involved in IYCF and to assess their nutrition knowledge, attitudes and practices (KAP) on IYCF. The qualitative methodology was used to explore, understand and describe participants' perceptions and experiences of IYCF, and to identify the factors that affected their involvement in child feeding.

Data in the quantitative design were collected by using semi-structured questionnaires, whereas data in the qualitative design were collected by using focus group discussions (FGDs) and in-depth interviews with the study participants (*see paragraph 3.7.4.1 & 3.7.4.2*).

Figure 3.1 shows a diagrammatic representation of the quantitative and qualitative methods which this study employed to answer the research objectives.

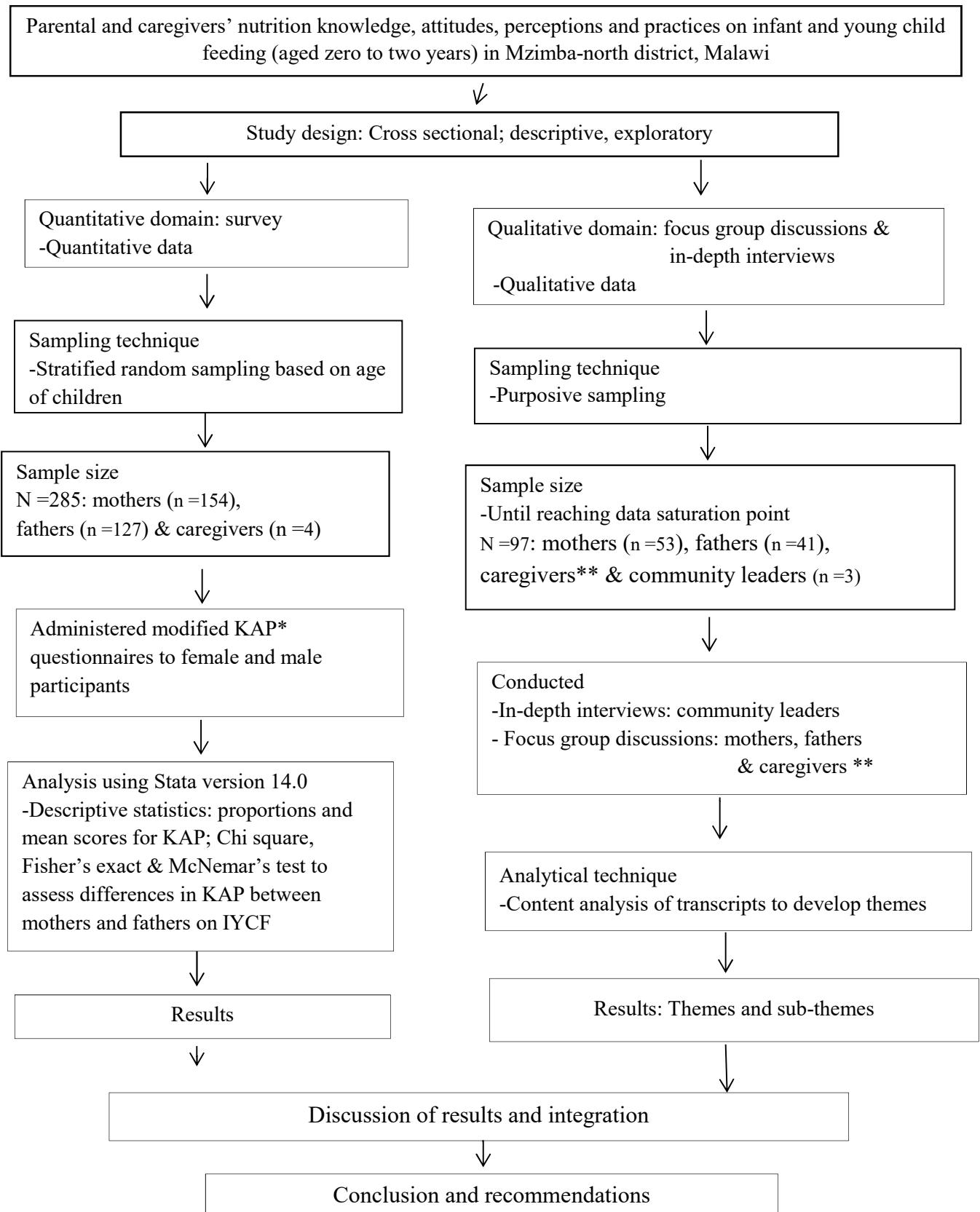


Figure 3-1: Methodology of study in quantitative and qualitative domains

*= FAO Knowledge, attitude and practice questionnaire

**= Mothers, fathers and caregivers who did not participate in the quantitative domain (survey)

3.3 Aim of the study and objectives

3.3.1 Aim of the study

The aim of this study was to explore and describe the involvement of biological parents (both mother and father) and caregivers in infant and young child feeding (IYCF) of children aged zero to 24 months in Mzimba-north district, Malawi. This was done through an assessment of the parents' and caregivers' nutrition knowledge, attitudes, perceptions and practices, and the identification of factors that affected the parents' and caregivers' involvement in the feeding practices. Caregivers participated where the biological parents were not available. The study also aimed at identifying and describing ways of improving the parents' and caregivers' involvement in IYCF of children aged zero to 24 months.

3.3.2 Primary objectives

3.3.2.1 To determine and describe the proportion of fathers, mothers and caregivers respectively involved in IYCF of children aged zero to 24 months in Mzimba-north District, Malawi by using semi- structured questionnaires with respect to:

- i) the responsibility of both biological parents and caregivers to feed the child;
- ii) the responsibility of both biological parents and caregivers to make decisions on purchasing food for young children; and
- iii) the responsibility of both biological parents and caregivers to make decisions on exclusive breastfeeding and complementary feeding of the child.

3.3.2.2 To assess and describe mothers', fathers' and caregivers' nutrition KAP respectively with respect to IYCF of children aged zero to 24 months in Mzimba-north District, Malawi using a semi-structured modified FAO knowledge, attitudes and practices questionnaire (Macías *et al.*, 2014).

3.3.2.3 To compare the mothers', fathers' and caregivers' nutrition KAP with respect to IYCF of children aged zero to 24 months in Mzimba-north district, Malawi.

3.3.2.4 To explore and describe the parental roles and responsibilities of mothers, fathers and caregivers respectively and their perceptions of IYCF of children aged zero to 24 months in Mzimba-north District, Malawi, using FGDs and in-depth interviews.

3.3.2.5 To explore and describe the factors that affected both parents' and caregivers' involvement in IYCF of children aged zero to 24 months in Mzimba-north District, Malawi using FGDs and in-depth interviews.

3.3.3 Secondary objective

To make recommendations on how the parents' and caregivers' involvement in IYCF of children aged zero to 24 months can be improved.

3.4 Conceptualisation

The purpose of this section is to present the conceptual framework of this study, and to define key terms as they were used in the study.

3.4.1 Conceptual framework

The conceptual framework for this study was an integration of the UNICEF framework on causes of malnutrition (UNICEF, 1998), the framework on barriers to physician adherence to practice guidelines in relation to behaviour change (Cabana, Rand, Powe, Wu, Wilson, Abboud & Rubin, 1999), the framework by Selvan which describes demographic factors that affect parental involvement in the prevention of mother to child transmission of HIV (Selvan, Ross, Kapadia, Mathai & Hira, 2001), and the conceptual framework for determinants of skilled birth attendance during delivery (Mangeni, Nwangi, Mbugua & Mukthar, 2012). These frameworks were integrated to form the conceptual framework for this study as shown in Figure 3.2.

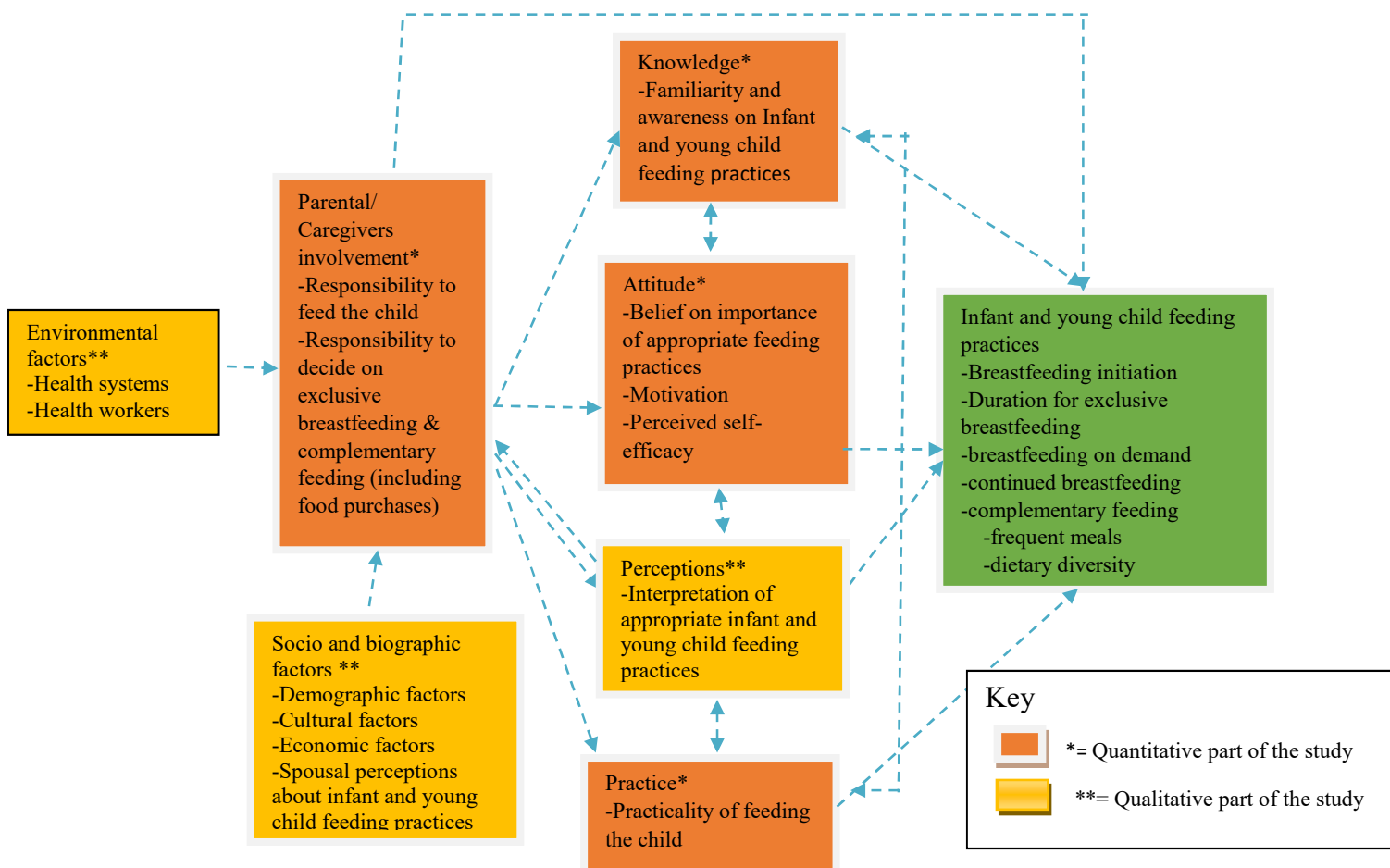


Figure 3-2: Conceptual framework of parental involvement in infant and young child feeding

The framework by Caban *et al.* (1999) provided the basis for an explanation on how the behavioural change process occurs through KAP. The frameworks by Mangeni *et al.* (2013) and Selvan *et al.* (2001), and the UNICEF (1998) causes of malnutrition framework provided information on the social and demographic factors that could affect the behavioural change process with respect to parental and caregivers' IYCF practices.

The conceptual framework for this study provided a frame of reference for exploring involvement of parents in IYCF through their nutrition KAP and perceptions of IYCF. Parental involvement influences directly or indirectly the IYCF practices at household level through the nutrition KAP and perceptions of mothers, fathers and caregivers. There is also an interrelationship among nutrition knowledge, attitudes, perceptions and practices. For example, if parents (mothers and fathers) and caregivers are greatly involved in IYCF and have high levels of nutrition knowledge, positive attitudes and perceptions and good practices, they are likely to be capable of solving problems they may encounter in feeding the infants and young children. This will ultimately improve the IYCF practices (Faith, Scanlon, Birch, Francis & Sherry, 2004). The perceptions a father or a mother has towards child feeding will also determine the extent of their involvement. For instance, if fathers consider the feeding of young children as a responsibility of the mothers, this will then limit their involvement (Arora *et al.*, 2000).

However, parental involvement is also influenced by other environmental factors such as policies, health structures or facilities, the conduct of health workers, limited knowledge and skills of health workers, the parents access to resources, the unlimited marketing of infant formula, workplace constraints and economic constraints among others (Alive and Thrive, 2015; Rollins, 2016). Environmental factors, therefore, can also affect the degree of parental involvement. Similarly, socio-biographic factors, which include cultural and economic factors, also affect how parents are involved in the feeding of infants and young children (Thuita, 2011).

Parental involvement, which is influenced by environmental and socio-biographical factors, and is reflected through parental nutrition knowledge, attitudes, perceptions and practices affects IYCF practices. The IYCF practices consist of breastfeeding and complementary feeding (WHO, 2009). Key indicators of breastfeeding and complementary feeding include time for breastfeeding initiation, exclusive breastfeeding, breastfeeding on demand, time for introducing complementary feeding, dietary diversity and frequency of meals, responsive feeding and food preparation and safety (WHO, 2009).

3.4.2 Conceptual definitions

3.4.2.1 Parental involvement

This refers to a one-to-one interaction between a biological parent and a child in activities such as feeding and assuming responsibility for child care and welfare (Lamb *et al.*, 1987). In this study parental involvement referred to the responsibility of a parent or caregiver to feed the child, and to decide on exclusive breastfeeding and complementary feeding (including food purchases). This involvement is influenced by and reflected through the parents' or caregivers KAP and perceptions of IYCF.

3.4.2.2 Caregiver

This is a person, who is not the biological parent of the child, but has the responsibility of providing for and feeding the child (Hermanns & Mastel-Smith, 2012).

3.4.2.3 Infant and young child feeding practices

These are practices that are followed in feeding children from zero to two years of age. Feeding practice has been defined as an application of rules and knowledge of appropriate breastfeeding and complementary feeding that leads to action (Bano, AlShammari, Fatima & Al-Shammar, 2013). The practices include the following: early initiation of breastfeeding, exclusive breastfeeding, continued breastfeeding until two years of age and appropriate complementary feeding (WHO, 2009).

3.4.2.4 Nutrition knowledge

Nutrition knowledge refers to the familiarity and awareness of concepts and information related to nutrition and health, including awareness of appropriate diet and health, foods providing major sources of nutrients and dietary guidelines and recommendations (Axelson & Brinberg, 1992; McKinnon, Giskes & Turrell, 2014). For this study, the scope of the nutrition information was on breastfeeding and complementary feeding practices and the benefits of exclusive breastfeeding.

3.4.2.5 Attitudes

This refers to “inclinations to react in a certain way to a certain situation; or to see and interpret events according to certain predispositions” (Bano *et al.*, 2013). Attitudes are motivational, perceptive and cognitive beliefs that influence an individual's practice (FAO, 2014). In this study, attitudes referred to beliefs on the importance of appropriate breastfeeding and complementary feeding practices. Attitudes could be positive or negative.

3.4.2.6 Perceptions

Perception is the way an individual interprets and organises sensation to produce a meaningful experience through one's senses (Lindsay & Norman, 1977). In other words, when an individual is confronted with a situation, the person will interpret the situation into something meaningful to him or her, based on prior experiences, even if the interpretation may greatly differ from the reality. This, therefore, shows that perception is often limited by an individual's existing beliefs, attitudes, motivation, and personality (Assael, 1995). In this study, perception referred to how parents and caregivers understood and interpreted appropriate IYCF practices. Just like attitudes, perceptions result in positive or negative interpretation of a situation.

3.4.2.7 Practices

This refers to the customary, habitual or expected way of doing things (Schatzki, Knorr-Cetina & Von Savigny, 2001). In this study, practices referred to the habitual ways of feeding infants and young children.

3.4.2.8 Community leader/ Local leader

This is a designation for a person that is perceived to represent a community (Anderson, O'Loughlin & Salt, 2001). In this study, a community leader was a person who represented a village or several villages and their leadership was tied to custom.

3.4.2.9 Responsibilities

This refers to the legal rights, duties and powers that an individual has (Eekelaar, 1991). In this study, parental responsibilities were the rights, duties and powers in decision making that parents had for a child in relation to infant and young child feeding.

3.4.3 Delimitations of study

This study was conducted in Mzimba-north district, Malawi. The participants were parents and caregivers with children aged below 24 months and local leaders from the study area. The study covered the parents' and caregivers' nutrition KAP and perceptions on IYCF. The assessment of nutrition knowledge and attitudes was on breastfeeding, the benefits of exclusive breastfeeding and complementary feeding. Parents and caregivers of children below six months were asked if they had given the child any food or water in addition to breast milk, while parents and caregivers of older children (six to 24 months) were asked to recall without quantifying what the child ate during the previous 24 hours to assess their IYCF practices. The study also assessed the perceptions of parents, caregivers and local leaders of their roles and

responsibilities in IYCF. This study did not assess the children’s nutritional status and nutrient intake.

3.5 Study setting

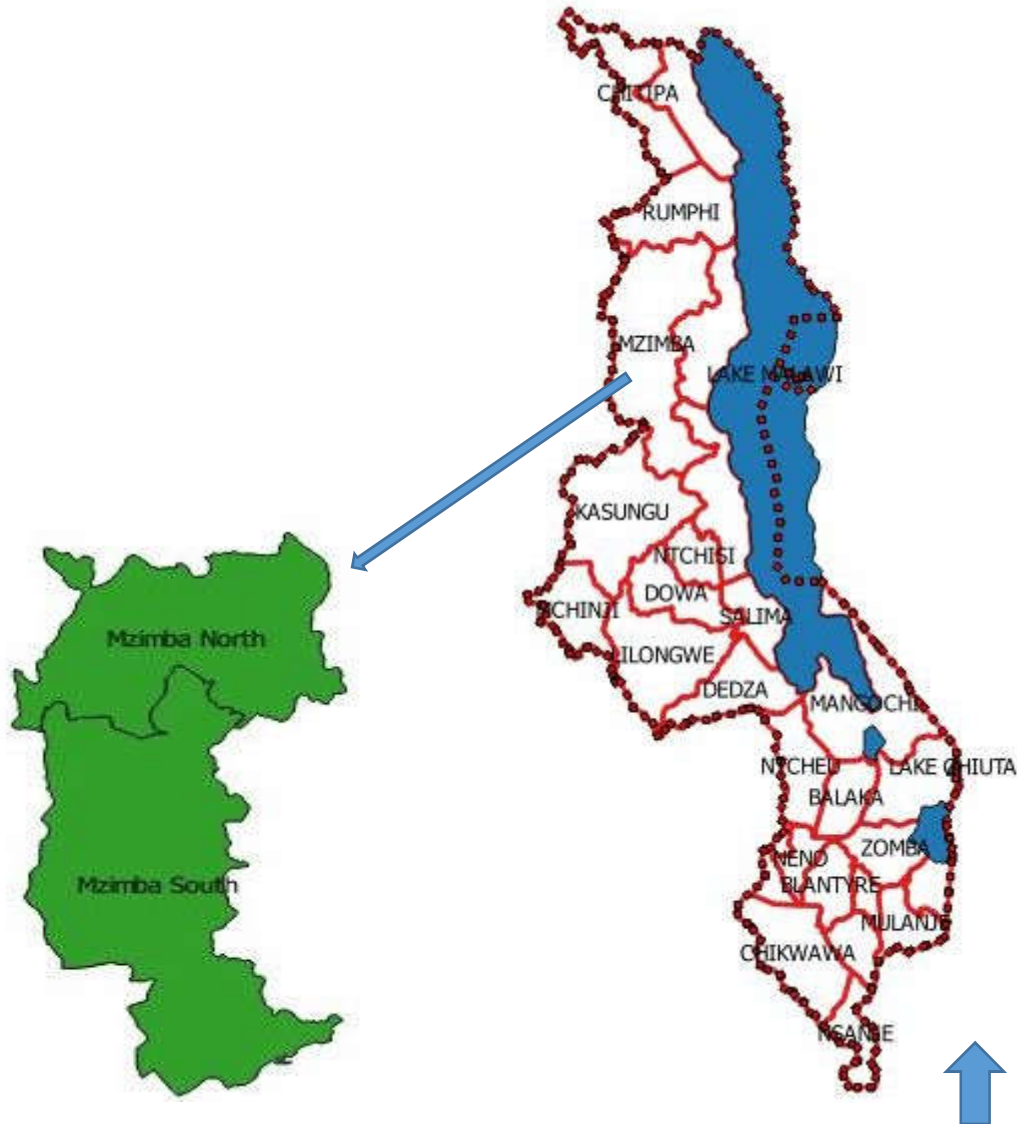


Figure 3-3: Map of Malawi showing enlarged Mzimba district

The study was conducted in Mzimba District in Malawi. The district is the largest in the northern region, and in Malawi as a whole. It is a rural setting that covers a total area of 10,430 square kilometres, ranging from plains to plateaus. It has an average annual rainfall of 3500mm. The mean temperature ranges between 15.5 to 19.8 degrees Celsius with the highest temperature experienced in October and the lowest in June and July. The cropping season generally is between November and April. The major economic activity is subsistence farming that involves maize and tobacco cultivation and livestock rearing, especially cattle and goats.

In 2008, the district had a population of 724,873 that represented 5.5 % of the country's population and had an average household size of 5.1. The population density was 70 persons per square kilometre (NSO & UNICEF, 2008). At the time of conducting this study, the district had 50 health facilities of which four were rural hospitals, 40 health centres and six dispensaries. Many people in the district have limited access to health services due to a poor and inadequate delivery system. For instance, people have to travel for about two hours to reach the nearest health centre for treatment. Drugs in hospitals in many cases are short in supply and disease incidence is high. The common diseases leading to morbidity and mortality in Malawi include malaria and HIV and AIDS related diseases. In addition, many people are prone to water related diseases such as diarrhoea and dysentery due to limited access to potable water (NSO & UNICEF, 2008; NSO, 2011).

Mzimba district is administratively divided into two areas (Mzimba North and Mzimba South) in both the Ministries of Health and Agriculture. In the Ministry of Agriculture, the district is further divided into extension planning areas (EPA). An EPA is defined as a basic agricultural or administrative unit composing several villages where farmers are located and can access information (Masangano & Mthinda, 2012). At the time of the study, there were a total of 22 EPAs in the district of which nine were in Mzimba-north and 13 in Mzimba-south. In the Ministry of Health there is further division related to health centres. There were 15 health centres in Mzimba north and 25 health centres in Mzimba south.

For this study, five EPAs in Mzimba-north were conveniently selected to participate. These areas were selected because they were close to where the researcher lived and as such they were convenient for the researcher to conduct the study with limited resources. In addition, the EPAs were located within the same boundaries of Mzimba-north for both the Ministries of Health and Agriculture and this made it easier to obtain the sampling frame for the study. The selected EPAs included Zombwe, Bwengu, Emsizini, Njuyu and Engucwini.

3.6 Methodology in the quantitative domain

3.6.1 Study design

In order to determine and describe the proportion of fathers, mothers and caregivers involved in IYCF and to assess their nutrition KAP on IYCF, a prospective cross sectional survey design was used. This study design was chosen because it enabled the researcher to assess and describe the exposure and outcome variables at the same time (Kumar, 2014).

3.6.2 Sampling

Bhattacharjee defines sampling as a process of choosing a subset of a population of interest with the aim of making observations and statistical inferences of that population (Bhattacharjee, 2012). The unit of analysis for this study was households that had children aged zero to 24 months. A household was defined as a person or a group of people who were related or unrelated and were living together in the same dwelling unit and were making common provisions for food by eating together or sharing the same grain store (NSO & ICF Macro, 2011). The study used the biological parents (fathers and mothers) of these children. Where the parents were not available, the caregivers formed the sampling frame. The sampling frame refers to a list of all the people or subjects relevant to the study (Fox, Hunn & Mathers, 2007). In this study, a list of households (the sampling frame) comprising mothers, fathers and caregivers who had children aged zero to 24 months was obtained from the health clinics/health centres in the five EPAs of Mzimba-north district, Malawi. This age group of children (zero to 24 months) was selected because it is during this time that children are more susceptible to malnutrition (WHO, 2009).

In order to select the sample, the study applied a stratified random sampling technique. First, the list of households that had biological mothers, fathers and caregivers of children aged zero to 24 months was obtained from the health centres within the selected EPAs. The list was then divided into categories according to the ages of the children as follows: less than six months, six to 12 months and >12 to 24 months. Households that had a child in more than one age category were classified based on the age of the oldest child. This was done to minimise the influence of the parents' and caregivers' child feeding experiences on their knowledge of feeding the younger child.

Once the whole list was classified, a simple random sampling technique, using random number tables, was applied in each age group to select the respondents to participate in the survey. Stratified random sampling was selected to ensure that each particular stratum or category of individuals was represented in the sampling process (Fox *et al.*, 2007).

3.6.3 Sample size calculation

The sample size was calculated considering the primary objective of assessing the nutrition knowledge of both parents (fathers and mothers) and caregivers with children in the age groups; less than six months, six to twelve months and >12 to 24 months. The trend for a mother's (including female caregivers) nutrition knowledge of feeding children in the three age groups

was considered. Assuming mothers' adequate nutrition knowledge proportions of 0.7 for feeding children aged less than six months, 0.55 for feeding children in the age group six months to 12 months and 0.35 for feeding children >12 months to 24 months, a sample size of 52 households per age group was calculated using nQuery computer software version 7. (0.7, 0.55, 0.35- refer to proportions of mothers with adequate nutrition knowledge per age group respectively). The sample size was calculated to have at least 52 female participants (mothers and caregivers) per age group and 90% power to detect a linear trend when testing at 0.05 level of significance.

The sample size for the study was therefore calculated to be:

$$= 52 \text{ households} \times 3 \text{ age groups}$$

$$= 156 \text{ households}$$

This translated into the number of participants ranging from 156 to 312 (156 female participants and 156 male participants) depending on the availability of male participants within the household.

3.6.4 Inclusion and exclusion criteria

Households were included in the study if they had children from zero to 24 months of age and were living within the selected five EPAs of Mzimba-north district, Malawi, namely Emsizini, Zombwe, Engucwini, Bwengu and Njuyu. The participants also had to be 18 years of age and older. Households were excluded if the child had health complications (including disability) that affected their feeding practices and if the participant did not consent.

3.6.5 Data generating instrument

A validated semi-structured questionnaire that had been used by the FAO in Africa (including Malawi) to assess women's nutrition KAP on IYCF was modified to come up with four semi-structured questionnaires (for male and female participants; two for assessing nutrition KAP of participants with children below six months of age and another two for assessing nutrition KAP of participants with children six to 24 months) that were used for this study (Macías *et al.*, 2014). The FAO questionnaire was modified by adding questions to assess parental involvement in IYCF and including a list of local foods for both the male and female nutrition KAP questionnaires. In addition, the FAO questionnaire was modified to address males for the male nutrition KAP questionnaires. The questionnaires (addenda 1 and 2 for assessing nutrition KAP of participants with children <six months and 3 and 4 for assessing nutrition KAP of

participants with children six to 24 months) were used to determine the proportion of mothers, fathers and caregivers involved in IYCF, and to assess the nutrition KAP of both the female participants (mothers and female caregivers) and the male participants (fathers and male caregivers).

The questionnaires covered the following areas: parental and caregivers' involvement in IYCF, nutrition KAP of parents and caregivers on feeding children zero to 24 months. The questionnaires for parents and caregivers with children below six months of age had 37 questions (eleven on knowledge, six on attitudes and seven on practices). The questionnaires for parents six to 24 months had 32 questions (seven on knowledge, seven on attitudes and 13 on practices). The questionnaires had both closed and open ended questions and were administered by the researcher and research assistants (*see paragraph 3.6.8*).

The questionnaires which were originally in English were translated to the local language (Tumbuka) by the communications officer from the Ministry of Agriculture, who is fluent in both English and Tumbuka. Another communications officer, who had not been involved in the first translation, back translated the questionnaires to English. Thereafter, the original questionnaires were compared with the questionnaires that had been translated from the local language to English to ensure that the questionnaires retained the same intended meaning. This was done to increase the reliability of the questionnaires (Naidoo *et al.*, 2015). The translated questionnaires were then piloted within the district in Emsizini EPA to further check if the translation of the questionnaires had maintained the intended meaning (*see paragraph 3.6.7*).

3.6.6 Recruitment and training of research assistants

Four research assistants were involved in administering the questionnaires. These research assistants were selected based on their knowledge of the local language, which is Tumbuka, culture and their experience in research work. The use of research assistants to administer the questionnaires helped in reducing non response bias (Kothari, 2004). The research assistants were trained by the researcher for three days to familiarise them on the questionnaires and the filling out thereof. The topics for the training covered the study objectives, data collection and interviewing techniques to ensure quality data, research ethics and a review of the data collection instruments used in this study.

3.6.7 Pilot study

The translated questionnaires were piloted one week prior to the data collection (*see paragraph 3.6.8 on data collection*) within the study area with participants who were not part of the main

study, but possessed similar characteristics as the study participants. Eight questionnaires were administered to the participants; to four female participants (three to mothers and one to a caregiver) and to four male participants (fathers). Piloting the questionnaire was necessary to estimate the time for completion of a questionnaire. It has been observed by Dillman (2000) that when participants are kept for a long time to answer a questionnaire, they often become bored and give questionable responses in order to finish the whole exercise in a rush. Thus it is advisable to keep the questionnaires as short as possible. Piloting the questionnaires also allowed the researcher to assess the clarity of the questions used, and how both the participants and the research assistants understood the questions. Additions were made to the questionnaires to include foods that were locally found as well as changes in some of the words that were not clear to the respondents. For instance, *Likuni phala* (porridge made from maize and soy bean flour) and *nsima* (thick porridge that is eaten with *ndiwo*, which is a side dish consisting of cooked beans, eggs, fish, meat or vegetables) were added to the list of foods. Finally, piloting the survey questionnaires enabled the research assistants to get acquainted with the actual rigorous process of data collection.

3.6.8 Data collection

The questionnaires were administered by the researcher and four research assistants in the local language (Tumbuka) to 156 households that had children from the age of zero to 24 months. The participants were given informed consent forms (addendum 5) which they signed before the questionnaires were administered. The participants were allowed time for consideration to participate in the study. The researcher and research assistants read out the questions to the participants and recorded the participant's responses on the questionnaires. Both the father and mother of the child were interviewed separately and where the parents were not available, caregivers were interviewed. A total of 285 participants (156 female participants and 129 male participants) were interviewed. The questionnaire took an average of 40 to 50 minutes per participant to complete.

The data collection exercise was done during weekdays from 25 January to 19 February 2016, taking a total of 20 days. The researcher was the overall supervisor checking the quality of data that were collected.

3.6.9 Data management

To maintain the quality of the data that were collected, research assistants were required to check the completed questionnaires to verify if they had been correctly filled out before going

to the next household. A mark (a tick) was put in the top corner on all the questionnaires that had been checked by the research assistants. The researcher cross checked the filled questionnaires at the end of each day and any discrepancies were being referred to the responsible research assistant for the correction thereof. At the end of the day all research assistants met with the researcher to review and discuss problems encountered and areas necessitating improvement.

3.6.10 Data capturing and cleaning

Data from the questionnaires were entered into Microsoft excel 2013 for analysis. Data entry was done by three research assistants (data entry team) who were not part of the four research assistants involved in the data collection. These research assistants were selected based on their knowledge of Microsoft Excel. A password was put on the computers used for data entry to ensure that the information was kept confidential.

Data cleaning was performed before analysis to check outliers, that all variables from the questionnaire had been entered correctly and that they matched those in the data set. The researcher physically compared the information on all the questionnaires with the data set on Microsoft excel before data analysis.

3.6.11 Data analysis

Analysis of the data was done using Stata version 14.0 and Microsoft Excel version 2013. Frequencies were used to summarise the data (Kumar, 2014). The Chi-square, Fisher's exact and McNemar's tests were used to compare the participants' nutrition KAP. Testing was done at 0.05 level of significance.

3.6.11.1 Knowledge

The parents' and caregivers' nutrition knowledge was measured through multiple choice questions. The responses were analysed and further put into binary classifications of whether the parents and caregivers had knowledge of a particular area or not. The parents and caregivers were classified to have knowledge, i.e. "knows" when they gave correct answers or "did not know" when the respondent gave a wrong answer. For the questions that had several correct answers, the participant were classified as "knows" when they gave at least one possible correct answer, and they were classified as they "did not know" when the respondent gave no correct answer. Participants who were classified as "knows" on a particular question were given a score of one, while those that were classified as "did not know" were given a score of zero. The total knowledge score for each participant was calculated by adding the scores on each

question where the participant was classified as “knows”. Mean scores for knowledge per question were calculated using the formula by Macias *et al.* (2014) as follows:

$$\text{Mean score of knowledge per question} = \frac{\text{sum of correct responses given by all respondents}}{\text{total number of respondents}}$$

3.6.11.2 Attitudes

Attitudes were measured by using a three point scale: having a positive response, a negative response and a neutral response. The parents’ and caregivers’ responses were analysed and further put into binary classifications of whether the parents and caregivers had positive or negative attitudes towards appropriate IYFC. The parents and caregivers were classified to have positive attitudes when they gave a positive response and were given a score of one, and to having negative attitude when they gave a negative response and were given a score of zero. The total attitude score for each participant was calculated by adding the scores on each attitude statement where the participant gave a positive response. The mean scores for each question was calculated by using the formula by Macias *et al.* (2014):

$$\text{Mean score of attitude per question} = \frac{\text{sum of scores of all respondents}}{\text{total number of respondents}}$$

3.6.11.3 Practices

Parents and caregivers were also asked multiple choice questions regarding their practices in feeding the children. The questions covered areas on how the children were breastfed, the type of food given to the child in the previous 24 hours and the number of times the child was given food. The responses given by the parents on the number of times the child was given food was then compared to the WHO recommendations (FAO, 2014, WHO, 2003). The parents’ and caregivers were classified to have “good practices” when they reported to having fed the children according to the recommended IYCF practices and were classified to have “poor practises” when they did not follow the recommended IYCF practices. Since this study was conducted during the rainy season, which is also the hunger season in Malawi, participants with children aged >12 to 24 months were also asked to recall the type of food they provided during the months of April to September 2015 to assess if season affected their feeding practices. The parents’ and caregivers’ responses were analysed and further put into binary classifications of whether the parents had reported good or poor practices. Frequencies and proportions were used to summarise the data.

3.6.11.4 Comparison on performance in knowledge, attitudes and practices between male and female participants

The Chi-square and Fisher's exact tests were used to compare the nutrition KAP on IYCF of the male and female participants and for the comparison of the trend in nutrition KAP on IYCF over two of the age groups (six to 12 months and >12 to 24 months) for male and female participants. For the households, where data were collected for both the mother and father, the McNemar's test for symmetry was also used to compare their nutrition KAP.

3.6.12 Validity and reliability

Validity in quantitative research is defined as a demonstration that a "particular instrument measures what it is supposed to measure" (Cohen, Manion & Morrison, 2007). Reliability is defined as the ability of a method or instrument to provide the same answer repeatedly under similar conditions (Kumar 2014). In this study, the following measures were put in place to ensure validity and reliability of the measurements:

- i) Households that participated in the study were selected by using simple random sampling, therefore each household in the target group had a chance of being selected. This ensured that a representative sample was drawn from the wider population. Random sampling ensures that "unknown influences" are distributed evenly within the sample (Preece, 1994), thus reducing the effect of sampling bias.
- ii) The study used questionnaires that were developed from modifying a FAO validated questionnaire (Macías *et al.*, 2014). The questionnaires were translated and administered in the local language (Tumbuka). The translation of the questionnaire was done by using the recommended procedures (*see paragraph 3.6.5*).
- iii) The questionnaires were piloted within the district to adapt them to the local setting (*see paragraph 3.6.7*).
- iv) The research assistants, who were involved in the data collection, were trained on the questionnaires and on how to fill them to ensure that the process of collecting information was done in the correct manner and also consistently.
- v) Data entry was done by three research assistants and the researcher verified the data entered with the information on the questionnaires before data analysis.
- vi) The study obtained ethical approval (*see paragraph 3.8.1*).

3.7 Methodology in the qualitative domain

3.7.1 Introduction

According to Polit and Beck, qualitative research is “the investigation of the phenomenon in an in-depth and holistic fashion through the collection of rich narrative materials using a flexible research design” (Polit & Beck, 2008). Kumar (2014) further explains that qualitative research follows an open, flexible and unstructured approach to an enquiry, aiming at exploring diversity and emphasising the description and narration of feelings, perceptions and experiences.

3.7.2 Study design

Both exploratory and descriptive study designs were used in this study. The exploratory research design is defined by Kumar (2014) as a study with the objective of exploring an area where little is known. The descriptive research on the other hand is a study where the main focus is to systematically portray a situation, problem or phenomenon (Kumar, 2014). The descriptive and exploratory designs allowed the researcher to:

- i) explore and describe the roles and responsibilities of parents and caregivers in IYCF;
- ii) explore and describe the parents’ and caregivers perceptions of IYCF;
- iii) identify and describe the factors that affected parental and caregivers’ involvement; and
- iv) identify ways of improving parental involvement in IYCF in Mzimba-north district, Malawi.

This approach enabled the researcher to collect rich and informative data from the parents with children aged zero to 24 months, as well as from local leaders.

3.7.3 Sampling

The study used purposive sampling. This is a sampling technique that allows the researcher to use judgement to select participants who can best provide the information needed to achieve the study objectives (Kumar, 2014). The data were collected through FGDs and in-depth interviews and were collected after completion of the quantitative part of the study. For the FGDs, the researcher sampled only those parents/ caregivers with children below the age of two years, who were not part of the quantitative study to participate, using the same sampling frame used for the quantitative part of the study (*see paragraph 3.6.2*). For the in-depth interviews, key informants, consisting of local leaders, were selected. The area has a total of 45 local leaders and these formed the sampling frame for in-depth interviews. The use of FGDs

and in-depth interviews assisted the researcher to triangulate the information obtained with the quantitative findings (Mack, Woodsong, MacQueen, Guest & Namey, 2005).

3.7.4 Inclusion and exclusion criteria

3.7.4.1 Inclusion and exclusion criteria for focus group discussions

Participants were included for the study if they were parents or caregivers of children from zero to 24 months of age, aged 18 years and older, and lived within the study area. They were excluded if they had participated in the quantitative part of this study (survey) and if participants did not consent.

3.7.4.2 Inclusion and exclusion criteria for in-depth interviews

Participants were included if they were traditional local leaders, aged 18 years and older and lived within the study area. They were excluded if they had participated in the quantitative part of this study (survey) and if they did not consent.

3.7.5 Preparation for data collection

3.7.5.1 Interview guide development

Three interview guides (addendum 6, 7 and 8) were developed to guide the discussions for the FGDs with women and men, and in-depth interviews. The interview guides were developed for each of the groups (one was for guiding male FGDs, one for guiding female FGDs and one for guiding local leaders' in-depth interviews). The development of the interview guides was guided by the socio-ecological model of health behaviour (Sallis, Owen & Fisher, 2008) and the Ecological model on barriers to prevention of mother to child transmission (Busza, Walker, Hairston, Gable, Pitter, Lee, Katirayi, Simiyu & Mporu, 2012). These models give a good understanding of a range of factors that influence human behaviour. Human behaviour is influenced by factors relating to the individual and the environment. Similarly, parental and caregivers' participation in IYCF is influenced by several factors that include intrapersonal factors, socio-cultural factors and factors that relate to the health system and policies. The intrapersonal factors are those factors that relate directly to the individual, and the socio-cultural factors include cultural factors, economic factors and religious factors (Sallis *et al.*, 2008).

The interview guides guided the discussions to focus on the topic (parental involvement in IYCF) and to get the information the researcher wished to obtain (Botma, Greeff, Mulaudzi & Wright, 2010). They also helped the researcher to probe more on the factors that influence parental and caregivers' involvement in addition to collecting data on the roles and

responsibilities of the biological parents and caregivers in IYCF. The three interview guides which were prepared in English, were translated to the local language (Tumbuka) and back translated to English by a communications officer from the Ministry of Agriculture following the recommended procedure (Naidoo *et al.*, 2015). The interview guides were piloted within the study area (*see paragraph 3.7.6*)

3.7.5.2 Arrangements for focus group discussions

A list of mothers, fathers and caregivers who did not participate in the quantitative part of the study but had children below two years of age were identified with the help of local extension workers (from both the Ministries of Agriculture and Health), based on availability and willingness to participate in the study. The extension workers held a meeting with the identified parents and caregivers to set dates when the identified parents and caregivers would be available for FGDs two weeks in advance. The aim and objectives of the study were explained to the parents and caregivers. Permission to use the EPA conference rooms was also obtained. One week prior to the interviews, the extension workers from the Ministry of Agriculture in the area made phone calls to the participants to confirm their participation and to remind them of the time and venue for the discussions. The time and date for the discussions were dependent on the participants' availability.

3.7.5.3 Arrangements for in-depth interviews

Field workers from the Ministries of Agriculture and Health were consulted to identify influential local leaders within the study area who could participate in the study. The field workers visited the identified participants to make appointments with them two weeks in advance. During this visit the participants were informed about the aims and objectives of the study. The time and venue for the interviews were determined by the participants in order to enhance comfort and free sharing of information/ views.

3.7.6 Pilot study

The interview guides (addendum 6, 7 and 8) for the FGDs and in-depth interviews were piloted within the study area with participants who were not part of the main study. Two focus group discussions (one with mothers and one with fathers) and one in-depth interview with one local leader were held. The participants for the pilot test were excluded from the main study. Piloting the interview guides ensured that the questions were clear to the participants and that they would lead to collection of rich data. A quiet room, that was easily accessible for participants, was arranged for the discussions and interviews. For the FGDs, chairs were arranged in a circle

to allow for face to face discussions (Krueger & Casey, 2002). Changes with regards to some words used on the translated (Tumbuka) interview guides were made to ensure that participants understood the questions.

3.7.7 Data collection

Data were collected through FGDs and in-depth interviews. This led to the collection of data that were detailed and rich as the participants were free to share their ideas (Kumar, 2014). A total of eleven FGDs (*see paragraph 3.7.7.1*) and three in-depth interviews (*see paragraph 3.7.7.2*) were conducted.

3.7.7.1 Focus group discussion

A focus group is a qualitative method of data collection where one or two researchers meet a group of participants to facilitate a discussion on a research topic (Dawson, 2002; Mack *et al.*, 2005). The FGDs added information to the data collected in the survey in the quantitative domain. It also allowed for the collection of data that were comprehensive and with multiple view points of the parents' and caregivers' perceptions of IYCF, the roles of mothers, fathers and caregivers in IYCF and on the factors that affected their involvement thereof (Mack *et al.*, 2005; Botma *et al.*, 2010). The FGDs for male and female participants (fathers and mothers; not from the same household) were held separately. A total of five FGDs with male participants and six FGDs with female participants were conducted during weekdays from 22 February to 4 March 2016. Participants for the FGDs were from Bwengu, Zombwe, Engucwini and Emsizini EPAs in Mzimba North.

At the beginning of each session, the researcher briefly described the procedure for the group discussions, including the objectives of the study and areas on which the questions were to be asked. The researcher also set out participatory ground rules that were honoured during the discussion. Participants were assured that they could withdraw at any time during the discussions, and that confidentiality of the information provided would be ensured. Before each session began, participants signed an informed consent form (addendum 5) and pseudo names were assigned to each participant. (Time was allowed for the participants to consider their participation in the study.) An audio recorder was used to record the interviews and participants gave verbal consent to have the discussions recorded. The participants were seated in a circular sitting arrangement that is conducive for group discussions as it allows for face to face interactions (Krueger & Casey, 2002). The mothers and fathers had their discussions separately

to ensure that responses from each group were not influenced by the presence of another group. The size of the groups ranged from six to eleven participants (Krueger & Casey, 2014).

The researcher facilitated the discussions and had a research assistant who operated the audio tape and took field notes during the discussions. The researcher used communication skills, such as paraphrasing of the questions and probing where less details were provided, in order to get as much data as possible. The main questions asked were: “What are the roles of mothers and fathers in infant and young child feeding?”, “Why are the mothers, fathers and caregivers given such roles?”, “What are the perceptions of fathers, mothers and caregivers with regards to IYCF?”, “What are the factors that affect mothers and fathers participation in IYCF?” and “How can parents’ involvement in IYCF be improved?” The interview guides (addendum 6 and 7) for the FGDs were used to ensure that the questions had been adequately covered. The duration of the discussions ranged from 60 to 70 minutes. At the end of each session participants were given an opportunity to ask questions. Thereafter, the researcher wrapped up the discussion, thanked the participants for their participation and turned off the audio recorder. The FGDs were conducted until a data saturation point was reached, i.e. no new information was gathered (Kumar, 2014). Refreshments were served at the end of each FGD.

3.7.7.2 In-depth interviews

Mack *et al.* (2005) define in-depth interview as a “technique designed to elicit a vivid picture of the participant’s perspective on the research topic.” For this study, the interviews were conducted using an interview guide (addendum 8) at the time set by the participants at their homes so that they were comfortable in sharing the information. A total of three in-depth interviews were conducted from 9 to 11 March 2016. Participants for the in-depth interviews were from Bwengu, Zombwe and Emsizini EPAs.

In order to learn more from the participants and get rich data, the participants, who were interviewed, were considered as experts; whereas the researcher, who was the interviewer, assumed the role of the student (Mack *et al.*, 2005). The researcher had a research assistant whose role was to operate the audio tape and take field notes during the interviews. The researcher briefly described the interview process, including the objectives of the study, the topic to be discussed (IYCF) and the need to obtain informed consent. Participants were assured that they could withdraw at any time during the interviews, and that confidentiality of the information provided would be ensured. The participants signed informed consent (addendum 5) before the interview and gave verbal consent to have the discussion recorded. (Time was

allowed for the participants to consider their participation in the study.) An audio recorder was used to record the interviews and was tested before the interviews. Each participant was given a pseudo name which was used throughout the interviews.

The researcher interacted with the participants by asking questions in a neutral manner, listening attentively to participants' responses, and asking follow-up questions and probing based on participants' responses (Mack *et al.*, 2005). The main questions for the in-depth interviews were: "What are the roles of mothers, fathers and caregivers in IYCF?", "What is the role of local leaders in IYCF?", "Why are the roles given to the mothers, fathers, caregivers and local leaders respectively?", "What are the parents' and caregivers' perceptions with regards to IYCF?", "What are the factors that affect mothers, fathers and caregivers participation in IYCF?" and "How can the parents' and caregivers' involvement in IYCF be improved?" The interview guide (addendum 8) for the in-depth interviews was used to ensure that the topic (parental involvement in IYCF) had been adequately covered. The interviews lasted an average of 40 to 50 minutes per session. The discussions were facilitated beyond the mentioned questions. At the end of each interview session, the participant was given a chance to ask questions. Thereafter, the researcher turned off the audio recorder and thanked the participant for making themselves available for the interview. The interviews were conducted until a data saturation point was reached, i.e. no new information was obtained (Kumar, 2014). Refreshments were served at the end of each interview.

3.7.7.3 Data analysis

Data analysis is defined as the systemic organisation and the synthesis of the research data (Polit & Beck, 2008). In this study, Creswell's method of data analysis was used. The analysis was manually done. This method involved transcribing the interviews, coding the data, identifying and describing themes, presenting findings and interpreting the data (Botma *et al.*, 2010). The field notes were used to complement the texts allowing for fuller analysis of the data. Figure 3.4 presents the steps that were used in the data analysis process.

