MINI – DISSERTATION

FACTORS INFLUENCING INFANT FEEDING PRACTICES OF MOTHERS AND CAREGIVERS IN THE POLOKWANE MUNICIPALITY- LIMPOPO PROVINCE

By

MAKWELA MAISHATABA SOLOMON

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Supervisor: Dr. E Maimela

Co supervisor: Mrs. MM Bopape

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DEDICATION

To the Almighty God thank you for being with me every step of the way from day one to the last day of my research project. My wife Regina and my children Realeboga and Boitumelo for being the pillar of strength. My late child Mogau for motivating me to pull through testing times and for helping me to realize that unconditional love truly exists.

DECLARATION

I declare that **FACTORS INFLUENCING INFANT FEEDING PRACTICES OF MOTHERS AND CAREGIVERS IN THE POLOKWANE MUNICIPALITY - LIMPOPO PROVINCE** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

_____ _____

MAISHATABA SOLOMON MAKWELA **Date**

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ABSTRACT

Introduction: Exclusive breastfeeding for six months, with introduction of appropriate complimentary feeding at six months, continuing to 2 years and beyond comes highly recommended. Although breastfeeding rates have improved in South Africa, the prevalence still remains lower than the Rome target of 50%, supporting investigation into factors that influence infant feeding practices.

Aim: The aim of this study was to describe infant feeding practices and to determine the factors influencing infant feeding practices of mothers and care givers of infants in the Polokwane Municipality - Limpopo Province.

Methods: A cross-sectional health facility-based quantitative and descriptive survey was conducted using a validated-structured questionnaire. Interviews only were conducted to gather quantitative data. The questionnaires were administered to the mothers, one mother at a time. Chi–square tests were used to determine the relationship between selected variables, where $p<0.05$ was set as level of significance.

Results: A total of 146 mothers participated in the study. All were biological mothers of infants. Ninety-four percent of the mothers initiated breastfeeding, however, at the time of data collection 8% of mothers had stopped. Of those who had stopped breastfeeding, 5% stopped earlier than one month after initiation. Thirty-nine percent of mothers breastfed exclusively, while 61% practiced mix feeding. A positive association between breast feeding practices and age of the mother ($p<0.036$) was observed. The reasons mothers reported for stopping breastfeeding were: mother was ill (45.4%) and going back to school or work (27.3%). Reasons for not breastfeeding were cited as: medical condition, not enough milk and infant refusal to breastfeed at 33.3%. Health workers are the main source of HIV information (77%). Mothers believe that HIV-positive women should breastfeed their infants (57%).

Conclusion: breastfeeding initiation is well practiced. Exclusive breastfeeding during the first six months is rarely practiced. Infant formula and solid foods were introduced at an early age. Young mothers tend to stop exclusive breastfeeding compared to older mothers.

Key concepts: Breastfeeding, feeding practices, Factors

DEFINITION OF CONCEPTS

Caregiver Person who assumes the main role of providing care and attention to an infant (The Cambridge English dictionary, 2015). For the purposes of this study, a caregiver refers to the infant's mother.

Exclusive breastfeeding Giving the infant breast milk (including expressed breast milk) and any minerals, vitamins and prescribed medicines, if needed, for the first six months (UNICEF/WHO, 2007) of the infant's life. In this study exclusive breastfeeding refers to giving the infant only mother's breast milk, prescribed medicines and drops of needed vitamins and minerals.

Exclusive formula feeding Giving the infant formula only and any minerals, vitamins and prescribed medicines, if needed, for the first six months of life (World Health Organization, 2009). In the context of this study, exclusive formula feeding refers to giving the infant formula only, along with prescribed medicines and drops of vitamins and minerals.

Feeding practices The actual feeding or use of feeding, belief, or method, as opposed to theories relating to feeding. Feeding practice means to carry out or perform feeding habitually or regularly (The free dictionary, 2010). In this study, feeding practice refer to the pattern which mothers follow to provide their infants (0-6 months) with food, breast milk, commercial infant formula or the mixture of both.

Infant Person from birth to 12 months of age (National Department of Health, 2013). In this context an infant refers to the new born from birth to six months of age.

Mixed feeding	Feeding breast milk as well as other milks, foods or liquids (National Department of Health, 2013). In this study, mixed feeding refers to feeding infants any food or drink, in addition to breast milk, before 6 months.

ABBREVIATIONS

ART	Antiretroviral Treatment
CHC	Community Health Centre
CoMMiC	Committee on Morbidity and Mortality In Children
DHIS	District Health Information System
EBF	Exclusive Breast Feeding
HIV	Human Immunodeficiency Virus
HSRC	Human Sciences Research Council
IYCF	Infant An Young Child Feeding
MBFI	Mother Baby Friendly Initiative
NDoH	National Department of Health
PHC	Primary Health Care
PMTCT	Prevention of Mother-To-Child Transmission

SADHS	South African Demographic And Health Survey
UNICEF	United Nations Children's Fund
WHO	World Health Organization

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

This chapter provides an introduction to the study by briefly reviewing the literature on feeding recommendations for infants from birth to 6 months of age, both internationally and locally. Furthermore, this chapter discusses some of the factors which may influence the infant feeding practices of the mothers and caregivers. The chapter further presents the research problem and significance of the study, as well as the aims and objectives of the study.

According to the United Nations Children's Fund (UNICEF), optimal infant and young child feeding (IYCF) is essential for child growth and development (UNICEF, 2012). As a global public health recommendation, infants should be exclusively breastfed for the first six months of life in order to achieve optimal growth, development and health. Thereafter, to meet their ever changing nutritional requirements, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond (UNICEF, 2012).