Transcribing the interviews

The in-depth interview and focus group data consisted of audio recordings and field notes. Data were transcribed verbatim (in Tumbuka) from the audiotape by the researcher.

Coding

The transcripts were carefully read together with the field notes to make sense of the data. After reading through each transcript, the researcher wrote her thoughts in English on the margins.

After reading all transcripts, a list of topics related to the study objectives and questions in the interview guide was made and similar topics were grouped together. The topics were used to code the data for all the transcripts. The data from the field notes and audio recordings were compared and used to complement each other. The coding followed the order in which the data were collected, i.e. male FGDs, female FGDs and in-depth interviews with local leaders. Categories were further derived from the coded content under each topic and categories that were related were put together. Participant quotes on each identified topic were written in English under each topic. Finally, the information belonging to each category were put together.

Identifying and describing themes

The themes emerging from the FGDs and in-depth interviews were identified and each theme was given a description. The themes were developed from both the narratives of the participants (in the FGDs and in-depth interviews) and the generated topics and categories. Theme identification was done separately for each group (group by group by gender) in the same order as the coding of data.

Presenting findings and interpreting the data

The findings are presented in line with the themes, starting with the findings from the FGDs followed by findings from the in-depth interviews. Frequency and intensity of participants' comments (by counting) were used to explain the data. Quotes from the participants' were used to demonstrate the link between the data and the results (Brink, Van der Walt & Van Rensburg, 2006).

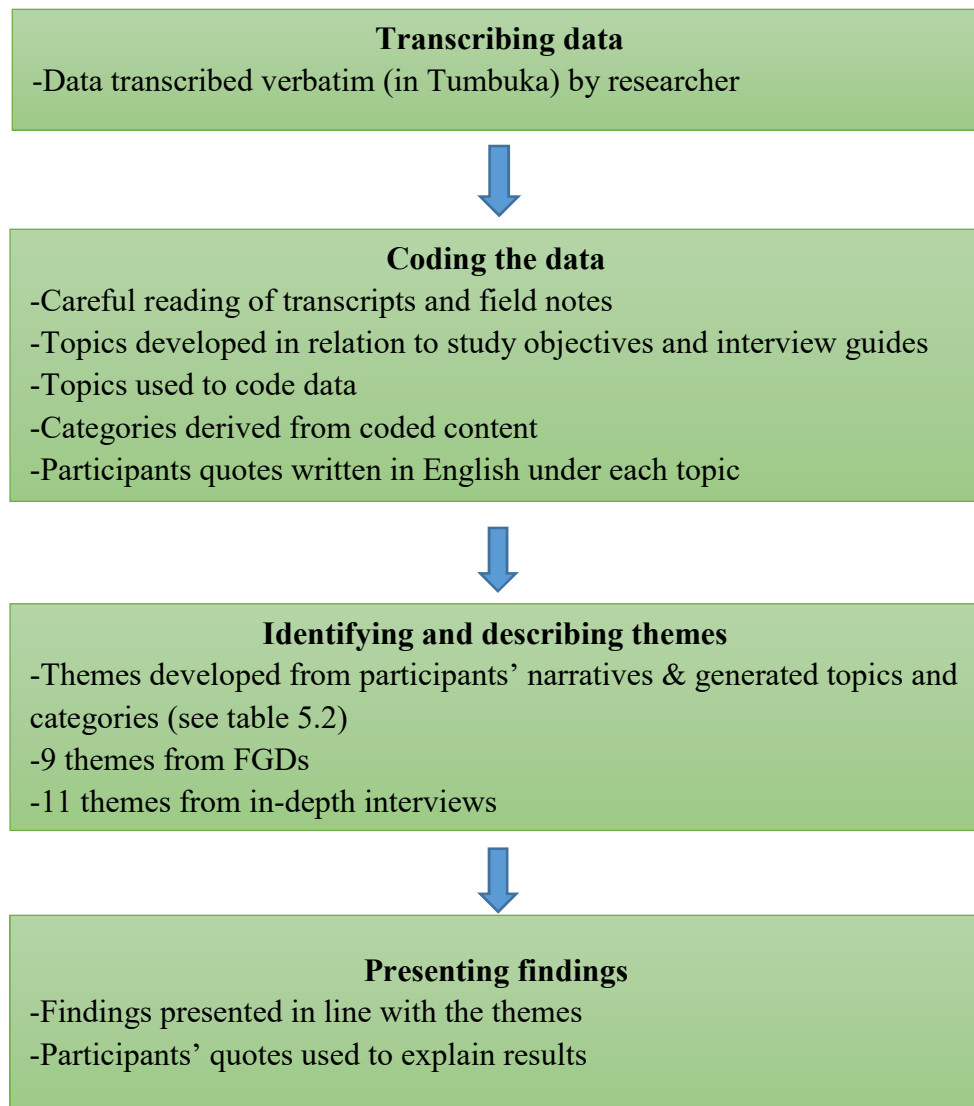


Figure 3-4: Data analysis process (adapted from Botma *et al.*, 2010)

3.7.8 Trustworthiness in qualitative research

Johnson (1997) argued that if the validity or trustworthiness in qualitative studies could be maximised, it could lead to a more “credible and defensible result” leading to improvements in generalising of the findings in a given context. Trustworthiness refers to the degree of confidence qualitative researchers have in their data (Polit & Beck, 2008). There are four epistemological standards according to Guba and Lincoln (1982) and Botma *et al.* (2010) that are used in establishing trustworthiness. These include truth value, applicability, consistency and neutrality. These epistemological standards were used in this study to establish trustworthiness.

3.7.8.1 Truth value

Truth value is used to determine if the researcher has confidence in the true findings from participants (Botma *et al.*, 2010). This study used the principle of triangulation to ensure the study findings were credible. The study used methodologies in two research domains, quantitative and qualitative. In addition the same set of questions were asked to mothers, fathers and local leaders to obtain the different viewpoints and in a way making sure that a full and accurate understanding of the topic is obtained.

A pilot study had also been conducted before the main study. The pilot study allowed for the researcher to assess the clarity of the questions for the participants and whether the use of the interview guides assisted in capturing the information that was intended to be captured. This also ensured obtaining information that was true.

3.7.8.2 Applicability

Applicability is the degree to which study findings are applicable to different groups and contexts. It is the ability to generalise study findings to a larger group by applying the transferability strategy (Botma *et al.*, 2010). The data were collected until a data saturation point was reached. Clear descriptions of the participants, the methods and the sampling used in the study are presented to enable the readers to assess the application of the study results in other similar settings. This study used purposive sampling and data were collected in five EPAs of Mzimba-north district, Malawi. As such, generalisation of the study results would probably be applicable to the parents and caregivers within Mzimba-north district, Malawi.

3.7.8.3 Consistency

Consistency is considered if similar study findings can be obtained when the inquiry will be replicated with the same participants in a similar context (Botma *et al.*, 2010). A clear description of the methodology, the sampling methods, the investigators and all the steps used in the study are presented in detail. This makes it possible to replicate the study and to assess whether the findings from this study are trustworthy in respect to consistency.

3.7.8.4 Neutrality

Neutrality refers to the degree to which study findings are a function solely of the informants and other conditions in the absence of other biases (Botma *et al.*, 2010). Data were collected separately from two sets of parents (mothers/ female caregivers and fathers/ male caregivers) in both the quantitative and qualitative research domains, which controlled for response bias

and allowed for the findings in the qualitative domain to be checked against the findings in the quantitative domain. The questionnaires in the quantitative study were administered to the males and females separately and separate FGDs were conducted for the mothers and fathers (from different households) in the qualitative study.

3.8 Ethical approval and consideration

According to Belmont Report (1974) three basic ethical principles relevant to research involving human subjects include respect for persons, beneficence and justice. To adhere to these principles, the researcher followed these steps during the research:

3.8.1 Ethical approval

The researcher obtained approval for the study from the University of Pretoria, Faculty of Natural and Agricultural Sciences ethics committee - no. EC151204-26 (addendum 9). In addition, verbal approval to conduct the study was also sought from the Ministry of Agriculture, Mzuzu Agriculture Development Division, Malawi; where the study was conducted.

3.8.2 Informed consent

Informed consent means that the participants have adequate information regarding the research and are aware of the possible risks and benefits and they consent to participate in the study voluntarily (Polit & Beck, 2008). The participants were informed about the research study, and were allowed time for considering their participation in the study. Verbal and written consents were obtained from all the participants. Participation was therefore voluntarily. Upon voluntarily accepting to participate in the study, participants were required to sign a consent form and for those who could not read and write, verbal consent was provided in the presence of a witness. The informed consent (addendum 5) contained the aim, the objective and significance of the study. The rights and risks of the study were explained to the participants. Information on the benefits of the study, the role of the researcher, the coding that was used for data collection to ensure anonymity of the participants and permission from the ethics committees were explained to the participants. At the end of each interview session, participants were also given an opportunity to ask questions. For the qualitative domain, participants also gave verbal consent to have the conversations audio recorded.

3.8.3 Beneficence

Beneficence entails maximising possible benefits and minimising possible harm on the participants (Polit & Beck, 2008). The researcher ensured that the research was not harmful to

participants by avoiding sensitive and intrusive questions and keeping to the agreed length of time for both the FGDs and in-depth interviews.. In addition, anonymity and confidentiality were also maintained throughout data collection, analysis, and report writing.

3.8.4 Justice

Justice refers to being fair with the participants (Belmont Report, 1974) with respect to participating in the study when the participants meet the selection criteria. Household members from the study area who had children aged between zero to 24 months, who voluntarily accepted to participate in the study and met the inclusion criteria of the study, formed part of the sampling frame. No participant was discriminated against based on ethnicity, sex, occupation or education level.

3.9 Assumptions for the study

Leedy and Ormrod (2010) describe “assumptions as so basic that, without them, the research problem itself cannot exist.” Assumptions are often beyond the control of the researcher (Simon & Goes, 2011). This study has two key assumptions.

Firstly, the use of a cross-sectional survey through the administration of a validated semi-structured questionnaire, conducting of key informant interviews and FGDs implicitly assumed that participants would respond truthfully or give honest answers. This was a reasonable assumption, because the researcher ensured that anonymity and confidentiality of the participants were preserved at all time through the use of codes and pseudo names during data collection, analysis and report writing. In addition, participants were allowed to participate in the survey without being forced, which meant that they could decline to participate without any negative consequences. Furthermore, the objectives, risks, rights and any possible benefit from the study were clearly explained to the participants. With these measures, it was highly likely that only participants who were willing, felt confident and trusted the researcher took part in the study; thereby answering the questions truthfully.

Secondly, the study assumed that the participants who were sampled to participate in the survey (quantitative domain) represented the population of interest in the study area. The assumption was realistic because the representativeness of the sample was achieved by applying a random sampling technique and using a probability sample size formula to determine the sample size.

3.10 Limitations for the study

The study used a single non-quantified 24 hour dietary recall to obtain information on the child's feeding practices. In addition, parents who had children aged 13 to 24 months were asked to recall the type of foods they had given to the child the previous year. As such, the study findings are subject to recall bias as the parents might have reported the generally acceptable practices or might have forgotten the foods consumed by the child. Therefore, the reported practices might not have fully reflected the feeding practices of the infants and young children.

Data for the study were only collected during the rainy season, which is also the hunger period in Malawi. As such, these findings might not have fully reflected the feeding practices of the infants and young children for Mzimba-north district throughout the year.

Due to the qualitative nature of a part of this study, the study findings cannot be generalised, but were meant for exploring the nutrition KAP and perceptions on IYCF of the parents and caregivers with children aged zero to 24 months in Mzimba-north district. However, the quantitative findings were supportive of the findings from the qualitative part of the study.

The attitude statements on the questionnaire were stated in a positive manner. This could have resulted in the participants responding positively due to the statements leading them. However, it was part of the standardised questionnaire (Macías *et al.*, 2014).

The FGDs were conducted by the researcher, who was also a nutrition officer in the district. This might have influenced the responses of the participants to report good feeding practices, so called response bias. However, the findings from the qualitative study were supportive of the quantitative findings.

The FGDs and in-depth interviews were conducted in the local language (Tumbuka). This might have had an effect on interpreting the results of the study although the interviews and data analysis were done by the researcher, who is fluent in both Tumbuka and English.

The translation of the transcripts from the FGDs and the in-depth interviews from Tumbuka to English were done by the researcher who also conducted the interviews. This may have introduced bias. The use of an independent translator would have helped to minimise the bias.

CHAPTER 4

RESULTS IN THE QUANTITATIVE DOMAIN

4.1 Introduction

This study was conducted on households that had children in the age group of zero to 24 months, and the parents of the children were engaged as the study participants. Where the parents were not available, caregivers were interviewed. For each household, both biological parents (father and mother) of the child were separately interviewed to assess their nutrition KAP on IYCF. The participants were split into three groups depending on the age of their children (i.e. less than six month, six to 12 months and >12 to 24 months). The results from the quantitative study are presented in three sections. The first part (part 4.2) is a summary of bio-socio-demographic characteristics of the participants. The second part (part 4.3) shows the proportion of parents and caregivers involved in IYCF. Finally, the third part (part 4.4) gives the findings on parental and caregivers' nutrition KAP with respect to IYCF. In each part, the results are presented for children less than six months, followed by the results for children six months to 24 months. This is because of the differences in feeding practices, namely exclusive breastfeeding for children below six months vs complementary feeding for children six to 24 months.

The Chi-square, Fisher's exact and McNemar's tests were used in analysing the quantitative results. The Fisher's exact and Chi-square tests were used in analysing all the results, i.e. making comparisons between all the male and female participants. A few differences were observed in the results from the Fisher's exact and the Chi-square test; i.e. few significant differences between the mothers and fathers were observed on the same KAP responses for the two tests and these will be highlighted. The McNemar's test was only conducted for households where both the mother and father participated. For the McNemar's test, the households were grouped into two groups: those with children below six months and those with children six to 24 months. The P-values from the Fisher's exact have been used in presenting most of the results unless otherwise indicated.

4.2 Bio-socio-demographic characteristics of participants

This section presents the bio-socio-demographic characteristics of both the parents and caregivers who participated, and the children who were being referred to in the study.

4.2.1 Bio-socio-demographic characteristics of participants with children below six months

Table 4.1 presents the bio-socio-demographic characteristics of the parents and caregivers who had children below six months of age.

Table 4-1: Bio-socio-demographic characteristics of the participants with children below six months of age (n = 94)

Characteristics	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	Total (n = 94) Frequency (%)
Relationship with child			
Mother	-	52 (100)	52 (55.3)
Father	42 (100)	-	42 (44.7)
Age of participant			
<20 years	-	13 (25.0)	13 (13.8)
20 to 24 years	7 (16.7)	15 (28.8)	22 (23.4)
25 to 29 years	12 (28.6)	13 (25.0)	25 (26.6)
30 to 34 years	9 (21.4)	6 (11.5)	15 (16.0)
>34 years	14 (33.3)	5 (9.6)	19 (20.2)
Marital status			
Single	-	2 (3.8)	2 (2.1)
Married	42 (100)	48 (92.7)	90 (95.7)
Separated	-	2 (3.8)	2 (2.1)
Education level			
None	1 (2.4)	3 (5.8)	4 (4.3)
Primary	23 (54.8)	35 (67.3)	58 (61.7)
Secondary	18 (42.9)	14 (26.9)	32 (34.0)
Source of income			
Farming	20 (47.6)	12 (23.1)	32 (34.0)
Small business	6 (14.3)	12 (23.1)	18 (19.1)
Part time employment	7 (16.7)	13 (25.0)	20 (21.3)
Farming and small business	4 (9.5)	6 (11.5)	10 (10.6)
Others	5 (11.9)	9 (17.3)	14 (14.9)

A total of 94 participants with children below the age of six months participated in this study of which the majority (55.3%) were females. More than half (54.7%) of the male participants were aged 30 years and older, while more of the female participants (53.8%) were below the age of 25 years. More than half of the participants (54.8% males and 67.3% females) had primary education as their highest level of qualification. A higher proportion of male

participants (42.9%) had attained secondary schooling compared to the females (26.9%). Farming was reported as the main source of income by 34.0% of the participants, followed by part time employment (21.3%).

The study targeted both the father (or male caregiver) and mother (or female caregiver) from each household. However, some of the households were female headed (there were no fathers or male caregivers) and therefore the study had more female participants than male participants. The household size is presented by using the mothers' and female caregivers' responses only. A total of 52 households participated in this age group (<six months); ten of which were female headed households. Almost a quarter (23%) of the households had a large household size with eight to ten occupants (refer to Figure 4.1).

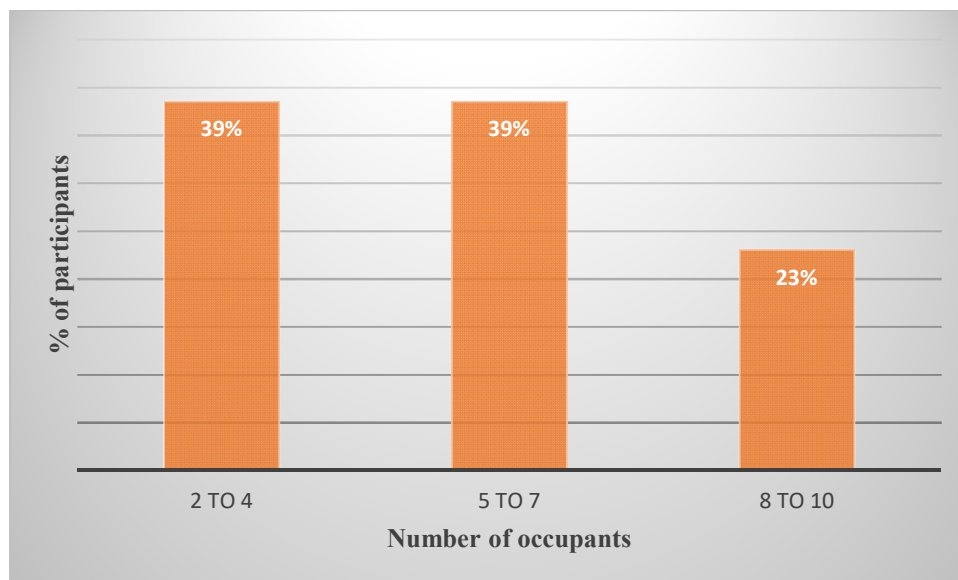


Figure 4-1: Household size for families with children aged < six months (n = 94)

4.2.2 Bio-socio-demographic characteristics of parents with children six to 24 months

The bio-socio-demographic characteristics of parents with children aged six to 24 months are presented in Table 4.2. The biographic characteristics of the children who were being referred to by the parents are presented in Table 4.3.

Table 4-2: Bio-socio-demographic characteristics of participants with children aged six to 24 months (n = 191)

Participant characteristic	6 to 12 months Frequency (%)		>12 to 24 months Frequency (%)		Total (n = 191)
	Male (n = 43)	Female (n = 53)	Male (n = 43)	Female (n = 52)	
Gender	43 (22.5)	53 (27.8)	43 (22.5)	52 (27.2)	191 (100)
Marital status					
Married	43 (100)	51 (96.2)	43 (100)	46 (88.5)	183 (95.8)
Single	-	-	-	1 (1.9)	1 (1.1)
Divorced	-	-	-	2 (3.8)	2 (2.1)
Separated	-	-	-	1 (1.9)	1 (1.1)
Widowed	-	2 (3.8)	-	2 (3.8)	4 (2.1)
Relationship with child					
Mother	-	51 (96.2)	-	51 (98.1)	102 (53.4)
Father	42 (97.7)	-	43 (100)	-	85 (44.5)
Grandmother	-	2 (3.8)	-	1 (1.9)	3 (1.6)
Grandfather	1 (2.3)	-	-	-	1 (0.5)
Age					
<20 years	3 (7.0)	12 (22.6)	-	10 (19.2)	25 (13.1)
20 to 24 years	6 (14.0)	19 (35.9)	7 (16.3)	10 (19.2)	42 (22.0)
25 to 29 years	12 (28.0)	10 (18.9)	12 (27.9)	11 (21.2)	45 (23.6)
30 to 34 years	9 (21.0)	6 (11.3)	5 (11.6)	12 (23.1)	32 (16.8)
>34 years	13 (30.2)	6 (11.3)	19 (44.2)	9 (17.3)	47 (24.6)
Education					
No education	1 (2.3)	1 (1.9)	1 (2.3)	3 (5.8)	6 (3.1)
Primary education	18 (41.9)	37 (69.8)	20 (46.5)	34 (65.4)	109 (57.1)
Secondary education	24 (55.8)	15 (28.3)	21 (48.9)	15 (28.8)	75 (39.3)
Adult learning	-	-	1 (2.3)	-	1 (0.5)
Source of income					
Farming	23 (53.5)	22 (41.5)	29 (67.4)	23 (44.2)	97 (50.8)
Business	2 (4.7)	4 (7.6)	1 (2.3)	4 (7.7)	11 (5.8)
Part time employment	7 (16.3)	6 (11.3)	3 (7.0)	9 (17.3)	25 (13.1)
Fulltime employment	2 (4.7)	3 (5.7)	-	-	5 (2.6)
Farming and others	9 (20.9)	18 (33.9)	10 (23.3)	16 (30.8)	53 (27.7)

A total of 191 participants, with nearly equal proportions of those with children aged six to 12 months (50.3%) and those with children aged >12 to 24 months (49.7%), participated in the study. Most of the participants were married (95.8%) and were the biological parents of the child (53.4% were mothers and 44.5% were fathers) with the rest being grandparents (2.1%). The trend in the participants' age was similar to that of participants with children below six months of age, where most of the male participants were aged 30 years and above (51.2% and 55.8% for males with children in the age group six to 12 months and >12 to 24 months respectively). Most of the female participants were below 24 years of age (58.5% and 38.4% for females with children in the age group six to 12 months and >12 to 24 months respectively). More than half of the participants (57.1%) had attended primary school and only 3.1% of the participants had had no formal education. It was also observed that more of the male participants (55.8% with children six to 12 months and 48.9% with children >12 to 24 months) reported to have attained secondary education in comparison to females (28.3% with children aged six to 12 months and 28.8% with children aged >12 to 24 months). The majority (50.8%) of the participants reported farming as their main source of income and over a quarter of the participants (27.7%) reported a combination of farming and other sources of income. Nearly a quarter of the participants (23.6%) reported that the children were the first born and second born in both each age categories (Table 4.3). The participants reported that more than half (55.0%) of the children were females.

Table 4-3: Socio-demographic characteristics of children aged six to 24 months (n = 191)

Characteristic	6 to 12 months (n = 96) Frequency (%)	>12 to 24 months (n = 95) Frequency (%)	Total (n = 191) Frequency (%)
Gender			
Male	23 (42.7)	25 (47.4)	47 (45.0)
Female	30 (57.3)	27 (52.6)	58 (55.0)
Position of child in family			
First	15 (29.2)	9 (17.9)	25 (23.6)
Second	12 (22.9)	13 (24.2)	25 (23.6)
Third	11 (20.8)	9 (17.9)	20 (19.4)
Fourth	8 (14.6)	9 (16.8)	16 (15.7)
Fifth	7 (12.5)	12 (23.2)	19 (17.8)

A total of 105 households participated in the age group six to 24 months of which 19 were female headed. Figure 4.2 shows the household size of the participants that had children aged six to 24 months.

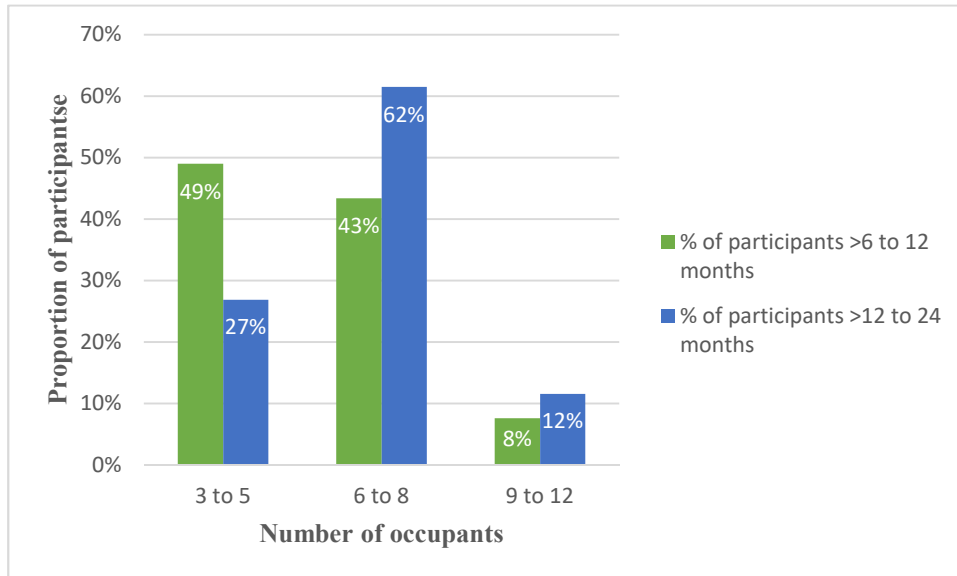


Figure 4-2: Household size for families with children six to 24 months (n = 191)

The majority of participants (62%) who had children aged >12 to 24 months had a bigger household size in comparison to the participants who had children aged six to 12 months (Figure 4.2).

4.3 Parental and caregivers' involvement in infant and young child feeding

The proportion of parents involved in IYCF was determined by assessing the parents' and caregivers' responsibility to feed the child, to purchase food for the young children and mothers, and the responsibility of decision making on exclusive breastfeeding and complementary feeding.

4.3.1 Parental and caregivers' involvement in infant feeding below six months of age

To determine the parental and caregivers' involvement in infant feeding, the participants were asked questions on their participation in child feeding and in making decisions related to breastfeeding of the baby (Table 4.4). A significantly higher proportion of female participants (71.2%) than male participants (42.9%) reported that mothers were the main decision makers on exclusive breastfeeding ($P = 0.007$). When asked to mention the person who fed the child when the mother was not around, nearly equal proportions of participants reported fathers (9.6%) and grandmothers (11.7%) to take on this responsibility. A significantly higher

proportion of female participants (92.3%) than male participants (61.9%) reported that such a situation had never happened before because the mothers always carried the child with them whenever they travelled or when working ($P = 0.001$). Interestingly, more than half (67.7%) of the male participants reported that mothers were encouraged to exclusively breastfed the babies, while the majority of the mothers (57.7%) reported not being encouraged. Out of the participants who reported mothers being encouraged, only 18.1% mentioned that the husbands encouraged the mothers to exclusively breastfeed compared to the majority (35.1%) who reported that mothers got information to encourage breastfeeding from the clinics. When the participants were asked about whom had the responsibility to ensure that a baby is exclusively breastfed, a significantly higher proportion of females (80.8%) compared to males (52.4%) mentioned that it was the responsibility of the mothers ($P = 0.004$). On the other hand, a higher proportion of the males (38.1%) compared to females (19.2%) mentioned that it was the responsibility of both parents to ensure that the baby is exclusively breastfed. When asked whether additional food was bought for mothers because they were breastfeeding, most females (57.7%) reported that no additional food was bought, while most males (52.4%) mentioned that additional food was bought. Soft drinks (29.8%) were the additional food commonly purchased for breastfeeding mothers, followed by rice (9.6%). Comparisons within the households, using McNemar's test, also found significant differences between the male and female participants' responses on who made decisions on exclusive breastfeeding ($P = 0.020$), who fed the child when the mother was not around ($P = 0.020$) and who had the responsibility to ensure that the baby was exclusively breastfed ($P = 0.026$) (*results are not shown*).

Table 4-4: Parental and caregivers' participation in feeding infants below six months of age (n = 96)

Question on parental participation	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	P-value*	Total (n = 94) Frequency (%)
Who makes decisions on exclusive breastfeeding?			0.007	
Mother	18 (42.9)	37 (71.2)		55 (58.5)
Father	8 (19.0)	4 (7.7)		12 (12.8)
Follows doctors' advice	1 (2.4)	4 (7.7)		5 (5.3)
Both mother and father	15 (35.7)	7 (13.5)		22 (23.4)
Who feeds the child when mother is not around?			0.001	
Father	7 (16.7)	2 (3.8)		9 (9.6)
Grandmother	9 (21.4)	2 (3.8)		11 (11.7)
Never happened before	26 (61.9)	48 (92.3)		74 (78.7)
Is mother encouraged to exclusively breastfed?			0.023	
Yes	28 (66.7)	22 (42.3)		50 (53.2)
No	14 (33.3)	30 (57.7)		44 (46.8)
How is mother encouraged to exclusively breastfeed?			0.063	
Words of encouragement at the clinic	18 (42.9)	15 (28.8)		33 (35.1)
Words of encouragement by husband	10 (23.8)	7 (13.5)		17 (18.1)
No response (no encouragement)	14 (35.7)	30 (57.7)		44 (46.8)

Continued...

Table 4-4: Parental and caregivers' participation in feeding infants below six months of age (n =96) continued

Question on parental participation	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	P-value *	Total (n = 94) Frequency (%)
Who has the responsibility to ensure that baby is exclusively breastfed?			0.004	
Mother	22 (52.4)	42 (80.8)		64 (68.1)
Father	4 (9.5)	-		4 (4.3)
Both mother and father	16 (38.1)	10 (19.2)		26 (27.7)
Is food bought for the breastfeeding mother?			0.407	
Yes	22 (52.4)	22 (42.3)		44 (46.8)
No	20 (47.6)	30 (57.7)		50 (53.2)
What type of food is bought for the breastfeeding mother?			0.702	
Watery foods (mineral drinks)	14 (33.3)	14 (26.9)		28 (29.8)
Soaked rice**	4 (9.5)	5 (9.6)		9 (9.6)
Watery foods, rice and maize flour	3 (7.1)	1 (1.9)		4 (4.3)
Bread and sugar	1 (2.4)	2 (3.8)		3 (3.2)
None	20 (47.6)	30 (57.7)		50 (53.2)

Percentages calculated based on total number of responses.

**P-values for Fisher's exact*

***=Rice is soaked in cold water until soft and then eaten by the breastfeeding mothers*

4.3.2 Parental and caregivers' participation in feeding infants and young children aged six to 24 months

The study also assessed the participation of parents and caregivers with children aged six to 24 months in IYCF. On the responsibility to feed infants and young children across the two age groups (six to 12 months and >12 to 24 months), a significantly higher proportion of female participants (73.6% and 73.1% with children aged six to 12 and >12 to 24 months respectively) perceived child feeding as the mother's responsibility, while more than half (53.5% and 62.8% with children aged six to 12 and >12 to 24 months respectively) of the males reported that child feeding was a shared responsibility between the mother and father ($P= 0.000$ for participants with children aged six to 12 months and $P= 0.007$ for participants with children aged >12 to 24 months). Figure 4.3 shows the distribution of participant responses on the responsibility to feed infants and young children.

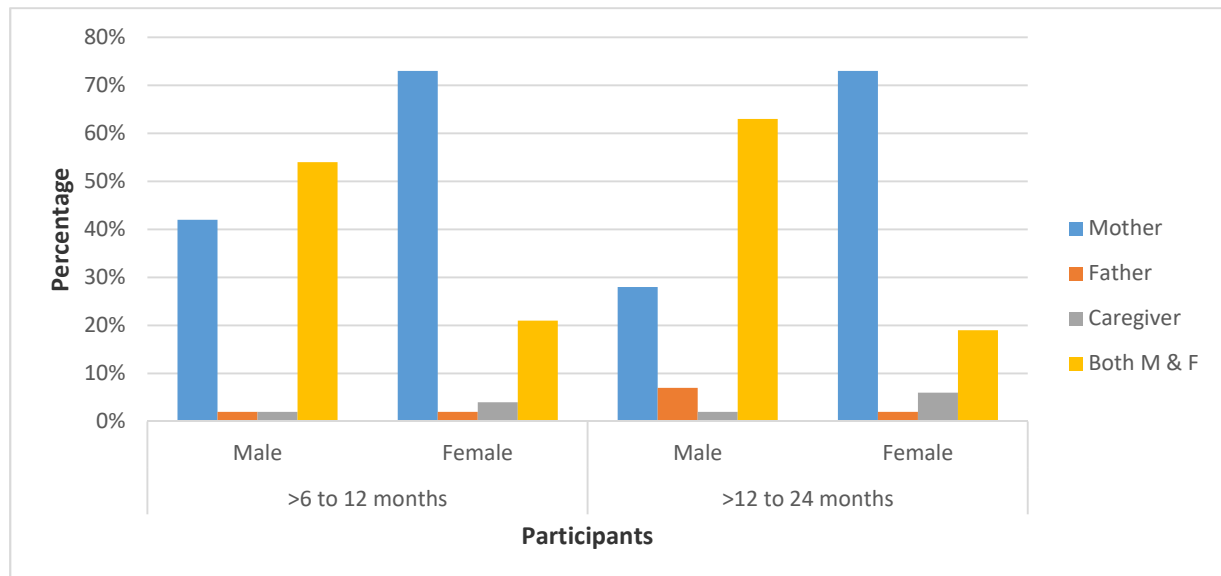


Figure 4-3: Participants' responses on responsibility to feed the children (n = 191)

Participants were also asked questions with regard to introducing complementary feeding and the responsibilities that parents had in IYCF. The participants' responses are presented in Table 4.5. A significantly higher proportion of female than male participants (73.6% vs 60.5% with children aged six to 12 months and 63.5% vs 51.2% with children aged >12 to 24 months) said that mothers made the decisions on when to introduce complementary feeding ($P = 0.027$ for participants with children six to 12 months and $P = 0.024$ for participants with children aged >12 to 24 months). Similarly, more female than male participants (69.8% vs 51.2% with children aged six to 12 months and 75.0% vs 55.8% with children aged >12 to 24 months)

reported it was the mothers' responsibility to introduce complementary foods. The differences between the two gender groups were significant ($P = 0.010$ for participants with children aged six to 12 months and $P = 0.016$ with children aged >12 to 24 months). When asked if participants bought food specifically for the child, the majority of participants (80.6%) reported that food was bought specifically for the child. Significant differences were observed for participants with children aged six to 12 months on their responses with regard to who had the responsibility to buy the food ($P = 0.001$). More female participants than males (20.7% vs 9.3%) said the responsibility was that of mothers. However, more male participants than females (66.8% and 60.4%) said fathers had this responsibility. A higher proportion of male participants (34.9%) than female participants (19.9%) also responded that it was a shared responsibility. With regard to the responsibility of decision making on buying food for children, a higher proportion of participants (33.0%) mentioned fathers to be responsible for deciding on food purchasing, and that it was the fathers who bought the food (48.2%). A notable proportion (29.8%) indicated that both parents were involved in making decisions. The differences in participant responses between the two age groups were not significant ($P > 0.05$). For comparisons within the household using McNemar's test, significant differences were found between the male and female participants' responses on who had the responsibility to introduce complementary feeding ($P = 0.013$) and who had the responsibility to buy food ($P = 0.021$) (*results not shown*).

Table 4-5: Parental and caregivers' participation in infant and young child feeding for children aged six to 24 months (n = 191)

Questions on parental participation	6 to 12 months Frequency (%)		P-value*	>12 to 24 months Frequency (%)		P-value*	Total Frequency (%) (n = 191)	P- Values**	
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)			Male	Female
Who makes decision to introduce complementary feeding?			0.027			0.024		0.277	0.349
Mother	26 (60.5)	39 (73.6)		22 (51.2)	33 (63.5)		114 (59.7)		
Father	6 (14.0)	5 (9.4)		7 (16.3)	5 (9.6)		29 (15.2)		
Both mother and father	10 (23.2)	9 (17.0)		12 (27.9)	11 (21.1)		42 (22.0)		
Caregivers	1 (2.3)	-		2 (4.7)	3 (5.8)		6 (3.1)		
Whose responsibility is it to introduce complementary feeding?			0.010			0.016		0.424	0.274
Mother	22 (51.2)	37 (69.8)		24 (55.8)	39 (75.0)		122 (63.8)		
Father	4 (9.3)	1(1.9)		7 (16.3)	-		12 (6.3)		
Grandmother	2 (4.7)	4 (7.6)		2 (4.7)	1 (1.9)		9 (4.7)		
Both mother and father	15 (34.9)	11 (20.8)		10 (23.2)	12 (23.1)		48 (25.2)		
Do they buy food specifically for the child?			0.202			0.478		0.571	0.663
Yes	38 (88.4)	42 (79.3)		35 (81.4)	39 (75.0)		154 (80.6)		
No	5 (11.6)	11 (20.7)		8 (18.6)	13 (25.0)		37 (19.4)		

Continued...

Table 4-5: Parental and caregivers' participation in infant and young child feeding for children aged six to 24 months (n = 191) continued

Questions on parental participation	6 to 12 months Frequency (%)		P- value*	>12 to 24 months Frequency (%)		P – value*	Total (n =191) Frequency (%)	P- value**	
	Male (n =43)	Female (n =53)		Male (n = 43)	Female (n =52)			Male	Female
Who has the responsibility to buy food for child?			0.001			0.059		0.220	0.019
Mother	4 (9.3)	11 (20.7)		1 (2.3)	9 (17.4)		25 (13.1)		
Father	23 (66.8)	31 (60.4)		31 (72.1)	30 (57.7)		116 (60.7)		
Grandmother	-	1 (1.9)		-	1 (1.9)		2 (1.1)		
Both parents	15 (34.9)	10 (19.9)		11 (25.6)	12 (23.1)		48 (25.1)		
Who makes decisions on buying food for child?			0.420			0.463		0.832	0.669
Mother	5 (11.6)	10 (18.9)		6 (14.0)	12 (23.1)		33 (17.3)		
Father	18 (41.9)	18 (34.0)		15 (34.9)	12 (23.1)		63 (33.0)		
Grandmother	-	-		-	1 (1.9)		1 (0.5)		
Both parents	15 (34.9)	14 (26.4)		14 (32.6)	14 (26.9)		57 (29.8)		
Don't buy	5 (11.6)	11 (20.8)		8 (18.6)	13 (25.0)		37 (19.4)		
Who buys food?			0.113			0.144		0.695	0.497
Mother	7 (16.3)	12 (22.6)		8 (18.6)	14 (26.9)		41 (21.5)		
Father	29 (67.4)	21 (39.6)		25 (58.1)	17 (32.7)		92 (48.2)		
Grandmother	1 (2.3)	6 (11.3)		-	1 (1.9)		8 (4.2)		
Both parents	1 (2.3)	3 (5.7)		2 (4.7)	7 (13.5)		13 (6.8)		
Don't buy	5 (11.6)	11 (20.8)		8 (18.6)	13 (25.0)		37 (19.4)		

Percentages calculated based on total number of responses, *P-Values for Fisher's exact, **=P-Value for differences between the two age groups

4.4 Parental and caregivers' nutrition knowledge, attitudes and practices in infant and young child feeding

4.4.1 Parental and caregivers' nutrition knowledge in feeding infants below six months

To assess the parents and caregivers' nutrition knowledge of feeding infants below six months, the participants were asked questions on the food they gave to new born babies, their understanding of exclusive breastfeeding and on how mothers could keep up their breast milk supply. Table 4.6 presents the participants' mean scores of correct answers on nutrition knowledge on feeding infants below six months. Female participants had a higher mean score (72.3 %) on nutrition knowledge in comparison to the male participants (63.8%). However, the differences were not significant ($P = 0.157$). Both the male and female participants had high mean scores (100%) on the knowledge on the first food a baby should receive. Participants scored more than 80% on the benefits of exclusive breastfeeding for the child, but had lower knowledge scores (28.6% for males and 42.3 for females) on the benefits of exclusive breastfeeding for the mother. Interestingly, male participants had higher knowledge scores compared to female participants (67% vs 64%) on the ways a mother could keep up her milk supply. Significant differences between the male and female participants' knowledge scores were observed on their knowledge of the meaning of exclusive breastfeeding ($P = 0.046$) and the frequency for breastfeeding infants up to six months ($P = 0.006$).

Table 4-6: Participants' mean scores (%) on nutrition knowledge on feeding infants below six months of age (n = 94)

Knowledge of infant feeding	Male (n = 42) Score (%)	Female (n = 52) Score (%)	P-value*	Total (n = 94) Score (%)
Correct answers on first food a baby should receive	100	100	-	100
Correct answers on time taken for baby to breastfeed after birth	61.9	76.9	0.096	76.9
Correct answers on the meaning of exclusive breastfeeding	50	63.5	0.046	57.4
Correct answers of the period recommended for exclusive breastfeeding	66.7	84.6	0.050	76.6

Continued...

Table 4-6: Participants' mean scores (%) on nutrition knowledge on feeding infants below six months of age (n = 94) continued

Knowledge on infant feeding	Male (n = 42) Score (%)	Female (n = 52) Score (%)	P-value*	Total (n = 94) Score (%)
Correct answers on the reason why breast milk is the only food recommended for infants up to six months	57.1	61.5	0.534	59.6
Correct answers on the frequency for breastfeeding an infant for zero to six months	85.7	100	0.006	93.6
Correct answers on the benefits for baby that is exclusively breastfed	85.7	82.7	0.782	84
Correct answers on the benefits for the mother that is exclusively breastfeeding her baby	28.6	42.3	0.199	36.2
Correct answers on ways a mother can keep up her milk supply	66.7	63.5	0.808	64.9
Correct answers on how working mothers can continue providing breast milk when separated from child	35.7	52.9	0.146	44.7
Total mean score	63.8	72.3	0.157	68.5

**P-value for Chi-square*

Table 4.7 presents the distribution of individual scores for the participants' knowledge on feeding infants zero to six months. More female participants (21.2%) had a score of eight out of ten, while more male participants (23.8%) had a score of seven. However, there was no significant difference in the individual knowledge scores between the male and female participants ($P = 0.765$).

Table 4-7: Total knowledge scores of participants on feeding infants below six months of age (n = 94)

Score (out of ten)	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	Total (n = 94) Frequency (%)
Two	1 (2.4)	1 (1.9)	2 (2.1)
Three	2 (4.8)	1 (1.9)	3 (3.2)
Four	4 (9.5)	3 (5.8)	7 (7.5)
Five	5 (11.9)	4 (7.7)	9 (9.6)
Six	5 (11.9)	6 (11.5)	11 (11.7)
Seven	10 (23.8)	10 (19.2)	20 (21.3)
Eight	6 (14.3)	11 (21.2)	17 (18.1)
Nine	8 (19.1)	10 (19.2)	18 (19.2)
Ten	1 (2.4)	6 (11.5)	7 (7.5)

Detailed information on the participants' responses regarding the specific knowledge questions on exclusive breastfeeding is presented in Table 4.8. The majority (97.9%) of the participants knew that breast milk was the first food to be provided to a new born. However, more of the male participants (38.1%) compared to female participants (23.0%) did not know the recommended time for initiation of breastfeeding after birth (which is within one hour). The majority of the participants (95.7%) had heard about exclusive breastfeeding. Despite this, a smaller proportion of both male and female participants (50.0% of males and 63.5% of females) knew the meaning of exclusive breastfeeding. The majority of the participants (86.2 %) had good knowledge of the duration recommended by the WHO for exclusive breastfeeding, which is six months. The participants also had good knowledge of the frequency of breastfeeding; only 5.3% of the participants (all males) did not know the recommended breastfeeding frequency. With regard to ways a mother could keep up her breast milk supply, close to half of the participants (45.2% males and 44.2% females) mentioned having a balanced diet, where as 19.0% of the males and 25.0% of the females did not know. A total of 14.3% of the males and 11.5% of the females had the misconception that eating fresh cassava and soaked rice helped in increasing a mother's breast milk supply. A high proportion of the participants (71.4% of males and 57.7% of females) did not know the benefits for the mother who is exclusively breastfeeding while, only 14.3% of the males and 17.3% of the females did not know the benefits for the baby who is exclusively breastfeeding. More female participants (52.9%) in comparison to the males (35.7%) knew that working mothers could express their breast milk

and keep it for the baby's use when the mother was separated from her child. For comparisons within the households, no significant differences were found between the male and female participants responses to the knowledge questions ($P > 0.05$) (*results not shown*).

Table 4-8: Participants' responses to knowledge questions on feeding infants below six months of age (n = 94)

Question on nutrition knowledge on infant feeding	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	P- value*	Total (n = 94) Frequency (%)
What is the first food a new born should receive?			0.500	
Only breast milk	42 (100)	50 (96.2)		92 (97.9)
Thin porridge	-	2 (3.8)		2 (2.1)
How long should it take for baby to receive breast milk after birth?			0.200	
Immediately within one hour	26 (61.9)	40 (76.9)		66 (70.2)
More than 1 hour after	5 (11.9)	6 (11.5)		11 (11.7)
Doesn't know	11 (26.2)	6 (11.5)		17 (18.1)
Have you ever heard of exclusive breastfeeding?			0.037	
Yes	38 (90.5)	52 (100)		90 (95.7)
No	4 (9.5)	-		4 (4.3)
What is the meaning of exclusive breastfeeding?			0.207	
Infant feeds on breast milk only without any other liquids	21 (50.0)	33 (63.5)		54 (57.4)
Infant frequently breastfeeds	15 (35.7)	11 (21.2)		26 (27.7)
Doesn't know	6 (14.3)	8 (15.4)		14 (14.9)

Continued...

Table 4-8: Participants' responses to knowledge questions on feeding infants below six months of age (n = 94) continued

Question on nutrition knowledge in infant feeding	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	P- value*	Total (n = 94) Frequency (%)
What is the recommended period for exclusive breastfeeding?			0.670	
Birth to six months	37 (88.1)	44 (84.6)		81 (86.2)
<six months	3 (7.1)	4 (7.7)		7 (7.4)
>six months	1 (2.4)	4 (7.7)		5 (5.3)
Doesn't know	1 (2.4)	-		1 (1.1)
Why is exclusive breastfeeding recommended for six months?			0.929	
Breast milk provides all the nutrients and liquids that baby requires	13 (31.0)	16 (30.8)		29 (30.9)
Baby's intestines are not well developed to digest other foods	9 (21.4)	15 (28.8)		24 (25.5)
Doesn't know	10 (23.8)	10 (19.2)		20 (21.3)
Child grows healthy	7 (16.7)	9 (17.3)		16 (17.0)
Prevents diseases	2 (4.8)	1 (1.9)		3 (3.2)
Child is still young to be fed other solids foods	1 (2.4)	1(1.9)		2 (2.1)
How often is it recommended to breastfeed a child below six months?			0.039	
On demand whenever baby wants	31 (73.8)	34 (65.4)		65 (69.1)
Whenever baby cries and when mother wants	6 (14.3)	18 (34.6)		24 (25.5)
Doesn't know	5 (11.9)	-		5 (5.3)

Continued...

Table 4-8: Participants' responses to knowledge questions on feeding infants below six months of age (n = 94) continued

Question on nutrition knowledge in infant feeding	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	P- value*	Total (n = 94) Frequency (%)
What are the benefits for the baby who is exclusively breastfed?			0.283	
Baby grows healthy	32 (76.2)	32 (61.5)		64 (68.1)
Protection from diarrhoea and other infections	1 (2.4)	-		1 (1.1)
Protection against diseases	-	4 (7.7)		4 (4.2)
Baby grows healthy and protects from diarrhoea	1 (2.4)	2 (3.8)		3 (3.2)
Baby grows healthy and protects from diseases	2 (4.8)	5 (9.6)		7 (7.4)
Doesn't know	6 (14.3)	9 (17.3)		15 (16.0)
What are the benefits for the mother who is exclusively breastfeeding?			0.836	
Delays fertility	6 (14.3)	6 (11.5)		12 (12.8)
Helps in losing weight gained during pregnancy	2 (4.8)	4 (7.7)		6 (6.4)
Lowers risks of breast and ovarian cancer	1 (2.4)	2 (3.8)		3 (3.2)
Lowers risks of losing blood after birth	1 (2.4)	2 (3.8)		3 (3.2)
Improves the relationship between mother and baby	1 (2.4)	3 (5.8)		4 (4.3)
Delays fertility and helps in losing weight	-	2 (3.8)		2 (2.1)
Delays fertility and lowers risks of developing cancer	-	2 (3.8)		2 (2.1)
Doesn't know	30 (71.4)	30 (57.7)		60 (63.8)

Continued...

Table 4-8: Participants' responses to knowledge questions on feeding infants below six months of age (n = 94) continued

Question on nutrition knowledge in infant feeding	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	P- value*	Total (n = 94) Frequency (%)
What can a mother do to keep up her milk supply?			0.439	
Breastfeeding exclusively on demand	3 (7.1)	3 (5.8)		6 (6.4)
Having good nutrition (eating well/ having a balanced diet)	19 (45.2)	23 (44.2)		42 (44.7)
Drinking enough liquids during the day	5 (11.9)	2 (3.8)		7 (7.4)
Eating fresh cassava and soaked rice	6 (14.3)	6 (11.5)		12 (12.8)
Having good nutrition and drinking enough liquids	1 (2.4)	5 (9.6)		6 (6.4)
Doesn't know	8 (19.0)	13 (25.0)		12 (22.3)
How can a mother continue giving child breast milk when separated from child?			0.244	
Expressing the milk to be given to the child later	14 (33.3)	27 (51.9)		41 (43.6)
Taking the child with mother to work (ensuring no separation)	7 (16.7)	9 (17.3)		16 (17.0)
Buying other foods	6 (14.3)	4 (7.7)		10 (10.6)
Doesn't know	15 (32.7)	12 (23.1)		27 (28.7)

*P-values for Fisher's exact

4.4.2 Parental and caregivers' nutrition knowledge on infant and young child feeding for parents with children aged six to 24 months

To assess the parents' and caregivers' nutrition knowledge on IYCF for children aged six to 24 months, the participants were asked seven questions on their knowledge of breastfeeding and complementary feeding. Table 4.9 presents the mean scores that were calculated based on the number of correct responses of the participants. Female participants had better nutrition knowledge on IYCF practices for children aged six to 24 months than male participants. This was indicated by a higher mean score (87.1%) on feeding children six to 12 months in comparison to the male participants (67.1%). Similarly, the females also had a higher mean knowledge score (87.1%) on the feeding of children aged above 12 to 24 months compared to their male counterparts (61.4%). However, the differences were not significant ($P > 0.05$). Significant differences were found in the participants' mean scores (with female participants having higher scores than males) on their knowledge of the recommended period to continue breastfeeding ($P = 0.007$ for participants with children aged six to 12 months and $P = 0.004$ for participants with children aged >12 to 24 months), the time for introducing complementary feeding ($P = 0.016$ for participants with children aged six to 12 months and $P = 0.000$ for participants with children aged >12 to 24 months), importance of introducing complementary feeding at six months ($P = 0.030$ for participants with children aged six to 12 months and $P = 0.000$ for participants with children aged >12 to 24 months), the type of porridge to give to a child ($P = 0.030$ for participants with children six to 12 months and $P = 0.000$ for participants with children >12 to 24 months) and the reason for choosing the type of porridge ($P = 0.000$ for participants with children aged >12 to 24 months).

Table 4-9: Participants' mean scores on nutrition knowledge on feeding infants and young children aged six to 24 months (n= 191)

Nutrition knowledge categories	6 to 12 months		P-value*	>12 to 24 months		P-value*
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)	
Knowledge on recommended age for mothers to continue breastfeeding	88.4	100	0.007	72.1	94.2	0.004
Knowledge on time for introducing complementary feeding	69.8	94.3	0.016	67.4	98.1	0.000

Continued...

Table 4-9: Participants' mean scores on nutrition knowledge on feeding infants and young children aged six to 24 months (n= 191) continued

Nutrition knowledge categories	6 to 12 months		P-value*	>12 to 24 months		P-value*
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)	
Knowledge on importance of introducing complementary feeding at six months	55.8	77.4	0.030	25.6	71.2	0.000
Knowledge on type of porridge to give child	44.2	77.4	0.030	37.2	84.6	0.000
Knowledge on the reason for picking the type of porridge	44.2	77.4	0.056	37.2	84.6	0.000
Knowledge on type of food to enrich porridge	100	100	0.936	100	100	0.984
Knowledge on how to encourage child to eat	100	81.1	0.021	90.7	84.1	0.104
Total mean Score	67.1	87.1	0.157	61.4	87.1	0.096

*P-values for Chi-square test

The individual scores (out of a possible maximum of seven) for the participants on the knowledge questions on feeding infants six to 24 months is presented in Table 4.10. Close to half of the female participants (49.1%) with children aged six to 12 months had a score of seven while more male participants (28.0%) had scores of five and six on their knowledge of feeding infants and young children six to 24 months. More female participants (44.2%) with children aged >12 to 24 months had a score of seven on their knowledge of feeding infants and young children six to 24 months compared to male participants (7.0%). The differences in the scores between the two gender groups were significant ($P = 0.007$ for participants with children aged six to 12 months and $P = 0.000$ for participants with children aged >12 to 24 months).

Table 4-10: Total knowledge scores of participants on feeding infants aged six to 24 months (n = 191)

Score (out of seven)	6 to 12 months Frequency (%)		P-value*	>12 to 24 months Frequency (%)		P-value*
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)	
Two	1 (2.3)	-	0.007	5 (11.6)	-	0.000
Three	2 (4.7)	-		10 (23.3)	-	
Four	9 (21.0)	6 (11.3)		9 (20.9)	3 (5.8)	
Five	12 (28.0)	12 (22.6)		6 (14.0)	10 (19.2)	
Six	12 (28.0)	9 (17.0)		10 (23.3)	16 (30.8)	
Seven	7 (16.3)	26 (49.1)		3 (7.0)	23 (44.2)	

*P-values for Chi-square test

With regard to the specific knowledge items (Table 4.11), both gender groups performed very well on the type of food for enriching a child's porridge with all participants responding correctly. Females performed highly on all knowledge items, except on how to encourage a child to eat. Males performed poorly on the importance of introducing complementary feeding, the type of porridge to give to the child and the reasons for choosing the type of porridge with less than 50% of the participants giving correct responses. Female participants generally performed well with more than 70% of the participants giving correct responses on all the questions.

The majority of the participants (83.8%) knew the time to introduce complementary feeding, which is at six months of age. Only 9.9% of the participants did not know the importance of introducing complementary foods at that time. More than half of the participants (62.8%) knew that a child should be provided with thick porridge, while only 37.2 % of the participants mentioned watery porridge. Most of the participants (64.9%) reported giving attention to the child when eating as the way of encouraging the child to eat. Interestingly, more female participants (17.0% with children aged six to 12 months and 17.3% with children aged >12 to 24 months) than male participants (2.3% with children aged >six to 12 months and 4.6% with children aged >12 to 24 months) reported forcing the child to eat as a way of encouraging a child to eat. Significant differences between the two gender groups (with more females giving correct responses than males) were observed on their responses to all of the knowledge questions ($P < 0.05$), except on the importance of introducing complementary food at six

months ($P = 0.164$ for participants with children aged six to 12 months), the type of food to enrich a child's porridge ($P = 0.966$ for participants with children aged six to 12 months and $P = 0.886$ for participants with children aged >12 to 24 months) and how to encourage a child to eat ($P = 0.104$ for participants with children aged six to 12 months and $P = 0.079$ for participants with children aged >12 to 24 months).

For comparisons within households, using McNemar's test, significant differences were found between the male and female participants' responses to all the knowledge questions except on their knowledge on the type of food to enrich a child's porridge ($P = 0.504$), and how to encourage a child to eat ($P = 0.078$) (*results not shown*).

Table 4-11: Participants' responses to knowledge questions on feeding infants and young children aged six to 24 months (n = 191)

Nutrition Knowledge questions	6 to 12 months		P- Value*	>12 to 24 months		P- value	Total (n = 191)	P- value**	
	Frequency (%)			Frequency (%)				Male	Female
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)				
What is the recommended age for mothers to continue breastfeeding?			0.012			0.006		0.064	0.035
6 to 11 months	-	-		1 (2.3)	-		1 (0.5)		
12 to 23 months	5 (11.6)	-		11 (25.6)	3 (5.8)		19 (9.9)		
>23 months	15 (34.9)	16 (30.2)		19 (44.2)	23 (44.2)		73 (38.2)		
24 months	23 (53.5)	37 (69.8)		12 (69.8)	26 (50.0)		98 (51.3)		
When should complementary feeding be introduced?			0.013			0.000		0.115	0.243
6 months	30 (69.8)	50 (94.3)		29 (67.4)	51 (98.1)		160 (83.8)		
< 6 months	10 (23.2)	-		4 (9.3)	1 (1.9)		15 (7.9)		
>6 months	3 (7.0)	3 (5.7)		10 (23.3)	-		16 (8.3)		
What is the importance of introducing complementary food at 6 months?			0.164			0.000		0.016	0.882
Breast milk not sufficient	7 (16.3)	29 (54.7)		10 (23.3)	25 (48.0)		71 (37.2)		
Baby's intestines not fully developed	17 (39.5)	12 (22.6)		1 (2.3)	12 (23.1)		42 (22.0)		
Don't know	6 (14.0)	3 (5.7)		7 (16.3)	3 (5.8)		19 (9.9)		
Child grows healthy	13 (30.2)	9 (17.0)		25 (58.1)	12 (23.1)		59 (30.9)		

Continued...

Table 4-11: Participants' responses to knowledge questions on feeding infants and young children aged six to 24 months (n = 191)
 continued

Nutrition Knowledge questions	6 to 12 months Frequency (%)		P-value*	>12 to 24 months Frequency (%)		P- value*	Total (n = 191)	P-value**	
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)			Male	Female
Type of porridge to give child			0.017			0.000		0.193	0.457
Thick	19 (44.2)	41 (77.4)		16 (37.2)	44 (84.6)		120 (62.8)		
Watery	24 (55.8)	12 (22.6)		27 (62.8)	8 (15.4)		71 (37.2)		
Reason for picking the type of porridge			0.004			0.000		0.237	0.499
Thicker porridge makes the child full	19 (44.2)	41 (77.4)		16 (37.2)	44 (84.6)		120 (62.8)		
Baby's intestines still developing	2 (4.7)	3 (5.7)		4 (9.3)	2 (3.8)		11 (5.8)		
Watery porridge is easy to digest and feed child	15 (34.9)	6 (11.2)		23 (53.5)	6 (11.5)		50 (26.2)		
Doesn't know	7 (16.3)	3 (5.7)		-	-		10 (5.2)		
Type of food to enrich porridge			0.966			0.886		0.184	0.069
Pulses and nuts (soy beans, beans, ground nuts)	9 (20.1)	15 (28.3)		13 (30.2)	17 (32.7)		54 (28.3)		
Vitamin A rich fruits and vegetables (pumpkins)	-	-		2 (4.7)	-		2 (1.0)		
Pulses & nuts and green leafy vegetables (pumpkin leaves, rape)	3 (7.0)	4 (7.6)		1 (2.3)	1 (1.9)		9 (4.7)		
Animal food (milk, eggs and small fish), pulses and nuts	14 (32.6)	14 (26.4)		11 (25.6)	11 (21.2)		50 (26.2)		
Animal food, nuts & pulses and green leafy vegetables	6 (14.0)	6 (11.3)		4 (9.3)	4 (7.7)		20 (10.5)		

Continued...

Table 4-11: Participants' responses to knowledge questions on feeding infants and young children aged six to 24 months (n = 191) continued

Nutrition Knowledge questions	6 to 12 months Frequency (%)		P-value*	>12 to 24 months Frequency (%)		P-value*	Total (n = 191)	P-value**	
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 53)			Male	Female
Type of food to enrich porridge continued									
Pulses, nuts and energy foods (margarine, cooking oil)	5 (11.6)	7 (13.2)		2 (4.7)	2 (3.9)		16 (8.4)		
Other ^a	6 (16.3)	7 (13.2)		10 (23.3)	17 (32.7)		40 (20.9)		
How do you encourage a child to eat?			0.104			0.079		0.663	0.165
Giving child attention	33 (76.7)	39 (73.6)		23 (53.5)	29 (55.8)		124 (64.9)		
Making funny faces	2 (4.7)	3 (5.7)		4 (9.3)	6 (11.5)		15 (7.9)		
Saying encouraging words	2 (4.7)	1 (1.9)		3 (7.0)	1 (1.9)		7 (3.7)		
Drawing child's attention	2 (4.7)	1 (1.9)		4 (9.3)	6 (11.5)		13 (6.8)		
Forcing child to eat	1 (2.3)	9 (17.0)		2 (4.6)	9 (17.3)		21 (11.0)		
Other ^b	3 (7.0)	-		7 (16.3)	1 (1.9)		11 (5.8)		

*P-values for Fisher's exact

**P-values for differences between the two age groups

Other ^a = A combination of Pulses & Nuts (6%), Animal and Energy food (3%) and Animal food, Pulses & Nuts, Vegetables and Energy foods (6%)

Other ^b = clapping hands (2%), modelling how to eat (2%) and other participants did not know (2%)

In order to assess participants' knowledge on the enrichment of the porridge that was given to infants and young children, participants were asked to mention the food items which could be added to porridge to increase nutrient density. The number of food groups mentioned are presented in Figure 4.4. In the age category of children aged six to 12 months, more than half of the male and female participants (52% and 51% respectively) mentioned only two food groups that could be used for enrichment. These food groups included pulses and nuts (ground nuts, beans and soybeans) and animal food (milk). About a quarter of the male and female participants (about 25% and 29% respectively) mentioned three food groups, adding dark green vegetables to the two former groups. For children in the age category of above 12 to 24 months, most participants (34% males and 32% females) mentioned food items from one food group that could be used to enrich the porridge. Only a few male and female participants (9% and 13% respectively), from the same age group, mentioned food items from four food groups.

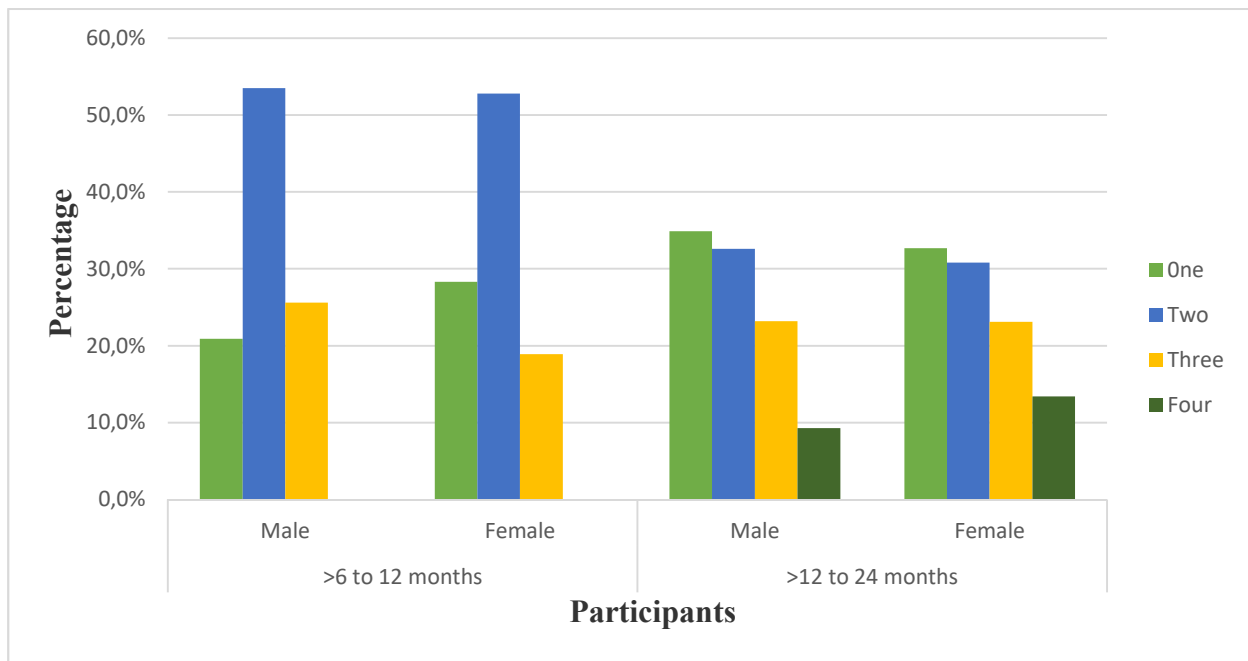


Figure 4-4: Number of food groups mentioned for enriching child's porridge (n = 191)

4.4.3 Parental and caregivers' attitudes on feeding infants below six months of age

Table 4.12 presents the mean scores on the attitude statements for parents and caregivers towards the recommended feeding practices for infants below the age of six months. At least 80% of all the participants, both male and female, showed positive attitudes on all the attitude statements that were presented to them. The differences in scores between the males and females were not significant ($P > 0.05$).

Table 4-12: Participants' mean positive scores on attitudes towards feeding infants below six months of age (n = 94)

Attitude statement	Male (n = 42) Score (%)	Female (n = 52) Score (%)	P-value*	Total (n = 94) Score (%)
Exclusive breastfeeding is good	97.6	100	0.263	98.9
Exclusive breastfeeding is not difficult	81	82.7	1.000	81.9
Breastfeeding on demand when the child wants is good	100	100	-	100
Breastfeeding on demand when the child wants is difficult	100	96.2	1.000	97.9
Confident with how child is breastfeeding	100	98.1	0.199	98.9
Confident with expressing breastmilk for child	-	-	-	-
Total score	94.6	94.7	0.96	94.7

*P-values for Chi-Square test

The individual scores (out of a possible maximum of six) for the participants' attitudes on feeding infants below six months of age is presented in Table 4.13. The majority of the both the male and female participants (83.3% and 76.9%) had a score of five and 2.1% of the participants had the lowest score of three. The difference in the scores between the male and female participants were not significant ($P = 0.374$).

Table 4-13: Total attitude scores of participants on feeding infants below six months of age (n = 94)

Score (out of six)	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	Total (n = 94) Frequency (%)
Three	1 (2.4)	1 (1.9)	2 (2.1)
Four	6 (14.3)	11 (21.2)	17 (18.1)
Five	35 (83.3)	40 (76.9)	75 (79.8)
Six	-	-	-

More information on the participants' responses to the attitude statements is presented in Table 4.14. A high proportion of the participants (98.9%) felt that it was good to exclusively breastfeed the children and that it was not difficult (81.9%) to do so. All of the participants felt that it was good to breastfeed the child on demand when the baby wanted. During informal discussions with the participants, they further emphasised that mothers also had to breastfeed when they wanted because sometimes babies did not know when they were hungry. Only 2.1% of the participants reported that it was difficult to breastfeed the child on demand, when the baby wanted, because mothers did not always have "enough" milk, especially as the child was growing. Almost all of the mothers (98.1%) reported being confident when breastfeeding the child. Most of the participants had never heard of mothers expressing milk for the baby's use, and none reported to having expressed the mother's milk. Some of the participants (in informal discussions) said that expressing milk for the child was unhygienic, and that it was easier for the mothers to carry the child with them when they worked so that they could breastfeed. There were no significant differences between the male and female participants' responses to the attitude questions ($P > 0.05$).

Similarly, for comparisons within the households using McNemar's test, there were no significant differences between the male and female participants on their responses to the attitude questions ($P > 0.05$) (*results not shown*).

Table 4-14: Participants' responses to attitude questions on breastfeeding infants below six months of age (n = 94)

Attitude question	Frequency (%)		P-value*	Total (n = 94) Frequency (%)
	Male (n = 42)	Female (n = 52)		
Is exclusive breastfeeding good?			0.447	
Yes	41 (97.6)	52 (100)		93 (98.9)
No	1 (2.4)	-		1 (1.1)
Is exclusive breastfeeding difficult?			1.000	
Yes	8 (19.0)	9 (17.3)		17 (18.1)
No	34 (81.0)	43 (82.7)		77 (81.9)
Reason if exclusive breastfeeding if difficult			1.000	
Food for the mother (to enhance milk production) is scarce	5 (11.9)	4 (7.7)		9 (9.6)
Breast milk is not enough for the baby	3 (7.1)	5 (9.6)		8 (8.5)
None	34 (81.0)	43 (82.7)		77 (81.9)

Continued...

Table 4-14: Participants' responses to attitude questions on breastfeeding infants below six months of age (n = 94) continued

Attitude question	Frequency (%)		P-value*	Total (n = 94) Frequency (%)
	Male (n = 42)	Female (n = 52)		
Is it good to breastfeeding on demand when the child wants? yes**	42 (100)	52 (100)	-	94 (100)
Is breastfeeding on demand difficult? Yes No	- 42 (100)	2 (3.8) 50 (96.2)	1.000	2 (2.1) 92 (97.9)
Reason if breastfeeding on demand is difficult Mothers not having enough milk No response	- 42 (100)	2 (3.8) 50 (96.2)	1.000	2 (2.1) 92 (97.9)
Are you confident with how you breastfeed your child? Yes No	42 (100) -	51 (98.1) 1 (1.9)	0.500	93 (98.9) 1 (1.1)
Reason for not being confident Food for mother is scarce No reason	- 42 (100)	1 (1.9) 51 (98.1)	1.000	1 (1.1) 93 (98.9)
Are you confident in expressing breast milk for child? Do not express breast milk	42 (100)	52 (100)	-	94 (100)

*P-values for Fisher's exact, **=participants added that breastfeeding had to be even when mother wanted because a baby may not know when they are hungry

4.4.4 Parental and caregivers' attitudes on feeding infant and young children aged six to 24 months

To assess participants' attitudes on feeding infants and young children six to 24 months of age, the participants were asked attitudinal questions on breastfeeding children six to 24 months, their confidence in preparing food for the child and on how complementary food was provided to the child. The mean scores on participants' positive attitudes on IYCF for children aged six to 24 months are presented in Table 4.15. Both gender groups had positive attitudes on breastfeeding beyond six months and on giving different types of food to children with scores of 100% in all age groups. Both the males and females had scores of more than 50% for all the

attitude statements. For all the attitude statements, women had higher scores than men except for their confidence in food preparation and on giving different types of food to the child for the age group >12 to 24 months. However, no significant differences were observed between the males and females mean attitudes scores ($P > 0.05$).

Table 4-15: Participants' mean positive scores on attitudes towards feeding infants and young children aged six to 24 months (n = 191)

Nutrition attitude statement	6 to 12 months		P-value*	>12 to 24 months		P-value*
	Male n = 43	Female n =53		Male n =43	Female n =52	
Confident in food preparation	79.1	75.5	0.677	76.7	53.8	0.682
Giving child different types of food is good	100	100	-	100	100	-
Giving child different types of food is difficult	83.7	84.9	0.874	67.4	59.6	0.431
Giving child food several times a day is good	74.4	69.8	0.618	83.7	86.5	0.700
Giving child food several times a day is difficult	58.1	67.9	0.677	65.1	69.2	0.761
Continued breastfeeding beyond six months is good	100	100	-	100	100	-
Breastfeeding beyond six months is difficult	100	100	-	100	100	-
Total Score	85	85.4	0.157	84.7	81.3	0.156

*P-values for Chi-square

The individual score (out of seven) for the participants on the attitude statements on feeding infants six to 24 months of age is presented in Table 4.16. The majority of the participants (44.2% males and 39.6% females) with children aged six to 12 months had a score of seven. For participants with children aged >12 to 24 months, most of the male participants (44.2%) had a score of seven while the majority of female participants (38.5%) had a score of six. There were no significant differences on the attitude scores between the male and female participants ($P = 0.898$ for participants with children aged six to 12 months and $P = 0.312$ for participants with children aged >12 to 24 months).

Table 4-16: Total attitude scores of participants on feeding infants aged six to 24 months (n = 191)

Score (out of seven)	6 to 12 months		P-value	>12 to 24 months		P-value
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n= 52)	
Four	1 (2.3)	1 (1.9)	0.898	5 (11.6)	8 (15.4)	0.312
Five	10 (23.3)	16 (30.2)		9 (20.9)	7 (13.5)	
Six	13 (30.2)	15 (28.3)		10 (23.3)	20 (38.5)	
seven	19 (44.2)	21 (39.6)		19 (44.2)	17 (32.7)	

**P-values for Chi-square test*

Table 4.17 shows in detail the parental and caregivers' positive attitudes on IYCF. A higher percentage of male participants (79.1% and 76.7% with children aged six to 12 and >12 to 24 months respectively) reported being confident with how they prepared foods for the child in comparison to female participants (75.5% and 53.8% with children with children aged six to 12 months and >12 to 24 months respectively). Of the participants (29.3%) who responded that they did not feel confident, the majority (20.9%) gave the reason that the foods they provided to the child were not diversified. All the participants said that it was good to provide different types of foods to the child. However, about a quarter (26.2%) indicated that providing different types of food was difficult, mostly because they did not have enough money to purchase the foods.

The majority (78.5 %) of the participants felt that it was good to give a child food several times a day. Of the remainder who felt that giving a child food several times a day was not good, the majority (55.0 %) feared that a child might get constipated, followed by those who felt the child might get used to eating several times a day (17.5 %), and that food was scarce (17.5 %). The majority (69.2%) of the participants reported that it was not difficult to give a child food several times a day. All the male participants (41.9% with children aged six to 12 months and 34.9% with children aged >12 to 24 months), who reported giving a child food several times a day as being difficult, mentioned that it was because they lacked money to purchase these foods.

There were no significant differences in participants' responses to attitude questions between the two gender groups ($P > 0.05$). Significant differences were only observed between the female participants' attitudes to giving a child different types of food between the two age groups ($P = 0.005$). A higher proportion (40.4%) of females with children aged >12 to 24

months than the females with children aged six to 12 months (19.1%) reported that it was difficult to give a child different types of food.

No significant differences were also observed between the male and female participants' responses to attitude questions within the households ($P > 0.05$) (*McNemar's test; results not shown*).

Table 4-17: Participants' responses to attitude questions on feeding infants and young children aged six to 24 months (n = 191)

Attitude questions	6 to 12 months Frequency (%)		P-value*	>12 to 24 months Frequency (%)		P-value*	Total (n = 191)	P-values**	
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)			Male	Female
Are you confident with how you prepare food for the child?			0.808			0.813		1.000	0.826
Confident	34 (79.1)	40 (75.5)		33 (76.7)	28 (53.8)		145 (70.7)		
Not confident	9 (20.9)	13 (24.5)		10 (23.3)	24 (46.2)		56 (29.3)		
Reason for not being confident			0.922			0.497		1.000	0.675
Food not diversified	7 (16.2)	11 (20.7)		8 (18.6)	14 (27.0)		40 (20.9)		
Food not enough for child	2 (4.7)	2 (3.8)		2 (4.7)	10 (19.2)		16 (8.4)		
None	34 (79.1)	40 (75.7)		33 (76.7)	28 (53.8)		145 (70.7)		
Is giving different types of food to child good?			-			-		-	-
Yes	43 (100)	53 (100)		43 (100)	52 (100)		191 (100)		
Is giving different types of food to child difficult?			1.000			0.523		0.131	0.005
Yes	7 (16.3)	8 (19.1)		14 (32.6)	21 (40.4)		50 (26.2)		
No	36 (83.7)	45 (84.9)		29 (67.4)	31 (59.6)		141 (73.8)		

Continued...

Table 4-17: Participants' responses to attitude questions on feeding infants and young children aged six to 24 months (n = 191) continued

Attitude questions	6 to 12 months Frequency (%)		P-value*	>12 to 24 months Frequency (%)		P-value*	Total (n=191)	P-values**	
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)			Male	Female
Reason if giving child different types of food is difficult			1.000			0.362		0.072	0.010
Lack of money to buy food	6 (14.0)	7 (13.2)		14 (32.6)	18 (34.6)		45 (23.6)		
Food is scarce	1 (2.3)	1 (1.9)		-	3 (5.8)		5 (2.6)		
No reason	36 (83.7)	45 (84.9)		29 (67.4)	31 (59.6)		141 (73.8)		
Is giving child food several times a day good?			0.655			0.776		0.427	0.058
Yes	32 (74.4)	37 (69.8)		36 (83.7)	45 (86.5)		150 (78.5)		
No	11 (25.6)	16 (30.2)		7 (14.3)	7 (13.5)		41 (21.5)		
Reason if giving child food several times a day is not good			0.079			0.943		0.261	0.024
Food is scarce	4 (36.4)	-		1 (16.7)	2 (28.6)		7 (17.5)		
Child may get sick (constipated)	6 (54.5)	10 (62.5)		2 (33.3)	4 (57.1)		22 (55.0)		
Child may get used to eating several times a day	-	6 (37.5)		-	1 (14.3)		7 (17.5)		
Lack of money to buy food	1 (9.1)	-		3 (50.0)	-		4 (10.0)		

Continued...

Table 4-17: Participants' responses to attitude questions on feeding infants and young children aged six to 24 months (n = 191) continued

Attitude questions	6 to 12 months Frequency (%)		P-value*	>12 to 24 months Frequency (%)		P-value*	Total (n = 191)	P-values**	
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)			Male	Female
Is giving child food several times a day difficult?			0.808			0.824		0.616	0.518
Yes	18 (41.9)	17 (34.1)		15 (34.9)	16 (30.8)		66 (34.6)		
No	25 (58.1)	36 (67.9)		28 (65.1)	36 (69.2)		125 (65.4)		
Reason if giving child food several times a day is difficult			0.362			0.894		0.405	0.079
Food is scarce	-	10 (18.9)		-	10 (19.2)		20 (10.5)		
Lack of money to buy food	18 (41.9)	7 (13.2)		15 (34.9)	6 (11.5)		46 (24.1)		
No reason	25 (58.1)	36 (67.9)		28 (65.1)	36 (69.2)		125 (65.4)		
Is breastfeeding beyond 6 months good?			-			-		-	-
Yes	43 (100)	53 (100)		43 (100)	52 (100)		191 (100)		
Is breastfeeding beyond six months difficult?			-			-		-	-
No	43 (100)	53 (100)		43 (100)	52 (100)		191 (100)		

*P-values for Fisher's exact, **= P-values for differences between the two age groups

4.4.5 Parental and caregivers' practices in feeding infants below six months of age

Participants' responses on feeding practices for infants below the age of six months are shown in Table 4.18. All participants reported having the baby breastfed both during the previous day and night. When asked on the food that was given to the baby when the mother was not around, a significantly higher proportion of female participants (92.3%) than males (61.9%) mentioned that such a situation had never happened before ($P = 0.000$). A small proportion of participants (10.6%) reported that they provided thin porridge to the children and 6.4% of the male participants reported providing cow's milk. For comparisons within the households, significant differences were also observed between the male and female participants' responses on the type of food the babies were given when the mothers was not around ($P = 0.013$) (*McNemar's test; results not shown*).

To determine whether the child was exclusively breastfed, participants were asked on the food that the baby had consumed within the previous 24 hours. Half of the participants (48.1% of the female participants and 52.4% of the male participants) reported that mothers breastfed the child without providing any other liquids and food (i.e. exclusive breastfeeding), while the other half reported providing other liquids or foods. Of the participants who reported giving the children other liquids or foods, 17.0% reported providing water and thin porridge to the children, 14.9% provided plain water (14.9%) and 7.4% provided of water, porridge and *msuzi* (sauce from cooked beans, meat, fish or vegetables).

Table 4-18: Parental and caregivers' practices in feeding infants below six months

(n = 94)

Question on practices in infant feeding	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	P –value*	Total (n = 94) Frequency (%)
Was the baby breastfed during the day? Yes	42 (100)	52 (100)	-	94 (100)
Was the baby breastfed during the night? Yes	42 (100)	52 (100)	-	94 (100)

Continued...

Table 4-18: Parental and caregivers' practices in feeding infants below six month (n = 94) continued

Question on practices in infant feeding	Male (n = 42) Frequency (%)	Female (n = 52) Frequency (%)	P-value*	Total (n = 94) Frequency (%)
Other ways in which the baby consumed milk apart from breastfeeding.			-	
None (child only breastfed)	42 (100)	52 (100)		94 (100)
What food is baby given when mother is not around?			0.000	
Likuni Phala ^A	-	1 (1.9)		1 (1.1)
Other liquids	3 (7.1)	-		3 (3.2)
Thin porridge	8 (16.7)	3 (5.7)		10 (10.6)
Cow's milk	6 (14.3)	-		6 (6.4)
Never happened before	26 (61.9)	48 (92.3)		74 (78.7)
Liquids that the baby consumed during the previous day			0.435	
Plain water	5 (11.9)	9 (17.3)		14 (14.9)
Cow's milk	1 (2.4)	1 (1.9)		2 (2.1)
Thin porridge	3 (7.1)	-		3 (3.2)
Water and thin porridge	5 (11.9)	11 (21.2)		16 (17.0)
Water, Msuzi ^B and thin porridge	3 (7.1)	4 (7.7)		7 (7.4)
Water and cow's milk	3 (7.1)	2 (3.8)		5 (5.3)
None	22 (52.4)	25 (48.1)		47 (50.0)

Percentage calculated based on total number of responses

**P-values for Fisher's exact*

^A=Likuni phala- Maize porridge enriched with soya

^B=Msuzi- sauce made from cooked beans, meat, fish or vegetables

4.4.6 Parental and caregivers' practices in feeding infants and young children aged six to 24 months

Parental feeding practices were assessed by asking parents to recall, without quantifying, whether the child was breastfed and the type of food the child consumed within the previous 24 hours. The information also covered the number of times the child ate food and snacks given within the 24 hour period.

To assess the diversity of the foods the children had eaten, participants were asked to mention, without quantifying, the type of food that the child had eaten in the previous 24 hours. The distribution of the food the children consumed according to food groups is presented in Figure 4.5.

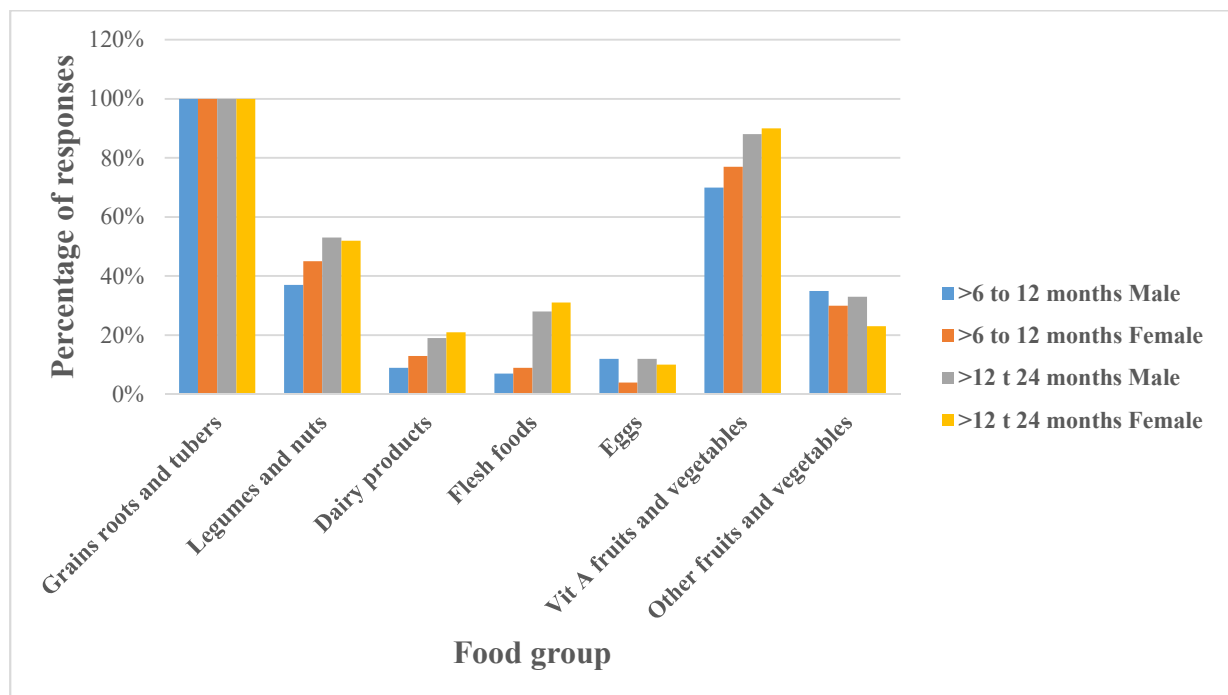


Figure 4-5: Children's food consumption according to food groups during the previous 24 hours (n = 191)

A high consumption of foods from plant sources (grains, roots and tubers; legumes and nuts, vitamin A fruits and vegetables) was reported in comparison to the consumption of foods from animal sources. All the participants reported that the children consumed foods from the grains, roots and tubers group during the previous 24 hours. This was followed by the consumption of vitamin A rich fruits and vegetables (81.7%), and legumes (47.1%). Animal foods were the

least consumed, with the consumption of eggs (9%) being the lowest followed by dairy products (16%) and flesh foods (19%).

Table 4.19 shows the consumption of the foods from the different food groups by the children within the previous 24 hours. On the actual food items from each food group consumed by the children, *nsima* (thick maize porridge that can be held in the hand and is eaten with *ndiwo*, which is a side dish consisting of either cooked beans, meat, fish or vegetables) and other maize porridge were reported by the majority (69.1%) of participants followed by other maize porridge only (26.7%). Less than half (47%) of the participants reported the consumption of legumes and nuts, with soy beans being the most consumed legume (14.7%). Close to half of the participants (48.7%) reported their children as having consumed dark green leafy vegetables only, and over a quarter (27.2%) reported the consumption of a combination of dark green leafy vegetables and mangoes. The other fruits and vegetables that were mentioned by 29.8% of the participants were bananas, guavas, oranges and cabbage.

A higher proportion of participants (76.7% males and 84.6 females) with children aged > 12 to 24 months reported their children consuming maize porridge and *nsima* (thick maize porridge that can be held in the hand and is eaten with *ndiwo*, which is a side dish consisting of either cooked beans, meat fish or vegetables) compared to participants with children aged six to 12 months (51.2% males and 62.3% females). The differences were significant ($P = 0.006$ for males and $P = 0.014$ for females). A high proportion of participants with children aged six to 12 months compared to participants with children aged > 12 to 24 months reported their children not consuming flesh food (93.0% males and 90.6% females with children six to 12 months vs 74.4% males and 73.1 females with children aged >12 to 24 months) and vitamin A fruits and vegetables (30.2% males and 22.6% females with children aged six to 12 months vs 11.6% males and 9.6% females with children aged >12 to 24 months). The differences were significant (for flesh foods; $P = 0.007$ for males and $P = 0.006$ for females while for vitamin A fruits and vegetables; $P = 0.000$ for both males and females).

No significant differences were observed between the male and female participants within the households on their responses on the type of food given to the children within the previous 24 hours ($P > 0.05$) (*McNemar's test; results not shown*)

Table 4-19: Consumption of foods from the food groups by children aged six to 24 months (n = 191)

Type of food	6 to 12 months Frequency (%)		P-value*	>12 to 24 months Frequency (%)		P-value*	Total (n = 191)	P-values**	
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)			Male	Female
Grains			0.504			0.614		0.006	0.014
Maize porridge	19 (44.2)	19 (35.8)		6 (14.0)	7 (13.5)		51 (26.7)		
Nsima ^A	2 (4.7)	2 (1.9)		2 (1.9)	1 (1.9)		6 (3.1)		
Maize porridge and Nsima	22 (51.2)	33 (62.3)		33 (76.7)	44 (84.6)		132 (69.1)		
Rice and pap	-	-		2 (4.7)	-		2 (1.0)		
Roots and tubers			0.698			0.047		0.147	0.041
White potatoes	-	1 (1.9)		3 (7.0)	-		4 (2.1)		
White yams	-	-		2 (4.6)	-		1 (0.5)		
Cassava	1 (2.3)	-		1 (2.3)	5 (9.6)		7 (3.7)		
Legumes and nuts			0.138			0.003		0.000	0.210
Beans	6 (14.0)	1 (1.9)		6 (14.0)	5 (9.6)		18 (9.4)		
Soy beans	7 (16.3)	11 (20.8)		1 (2.3)	9 (17.3)		28 (14.7)		
Ground nuts	-	1 (1.9)		-	2 (2.3)		3 (1.6)		
Beans, soy beans & ground nuts	-	3 (5.7)		4 (9.3)	8 (15.4)		15 (7.9)		
Other ^B	3 (7.0)	8 (15.1)		12 (27.9)	3 (5.8)		26 (13.6)		
None	27 (62.8)	29 (54.7)		20 (46.5)	25 (48.1)		101 (52.9)		

Continued...

Table 4-19: Consumption of foods from the food groups by children aged six to 24 months (n=191) continued

Type of food	6 to 12 months Frequency (%)		P-value*	>12 to 24 months Frequency (%)		P-value*	Total (n = 191)	P-value**	
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)			Male	Female
Dairy products			0.749			0.792		0.520	0.438
Milk (fresh animal milk)	4 (9.3)	7 (13.2)		7 (16.3)	10 (19.2)		28 (14.7)		
None	39 (90.7)	45 (86.6)		36 (83.7)	43 (82.7)		163 (85.3)		
Flesh foods			1.000			0.905		0.007	0.006
Organ meat	1 (2.3)	1 (1.9)		1 (2.3)	1 (1.9)		4 (2.1)		
Any other meat	-	1 (1.9)		4 (9.3)	4 (7.7)		9 (2.1)		
Small fish (usipa)	2 (4.7)	3 (5.7)		1 (2.3)	2 (3.9)		8 (4.1)		
Flying termites (ngumbi)	-	-		5 (11.6)	7 (13.5)		12 (6.3)		
None	40 (93.0)	48 (90.6)		32 (74.4)	38 (73.1)		158 (82.8)		
Eggs			0.237			0.751		1.000	0.270
Consumed	5 (11.6)	2 (3.8)		5 (11.6)	5 (9.6)		35 (18.3)		
None	38 (88.4)	51 (96.2)		38 (88.4)	47 (90.4)		156 (81.7)		
Vitamin A foods and vegetables			0.890			0.882		0.000	0.000
Dark green leafy vegetables	20 (46.5)	24 (45.3)		22 (51.2)	27 (51.9)		93 (48.7)		
Ripe mangoes	2 (4.7)	5 (9.4)		2 (4.7)	1 (1.9)		10 (5.2)		
Papaya	-	1 (1.9)		-	-		1 (0.5)		
Vegetables and mangoes	8 (18.6)	11 (20.7)		14 (32.6)	19 (36.5)		52 (27.2)		
None	13 (30.2)	12 (22.6)		5 (11.6)	5 (9.6)		35 (18.3)		

Continued...

Table 4-19: Consumption of foods from the food groups by children aged six to 24 months (n = 191) continued

Type of food	6 to 12 months Frequency (%)		P-value *	>12 to 24 months Frequency (%)		P-value*	Total (n = 191)	P-value**	
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)			Male	Female
Other fruits and Vegetables			0.665			0.410		0.818	0.509
Consumed	15 (34.9)	16 (30.2)		14 (32.6)	12 (23.1)		57 (29.8)		
None	28 (65.1)	37 (69.8)		29 (67.4)	40 (76.9)		134 (70.2)		

Nsima^A = Thick maize porridge that can be held in the hand and is eaten with ndiwo. Ndiwo is a side dish consisting of either cooked beans, meat, fish or vegetables

Other^B = Cowpeas (3%), pigeon peas (2%), soy & groundnuts (2%), beans & groundnuts (2%), beans & peas (2%), soybean, beans, peas & ground nuts (3%)

**P-value for Fisher's exact*

*** - P-value for differences between the two age groups*

Most of the participants (35% with children aged six to 12 months and 38% with children aged >12 to 24 months) reported that the children consumed foods from only two food groups. A small proportion of participants with children aged >12 to 24 months reported giving the children food from six groups, while there was none of the participants with children aged six to 24 months who gave their children food from six food groups (Figure 4.6). However, the differences between the two groups were not significant ($P = 0.059$). More participants with children in the age group six to 12 months reported consumption from only one food group (13%) compared to those with children aged above 12 to 24 months (3%).

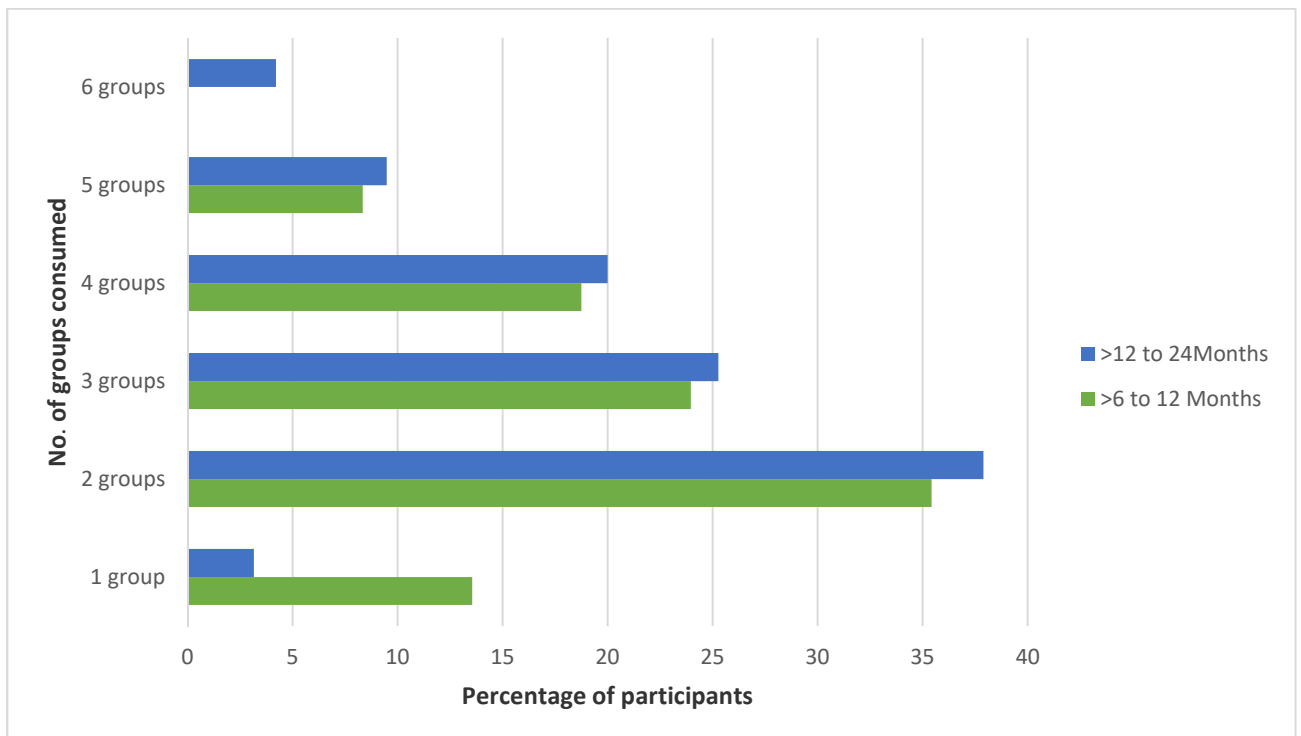


Figure 4-6: Number of food groups consumed by children aged six to 24 months (n = 191)

The feeding practices for children aged six to 24 months is presented in Table 4.20. The majority of the participants (88.5%) reported to having their child breastfed during the previous 24 hours and only two fathers did not know whether their child was breastfed or not. Most of the participants (48.8% of males and 47.2% of females with children aged 6 to 12 months, and 60.8% of males and 50.0% of females with children above the age of 12 to 24 months) reported that the children were given both meals and snacks only two times per day. No significant differences were observed between the male and female participants' responses ($P > 0.05$). A high proportion of participants with children aged six to 12 months (97.7% males and 98.1%

females) than participants with children >12 to 24 months (81.4% males and 76.9% females) reported having breastfed their child. The differences were significant ($P = 0.033$ for males and $P = 0.001$ for females). For comparisons between male and female participants within the households, no significant differences were observed on their reported feeding practices for children six to 24 months ($P > 0.05$) (*McNemar's test; results not shown*)

Table 4-20: Feeding practices for infant and young child feeding for feeding children aged six to 24 months (n = 191)

Feeding practice	6 to 12 month Frequency (%)		P -value*	>12 to 24 months Frequency (%)		P -value*	Total (n = 191)	P -value**	
	Male (n = 43)	Female (n = 53)		Male (n = 43)	Female (n = 52)			Male	Female
Child breastfeeding			1.000			0.176		0.033	0.001
Yes	42 (97.7)	52 (98.1)		35 (81.4)	40 (76.9)		169 (88.5)		
No	1 (2.3)	1 (1.9)		6 (14.0)	12 (23.1)		20 (10.5)		
Don't know	-	-		2 (4.6)	-		2 (1.0)		
Number of food groups consumed ^A			0.750			0.726		0.114	0.352
One	7 (16.3)	6 (11.3)		1 (2.3)	2 (3.9)		16 (8.4)		
Two	16 (37.2)	18 (34.0)		16 (37.2)	20 (38.5)		70 (36.6)		
Three	10 (22.3)	13 (24.5)		11 (25.6)	13 (25.0)		47 (24.6)		
Four	6 (14.0)	12 (22.6)		10 (23.3)	9 (17.3)		37 (19.4)		
Five	4 (9.3)	4 (7.6)		4 (9.3)	5 (9.6)		17 (8.9)		
Six	-	-		1 (2.3)	3 (5.8)		4 (2.1)		
Number of times child ate other foods and snacks			0.148			0.184		0.005	0.291
Once	11 (25.6)	6 (11.3)		1 (2.3)	1 (1.9)		19 (9.9)		
Two times	21 (48.8)	25 (47.2)		30 (69.8)	26 (50.0)		102 (53.4)		
Three times	11 (25.6)	21 (39.6)		11 (25.6)	23 (44.2)		66 (34.6)		
Four times	-	1 (1.9)		1 (2.3)	2 (3.9)		4 (2.1)		

*P-value for Fisher's exact

**=P-value for the differences between the two age groups

^A=the number of good groups consumed was calculated from the participants' responses on the foods consumed by the children

Participants with children aged above 12 to 24 months were also asked to recall, without quantifying, the foods that they had provided to their children in the months of April to September the previous year (2015) to assess if season affected their food practices. The consumption of foods by the children in the month of April to September is presented in Table 4.21. A similar consumption pattern to what was reported for the previous 24 hours was reported. Consumption of foods from the grains, roots and tubers group was highly reported, seconded by the consumption of legumes. The participants also reported a low consumption of dairy products. Contrary to what was reported for the previous 24 hours, more participants reported a high consumption of flesh foods and eggs.