Worldwide, it is estimated that only 34.8% of infants are exclusively breastfed for the first 6 months of life, the majority receiving some other food or fluid in the early months of their lives (Al-Farsi, Sharbati, Waly, Al-Farsi et al., 2012). According UNICEF's (2010) State of the World's Children reports, between the years 1996 and 2006 the rate of exclusive breastfeeding for the first 6 months of life increased from 33% to 37%. Significant increases have been made in sub-Saharan Africa, where rates of exclusive breastfeeding increased from 22% to 30%; and in Europe, with rates increasing from 10% to 19% (World Health Organization, 2009). Exclusive breastfeeding rates have improved positively in the recent years, from a low of 7% (Shisana, Labadarios, Rehle, Simbayi, Zuma, Dhansay *et al*., 2013) to 32% in 2016 (SADHS, 2016). These improvements may be attributed to the implementation of breastfeeding promotion strategies, such as the mother-baby friendly initiative (MBFI) and related initiatives.

In South Africa, the 2nd Triennial Report of the Committee on Morbidity and Mortality in Children Under 5 Years (CoMMIC) of 2014 reported that, in Limpopo Province, the breastfeeding rate was 37% at the 14 weeks' immunization visits, which is very low, considering that this province is historically a breastfeeding province (Mamabolo, Alberts, Mbhenyane, Steyn, Nondivine, Nthangeni, *et al*., 2004). In all cultures there are a number of factors that affect a women's decision on how to feed their children (Matusiak, 2005). These include factors such as age, socio-economic status, marital status of the mother, and whether or not women receive support from health workers (Sowden *et al*., 2009, Goosen, McLachlan & Schübl, 2014, Cox, Giglia & Bins, 2015 & Kimani-Murage *et al*., 2015). For example, Kimani-Murage *et al*. (2015) indicate that young mothers do not exclusively breastfeed their infants due to their busy lifestyles and the fact that they are still at school.

The literature review will focus the infant feeding practices of mothers and care givers of infants during the first six months of life and the factors that influence these practices. This topic will be covered under the following sub headings: Infant feeding recommendations, current infant feeding practices, the key role-players in providing infant feeding information and support as well as factors that influence current infant feeding practices.

1.2 Research problem

South Africa has adopted international recommendations which encourage exclusive breastfeeding for six months and the continuation of breastfeeding for two years and beyond. In support of these recommendations, the Department of Health in South Africa developed and implemented the Infant and Young Child Feeding Policy. The policy includes strategies such as the Mother-Baby Friendly Initiative (MBFI) and the Tshwane declaration of support for breastfeeding in South Africa, both of which promote and protect breastfeeding. However, since the policy was implemented, little improvement has been reported on breastfeeding rates in the country. This researcher's observation at health facilities around the Polokwane Municipality in the Limpopo Province is that mothers and caregivers continue to introduce other food, such as porridge, teas and infant formula, before the infant turns six months. This continues despite the messages

given to pregnant and lactating women regarding appropriate infant feeding practices. It is unclear why mothers and care givers still continue to introduce additional foods so early on in the infant's life. There are few published studies which report on exclusive breastfeeding rates in Limpopo (Mamabolo *et al*., 2004 and Mushapi, Mbhenyane, Khoza & Amey, 2008). However, these studies were limited to examining the infant feeding practices of mothers and the assessment of nutritional status of infants. Little was reported on the factors that influence these practices. This study, therefore, seeks to describe infant feeding practices and to determine the factors influencing infant feeding practices among mothers and care givers of infants in the Polokwane Municipality - Limpopo Province

1.3 Significance of the study

Findings of this study are expected to shed light on factors influencing infant feeding practices in the Polokwane Municipality. It is vital to understand the current practices of mothers and caregivers regarding infant feeding and to determine the influencing factors in order to develop interventions aimed at improving the feeding practices. Recommendations emanating from this study are expected to help nutrition service providers and the Department of Health to develop appropriate area-specific interventions to address factors which influence current infant feeding practices.

1.4 Purpose of the study

1.4.1 Aim of the study

The aim of the study was to determine factors influencing infant feeding practices of mothers and caregivers in the Polokwane Municipality - Limpopo Province.

1.4.2. *Objectives of the study*

The aim was achieved through the following objectives:

- To describe infant feeding practices of mothers and caregivers in the Polokwane Municipality;

- To determine the factors influencing infant feeding practices of mothers and caregivers in the Polokwane Municipality.

1.43 Research questions

The following questions were used to develop the questionnaire and to test the objectives in this study:

- What are the infant feeding practices of mothers and caregivers in the Polokwane Municipality?
- What are the factors influencing infant feeding practices of mothers and caregivers in the Polokwane Municipality?

CHAPTER TWO: LITERATURE REVIEW

This section presents an overview of the literature related to maternal infant feeding practices and covers the following topics: infant feeding recommendations, definition of infant feeding, infant feeding practices and factors that influence such practices.

2.1 Infant feeding recommendations

Infant feeding is defined as the food given to infants to provide for their nutritional needs (UNICEF, 2010). As a global public health recommendation, the United Nations Children's Fund (UNICEF) recommends that infants should be exclusively breastfed for the first six months of life in order to achieve optimal growth, development and health. Thereafter, in order to meet their changing nutritional requirements, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age and beyond. The World Health Organization (2010) further recommends that breastfeeding be initiated within the first hour after birth and that the infant should be given only breast milk without any additional liquid, including water, for the first six months of life.

When mothers known to be HIV-infected decide to stop breastfeeding at any time, infants should be provided with safe and adequate replacement feeds to enable normal growth and development. Home-modified milk is not recommended (WHO, 2010). For infants less than six months of age, a commercial infant formula is recommended.

2.2 Infant feeding in the context of HIV and AIDS

Although breastfeeding is the optimal feeding choice, medical conditions, such as human immunodeficiency virus (HIV) infection, make it difficult for mothers to breastfeed. In 2010, the World Health Organization revised guidelines on HIV and infant feeding. The guidelines recommend that all infants born to HIV-infected mothers should be provided with additional antiretroviral treatment (ART) interventions for at least the first 12 months of their lives. Antiretroviral drugs prevent HIV infection of the infant through breastfeeding and improve the health and survival of HIV-infected mothers

(WHO, 2010). This guideline further recommends that mothers with HIV should breastfeed their infants for up to 12 months, provided these infants test negative for HIV at six weeks. If infants test positive for HIV, they should be breastfed for up to two years and beyond. In light of South Africa's poor performance with respect to reducing child mortality, the country adopted these revised recommendations in order to improve child survival rates (The Tshwane declaration of support of breastfeeding in South Africa, 2011).