Table 4-21: Frequency of food group consumption in the months of April to September 2015 by children aged >12 to 24 months (n = 95)

Food group	April	May	June	July	August	September	Food items consumed
Grains, roots and tubers							Maize porridge, pap, rice, bread & white potatoes
None	11 (11.6)	6 (6.3)	7 (7.4)	9 (9.5)	8 (8.4)	6 (6.3)	
Consumed	84 (88.4)	89 (93.6)	88 (92.6)	86 (90.5)	87 (91.6)	89 (93.7)	
Legumes and nuts							Beans, ground nuts, soy beans & cow peas
None	10 (10.5)	10 (10.5)	8 (8.4)	6 (6.3)	10 (10.5)	10 (10.5)	
Consumed	85 (89.5)	85 (89.5)	87 (91.6)	89 (93.7)	85 (89.5)	85 (89.5)	
Dairy products							Fresh animal milk & powdered milk
None	58 (61.1)	83 (87.4)	81 (85.3)	77 (81.1)	76 (80.0)	16 (16.8)	
Consumed	37 (38.9)	12 (12.6)	14 (14.7)	18 (18.9)	19 (20.0)	79 (83.2)	
Flesh foods							Meat (pork, beef, goat & chicken), insects, dried fish, organ meat
None	11 (11.6)	11 (11.6)	12 (12.6)	13 (13.7)	11 (11.6)	9 (9.5)	
Consumed	84 (88.4)	84 (88.4)	83 (87.4)	82 (86.3)	84 (88.4)	86 (90.5)	
Eggs							Eggs
None	53 (55.8)	39 (41.1)	49 (51.6)	54 (56.8)	55 (57.9)	51 (53.7)	
Consumed	42 (44.2)	56 (58.9)	46 (48.4)	41 (43.2)	40 (42.1)	44 (90.5)	
Vitamin A fruits and vegetables							Pumpkins, dark green vegetables and papaya
None	36 (37.9)	13 (13.7)	12 (12.6)	11 (11.6)	10 (10.5)	9 (9.5)	
Consumed	59 (62.1)	82 (86.3)	83 (87.4)	84 (88.4)	85 (89.5)	86 (90.5)	
Other fruits and Vegetables							Other fruits and vegetables (guava, avocado pears, cabbage)
None	13 (12.7)	16 (16.8)	16 (16.8)	17 (17.9)	15 (15.8)	14 (14.7)	
Consumed	82 (86.3)	79 (83.2)	79 (83.2)	78 (82.1)	80 (84.2)	81 (85.3)	

4.5 Summary

The study sample comprised a total of 157 households (52 with children aged below six months and 105 with children six to 24 months); 154 mothers, 127 fathers and four caregivers. Both the father and mother (or male and female caregiver) of a child from each household participated in this study, except for female headed households where only mothers or female caregivers participated. Most of the participants had attained primary education and reported farming as their main source of income.

Child feeding was largely reported as the mother's responsibility by most female participants, while male participants reported child feeding as a shared responsibility between the mother and father. However, mothers were reported to have made most of the decisions on IYCF, except on purchasing food for the child where the fathers were reported to have made these decisions.

The study found that the participants from all the age groups were aware of most of the IYCF practices. More than half of the participants with children less than six months knew the meaning of exclusive breastfeeding, benefits of exclusive breastfeeding for the child and the time for introducing complementary feeding. Poor nutrition knowledge on the benefits of exclusive breastfeeding for the mother was found in more than half of the participants with children below six months. More than half of the male participants with children six to 24 months did not know the type of porridge to provide to the child. Significant differences were observed between the mothers' and fathers' responses on the recommended age for mothers to continue breastfeeding ($P = 0.012$ and $P = 0.006$ for participants with children aged six to 12 months and >12 to 24 months respectively), the time for introducing complementary foods ($P = 0.013$ and $P = 0.000$ for participants with children aged six to 12 and >12 to 24 months respectively), the type of porridge to give a child ($P = 0.017$ and $P = 0.000$ for participants with children aged six to 12 and >12 to 24 months respectively) and on the importance of introducing complementary foods at six months ($P = 0.000$ for participants with children aged >12 to 24 months).

Positive attitudes on IYCF were reported by the participants on exclusive breastfeeding, continued breastfeeding and on providing a diversified diet several times in day to the children. There were no significant differences in the participants' attitudes on appropriate IYCF between the male and female participants, as well as between the age groups ($P > 0.05$).

Generally, participants reported poor feeding practices. Only half of the participants who had children below six months reported their child being exclusively breastfed at the time of the study. Significant differences were observed on the participants' responses on the type of food the baby was given when the mother was not around for participants with children below six months of age ($P = 0.000$). Low food diversification (from two out of seven food groups) was reported in feeding children six to 24 months. Low consumption was reported for food from animal sources and high consumption of plant based foods; (grains, roots and tubers), followed by vitamin A fruits and vegetables and legumes and nuts. Low meal frequencies were also reported.

CHAPTER 5

RESULTS IN THE QUALITATIVE DOMAIN

5.1 Introduction

This chapter is divided into three sections as is shown in Figure 5.1. The first two sections (sections 5.2 and 5.3) present the results based on the two methods of data collection, namely FGDs and in-depth interviews (Chapter 3). In the first section (section 5.2), the socio-demographic characteristics of the mothers and fathers who participated in the FGDs are presented, followed by the themes that were generated from the FGDs. The second section (section 5.3) presents the socio-demographic characteristics of local leaders who participated in in-depth interviews, followed by the themes that were generated from the in-depth interviews. Finally, the third section presents a summary of findings from the two sections (section 5.2 and 5.3).

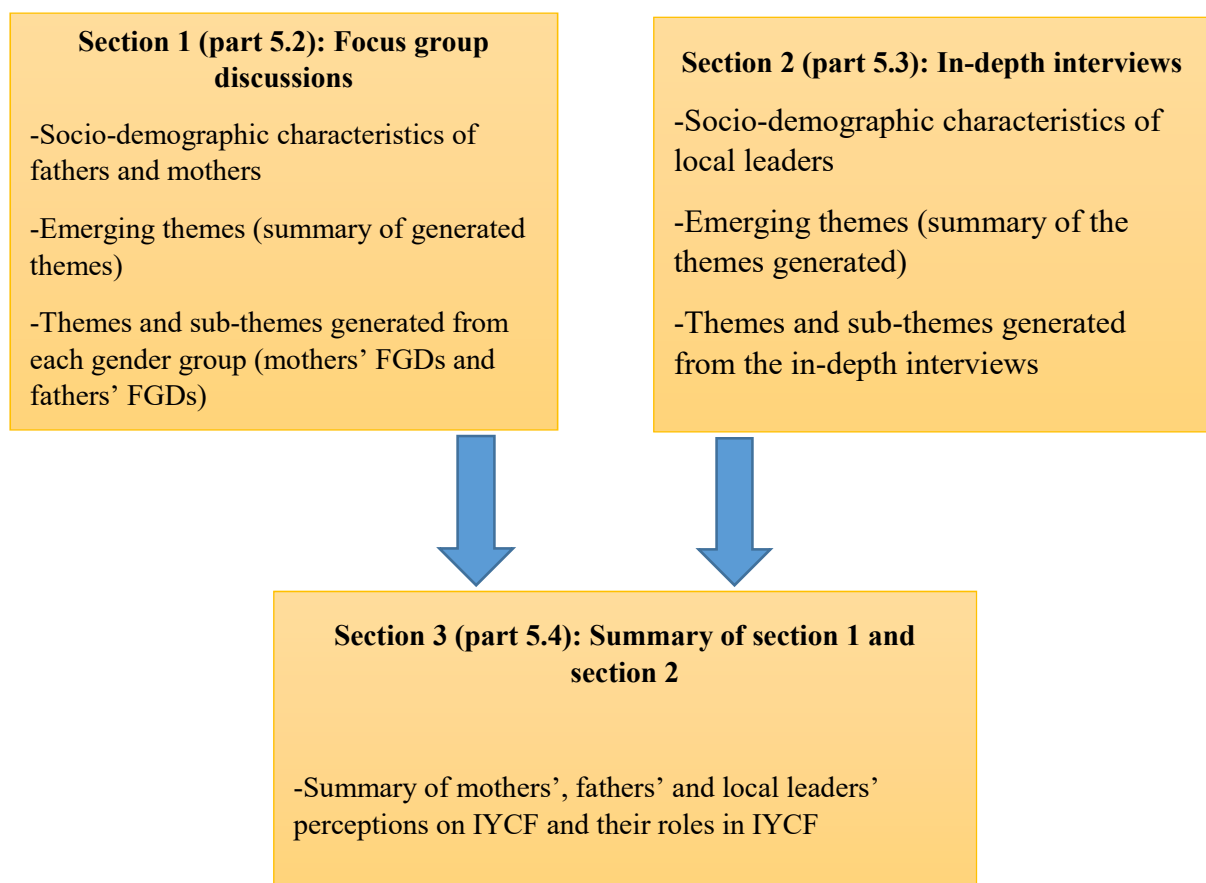


Figure 5-1: Outline of the presentation on the qualitative results

5.2 Results from the focus group discussions

A total of eleven FGDs with 94 participants were conducted. These participants did not participate in the quantitative part of the study (*refer to Paragraph 3.7.4.1*). Specifically, five FGDs with 41 participants were conducted with fathers, and six FGDs with 53 participants were conducted with mothers. The average number of participants per FGD was eight (range six to 11). No distinction was made between the biological parents and the caregivers in the FGDs.

5.2.1 Socio-demographic characteristics of participants

The demographic characteristics of the mothers, fathers and caregivers who participated in the study are presented in Table 5.1.

Table 5-1: Socio-demographic characteristics of participants in focus group discussions (N = 94)

Characteristic	Male participants (n = 41)		Female participants (n = 53)	
	n	%	n	%
Age (years)				
<20	-	-	2	3.8
20 - 29	15	36.6	31	58.4
30 - 39	19	46.4	18	34.0
40 - 49	6	14.6	2	3.8
50 – 59	1	2.4	-	-
Education level				
None	-	-	1	1.9
Primary	23	56.1	30	56.6
Secondary	14	43.9	22	41.5
Adult learning	-	-	-	-
Employment status				
Farming	27	65.9	43	81.1
Business	7	17.1	10	18.9
Casual labour	5	12.1	-	-
Full time employment*	2	4.9	-	-
Location				
Bwengu	18	43.9	14	26.4
Zombwe	6	14.6	23	43.4
Emsizini	7	17.1	7	13.2
Enguewini	10	24.4	9	17.0

* Full time employment means working for salaried job

The majority (46.4 %) of male participants were between the ages of 30 to 39 years, while most female participants (58.4%) were younger, falling within the age range of 20 to 29 years. While there were no male participants below the ages of 20 years, 3.8% of female participants were under the age of 20 years. Similarly, there were no females within the age range of 50 to 59 years, whereas one male was in this age category.

A large proportion of both the male (56.1%) and female (56.6%) participants had attained primary education in comparison to 43.9% of the males and 41.5% of the female participants who attained secondary education.

In this study, most of the female participants were engaged in farming as a source of income (81.1%) compared to the male participants (65.9%). Interestingly, only male participants were involved in working as casual labourers (12.1%) and full (salaried) employment (4.9%). Less than a quarter of the participants (18.9% of women and 17.1% of men) reported operating small scale businesses.

Since the study used purposive sampling to identify participants and participation in the study was voluntarily, the number of fathers and mothers participating in the FGDs was not the same for all the EPAs. Most of the male participants (43.9%) were drawn from Bwengu EPA, while most females (43.4%) were drawn from Zombwe EPA.

5.2.2 Parental perceptions of IYCF and their involvement on infant and young child feeding

The FGDs captured fathers' and mothers' perceptions on IYCF and their involvement in IYCF. The results from the FGDs have been presented in two parts based on the nine themes that were generated from the discussions. The first part gives a summary of the themes and sub-themes that were generated (*see paragraph 5.2.2.1*). The second part presents the themes and sub-themes generated from the mothers' and fathers' FGDs, including the quotes from the participants on each sub-theme (*see paragraph 5.2.2.2*).

5.2.2.1 Emerging themes and sub-themes

A total of nine themes were generated from each of the FGDs with the male and female participants. Based on the similarities in the themes developed from the groups, six general themes were generated for the study. The themes were generated from the participants' discussions. The six general themes, the nine themes and the sub-themes are presented in Table 5.2.

Table 5-2: Emerging themes from the focus group discussions

General theme	Theme	Sub-theme	
Feeding practices for infants and young children	Breastfeeding and food for breastfeeding mothers	Frequency of breastfeeding the child	
		Factors affecting breastfeeding	
		Quantity and quality of food for breastfeeding mother	
	Complementary feeding for infants and young children	Quality of food for infants and young children	
		Introduction of and frequency of meals for complementary feeding	
		Reasons for early introduction of complementary foods	
Roles of parents in IYCF	Fathers roles in IYCF	Providing physical support to wives (mother of the child)	
		Providing emotional support to the wives (mother of the child)	
		Providing financial support	
	Mothers roles in IYCF	Breastfeeding the child	
		Food preparation and feeding older children	
		Seeking and applying nutrition and child care information	
		Providing emotional support	
		Providing food for the child	
	Motivators for parental involvement in IYCF	Motivators for the fathers involvement	Fulfilling a perceived cultural responsibility
			Love for the wives and children
Social support			
Motivators for the mothers involvement		Fulfilling a perceived cultural responsibility	
		Love and affection for the child	
		Problems related to food shortages	
		Social support	
Sources of information	Sources of information	Ministry of Health	
		Relatives friends and NGOs	

Continued...

Table 5-2: Emerging themes from the focus group discussions continued

General theme	Theme	Sub-theme
Barriers to parental involvement in IYCF	Barriers to parental involvement	Cultural
		Heavy work load
		Financial constraints
		Lack of appropriate knowledge on IYCF
		Interpersonal factors
		Negative influence of relations
		Age factor
		large number of children
		Delayed health service delivery
Improving parental involvement in IYCF	Improving parental involvement in IYCF	Acquiring appropriate IYCF knowledge
		Behavioural change and reduced number of children
		Developing platforms for sharing information on IYCF

5.2.2.2 Themes and sub-themes from fathers' and mothers' focus group discussions

This section presents themes and sub-themes that were generated from the FGDs with mothers and fathers. The themes and sub-themes have been presented separately for fathers and mothers according to the nine themes and the sub-themes that were generated (Table 5.2). In addition, the quotes from the participants for each sub-theme have been used to give a clear picture of what was discussed in the FGDs by each gender group. The quotes are presented by showing the group number, the participant number and the number of participants in the group. For instance, Gp1, P2/6 indicates group 1, participant number 2 in a group of 6 participants. Table 5.3 presents the themes and sub-themes generated from the mothers' FGDs, and Table 5.4 presents the themes and sub-themes that were generated from the FGDs with the fathers.

Table 5-3: Themes and sub-themes generated from mothers' focus group discussions (n = 53; FGD-groups: n = 6)

Theme	Sub-theme	Participants quotes
Breastfeeding and food for breastfeeding mothers	Frequency of breastfeeding the child	<p><i>"women should breastfeed frequently"- Gp3, P1/9</i></p> <p><i>"breastfeeding has to be frequently even when the baby is not crying for milk"- Gp2, p2/11</i></p> <p><i>"when the child sleeps for long without breastfeeding, we wake them up and breastfeed them"- Gp2, p4/11</i></p>
	Factors affecting breastfeeding	<p><i>"when the mother is relaxed and has no stress, breastfeeding is easier and there is increased breast milk production"- Gp1, P5/12</i></p> <p><i>"we need to eat a lot to increase our milk supply"- Gp5, P3/7</i></p>
	Quantity and quality of food for breastfeeding mother	<p><i>"mothers need to eat adequately to breastfeed effectively"- Gp1, P9/12</i></p> <p><i>"we need to eat a lot to increase our milk supply"- Gp5, P3/7</i></p> <p><i>"mothers have to increase normal food intake to have an increased milk production"- Gp6, P2/8</i></p> <p><i>"...a diversified diet helps to increase milk production"- Gp3, P4/9</i></p> <p><i>"eating lots of raw cassava enhances milk production"- Gp1, P3/12</i></p> <p><i>"raw cassava and rice are needed for breastfeeding mothers to increase milk production"- Gp4, P2/6</i></p>
Complementary feeding for infants and young children	Quality of food for infants and young children	<p><i>"animal food like eggs are not added to porridge because they are considered ndiwo*...it is expensive"- Gp3, P3/9</i></p> <p><i>"some people still believe that providing eggs to children makes the child sick"- Gp2, P9/11</i></p> <p><i>"we normally mix maize flour with soy or ground nut flour when making child's porridge"- Gp5, P3/7</i></p> <p><i>"other foods like meat and vegetables are eaten with nsima** by older children" – Gp3, P1/9</i></p> <p><i>"milk is also added to child's porridge mostly when the family has a milking cow" -Gp5, P7/7</i></p>
	Introduction and frequency of meals for complementary feeding	<p><i>"...feeding the child at least three times a day"- Gp1, P6/12</i></p> <p><i>"we feel breast milk alone does not have enough water for the baby as such we give the baby some drinking water"- Gp5, P4/7</i></p>

Continued...

Table 5-3: Themes and sub-themes generated from mothers' focus group discussions (n = 53; FGD-groups: n = 6) continued

Theme	Sub-theme	Participants quotes
Complementary feeding for infants and young children	Introduction and frequency of meals for complementary feeding	<i>"sometimes the child is thirsty so some mothers give them water..." - Gp2, P10/11</i> <i>"we give the children porridge in the morning, nsima at midday and porridge again in the evening"- Gp5, P3/7</i>
	Reasons for early introduction of complementary feeding	<i>"we give children porridge at an early stage if they keep crying after breastfeeding" - Gp3, P3/9</i> <i>"when the child continues to cry after breastfeeding, we introduce light porridge because we feel breast milk alone is not enough"- Gp5, P1/7</i> <i>"porridge is sometimes introduced early because we want the child to be full and stop crying for breast milk so that we can concentrate on work"- Gp5, P4/7</i>
Mother's roles in IYCF	Breastfeeding the child	<i>"...ensuring that the child is positioned correctly for proper breastfeeding"- Gp6, P8/8</i> <i>"breastfeeding the child frequently"- Gp6, P4/8</i> <i>"the main role...ensure child is adequately breastfed"- Gp3, P1/9</i>
	Food preparation and feeding older children	<i>"preparing food on time for the child"- Gp1, P9/12</i> <i>"preparing enriched flour for preparing child's porridge is also mothers' role"- Gp3, P4/9</i> <i>"...cooking child's porridge"- Gp6, P4/8</i> <i>"making sure we prepare child's porridge"- Gp6, P4/8</i> <i>"our role is to prepare food for the child and feeding the children"- Gp2, P3/11</i>
	Seeking and applying nutrition and child care information	<i>"we have to get enough information on child feeding"- Gp5, P3/7</i> <i>"we attend under-five clinics to get information on child feeding"- Gp4, P6/6</i> <i>"we have to attend all meetings on child feeding..."- Gp3, P7/9</i>
	Providing emotional support	<i>"mothers are supposed to show love to the children to make breastfeeding easier"- Gp3, P2/9</i>
	Providing food	<i>"we ensure that there is food at home for the child always"- Gp6, P4/8</i> <i>"we help fathers in doing piece work to buy maize for child's porridge"- Gp1, P10/12</i> <i>"growing crops like soya beans, ground nuts and vegetables that can be added to maize porridge to enrich it"- Gp1, P9/12</i>

Continued...

Table 5-3: Themes and sub-themes generated from mothers' focus group discussions (n = 53; FGD-groups: n = 6) continued

Theme	Sub-theme	Participants quotes
Mother's roles in IYCF	Providing food	<i>"we have to ensure that we have enough maize flour for making child's porridge everyday"- Gp6, P8/8</i>
Motivators for mothers	Fulfilling a perceived cultural responsibility	<i>"this is our responsibility as mothers"- Gp1, P11/12</i> <i>"preparing food is culturally a mother's responsibility..."- Gp4, P1/6</i>
	Love and affection for the child	<i>"because of the bond and love we have for the child, we make sure we feed them accordingly"- Gp1, P7/12</i> <i>"the love we have for the children makes us to work hard and find food for them always"- Gp3, P6/9</i> <i>"father's affection and love helps us not to be stressed and breastfeeding is easy"- Gp1, P9/12</i>
	Problems related to household food shortages	<i>"during the hunger season we just have to help providing food for the home so that the child should eat"- Gp3, P5/9</i> <i>"like now (hunger period), we work with the fathers to provide food at home'- Gp5, P6/7</i> <i>"some men are lazy, they do not bring food home so we work hard to provide for the home"- Gp3, P1/9</i> <i>"when the man is a drunkard, they do not provide for the home, the mother therefore has the role of providing food for the home...making sure there is enough porridge for the child"- Gp3, P3/9</i>
	Social support	<i>"we are encouraged at the under-five clinic and they provide us with information on preparing appropriate child food"- Gp2, P6/11</i> <i>"the health personnel sometimes visit us to encourage us"- Gp4, P6/6</i> <i>"mother-in-law's (grandmothers) also help us and encourage us..."- Gp3, P6/9</i>
Father's roles in IYCF	Providing physical support to the wives (mother of the child)	<i>"relieving mothers of heavy work"- Gp2, P6/11</i> <i>"fathers help by doing some chores to give time to mothers to breastfeed"- Gp2, P1/11</i> <i>"preparing food for the child when the mother is sick or not around"- Gp2, P2/11</i> <i>"helping the mothers in feeding the child"- Gp6, P7/8</i>

Continued...

Table 5-3: Themes and sub-themes generated from mothers' focus group discussions (n = 53; FGD-groups: n = 6) continued

Theme	Sub-theme	Participants quotes
Father's roles in IYCF	Providing emotional support to the wives (mother of the child)	<p>"...encouraging the mothers to breastfeed"- Gp1, P9/12</p> <p>"encouraging mothers to prepare food for child..."- Gp1, P8/12</p> <p>"by showing love to mothers ...the father's love helps us to breastfeed easily...we are not stressed"- Gp3, P3/9</p> <p>"sometimes the fathers just encourage us to feed the child"- G4, P1/6</p>
	Providing financial support	<p>"...buying food for the breastfeeding mothers and the children"- Gp2, P2/11</p> <p>"the fathers do piece jobs to bring money home so that we buy food for the child"- Gp5, P6/7</p> <p>"fathers buy food for the child..."- Gp5, P1/7</p> <p>"they increase crop production so that they provide enough food for the home"- Gp1, P9/12</p>
Motivators for fathers	Fulfilling a perceived cultural responsibility	<p>"providing for the home is culturally the father's role"- Gp5, P4/7</p> <p>"...that's how it is, fathers have these roles culturally"- Gp3, P4/9</p>
	Love and affection for the child and mother	<p>"other fathers love their wives and so they help them do some work..."- Gp3, P3/9</p> <p>"their love for their child, some children prefer the fathers to feed them"- Gp5, P2/7</p>
Sources of information	Ministry of Health	<p>"from the under-five clinics when we go with our child..."- Gp1, P10/12</p> <p>"fathers also go with us to prenatal clinics and they get information there"- Gp1, P12/12</p> <p>"extension workers from the Ministry of Health when they organise meetings"- Gp1, P6/12</p> <p>"...the radio airs such programmes and at times posters from the clinics"- Gp2, P9/11</p>
	NGOs, friends and relatives	<p>"NGOs, come to the villages and teach us the appropriate feeding practices"- Gp1, p9/12</p> <p>"grandmothers and other elders mostly after the birth of the first child..."- Gp1, P12/12</p> <p>"grandmothers though sometimes their information contradicts the information from the clinic..."- Gp5, P4/7</p>

Continued...

Table 5-3: Themes and sub-themes generated from mothers' focus group discussions (n = 53; FGD-groups: n = 6) continued

Theme	Sub-theme	Participants quotes
Sources of information	NGOs, friends and relatives	<p><i>"from friends when we are chatting..."- Gp2, P6/11</i></p> <p><i>"we live with the grandmothers in the home and they help us with child feeding"- Gp4, P3/6</i></p> <p><i>"fathers get information from us when we share what we learn from under-five clinics"- Gp5, P1/7</i></p>
Barriers to parental involvement in IYCF	Heavy workload	<p><i>"we have a lot of work, we cannot prepare food for child frequent enough"- Gp2, P3/11</i></p> <p><i>"mostly during the growing season of crops, we have a lot of work and breastfeeding and food preparation for the child suffers sometimes..."- Gp1, P2/12</i></p> <p><i>"women have a lot of work caring for the home and for the children, it is difficult to prepare food frequently and eat..."- Gp5, P4/7</i></p> <p><i>"there is an increased work load for women during the growing season and we do not have enough time to prepare food for children and feed them adequately..."- Gp2, p9/11</i></p>
	Financial constraints	<p><i>"when the money is not enough, we cannot prepare child's food adequately..."- Gp2, P3/11</i></p> <p><i>"men fail to provide enough food for the home because of lack of money"- Gp2, P9/11</i></p> <p><i>"we fail to buy other food items to enrich child's porridge when we have no money"- Gp4, P4/12</i></p> <p><i>"mothers are forced to start small businesses to diversify money sources at home making us busy to prepare child's food frequently"- Gp6, P5/8</i></p> <p><i>"when both parents go in search of money, food preparation is affected"- Gp4, P2/6</i></p> <p><i>"fathers fail to attend under-five clinics to learn about child feeding because they also have to work to provide for the home..."- Gp5, P6/7</i></p> <p><i>"when there is no money for food and we do not eat adequately, we do not have enough milk to breastfeed..."- Gp4, P4/6</i></p> <p><i>"when there is no food, we sometimes prepare less meals (2 meals instead of three) for the children..."-Gp1, P7/12</i></p>

Continued...

Table 5-3: Themes and sub-themes generated from mothers' focus group discussions (n = 53; FGD-groups: n = 6) continued

Theme	Sub-theme	Ethnographic quotation(s)
Barriers to parental involvement in IYCF	Delayed health service delivery	<i>"fathers fail to attend under-five clinics sometimes because of the delayed service delivery at the clinics"- Gp1, P5/12</i>
	Interpersonal	<p><i>"...when fathers have affairs it makes us sad and breastfeeding is affected"- Gp2, P9/11</i></p> <p><i>"...fathers spend more money on the girlfriends instead of buying food for the child"- Gp4, P4/6</i></p> <p><i>"...when fathers have girlfriends they spend more time with the girlfriends instead of being at home and help in caring for the child"- Gp1, P5/12</i></p> <p><i>"good food (animal food) is given to the husbands and not children most times when women try to keep the husbands from having extramarital relationships"- Gp2, P3/11</i></p> <p><i>"sometimes there is a lot of care given to the husband than to the children to keep the husbands from cheating"- Gp3, P5/9</i></p> <p><i>"when the father is a drunkard, they spend money on beer than on buying food for child"- Gp3, P3/9</i></p> <p><i>"when fathers drink a lot of beer, they do not help in caring for the child"- Gp4, P1/6</i></p> <p><i>"when there are arguments in the home and the mother is sad, breastfeeding is negatively affected..."- Gp2, P1/11</i></p> <p><i>"when there are constant arguments in the home and mothers are angry, we may not prepare food for the child adequately"- G4, P2/6</i></p>
	Large number of children	<p><i>"when we have a lot of children, we have a lot of work caring for them and the care given to the younger child is affected"- Gp4, P4/6</i></p> <p><i>"when we have a lot of children, food is most times not enough for them as such we fail to adequately prepare for the younger children"- Gp1, p11/12</i></p> <p><i>"we fail to buy food items to enrich the child's porridge when we have a lot of children"- Gp1, P7/12</i></p>

Continued...

Table 5-3: Themes and sub-themes generated from mothers' focus group discussions (n = 53; FGD-groups: n = 6) continued

Theme	Sub-theme	Participants quotes
Barriers to parental involvement in IYCF	Cultural	<p><i>"caring for a child is considered a feminine role and some men are embarrassed to be seen feeding the child..."- Gp1, P6/12</i></p> <p><i>"breastfeeding a child while pregnant may make the child sick..."- Gp2, P2/11</i></p> <p><i>"when a mother is pregnant while breastfeeding, culturally we are supposed to stop breastfeeding..."- Gp5, P1/7</i></p> <p><i>"breastfeeding mothers not sharing room with fathers...affects fathers participation"- Gp4, p2/6</i></p>
	Negative influence of relations	<p><i>"when the mother-in-law is not comfortable with fathers participating in child feeding, the fathers do not participate"- Gp2, P9/11</i></p> <p><i>"the mother-in-law (grandmothers) most times influence the food we give to the child..."- Gp3, P1/9</i></p> <p><i>"sometimes the grandmothers do not have appropriate information so they end up giving us wrong information"- Gp2, P9/11</i></p> <p><i>"to avoid arguments with mothers in law (grandmothers) sometimes we follow their advice even when it contradicts with the information from the clinic"- Gp1, P1/12</i></p>
	Lack of appropriate knowledge on child feeding	<p><i>"not knowing what to do, affects the father's participation mostly"-Gp5, P5/7</i></p> <p><i>"when we do not know how to prepare appropriate food for the child..."-Gp2, P9/11</i></p> <p><i>"fathers may participate when they know their roles..."-Gp4, P2/6</i></p> <p><i>"we prepare food according to what we know..."-Gp2, P10/11</i></p>
Improving parental participation	Increasing crop production	<p><i>"we need to increase our crop production and have gardens so that we are able to prepare food for our children"- Gp4, P4/6</i></p> <p><i>"we need to have gardens where we grow ground nuts and soya beans to enrich our child's porridge"- Gp4, P5/6</i></p>

Continued...

Table 5-3: Themes and sub-themes generated from mothers' focus group discussions (n = 53; FGD-groups: n = 6) continued

Theme	Sub-theme	Participants quotes
Improving parental participation	Acquiring appropriate IYCF knowledge	<p><i>"fathers have to be encouraged to attend under-five clinics so that they obtain knowledge"- Gp4, P6/6</i></p> <p><i>"...if fathers can understand more of the importance of child feeding, they may understand their roles and remove the perception that child feeding is feminine"- Gp3, P5/9</i></p> <p><i>"...grandmothers also have to be given appropriate information on child feeding so they can influence us positively"- Gp2, P9/11</i></p> <p><i>"by providing appropriate knowledge to both parents so that we all participate appropriately"- Gp5, P8/11</i></p>
	Developing platforms for sharing IYCF information	<p><i>"when there is improved communication within the home, we are comfortable sharing information and this can help improve our participation"- Gp3, P2/9</i></p> <p><i>"improving communication within the home would help fathers know about child feeding and know how to participate"- Gp2, P10/11</i></p> <p><i>"having meetings with other families with young children to discuss ways of how we can improve our participation..."- Gp1, P11/12</i></p>
	Reducing number of children	<p><i>"there is need to reduce the number of children a family should have so that mothers can adequately care for the children"- Gp1, P8/9</i></p> <p><i>"reducing the number of children would help us to manage care for them and feed them"- Gp3, P2/9</i></p>

*Ndiwo** = a side dish consisting of either cooked beans, meat, fish or vegetables

*Nsima*** = a thick maize porridge that can be held in the hand and is eaten with ndiwo

Table 5-4: Themes and sub-themes generated from fathers' focus group discussions (n = 41; FGD-groups: n = 5)

Theme	Sub-theme	Participants quotes
Breastfeeding and food for breastfeeding mothers	Frequency of breastfeeding the child	<p><i>"...mothers have to breastfeed frequently"- Gp3, P4/7</i></p> <p><i>"a baby is supposed to breastfeed frequently even during the night"- Gp1, P1/7</i></p>
	Quality of food for breastfeeding mother	<p><i>"frequent eating by the breastfeeding mother ensures increase in milk production"-Gp4, P1/10</i></p> <p><i>"breastfeeding mothers should eat raw cassava and soaked rice to have enough milk for the child"- Gp1, P8/10</i></p> <p><i>"a diversified diet increases mother's milk production..."- Gp1, P6/10</i></p>
Complementary feeding for infants and young children	Quality of food for infants and young children	<p><i>"mothers should continue breastfeeding the child..."- Gp3, P5/7</i></p> <p><i>"child requires to have a diversified diet..."- Gp1, P6/10</i></p> <p><i>"we just mix soy bean and ground nut flour and maize flour to make enriched porridge for the children..."- Gp1, P3/7</i></p> <p><i>"other foods like meat and eggs are only given to older children" -Gp4, P3/10</i></p> <p><i>"pumpkins and sweet potatoes are not given to a child less than one year because their intestines are still weak"- Gp1, P10/10</i></p>
Father's roles in IYCF	Providing financial support for the home	<p><i>"we purchase farm inputs and make sure we grow soya beans, ground nuts and maize so that mothers can use it to make porridge"- Gp3, P6/7</i></p> <p><i>"we have to buy soybeans, ground nuts and milk to enrich the child's porridge"- Gp4, P5/10</i></p> <p><i>"buying other food items to ensure that there is adequate food at home for the mothers so that they increase milk production"- Gp4, P5/10</i></p> <p><i>"we provide a variety of food through purchases and own production...ensuring that the child eats in-between meals as well"- Gp2, P4/8</i></p> <p><i>"fathers' have to purchase washing detergents that have to be used to wash mother's and child's clothes to reduce disease incidences when breastfeeding due to dirty clothes."- Gp3, P3/7</i></p>

Continued...

Table 5-4: Themes and sub themes generated from fathers' focus group discussions (n = 41; FGD-groups: n = 5) continued

Themes	Sub-theme	Participants quotes
Father's roles in IYCF	Providing physical support to wives (mother of the child)	<p><i>"I help my wife in taking care of our child by carrying the baby when the child is crying. I also help by doing some of the hard chores like fetching water"- Gp1, P10/10</i></p> <p><i>"when the child is older, fathers get to bond with the child and are involved in feeding the child"- Gp5, P2/6</i></p> <p><i>"we help care for the child so the mother can rest"- Gp2, P1/8</i></p> <p><i>"we relieve mothers of other chores so that they can have time to breastfeed"-Gp1, P7/10</i></p> <p><i>"we help in preparing food for the child when the mother is busy".- Gp2, P2/8</i></p>
	Providing emotional support to the wives (mother of the child)	<p><i>"it is our responsibility to make the mothers feel loved so that they are comfortable and not stressed when breastfeeding the child"- Gp2, P2/8</i></p> <p><i>"we remind the mothers to breastfeed. Sometimes mothers oversleep during the night and it is our responsibility to wake them up so that they breastfeed"- Gp3, P2/7</i></p> <p><i>"we remind mothers of their responsibility to breastfeed"- Gp1, P10/10</i></p> <p><i>"...encouraging the mothers to feed the child. We keep on checking if they have given food to the child."- Gp3p, P6/7</i></p>
Motivators for fathers	Fulfilling a perceived cultural responsibility	<p><i>"these are my responsibilities as a husband in the house"- Gp3, P5/7</i></p> <p><i>"that's what being a husband is, we have to provide for the home"- Gp1, P3/10</i></p> <p><i>"that is how it has been culturally, we provide food for the family"- Gp1, p6/10</i></p>
	Love for the wife and child	<p><i>"I help because I love my wife and I do not mind when other people laugh at me...I know that what I am doing is good for my household"- Gp1, P7/10</i></p> <p><i>"Some of the roles are feminine but I do them anyway because I love my wife"-Gp2, P8/8</i></p>

Continued...

Table 5-4: Themes and sub themes generated from fathers' focus group discussions (n = 41; FGD-groups: n = 5) continued

Theme	Sub-theme	Participants quotes
Motivators for fathers	Social support	<p><i>"I get encouragement and support from my mother (grandmother) so I help in caring for our child"- Gp2, P8/8</i></p> <p><i>"the NGO working in our area challenged us to be more involved and now we freely go to under-five clinics with our wives"- Gp1, P10/10</i></p> <p><i>"my mother (grandmother) advised me to help my wife in caring for our child and because we live with her, she still encourages me..."- Gp1, P4/10</i></p>
Mother's roles in IYCF	Breastfeeding the child	<p><i>"women are supposed to give the child breast milk and feed the older children as well"- Gp1, P1/10</i></p> <p><i>"women need to know when to breastfeed and the proper way of breastfeeding the baby"- Gp4, P8/10</i></p> <p><i>"mothers need to know the indicators on how the child behaves when adequately fed and when the baby needs breastfeeding"- Gp2, P3/8</i></p>
	Food preparation and feeding young children	<p><i>"women are supposed to prepare enriched porridge after we provide the ingredients to them"- Gp4, P5/9</i></p> <p><i>"mothers have to ensure that they prepare enough porridge for the child and feed them"- Gp4, P5/10</i></p>
	Seeking and applying nutrition and child care information	<p><i>"mothers have to attend under-five clinics with the children and get information on feeding the child"- Gp4, P10/10</i></p> <p><i>"when there are meetings or trainings on food preparation in the village, mothers have to attend and learn"- Gp1, P1/10</i></p>
	Providing emotional support	<p><i>"the mothers have to show love to their children...it eases the breastfeeding process"- Gp5, P6/6</i></p> <p><i>"children easily breastfeed when they feel loved by mothers"- Gp4, P2/10</i></p>
Motivators for mothers	Fulfilling a perceived cultural responsibility	<p><i>"mothers spend much time with the child as a result they have to feed the child"- Gp4, P2/10</i></p>

Continued...

Table 5-4: Themes and sub themes generated from fathers' focus group discussions (n = 41; FGD-groups: n = 5) continued

Theme	Sub-theme	Participants quotes
Motivators for mothers	Fulfilling a perceived cultural responsibility	<p><i>“culturally, preparing meals and feeding the children are roles for women”- Gp1, P6/10</i></p> <p><i>“mothers go through pregnancy and child birth and this makes them responsible for these roles”- Gp1, P2/10</i></p> <p><i>“it is women’s responsibility to prepare food for us all, children inclusive”,- Gp5, P6/6</i></p> <p><i>“women go to under-five clinics and they are taught how to feed the children, that is why they have to prepare and feed the children”- Gp4, P10/10</i></p>
	Love for the child	<p><i>“mothers have a special bond with the children and it is this love that makes them to be more involved in child feeding”- Gp5, P3/6</i></p> <p><i>“mothers love the children so much and that is why they are more involved”- Gp1, P10/10</i></p>
Sources of information	Ministry of Health	<p><i>“extension workers mostly from the Ministry of Health organise meetings within communities”- Gp4, P10/10</i></p> <p><i>“we are forced to go to prenatal clinics these days...they provide health education messages and sometimes they have topics on child feeding”- Gp4, P9/10</i></p> <p><i>“some of us go with our wives to under-five clinics and they give us messages on child feeding”- Gp5, P1/6</i></p>
		<p><i>“mothers always attend under-five clinics and pre-natal clinics where they get a lot of information”- Gp5, P6/6</i></p> <p><i>“on the radio, there is a programme on nutrition and sometimes they cover child feeding”- Gp2, P7/8</i></p>
	NGOs and relations	<p><i>“NGOs like Nkhotakota AIDS support organisations disseminate child feeding information through the use of male motivators that move door to door in the villages”- Gp5, P1/6</i></p> <p><i>“other organisations like Plan international, Livingstonia synod AIDS programme (LISAP)...”- Gp4, P1/10</i></p>

Continued...

Table 5-4: Themes and sub themes generated from fathers' focus group discussions (n = 41; FGD-groups: n = 5) continued

Theme	Sub-theme	Participants quotes
Sources of information	NGOs and relations	<p><i>“the NGOs teach us about family planning and that it is alright to sleep in the same room with spouses when they have babies and encourage them to breastfeed”- Gp4, P5/10</i></p> <p><i>“in many cases we get information from our wives when they get information from the under-five clinics”- Gp3, P4/7</i></p> <p><i>“grandmothers also give us information when they come to live with us and help with caring for the baby”- Gp1, P2/10</i></p> <p><i>“we also get information from the discussions we have with other fathers as we chat”- Gp3, P6/7</i></p> <p><i>“mother also get information from other mothers and grandmothers...”- Gp2, P3/8</i></p> <p><i>“fliers and posters with information on child feeding from NGOs and government departments”- Gp1, P1/10</i></p>
Barriers to parental involvement in IYCF	Cultural	<p><i>“in our culture, men do not attend women gatherings...we do not even spend much time at home with women as such it is difficult to participate in feeding the child”-Gp2, P2/8</i></p> <p><i>“sometimes we would want to help, but in our culture men are not supposed to do work meant for women, like fetching water and house cleaning”- Gp5, P6/6</i></p> <p><i>“our culture does not allow us to sleep in the same room together with breast feeding mothers...this makes it difficult for us to remind mothers to breastfeed at night”- Gp3, P1/7</i></p> <p><i>“sometimes we fail to do things because of our ego, we are shy to attend under-five clinics, care for children and feed them because they are considered feminine roles”- Gp5, P1/6</i></p> <p><i>“most of us men are just shy to help the mothers in doing some of the work that is culturally assigned for women...we feel our friends will laugh at us”- Gp5, P6/6</i></p> <p><i>“at the clinic I get to be with my daughter-in-law so I would rather not go. Am old now...”-Gp1, P6/10</i></p>

Continued...

Table 5-4: Themes and sub themes generated from fathers' focus group discussions (n = 41; FGD-groups: n = 5) continued

Theme	Sub-theme	Participants quotes
Barriers to parental involvement in IYCF	Financial constraints	<p><i>"I really do try to relieve my wife of some heavy duties, but I fail during the growing season, because I still need her help in the farm as I do not have enough money to employ other casual labourers to help"- Gp1, P6/10</i></p> <p><i>"some of us are poor, so we may not be able to purchase other food items to enrich the child's porridge..."- Gp2, P4/8</i></p> <p><i>"when we do not have enough money, we only buy maize flour for childs porridge and not the other food items like milk for enriching the porridge"- Gp2, P2/8</i></p> <p><i>"we miss out on things like reminding mothers to breastfeed and feed the children when we go to work for long hours"- Gp2, P3/8</i></p> <p><i>"...during the hunger period which is also the growing season, we need money for food and we also have to work in the farms. This makes it hard to relieve the breastfeeding mothers of heavy farm work"- Gp2, P6/8</i></p>
	Heavy workload	<p><i>"there is a lot of work during the growing season time and we fail to help the others with child feeding"- Gp1, P6/10</i></p> <p><i>"mothers have a lot of work during the growing season and this affects how they feed the child"- Gp3, P3/7</i></p> <p><i>"mothers work a lot to help providing food for the home and sometimes do not take good care of the children"- Gp1, P3/10</i></p>
	Interpersonal factors	<p><i>"prenatal clinics have been attended by women all along and some of us are, therefore, shy to be seen going with the women and attending women gatherings"- Gp2, P1/8</i></p> <p><i>"I go with my wife to the under-five clinic but we go to the clinic far from here because I am afraid my friends will laugh at me..."- Gp5, P1/6</i></p> <p><i>"some men are just shy to be seen singing at the clinics. It is so feminine"- Gp5, P5/6</i></p>

Continued...

Table 5-4: Themes and sub themes generated from fathers' focus group discussions (n = 41; FGD-groups: n = 5) continued

Theme	Sub-theme	Participants quotes
Barriers to parental involvement in IYCF	Interpersonal factors	<p><i>"It is embarrassing to be seen at female gatherings so some of us do not just go"-Gp3, P1/7</i></p> <p><i>"when we help the women with household chores, they later tell their friends who make fun of us for doing women's work. It is embarrassing..."- Gp5, P2/6</i></p> <p><i>"children are so attached to the mothers so fathers just limit their role to providing food..."- Gp1, P4/10</i></p> <p><i>"some women become lazy when they are breastfeeding, they keep chatting at home even when there is work"- Gp1,P8/10</i></p> <p><i>"breastfeeding mothers have a smell of milk that is not nice, so some men do not get close to them to help them care for the child because of this"- Gp2, p2/8</i></p> <p><i>"sometimes when we help the mothers, they take it for granted and expect us to keep feeding the child, forgetting that it is their responsibility"- Gp3, P7/7</i></p> <p><i>"sometimes when men have extra-marital affairs...they spend money on them instead of providing food for the home"- Gp4, P1/10</i></p> <p><i>"responsibilities at church make men busy to be at home and help care for child"-Gp5, P1/6</i></p> <p><i>"conflicts between the mothers and grandmothers leave the mothers stressed and they fail to adequately breastfeed'- Gp4, P7/10</i></p> <p><i>"sometimes grandmothers ill-treat our wives and this affects the way the mothers feed the child"- Gp4, P3/10</i></p> <p><i>"fathers, after arguments with the wives, get angry and may end up not buying food for the home"- Gp2, P5/10</i></p>
	Age	<p><i>"some of us are old now to change...we will just encourage the younger fathers to be involved"- Gp1, P8/10</i></p> <p><i>"at this age I may not have another child...I will just have to encourage the younger men"- Gp3, P4/7</i></p>

Continued...

Table 5-4: Themes and sub themes generated from fathers' focus group discussions (n = 41; FGD-groups: n = 5) continued

Theme	Sub-theme	Participants quotes
Barriers to parental involvement in IYCF	Delayed health service delivery	<p><i>"they take long at the clinics waiting for people before they present nutrition information..." - Gp2, P4/8</i></p> <p><i>"we have a lot of work and they delay service delivery at the clinic so we just send the women"- Gp1, P1/10</i></p>
	Lack of appropriate knowledge in IYCF	<p><i>"we do not know what to do sometimes"- Gp1, P7/10</i></p> <p><i>"the problem is we do not know some of these things...if it can be explained we could easily participate"- Gp5, P5/6</i></p> <p><i>"fathers need to know that child feeding is for both parents"- Gp3, P3/7</i></p> <p><i>"most men do not know what to do so they leave everything to the mothers"- Gp1, P9/10</i></p> <p><i>"we do not know the other food items to add to child's porridge so we do not provide that"- Gp4, P1/10</i></p>
Improving parental involvement in IYCF	Acquiring appropriate knowledge in IYCF	<p><i>"we need to take a big role in participating in meetings where information on child feeding is being shared"- Gp3, P5/7</i></p> <p><i>"with adequate knowledge we can participate actively"- Gp5, P4/6</i></p> <p><i>"we need adequate information on child feeding to understand our responsibilities"- Gp2, P6/8</i></p> <p><i>"the importance of our involvement have to be explained clearly to us"- Gp1, p2/10</i></p>
	Developing platforms for sharing of information on infant and young child feeding	<p><i>"women have to share information from the under-five clinics with the fathers through face-to-face discussions"- Gp4, P6/10</i></p> <p><i>"forming clubs for fathers to share information"- Gp3, P1/7</i></p> <p><i>"encourage the concept of male motivators so that fathers learn by example"- Gp5, P2/6</i></p> <p><i>"providing us with information without getting us into women gatherings"- Gp2, P3/8</i></p>

Continued...

Table 5-4: Themes and sub themes generated from fathers' focus group discussions (n = 41; FGD-groups: n = 5) continued

Theme	Sub-theme	Participants quotes
Improving parental involvement in IYCF	Behavioural change	<p><i>“there is need to educate people on some of the bad cultural beliefs so that they are removed”- Gp4, P10/10</i></p> <p><i>“choosing the cultural beliefs that reinforce good behaviours and abandoning the bad ones”- Gp3, P1/7</i></p> <p><i>“stop following cultural beliefs that are not beneficial to child feeding”- Gp4, P10/10</i></p> <p><i>“we need to stop having extra-marital affairs and concentrate our resources at home, providing food at home”- Gp4, P1/10</i></p> <p><i>“we need to find better sources of finding money to buy other food items for the child and breastfeeding mothers”- Gp3, P7/7</i></p> <p><i>“we have to increase our crop production so that we have enough food at home for both child and mother”- Gp4, p3/10</i></p>

5.3 Results from in-depth interviews

A total of three in-depth interviews were conducted with three male local leaders. These local leaders did not participate in the quantitative part of the study (*see paragraph 3.7.4.1*). Local leaders were included in the study because of their involvement as well as the influence that they had in the rural communities.

5.3.1 Socio-demographic characteristics of participants' in-depth interviews

Only one of the three local leaders was below the age of 50 years. Two of the local leaders had formal education (one had primary and the other secondary education), whilst one local leader had no formal education. One of the local leaders had a business as a source of income, while the other two were farmers. The leaders were drawn from Bwengu, Zombwe and Emsizini EPAs (one from each EPA).

5.3.2 Local leaders' perceptions of their involvement in infant and young child feeding

The in-depth interviews captured the perceptions of local leaders on IYCF. The results from the in-depth interviews are presented in two parts. The first part presents the themes and sub-themes that were generated from the interviews (*see paragraph 5.3.2.1*), and the second part presents the themes and sub-themes together with quotes from the participants on each sub-theme (*see paragraph 5.3.2.2*).

5.3.2.1 Emerging themes and sub-themes

Most of the themes that were generated were similar to the themes generated from the FGDs. However, there is an inclusion of two additional themes from the in-depth interviews on the roles and motivators for local leaders in IYCF. Therefore a total of eleven themes were generated from the in-depth interviews. These themes were generated from the participants' discussions. The six general themes, the eleven themes and the sub-themes are presented in Table 5.5.

Table 5-5: Emerging themes from the in-depth interviews with local leaders

General Theme	Theme	Sub-theme
Feeding practices for infants and young children	Breastfeeding and food for breastfeeding mothers	Frequency of breastfeeding the child
		Quantity and quality of food for breastfeeding mother
	Complementary feeding for infants and young children	Quality of food for infants and young children
Roles of parents in IYCF	Fathers roles in IYCF	Providing physical support to wives (mother of the child)
		Providing emotional support to the wives (mother of the child)
		Providing financial support
	Mothers roles in IYCF	Breastfeeding the child
		Food preparation and feeding younger children
		Providing food for the child
		Seeking and applying nutrition and child care information
	Roles of local leaders in IYCF	Local leaders role in IYCF
Motivators for parental involvement in IYCF	Motivators for the fathers involvement	Fulfilling a perceived cultural responsibility
		Social support
	Motivators for the mothers involvement	Fulfilling a perceived cultural responsibility
	Motivators for local leaders	Cultural
		Social support
Source of information	Sources of information	Ministry of Health
		Relatives and NGOs
Barriers to parental involvement in IYCF	Barriers to parental involvement in IYCF	Cultural
		Financial constraints
		Lack of appropriate knowledge
		Interpersonal factors
Improving parental involvement in IYCF	Improving parental involvement in IYCF	Acquiring appropriate IYCF knowledge
		Behavioural change and reduced number of children

5.3.2.2 Themes and sub-themes from in-depth interviews

This section presents in detail the themes and sub-themes that were generated from the in-depth interviews. In addition to the themes and sub-themes, quotes from the participants have also been presented to give a clear description of what was discussed with the local leaders (Table 5.6). The quotes for the local leaders have been presented as LL and the number allocated to the local leader, for instance, LL1 indicates, local leader number 1.

Table 5-6: Local leaders' perceptions of parental involvement in infant and young child feeding (N = 3)

Themes	Sub-theme	Participants quotes
Breastfeeding and food for breastfeeding mothers	Frequency of breastfeeding the child	<i>"mothers are supposed to breastfeed the child frequently"- LL3</i> <i>" when the child cries for breast milk, mothers should be there and breastfeed..."- LL1</i>
	Quantity of food for breastfeeding mother	<i>"breastfeeding mothers have to eat a lot more than their usual intake to be able to breastfeed..."- LL3</i> <i>"mothers are supposed to increase their food intake'- LL1</i>
Complementary feeding for infants and young children	Quality of food for infants and young children	<i>"here in the village, child porridge is mostly prepared by adding soy flour, ground nut flour and maize flour..."LL2</i>
Father's roles in IYCF	Providing financial support	<i>"fathers provide for the home...purchasing sugar and milk to be added to child's porridge'- LL1</i> <i>"fathers mostly participate when they have money so they buy food for child and mother"- LL1</i> <i>"fathers have to increase their food production and grow additional crops like soya"- LL3</i>
	Providing physical support to the wives (mother of the child)	<i>"relieving the mother of heavy chores during the first month after delivery- LL1</i> <i>"giving them breaks when working at the farms so that they breastfeed..."- LL1</i> <i>"helping in feeding the child"- LL1</i>
	Providing emotional support to the wives (mother of the child)	<i>"encouraging the mothers to breastfeed... prepare child for older children..."- LL1</i> <i>"encourage mothers to attend under-five clinics"- LL3</i> <i>"encouraging mothers to prepare enriched porridge"- LL3</i> <i>"encouraging and waking up mothers to breastfeed at night"- LL2</i> <i>"encouraging mothers to eat frequently so that they increase their milk supply"- LL2</i>
Motivators for fathers	Social support	<i>"the health extension workers encourage the fathers"- LL3</i> <i>"the organisation working in my area encourages the fathers to be involved..."- LL1</i>
	Fulfilling a perceived cultural responsibility	<i>"that's what being a husband and father entails..."- LL1</i> <i>"culturally fathers just have these roles"- LL2</i>

Continued...

Table 5-6: Local leaders' perceptions of parental involvement in infant and young child feeding (N=3) continued

Themes	Sub-theme	Participants quotes
Mother's roles in IYCF	Breastfeeding the child	<i>"mothers are supposed to breastfeed the child"-LL3</i> <i>"mothers should frequently breastfeed the children"-LL1</i>
	Food preparation and feeding young children	<i>"mothers prepare child's porridge and feeds the children"-LL1</i> <i>"feeding the children is the mother's responsibility"-LL3</i>
	Providing food	<i>"sometimes they purchase food items for enriching child's porridge"-LL2</i> <i>"ensuring that there is enough food for the home..."-LL2</i>
	Seeking and applying nutrition and child care information	<i>"going with the child to under-five clinic so that they obtain knowledge on child feeding"-LL3</i>
Motivators for mothers	Fulfilling a perceived cultural responsibility	<i>"it is cultural for mothers to have these roles"-LL3</i> <i>"children spend much time with the mothers so they have to feed the children"-LL3</i>
Local leader's role	Provide emotional support	<i>"my role is to encourage the parents to participate and for them to follow the advice from the health extension workers in my area"-LL1</i> <i>"encourage people to grow fruits to help in feeding the children"-LL3</i> <i>"we encourage fathers to increase their crop production so that they are able to provide for their home"-LL2</i> <i>"to encourage parents to follow advice from the under-five clinic and the extension workers and change bad cultural beliefs "-LL1</i>
Motivators for local leaders	Social support	<i>"the organisations that work in my area encourages us to be involved so that the community members should be involved too"-LL2</i> <i>"extension workers work with the local leaders so they encourage us"- LL3</i>
	Fulfilling a perceived cultural responsibility	<i>"it is the role of local leaders to encourage good practices in the community..."- LL2</i>
Sources of information	Relations and NGOs	<i>"...from friends and grandparents"- LL1</i> <i>"fathers get information from their wives..."- LL3</i> <i>"the NGOs working in the areas..."- LL2</i>

Continued...

Table 5-6: Local leaders' perceptions of parental involvement in infant and young child feeding (N=3) continued

Themes	Sub-themes	Participants quotes
Sources of information	Ministry of Health	<p>“...from extension workers from the Ministry of Health”- LL1</p> <p>“health committees in the community...”- LL1</p> <p>“...health volunteers that learn from the clinics and are responsible for holding meetings...”- LL1</p> <p>“prenatal clinics...”- LL3</p> <p>“from the radio, Ministry of Health programme, sometimes they have messages on these issues...”- LL1</p>
Barriers to parental involvement in IYCF	Culture	<p>“feeding the child is considered mother’s role in our culture...”- LL1</p> <p>“fathers are not supposed to be very close with the women (mostly breastfeeding women) so they are most times not at home”- LL3</p>
	Financial constraints	<p>“when there is no money, fathers do not buy other food items to add to child’s porridge”- LL1</p> <p>“when a family has no money it is difficult to feed the child”- LL3</p>
	Interpersonal reasons	<p>“it is embarrassing for us men to be seen at women’s gathering and singing”- LL1</p> <p>“conflicts also affect parental participation...”- LL3</p> <p>“some fathers just ignore and do not participate even when they know they have to participate”- LL3</p> <p>“extramarital affairs affect child’s feeding...the money goes to the girlfriends”- LL2</p>
	Lack of knowledge in IYCF	<p>“sometimes the parents do not have the appropriate knowledge hence fail to do some roles...”- LL2</p> <p>“the parents do not know some of these things...”- LL3</p>
Improving parental involvement in IYCF	Appropriate knowledge in IYCF	<p>“explaining the importance of parental participation in child feeding clearly to the parents”- LL1</p> <p>“educating both parents on child feeding...”- LL3</p> <p>“explaining to fathers clearly of their participation”- LL3</p>
	Behavioural change	<p>“changing some of our bad cultural practices that hinder optimal IYCF...”- LL3</p> <p>“fathers have to find better ways of finding money and providing for the home”- LL3</p> <p>“growing diversified crops so that they have other food items like soya to enrich child’s porridge”- LL3</p>

Continued...

5.4 Summary of mothers’ fathers’ and local leaders’ perceptions on IYCF and parental and local leaders’ roles in IYCF

This section presents a summary of the findings from the mothers’ and fathers’ FGDs, and the local leaders’ in-depth interviews. The findings are on the mothers’, fathers’ and local leaders’ perceptions on IYCF and the roles that parents and local leaders have in IYCF. Table 5.7 presents the themes, sub-themes and a summary of the findings generated from the FGDs and in-depth interviews.

Differences were observed in the generated themes and sub-themes as some issues were only discussed in some of the groups. In the table, “not applicable (N/A)” has been used in places where a particular issue was not discussed and a theme was not generated from the mothers’ and fathers’ FGDs. “No response” has been used in places where a particular theme was discussed but the sub-theme was not discussed in the mothers’ and fathers’ FGDs, and/or in the local leaders’ in-depth interviews.

Table 5-7: Summary of findings on the themes from focus group discussions and in-depth interviews

General theme	Theme	Sub-theme	Findings		
			Mothers' FGDs	Fathers' FGDs	Local leaders' in-depth interviews
Feeding practices for infants and young children	Breastfeeding and food for breastfeeding mothers	Frequency of breastfeeding the child	<ul style="list-style-type: none"> Breastfeeding mothers to breastfeed frequently during the day and night, and whenever both mother and child wants (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Factors affecting breastfeeding	<ul style="list-style-type: none"> Stress (mothers need to be relaxed) Mother's diet (<i>Table 5.3</i>) 	No response	No response
		Quantity and quality of food for breastfeeding mother	<ul style="list-style-type: none"> Breastfeeding mothers to increase food intake for increased milk supply (<i>Table 5.3, 5.4 & 5.6</i>) 		
			<ul style="list-style-type: none"> A diversified diet for breastfeeding mothers Breastfeeding mothers need an adequate diet for effective breastfeeding The misconception that eating cassava and soaked rice enhances milk production (<i>Tables 5.3 & 5.4</i>) 	No response	
	Complementary feeding for infants and young children	Quality of food for infants and young children	<ul style="list-style-type: none"> Normally children ate maize porridge enriched with ground nut and soya bean flour <ul style="list-style-type: none"> Other foods were eaten as <i>ndiwo</i>* (meat, fish, beans and vegetables) by children >12 months when they were able to chew (<i>Tables 5.3, 5.4 & 5.6</i>) 		
			<ul style="list-style-type: none"> Households couldn't afford a diversified diet that included animal food Misconception that some foods made children sick <ul style="list-style-type: none"> eggs, pumpkins and sweet potatoes (<i>Tables 5.3 & 5.4</i>) 		No response
			No response	<ul style="list-style-type: none"> Mothers to continue breastfeeding and provide a diversified diet (<i>Table 5.4</i>) 	No response
		Introduction and frequency of meals for complementary feeding	<ul style="list-style-type: none"> Complementary food introduced earlier than six months Children fed complementary food at least three times/ day (<i>Table 5.4</i>) 	No response	No response

Continued...

Table 5-7: Summary of findings on the themes from focus group discussions and in-depth interviews continued

General theme	Theme	Sub-theme	Summary of findings		
			Mothers' FGDs	Fathers' FGDs	Local leaders' in-depth interviews
Feeding practices for infants and young children	Complementary feeding for infants and young children	Reasons for early introduction of complementary foods	<ul style="list-style-type: none"> • Mothers felt child was thirsty • Child continued crying despite being breastfed <ul style="list-style-type: none"> - Mothers felt child was hungry • To ensure that child had eaten and slept so that mothers could do other household chores (<i>Table 5.3</i>) 	No response	No response
Roles of parents in IYCF	Fathers roles in IYCF	Providing physical support to wives (mother of the child)	<ul style="list-style-type: none"> • Relieving mothers of heavy chores so that they could concentrate on breastfeeding <ul style="list-style-type: none"> - Normally during first month after delivery • Helping in feeding and caring for the older children • Preparing food for child when mother is sick or busy (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Providing emotional support to the wives (mother of the child)	<ul style="list-style-type: none"> • Making mothers feel loved • Encouraging mothers to feed children <ul style="list-style-type: none"> - Waking them up to breastfeed at night - Reminding mothers to prepare food and feed older children (<i>Tables 5.3, 5.4 & 5.6</i>) 		
			No response	No response	<ul style="list-style-type: none"> • Encouraging mothers to attend under-five clinics (<i>Table 5.6</i>)
		Providing financial support	<ul style="list-style-type: none"> • Described as fathers' main role • Proving money, food & other household necessities for the home by <ul style="list-style-type: none"> - Increasing crop production - Operating businesses and securing temporary jobs to get money (<i>Tables 5.3, 5.4 & 5.6</i>) 		

Continued...

Table 5-7: Summary of findings on the themes from focus group discussions and in-depth interviews continued

General theme	Theme	Sub-theme	Summary of findings		
			Mothers' FGDs	Fathers' FGDs	Local leaders' in-depth interviews
Roles of parents in IYCF	Mothers roles in IYCF	Breastfeeding the child	<ul style="list-style-type: none"> Ensuring optimal breastfeeding of the child <ul style="list-style-type: none"> - Correct positioning of child for proper breastfeeding - Frequently breastfeeding the child (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Food preparation and feeding children	<ul style="list-style-type: none"> Preparing enriched food for older children (>six months) and feeding them (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Seeking and applying nutrition and child care information	<ul style="list-style-type: none"> Attending under-five, prenatal and community nutrition meetings to obtain information on IYCF (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Providing emotional support to the child	<ul style="list-style-type: none"> Showing love to the children and developing a bond between the mother and the child which made breastfeeding easier (<i>Tables 5.3 & 5.4</i>) 		
		Providing food for the child	<ul style="list-style-type: none"> Helped fathers to provide food for the home by growing food crops and doing piece work to obtain money (<i>Table 5.3</i>) 	No response	<ul style="list-style-type: none"> Purchasing food items for enriching child's porridge (<i>Table 5.6</i>)
Roles of local leaders in IYCF	Local leaders role in IYCF	Providing emotional support	N/A	N/A	<ul style="list-style-type: none"> Encouraging the parents to actively participate in IYCF Assisting in changing cultural beliefs that hindered optimal IYCF (<i>Table 5.6</i>)

Continued...

Table 5-7: Summary of findings on the themes from focus group discussions and in-depth interviews continued

General theme	Theme	Sub-theme	Summary of findings		
			Mothers' FGDs	Fathers' FGDs	Local leaders' in-depth interviews
Motivators for parental involvement in IYCF	Motivators for the fathers involvement	Fulfilling a perceived cultural responsibility	<ul style="list-style-type: none"> Providing food and household necessities was a role culturally assigned to fathers (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Love for the wives and children	<ul style="list-style-type: none"> Fathers helped in IYCF out of their love for wife and child (<i>Tables 5.3 & 5.4</i>) 	No response	
		Social support	<ul style="list-style-type: none"> Fathers were encouraged to participate by friends, grandmothers, NGOs and extension workers from the Ministry of Health (<i>Tables 5.3 & 7 5.4</i>) 	No response	
	Motivators for the mothers involvement	Fulfilling a perceived cultural responsibility	<ul style="list-style-type: none"> Feeding and caring for the infants were culturally regarded as obligations of women (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Love and affection for the child	<ul style="list-style-type: none"> Mothers were actively involved in IYCF because of their love for the child (<i>Tables 5.3 & 5.4</i>) 	No response	
		Problems related to household food shortages	<ul style="list-style-type: none"> Mothers helped in providing food during household food shortages (during growing season) (<i>Table 5.3</i>) 	No response	No response
		Social support	<ul style="list-style-type: none"> Encouraged by grandmothers and extension workers (<i>Table 5.3</i>) 	No response	No response
	Motivators for local leaders' involvement in IYCF	Motivators for local leaders' involvement in IYCF	Culture	N/A	N/A
Social support			N/A	N/A	<ul style="list-style-type: none"> Encouragement from NGOs and extension workers (<i>Table 5.6</i>)

Continued...

Table 5-7: Summary of findings on the themes from focus group discussions and in-depth interviews continued

General theme	Theme	Sub-theme	Summary of findings		
			Mothers' FGDs	Fathers' FGDs	Local leaders' in-depth interviews
Sources of information	Sources of information	Ministry of health	<ul style="list-style-type: none"> Information shared through community health meetings, health education at under-five and prenatal clinics, health programmes aired on the radio and posters (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Relatives friends and NGOs	<ul style="list-style-type: none"> Grandmothers and other elderly women, friends and NGOs working in the areas (<i>Tables 5.3, 5.4 & 5.6</i>) 		
Barriers to parental involvement in IYCF	Barriers to parental involvement in IYCF	Cultural	<ul style="list-style-type: none"> Child feeding and other household chores were considered feminine roles and some fathers were shy to participate Breastfeeding mothers did not sleep in the same room with fathers and this hindered fathers' participation (<i>Tables 5.3, 5.4 & 5.6</i>) 		
			<ul style="list-style-type: none"> Misconception that breastfeeding while pregnant makes child sick (<i>Table 5.3</i>) 	No response	No response
		Heavy workload	<ul style="list-style-type: none"> Mothers had multiple chores in the home and farms (mostly during the growing season) and this affected the frequency of breastfeeding and feeding the older children (<i>Table 5.3 & 5.4</i>) 		No response
		Financial constraints	<ul style="list-style-type: none"> Major barrier to fathers' participation in IYCF Fathers failed to adequately provide food for the household and participate in IYCF when they had no money Lack of money resulted in less frequent meals for children and inadequate food items to enrich child's porridge (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Lack of appropriate knowledge on IYCF	<ul style="list-style-type: none"> When parents have poor nutrition knowledge on IYCF, their participation in IYCF is poor <ul style="list-style-type: none"> Fathers actively participated when they knew their roles Mothers could prepare appropriate food for child when they had adequate knowledge on IYCF (<i>Tables 5.3, 5.4 & 5.6</i>) 		

Continued...

Table 5-7: Summary of findings on the themes from focus group discussions and in-depth interviews continued

General theme	Theme	Sub-theme	Summary of findings		
			Mothers' FGDs	Fathers' FGDs	Local leaders' in-depth interviews
Barriers to parental involvement in IYCF	Barriers to parental involvement in IYCF	Interpersonal factors	<ul style="list-style-type: none"> Fathers spend money on extramarital affairs and beer resulting in less money for purchasing food for the household Conflicts in the home left mothers stressed and they failed to adequately breastfeed (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Negative influence of relations	<ul style="list-style-type: none"> When grandmothers had inappropriate information on IYCF, they influenced inappropriate feeding practices on the mothers When the grandmothers perceived child feeding as the mothers' role, they discouraged the fathers' participation (<i>Table 5.3</i>) 	No response	No response
		Age	No response	<ul style="list-style-type: none"> Older fathers rarely participated in child feeding in comparison to the younger fathers (<i>Table 5.4</i>) 	No response
		Delayed health service delivery	<ul style="list-style-type: none"> Delayed delivery of health services at under-five clinics discouraged fathers participation (spending a lot of time at the clinics negatively affected their businesses (<i>Tables 5.3 & 5.4</i>)) 		No response
		Large number of children	<ul style="list-style-type: none"> Large number of children meant increased work for mother and more food requirement which household did not have (<i>Table 5.3</i>) 	No response	No response

Continued...

Table 5-7: Summary of findings on the themes from focus group discussions and in-depth interviews continued

General theme	Theme	Sub-theme	Summary of findings		
			Mothers' FGDs	Fathers' FGDs	Local leaders' in-depth interviews
Improving parental involvement in IYCF	Improving parental involvement in IYCF	Acquiring appropriate IYCF knowledge	<ul style="list-style-type: none"> Acquiring appropriate knowledge on IYCF could help improve parental participation Timely and correct information on IYCF must target mothers, fathers as well as grandmothers (<i>Tables 5.3, 5.4 & 5.6</i>) 		
		Behavioural change and reduced number of children	<ul style="list-style-type: none"> Traditions and cultural beliefs that hindered parental involvement in IYCF and appropriate IYCF practices needed to be changed (<i>Table 5.3, 5.4 & 5.6</i>) 		
			<ul style="list-style-type: none"> Reducing the number of children which would reduce the workload for mothers and result in their increased participation (<i>Table 5.3</i>) 	No response	No response
		Developing platforms for sharing information on IYCF	<ul style="list-style-type: none"> Establishment of clubs to discuss issues affecting IYCF and breastfeeding mothers Sharing of various experiences and contexts regarding the IYCF, as well as ways in which they could increase their food sources (<i>Tables 5.3 & 5.4</i>) 		No response

*Ndiwo** = a side dish consisting of either cooked beans, meat, fish or vegetables. Usually eaten with a main dish consisting of either nsima or rice

5.5 Summary

A total of eleven FGDs were conducted (five with 41 fathers and six with 53 mothers). Three in-depth interviews were conducted with three local leaders.

Nine themes were generated from the FGDs, which included breastfeeding and food for breastfeeding mothers, complementary feeding for infants and young children, the father's roles in IYCF, the mother's roles in IYCF, motivating factors for mothers, motivating factors for fathers, participants sources of information on IYCF, barriers to parental involvement and ways of improving parental involvement in IYCF. Two additional themes were generated from the in-depth interviews with local leaders, which included the roles of local leaders and the motivating factors for local leaders' involvement.

Providing physical, emotional and financial support to the wives (mothers) were identified as the roles of fathers in IYCF, while the mother's roles were identified as breastfeeding the child, preparing and providing food for the child and feeding other young children, seeking and applying nutrition and child care information, and providing emotional support. Both the fathers and mothers were mostly motivated to perform their roles to fulfil perceived cultural responsibilities. Other motivating factors for mothers included the love they had for their children, problems relating to household food shortages, as well as the social support they received. Fathers were also motivated by the love they had for their wives and children, and social support.

Providing social support to families was identified as the local leaders' role in IYCF and they were motivated by their need to fulfil a cultural responsibility.

The Ministry of Health, NGOs and relatives were identified as the sources of information on IYCF. Culture, heavy workload, financial constraints, lack of appropriate IYCF knowledge, interpersonal factors, negative influence of relatives, age of parents, large number of children and delayed health service delivery were identified as some factors that hindered the parents' involvement in IYCF.

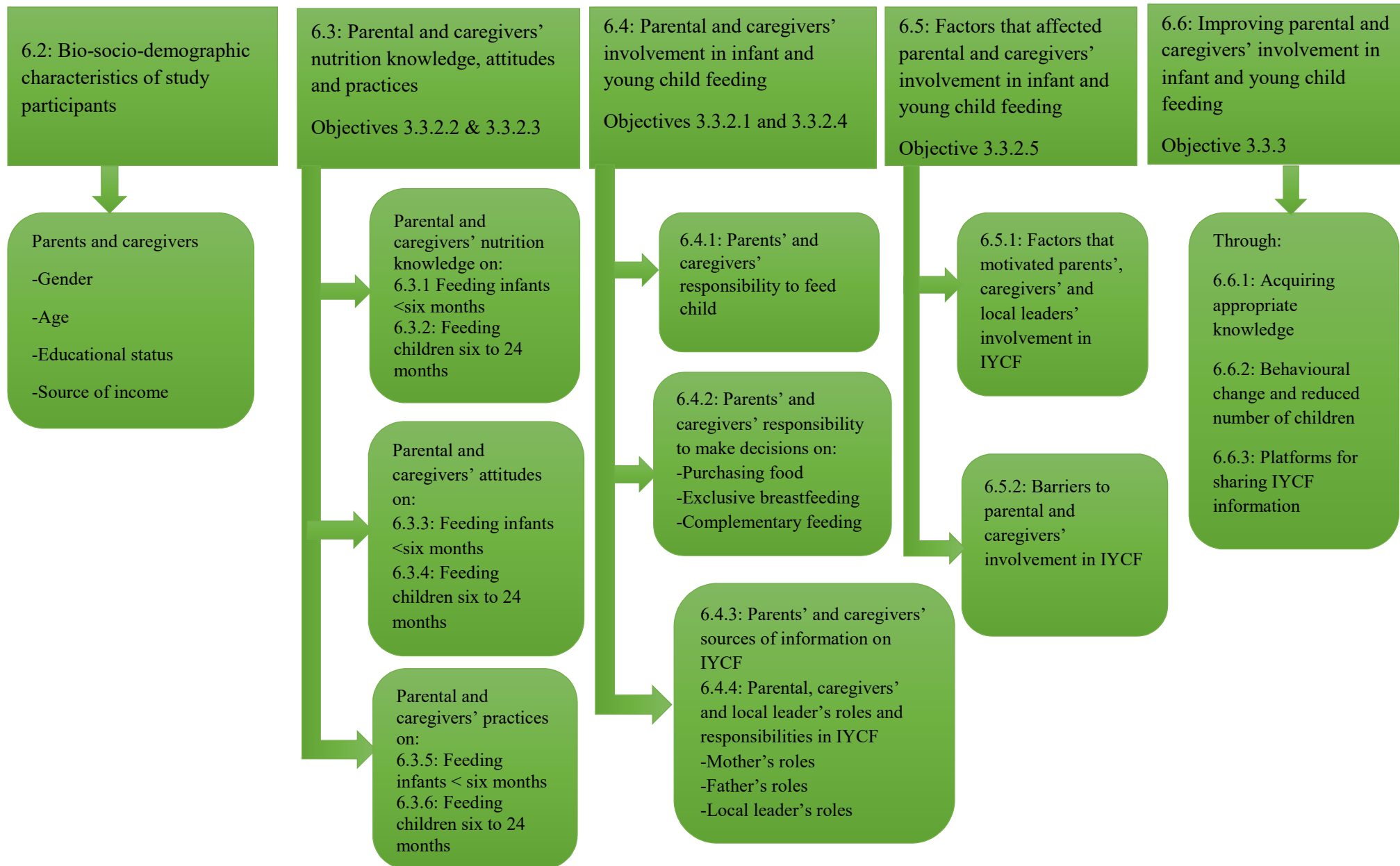
Participants mentioned the following ways of improving IYCF: acquiring appropriate IYCF knowledge, behavioural change in communities regarding certain cultural beliefs and practices, reduced number of children, and developing platforms for sharing information on IYCF.

CHAPTER 6

DISCUSSION

6.1 Introduction

This chapter presents the discussion of the study results. The results are discussed in an integrative manner (quantitative and qualitative findings) in line with the objectives of the study. Figure 6.1 presents the outline for the discussion. The presentation of the discussion is done in five main parts, namely the bio-socio-demographic characteristics of the participants (*section 6.2*) (from both the quantitative and qualitative research domains); the parents' and caregivers' nutritional KAP (*section 6.3*) (findings mainly in the quantitative research domain); the parents' and caregivers' involvement in IYCF (*section 6.4*) (integration of findings in quantitative and qualitative research domains); the factors that affected the involvement of parents in IYCF (*section 6.5*) (findings in the qualitative research domain), and the ways of improving parental involvement in IYCF (*section 6.6*) (findings in the qualitative research domain).



[150]

Figure 6-1: Outline of the presentation of the discussion

6.2 Bio-socio-demographic characteristics of study participants

This study had more female participants than males. In the quantitative domain, 52 participants with children below six months of age, and 105 participants with children aged six to 24 months were females, while 42 participants with children below six months of age and 86 participants with children aged six to 24 months were males. This was because some of the households were female headed. However, the majority of the households were male headed. Similarly, more women ($n = 53$) than men ($n = 41$) participated in the qualitative study. This is a true representation of the Malawian population as a similar trend was also observed in the 2016 MDHS, where 51% of the participants were female and 49% were male, and a quarter of the households were female headed (NSO & ICF-International, 2016). It was also observed that most of the women, who participated in this study, were younger than the male participants, suggesting that the women from the study area started having children at a younger age than their male counterparts. Mothers' maternal age has an effect on IYCF where it is suggested that older mothers make independent decisions and have improved feeding practices, while younger women are more easily influenced into making decisions on child care practices by either grandmothers or men (Kerr, Dakishoni, Shumba, Msachi & Chirwa, 2008; Mossman *et al.*, 2008). This may imply that even though younger women attain knowledge on IYCF, the knowledge might not translate into practice.

Studies have also found the parental level of education to influence IYCF, suggesting that more educated parents are more likely to have a better understanding of the IYCF practices and hence have improved feeding practices (Katepa-Bwalya *et al.*, 2015). Primary education is free in Malawi, therefore most of the population attain primary education in comparison to secondary education. Most of the participants in this study (61.7% with children below six months of age and 57.1% with children aged six to 24 months in the quantitative study, and 56.6% from FGDs in the qualitative study) had only attended primary education ranging from spending three to eight years in school. Similar observations were made in a study in Mzimba (FAO, 2014) where 61.6% of the participants reported to have at least primary education. Similarly, in the MDHS of 2016, 54% of women and 50% of men were reported to have attended primary education, but only 8% of women and 9% of men were reported to have completed primary education (NSO & ICF-International, 2016).

Agriculture plays a major role in defining Malawian rural livelihoods with over 80% of the rural population involved in farming (Tchale, 2009; FAO, 2014). It was therefore not surprising that the majority of the participants (30% with children below six months of age, 50.8% with

children aged six to 24 months and 81.1% from the FGDs) reported farming as their main source of income and over a quarter of the participants (27.7%) with children aged six to 24 months reported a combination of farming and other sources of income. Two other studies that were conducted in Mzimba district also found that most of the population were small holder farmers (Kerr et al., 2008; FAO, 2014). This implies that most of the foods consumed in these households were from their own farm produce, therefore diversifying their production would result in diversified meals. In as much as the operation of small businesses was being encouraged in the rural areas of Malawi in the months preceding the study, only a small proportion of the participants (5.8% with children less than six months of age and 19.1% with children aged six to 24 months) in the quantitative study, and 18.9% of the women, 17.1% of the men and two of the local leaders from the qualitative study reported operating small scale businesses.

6.3 Parental and caregivers' nutritional knowledge, attitudes and practices in infant and young child feeding

This part presents the discussion in line with objectives 3.3.2.2 and 3.3.2.3. The objectives are as follows:

- (i) To assess and describe mothers', fathers' and caregivers' nutrition knowledge, attitudes and practices respectively with respect to IYCF of children aged zero to 24 months in Mzimba-north District, Malawi using a semi-structured modified FAO knowledge, attitudes and practices questionnaire (Macías *et al.*, 2014) (*objective 3.3.2.2*).
- (ii) To compare and describe the mothers', fathers' and caregivers' nutrition knowledge, attitudes and practices with respect to IYCF of children aged zero to 24 months in Mzimba-north district, Malawi (*objective 3.3.2.3*).

6.3.1 Parental and caregivers' nutritional knowledge in feeding infants below six months of age

All of the participants in the quantitative study (100% males and 96.2%) had good knowledge of the first food to give a new born, which is breast milk (*Table 4.8*). Other studies from Malawi, Zambia and Ethiopia also reported that mothers knew that they had to give a baby breast milk immediately after birth though they reported poor practices (Phiri, 2013; Katepa-Bwalya *et al.*, 2015; Tadele, Habta, Akmel & Deges, 2016). However, this study did not ask about the participants' practice of the first food, i.e. what they actually gave to the children to verify if their good knowledge was translated into practice. Other Malawian studies have reported that children were given traditional medicine (dawale: a herbal infusion) and water

soon after birth to prevent them from diseases (Kerr, Berti & Chirwa, 2007; Kerr *et al.*, 2008; Phiri C., 2013; FAO, 2014). This practice was commonly found in situations where the child was born at home or by the help of a traditional birth attendant (NSO & ICF Macro, 2011). In the years preceding this study, there was a campaign by the Ministry of Health to encourage mothers to give birth at the clinics. Up to 91% of all live births that occurred five years before the 2016 MDHS were reported to have delivered in a health facility (Zamawe *et al.*, 2015; NSO & ICF-International, 2016). This may have increased the people's knowledge on the first food to give a child. The practice of giving a new born other foods before breast milk has also been reported in other studies. In a study that pooled results from 22 countries within the Sub-Saharan region, plain water, milk other than breastmilk and sugar water were reported to be provided to new borns (Berde & Ozcebe (2017). A study in Mali also reported that children were given warm water to "open the baby's stomach" so that they could breastfeed (Pelto *et al.*, 2003). Honey and sugar water were also reported as the first food given to a new born by more than half of the participants in an Indian study (Subbiah & Jeganathan, 2012). Although all of the participants in this study knew that breastmilk was the first food to give a new born, a relatively smaller proportion of fathers (61.9%) than mothers (76.9%) were aware of the time for initiation (*Table 4.8*). It has been reported that when mothers gave birth at the clinics, the health personnel brought the baby to the mother soon after delivery hence mothers breastfed within an hour (Katepa-Bwalya *et al.*, 2015). The mothers' knowledge could therefore be as a result of their experiences; they reported their experiences in comparison to men who in most times were absent during child birth (Kululanga *et al.*, 2012a).

Even though the majority of the participants (90.5 % of males and 100% of females) reported to have ever heard about exclusive breastfeeding, they demonstrated lower knowledge regarding its meaning. More than half of the mothers knew the meaning (63.5%) and the recommended period (84.6%) for exclusive breastfeeding. Only half of fathers knew the meaning of excluding breastfeeding and 88.1% knew the recommended period for exclusive breastfeeding (*Table 4.8*). A study in Ghana also had similar findings where about 26% of the participants were unable to define exclusive breastfeeding, and 66% defined exclusive breastfeeding as giving the child water and breastmilk (Mogre, Dery & Gaa, 2016). Under-five clinics were reported to be the main source of information on child care and nutrition in Malawi (Kerr *et al.*, 2008; Phiri, 2013), as well as in other African countries (Oche, Umar & Ahmed, 2011; Tadele *et al.*, 2016). Since it was mostly the mothers who attend these clinics, they were more likely to have better nutrition knowledge than the fathers. One third (35.7%) of the fathers

gave the response that exclusive breastfeeding meant frequent breastfeeding of the child (*Table 4.8*). The researcher observed that during the time of data collection for this study, the Ministry of Health had messages encouraging frequent breastfeeding of infants on the radio and this could have been the reason for the fathers' misconception on the meaning of exclusive breastfeeding. Considering that only half of the children were reported to have been exclusively breastfed (*Table 4.16*), some of the fathers possibly had wrong information based on what was practised in their household. Exclusive breastfeeding is recommended for the first six months after birth mainly because during the first six months of life, breast milk provides all the required nutrients and liquids as well as the immunologic properties that a baby needs (WHO, 2009).

In this study more than a quarter of the participants (31% of males and 30.8% of females) from the quantitative survey knew that breast milk provided all the required nutrients for a child during the first six months of life. A quarter of the participants (21.4% of males and 28.8% of females) mentioned that before six months the baby's intestines are not well developed to digest other foods (*Table 4.8*). The reason that a baby's intestines are underdeveloped before six months of age was also reported in a *Zambian study* (Katepa-Bwalya *et al.*, 2015). This reasoning, although it is correct, might however result in parents introducing water to the infants, since water was not considered food because it is not thick (Nduati, Arum & Kategha, 2008; FAO, 2014). More of the male participants (23.8%) than the female participants (19.2%) did not know the reason why exclusive breastfeeding was recommended for the first six months and this could result in poor practices. This study also revealed that parents lacked knowledge on the benefits of exclusive breastfeeding, especially to the mother. (*Table 4.8*). The most reported reason for the benefits of exclusive breastfeeding to the child was that the baby grows healthy. A few participants (9.6% of males and 21.1% of females) mentioned other benefits of exclusive breastfeeding to the child. This was also reported in a study in California where exclusive breastfeeding was mostly linked to improving the child's health (Wojcicki, Gugig, Tran, Kathiravan, Holbrook & Heyman, 2010). More than half of the participants (71.4% of males and 57.7% of females) did not know the benefits of exclusive breastfeeding to the mother. Inadequate knowledge of the maternal benefits of exclusive breastfeeding have also been reported in a Ghanaian study (Mogre *et al.*, 2016). The lack of knowledge on the benefits of exclusive breastfeeding to the mother and baby was also reported in studies from Pakistan and Bangladesh as the reason why some mothers did not exclusively breastfeed (Memon, Shaikh, Kousar & Memon, 2010; Saleh, Ferdous Ara, Hoque & Alam, 2014) .

A baby's cry was reported as a sign that the baby wanted to be breastfed in this study (*Table 4.8*). This result corroborates with other studies (Kerr *et al.*, 2007; Kerr *et al.*, 2008; Thuita, 2011). However, crying is one of the late signs of hunger and as such should not be used. A caregiver/ parent will notice other behavioural cues such as sucking on his/her fist, smacking lips, waking up and acting restless. By the time a hungry baby is wailing, he may be too stressed to start eating easily. It is therefore recommended that a caregiver notices the hunger cues early before the child starts crying. (WHO, 2003; WHO, 2005)

Most of the participants were aware that a child had to be breastfed on demand. Participants in the fathers' and mothers' FGDs, as well as local leaders also added that mothers had to breastfeed when the mother wanted to do so. This was because the participants felt that sometimes the child did not cry or show signs of being hungry, but they still needed to be breastfed (*Table 5.7*).

Even though this study did not report on the actual breastfeeding frequency, a high breastfeeding frequency has been reported in Mzimba district, Malawi by the FAO (2014) and the MDHS of 2010 and 2016 (NSO & ICF Macro, 2011; NSO & ICF-International, 2016). Other studies from Africa and India have also reported that most mothers knew the breastfeeding frequency, and that they breastfed their children on demand (Oche *et al.*, 2011; Subbiah & Jeganathan, 2012; Tadele *et al.*, 2016; Prabhu, Radhe, Naik, Brahmanekar & Behere, 2016).

In this study most of the participants (88.2% of males and 63.4% of females) knew of some of the ways mothers could maintain their breast milk supply (*Table 4.8*). The most common method mentioned by 45.2% of the male and 44.2% of the female participants was that the mothers needed to eat well and have a balanced diet. This was also mentioned in the FGDs and in-depth interviews (*Table 5.7*) where participants reported that for mothers to produce adequate volumes of breast milk, they needed to increase their food intake and eat a diversified diet. Other African studies also had similar findings where the mothers' dietary intake was mostly linked to breastfeeding (Fjeld, Siziya, Katepa-Bwalya, Kankasa, Moland & Tylleskär, 2008; Arts *et al.*, 2010). Although only 7.4% of the participants from the quantitative study mentioned drinking liquids as a way of increasing mothers' milk supply (*Table 4.8*), soft drinks were highly mentioned as the food the fathers bought for breastfeeding mothers to increase their milk supply (*Table 4.4*). Mothers from Delhi (India) also reported drinking milk and ghee to increase their milk production (Subbiah & Jeganathan, 2012). Only few of the participants

(6.4%) knew that exclusive breastfeeding on demand was another way of increasing the mother's breast milk supply. The perception that mothers did not have adequate breast milk when they had not eaten has also been presented in another studies as the reason mothers did not breastfeed (Kerr *et al.*, 2008; Osman, El Zein & Wick, 2009; Raffle, Ware, Borchardt & Strickland, 2011).

More of the male participants (66.7%) than females (48.1%) did not know about expressing breastmilk and storing it safely to be given to the child when the mother was away (*Table 4.8*). This could be because the expression of breastmilk is not a common practice in Malawi (NSO & ICF Macro). Some participants in informal discussions also mentioned that they felt expressing breastmilk for a baby's consumption was unhygienic. Similar observations were made in a study from Ghana where mothers felt that the expressed breastmilk could get contaminated or lose its nutrients (Mogre *et al.*, 2016). Expressing milk allows for the mothers to provide milk to the baby when the mothers are separated from their children (Shirima, Greiner, Kylberg & Gebre-Medhin, 2001), as well as for premature and low birth weight infants (Clemons & Amir, 2010; Helene, 2015). Expressing breastmilk has also been reported to be beneficial in countries such as Australia where mothers were embarrassed to breastfeed in public (Helene, 2015).

6.3.2 Parental and caregivers' nutritional knowledge in feeding infants and young children aged six to 24 months

Breast milk is an important source of energy and nutrients for children six to 23 months of age or beyond (WHO, 2003). It is therefore important that children continue to breastfeed up to two years of age. More than half of the participants (88.4% of males and 100% of females with aged children six to 12 months and 72.1% of males and 94.2% of females with aged children >12 to 24 months) from the quantitative study knew of the recommended period to breastfeed (*Table 4.11*). The need to continue breastfeeding was also reported in the FGDs with men and women, as well as in the in-depth interviews with local leaders (*Table 5.7*). Breastfeeding is a cultural norm in Malawi as reported in the MDHS 2010 and 2016 that almost all the children (99% and 98% respectively) born in the two years preceding the survey were breastfed (NSO & ICF Macro, 2011; NSO & ICF-International, 2016). More of the female participants (94.3% with children aged six to 12 months and 98.1% with children aged >12 to 24 months) than males (69.8 with children aged six to 12 months and 67.4 with children aged >12 to 24 months) from the quantitative study had good knowledge on the time to introduce complementary feeding, which is at six months. Up to 23.2% of the males with children aged six to 12 months

reported that complementary feeding was to be introduced to children below six months of age. Fathers have also been reported to have limited knowledge on IYCF practices because they did not have direct experience of feeding children (Taşpınar *et al.*, 2013).

Mothers in the FGDs reported that complementary foods were sometimes introduced earlier than six months when the mothers felt the child was still hungry even after breastfeeding (*Table 5.7*). Therefore, the lack of knowledge in men on the time for introducing complementary feeding could be due to the experiences in their households. Corroborating with the findings of this study, studies by Phiri, (2013) and the FAO (2014) in Mzimba and Kasungu districts (Malawi) reported inappropriate IYCF that included early introduction of foods before six months. Early introduction of complementary foods has also been reported in other African studies (Pelto *et al.*, 2003; Osman *et al.*, 2009; Semahegn *et al.*, 2014; Vaarno, 2016). In this study only 9.9% of the participants (14.0% of males and 5.7% of females with children aged six to 12 months and 16.3% of males and 5.8% of females with children aged >12 to 24 months) did not know the importance of introducing complementary foods at six months. Introducing complementary foods at six months is important because during this period breast milk alone is not enough to provide all the required nutrients (WHO, 2003).

Most of the female participants (77.4% with children aged six to 12 months and 84.6% with children aged >12 to 24 months) than males (44.2% with children aged six to 12 months and 37.2% with children aged >12 to 24 months) reported that a thick enriched porridge was more appropriate for a young child than watery porridge (*Table 4.11*). However, the focus was on the porridge being thick to make the child full and not on having enriched porridge. This is contrary to what was reported in the FAO (2014) study in Malawi, where young children were being given watery porridge made from refined maize flour only. Most of the female participants who reported watery porridge as being appropriate had children aged six to 12 months. The reason that was given for providing watery porridge was similar to what has been reported by other studies (Arts *et al.*, 2010; FAO, 2014; Katempa-Bwalya *et al.*, 2015); that the child's intestines were still developing and that the watery porridge was easier to digest for the child. It was interesting to note that although the participants' focus was not on enriching the children's porridge, they all knew of food from at least one food group that could be used to enrich the child's porridge (*Table 4.11*). However, most of the participants (20.1% of males and 28.3% of females with children aged six to 12 months and 30.2% of males and 32.7% of females with children aged >12 to 24 months) only mentioned foods from two food groups (legumes and nuts- ground nuts, beans, soya beans and dairy products- milk) out of the seven

groups that could be added to the child's porridge to enrich it (Figure 4.4). This study used the seven food groups that were used in the FAO questionnaire. The seven food groups include legumes and nuts, dairy products, flesh foods, eggs, vitamin A fruits and vegetables, other fruits and vegetables, and grains, roots and tubers (Macías *et al.*, 2014). In both the quantitative and qualitative parts of this study, participants reported adding pulses and nuts to the child's porridge. Dairy products, mostly cow's milk, was only reported by about a quarter of the participants. The adding of pulses and nuts, specifically beans, soy beans and ground nuts to the child's porridge, is common in Malawi, mostly during the harvesting period when there is plenty of food (Mtimuni *et al.*, 2008; FAO, 2014). The practice decreases during the rainy season, which is the time this study was conducted (Mtimuni *et al.*, 2008). Even though vegetables are commonly consumed in most rural Malawian families, few participants knew that vegetables could be added to the child's porridge, hence younger children were not given vegetables.