Mixed feeding during the first six months of life increases exposure to HIV since the practice compromises gut integrity and, therefore, carries a far greater risk of transmitting HIV than exclusive breastfeeding (Doherty, Goga, Jackson, Colvin, *et al*., 2010). Early and appropriate antiretroviral treatment, combined with exclusive breastfeeding, decrease the postnatal risk of HIV transmission to 0-1% (WHO, 2010). Strict adherence to ART can suppress maternal viral load to an undetectable level (Morrison, Israel-Ballard, Greiner, 2011).

2.3 Infant feeding guidelines in South Africa

2.3.1 Infant and young child feeding policy (IYCF)

South Africa has adopted the WHO recommendations on infant and young child feeding and further developed the Infant and Young Child Feeding Policy (IYCF) in 2013 to align the country to global infant feeding recommendations. The policy also supports exclusive breastfeeding for six months, with the introduction of complimentary feeding at six months, and continued breastfeeding to two years and beyond. The IYCF policy in South Africa has identified the Mother Baby Friendly Hospital Initiative as one of the strategies to support, promote and strengthen breastfeeding (National Department of Health, 2013).

2.3.2 Baby friendly hospital initiative

The WHO and UNICEF launched the Baby Friendly Hospital Initiative (BFHI) in 1991, which South Africa has adopted. The initiative is one of the global efforts to implement

practices that protect, promote and support breastfeeding (Latham, 2012). The BFHI has shown improvement in breastfeeding initiation rates (Lu, Lange, Slusser, Hamilton & Halfon, 2001). The initiative is used as a measure to verify whether the facility supports and promotes breastfeeding. The accreditation process uses the Ten steps in assessing facilities for MBFI.

South Africa renamed the MBFI initiative as the Mother and Baby Friendly Initiative (MBFI) and included three additional items, namely, mother friendly care, the Regulations Relating to Foodstuffs for Infants and Young Children (R.991) and care for HIV-infected women and their infants, as additional focus areas (National Department of Health, 2012). The three items were added to enhance the support to breastfeeding as follows:

Item 1: Regulations Relating to Foodstuffs for Infants and Young Children (R.991), complies with the International Code of Breast-milk Substitutes and relevant World Health Assembly (WHA) resolutions.

Item 2: Care for HIV-infected women and their infants, provides guidance and support to women with respect to HIV and infant feeding.

Item 3: Mother friendly care, deals with the practice mother friendly labour and delivery care for successful breastfeeding. (National Department of Health, 2012).

In the Limpopo Province, 20 of the 51 facilities were MBFI-accredited by November 2012.

In 2017 the Ten Steps to Successful Breastfeeding initiative was revised and subdivided into (i) the institutional procedures necessary to ensure that care is delivered consistently and ethically (critical management procedures); and (ii) standards for individual care of mothers and infants (key clinical practices). Implementation of the review acknowledges that previously only a few volunteer facilities were accredited, but could not sustain their BFHI status (WHO, 2018).

The current guidance also recommends revisions to the national implementation of the BFHI, with emphasis on scaling up to universal coverage and ensuring sustainability

over time. The guidance focuses on integrating the programme more fully in the health-care system, to ensure that all facilities in a country implement the Ten Steps. The wording of the previous Ten Steps initiative has changed as described in table 2.1 below:

Table 2.1: The ten steps to successful breastfeeding

Ten Steps to Successful Breastfeeding (revised 2018)

Critical management procedures

1. a. Comply fully with the *International Code of Marketing of Breast-milk Substitutes* and relevant World Health Assembly resolutions.
   b. Have a written infant feeding policy that is routinely communicated to staff and parents.
   c. Establish ongoing monitoring and data-management systems.
2. Ensure that staff have sufficient knowledge, competence and skills to support breastfeeding.

Key clinical practices

3. Discuss the importance and management of breastfeeding with pregnant women and their families.
4. Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth.
5. Support mothers to initiate and maintain breastfeeding and manage common difficulties.
6. Do not provide breastfed newborns any food or fluids other than breast milk, unless medically indicated.
7. Enable mothers and their infants to remain together and to practice rooming-in 24 hours a day.
8. Support mothers to recognize and respond to their infants' cues for feeding.
9. Counsel mothers on the use and risks of feeding bottles, teats and pacifiers.
10. Coordinate discharge so that parents and their infants have timely access to ongoing support and care.

(World Health Organization, 2018)

2.3.3 The Tshwane declaration of support of breastfeeding in South Africa

The National Breastfeeding Consultative Meeting held in Tshwane, Gauteng Province of South Africa between 22 and 23 August 2011 declared South Africa to be a country that actively promotes, protects and supports exclusive breastfeeding as a public health

intervention to optimise child survival (National Department of Health, 2013). The meeting declared South Africa as a country that actively promotes, protects and supports exclusive breastfeeding, and takes action to demonstrate this commitment. This action includes the further mainstreaming of breastfeeding into all relevant policies, legislation, strategies and protocols. The country resolved to:

- declare itself as a country that actively promotes, protects and supports exclusive breastfeeding, and takes action to demonstrate this commitment. This includes further mainstreaming of breastfeeding into all relevant policies, legislation, strategies and protocols;
- adopt the 2010 WHO guidelines on HIV and infant feeding and to recommend that all HIV-infected mothers should breastfeed their infants and receive anti-retroviral drugs to prevent HIV transmission. The provision of anti-retroviral drugs to prevent HIV transmission through breastfeeding and to improve the health and survival of HIV infected mothers should be scaled up and sustained;
- finalise and adopt into legislation within twelve months, fully implemented and outcomes monitored
- promote and support human milk banks as an effective approach, especially in post-natal wards and neonatal intensive care units. This will help to reduce early neonatal and postnatal morbidity and mortality of babies who cannot breastfeed;
- Implementation of Baby Friendly Health Initiative (BFHI) and Kangaroo Mother Care (KMC) to be mandated such that:
    - All public hospitals and health facilities are BFHI accredited by 2015;
    - All private hospitals and health facilities are partnered with a BFHI-accredited facility by 2015;
    - Communities are supported to become ‘Baby Friendly’ (National Department of Health, 2013).