Most of the participants knew of the proper methods of encouraging a child to eat. However, more of the female participants (17.0% with children aged six to 12 months and 17.3% with children aged >12 to 24 months) than males (2.3% with children aged six to 12 months and 4.6 with children aged >12 to 24 months) reported forcing the child to eat. Force-feeding was also reported in a Kenyan and a Nigerian studies as a cultural norm where the mother covered a baby's nose during feeding so that the child will swallow and eat quickly (Pelto *et al.*, 2003; Nduati *et al.*, 2008).

6.3.3 Parental and caregivers' attitudes in feeding infants below six months of age

According to the Theory of planned behaviour, attitudes have a direct influence on behaviour, implying that positive attitudes can result in positive behaviour changes (Ajzen, 1991). The contrary however was reported in this study. Both the male and female participants reported having positive attitudes towards the appropriate IYCF practices for feeding infants below six months, but poor practices were reported. For example, the majority of the participants reported that exclusive breastfeeding was good (97.6% of males and 100% of females) and that it was not difficult (81.0% of males and 82.7% of females), but only half were exclusively breastfeeding their children. This could have been because the questionnaire, which was used in this study, had positive attitude statements which could have been leading the participants to respond positively. Other African studies in which only mothers participated, have also reported positive attitudes towards exclusive breastfeeding (Oche *et al.*, 2011; Tadele *et al.*, 2016; FAO, 2016). The remainder of the participants from this study, who mentioned that

exclusive breastfeeding was difficult, reported that it was because they felt breastfeeding was not enough for the baby, and that it was difficult for the households to provide enough food for the breastfeeding mothers for them to produce adequate amounts of breast milk (*Table 4.13*). This however may be an exaggeration as mothers need only 650KCal in addition to their daily requirement when breastfeeding. Successful breast-feeding requires that the mother maintain good nutrition and adequate rest. A good, nutritional diet is needed to support the stamina that nursing an infant requires. Beyond this, however, a woman must consume a nutrient-rich diet to produce nutrient-rich milk. Nutritional deprivation in the mother generally reduces the quantity, than the quality, of the milk. Such that a woman can produce milk with sufficient protein, carbohydrate, fat and minerals even if their own intake is insufficient, the quality of the breast milk is maintained at the expense of the mother's own nutrients (Hermelin, Levinson & Paradissis, 2006). The perception that mothers need extra food when breastfeeding was also reported in other studies where mothers introduced complementary food early because they felt they did not produce enough milk for the baby (Pelto *et al.*, 2003; FAO, 2014; Ndikom, Fawole & Ilesanmi, 2014; Katepa-Bwarya *et al.*, 2015).

Positive attitudes were also reported on the frequency of breastfeeding and this could be because the participants understood the principle of breastfeeding on demand based on their knowledge on the frequency of breastfeeding for a child below six months (*Table 4.13 and 5.7*). Interestingly, all mothers reported being confident on how they breastfed their children despite that only half of the mothers had reported exclusively breastfeeding their children. Maternal confidence has been identified as an important determinant for breastfeeding success (Blyth, Creedy, Dennis, Moyle, Pratt & De Vries, 2002; Otsuka, Dennis, Tatsuoka & Jimba, 2008), therefore it is important for mothers to be confident with their breastfeeding practices.

An individual's attitudes are influenced by their knowledge of a particular matter (Kemm & Close, 1995). This implies that having good knowledge in child feeding could result in positive attitudes towards the appropriate child feeding practices, while having poor knowledge could result in positive attitudes towards inappropriate feeding practices (Mitra, Khoury, Hinton & Carothers, 2004). However, this is not always the case as was reported in an Ethiopian study where mothers had positive attitudes and good knowledge of exclusive breastfeeding but reported poor practices (Tadele *et al.*, 2016). Close to half of the participants in this study (43.6%) had poor knowledge on the meaning of exclusive breastfeeding (*Table 4.8*), but reported having positive attitudes towards exclusive breastfeeding. This could imply that they might have been confident in the wrong breastfeeding practices. This may have been re-

enforced because even with the poor breastfeeding practices, the parents felt the infants were growing well.

6.3.4 Parental and caregivers' attitudes in feeding infants and young children aged six to 24 months

Participants, especially females with children aged six to 12 months, reported being confident in preparing food for their child in comparison to females who had children in the age group of >12 to 24 months (*Table 4.15*), despite having reported poor diversity in the food they prepared (*Table 4.17*). It was also reported in the FGDs with mothers and fathers and in-depth interviews that younger children were mostly given porridge that was not enriched with other foods (*Table 5.7*). All of the participants also reported that it was good for them to provide different types of food to the child. Most of the participants (both males and females), who were not confident, reported that they did not provide a diversified diet to the children and they felt that the food they provided was not enough. This is in agreement with the findings on their reported practices where most participants reported their children having consumed from only two food groups in the previous 24 hours (*Figure 4.6*). This could imply that even though the parents had good knowledge on the type of food to feed the children, they could not apply this knowledge because they had poor access to the food. More participants with children aged >12 to 24 months reported that it was difficult for them to provide different types of food for the child than participants with children aged six to 12 months of age. The males mostly provided the reason that they lacked money to adequately provide a diversified diet (*Table 4.15*). A Nigerian study also reported that participants felt that it was not good to give different kinds of food to the child, because the child would then expect the same food all the time and the parents could not afford it (Nwabueze, Azuike, Egenti, Okafor, Aniemena, Udedibia, Onyemachi & Amaechi, 2015). It was also mentioned in the FGDs with men and women that the parents and caregivers failed to provide a more diversified diet to the children. The parents and caregivers only fed the children food from their farm produce which was mostly limited to maize, ground nuts and beans (*Table 5.7*). This is similar to what was reported by the FAO (2014) in Mzimba south district and in India where low consumption of animal foods was also reported (Patel, Pusdekar, Badhoniya, Borkar, Agho & Dibley, 2012).

The majority of the participants (74.4% of males and 69.8% of females with children six to 12 months and 83.7% of males and 86.5% of males with children >12 to 24 months) reported that it was good to give a child food several times a day. Some participants (21.5%) felt that it was not good because the children could get constipated and that food was scarce. The reason that

children could get constipated when given food several times a day was also given in a Zambian study (Katepa-Bwalya *et al.*, 2015). Most of the participants in this study reported giving food to the child two to three times per day, and in most cases it was less than the recommended feeding frequencies for the children (*Table 4.20*). In the FGDs, mothers also mentioned that they only provided food to the children two to three times a day (*Table 5.7*). Poor meal frequencies for young children have been reported to be a problem in Malawi (NSO & ICF Macro, 2011; NSO & ICF-International, 2016). When asked whether it was difficult to provide food several times a day, nearly a third of the participants (41.9% of males and 34.1% of females with children aged six to 12 months and 34.9% of males and 30.8% of females with children aged >12 to 24 months) reported that they found it difficult, indicating that they did not have enough money to buy food for the children and that food was scarce (*Table 4.15*). It was also mentioned in the FGDs and other studies (Patel *et al.*, 2012; Webb-Girard *et al.*, 2012) that lack of finances hindered male participation in IYCF, because the fathers failed to purchase food for the children (*Table 5.7*). The study by the FAO (2014) also had similar findings and encouraged the use of locally available food which led to improvement in the meal frequencies. Positive attitudes were also observed in the participants' responses regarding continuation of breastfeeding. All of the participants with children aged six to 24 months in the quantitative study reported that breastfeeding beyond six months was good and that it was not difficult. This was not surprising considering the high prevalence of breastfeeding in Malawi (NSO & ICF-International, 2016). Positive attitudes on breastfeeding have also been reported in other African studies (Ayed, 2014; Vijayalakshmi, Susheela & Mythili, 2015).

6.3.5 Parental and caregivers' feeding practices for children below six months of age

Breastfeeding is widely practised in Malawi with nearly all children (98%) born in the two years preceding the 2016 MDHS, reported to have been breastfed (NSO & ICF-International, 2016). In this study, all participants who had children below the age of six months reported to have breastfed their children, both during the day and during the night (*Table 4.16*). However, much as breastfeeding is widely practised in Malawi, exclusive breastfeeding up to six months is not widespread, as reported in the MDHS of 2016 where only 61% of infants below six months were exclusively breastfed (NSO & ICF-International, 2016). In this study only half of the participants (52.4% of males and 48.1% of females) with children below six months reported having exclusively breastfed their children. Similar findings were also made in other African studies where suboptimal breastfeeding was reported (Paul, Muti, Khalfan, Humphrey, Caffarella & Stoltzfus, 2011; Δάγλα & Αντωνίου, 2014; Kuchenbecker, Jordan, Reinbott,

Herrmann, Jeremias, Kennedy, Muehlhoff, Mtimuni & Krawinkel, 2015; Tadele *et al.*, 2016; Mogre *et al.*, 2016). Exclusive breastfeeding is recommended because breast milk contains all the nutrients, water and protection necessary for the children within the first six months of life (UNICEF, 2011). Early introduction to solid foods is discouraged because it exposes infants to the risk of infection, decreases the infants' intake of breast milk and the frequency of breastfeeding, which reduces breast milk production. In constrained resource settings, such as where this study was conducted, the solid food that is given is often nutritionally inadequate (WHO, 2005; NSO & ICF Macro, 2011). Therefore, it is important to breastfeed exclusively. The proportion (50.0%) of infants reported being exclusively breastfed in this study was not very different from the exclusive breastfeeding rate reported in other studies (Phiri, 2013 & FAO, 2014). However, the figures are lower than the MDHS of 2015 that reported 61% of children below the age of six months to have been exclusively breastfed (NSO & ICF-International, 2016). Most of the participants (84.0%) knew the benefits of exclusive breastfeeding for the child. However, this knowledge did not translate into improved practice for some of the study participants. Water and thin porridge were also provided to the infants among other liquids and foods as indicated by the quantitative results (*Table 3.16*). Similar findings have also been reported in other studies (Vahtera *et al.*, 2001; Kerr *et al.*, 2007; NSO & ICF Macro, 2011; Subbiah & Jeganathan, 2012; Phiri, 2013; FAO, 2016; Mogre *et al.*, 2016).

The FGDs with mothers revealed that mothers provided water, other watery foods and watery porridge to infants before six months of age when they cried after breastfeeding. Crying after breastfeeding was perceived as a sign that the breast milk was not enough (*Table 5.7*) in this study as well as other studies (Phiri, 2013; Mogre *et al.*, 2016). Other studies also reported that the consumption of such foods and water was based on advice from elders that small children got thirsty (Kerr *et al.*, 2008), and that the children were born with sores in their stomach so they needed traditional herbs to relieve the pain (Osman *et al.*, 2009). The food and water were also provided when the child cried often and the mothers felt that they were not producing enough milk and that breast milk did not have enough water (Vahtera *et al.*, 2001; Subbiah & Jeganathan, 2012). The influence of grandmothers played a role in IYCF as reported by Kerr *et al.* (2007) and Raffle *et al.* (2011) that paternal grandmothers encouraged the introduction of water and other traditional medicine and porridge to complement breast milk due to the belief that children were born hungry. In Mali the infants were given warm water every day for three months to "open the baby's stomach", as well as when the child was thirsty (Pelto *et al.*, 2003).

Early provision of water and other complementary foods have been associated with an increase in diarrhoeal diseases in infants and should be avoided (WHO, 2009). The other reason parents introduced complementary feeding early was explained in the FGDs. Mothers in FGDs reported that thin porridge was sometimes introduced early (before the child was six months) to get the child to sleep while the mother was busy with other chores (*Table 5.7*). This was also reported in studies in Mozambique (Arts *et al.*, 2010) and Kenya (Thuita, 2011). Other studies in Malawi have reported consumption of other liquids and foods such as dawale and mzuwula (herbal infusions), water, and porridge (Kerr *et al.*, 2007; FAO, 2014; NSO & ICF-International, 2016). Some of these liquids (mzuwula and dawale) were given first, even before initiating breastfeeding, to protect the child from diseases. Water was reported to be given to the children to keep the baby's throat wet as they wait until breast milk started coming (Vaahtera *et al.*, 2001; Kerr, Berti & Chirwa, 2007; Kerr *et al.*, 2008; Katepa-Bwalya *et al.*, 2015).

6.3.6 Parental and caregivers' feeding practices for children aged six to 24 months

The WHO recommends that infants and young children continue to breastfeed until two years and beyond (WHO, 2003). In this study, even though the breastfeeding rate was generally high, it was observed that breastfeeding decreased with an increase in the age of the child (*Table 4.18*). A small proportion (1.9%) of mothers with children aged six to 12 months reported not to have breastfed their children in comparison to mothers with children aged >12 to 24 months (23.1%). The MDHS of 2010 and 2015, and Vaahtera *et al.* (2001) also reported similar trends. This study did not enquire on the reason why some mothers stopped breastfeeding before 24 months. However, another study in Zambia reported the following reasons: mothers felt babies lost interest in breastfeeding, and that beyond 18 months mothers felt the child did not need breast milk (Katepa-Bwalya *et al.*, 2015). A study in Sierra Leone reported that mothers chose to stop breastfeeding early (before 24 months) when they started having sex with their husbands, because they believed that the sperm could contaminate the mother's milk and make the child sick (Daglas & Antoniou, 2012). A short maternity leave and the families' desire to offer manufactured foods were also reported in a Brazilian study as some of the reasons why mothers stopped breastfeeding before the child reached 24 months of age (Cavalcante Caetano, Ortiz Ortiz, Lopes Da Silva, Suano De Souza & Saccardo Sarni, 2012).

A diversified diet that should include the consumption of a minimum of at least four food groups, from the seven food groups as outlined by the WHO, is recommended for feeding children aged six to 24 months of age (WHO, 2003). The seven food groups according to the

FAO include grains, roots and tubers; legumes and nuts; dairy products (milk, yogurt and cheese); flesh foods (meat, fish, poultry and liver/organ meats); eggs; vitamin A fruits and vegetables and other fruits and vegetables (Macías *et al.*, 2014). Poor dietary diversification was observed in this study as only one third (30.4%) of the children were reported to have been fed food from at least four of the food groups in the previous 24 hours (*Table 4.18*). An even smaller percentage (25%) was reported for Malawi in the DHS of 2016 (NSO & ICF-International, 2016), implying poor diversification of the Malawian children's diet. No significant differences were observed on the reported diets of children between the two groups (six to 12 months and >12 to 24 months). A study conducted by the FAO in Mzimba (Malawi) also reported low diversification of children's diets, especially in children below 12 months of age (Phiri, 2013; FAO, 2014).

Within the food groups, a high consumption of grains, roots and tubers, followed by vitamin A fruits and vegetables, and legumes and nuts was observed. Specifically, consumption of *nsima* (a thick maize porridge that can be held in the hand and is eaten with *ndiwo*, which is a side dish consisting of either cooked beans, meat, fish or vegetables) and other porridge made from maize flour was frequently reported (*Table 4.19*). Generally, the Malawian diet is mainly composed of maize and starchy foods (Mtimuni *et al.*, 2008). In addition to the poor diversification of the children's diet, another study in Mzimba also reported that there was low provision of healthy snacks to the children, and that the porridge given to the children was watery and was not provided frequently enough (FAO, 2014). This is similar to what was found in this study where most children (53.4%) were only given food and snacks two times in a day.

Studies have shown that a plant based complementary diet is insufficient to meet the needs of many micronutrients such as iron for children. Therefore it is advised that children should daily eat food from animal sources or as frequently as possible together with vitamin A-rich fruits and vegetables (WHO, 2003). Contrary to the recommendations, this study found a low intake of food from animal sources [dairy products (15%), flesh foods (17%), eggs (18.3%)]. The study by the FAO (2014), and both the MDHS of 2010 and 2015, had similar findings. In the FAO (2014) study it was reported that the low consumption of animal food, especially during the rainy season, was because of the lack of financial resources. Poorly diversified diets with low consumption of animal foods in complementary feeding is common in developing countries and has also been reported in other studies (Pelto *et al.*, 2003; Shi, Zhang, Wang, Caulfield & Guyer, 2010; Patel *et al.*, 2012). The FAO study found that during the plant growing season, animal source foods such as milk, eggs, meat and dried fish were rarely eaten

in the rural communities because of their high cost (FAO, 2014). The low consumption of eggs could also be as a result of the misconception that eggs made the children sick as reported in the FGDs with women and men (*Table 5.7*). This misconception has also been reported in another Malawian study where eggs were perceived to be harmful to children, while herbal tonics and thin porridges were believed to offer protective qualities (FAO, 2014). Other studies also reported similar findings where children were not given eggs, meat and cooking oil because of the misconception that such foods were “too heavy” for infants to digest (Shi *et al.*, 2010; Paul, Muti, Chasekwa, Mbuya, Madzima, Humphrey & Stoltzfus, 2012).

The lack of finances to buy food was also mentioned in the FGDs and in-depth interviews as one of the main factors limiting parental involvement in IYCF. With limited financial resources, the parents could not provide enough and adequate food to the children. Lack of finances was also reported as the reason why children were not given animal foods in Mali (Pelto *et al.*, 2003). Contrary to the consumption pattern reported in the previous 24 hours, when the participants were asked to recall their child’s food consumption over the period of April to September of the previous year, a higher consumption of animal food was reported. This could have been because this is a period after harvest and therefore households could have had more money to purchase the animal food (Mtimuni *et al.*, 2008). However, this information was also prone to recall bias and the participants could have reported what was convenient at the time and not the actual feeding practices over the said period (Naidoo *et al.*, 2015). More than half of the participants reported that their children consumed vitamin A-rich fruits and vegetables during the previous 24 hours just as was reported in the study by the FAO (2014). However, the consumption was higher in children >12 to 24 months of age than in children six to 12 months of age (*Table 4.17*). This could be because the children aged six to 12 months were still being given porridge as they could not chew food and the parents did not consider adding the vegetables to the porridge as was found in the FAO (2014) study. This study was conducted during the rainy season when dark green leafy vegetables and mangoes were plenty (Mtimuni *et al.*, 2008). This could probably explain the high percentage of children consuming these foods (*Table 4.17*). In the FGDs participants mentioned enriching child’s porridge with ground nut flour (*Table 5.7*). The quantitative results however indicated that very few participants (2%) used ground nut flour to enrich the child’s porridge. The results also showed that more than half of both the male and female participants did not report to have used legumes to enrich children’s porridge. Since most of the foods given to the children were from the parents’ own produce, which in most cases was too little to cover the year, the households

might have run out of legumes to add to the porridge. This finding was also reported in the FAO (2014) study. Similar findings were also made in an Indian study where the diet of infants and young children was predominantly cereal based (Bhandari, Mazumder, Bahl, Martines, Black & Bhan, 2004). The addition of legumes to the child's porridge provides an important source of protein to the children's diet, more especially where there is low consumption of animal foods. The recommendation is to increase the consumption of legumes with grains when milk and other animal-source foods are not eaten in adequate amounts (WHO, 2003; WHO, 2005).

Lower consumption of food from the food groups was noted in the six to 12 months age group than in the >12 to 24 months age group. This could be because some of the children in the six to 12 months age group were only given porridge that was not enriched with other foods. It was mentioned in the FGDs that introduction of other foods, such as meat and vegetables, was in most cases only done when the children had reached ten to 12 months of age and had started eating *nsima* (a thick porridge made from maize flour) which is served with *ndiwo* (a side dish consisting of either cooked beans, meat, fish or vegetables) (Table 5.7). A similar finding was made in a Tanzanian study where children were given *uwugali* (a thick porridge made from maize flour) with a side dish, mostly vegetables. However, the study by the FAO (2014) also found that in most cases, younger children were given *nsima* with *msuzi* (sauce from cooked beans, meat, fish or vegetables) and not *ndiwo* because they could not chew. The low consumption of vegetables and other foods was reported in this study despite the fact that vegetables were in season.

The WHO (2003) recommends the following minimum meal frequencies per day: two to three times for breastfed infants six to eight months of age; three to four times for breastfed children nine to 23 months of age and four times (including milk feeds) for non-breastfed infants and children of six to 24 months of age. Figure 6.2 presents the findings of the number of times the participants reported to have provided food (meal and snack) to the children in the previous 24 hours compared to the WHO recommendations. It was noted that more than half of the participants with children aged >12 to 24 months (67.0% of male participants and 56.0% of female participants) reported to have given their children food below the recommended meal frequency. Only 44.0% of the male participants and 53.0% of the female participants with children aged six to 12 months reported giving their children food according to the recommended meal frequency.

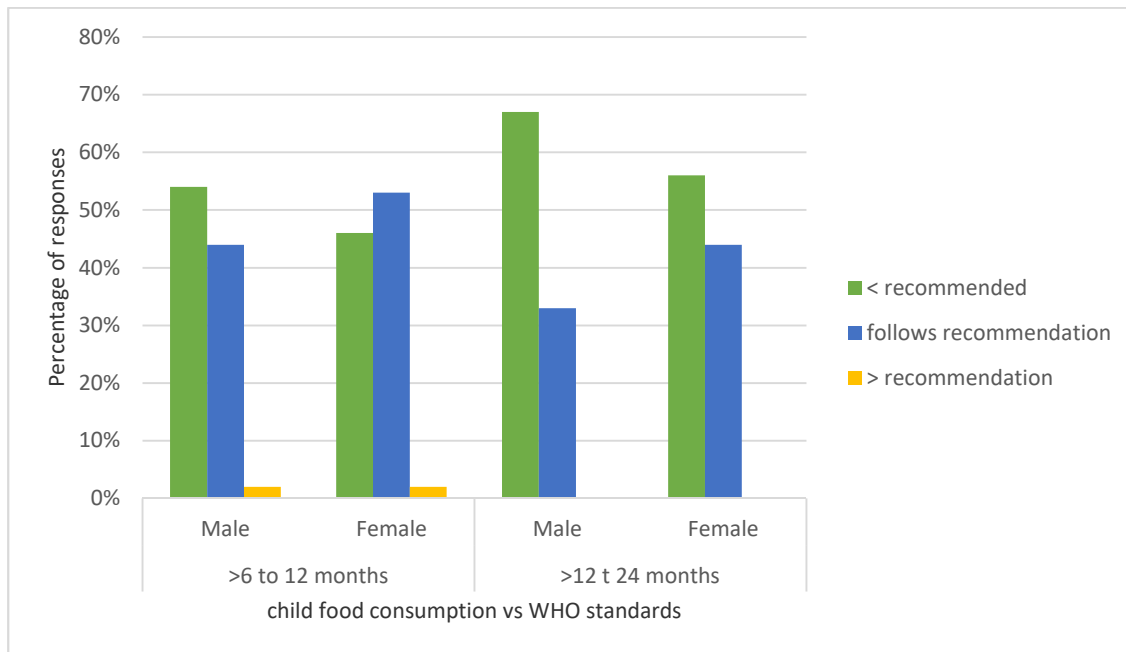


Figure 6-2: Frequency of child feeding vs the WHO recommendations (2008)

Less than half of the female participants and more than half of the male participants with children aged >12 to 24 months reported their children being fed foods and snacks at least the minimum number of times (*Figure 6.1*). The participants mostly reported providing meals with no snacks in between the meals. Lower meal frequencies were reported in the study by the FAO (2014), where only 19% of the children >12 to 23 months of age were given food according to the recommended frequency. A low percentage (29%) of the children being fed at least the minimum frequencies was also reported in the 2016 MDHS, implying low meal frequencies for Malawian children. The meal frequencies reported in the quantitative study are in agreement with those from the FGDs where participants mentioned that food was normally provided three to four times in a day to the children (*Table 5.7*). Low meal frequencies have also been reported in other studies; mostly in the rural areas where households were food insecure (Pelto *et al.*, 2003; Shi *et al.*, 2010; Patel *et al.*, 2012). Heavy work load for the mothers was indicated as one of the barriers hindering mothers from frequently preparing food for the child in the mothers' FGDs. Since the study was conducted during the rainy season, which is also the crop growing season, the mothers could have been busy with farm work and hence failed to frequently prepare food. On the other hand, the growing season is also the hunger season in Malawi. This could imply that the households did not have enough food to provide to the children (Mtimuni *et al.*, 2008).

6.4 Parental and caregivers' involvement in infant and young child feeding

This part presents the discussion of results in relation to objectives 3.3.2.1 and 3.3.2.4.

- (i) To determine and describe the proportion of fathers, mothers and caregivers respectively involved in IYCF of children aged zero to 24 months in Mzimba-north District, Malawi by using a semi- structured questionnaire with respect to:
 - i) the responsibility of both biological parents and caregivers to feed the child;
 - ii) the responsibility of both biological parents and caregivers to make decisions on purchasing food for young children; and
 - iii) the responsibility of both biological parents and caregivers to make decisions on exclusive breastfeeding and complementary feeding of the child (*objective 3.3.2.1*).
- (ii) To explore and describe the parental roles and responsibilities of mothers, fathers and caregivers respectively and their perceptions of IYCF of children aged zero to 24 months in Mzimba-north District, Malawi using focus group discussions and in depth interviews (*objective 3.3.2.4*).

6.4.1 Parental and caregivers' responsibility to feed child and make decisions on IYCF

More than half of the male (52.4%) and the majority of female (80.8%) participants with children below six months of age reported that it was the mother's responsibility to ensure that a child was exclusively breastfed (*Table 4.4*). Participants with children aged six to 24 months also reported that mothers were also responsible for introducing complementary feeding and deciding when to introduce complementary foods (*Table 6.5*). The mother's role of making decisions in breastfeeding and complementary feeding has also been reported in a Tanzanian study (Sellen, 2001). Similarly, in the mothers' and fathers' FGDs and in-depth interviews, it was also reported that it was the mother's role to ensure optimal breastfeeding of the child. This is in agreement with the responsibilities that are culturally assigned to mothers in most African cultures (Thuita, 2011). Other studies have also reported that child feeding and ensuring optimal nutrition for babies as an essential part of motherhood (Schmied & Lupton, 2001; Marshall, 2011; Tully & Ball, 2014).

Participants in the mothers' and fathers' FGDs and in-depth interviews reported that mothers had the responsibility of caring for the children, while fathers had supporting roles. In the Malawian culture, mothers and fathers were supposed to sleep in separate rooms during the first few months after a child is born (Kerr *et al.*, 2008). This was done to prevent pregnancies. However, this made it difficult for fathers to be supportively involved in exclusive

breastfeeding. That was probably the reason why ensuring exclusive breastfeeding was reported as the mother's responsibility. Interestingly, twice as many fathers (38.1%) than mothers (19.2%) reported child breastfeeding as a shared responsibility. The fathers saw child feeding as team work and they characterised themselves as supporting members, while the mothers probably focused on the direct role of breastfeeding.

Participants from the mothers' and fathers' FGDs and in-depth interviews reported that fathers had the role of encouraging mothers to feed the children (*Table 5.7*). This finding corroborates with what has been reported in other studies that fathers have an important role of supporting mothers in IYCF and that they influence the mother's decision to initiate and continue breastfeeding, and introduce complementary foods (Rempel & Rempel, 2011; Nickerson, Sykes & Fung, 2012; Bich, Hoa & Målqvist, 2014; Mueffelmann, Racine, Warren-Findlow & Coffman, 2014). In this study 66.7% of the male participants with children below six months of age reported to having the mothers being encouraged to exclusively breastfeed, and only 13.1% of the female participants reported to having being encouraged by their husband to exclusively breastfeed (*Table 4.4*). This could imply that even though the fathers knew of their role of encouraging the mothers to feed the children, they did not perform this role.

Grandmothers were also mentioned in the FGDs and in-depth interviews to encourage mothers to feed the children though they were not mentioned in the quantitative study. Just as it was reported in a Tanzanian study, most mothers with children less than six months of age reported carrying the child with them when working in the field (Pelto *et al.*, 2003). In this study most of the mothers (11.7%), who reported not carrying the child with them when working outside the household, reported leaving the children in the care of grandmothers (*Table.4.4*). Grandmothers play a major role in IYCF. According to the Malawian culture grandmothers and other elderly women were considered experts in child care and feeding, and therefore had a significant influence on the feeding practices (Kerr *et al.*, 2007). Grandmothers have also been reported in other studies as having the role of supporting mothers in child care (Osman *et al.*, 2009; Aubel, 2012).

6.4.2 Parents' and caregivers' responsibility to purchase food for child and mother

More than half of the male participants (52.4%) with children below six months of age reported to have purchased food for mothers when they were breastfeeding to increase their milk supply. Mineral drinks were the food reported by the majority of the participants (63.8%). The participants from the FGDs and in-depth interviews reported that mothers had to increase their

food intake and have a diversified diet for them to increase their breast milk supply. The perception that increasing a mother's food intake increases her breast milk supply was also reported in other African studies (Thuita, 2011; Katepa-Bwalya *et al.*, 2015). To increase their breastmilk supply, mothers are advised to have a balanced diet, increase their consumption of watery drinks and breastfeed on demand (Macías *et al.*, 2014). The misconceptions that eating cassava and soaked rice enhance breast milk production were reported in this study, both in the quantitative domain as well as in the FGDs and in-depth interviews. While the consumption of the cassava may contribute to a diversified diet for the mothers, and the mineral drinks may increase a mother's fluid intake, studies are required to test the biological plausibility of these claims (Nduna, Marais & Van Wyk, 2015).

The majority of the participants (80.6%) reported buying food specifically for the child. It was also discussed in the mothers' and fathers' FGDs and in the in-depth interviews that a diversified diet for the child six to 24 months of age was important (*Table 5.7*). To ensure optimal growth of children, optimal IYCF practices are essential and this includes the consumption of a diversified diet (WHO, 2003).

This study also found that while most of the decisions regarding child feeding were made by the mothers, 60.7% of the participants with children aged six to 24 months reported that fathers were responsible for purchasing food for the children and for deciding on the type of food to buy (*Table 4.5*). Fathers have been reported to have a strong control over what foods are purchased in the home and the women most times recommend the foods that the father should purchase (Saha *et al.*, 2011). This was probably because of the father's role of providing financial support in the household (*Table 5.7*). A study by the FAO (2014) in Mzimba also reported that fathers had a strong control over food purchases in the household. The limiting of fathers' roles to financial support is true for Malawi as well as other African countries, where low involvement of fathers in child care is a common practice, except where finances are concerned (Waltensperger, 2001; Aibel, 2011; Mukuria *et al.*, 2012). This suggests that when fathers do not have appropriate knowledge of the food to be provided to the children, it may result in poor IYCF practices. It was found that involving fathers in IYCF results in improved feeding practices in the FAO study in Mzimba and Kasungu districts in Malawi (FAO, 2014). Concurring with this finding, is a Ugandan study where mothers presented greater knowledge of optimal IYCF than fathers, but since fathers had authority in decision making, mothers' capacity to adopt the improved practices was limited (Engebretsen, Moland, Nankunda, Karamagi, Tylleskär & Tumwine, 2010).

6.4.3 Parents' and caregivers' sources of information on infant and young child feeding

The Ministry of Health was identified as the main source of information on IYCF by the mothers, fathers and local leaders in the qualitative part of this study. The Ministry of Health, in particular health care personnel, has also been reported as a trusted source of information on child health in other studies (Kerr *et al.*, 2007; Nduati, Arum & Kageha, 2008; Shi *et al.*, 2010; Tadele *et al.*, 2016). Mothers reported that they obtained most of their information from under-five clinics and the community health meetings. Health care professionals have also been reported to have an influence on a mother's decision to breastfeeding and on introducing complementary feeding (Sellen, 2001).

Fathers reported that they obtained most of the information from the health programmes aired on the radio and posters. Many people in the rural areas in Malawi have regular access to the radio, therefore the radio presents a quick and economic platform to deliver health messages (Zamawe *et al.*, 2015). In a Malawian study, where a radio campaign on maternal health was done, it was observed that fathers who were exposed to the radio campaign were twice more likely to participate in maternal health than fathers who were not exposed (Zamawe *et al.*, 2015).

Under-five clinics are mostly attended by women in Malawi and that could be the reason they were mentioned as the source of information for the mothers. The other sources of information included grandmothers, friends and other NGOs working in the area. Friends (male motivators) provide a good source of information to fathers. Kululanga *et al.* (2011) found that most men in Malawi are brought up to believe that they are inherently superior to females and therefore tend to downplay the importance of ideas originating from females, but they may be more receptive to information originating from friends (fellow men). Grandmothers have a cultural role of guiding new mothers on how to take care of children and they have been reported to be of influence on the mothers' IYCF practices (Kerr *et al.*, 2008; Rao, Swathi, Unnikrishnan & Hegde, 2011). NGOs have also been observed to provide information on IYCF and influence good IYCF practices in Malawi (FAO, 2014).

6.4.4 Parental roles and responsibilities in infant and young child feeding

Women and men in communities most times behave according to the roles that are assigned to them in their culture (Aubel, 2011). In most African cultures women have the direct role of taking care of the children, while men have the role of providing support to the women in child

care and providing for the home (Thuita, 2011). Similarly in this study, the direct roles in IYCF were reported to be the mother's roles by the mothers, fathers and local leaders. These roles included breastfeeding the children, preparing food for the children and feeding the young children, helping fathers in providing food for the household and showing affection and bonding with the child (*Table 5.3*). The mother's role of feeding infants and young children has also been reported in other studies (Pelto *et al.*, 2003; Rempel & Rempel, 2011; Nickerson *et al.*, 2012).

In addition to these roles, seeking and applying nutrition and child care information was mentioned as a mother's role. Antenatal clinics are the most common source of nutrition and child care information in Malawi and are mostly attended by women, hence it was regarded as a mother's role (Matinga, 2002). Since women are culturally expected to prepare enriched food and feed the children (Thuita, 2011), they are expected to be the ones who seek information on IYCF. Culture also allows for mothers to spend much time with the infants and young children compared to men. Because of the higher involvement of women in IYCF than men, most of the programmes and projects on IYCF have targeted women, while men have been side-lined (Kuyper & Dewey, 2012).

Even though the role of providing food for the home is culturally assigned to fathers (Thuita, 2011), the participants from female FGDs and the local leaders mentioned that mothers also helped when fathers failed to provide adequate amounts of food (*Table 5.7*). During the rainy growing season, which is also the hunger period in Malawi, both mothers and fathers do piece work to ensure that they have food in the home (Mtimuni *et al.*, 2008). Similar findings were also reported in Nepal, where mothers had to leave breastfeeding children at home to work in their fields to ensure that the household had food (Pelto *et al.*, 2003).

Fathers are culturally assigned supporting roles in IYCF (Thuita, 2011; Kuyper & Dewey, 2012; Bich *et al.*, 2014). The mothers, fathers and local leaders from the FGDs and in-depth interviews identified providing financial, physical and emotional support as the father's responsibilities (*Table 5.4*). Providing financial support was mentioned as the major role for fathers and it included providing food for the children and the mothers, and other household necessities. Traditionally, in most African cultures men are regarded as breadwinners since they are in charge of the finances within the households and they make most of the decisions that are money related (Ganle & Dery, 2015). However, it has been reported that limiting fathers' involvement to providing financial support could result in low involvement of fathers

in IYCF as they would only ensure that there is food in the home or provide the finances for food (Raub, Carson, Cook, Wyshak & Hauser, 2012).

The other forms of support mentioned included providing physical and emotional support. The fathers mentioned that this kind of support meant that fathers had to encourage the mothers to breastfeed and to help the mothers with other chores so that the mothers had time to breastfeed. The fathers' supporting role in the feeding of infants and young children has also been reported in other studies (Tohotoa *et al.*, 2009; Aluko-Arowolo, 2012). The emotional support that fathers provide creates an enabling environment for a mother to breastfeed (Nduna *et al.*, 2015). The provision of emotional support by fathers has also been reported to have an influence on the involvement of mothers in IYCF (Hodnett, Gallop & Chalmers, 2002; Ekström, Widström & Nissen, 2003; Clifford & McIntyre, 2008). Local leaders also added that fathers had to encourage mothers to attend under-five clinics where they obtained appropriate information on IYCF.

The local leaders in this study identified their role as that of providing emotional support to the parents (*Table 5.6*). They mentioned that since they had substantial influence on the cultural practices in their communities, they were in a position to advocate for change and promote the involvement of parents in IYCF. Local leaders in Malawi are highly respected in the communities and have been involved in promoting maternal and health care messages in the communities. The local leaders are influential, therefore people in the communities listen to them. Success has been reported in programmes that involved the local leaders. The effectiveness of collaboration with local leaders has been evident in reducing maternal mortality in Mwanza district, Malawi (Kululanga, Sundby & Chirwa, 2011), as well as in promoting appropriate IYCF practices in Ethiopia (Pelto *et al.*, 2003; WHO, 2016).

6.5 Factors affecting parental and caregivers' involvement in infant and young child feeding

The discussions in this part is according to objective 3.3.2.5

- (i) To explore and describe the factors that affected both parents' and caregivers' involvement in IYCF of children aged zero to 24 months in Mzimba-north District, Malawi using focus group discussions and in-depth interviews (*objective 3.3.2.5*).

6.5.1 Factors that motivated parents, caregivers and local leaders' involvement in infant and young child feeding

Both mothers and fathers in the FGDs mentioned that culture was the main factor that motivated their participation in IYCF. The roles that both the mothers and fathers had were culturally assigned to them. Culture plays a significant role in determining how parents are involved in most African cultures (Thuita, 2011; Mukuria *et al.*, 2012). Culture has also been reported in other studies as the influencing factor on the roles of men and women in IYCF and child care in general (Daglas & Antoniou, 2012; Tully & Ball, 2014). Local leaders also reported culture as the main motivating factor for their involvement in IYCF.

In as much as culture was the main motivating factor for the different roles the parents had in IYCF, other factors such as love for the child and the influence from other family members, were also mentioned in the FGDs. Fathers mentioned that sometimes they performed other household chores that were culturally regarded as roles for women out of love as a way of supporting the mothers so that they had time to adequately breastfeed. Similar findings were also made in a study in Mozambique (Audet, Chire, Vaz, Bechtel, Carlson-Bremer, Wester, Amico & González-Calvo, 2015). For successful IYCF, mothers need the support of other family members, friends and the community (Subbiah & Jeganathan, 2012). This was found in a study in Ohio that reported that friends' and family's opposition to breastfeeding had a negative impact in a mother's decision to breastfeed (Raffle *et al.*, 2011).

The involvement of NGOs has also been reported to have an influence on parental involvement in IYCF and child care in general (FAO, 2015; Yargawa & Leonard-Bee, 2015). The NGOs that worked in the communities sensitised the parents and local leaders on the importance of the father's involvement in IYCF and that prompted some fathers to be actively involved. The role of NGOs in promoting fathers' involvement in IYCF was also found in a study by the FAO (2014) where fathers were encouraged to participate in IYCF. The NGOs also promote

appropriate IYCF through nutrition education to both the mothers and fathers (Pelto *et al.*, 2003; WHO, 2016).

Other NGOs also enlisted the help of local leaders when implementing IYCF programmes. These NGOs encouraged the local leaders to participate in IYCF. Success has been reported in studies that worked with local leaders to improve male involvement in maternal health (Kululanga *et al.*, 2011; WHO, 2016). This increased local leaders' involvement in other programmes, including IYCF. Interestingly, the mothers and fathers in the FGDs did not mention the local leaders as motivators in IYCF. It was noted by the researcher, and from the household sizes, that most of the young families in the study area either lived together or close to the paternal grandparents. It was according to their culture that grandmothers were involved in teaching the young mothers matters of child care (Kerr *et al.*, 2008). Therefore, the IYCF practices of the grandmothers in such cultures easily influence the young mothers.

Food shortages within a household were also reported as a motivating factor for mothers' participation in IYCF. Even though fathers had the role of providing food for the home, it was reported in the mothers' FGDs that mothers assumed this role when the household had food shortages. This mostly happened during the crop growing season which is also the hunger period in Malawi. During this time, both the mothers and fathers do piece jobs to ensure that the household has food (Mtimuni *et al.*, 2008). Mother's participation in providing food for the home has also been observed in a Kenyan study (Mukuria *et al.*, 2012). Women in the Sub-Saharan Africa are mostly involved in agricultural activities (Amenyah & Puplampu, 2013), which is probably the reason why the mothers from this study reported providing food for the household as their role.

6.5.2 Barriers to parental and caregivers involvement in infant and young child feeding

Culture determines the involvement of both mothers and fathers in IYCF in most African countries (Thuita, 2011). This makes it difficult for fathers to be more involved since their roles are mostly limited to providing financial support to the mothers. Participants in this study mentioned that they failed to provide physical support to mothers because the activities associated with child feeding were considered feminine in their culture (*Table 5.7*). This finding is in agreement with other findings from other African studies, including in Malawi where the provision of physical support to women in child care was often associated with male weakness (Kululanga *et al.*, 2012a; Ganle & Dery, 2015; Audet *et al.*, 2015). In these studies,

those fathers, who helped women with household chores or accompanied them to the under-five clinics, were considered to be dominated by their wives and this resulted in low father involvement. Similarly in this study, fathers reported being shy and embarrassed to attend under-five clinics despite antenatal and under-five clinics being reported as the main official source of child care information in Malawi (Matinga, 2002; Kerr *et al.*, 2007). The mothers, fathers and local leaders also revealed that cultural influence limited the fathers' presence around the home and that since the fathers did not sleep in the same room as the mothers, they missed the opportunity to encourage the mothers to breastfeed (*Table 5.7*). This aspect of cultural influence was also reported by Kerr *et al.*, (2008) in a study in a part of Mzimba (Malawi), where it was found that husband and wife had to abstain from sexual intercourse for one year after the birth of the child to prevent child malnutrition. Other African studies have also reported similar observations (Pelto *et al.*, 2003; Aluko-Arowolo, 2012) and that this kept the fathers away from home; often leading to extra-marital relationships as was also reported in this study. Extra-marital relationships were also mentioned in the mothers' FGDs as another factor that hindered the fathers' participation in IYCF. Fathers often spent money on these relationships instead of purchasing food for the household. The extramarital affairs also had an influence on mother's participation in IYCF as reported in a Nigerian study where it was a taboo for a breastfeeding woman to engage in sexual activities. In that study, mothers stopped breastfeeding their children to prevent their husbands from having extramarital affairs (Aluko-Arowolo, 2012).

There were several other barriers to parental involvement in IYCF that were mentioned in addition to how culture defined the roles of fathers and mothers. Heavy workload, especially for mothers, was mentioned in the FGDs with both fathers and mothers as one of the factors that affected mother's participation in IYCF. Mothers had multiple chores and they were most times busy, and as such they did not have adequate time to breastfeed, as well as prepare food for older children. Women in most African cultures do most of the household and other traditional work and they are most likely more overworked than men (Ahmeduzzaman & Roopnarine, 1992). This finding was also presented in another Malawian study where early introduction to complementary food was observed because the mothers had more work and could not adequately practise exclusive breastfeeding. That study, which was conducted in Mangochi district (Malawi), found that women were mostly involved in fish farming and that involved travelling for many days, which most times resulted in earlier introduction of complementary feeding (Kalanda, Verhoeff & Brabin, 2006). Where the household had a large

number of children in this study, the mothers reported to be very busy to manage the household chores, as well as take care of the home. This had negative effects on the quality of the food and the frequency of providing the food to the children. Similar findings were also made in other studies where mothers reported to having a lot of work during the day so that they failed to feed and care for their children (Osman *et al.*, 2009; Raffle *et al.*, 2011). Families with large number of children also require more food which may not be available in the home resulting in poor feeding practices (Nduati *et al.*, 2008).

Fathers in this study also mentioned that older fathers rarely participated in IYCF compared to the younger fathers. This could be because the older fathers were used to the old ways of doing things and found it difficult to change. Financial constraints were mentioned as a major barrier to parental involvement, especially in the fathers' FGDs. This was also mentioned in the mothers' FGDs as well as the in-depth interviews. The economic status of a household has an influence on the quality of foods provided for the children (Darmon & Drewnowski, 2015). Adequate dietary diversity was reported to be difficult to achieve because the households could not afford to buy a variety of food for the child (*Tables 5.3 & 5.4*) in this study, as well as in other studies (Pelto *et al.*, 2003; Monterrosa, Pelto, Frongillo & Rasmussen, 2012). This finding was also reported in a study in Asia where the number of children having adequate dietary diversity, i.e. receiving foods from four or more food groups, was the lowest in the poorest families (McAndrew, Thompson, Fellows, Large, Speed & Renfrew, 2012). Other complementary foods are expensive, therefore low income families are unable to purchase them for their children (Sellen, 2001; Vaarno, 2016). In Malawi, food from animal sources such as fish and meat is expensive in the rural areas, and this makes it difficult for the households to add such food in a child's meal (Mtimuni *et al.*, 2008). Increasing a household's income would therefore be important to ensure that they can afford to diversify a child's diet.

This study also revealed that grandmothers had a significant influence on the participation of fathers in IYCF. Grandmothers were also involved in guiding new mothers in feeding infants and young children (*Tables 5.3 & 5.4*). This is similar to what was reported by the FAO (2014) and Kerr *et al.* (2008) in the same Mzimba district on the roles of grandmothers in IYCF. It was reported that grandmothers influenced the child's feeding practices, including the duration of breastfeeding, the introduction of liquids and other foods, and the frequency of providing food to the children; mostly during the rainy season when the mothers work long hours in the field. Grandmother's influence in child care has also been reported in other African studies (Raffle *et al.*, 2011; Aubel, 2012). However, the participants in the mothers' FGDs also

mentioned that grandmothers, most times, had inappropriate knowledge on IYCF and this resulted in them providing inappropriate knowledge to young mothers. This has also been reported in other African studies, where it was found that grandmothers influenced inappropriate breastfeeding practices because they lacked knowledge on the recommended breastfeeding practices (Grassley & Eschiti, 2008; Nduati *et al.*, 2008). It was also mentioned in the FGDs with mothers that grandmothers were influential in deciding the extent of the father's involvement in caring for children in general. While in some instances grandmothers promoted the involvement of fathers in IYCF, they also encouraged other cultural beliefs that hindered fathers' involvement. Such cultural beliefs have also been reported by Kerr *et al.*, (2008), where grandmothers encouraged the belief that fathers should not sleep together with mothers within the first months after the birth of a baby.

Inadequate knowledge could result in inappropriate behaviours (Kemmm & Close, 1995). Participants from the mothers' and fathers' FGDs, and the in-depth interviews mentioned that limited knowledge on IYCF resulted in the parents' poor involvement in IYCF practices (*Table 5.7*). Inadequate nutrition knowledge in IYCF has also been reported as one of the major causes of inappropriate child feeding practices and subsequently malnutrition (Sellen, 2001; Stuebe & Bonuk, 2011; Rao *et al.*, 2011; FAO, 2015).

Participants in the mothers' and fathers' FGDs also mentioned that fathers were discouraged to attend under-five clinics because of slow service delivery. Since fathers had the role of providing food and finances for the family, they felt that spending much time at the clinic negatively affected their work. Since most of child care information is shared at the under-five clinics (Matinga, 2002; Kerr *et al.*, 2008), where fathers normally do not attend, the fathers did not have adequate information on IYCF and therefore did not adequately participate (*Table 5.7*). Another Malawian study had similar findings. In that study the men reported that as main family breadwinners, they could not manage to postpone or stop working so that they could participate in maternal health care, and that they wasted time by being at the ante-natal clinics instead of attending to personal business that brought money to the household (Kululanga *et al.*, 2011).

6.6 Improving parental and caregivers' involvement in infant and young child feeding

The discussion in this part is in line with the secondary objective of this study, which was to make recommendations on how parents' and caregivers' involvement in infant and young child feeding could be improved.

The participants in both the FGDs and in-depth interviews gave suggestions on how parental and caregivers' involvement in IYCF could be improved. These suggestions included acquiring appropriate knowledge, facilitation of behavioural change regarding some cultural beliefs and practices, having a reduced number of children, and developing platforms for sharing IYCF information.

It was discussed that ensuring that both the parents and family members have appropriate information on IYCF would help in improving their participation in IYCF. Increasing parents knowledge has been observed to improve parents breastfeeding confidence (Chezem *et al.*, 2003), breastfeeding initiation and duration (Chezem *et al.*, 2003; Stuebe & Bonuck, 2011) and IYCF practices in general (FAO, 2014). In Ethiopia, a project that provided nutrition education (using a variety of channels and platforms) on child feeding also reported changes in IYCF practices, specifically on early initiation of breastfeeding, timely introduction of complementary feeding, consumption of more diversified diets and more children consumed animal source foods (Fahmida *et al.*, 2015).

The participants in the FGDs and in-depth interviews also suggested making changes in cultural practices that hindered parental involvement in IYCF. Culture is dynamic and it changes slowly with new knowledge (Kwame, 2006). Making changes in cultural practices takes time because most people resist to make changes on strongly held beliefs (Marshall, Sheaff, Rogers, Campbell, Halliwell, Pickard, Sibbald & Roland, 2002). Therefore, to ably facilitate cultural change, the facilitators have to be persistent, provide adequate information and work with influential members of the community (Kwame, 2006). Modelling the changes to the community could also enhance the cultural changes in the community (Essawi & Tilchin, 2012).

Developing platforms where these parents could share information on IYCF would also be important. This would allow the parents to share ideas on the appropriate IYCF practices and on how the parents could improve their participation in IYCF. Other intervention studies that encouraged sharing information on child care between the parents reported improved IYCF practices (Pelto *et al.*, 2003; Phiri, 2013; WHO, 2016). Since the roles that the parents had were mostly influenced by their culture, facilitating behaviour change in some of the cultural practices that hindered the parent's participation would improve their participation in IYCF and their IYCF practices. Improving parental IYCF practices also requires encouragement and support at community level where the parents with children below 24 months of age could be

sharing information on IYCF. This has been recognised in the Global strategy for IYCF, where community-based interventions are included as one of its operational targets (Quinn, Guyon, Schubert, Stone-Jiménez, Hainsworth & Martin, 2005).

Reducing the number of children in a household was also reported in the mothers' FGDs as one way of improving parental involvement. Mothers mentioned that having a smaller household size reduces the work load that the mothers have, and allows for them to breastfeed frequently and prepare food for the children. Other studies have also linked larger household size with poverty (Godfray, Beddington, Crute, Hadda, Lawrence, Muir, Pretty, Robinson, Thomas & Toulmin, 2010; NSO & ICF Macro, 2011; Henry-Unaeze & Ibe, 2013), since such households could not provide adequate food for all the members.

6.7 Summary

From the quantitative domain, the following results for parents' nutrition KAP have been discussed: the majority of both the male and female participants (>70%) with children <six months knew the first food to give to a new born, the period of introducing breast milk after birth, the recommended period for exclusive breastfeeding, the frequency of breastfeeding, the benefits of exclusive breastfeeding and the ways in which mothers could keep up their milk supply. Less than half of the participants (both males and females) knew of the benefits of exclusive breastfeeding and expressing breastmilk for the baby's use. For comparisons within households, females performed better than the males. Significant differences were found between the male and female participants' responses to all the knowledge questions except on their knowledge on the type of food to enrich a child's porridge ($P = 0.504$), and how to encourage a child to eat ($P = 0.078$). All of the participants (both male and female) with children <six months showed positive attitudes on breastfeeding infants less than six months of age with scores of more than 80% on all the attitude statements. All of the participants reported having their child breastfed both during the day and night at the time of the study. However, only half of the children were exclusively breastfed.

The majority of both the male and female participants (>60%) with children six to 24 months knew of the recommended age for mothers to continue breastfeeding, the time for introducing complementary foods, the importance of introducing complementary foods at six months, the type of food for enriching a child's porridge and the ways of encouraging a child to eat. Less than half of the male participants knew the type of porridge to give to a child. Both the male and female participants had positive attitudes (with scores of >80%) on feeding infants and

young children six to 24 months. Continued breastfeeding was reported by the majority of both the male and female participants (85.5%). Poor food diversity was found with the majority of participants reported giving children food from only two food groups in the previous 24 hours, and low consumption of animal foods was observed.

More females than males with children <six months reported mothers as the main decision makers in exclusive breastfeeding (71.2% vs 42.9%). Most females (73.6% and 73.1% with children six to 12 and >12 to 24 months respectively) also reported IYCF as a mother's responsibility while the majority of males (53.5% and 62.8% with children six to 12 and >12 to 24 months respectively) reported IYCF as a shared responsibility.

The following findings on parental involvement from the qualitative domain have also been discussed: Males and females from the FGDs and local leaders from the in-depth interviews identified the roles of mothers and fathers in IYCF. The roles for mothers included breastfeeding the children, preparing food for the child and feeding younger children, seeking and applying nutrition and child care information, providing emotional support and providing food for children. Fathers' roles included providing financial, physical and emotional support. Local leaders also identified their roles in IYCF, which included providing emotional support to the families and assisting in changing cultural behaviours and practices that hindered optimal IYCF. The motivating factors for the parents, caregivers and local leaders to perform these roles included the need to fulfil their perceived cultural responsibilities, the social support they received, the love fathers had for their wives and children, the mother's love for their children and the problems related to food security in the household. The factors that limited parental involvement in IYCF included cultural factors, heavy workload, financial constraints, lack of appropriate IYCF knowledge, interpersonal factors, negative influence of relations, age of parents, large number of children and delayed health service delivery. The participants from both the FGDs and in-depth interviews recommended acquiring appropriate IYCF knowledge, behavioural change, reducing the number of children in a household and developing platforms for sharing IYCF information as some of the ways of improving parental and caregivers' involvement in IYCF.

CHAPTER 7

EXECUTIVE SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Background

Parental involvement in infant and young child feeding (IYCF) plays a significant role in the nutritional status of a child. The first 1000 days of a child's life (from conception to 24 months) are critical for their growth and development (WHO, 2009). It is therefore important to provide adequate nutrition during pregnancy and in the child's first two years of life (Black *et al.*, 2008; Adair, 2014). Optimal breastfeeding, followed by the provision of safe and appropriate complementary foods introduced at six months, improves the growth and development of a child (WHO, 2009). Since both parents ought to participate in IYCF, it is essential that both the mothers and fathers have appropriate nutrition knowledge, positive attitudes and perceptions on IYCF to improve their feeding practices.

Fathers and grandmothers are considered to have a major influence on the decision-making of women to attend antenatal clinics, breastfeed their children, when to start complementary feeding, and the type of complementary foods to provide to the child (Ezeh, 1993; Lasee & Becker, 1997; Thuita, 2011). While there have been studies conducted on the involvement of fathers in attending HIV counseling and testing and the prevention of mother to child transmission initiative in Malawi (Kululanga *et al.*, 2012b), few studies have been done to assess fathers' involvement in IYCF (Kuyper & Dewey, 2012; FAO, 2015). To measure the participation of both parents in IYCF and parents' IYCF practices, there is a need for assessing their nutrition knowledge, attitudes and perceptions of IYCF, as well as their involvement in IYCF in order to intervene appropriately.

7.2 Aim and objectives

The aim of the study was to explore and describe the involvement of both biological parents (mother and father) and caregivers in IYCF of children aged zero to 24 months in Mzimba north district, Malawi. This was done through an assessment of the parents' and caregivers' nutrition knowledge, attitudes, perceptions and practices, and the identification of factors that affected the parents' and caregivers' involvement in the feeding practices. The study also aimed at identifying and describing ways of improving the parents' and caregivers' involvement in IYCF of children aged zero to 24 months.

The specific objectives of the study were:

- ❖ To determine and describe the proportion of fathers, mothers and caregivers respectively involved in IYCF of children aged zero to 24 months in Mzimba-north District, Malawi by using semi-structured questionnaires with respect to:
 - i) the responsibility of both biological parents and caregivers to feed the child;
 - ii) the responsibility of both biological parents and caregivers to make decisions on purchasing food for young children; and
 - iii) the responsibility of both biological parents and caregivers to make decisions on exclusive breastfeeding and complementary feeding of the child.
- ❖ To assess and describe mothers', fathers' and caregivers' nutrition knowledge, attitudes and practices respectively in relation to IYCF of children aged zero to 24 months in Mzimba-north District, Malawi using semi-structured modified FAO knowledge, attitudes and practices questionnaires (Macías *et al.*, 2014).
- ❖ To compare and describe the mothers', fathers' and caregivers' nutrition knowledge, attitudes and practices with respect to IYCF of children aged zero to 24 months in Mzimba-north district, Malawi.
- ❖ To explore and describe the parental roles and responsibilities of mothers, fathers and caregivers respectively and their perceptions of IYCF of children aged zero to 24 months in Mzimba-north District, Malawi, using focus group discussions and in depth interviews.
- ❖ To explore and describe the factors that affected both parents' and caregivers' involvement in IYCF of children aged zero to 24 months in Mzimba-north District, Malawi using focus group discussions and in-depth interviews
- ❖ To make recommendations on how parents' and caregivers' involvement in infant and young child feeding can be improved.

7.2.1 Significance of the study

This study contributes to the knowledge of IYCF and the information obtained is useful in designing intervention(s) that aim(s) at encouraging the involvement of both parents in IYCF of children aged zero to 24 months, and thereby contributing to optimal growth and development of infants and young children; specifically for infants and children in Mzimba-north district, Malawi.

7.3 Methodology

The study was executed using a mixed methods research approach, and was conducted from 25th January to 11th March 2016.

Ethical approval was obtained from the Ethics Committee, Faculty of Natural and Agricultural Sciences, University of Pretoria (*Ref No. EC151204-26*). In addition, approval to conduct the study was also sought from the Ministry of Agriculture, Mzuzu Agriculture Development Division, Malawi; where the study was conducted. Verbal and written consents were obtained from all the participants.

7.3.1 Study setting

The study was done in a rural setting in five EPAs of Mzimba-north district, in the northern region of Malawi.

7.3.2 Quantitative study

7.3.2.1 Sampling technique

A stratified random sampling technique was used to select the sample. The sampling frame consisted of parents with children aged zero to 24 months, and where the parents were not available, caregivers participated. The parents and caregivers were categorised according to the age of their children as follows: below six months, six to 12 months and >12 to 24 months. A simple random sampling technique, using random number tables, was applied in each age group to select the study participants.

7.3.2.2 Sample

The study had a total of 285 study participants (128 male and 157 females), of which 94 participants (42 males and 52 females) had children below six months of age, 96 participants (43 males and 53 females) had children aged six to 12 months and 95 participants (43 males and 52 females) had children aged >12 to 24 months.

7.3.2.3 Data collection

Data were collected by conducting interviews with the parents and caregivers using four semi-structured questionnaires (for male and female participants; two for assessing nutrition KAP for parents with children below six months and another two for assessing nutrition KAP for participants with children six to 24 months). The questionnaires were developed by modifying a validated semi-structured questionnaire that had been used by the FAO to assess women's nutrition KAP on IYCF (Macías *et al.*, 2014). The FAO questionnaire was modified by

adapting the questions to include local foods, as well as adding questions to assess parental involvement in. IYCF. In addition, modification was done on the questions to address males for the questionnaires administered to male participants. The questionnaires were administered in the local language (Tumbuka). The questionnaires, which were originally in English, were translated to Tumbuka using the recommended procedure (Naidoo *et al.*, 2015). The participants signed consent forms before participating in the study.

Four research assistants, who were fluent in Tumbuka, were involved in administering the questionnaires under the supervision of the researcher. The research assistants were trained by the researcher for three days to familiarise them on the questionnaires and the filling out thereof. The training covered the study objectives, data collection and interviewing techniques, research ethics and a review of the data collection instruments.

7.3.2.4 Data capturing and checking

Data from the questionnaires were entered into Microsoft excel 2013 for analysis. Data entry was done by three research assistants who were not part of the four research assistants involved in data collection. Data cleaning was done by the researcher by physically comparing the information on all the questionnaires with the data set on Microsoft excel before data analysis.

7.3.2.5 Data analysis

Data were analysed using Stata version 14.0 and Microsoft Excel version 2013. Frequencies were used to summarise the data and the Chi-square and Fisher's exact tests were used to compare the male and female participants' and caregivers' nutrition KAP. McNemar's test was used to compare the participants' nutrition KAP in households where data were collected from both the mother (or female caregiver) and father (or male caregiver). Testing was done at 0.05 level of significance.

7.3.3 Qualitative study

7.3.3.1 Sampling technique

The qualitative study was conducted after the quantitative study. Purposive sampling was used to select the study participants. The same sampling frame that was used in the quantitative study, was used to obtain the sample for the qualitative study.

7.3.3.2 Sample

The study participants were parents and caregivers with children aged zero to 24 months ($n = 94$) and local leaders ($n = 3$) who were not involved in the quantitative study.

7.3.3.3 Data collection

Data were collected by conducting FGDs and in-depth interviews. A total of eleven FGDs; five FGDs with fathers ($n = 41$) and six FGDs with mothers ($n = 53$) who had children below the age of two, and three in-depth interviews with three male local leaders were conducted.

Three interview guides for the mothers and fathers FGDs, and the local leader's in-depth interviews (one for each group) were developed to guide the FGDs and in-depth interviews. The three interview guides which were prepared in English, were translated to Tumbuka using the recommended procedure (Naidoo *et al.*, 2015).

The researcher moderated the discussions in the FGDs and in-depth interviews. The researcher also had a research assistant who operated the audio tape and took field notes during the discussions. The participants signed consent forms before participating in the FGDs and in-depth interviews.

7.3.3.4 Data analysis

Creswell's method of data analysis was used to analyse the qualitative data (Botma *et al.*, 2010). This method involved transcribing the interviews, coding the data, identifying and describing themes, presenting findings and interpreting the data. Nine themes were generated from the FGDs, and eleven themes were generated from the in-depth interviews.

7.4 Assumptions for the study

- The use of a cross-sectional survey through the administration of a validated semi-structured questionnaire, conducting of key informant interviews and FGDs implicitly assumed that participants would respond truthfully or give honest answers.
- The participants, who were sampled to participate in the survey (quantitative domain), represented the population of interest in the study area.

7.5 Delimitations of the study

- The participants were parents and caregivers with children aged below 24 months and local leaders from Mzimba-north district, Malawi.
- The study covered the parents' and caregivers' nutrition KAP and perceptions on IYCF. The assessment of nutrition knowledge and attitudes was on breastfeeding, the benefits of exclusive breastfeeding and complementary feeding. Parents and caregivers with older children (six to 24 months) were asked to recall without quantifying what the child ate during the previous 24 hours to assess their IYCF practices.

- The study assessed the parents' and caregivers' perception of their roles and responsibilities in IYCF.
- This study did not assess the children's nutritional status and nutrient intake.

7.6 Main findings

7.6.1 Quantitative study

7.6.1.1 Socio-demographic characteristics of participants

- A total of 94 parents and caregivers (52 households) with children below six months of age participated in this study. Ten of the households were female headed, while 42 were male headed. The majority of the participants had attained primary education and they reported farming as their main source of income.
- A total of 191 parents and caregivers (105 households) with children aged six to 24 months participated in this study. The majority of the households (96) were male headed, while 19 were female headed. Most of the participants (57.3%) had attained primary education. Farming was reported as the main source of income for the participants.

7.6.1.2 Parental involvement in IYCF

- A significantly higher proportion of females than males with children below the age of six months reported mothers as the main decision makers on breastfeeding of a child (71.2% females and 42.9% males; $P=0.007$), and that mothers had the responsibility to ensure that a baby is exclusively breastfed (80.8% females and 52.4% males; $P=0.004$). Close to half (53.2%) of the participants reported that mothers were encouraged to breastfeed and the majority (35.1%) mentioned under-five clinics as the main source of encouragement. Less than half (46.8%) of the participants reported buying food specifically for breastfeeding mothers, and soft drinks were reported as the type of food bought.
- Most of the females (73.6% and 73.1% with children aged six to 12 and >12 to 24 months respectively) reported IYCF as a mother's responsibility, while the majority of males (53.5% and 62.8% with children aged six to 12 and >12 to 24 months respectively) reported it as a shared responsibility between the mother and father. More than half of the male and female participants (59.7%) reported mothers as having the responsibility to introduce complementary foods and that mothers made the decisions on when to introduce complementary food (63.8%). The majority of the participants

(80.6%) reported to having bought food specifically for the children and more than half of the participants (60.7%) reported that fathers were responsible for buying the food.

7.6.1.3 Knowledge, attitudes and practices of parents and caregivers with children below six months of age

- Female participants had a higher mean score (72.3%) than males (63.8%) on their knowledge of feeding infants below six months of age. The majority of participants knew the first food a new born should receive (97.9%), the recommended period for introducing breast milk to new born (70.2%), the recommended period for exclusive breastfeeding (86.2%), the frequency of breastfeeding (94.6%), the benefits of exclusive breastfeeding to the baby (84.9%) and the ways in which mothers could keep up their milk supply (64.9%). Less than half of the participants knew the benefits of exclusive breastfeeding for the mothers (36.2%), and expressing of breast milk for the baby's use when the mother would be absent (43.6%).
- All of the participants (both male and female) showed positive attitudes (with scores of >80% on all attitude statements) on feeding infants less than six months of age. The majority of the participants reported that exclusive breastfeeding was good (98.9%) and not difficult (81.9%). A small proportion of participants (9.6%) reported that exclusive breastfeeding was difficult because they felt mothers did not have enough food to produce adequate amounts of breast milk. The participants reported that they were confident with how they breastfed their children (98.9%), and that breastfeeding on demand was good (100%) and not difficult (97.9%). None of the female participants reported having expressed breast milk. No significant differences were observed between the male and female participants' responses to the attitude statements ($P > 0.05$).
- All of the mothers reported having breastfed their children both during the previous day and night. Only half of the children were reportedly being exclusively breastfed with most of the non-exclusively breastfed children being given water and thin porridge.

7.6.1.4 Knowledge, attitudes and practices of parents and caregivers with children aged six to 24 months

- Female participants had higher mean scores (87.1% for both females with children aged six to 12 months and >12 to 24 months) than males (67.1% and 61.4% with children aged six to 12 and >12 to 24 months respectively) on their knowledge of feeding infants and young children aged six to 24 months. Both the male and female participants had

good knowledge on the recommended age for mothers to continue breastfeeding (88.4% of males and 100% of females with children below six months of age, and 64.2% of males and 94.2% of females with children aged >12 to 24 months), the time for introducing complementary foods (69.8% of males and 94.3% of females with children below six months, and 67.4% of males and 98.1% of females with children aged >12 to 24 months), the importance of introducing complementary foods at six months (86% of males and 94.3% of females with children below six months and 83.7% of males and 94.2% for females with children aged >12 to 24 months respectively), the type of food to enrich a child's porridge (100% for both males and females in all age groups), and the ways of encouraging a child to eat (100% for both males and females in all age groups). Male participants performed poorly on the type of porridge to give to a child (44.2% with children aged six to 12 and 37.2% with children aged >12 to 24 months) compared to females (77.4% with children aged six to 12 and 84.6% with children aged >12 to 24 months).

Significant differences were observed between the mothers' and fathers' responses to knowledge questions on the recommended age for mothers to continue breastfeeding ($P = 0.012$ and $P = 0.006$ for participants with children aged six to 12 months and >12 to 24 months respectively), the time for introducing complementary foods ($P = 0.013$ and $P = 0.000$ for participants with children aged six to 12 and >12 to 24 months respectively), the type of porridge to give a child ($P = 0.017$ and $P = 0.000$ for participants with children aged six to 12 and >12 to 24 months respectively) and on the importance of introducing complementary foods at six months ($P = 0.000$ for participants with children aged >12 to 24 months).

- Both the male and female participants had positive attitudes (with scores of >80% on all attitude statements) on feeding infants and young children aged six to 24 months. The participants (>70.7%) reported being confident on how they prepared food for the child. They also reported that it was good (100%) and not difficult (73.8%) to give the child different types of food in a day, and that it was also good (78.5%) and not difficult (65.4%) to give the child food several times in a day. The participants also reported that it was good and not difficult to breastfeed beyond six months (100%). The participants, who reported giving their children food several times a day as being difficult (34.6%), gave the reason that they lacked money to purchase food for the children. No significant

differences were observed between the male and female participants' responses to the attitude statements ($P > 0.05$).

- The majority of participants (88.5%) reported that their child was breastfed. Poor food diversity was reported with most of the children (36.6%) consuming food from two food groups (grain, roots and tubers and Vitamin a fruits and vegetables) only within the previous 24 hours. Low consumption of animal sources of food was reported (14.7% for dairy food, 17.2% for flesh foods and 18.3% for eggs). Parents with children aged 12 to 24 months compared to parents with children aged six to 12 months reported higher consumption of legumes and nuts (54.5% males and 51.9% females with children aged >12 to 24 months vs 37.2% males and 45.3% females with children aged six to 12 months), flesh foods (25.6% males and 26.9% females with children aged >12 to 24 months vs 7% males and 9.4% females with children aged six to 12 months), and Vitamin A rich foods (88.4% males and 90.4% females with children aged >12 to 24 months vs 69.8% males and 77.4% females with children aged six to 12 months).

7.6.2 Qualitative study

- A total of 41 males, 53 females and three local leaders participated in the study.
- Participants in FGDs (fathers and mothers) and in-depth interviews (local leaders) identified the roles for both mothers and fathers in IYCF. The roles for mothers included breastfeeding the children, preparing food for the child and feeding younger children, seeking and applying nutrition and child care information, providing emotional support and providing food for children. Providing financial, physical and emotional support were identified as the father's roles. The physical support that fathers provided included relieving mothers of heavy chores and helping in feeding older children, while the emotional support included encouraging mothers to breastfeed and prepare food for children. In addition, the local leaders identified their roles in IYCF. The local leaders' roles included providing emotional support to the families by encouraging the parents to actively participate in IYCF, and assist in changing cultural behaviours and practices that hindered optimal IYCF.
- The participants (fathers, mothers from FGDs and local leaders from the in-depth interviews) mentioned that they were motivated to perform these roles mostly by the need to fulfil their perceived cultural responsibilities. Fathers were also motivated by the love they had for their wives and children, and the social support they received.

Mothers were motivated by the love they had for their children, problems related to food security in the household, as well as the social support that they received.

- Participants from the FGDs and in-depth interviews identified factors that hindered their participation in IYCF. The factors hindering parental involvement included cultural factors, heavy workload, financial constraints, lack of appropriate IYCF knowledge, interpersonal factors, negative influence of relations, age of parents, large number of children and delayed health service delivery.
- The participants from the FGDs and in-depth interviews provided recommendations on what could be done to improve the parents' and caregivers' involvement in IYCF. The recommendations included ensuring that both parents and other family members have appropriate information on IYCF, which would help in improving their participation in IYCF. Participants also mentioned that changes had to be made regarding the cultural behaviours and practices that hindered optimal IYCF. Mothers added that reducing the number of children in a household would reduce the work load for mothers so that they could actively participate, as well as enable optimal IYCF, since the households could then afford providing adequate food for a smaller household.
- The findings from the qualitative part of the study were in support of the findings from the quantitative study.

7.7 Conclusion

The following conclusions are drawn from the study:

- Both the fathers and mothers were involved in IYCF. Mothers were reported to be the main decision makers in breastfeeding children and in deciding whether a child would be exclusively breastfed, i.e. for children below six months. Ensuring optimal IYCF was reported as the mother's responsibility, while purchasing food for the child and making decisions on the type of food to be bought were reported as a father's responsibility.
- Male participants had limited nutrition knowledge on feeding infants and young children aged zero to 24 months in comparison to females. For comparisons within the household, female participants also had better nutrition knowledge on feeding infants and young children zero to 24 months than the males. The differences however, were not significant. Both the male and female participants with children less than six months had limited knowledge of the benefits of exclusive breastfeeding for the mothers and expressing of breast milk for the baby's use when the mother would be absent. Males

with children aged six to 24 months performed poorly on their knowledge of the type of porridge to give to a child.

- Positive attitudes on feeding infants and young children aged zero to 24 months were observed from both the male and female participants.
- Poor IYCF practices were generally reported by both the male and female participants. Low prevalence of exclusively breastfed children was observed and early introduction of complementary feeding was reported for children below six months of age. Poor dietary diversity and low consumption of animal food were reported for children aged six to 24 months. The children were mostly given food from two food groups (grains, roots and tubers, and vitamin A rich fruits and vegetables) out of seven food groups.
- The participants identified roles for mother, fathers and local leaders in IYCF which included breastfeeding the children, preparing food for the child and feeding younger children, seeking and applying nutrition and child care information, providing emotional support and providing food for children. Providing financial, physical and emotional support were identified as the father's roles. The local leaders' role was to provide emotional support to the families.
- The fathers, mothers and local leaders identified the following factors that hindered parental involvement in IYCF: heavy work load for mothers, cultural factors, financial constraints, lack of appropriate knowledge in IYCF, interpersonal factors, negative influence of relations, age, large number of children and delayed health service delivery at under-five clinics.
- The participants provided the following recommendations on what could be done to improve the parents' and caregivers' involvement in IYCF: acquiring appropriate IYCF knowledge, behavioural change and reduced number of children and developing platforms for sharing information on IYCF.

7.8 Strengths of the study

The strengths of the study were:

- The study used the principle of triangulation in collecting data which made the study findings credible. The study used a mixed methods approach in the quantitative and qualitative research domains. The mixed methods approach allowed for the research questions to be addressed more appropriately and obtain richer information. Data for the study were also collected using multiple methods; questionnaires in the quantitative study, and FGDs and in-depth interviews in the qualitative study. The qualitative

findings were supportive of the quantitative findings. In addition, the same set of questions was used in the FGDs with mothers, fathers as well as in in-depth interviews with local leaders which led to the collection of rich data.

- Separate interviews were conducted for the mothers and fathers in both the quantitative and qualitative studies which allowed for the collection of richer data and controlled for response bias. The questionnaires were administered to the mothers (or female caregivers) and fathers (or male caregivers) separately in the quantitative study, and separate FGDs for mothers and fathers were conducted in the qualitative study.
- The sampling techniques that were used for this study - stratified random sampling for the quantitative study and purposive sampling for the qualitative study - allowed for the study results to be generalisable to the study population.
- The study used the FAO validated questionnaire ((Macías *et al.*, 2014) which was administered in the local language (Tumbuka). The questionnaire was modified (i) to include local foods for the questionnaires administered to both the male and female participants, as well as (ii) adapted to accommodate male participants for the questionnaires administered to the male participants. The questionnaires which were originally in English were translated to Tumbuka using the recommended procedure (Naidoo *et al.*, 2015).
- Both the questionnaires and the interview guides used in this study had been piloted with participants from a population similar to that of the study population before the data collection process.
- Both the data collection and data entry for the quantitative study were done by research assistants who were trained by the researcher.

7.9 Limitations of the study

- The study used a single non-quantified 24 hour dietary recall to obtain information on the child's feeding practices. In addition, parents who had children aged 13 to 24 months were asked to recall the type of foods they had given to the child the previous year. As such the study findings are subject to recall bias as the parents might have reported the generally acceptable practices or might have forgotten the foods consumed by the child (Kumar, 2014).
- Data for the study were only collected during the rainy season, which is also the hunger period in Malawi. As such, these findings might not have fully reflected the feeding

practices of the infants and young children for Mzimba-north district throughout the year.

- Due to the qualitative nature of a part of this study, the study findings cannot be generalised, but were meant for exploring the nutrition KAP and perceptions on IYCF of the parents and caregivers with children aged zero to 24 months in Mzimba-north district. However, the quantitative findings were supportive of the findings from the qualitative part of the study, which can also be regarded as a strength of the study.
- The attitude statements on the questionnaire were stated in a positive manner. This could have resulted in the participants responding positively due to the statements leading them. However, the standardised questionnaire was in that format (Macías *et al.*, 2014).
- The FGDs were conducted by the researcher, who was also a nutrition officer in the district. This might have influenced the responses of the participants to report good feeding practices, so called response bias. However, the findings from the qualitative study were supportive of the quantitative findings.
- The FGDs and in-depth interviews were conducted in the local language (Tumbuka). This might have had an effect on interpreting the results of the study although the interviews and data analysis were done by the researcher, who is fluent in both Tumbuka and English.

7.10 Recommendations

The following recommendations have been made for this study:

7.10.1 Future research

- More research is needed on the associations between parental knowledge and the actual feeding practices. This study did not measure the actual dietary intake of the children. The assessment of child feeding practices in this study used a single non-quantified 24 hour dietary recall, where the parents reported the foods the children consumed.
- This study only considered the knowledge, attitudes and practices on feeding infants and young children and did not consider the child's nutritional status. More research is needed on the associations between the infant and young child feeding practices and a child's nutritional status in Malawi.
- Data for this study were collected during the rainy season, which is also the hunger period for Malawi. Conducting a similar study during the hunger period, as well as

when food is plenty, would present a better picture of the IYCF practices in Mzimba north district.

- More research is needed on the process of cultural practices and behavioural change, and how parental and caregivers' beliefs and practices could be changed to ensure optimal IYCF. While studies have reported changes in cultural practices and behaviours that hindered IYCF, not much has been reported on how these changes occurred through facilitation in the communities, as well as in households.

7.10.2 For implementation

The recommendations on each of the studied areas related to IYCF is presented in Table 7.1.

Table 7-1: Recommendations for implementation

Studied area	Sub-area	Recommendation (s)
Parental involvement in IYCF	Parental and caregivers' responsibility to feed children and make decisions on IYCF	<ul style="list-style-type: none"> - Encourage the participation of both fathers and mothers in IYCF by providing IYCF information to the homes (both mothers and fathers), communities and on the radio
	Parental and caregivers' responsibility to purchase food for child and breastfeeding mothers	<ul style="list-style-type: none"> - Make communities aware through nutrition education programmes on the types of food recommended for feeding infants and young children, and breastfeeding mothers - Include fathers in nutrition education programmes on IYCF, so that they are aware of the type of food to purchase for the complementary fed children since they were reported as having the responsibility to purchase food for the children - Develop interventions that improve parents' and caregivers' access and affordability to food like subsidy programmes for infant and young child foods - Develop interventions that promote diversified food production and the use of enriched cereal production for improved IYCF.
Parental and caregivers' nutrition knowledge, attitudes and practices	Parental and caregivers' knowledge in feeding infants less than six months	<ul style="list-style-type: none"> - Sensitise communities comprehensively through nutrition education programmes on child development, including the meaning and the recommended period for exclusive breastfeeding, the benefit of exclusive breastfeeding to both the mother and child, and the ways of increasing a mother's breastmilk supply - Increase awareness on expressing and storage of breastmilk for a baby's use when separated from the mother

Continued...

Table 7-1: Recommendations for implementation continued

Studied area	Sub-area	Recommendation (s)
Parental and caregivers' nutrition knowledge, attitudes and practices	Parental and caregivers' knowledge in feeding infants and young children six to 24 months	<ul style="list-style-type: none"> - Sensitise communities, specifically mothers and fathers, on the recommended time for introducing complementary feeding, the importance of introducing complementary feeding at six months, the importance of providing enriched thick porridge to young children (using diversified locally available foods to enrich child's porridge), and the importance of providing a diversified diet to infants and young children aged six to 24 months using locally available foods. This can be achieved through age specific nutrition education programmes - Include grandmothers in nutrition education programmes on IYCF since they have an influence on parents' and caregivers' IYCF practices - Ensure that information on IYCF is delivered in full, unambiguously and with clear practical advice and demonstrations following the WHO guidelines on appropriate IYCF (Tiwari, Bharadva, Yadav, Malik, Gangal, Banapurmath, Zaka-Ur-Rab, Deshmukh & Agrawal, 2016)
	Parental and caregivers' attitudes in feeding infants less than six months	<ul style="list-style-type: none"> - Encourage the parents' and caregivers' positive attitudes while providing adequate nutrition knowledge on IYCF
	Parental and caregivers' attitudes in feeding infants and young children six to 24 months	<ul style="list-style-type: none"> - Teach communities the importance of providing foods following the frequencies recommended by the WHO (Tiwari <i>et al.</i>, 2016)
	Parental and caregivers' feeding practices for infants less than six months	<ul style="list-style-type: none"> - Emphasise the importance of exclusive breastfeeding to both parents and caregivers through community and sensitisation and home visitations by extension workers and IYCF volunteers to households with infants and young children - Involve and include grandmothers in IYCF trainings - Increase awareness on the ways a mother can increase breast milk supply by encouraging home visitations by extension workers

Continued...

Table 7.1: Recommendations for implementation continued

Studied area	Sub-area	Recommendation (s)
Parental and caregivers' nutrition knowledge, attitudes and practices	Parental and caregivers' feeding practices for infants and young children aged six to 24 months	<ul style="list-style-type: none"> - Emphasise the use of locally available, affordable and culturally acceptable foods and have cooking demonstrations with parents, caregivers and grandmothers so that they know how to prepare food for the child (WHO, 2016) - Educate parents on how to select, prepare and preserve nutritious foods, as well as the food combinations for optimal IYCF - Teach parents the preparation of enriched complementary foods (for instance, thin porridge vegetable source); and show them the preparation methods. - Encourage the establishment of backyard gardens and rearing of chickens and small stock to ensure household availability of vegetables and animal food throughout the year
Parental and caregivers roles and responsibilities in IYCF	Parents and caregivers' sources of information	<ul style="list-style-type: none"> - Provide appropriate IYCF information using diversified channels, including social media (having programmes on child feeding on the radio), community volunteers (who are trained on IYCF), and support groups for parents with infants and young children (WHO, 2016)
	Parental and local leaders' roles in IYCF	<ul style="list-style-type: none"> - Provide messages on optimal IYCF to both parents (mothers and fathers), and encourage the involvement of both mothers and fathers in IYCF, taking into consideration the different roles that males and females have in IYCF - Involve local leaders in reinforcing appropriate IYCF practices
Factors that affected parental and caregivers' involvement in IYCF	Motivating factors for parents', caregivers' and local leaders' involvement in IYCF	<ul style="list-style-type: none"> - Encourage community support on IYCF practices to parents with infants and young children
	Barriers to parental and caregivers' involvement in IYCF	<ul style="list-style-type: none"> - Promote good cultural behaviours and practices that promote appropriate IYCF - Provide appropriate information on IYCF to grandmothers to facilitate long term effects on child nutrition

Continued...

Table 7.1: Recommendations for implementation continued

Studied area	Sub-area	Recommendation (s)
Factors that affected parental and caregivers' involvement in IYCF	Barriers to parental and caregivers' involvement in IYCF	<ul style="list-style-type: none"> - Promote good cultural behaviours and practices that promote appropriate IYCF - Provide appropriate information on IYCF to grandmothers to facilitate long term effects on child nutrition - Sensitise communities on the need for reducing the workload for breastfeeding mothers so that they should have enough time to breastfeed and prepare food for young children - Teach mothers to prepare snacks and small meals for children that are not time consuming using locally available resources. - Encourage households to diversify their income sources so that they are able to provide for the dietary needs of their household - Encourage government programmes that provide inputs for rural households to increase their yields and subsequently food for the households (e.g. the farm input subsidy programme in Malawi) - Encourage family planning messages and sensitising communities on the benefits of having a smaller household size, i.e. smaller number of children whom they can ably take care of
Improving parental and caregivers' involvement in infant and young child feeding	Improving parental and caregivers' involvement in IYCF	<ul style="list-style-type: none"> - Develop and present programmes that promote the involvement of fathers and mothers in IYCF

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ADDENDUM 1: KAP questionnaire for female participants with children aged below six months

RESEARCH TITLE: Parental and caregivers' nutrition knowledge, attitudes, perceptions and practices on infant and young child feeding (aged zero to 24 months) in Mzimba-north district, Malawi

Name of interviewer	
Date	
Participant number	

ALL QUESTIONS IN THE QUESTIONNAIRE

A. SOCIO DEMOGRAPHIC INFORMATION

About the participant

1. Tick the sex of the participant

1	Male	
2	Female	

2. How many children do you have in your home (household) below the age of 24 months? (tick where appropriate and indicate the age in months)

1	One	
2	Two	
3	Three	
4	Other	

3. What is your relationship with the children?

1	Mother	
2	Father	
3	Grand mother	
4	Grand father	
5	Other	

4. How old are you? (Tick where appropriate)

1	<20 years	
2	20 – 24 years	
3	25 -29 years	
4	30 -34 years	
5	>34 years	

5. Where do you live?

1	EPA	
2	Section	
3	Village	

6. What is the size of your household?

Indicate the number	
---------------------	--

7. Tick the appropriate response on marital status

1	Married	
2	Single	
3	Divorced/separated	
4	Widow	

8. Have you ever attended school?

1	Yes	
2	No	

If No skip to question 11

9. What is the highest level of school you attended

		Tick the appropriate response	Indicate level in years
1	Primary school		
2	Secondary school		
3	Tertiary qualification		

10. What is your main source of income? (Tick the appropriate response)

1	Farming	
2	Business	
3	Employed (part time)	
4	Employed (full time)	
5	Others (specify)	

About the child

11. What is the sex of the child? (tick the appropriate response)

1	Male	
2	Female	

12. How old is the child? (Tick where appropriate and indicate the age)

1	0 – 6 months	
2	6 – 12 months	
3	12 – 18 months	
4	18 – 24 months	

13. What is the position of the child in the family? (Tick the appropriate response)

1	First child	
2	Second Child	
3	Third child	
4	Fourth child	
5	Fifth child or more	

B. CAREGIVERS NUTRITION KNOWLEDGE, ATTITUDES AND PRACTICES FOR CHILDREN 0-6 MONTHS

I am going to ask you some questions about nutrition of infants from birth to six months old. Please let me know if you need me to clarify any of my questions. Feel free to ask any question you may have.

Practices

14. Was the baby breast fed yesterday during the day?

1	Yes	
2	No	
3	Don't know / No answer	

15. Was the baby breast fed yesterday during the night?

1	Yes	
2	No	
3	Don't know/ No answer	

16. Sometimes babies are fed breast milk in different ways, did the child consume breast milk in any of the following ways yesterday during the day or night? (tick the appropriate response)

		Yes	No	Don't know
1	By another woman			
2	By spoon			
3	Cup			
4	Bottle			
5	Other (Specify)			

17. When you are not home or cannot feed the baby yourself, who does it?

1	Father	
2	Grand mother	
3	Other children	
4	Other	
5	Don't know / no answer	

18. If you are not there to feed the baby, what type of food is the baby fed?

1	Breast milk by spoon, cup or bottle	
2	Infant formula by spoon, cup, cup or bottle	
3	Other liquids	

Next I would like to ask you about some liquids that the baby may have had yesterday during the day or at night.

19. Did the child have any of the following liquids yesterday during the day or at night?
 (Tick the appropriate response)

		Yes	No	Don't Know	
1	Plain water				<input type="checkbox"/>
2	Infant formula				<input type="checkbox"/>
3	Milk [tinned, powdered, fresh animal milk]				<input type="checkbox"/>
4	Juice or juice drinks				<input type="checkbox"/>
5	Clear broth				<input type="checkbox"/>
6	Yogurt				<input type="checkbox"/>
7	Thin porridge				<input type="checkbox"/>
8	Thobwa				<input type="checkbox"/>
9	Msuzi				<input type="checkbox"/>
10	Any other liquid [specify]				<input type="checkbox"/>
					<input type="checkbox"/>
					<input type="checkbox"/>

Preliminary analysis

Questions 13 to 17 determine if the child is exclusively breastfed

1	Exclusively breastfed	
2	Not exclusively breastfed	

20. Whose responsibility is it to make decisions on exclusively breastfeeding the child?
 (Tick appropriate response. You can tick more than one response)

1	Mother	
2	Father	
3	Grand mother	
4	Caregiver	
5	Other specify	

knowledge

21. What is the first food a new born baby should receive?

1	Only breast milk	
2	Other [specify]	<input type="checkbox"/>
3	Don't know	<input type="checkbox"/>

Preliminary analysis

1	Knows	
2	Does not know	

22. For how long should it take for the baby to receive breast milk after being born? (Tick the appropriate response)

1	Immediately within one hour after birth	
2	More than one hour after birth	
3	I do not know	

23. Have you heard about exclusive breastfeeding?

1	Yes	
2	No	

If no go to question 22

24. What does exclusive breastfeeding mean?

1	Infants gets only breast milk and no other liquids or foods	
2	Other	<input type="checkbox"/>
3	Don't know	

☐ Preliminary analysis

1	Knows	
2	Does not know	

25. Until what age is it recommended that a child feeds nothing more than breastmilk?

1	From birth to six months	
2	Other	
3	Don't know	

☐

☐ Preliminary analysis

1	Knows	
2	Does not know	

26. Why do you think breast milk is the only food recommended for infants up to six months old? [probe if necessary]

1	Because breast milk provides all the nutrients and liquids a baby needs in its first six months	
2	Other	
3	Don't know	

☐

☐ Preliminary analysis

1	Knows	
2	Does not know	

27. How often should a baby younger than six months be breastfed or fed with breast milk?

1	On demand, whenever the baby wants	
2	Other	
3	Don't know	

Preliminary analysis

1	Knows	
2	Doesn't know	

28. What are the benefits for a baby if he or she receives only breast milk during the first six months of life?

1	The baby grows healthy	
2	Protection from diarrhoea and other infections	
3	Protection against obesity and chronic diseases in adulthood	
4	Protection against other diseases	
5	Other	
6	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

Number of correct responses _____

29. What are the physical or health benefits for a mother if she exclusively breastfeeds her baby?

1	Delays fertility		
2	Helps her lose the weight gained during pregnancy		
3	Lowers risk of cancer [breast and ovarian]		?
4	Lowers risk of losing blood after giving birth [less risk of post-partum haemorrhage]		?
5	Improves the relationship between the mother and baby		?
6	Other		?
7	Don't know		?

? Preliminary analysis

1	Knows	
2	Does not know	

Number of correct responses _____

30. Many times, mothers complain about not having enough breast milk to feed their babies. Please tell me different ways a mother can keep up her milk supply.

1	Breastfeeding exclusively on demand	
2	Manually expressing breast milk	
3	Having a good nutrition [eating well, having a healthy or diversified diet]	
4	Drink enough liquids during the day	
5	Other	
6	Don't know	

? Preliminary analysis

1	Knows	
2	Does not know	

Number of correct responses _____

31. Many mothers need to work and are separated from their baby. In this situation, how could a mother continue feeding her baby exclusively with breast milk?

1	Expressing breast milk by hand, storing it and asking someone to give breast milk to the baby	
2	Other	
3	Don't know	

☐

☐ Preliminary analysis

1	Knows	
2	Does not know	

Attitudes

32. Do you think exclusively breastfeeding your baby for six months is good?

1	Yes	
2	You are not sure	
3	No	

If not good, Can you tell me the reasons why it is not good?

33. Is it difficult for you to breastfeed your baby exclusively for six months?

1	Yes	
2	No	

If yes, can you tell me the reasons why it is difficult?

34. How good do you think it is to breastfeed your baby on demand, when the baby wants to feed?

1	Not good	
2	You are not sure	
3	Good	

If not good, can you tell me the reasons why it is not good?

35. Is it difficult for you to breastfeed your child on demand?

1	Yes	
2	No	

If difficult, can you tell me the reasons why it is difficult?

36. How confident do you feel in breastfeeding your child?

1	Not confident	
2	Ok/ so-so	
3	Confident	

If not confident, can you tell me the reasons why you do not feel confident?

37. How confident do you feel in expressing and storing breast milk so that someone else can feed your baby?

1	Not confident	
2	Ok / so-so	
3	Confident	

If not confident, can you tell me the reasons why you do not feel confident?

Thank you for your time

ADDENDUM 2: KAP questionnaire for male participants (with children <six months)

RESEARCH TITLE: Parental and caregivers' nutrition knowledge, attitudes, perceptions and practices on infant and young child feeding (aged zero to 24 months) in Mzimba-north district, Malawi

Name of interviewer	
Date	
Participant number	

ANSWER ALL QUESTIONS IN THE QUESTIONNAIRE

A. SOCIO DEMOGRAPHIC INFORMATION

About the participant

1. Tick the sex of the participant

1	Male	
2	Female	

2. How many children do you have in your home below the age of 24 months? (tick where appropriate and indicate the age in months)

1	One	
2	Two	
3	Three	
4	Other, specify	

3. What is your relationship with the children?(tick which is applicable)

1	Mother	
2	Father	
3	Grand mother	
4	Grand father	
5	Other (specify)	

4. How old are you?

1	<20 years	
2	20 – 24 years	
3	25 -29 years	
4	30 -34 years	
5	>34 years	

5. Where do you live? (tick the appropriated response)

1	EPA	
2	Section	
3	Village	

6. What is the size of your household?

Indicate the number	
---------------------	--

7. Tick the appropriate response on marital status

1	Married	
2	Single	
3	Divorced/separated	
4	Widow	

8. Have you ever attended school? (tick the appropriated response)

1	Yes	
2	NO	

If No skip to question 11

9. What is the highest level of school you attended

Number	Class	Tick appropriate response	Indicate level in years
1	Primary school		
2	Secondary school		
3	Tertiary qualification		

10. What is your main source of income? (Tick appropriate response)

1	Farming	
2	Business	
3	Employed (part time)	
4	Employed (full time)	
5	Others (specify)	

About the child

11. What is the sex of the child?

1	Male	
2	Female	

12. How old is the child?(Tick appropriate response)

1	0 – 6 months	
2	6 – 12 months	
3	12 – 18 months	
4	18 – 24 months	

13. What is the position of the child in the family? (Tick appropriate response)

1	First child	
2	Second Child	
3	Third child	
4	Fourth child	
5	Fifth child or more	

B. CAREGIVERS NUTRITION KNOWLEDGE, ATTITUDES AND PRACTICES FOR CHILDREN 0-6 MONTHS

I am going to ask you some questions about nutrition of infants from birth to six months old. Please let me know if you need me to clarify any of my questions. Feel free to ask any question you may have.

Practices

14. Was the baby breast fed yesterday during the day?

1	Yes	
2	No	
3	Don't know / No answer	

15. Was the baby breast fed yesterday during the night?

1	Yes	
2	No	
3	Don't know / No answer	

16. Sometimes babies are fed breast milk in different ways, did the child consume breast milk in any of the following ways yesterday during the day or night? (Tick the appropriate response).

		Yes	No	Don't know
1	By another woman			
2	By spoon			
3	Cup			
4	Bottle			
5	Other (Specify)			

17. Did the child consume breast milk in any of these ways yesterday during the day or night?

1	Yes	
2	No	
3	Don't know / No answer	

18. Do you buy special food meant for the breastfeeding mother?

1	Yes	
2	No	

If yes to question, list the type of food item you have bought for the past one week

- 1 _____
- 2 _____
- 3 _____

19. Whose responsibility is it to make decisions on exclusively breastfeeding the child? (Tick appropriate response. You can tick more than one response)

1	Mother	
2	Father	
3	Grand mother	
4	Caregiver	
5	Other specify	

20. Do you encourage the mother of the child to practice exclusively breast feeding?

1	Yes	
2	No	

If yes, then list down ways you encourage the mothers to breast feed

1 _____

2 _____

3 _____

4 _____

21. When the child's mother is not home or cannot feed the baby, who feeds the child?
 ?(Tick appropriate response)

1	Father	
2	Grand mother	
3	Other children	
4	Other	
5	Don't know / no answer	

22. If the child's mother is not there to feed the baby, what type of food is the baby fed?

1	Breast milk by spoon, cup or bottle	
2	Infant formula by spoon, cup, cup or bottle	
3	Other liquids	

23. Next I would like to ask you about some liquids that the baby may have had yesterday during the day or at night. ?(Tick appropriate response)

Did the child have any of the following liquids yesterday during the day or at night?

		yes	No	Don't Know
1	Plain water			
2	Infant formula			
3	Milk [tinned, powdered, fresh animal milk]			
4	Juice or juice drinks			
5	Clear broth			
6	Yogurt			
7	Thin porridge			
8	Thobwa			
9	Msuzi			
10	Any other liquid [specify]			

?