2.4 Infant feeding practices

2.4.1 Breast feeding practices

In South Africa, infant feeding practices are sub-optimal, however the rates of breastfeeding, especially exclusive breastfeeding (EBF), have improved over the last two decades from a low of 8% to a high of 32% (SADHS, 2003 & SADHS, 2016). Data from the 2003 South African Demographic and Health Survey (SADHS) show that, although breastfeeding is a common practice which is initiated early post-delivery in South Africa, mixed feeding, rather than exclusive breastfeeding, is common practice. The study also found that only 11.9% of children aged 0 to 3 months were exclusively breastfed and 20.1% of children aged 0 to 3 months were not breastfed at all at the time of the survey. The intention to increase the rate of exclusive breastfeeding (EBF) globally to at least 50% of infants in the first six months of life was initiated at the 2014 International Conference on Nutrition Rome Declaration on Nutrition and the Post-2015 Development Agenda (Rome Declaration, 2015). The recent improvements in the country's exclusive breastfeeding rates are still below the global target of 50% set in the Rome.

2.4.1 Exclusive breastfeeding in South Africa

The WHO (1998) reported that initiating breastfeeding on the first day of life reduces the risk of mortality and that early initiation of breastfeeding is associated with increased breastfeeding success and establishment of milk production. The risk of infant weight loss of more than 10% in the first three days of life is increased seven fold if lactation is delayed (Dewey, 2003). While exclusive breastfeeding (EBF) for the entire first six months of an infant's life is an uncommon practice in South Africa, the country has been shown to have very high breastfeeding initiation rates (75-97%). However, it appears that this is not maintained, and the 1998 and 2003 South African Demographic and Health Surveys showed that only 10% and 12% of infants aged 0-3 months, respectively, were exclusively breastfed, while EBF was even lower in infants aged 4-6 months (1% and 2%, respectively). Shisana *et a*l. (2014) reported an exclusive

breastfeeding rate of 7% in infants 0-6 months, one percent lower than that reported by the SADHS (2003).

Very low cumulative EBF rates of 7% at 0-5 months (1998) and 8% at 0-6 months (2003) were also reported in both surveys. In 2008, Shisana *et al*. reported that the cumulative EBF rate for the first six months of an infant's life had increased to 26% in South Africa. In 2013, Shisana *et al. (2013)* reported in (SANHANES-1) a cumulative exclusive breastfeeding rate of only 7% in children aged 0-6 months, 1% less than that reported in 2003 by SADHS. Table 2.2 presents a summary of rates of exclusive breastfeeding in South Africa from 1998 to 2016.

Table 2.2: Exclusive breastfeeding rates in South Africa from 1998-2016

	1998 SADHS (%)	**2003 SADHS (%)**	**2013 SANHANES-1 (%)**	**2016 SADHS (%)**
Exclusive breastfeeding				
0-6 months	6.8	8.3	7	32
Not breastfed				
0-3 months	16.6	20.1	-	24.0

2.4.2 Formula feeding practices

According to the WHO (2007), infant formula feeding, also known as artificial feeding or replacement feeding, involves feeding a child with artificial feeds (including non-human milk, such as infant feeding formula and powdered animal milk) and no breastfeeding at all. This can be seen as a form of exclusive replacement feeding. Formula feeding may be preferred by mothers who return to work or school, or who are HIV-infected, especially in urban areas. Replacement feeding is only recommended if it is acceptable, feasible, affordable, sustainable and safe (also known as the AFASS criteria) to ensure safe formula feeding practices (Doherty *et al*., 2010). Poor communities rarely meet

these criteria and exclusive breastfeeding has shown higher survival rates, even in communities with a high burden of HIV infection. An assessment was done in peri-urban and rural communities in South Africa which found that 67.4% of the women who intended to formula feed their infants did not meet all the AFASS criteria and, therefore, made an inappropriate choice (Doherty *et al*., 2010). In a study conducted in South Africa, HIV-infected mothers who formula fed their infants reported that they breastfed only when there was a shortage of formula at the health care facility or if they ran out of formula milk, indicating that formula feeding is not always sustainable (Ladzani, Peltzer, Mlambo & Phaweni, 2011).

- *Disadvantages of formula feeding*

A study conducted on the preparation and use of infant formula in health facilities and in households concluded that infants are often provided with bacterially contaminated infant formula that could contribute to increases in mortality and morbidity among both HIV-uninfected and HIV-infected infants (Doherty, Goga, Jackson, Colvin & Chopra, 2010). This, therefore, implies that formula feeding is not only dangerous post reconstituting; but even dry formula poses a threat. The pathogens of concern are *E. sakazakii* and *Salmonella enterica* and the potential risk of infection is increased when infant formula is mixed, handled and stored inappropriately. A study that evaluated the efficacy of preparation controls implemented in kitchens or other preparation areas where infant formula is prepared in 18 public hospitals in South Africa, with respect to *Enterobactre* (En) *sakazakii* and other potential pathogens, found that a few samples of powdered infant formula from sealed tins tested positive for pathogens. In the majority of samples which tested positive, contamination occurred after preparation, implying inadequate hygiene in feed preparation (National Department of Health, 2009).

The National Department of Health, (2012) suggested that the risk of sickness and death through formula feeding is understated and not communicated to mothers, whether HIV-infected or not; whereas the risk of HIV infection through breastfeeding is always communicated to mothers. It is important to note that infant formula is not a

sterile product and that, even if manufactured under excellent hygiene conditions, may still contain pathogens associated with serious illness.

- *Advantages of formula feeding*

Although formula feeding has its disadvantages, it is highly recommended in situations where breastfeeding is contraindicated (Department of Health, 2013). The infant feeding policy highlights the fact that infants who should not receive breast milk, or any other milk except specialized formula, includes infants with classic galactosemia, infants with maple syrup urine disease and infants with phenylketonuria.