?

?

Preliminary analysis

Questions 18 to 20 determine if the child is exclusively breastfed

1	Exclusively breastfed	
2	Not exclusively breastfed	

Knowledge

24. What is the first food a new born baby should receive?

1	Only breast milk	
2	Other [specify]	
3	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

For how long should it take for the baby to receive breast milk after being born? Tick the appropriate response

1	Immediately within one hour after birth	
2	More than one hour after birth	
3	I do not know	

25. Have you heard about exclusive breastfeeding?

1	Yes	
2	No	

If no go to question 24

26. What does exclusive breastfeeding mean?

1	Infants gets only breast milk and no other liquids or foods	
2	Other	
3	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

27. Until what age is it recommended that a child feeds nothing more than breastmilk?

1	From birth to six months	
2	Other	
	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

28. Why do you think breast milk is the only food recommended for infants up to six months old? [probe if necessary]

1	Because breast milk provides all the nutrients and liquids a baby needs in its first six months	
2	Other	
3	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

29. How often should a baby younger than six months be breastfed or fed with breast milk?

1	On demand, whenever the baby wants	
2	Other	
3	Don't know	

?

? Preliminary analysis

1	Knows	
2	Does not know	

30. What are the benefits for a baby if he or she receives only breast milk during the first six months of life?

1	The baby grows healthy	
2	Protection from diarrhoea and other infections	
3	Protection against obesity and chronic diseases in adulthood	
4	Protection against other diseases	
5	Other	
6	Don't know	

?

? Preliminary analysis

1	Knows	
2	Does not know	

Number of correct responses _____

31. What are the physical or health benefits for a mother if she exclusively breastfeeds her baby?

1	Delays fertility	
2	Helps her lose the weight gained during pregnancy	
3	Lowers risk of cancer [breast and ovarian]	
4	Lowers risk of losing blood after giving birth [less risk of post-partum haemorrhage]	
5	Improves the relationship between the mother and baby	
6	Other	
	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

Number of correct responses _____

32. Many times, mothers complain about not having enough breast milk to feed their babies. Please tell me different ways a mother can keep up her milk supply.

1	Breastfeeding exclusively on demand		<input type="checkbox"/>
2	Manually expressing breast milk		<input type="checkbox"/>
3	Having a good nutrition [eating well, having a healthy or diversified diet]		<input type="checkbox"/>
4	Drink enough liquids during the day		<input type="checkbox"/>
5	Other		<input type="checkbox"/>
6	Don't know		<input type="checkbox"/>

Preliminary analysis

1	Knows	
2	Does not know	

Number of correct responses _____

33. Many mothers need to work and are separated from their baby. In this situation, how could a mother continue feeding her baby exclusively with breast milk?

1	Expressing breast milk by hand, storing it and asking someone to give breast milk to the baby	
2	Other	
3	Don't know	

☒

☒ Preliminary analysis

1	Knows	
2	Does not know	

Attitudes

34. Do you think exclusively breastfeeding the baby for six months is good?

1	Yes it's good	
2	You are not sure	
3	No it's not good	

If Not good, Can you tell me the reasons why it is not good?

35. Do you think it is good for mothers to breastfeed a baby on demand, when the baby wants to feed?

1	No it's not good	
2	You are not sure	
3	Yes, it's good	

If not good, can you tell me the reasons why it is not good?

36. Do you think it is difficult for mothers to breastfeed babies on demand?

1	Yes	
2	No	

If difficult, can you tell me the reasons why it is difficult?

38. How confident do you feel in how the mother breastfeeds your child?

1	Not confident	
2	Ok / so-so	
3	Confident	

If not confident, can you tell me the reasons why you do not feel confident?

39. How confident do you feel in mothers expressing and storing breast milk so that you or someone else can feed your baby?

1	Not confident	
2	Ok / so-so	
3	Confident	

If not confident, can you tell me the reasons why you do not feel confident?

Thank you for your time

ADDENDUM 3: KAP questionnaire for female participants with children aged six to 24 months

Name of interviewer	
Date	
Participant number	

ANSWER ALL QUESTIONS IN THE QUESTIONNAIRE

A. SOCIO DEMOGRAPHIC INFORMATION

About the participant

1. Tick the sex of the participant

1	Male	
2	Female	

2. How many children do you have in your home (household) below the age of 24 months? (tick where appropriate and indicate the age in months)

1	One	
2	Two	
3	Three	
4	Other	

3. What is your relationship with the children?

1	Mother	
2	Father	
3	Grand mother	
4	Grand father	
5	Other	

4. How old are you? (Tick where appropriate)

1	<20 years	
2	20 – 24 years	
3	25 -29 years	
4	30 -34 years	
5	>34 years	

5. Where do you live?

1	EPA	
2	Section	
3	Village	

6. What is the size of your household?

Indicate the number	
---------------------	--

7. Tick the appropriate response on marital status

1	Married	
2	Single	
3	Divorced/separated	
4	Widow	

8. Have you ever attended school?

1	Yes	
2	No	

If No skip to question 11

9. What is the highest level of school you attended

		Tick the appropriate response	Indicate level in years
1	Primary school		
2	Secondary school		
3	Tertiary qualification		

10. What is your main source of income? (Tick the appropriate response)

1	Farming	
2	Business	
3	Employed (part time)	
4	Employed (full time)	
5	Others (specify)	

About the child

11. What is the sex of the child? (tick the appropriate response)

1	Male	
2	Female	

12. How old is the child? (Tick where appropriate and indicate the age)

1	0 – 6 months	
2	6 – 12 months	
3	12 – 18 months	
4	18 – 24 months	

13. What is the position of the child in the family? (Tick the appropriate response)

1	First child	
2	Second Child	
3	Third child	
4	Fourth child	
5	Fifth child or more	

B. CAREGIVERS NUTRITION KNOWLEDGE, ATTITUDES AND PRACTICES FOR CHILDREN 6 to 24 MONTHS

I am going to ask you some questions about nutrition of infants aged from 6 to 24 months. Please let me know if you need me to clarify any of my questions. Feel free to ask any question you may have.

Practices

14. Do you participate in feeding the child?

1	Yes	
2	No	

If no, give the reason why

15. Whose responsibility is it to feed the child? (Tick appropriate response. You can tick more than one response)

1	Mother	
2	Father	
3	Grand mother	
4	Caregiver	
5	Other specify	

16. Who made the decisions on when to introduce complementary feeding?

1	Mother	
2	Father	
3	Both	
4	Others	

17. Whose responsibility is it to make decisions on when to introduce complementary feeding? (Tick appropriate response. You can tick more than one response)

1	Mother	
2	Father	
3	Grand mother	
4	caregiver	
5	Other specify	

18. Do you buy food specifically for the child?

1	Yes	
2	No	

19. Whose responsibility is it to buy food for the child? (Tick appropriate response. You can tick more than one response)

1	Mother	
2	Father	
3	Grand mother	
4	caregiver	
5	Other specify	

20. Do you take part in making decisions to the buy food for your child?

1	Yes	
2	No	

If No can you tell me reasons why you do not take part in making decisions to buy food for the child?

1 _____

2 _____

3 _____

4 _____

21. Whose responsibility is it to make decisions on buying food for the child? (Tick appropriate response. You can tick more than one response)

1	Mother	
2	Father	
3	Grand mother	
4	Caregiver	
5	Other (specify)	

Who actually buys the food for your child? (Tick appropriate answer. You can tick more than one response)

1	Father	
2	Mother	
3	Grandmother	
4	Others (specify)	

40. Was the baby breastfed or did he or she consume breast milk yesterday during the day or at night?

1	Yes	
2	No	
3	Don't know	

Now I would like to ask you about (other) liquids or foods that the baby ate yesterday during the day or at night. I am interested in whether your child had the item even if it was combined with other foods.

For example, if the baby ate a maize porridge made with a mixed vegetable sauce, you should reply yes to any food that was an ingredient in the porridge or sauce.

Please do not include any food used in a small amount for seasoning or condiments (like chillies, spices, herbs or fish powder); I will ask you about those foods separately.

22. Yesterday during the day or at night, did the child eat any of the following:

(Read the food lists. Underline the corresponding foods consumed and tick the column Yes or No depending on whether any food item of the list was consumed.

Record the number of times when relevant (Group 3).

Group	Food list	Yes	No
Group 1: Grains, roots and tubers	Porridge, bread, rice, Nsima or other foods made from grains.		
	White potatoes, white yams, cassava or any other foods made from roots.		
Group 2: legumes and nuts	Any foods made from beans, soya beans , peas, pigeon peas, lentils, ground nuts or seeds		
Group 3: Dairy products	Infant formula	How many times:	
	Milk, such as tinned, powdered or fresh animal milk	How many times:	
	Yogurt or drinking yogurt and sour milk	How many times:	
Group 4: Flesh foods	Liver, kidney, heart or other organ meats		
	Any meat, such as beef, pork, lamb, goat, chicken or duck		
	Fresh or dried fish,		
	Insects		
Group 5: eggs	Eggs		
Group 6: Vitamin A fruits and vegetables	Pumpkin, carrots and sweet potatoes that are yellow or orange inside		
	Any dark green vegetables		
	Ripe mangoes (fresh or dried [not green]), ripe papayas (fresh or dried)		
Group 7: Other fruits and vegetables	Any other fruits or vegetables		
Others (not counted in the dietary diversity score)	Any sugary foods, such as chocolates, sweets, candies, pastries, cakes or biscuits.		
	Condiments for flavour, such as chillies, spices and herbs		

☐ Preliminary analysis

The baby consumes other food other than breast milk

1	Yes	
2	No	

Number of food groups consumed before the previous day _____

23. How many times did the baby eat foods that is meals and snacks other than liquids yesterday during the day or at night?

1	Number of times	
2	No answer/ don't know	

Preliminary analysis

WHO (2008) recommendations for minimum meal frequency:

For breastfed children:

- 2–3 times for breastfed infants 6–8 months
- 3–4 times for breastfed infants 9–23 months

For non-breastfed children:

- 4 times for non-breastfed-children 6–24 months (including milk feeds, identified in question P.2, Group 3)

From questions 21, 22 and 23, determine if the child receives food the minimum number of times according to WHO recommendations:

1	Less than recommended	
2	Follows the recommendation (the minimum number of times each day)	
3	More than recommended	

- Applicable to parents with children aged 12 months to 24 months.

Now I would like to ask you about (other) liquids or foods that the baby ate during the period from April to September last year. I am interested in whether your child had the item even if it was combined with other foods.

For example, if the baby ate a maize porridge made with a mixed vegetable sauce, you should reply yes to any food that was an ingredient in the porridge or sauce.

24. During the period from April to September, did the child eat any of the following:

(Read the food lists. Underline the corresponding foods consumed and tick the column on the months when any food item on the list was consumed).

Group	Food list	April	May	June	July	August	Sept
Group 1: Grains, roots and tubers	Porridge, bread, rice, Nsima or other foods made from grains.						
	White potatoes, white yams, cassava or any other foods made from roots.						
Group 2: legumes and nuts	Any foods made from beans, soya beans , peas, pigeon peas, lentils, ground nuts or seeds						
Group 3: Dairy products	Infant formula						
	Milk, such as tinned, powdered or fresh animal milk						
	Yogurt or drinking yogurt and sour milk						
Group 4: Flesh foods	Liver, kidney, heart or other organ meats						
	Any meat, such as beef, pork, lamb, goat, chicken or duck						
	Fresh or dried fish,						
	Insects						
Group 5: eggs	Eggs						
Group 6: Vitamin A fruits and vegetables	Pumpkin, carrots and sweet potatoes that are yellow or orange inside						
	Any dark green vegetables						
	Ripe mangoes (fresh or dried [not green]), ripe papayas (fresh or dried)						
Group 7: Other fruits and vegetables	Any other fruits or vegetables						
Others (not counted in the dietary diversity score)	Any sugary foods, such as chocolates, sweets, candies, pastries, cakes or biscuits.						
	Condiments for flavour, such as chillies, spices and herbs						
Number of food groups consumed in a month							

Preliminary analysis

The baby consumed other food other than breast milk

1	Yes	
2	No	

Knowledge

25. Until what age is it recommended that a mother continues breastfeeding?

1	Six months or less	
2	6 - 11 months	
3	12 – 23 months	
4	24 months and more	
5	Other specify	
6	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

26. At what age should babies start eating foods in addition to breast milk?

1	At six months	
2	Other	
3	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

27. Why is it important to give foods in addition to breast milk to babies from the age of six months?

1	Breast milk alone is not sufficient to supply all the nutrients needed for growth (from six months baby needs more food in addition to breast milk)	
2	Other	
3	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

28. Please look at these two pictures of porridges. Which one do you think should be given to a young child?

(Show the images/pictures of thick and watery/thin porridges and tick one of the options here below depending on the respondent answer.)

1	Thick porridge	<input type="checkbox"/>
2	Watery porridge	<input type="checkbox"/>
3	Does not know	<input type="checkbox"/>

Preliminary analysis

1	Knows	
2	Does not know	

29. Why did you pick that picture?

1	Because the first porridge is thicker than the other	
2	Because the thick porridge is more nutritious (its prepared with different types of ingredients)	
3	Because the porridge is watery	
4	Other	
5	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

To feed their children, many mothers give them maize meal porridge or rice porridge.

30. Which foods or types of food can be added to the porridge to make it more nutritious?(Tick the appropriate response)

By adding:

1	Animal-source foods (meat, poultry, eggs etc.)	
2	Pulses and nuts - ground nut flour and other legume flours, soy beans	
3	Vitamin A rich fruits and vegetables (carrot, yellow pumpkin, papaya, orange freshed sweet potato)	
4	Green leafy vegetables	
5	Energy rich foods (oil, butter)	
6	Other	
7	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

31. How do you encourage your child to eat?

1	Giving the attention during meals, talk to them	
2	Clapping hands	
3	Make funny faces/ play/ laugh	
4	Modelling how to eat (demonstrating opening your mouth wide)	
5	Say encouraging words	
6	Draw the child's attention	
7	Other	
8	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

Attitudes

32. Do you feel confident when preparing food for your child?

1	Yes	
2	No	
3	So-so	

If not confident, can you tell me the reasons why you do not feel confident?

33. Do you think it is good to give different types of food to your child each day?

1	Yes	
2	No	
3	Not sure	

If not good, can you tell me the reasons why it is not good?

34. Is it difficult for you to give different types of food to your child each day?

1	Yes	
2	No	
3	So-so	

If difficult, can you tell me the reasons why it is difficult?

35. Do you think it is good to feed your child several times each day?

1	It is not good	
2	You are not sure	
3	Yes it is good	

If not good, can you tell me the reasons why it is not good?

36. Is it difficult for you to feed your child several times each day?

1	Not difficult	
2	So-so	
3	Difficult	

If difficult, can you tell me the reasons why it is difficult?

37. Do you think it is good to continue breastfeeding beyond six months?

1	Not good	
2	You are not sure	
3	It is good	

If not good, can you tell me the reasons why it is not good?

38. Is it difficult for you to continue breast feeding beyond six months?

1	Not difficult	
2	So-so	
3	It is difficult	

If difficult, can you tell me the reasons why it is difficult?

Thank you for your time

ADDENDUM 4: KAP questionnaire for male participants (with children six months to 24 months)

RESEARCH TITLE: Parental and caregivers' nutrition knowledge, attitudes, perceptions and practices on infant and young child feeding (aged zero to 24 months) in Mzimba-north district, Malawi

Name of interviewer	
Date	
Participant number	

ANSWER ALL QUESTIONS IN THE QUESTIONNAIRE

A. SOCIO DEMOGRAPHIC INFORMATION

About the participant

1. Tick the sex of the participant

1	Male	
2	Female	

2. How many children do you have in your home below the age of 24 months? (tick where appropriate and indicate the age in months)

1	One	
2	Two	
3	Three	
4	Other, specify	

3. What is your relationship with the children?(tick which is applicable)

1	Mother	
2	Father	
3	Grand mother	
4	Grand father	
5	Other (specify)	

4. How old are you?

1	<20 years	
2	20 – 24 years	
3	25 -29 years	
4	30 -34 years	
5	>34 years	

5. Where do you live? (tick the appropriated response)

1	EPA	
2	Section	
3	Village	

6. What is the size of your household?

Indicate the number	
---------------------	--

7. Tick the appropriate response on marital status

1	Married	
2	Single	
3	Divorced/separated	
4	Widow	

8. Have you ever attended school? (tick the appropriated response)

1	Yes	
2	NO	

If No skip to question 11

9. What is the highest level of school you attended

Number	Class	Tick appropriate response	Indicate level in years
1	Primary school		
2	Secondary school		
3	Tertiary qualification		

10. What is your main source of income? (Tick appropriate response)

1	Farming	
2	Business	
3	Employed (part time)	
4	Employed (full time)	
5	Others (specify)	

About the child

11. What is the sex of the child?

1	Male	
2	Female	

12. How old is the child?(Tick appropriate response)

1	0 – 6 months	
2	6 – 12 months	
3	12 – 18 months	
4	18 – 24 months	

13. What is the position of the child in the family? ?(Tick appropriate response)

1	First child	
2	Second Child	
3	Third child	
4	Fourth child	
5	Fifth child or more	

B. CAREGIVERS NUTRITION KNOWLEDGE, ATTITUDES AND PRACTICES FOR CHILDREN 6 to 24MONTHS

I am going to ask you some questions about nutrition of infants aged from 6 to 24 months. Please let me know if you need me to clarify any of my questions. Feel free to ask any question you may have.

Practices

14. Do you participate in feeding the child?

1	Yes	
2	No	

If yes, how many times have you feed the child in the past 24 hours?

- i) Once
- ii) Twice
- iii) Three times
- iv) Four times
- v) Five times or more

If no, give the reason why

15. Whose responsibility is it to feed the child? (Tick appropriate response. You can tick more than one response)

1	Mother	
2	Father	
3	Grand mother	
5	Other specify	

16. Who made the decisions on when to introduce complementary feeding?

1	Mother	
2	Father	
3	Both	
4	Others	

17. Whose responsibility is it to make decisions on when to introduce complementary feeding? (Tick appropriate response. You can tick more than one response)

1	Mother	
2	Father	
3	Grand mother	
5	Other specify	

18. Do you buy food specifically for the child?

1	Yes	
2	No	

19. Whose responsibility is it to buy food for the child? (Tick appropriate response. You can tick more than one response)

1	Mother	
2	Father	
3	Grand mother	
5	Other specify	

20. Do you take part in making decisions to the buy food for your child?

1	Yes	
2	No	

If No can you tell me reasons why you do not take part in decision making of purchasing food for your child?

1 _____

2 _____

3 _____

4 _____

5 _____

21. Whose responsibility is it to make decisions to buy food for the child? (Tick appropriate response. You can tick more than one response)

1	Mother	
2	Father	
3	Grand mother	
5	Other specify	

22. Who actually buys the food for your child? (Tick appropriate answer. You can tick more than one response)

1	Father	
2	Mother	
3	Grandmother	
4	Others (specify)	

23. Was the baby breastfed or did he or she consume breast milk yesterday during the day or at night?

1	Yes	
2	No	
3	Don't know	

Now I would like to ask you about (other) liquids or foods that the baby ate yesterday during the day or at night. I am interested in whether your child had the item even if it was combined with other foods.

For example, if the baby ate a millet porridge made with a mixed vegetable sauce, you should reply yes to any food I ask about that was an ingredient in the porridge or sauce.

Please do not include any food used in a small amount for seasoning or condiments (like chillies, spices, herbs or fish powder); I will ask you about those foods separately.

24. Yesterday during the day or at night, did the child eat any of the following: (Read the food lists. Underline the corresponding foods consumed and tick the column Yes or No depending on whether any food item of the list was consumed. Record the number of times when relevant (Group 3)).

Group	Food list	Yes	no	Don't know
Group 1: Grains, roots and tubers	Porridge, bread, rice, nsima or other foods made from grain.			
	White potatoes, white yams, cassava or any other foods made from root.			
Group 2: legumes and nuts	Any foods made from beans, soya beans, peas, lentils, ground nuts, or seeds			
Group 3: Dairy products	Infant formula	How many times:		
	Milk, such as tinned, powdered or fresh animal milk	How many times:		
	Yogurt or drinking yogurt and sour milk	How many times:		
	Other dairy products			
Group 4: Flesh foods	Liver, kidney, heart or other organ meats			
	Fresh or dried fish			
	Insects			
Group 5: Eggs	Eggs			
Group 6: Vitamin A fruits and vegetables	Pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside			
	any dark green vegetables			
	Ripe mangoes (fresh or dried [not green]), ripe papayas (fresh or dried)			
Group 7: Other fruits and vegetables	Any other fruits or vegetables			
Others (not counted in the dietary diversity score)	Any sugary foods, such as chocolates, sweets, candies, pastries, cakes or biscuits			
	Condiments for flavour, such as chillies, spices, herbs or fish powder			

Preliminary analysis

The baby consumes other food other than breast milk

1	Yes	
2	No	

Number of food groups consumed before the previous day _____

25. How many times did the baby eat foods that is meals and snacks other than liquids yesterday during the day or at night?

1	Number of times	
2	No answer/ don't know	

Preliminary analysis

WHO (2008) recommendations for minimum meal frequency:

For breastfed children:

- 2–3 times for breastfed infants 6–8 months
- 3–4 times for breastfed infants 9–23 months

For non-breastfed children:

- 4 times for non-breastfed-children 6–24 months (including milk feeds, identified in question P.2, Group 3)

From questions 40, 41 and 42, determine if the child receives food the minimum number of times according to WHO recommendations:

1	Less than recommended	
2	Follows the recommendation (the minimum number of times each day)	
3	More than recommended	

➤ Applicable to parents with children aged 12 months to 24 months.

Now I would like to ask you about (other) liquids or foods that the baby ate during the period from April to September last year. I am interested in whether your child had the item even if it was combined with other foods.

For example, if the baby ate a maize porridge made with a mixed vegetable sauce, you should reply yes to any food that was an ingredient in the porridge or sauce.

41. During the period from April to September, did the child eat any of the following: (Read the food lists. Underline the corresponding foods consumed and tick the column on the months when any food item on the list was consumed).

Group	Food list	April	May	June	July	August	Sept
Group 1: Grains, roots and tubers	Porridge, bread, rice, Nsima or other foods made from grains.						
	White potatoes, white yams, cassava or any other foods made from roots.						
Group 2: legumes and nuts	Any foods made from beans, soya beans , peas, pigeon peas, lentils, ground nuts or seeds						
Group 3: Dairy products	Infant formula						
	Milk, such as tinned, powdered or fresh animal milk						
	Yogurt or drinking yogurt and sour milk						
Group 4: Flesh foods	Liver, kidney, heart or other organ meats						
	Any meat, such as beef, pork, lamb, goat, chicken or duck						
	Fresh or dried fish,						
	Insects						
Group 5: eggs	Eggs						
Group 6: Vitamin A fruits and vegetables	Pumpkin, carrots and sweet potatoes that are yellow or orange inside						
	Any dark green vegetables						
	Ripe mangoes (fresh or dried [not green]), ripe papayas (fresh or dried)						
Group 7: Other fruits and vegetables	Any other fruits or vegetables						
Others (not counted in the dietary diversity score)	Any sugary foods, such as chocolates, sweets, candies, pastries, cakes or biscuits.						
	Condiments for flavour, such as chillies, spices and herbs						
Number of food groups consumed in a month							

Preliminary analysis

The baby consumed other food other than breast milk

1	Yes	
2	No	

Knowledge

26. Until what age is it recommended that a mother continues breastfeeding?

1	Six months of age	
2	6 – 11 months	
3	12 – 23 months	
4	24 months and more	
5	Other specify	
6	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

27. At what age should babies start eating foods in addition to breast milk?

1	At six months	
2	Other	
3	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

28. Why is it important to give foods in addition to breast milk to babies from the age of six months?

1	Breast milk alone is not sufficient to supply all the nutrients needed for growth (from six months baby needs more food in addition to breast milk)	
2	Other	
3	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

29. Please look at these two pictures of porridges. Which one do you think should be given to a young child?

(Show the images/pictures of thick and watery/thin porridges and tick one of the options here below depending on the respondent answer.)

1	Thick porridge	
2	Watery porridge	
3	Does not know	

Preliminary analysis

1	Knows	
2	Does not know	

30. Why did you pick that picture?

1	Because the first porridge is thicker than the other	
2	Because the thick porridge is more nutritious (its prepared with different types of ingredients)	
3	Because the porridge is watery	
4	Other	
5	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

To feed their children, many mothers give them maize meal porridge or rice porridge.

31. Which foods or types of food can be added to the porridge to make it more nutritious?

(Tick the appropriate response).

By adding:

1	Animal-source foods (meat, poultry, eggs)	
2	Pulses and nuts - ground nut flour and other legume flours, soy beans	
3	Vitamin A rich fruits and vegetables (carrot, yellow pumpkin, papaya, orange fresh sweet potato)	
4	Green leafy vegetables	
5	Energy rich foods (oil, butter)	
6	Other	
7	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

53. How do you encourage your child to eat?

1	Giving the attention during meals, talk to them	
2	Clapping hands	
3	Make funny faces/ play/ laugh	
4	Modelling how to eat (demonstrating opening your mouth wide)	
5	Say encouraging words	
6	Draw the child's attention	
7	Other	
8	Don't know	

Preliminary analysis

1	Knows	
2	Does not know	

Attitudes

32. Do you feel confident when preparing food for your child?

1	Yes	
2	No	
3	So-so	

If not confident, can you tell me the reasons why you do not feel confident?

33. Do you think it is good to give different types of food to your child each day?

1	Yes	
2	No	
3	Not sure	

If not good, can you tell me the reasons why it is not good?

34. Is it difficult for you to give different types of food to your child each day?

1	Yes	
2	No	
3	So-so	

If difficult, can you tell me the reasons why it is difficult?

35. Do you think it is good to feed your child several times each day?

1	It is not good	
2	You are not sure	
3	Yes it is good	

If not good, can you tell me the reasons why it is not good?

36. Is it difficult for you to feed your child several times each day?

1	Not difficult	
2	So-so	
3	Difficult	

If difficult, can you tell me the reasons why it is difficult?

37. Do you think it is good for your child to continue breastfeeding beyond six months?

1	Not good	
2	You are not sure	
3	It is good	

If not good, can you tell me the reasons why it is not good?

Thank you for your time

Questionnaire identification number: _____

ADDENDUM 5: Informed consent form

Good morning/ afternoon. I am a postgraduate student from the University of Pretoria and also working as a food and nutrition officer with the ministry of agriculture – Mzimba-north district.

I am conducting a research on the parental and caregivers' nutrition knowledge, attitudes, perceptions and practices on infant and young child feeding (0 to 24 months) in Mzimba-north. You have been selected to participate because you are a parent or caregiver to a child within the specified age group, but your participation to this study is voluntary.

The aim of this study is to know more about parents and caregivers nutritional knowledge, attitudes, perceptions and practices in infant and young child feeding and to identify the factors that affect their involvement in the practices. The information generated can help government and non-governmental organisations in designing interventions that aim at encouraging the involvement of both parents and caregivers in infant and young child feeding.

This is not to evaluate or criticize you, so please do not feel pressured to give specific answers and do not feel shy if you do not know the answer to a question because I am not expecting you to give specific answers. I would like you to answer the questions honestly, telling me about what you know, how you feel and how you prepare food. The research also covers questions on the roles and responsibilities of parents and caregivers in infant and young child feeding and the factors that affect their involvement.

The interview/ discussion will take about 1 hour and please feel free to answer questions at your own pace. All the information I obtain will remain strictly confidential and your answers and name will never be revealed. You are not obliged to answer any question you do not want to, and you may stop the interview at any time. For focus group discussions and in-depth interviews I will be recording our conversation for the purpose of documentation so that I don't lose the information.

Do you have any questions, comments and concerns about the research or what I have said? If in future you have any questions regarding this research, feel free to contact me (**Wezzie Kumwenda**) by calling **+265 993 927 550** or my supervisor (**MS Gerda Gericke**) at the University of Pretoria by calling **+277 836 762 134** or my boss (**MR L Msiska**) at my work place-Ministry of Agriculture by calling **+265 999 280 624**.

Do you agree to participate in this research? If yes, please sign below to state your position.

Name of respondent: _____ Signature/mark: _____

Name of witness: _____ Signature/mark: _____

ADDENDUM 6: Interview schedule for focus group discussions with female participants

RESEARCH TITLE: Parental and caregivers' nutrition knowledge, attitudes, perceptions and practices on infant and young child feeding (aged zero to 24 months) in Mzimba-north district, Malawi

Date: _____

Time begin: _____

Time ended: _____

Group leader: _____

Group information

#	Name and surname	Age in years	Pseudo name	Location (Village & section)	Education Level (codes)
1					
2					
3					
4					
5					
6					
7					
8					

Codes for education level

1. none
2. Adult learning
3. Primary
4. Secondary
5. Tertiary

1. What responsibilities do parents have in infant and young child feeding?
 - i. What do you think are the responsibilities that you as mothers have to ensure proper child breast feeding?

Why do you think you have these responsibilities?
What do you do to ensure optimum breastfeeding?
Where do you get information on child breast feeding?
 - ii. What responsibilities do you think fathers have to ensure proper child breast feeding?

Why do you think the fathers have these responsibilities?
What do the fathers do to ensure optimum breast feeding?
Where do you think the fathers get information on child breast feeding?
 - iii. What do you think are the responsibilities that you as mothers have to ensure proper complementary feeding?

Why do you think you have these responsibilities?
What do you do to ensure optimum complementary feeding?
Where do you get information on complementary feeding?
 - iv. What responsibilities do you think fathers have to ensure proper complementary feeding?

Why do you think the fathers have these responsibilities?
What do the fathers do to ensure complementary feeding?
Where do the fathers get information on complementary feeding?

2. What do you think are the factors that affect parents' involvement in infant and young child feeding?
 - ☒ What do you think are some of the cultural factors that affect your participation as mothers in child breastfeeding?

How do you think these factors affect your participation in child breastfeeding?
 - ☒ What do you think are some of the economic factors that affect your participation as mothers in child breastfeeding?

How do you think these factors affect your participation in child breastfeeding?
 - ☒ What do you think are some of the intrapersonal factors that affect your participation as mothers in child breastfeeding?

How do you think these factors affect your participation in child breastfeeding?

- ☒ What do you think are some of the religious factors that affect your participation as mothers in child breastfeeding?
How do you think these factors affect your participation in child breastfeeding?
- ☒ What factors related to the health system (including health workers) do you think affect your participation as mothers in child breastfeeding?
How do these factors affect your participation in child breastfeeding?
- ☒ What other factors do you think affect your participation as mothers in child breastfeeding?
How do you think these factors affect your participation in child breastfeeding?
- ☒ What do you think are some of the cultural factors that affect fathers' participation in child breastfeeding?
How do you think these factors affect the fathers' participation in child breastfeeding?
- ☒ What do you think are some of the economic factors that affect fathers' participation in child breastfeeding?
How do you think these factors affect the fathers' participation in child breastfeeding?
- ☒ What do you think are some of the intrapersonal factors that affect fathers' participation in child breastfeeding?
How do you think these factors affect the fathers' participation in child breastfeeding?
- ☒ What do you think are some of the religious factors that affect fathers' participation in child breastfeeding?
How do you think these factors affect the fathers' participation in child breastfeeding?
- ☒ What factors related to the health system (including health workers) do you think affect the fathers' participation in child breastfeeding?
How do these factors affect fathers' participation in child breastfeeding?
- ☒ What other factors do you think affect fathers' participation in child breastfeeding?
How do you think these factors affect the fathers' participation in child breastfeeding?

- ☐ What do you think are some of the cultural factors that affect your participation as a mother in child complementary feeding?
How do you think these factors affect your participation in child complementary feeding?
- ☐ What do you think are some of the economic factors that affect your participation as mothers in child complementary feeding?
How do you think these factors affect your participation in child complementary feeding?
- ☐ What do you think are some of the intrapersonal factors that affect your participation as mothers in child complementary feeding?
How do you think these factors affect your participation in child complementary feeding?
- ☐ What do you think are some of the religious factors that affect your participation as mothers in child complementary feeding?
How do you think these factors affect your participation in child complementary feeding?
- ☐ What factors related to the health system (including health workers) do you think affect your participation as mothers in child complementary feeding?
How do these factors affect your participation in child complementary feeding?
- ☐ What other factors do you think affect your participation as mothers in child complementary feeding?
How do you think these factors affect the mothers' participation in child complementary feeding?
- ☐ What do you think are some of the cultural factors that affect fathers' participation in child complementary feeding?
How do you think these factors affect the fathers' participation in child complementary feeding?
- ☐ What do you think are some of the economic factors that affect fathers' participation in child complementary feeding?
How do you think these factors affect the fathers' participation in child complementary feeding?
- ☐ What do you think are some of the intrapersonal factors that affect fathers' participation in child complementary feeding?

How do you think these factors affect the fathers' participation in child complementary feeding?

- ☒ What do you think are some of the religious factors that affect fathers' participation in child complementary feeding?

How do you think these factors affect the fathers' participation in child complementary feeding?

- ☒ What factors related to the health system (including health workers) do you think affect fathers' participation in child complementary feeding?

How do these factors affect fathers' participation in child complementary feeding?

- ☒ What other factors do you think affect fathers' participation in child complementary feeding?

How do you think these factors affect the fathers' participation in child complementary feeding?

3. What additional responsibilities do you think can be played by fathers to ensure proper child breast feeding?
4. What additional responsibilities do you think can be played by you as a mother and other mothers to ensure proper child breast feeding?
5. What additional responsibilities do you think can be played by fathers to ensure proper complementary feeding?
6. What additional responsibilities do you think can be played by you as mothers to ensure proper complementary feeding?
7. How do you think the factors affecting involvement of parents in infant and young child feeding can be overcome?
 - Cultural factors
 - Religious factors
 - Economic factors
 - Factors related to the health system
8. What do you think can be done to increase the participation of both mothers and fathers on infant and young child feeding at:
 - i) Household level
 - ii) community level

Thank you so much for your time.

ADDENDUM 7: Interview schedule for focus group discussions with male participants

RESEARCH TITLE: Parental and caregivers’ nutrition knowledge, attitudes, perceptions and practices on infant and young child feeding (aged zero to 24 months) in Mzimba-north district, Malawi

Date: _____

Time begin: _____

Time ended: _____

Group leader: _____

Group information

#	Name and surname	Age in years	Pseudo name	Location (Village & section)	Education Level (codes)
1					
2					
3					
4					
5					
6					
7					
8					

Codes for education level

9. none
10. Adult learning
11. Primary
12. Secondary
13. Tertiary

1. What roles and responsibilities do parents have in infant and young child feeding?
 - i. What do you think are the responsibilities that you as fathers have to ensure proper child breast feeding?
What do you do to ensure optimum child breast feeding?
Where do you get information on child breast feeding?
 - ii. What responsibilities that you think mothers have to ensure proper child breast feeding?
What do the mothers do to ensure optimum breastfeeding?
Where do the mothers get information on child breast feeding?
 - iii. What do you think are the responsibilities that you as fathers have to ensure proper complementary feeding?
What do you do to ensure complementary feeding?
Where do you get information on complementary feeding?
 - iv. What responsibilities do you think mothers have to ensure proper complementary feeding?
What do the mothers do to ensure optimum complementary feeding?
Where do you think mothers get information on complementary feeding?

2. What do you think are the factors that affect parents' involvement in infant and young child feeding?
 - ☐ What do you think are some of the cultural factors that affect your participation as fathers in child breastfeeding?
How do you think these factors affect your participation in child breastfeeding?
 - ☐ What do you think are some of the economic factors that affect your participation as fathers in child breastfeeding?
How do you think these factors affect your participation in child breastfeeding?
 - ☐ What do you think are some of the intrapersonal factors that affect your participation as fathers in child breastfeeding?
How do you think these factors affect your participation in child breastfeeding?
 - ☐ What do you think are some of the religious factors that affect your participation as fathers in child breastfeeding?
How do you think these factors affect your participation in child breastfeeding?

- ☐ What factors related to the health system (including health workers) do you think affect your participation as fathers in child breastfeeding?

How do these factors affect your participation in child breastfeeding?

- ☐ What other factors do you think affect your participation as fathers in child breastfeeding?

How do you think these factors affect your participation in child breastfeeding?

- ☐ What do you think are some of the cultural factors that affect mothers' participation in child breastfeeding?

How do you think these factors affect the mothers' participation in child breastfeeding?

- ☐ What do you think are some of the economic factors that affect mothers' participation in child breastfeeding?

How do you think these factors affect the mothers' participation in child breastfeeding?

- ☐ What do you think are some of the intrapersonal factors that affect mothers' participation in child breastfeeding?

How do you think these factors affect the mothers' participation in child breastfeeding?

- ☐ What do you think are some of the religious factors that affect mothers' participation in child breastfeeding?

How do you think these factors affect the mothers' participation in child breastfeeding?

- ☐ What factors related to the health system (including health workers) do you think affect mothers' participation in child breastfeeding?

How do these factors affect mothers' participation in child breastfeeding?

- ☐ What other factors do you think affect mothers' participation in child breastfeeding?

How do you think these factors affect the mothers' participation in child breastfeeding?

- ☐ What do you think are some of the cultural factors that affect your participation as fathers in child complementary feeding?

How do you think these factors affect your participation in child complementary feeding?

- ☐ What do you think are some of the economic factors that affect your participation as fathers in child complementary feeding?

How do you think these factors affect your participation in child complementary feeding?

- ☐ What do you think are some of the intrapersonal factors that affect your participation as fathers in child complementary feeding?

How do you think these factors affect your participation in child complementary feeding?

- ☐ What do you think are some of the religious factors that affect your participation as fathers in child complementary feeding?

How do you think these factors affect your participation in child complementary feeding?

- ☐ What factors related to the health system (including health workers) do you think affect your participation as fathers in child complementary feeding?

How do these factors affect your participation in child complementary feeding?

- ☐ What other factors do you think affect your participation in child complementary feeding?

How do you think these factors affect your participation in child complementary feeding?

- ☐ What do you think are some of the cultural factors that affect mothers' participation in child complementary feeding?

How do you think these factors affect the mothers' participation in child complementary feeding?

- ☐ What do you think are some of the economic factors that affect mothers' participation in child complementary feeding?

How do you think these factors affect the mothers' participation in child complementary feeding?

- ☐ What do you think are some of the intrapersonal factors that affect mothers' participation in child complementary feeding?

How do you think these factors affect the mothers' participation in child complementary feeding?

- ☒ What do you think are some of the religious factors that affect mothers' participation in child complementary feeding?

How do you think these factors affect the mothers' participation in child complementary feeding?

- ☒ What factors related to the health system (including health workers) do you think affect mothers' participation in child complementary feeding?

How do these factors affect mothers' participation in child complementary feeding?

- ☒ What other factors do you think affect mothers' participation in child complementary feeding?

How do you think these factors affect the mothers' participation in child complementary feeding?

3. What additional responsibilities do you think can be played by mothers to ensure proper child breast feeding?
4. What additional responsibilities do you think can be played by you as a father and other fathers to ensure proper child breast feeding?
5. What additional responsibilities do you think can be played by mothers to ensure proper complementary feeding?
6. What additional responsibilities do you think can be played by you as fathers to ensure proper complementary feeding?
7. How do you think the factors affecting involvement of parents in infant and young child feeding can be overcome?
 - Cultural factors
 - Religious factors
 - Economic factors
 - Factors related to the health system
8. What do you think can be done to increase the participation of both mothers and fathers on infant and young child feeding at:
 - iii) Household level
 - iv) community level

Thank you so much for your time

ADDENDUM 8: Interview schedule for in-depth interviews

RESEARCH TITLE: Parental and caregivers’ nutrition knowledge, attitudes, perceptions and practices on infant and young child feeding (aged zero to 24 months) in Mzimba-north district, Malawi

Date: _____

Time begin: _____

Time ended: _____

Name of interviewer: _____

Participant information

Participant number	
Participant name	
Pseudo name	
Age (number of years)	
Sex (Male or Female)	
Location	Village:
	Section:
	EPA:
Have you ever attended school (Yes/No)	
What is the highest level of school you attended (indicate number of years)	

1. What responsibilities do parents have in infant and young child feeding?
 - i. What do you think are the responsibilities that mothers have in ensuring proper child breastfeeding?
Why do think they have these responsibilities?
Where do you think mothers get information on child breastfeeding?
 - ii. What do you think are the responsibilities that fathers have to ensure optimum child breastfeeding?
Why do you think they have these responsibilities?
Where do you think fathers get information on child breastfeeding?

- iii. What responsibilities do you think mothers have to ensure proper and safe complementary feeding?
Why do you think mothers have these responsibilities?
What do you think mothers do to ensure optimum complementary feeding?
Where do you think mothers get information on complementary feeding?
- iv. What responsibilities do you think fathers have to ensure proper and safe complementary feeding?
Why do you think fathers have these responsibilities?
What do the fathers do to ensure complementary feeding?
Where do you think fathers get information on complementary feeding?
2. What are the factors that affect parents' involvement in infant and young child feeding?
- ☐ What do you think are some of the cultural factors that affect mothers' participation in child breastfeeding?
How do you think these factors affect the mothers' participation in child breastfeeding?
 - ☐ What do you think are some of the economic factors that affect mothers' participation in child breastfeeding?
How do you think these factors affect the mothers' participation in child breastfeeding?
 - ☐ What do you think are some of the intrapersonal factors that affect mothers' participation in child breastfeeding?
How do you think these factors affect the mothers' participation in child breastfeeding?
 - ☐ What do you think are some of the religious factors that affect mothers' participation in child breastfeeding?
How do you think these factors affect the mothers' participation in child breastfeeding?
 - ☐ What factors related to the health system (including health workers) do you think affect the mothers' participation in child breastfeeding?
How do these factors affect mothers' participation in child breastfeeding?
 - ☐ What other factors do you think affect mothers' participation in child breastfeeding?

How do you think these factors affect the mothers' participation in child breastfeeding?

- ☒ What do you think are some of the cultural factors that affect fathers' participation in child breastfeeding?

How do you think these factors affect the fathers' participation in child breastfeeding?

- ☒ What do you think are some of the economic factors that affect fathers' participation in child breastfeeding?

How do you think these factors affect the fathers' participation in child breastfeeding?

- ☒ What do you think are some of the intrapersonal factors that affect fathers' participation in child breastfeeding?

How do you think these factors affect the fathers' participation in child breastfeeding?

- ☒ What do you think are some of the religious factors that affect fathers' participation in child breastfeeding?

How do you think these factors affect the fathers' participation in child breastfeeding?

- ☒ What factors related to the health system (including health workers) do you think affect the fathers' participation in child breastfeeding?

How do these factors affect fathers' participation in child breastfeeding?

- ☒ What other factors do you think affect fathers' participation in child breastfeeding?

How do you think these factors affect the fathers' participation in child breastfeeding?

- ☒ What do you think are some of the cultural factors that affect mothers' participation in child complementary feeding?

How do you think these factors affect the mothers' participation in child complementary feeding?

- ☒ What do you think are some of the economic factors that affect mothers' participation in child complementary feeding?

How do you think these factors affect the mothers' participation in child complementary feeding?

- ☒ What do you think are some of the intrapersonal factors that affect mothers' participation in child complementary feeding?
How do you think these factors affect the mothers' participation in child complementary feeding?
- ☒ What do you think are some of the religious factors that affect mothers' participation in child complementary feeding?
How do you think these factors affect the mothers' participation in child complementary feeding?
- ☒ What factors related to the health system (including health workers) do you think affect the mothers' participation in child complementary feeding?
How do these factors affect mothers' participation in child complementary feeding?
- ☒ What other factors do you think affect mothers' participation in child complementary feeding?
How do you think these factors affect the mothers' participation in child complementary feeding?
- ☒ What do you think are some of the cultural factors that affect fathers' participation in child complementary feeding?
How do you think these factors affect the fathers' participation in child complementary feeding?
- ☒ What do you think are some of the economic factors that affect fathers' participation in child complementary feeding?
How do you think these factors affect the fathers' participation in child complementary feeding?
- ☒ What do you think are some of the intrapersonal factors that affect fathers' participation in child complementary feeding?
How do you think these factors affect the fathers' participation in child complementary feeding?
- ☒ What do you think are some of the religious factors that affect fathers' participation in child complementary feeding?
How do you think these factors affect the fathers' participation in child complementary feeding?

- ☐ What factors related to the health system (including health workers) do you think affect the fathers' participation in child complementary feeding?
How do these factors affect fathers' participation in child complementary feeding?
- ☐ What other factors do you think affect fathers' participation in child complementary feeding?
How do you think these factors affect the fathers' participation in child complementary feeding?
3. What additional responsibilities do you think can be played by the fathers to ensure optimum child breastfeeding?
 4. What additional responsibilities do you think can be played by the mothers to ensure optimum child breastfeeding?
 5. What additional responsibilities do you think can be played by the fathers to ensure proper and safe complementary feeding?
 6. What additional responsibilities do you think can be played by the mothers to ensure proper and safe complementary feeding?
 7. How do you think the factors hindering the involvement of mothers in infant and young child feeding can be overcome?
 8. How do you think the factors hindering the involvement of caregivers in infant and young child feeding can be overcome?
 9. How do you think the factors hindering the involvement of fathers in infant and young child feeding can be overcome?
 10. How do you as a local leader encourage the participation of the mothers, fathers and caregivers in infant and young child feeding?
 11. What other additional ways do you think you as a local leader can do to encourage the participation of the mothers, fathers and caregivers in infant and young child feeding?
 12. What do you think can be done to increase the participation of mothers and fathers on infant and young child feeding at :
 - I) Household level
 - II) community level

Thank you so much for your time.

ADDENDUM 9: Ethical approval



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Natural and Agricultural Sciences
Ethics Committee

E-mail: ethics.nas@up.ac.za

4 May 2018

ETHICS SUBMISSION: LETTER OF APPROVAL

Ms Wazzie Kumwenda
Department of Human Nutrition
School of Health Care Sciences
Faculty of Natural and Agricultural Sciences

Reference number: EC151204-20

Project title: Parental and caregivers nutrition knowledge, attitudes, perceptions and practices on infant and young child feeding (aged zero to 24 months) in Mzimba-north district, Malawi.

Dear Ms Kumwenda

The submission conforms to the requirements of the NAS EC. Any amendments must be submitted to the NAS EC on a relevant application form as used for the original application quoting the reference number and detailing the required amendment. An amendment would be for example differentiating within the research target population.

You are required to submit a progress report no later than two months after the anniversary of this application as indicated by the reference number. The progress report document is accessible on the NAS faculty's website: Research/Ethics Committee.

You are required to notify the NAS EC upon the completion or ending of the project using the form Project Completed. Completion will be when the data has been analysed and documented in a postgraduate student's thesis or dissertation, or in a paper or a report for publication.

The digital archiving of data is a requirement of the University of Pretoria. The data should be accessible in the event of an enquiry or further analysis of the data.

The NAS EC wishes you well with your research project.

Yours sincerely,



Chairperson
NAS Ethics Committee

Agriculture Building
University of Pretoria
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Republic of South Africa

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