2.4.3 Complimentary feeding practices

Complementary feeding refers to foods given to the child when breast milk or infant formula no longer provides the infant with the required energy and nutrients to sustain normal growth, optimal health and development (WHO, 2007). The WHO also recommends that complimentary feeding should be introduced to infants after exclusive breastfeeding for six months. Studies by Mushapi, Mbhenyane, Khoza *&* Amey (2008) and by Goosen *et al*. (2014) reported that complimentary feeding starts very early in South Africa, at an average age of two to three months of age. According to SADHS (2008), approximately 70% of children are reported to receive complimentary feeds before the age of six months.

- *Consequences of early introduction of complimentary feeding*

Poor breastfeeding rate, compounded by inappropriate complementary feeding practices, is a major cause for concern because of the consequent stunting and risk of childhood mortality and morbidity (Shisana, 2010). The National Food Consumption Survey (1999) revealed that, for children 1-9 years of age, the dietary intake of energy, calcium, iron, selenium, vitamin A, vitamin D, vitamin E, riboflavin, niacin and vitamin B6 was less than 67% of the recommended dietary allowances. For this reason, early introduction of complimentary feeding, given these deficiencies, may predispose infants to malnutrition. Høst, Halken, Muraro *et al.* (2008) concluded that exclusively

breastfeeding for at least 4 months of infants who are at risk of developing atopic diseases is associated with a lower cumulative incidence of cow milk allergy until 18 months of age.

2.5 Infant feeding practices in the context of HIV and AIDS

The South African National HIV Prevalence, Incidence, Behaviour and Communication Survey conducted by Human Sciences Research Council (HSRC) in 2008, revealed that only 25.7% of children aged 0-6 months were exclusively breastfed; 22.5% were exclusively formula fed, while 51.3% of the children in this age group were mixed fed (Shisana, Rehle, Simbayi, Zuma & Jooste, 2010). In 2010, South Africa had an estimated HIV prevalence of 30.2% among antenatal women, with a prevalence rate of 18.5% in the Western Cape Province and 14.9% in the Cape Winelands District of the Western Cape (Department of Health, 2011).

Maternal factors known to increase the risk of HIV transmission through breastfeeding include recent infection, advanced stage of the HIV disease, a low CD4 count, a high viral load, mastitis and abscesses. The risk of transmission also increases with prolonged breastfeeding. Infant factors associated with the increased risk of HIV transmission include oral thrush and damage to the intestinal mucosa due to early introduction of fluids and food (Mayosi, Lawn, Van Niekerk, Bradshaw *et al.*, 2012. The World Health Organization revised its HIV and infant feeding recommendations in 2009 after sufficient evidence of the protracted effect of ART emerged. This was done in support of safer breastfeeding in low-income settings (WHO, 2010). The WHO recommended the provision of lifelong ART or antiretroviral (ARV) prophylaxis to pregnant women and ARV prophylaxis to breastfed infants, where applicable. Early and appropriate antiretroviral treatment, combined with exclusive breastfeeding, decreases the postnatal risk of transmission to 0-1% (Morrison, Israel-Ballard & Greiner, 2011).

With strict adherence, ART can suppress maternal viral load to an undetectable level (WHO, 2010 & Morris, Israel-Ballard & Greiner, 2011). In light of South Africa's poor performance in the reduction of child mortality, the country adopted these revised

recommendations to improve child survival rates (National Department of Health, 2010). Exclusive breastfeeding for the first six months of life is strongly recommended. Furthermore, the entry criteria for lifelong ART were adapted to include a CD4 count of less than or equal to 350/mm^3 or the presence of a WHO-defined Stage 3 or 4 illness. Mothers who do not qualify for lifelong ART receive ARV prophylaxis from as early as fourteen weeks of pregnancy for the duration of the pregnancy and the infant receives ARV prophylaxis for the entire period of breastfeeding, until one week after the cessation of breastfeeding (WHO, 2010 & Morris, Israel-Ballard & Greiner, 2011).

Within the context of HIV, expressing and heat-treating breast milk is a safer method of breastfeeding than feeding with breast milk that has not been heat-treated. Home-based flash heating entails placing a glass jar of breast milk in a pan or pot of water that is brought to boiling point. This method of pasteurization deactivates HIV while maintaining the nutritional and immunological properties of the milk (WHO, 2010 & Morris, Israel-Ballard & Greiner, 2011). Heat-treatment poses some difficulties and barriers. A study conducted in KwaZulu-Natal reported that heat-treating breast milk was not well promoted by health care facilities. Furthermore, heat-treatment is a time consuming practice, which also requires a certain level of acceptability, feasibility, affordability, sustainability and safety, as with any other replacement feed (Mbuya, Humphrey, Majo, Chasekwa, Jenkins, Israel-Ballard *et al*., 2010). In Southern Ghana, HIV-infected mothers regard expressed heat-treated breast milk as unacceptable and not feasible (Laar, 2011).

2.6 Factors influencing infant feeding practices

Infant feeding practices may be influenced by a variety of socio-cultural factors. These factors include, among others, the age of the mothers, family support and support from health workers.

2.6.1 Age of the mother

Kimani-Murage, Wekesah, Wanjohi, Kyobutungi *et al*. (2015) indicate that young mothers do not exclusively breastfeed their infants due to their busy lifestyles and the fact that they are still at school. The authors further report that a lack of confidence in breastfeeding has been identified as a factor hindering young mothers from practicing exclusive breastfeeding.

2.6.2 Social factors

Marital status plays a significant role in the decision of mothers to feed their infants. A study conducted by Cox, Giglia & Bins (2015) in rural Western Australia shows that mothers who perceived their baby's father to be hesitant about breastfeeding or to prefer formula feedings were 48% more likely to have ceased exclusive breastfeeding and 71% more likely to have ceased any breastfeeding by 26 weeks. Contrary to this study, Sowden, Marais & Beukes (2009) found that the majority of mothers in Cape Town did not feel that men find women who are breast-feeding less attractive.

In the African culture, mothers, especially new mothers, receive infant feeding information and guidance from their mothers and grandmothers. These family members, therefore, transfer skills, provide support and influence infant feeding behaviour (Goosen *et al.*, 2014). Results from a systematic review show that a perception of the maternal role is inherent to infant feeding decisions made by expectant mothers (Roll & Cheater, 2016).

The infant feeding attitudes of significant social support, such as a woman's partner and mother, are cited as positive influences on breastfeeding practice. Cox *et al.* (2015) found that approximately one third of mothers (34.9%) indicated that their own mother preferred breastfeeding. Mothers who perceived their own mother to be hesitant about breastfeeding or prefer formula feeding were 96% more likely to have ceased any breastfeeding by 26 weeks. The authors further reported that mothers who perceived their baby's father to be hesitant about breastfeeding or to prefer formula feeding were

48% more likely to have ceased exclusive breastfeeding and 71% more likely to have ceased any breastfeeding by 26 weeks (Cox *et al*., 2015).

2.6.3 Support by health workers

Inadequate infant feeding education and support by the health system plays a role in a mother's decision to exclusively breastfeed her infant (Goosen *et al.*, 2014). Dennis and McQueen (2009) suggest that there is a likelihood that mothers may need the support of healthcare workers in order to sustain their choice of infant feeding. The author concludes with a suggestion that depressed women may be less likely to initiate breastfeeding and to breastfeed exclusively (Dennis and McQueen, 2009).

2.6.4 Misconceptions about breast milk

Some mothers believe that breast milk is not sufficient to meet the nutritional requirements of the baby for the recommended period; hence these mothers introduce supplements/other foods, such as commercial formula milk (Kimani-Murage *et al*., 2015). With regard to the period of exclusive breastfeeding, some people believe that a little water and sugar/ glucose and/or salt or a commercially prepared mixture of water (gripe water) is good for the baby as this will protect the baby from stomach problems. The Baby Friendly Hospital Initiative (BFHI) review indicated that the main reasons provided by mothers for early introduction of complimentary foods include the perceived inadequate production of breast milk and the belief that breast milk alone was not enough to satisfy the infant (NDoH, 2008)

2.6.5 Mothers who are separated from their infants

The need for women to return to work has been identified as one of the factors that lead to the cessation of breastfeeding (Nankumbi & Muliira, 2015). Similarly, in a qualitative study conducted in Kenya, returning to work was cited as one of the factors affecting continued breastfeeding (Kimani-Murage *et al*., 2015). In Cape Town, South Africa, a study conducted among women from a high socio-economic class showed that the majority of mothers (80%) only decided after the birth of their infant to opt for formula

feeding, citing a lack of facilities to breastfeed at public places (75%), at work (71%) and convenience (64%) as reasons for their choice (Sowden, Marais & Beukes, 2009).

2.6.6 Culture of giving herbal medicine

In certain communities it is unacceptable if infants are not given herbal medicines. Mushapi, Mbhenyane, Khoza & Amey (2008) report that children were given tshiunza, a dish prepared from maize and roots (from different tree species) and fermented to make a sour soft porridge. In Kenya it is unacceptable to feed the baby expressed breast milk (Kimani-Murage *et al*., 2015). In a study conducted by Goosen, McLachlan & Schübl (2014), some respondents indicated that the decision to formula-feed was based on their understanding that breastfeeding led to HIV transmission. If they formula-fed their infants, they had to adhere to cultural expectations of giving medicine since this would pose no risk of HIV transmission.

2.6.7 Maternal education level

A study conducted in India which analysed data from three Nepal Demographic and Health Surveys (NDHS) 2001, 2006 and 2011 on the effect of a mother's educational status on early initiation of breastfeeding, found that, in each survey, maternal education is associated with a higher likelihood of early initiation of breastfeeding. These results show higher odds of early initiation of breastfeeding among the mothers with primary education and secondary or higher education when compared to mothers with no education (Acharya & Khanal, 2015).

2.6.8 Medical reasons

Goga, Doherty, Chopra *et al*. (2010) reported that, among mothers who breastfed between 3 weeks and 6 months postpartum, significantly more HIV-positive mothers (42%) practiced exclusive breastfeeding when compared to those mothers who were HIV-negative (17%). Contrary to Goga *et al.* (2010), Goosen *et al.* (2014) report that HIV infection exerts a significant influence ($p<0.001$) on infant feeding choice, where none of the HIV-infected mothers breastfed their infants. To determine the overall perception of HIV infection and breastfeeding, all mothers (n=140) were asked whether an HIV-

infected mother should breastfeed her infant. The majority of participants (78%) were not in favour of breastfeeding. Eighty-four percent of the mothers, who answered no reported HIV transmission as the reason why HIV-infected mothers should not breastfeed. The HIV status of mothers has influenced more mothers to refrain from breastfeeding earlier than recommended.

A study conducted in north of Jordan by Khasawneh and Khasawneh (2017) reported that Caesarean delivery and the hospitalisation of an infant as barriers to breastfeeding at adjusted odds ratios of 0.55 and 0.44 at a 95% confidence interval. This implies that women who delivered through Caesarean section and whose infants were hospitalised are less likely to breastfeed their infants.

2.6.9 Maternal attitude towards breastfeeding

A mother's attitude towards breastfeeding as the choice of infant feeding method has been shown to influence the likelihood of her initiating and continuing to breastfeed. Cox, Giglia & Bins (2015) conducted a study in rural Western Australia which found that mothers with a positive attitude towards breastfeeding are more likely to exclusively breastfeed for six months and beyond. Their results found that the majority of mothers (94.1%) agreed that breast milk was less expensive than formula and 72.4% agreed that breastfeeding was more convenient than formula feeding.

2.7 Conclusion

In this chapter, literature related to infant feeding practices and related factors were discussed. The following chapter will focus at the methodology used to conduct this research.

CHAPTER THREE: RESEARCH METHODOLOGY

This chapter discusses the research methodology used in conducting the current study. The focus will be on study design, study site, study population, sampling, ethical considerations.

3.1 Research/ Study design

The current study was cross-sectional descriptive study and quantitative in nature. Cross-sectional survey designs are usually associated with exploratory and descriptive studies which examine several groups of people at one point in time. This design can be used to determine whether a particular problem exists within a group of participants and what the level of the problem is (de Vos, Strydom, Fouché & Delport, 2011). In this study data was collected from mothers between December 2017 to February 2018 and the researcher had no contact with them thereafter. Quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world (Grove, Gray & Burns, 2015). In this study variables were converted into numerical information, analysed and interpreted.

3.2 Sampling methods

Convenience sampling was used to select participants. The participants who met the inclusion criteria and gave informed consent to take part in the study were enrolled to be interviewed. The use of convenience sampling within each facility was necessary owing to practical considerations, such as the days on which mothers with infants visited the clinic, as well as the distance between the facilities. If 20 participants were not recruited at the selected health facility, sampling was carried out at alternative clinics at close proximity to each other which were selected for data collection.

3.3 Study site/area

The study was conducted in the Polokwane Municipality in the Capricorn District of the Limpopo Province of South Africa. Polokwane Municipality is divided into Polokwane East and Polokwane West and forms part of the Capricorn District Municipality. The local area is made up of a mixture of rural villages, semi-urban areas and an urban area. The area includes the city of Polokwane. Polokwane Municipality consists of 23 primary health care (PHC) clinics and one community health centre (CHC). There are also several private health practitioners in the area, who charge users fees for the health services they provide, which include maternal and child health.

The study was conducted within the Polokwane Municipality. This local municipality is located within the Capricorn District of the Limpopo Province of South Africa (see map in Annexure I). This municipality is made up of townships, suburbs and villages within an area of 3,766 km² and an estimated population size of 797 127, of which 5.2% are white ,96.2% African, 5.4%, are Afrikaans speakers and 3.2% English speakers. Polokwane Municipality has an estimated sex ratio of 92.8 males per 100 females (Statistics South Africa, 2016).

The municipality is grouped into three clusters, namely; the Polokwane/Seshego cluster, the Molepo/Maja/Chuene cluster and the Mankweng/Sebayeng/Dikgale cluster. The study took place in the Polokwane City/Seshego Cluster and Molepo/Maja/Chuene cluster, which is located west of the central business district of the city (see map in Annexure J). This study site was chosen because it serves a large area within by the municipality. Further away, on the edges of the municipal area, are extremely impoverished rural settlements, scattered into the periphery with limited or no services and infrastructure. The area has 23 clinics, including a community health centre.

Table 3.1: Health facilities available in the Polokwane municipality

Urban cluster	Peri-urban cluster	Rural cluster	
		Rural cluster 1	Rural cluster 2
Rethabile CHC	Seshego Zone 1	Perskesbelt	Maja clinic
Buite Straat Clinic	Seshego Zone 2	Moletji clinic	Chuene clinic
	Seshego Zone 3	Matamanyane clinic	Suitfontein clinic
	Seshego Zone 4	Semenya clinic	
		Moshubaba clinic	

There are a total number of thirteen (13) facilities and one (1) community health centre situated within this municipality (Table 3.1). These health institutions provide primary health care services, including maternal and child health services. Each facility renders child health services (0-5 years) monthly. The data for infant services rendered is embedded within these estimates. In this study, facilities were grouped into urban, peri-urban and rural clusters, and then simple random sampling was used to select facilities from each of the clusters, as shown in Table 3.1.

3.4 Study Population

A study population consists of all the elements (individuals, objects, or substances) that meet certain criteria for inclusion in a study (Grove, Gray & Burns, 2015). In this study, respondents were biological mothers of infants aged zero to six months. Since all the infants were accompanied by their mothers, a mother- infant pair entering the health facility for child health services was recruited for participation. Mothers were sampled from the 6 selected health facilities within the Polokwane Municipality.

3.4.1 Sampling procedure

i. Selection of Facilities

Cluster sampling was used to select 6 health facilities out of the 14 facilities available within the Polokwane Municipality. In cluster sampling, the researcher develops a sampling frame that includes a list of all the institutions with which elements of the

identified population can be linked (Grove, Gray & Burns, 2015). In this study, simple random sampling was used to select these institutions.

A total of five primary health care (PHC) facilities were randomly selected, while the community health centre was automatically included as it was the only referral site within its cluster. The selection was done by placing pieces of paper on which the names of facilities from each cluster had been written in a bowl, which was thoroughly shaken. Four of the facilities were from peri-urban areas, five from rural cluster 1 and 3 from rural cluster 2. Six pieces of paper on which the facility names were written were drawn; two (2) facilities from the peri-urban cluster, two (2) facilities from the rural cluster, one (1) PHC facility from the urban cluster was included automatically because it was the only one within its cluster. The sixth facility was the community health centre (CHC), which was also automatically included because it was the only health centre within the municipality. The randomly selected facilities were then used as data collection sites.

3.4.2 Selection of respondents (mothers)

In the current study, convenience sampling was used to select study participants. Convenience sampling (also known as haphazard sampling or accidental sampling) is a specific type of non-probability sampling method that relies on data collection from population members who are conveniently available to participate in study (Etikan, Musa, & Alkassim, 2016). In the current study the use of convenience sampling within each facility was necessitated owing to practical considerations, such as the days on which mothers with infants visited the heath facility, the different times at which mothers reported to the facilities, as well as the distances between the facilities. On arrival at each of the 6 selected health facilities, the available participants who met the inclusion criteria and gave informed consent to take part were enrolled to be included in the study. The participants were recruited until the required number of participants was reached.

3.4.3 Sample size

Sample refers to a subset of the population selected for a particular study and the members of a sample are then referred to as subjects or respondents (Grove, Gray & Burns, 2015). Sample size of infinite population (where the population is greater than 50,000), was determined using Bill Gordon's formula as follows:

N = $\frac{\boldsymbol{Z^2 P\ (1-P)}}{\boldsymbol{(C)2}}$; where

N is the sample size;

Z is the desired level of confidence – 95% Confidence interval (CI);

p is the expected proportion with the variable of interest (8% exclusive breastfeeding. SADHS, 2007). The rate of breastfeeding at the national level was 8% at time of sampling; however, the researcher acknowledges the recent improvements in the rates of exclusive breastfeeding from 8% (SADHS, 2003) to 32% (SAHDS, 2016).

e is the sampling error – 5%.

n = $\frac{\boldsymbol{Z^2 P\ (1-P)}}{\boldsymbol{(e)2}}$

= $\frac{\boldsymbol{1.95\ X\ 0.08\ (1-0.08)}}{\boldsymbol{(0.05)2}}$ **=** 113 mothers.

By adding 10% to account for non-response, a total of 126 mothers were included in the study. Therefore, controlling for the study design using a design effect of 1.2%, the final sample became 149. This number was distributed proportionally among the selected health facilities, as shown in table 3.2.

Table 3.2: Proposed sample per sampled health facility

Urban cluster		**Peri-urban cluster**		**Rural cluster**			
				Rural cluster 1		**Rural cluster 2**	
Type of facility	**n (%)**	**Type of facility**	**n (%)**	**Type of facility**	**n (%)**	**Type of facility**	**n (%)**
CHC	43 (29.5)	PHC-1	29 (19.9)	PHC	16 (11)	PHC	21 (14.4)
PHC	24 (16.4)	PHC-2	16 (11)				
Total =	**47**	**45**		**16**		**21**	
Grand total = 146							

3.5 Inclusion and exclusion criteria

Inclusion criteria

- Mothers of infants aged 0 to 6 months who visited the facility for immunization on the days for data collection;
- Mothers who gave written consent to take part in the study.

Exclusion criteria

- Facilities which have been used during pilot study;
- Infants brought in by the care givers who are neither biological mothers nor primary caregivers;
- First time mothers with infants zero to two weeks – because they may have limited infant feeding experience;
- Mothers and caregivers of children over six months of age;
- Mothers having an infant with any kind of metabolic disease such as Down Syndrome.

3.6 Data collection

3.6.1 Data collection procedure

Upon obtaining ethical clearance from the university, the researcher obtained permission from the Provincial Department of Health to collect data (Annexure C). Upon receiving permission from the provincial office, the researcher requested permission to approach specific health facilities and the permission was granted (Annexure D). With the support in the form of district approval, the researcher requested permission from operational managers to gain access into the selected facilities and access was granted. Facilities operational managers had notified staff members in the child health services of the presence of the researcher and they were requested to cooperate by providing an interviewing space and by recruiting of participants. The researcher visited the facilities to discuss the data collection logistics with staff members.

The researcher visited the facility the day before data collection in order to notify the operational manager of his intention to visit the facility for data collection. On the day of data collection, the researcher identified the mothers of infants within the required age group from the security records. When mothers register at the gate to the facility, the security officers issue them with cards that have numbers on them and allow them to proceed to the waiting area in child health section of the facility. The numbers on the card serve as the number of the mother on the queue.

While the mothers were in the waiting area waiting to be served, the researcher asked the nurses to allow him to address the mothers regarding the purpose of the study and to recruit suitable participants. The researcher used the numbers given to mothers to call out mothers who met the selection criteria. Mothers who met the criteria and agreed to participate in the study were invited into interview room and they were provided with a written consent form (Appendix A). After explaining the purpose of the study to the participants, data was collected from each mother, one at a time, using a validated questionnaire. Data was collected in the language that the mother was most comfortable with, either English or Sepedi (Appendices E & F). The researcher conducted interviews using the participants' language of choice. The average length of an interview was fifteen minutes. The nurses reminded those mothers they consulted before data collection to go to the interview room before leaving the health facility, however, nurses did not form part of the data collection process.

3.6.2 Data collection tool

A validated structured questionnaire was used to collect the data (adapted from Goosen *et al.,* 2014). The questionnaire consisted of closed-ended questions only and was divided into four sections:

SECTION A: Socio demographic information

SECTION B: Infant feeding practices

SECTION C: Knowledge of care givers

SECTION D: Medical information

The questionnaire consisted of forty-nine questions in total and was developed in English and Sepedi, which are the two main languages spoken by community members at the study sites.

3.6.3 Pilot study

A pilot study is a small scale investigation designed to test the feasibility of methods and procedures for later use on a large scale or to search for possible effects and associations that may be worth following up in a subsequent larger scale (Last, 2001). In order to test for face validity of the tool, a pilot study was conducted. The questionnaire was piloted at one of the selected primary health care facilities and the results from the pilot study were used to adjust the questionnaire accordingly.

3.7 Data analysis

Using a questionnaire, responses were collected and captured using Excel. The captured data was cleaned for errors until most of the data capturing errors were corrected. The data was analysed using SPSS (version 25). Chi-square tests were used to evaluate relationships between different selected variables (e.g., to find associations between the age of mother and her education level, birth order; association between infant feeding practice and the mother's age, education level and breastfeeding duration). The critical value for significance was set at $p< 0.05$ for all analyses. Descriptive statistics was used (namely, frequencies and cross tabulations) to summarize the socio-demographic characteristics of the study participants, the prevalence of infant feeding practices and factors influencing infant feeding practices.

3.8 Reliability and validity

3.8.1 Reliability

De Vos, Strydom, Fouché, Delport & Strydom (2011) define reliability as the stability or consistency of the measurement. This means that, if the same variable is measured under the same conditions, reliable measurement procedures will produce identical (or nearly identical) measurements. A pilot study was conducted before the start of the main

study in order to adapt and enhance the research tool and to test the procedures at health facility level. In order to increase reliability of the instrument, the researcher had gone through the questionnaire with respondents to clarify some of the questions.

3.8.2 Validity

According to de Vos, Strydom, Fouché, Delport & Strydom (2011), validity has two aspects: That the instrument actually measures the concept in question (content validity) and that the concept is being measured accurately (face validity). In this study, in order to test validity, the questionnaire was reviewed by the researcher's supervisor to test content validity. The questionnaire was also given to lecturers in the Department of Human Nutrition, as content experts, to go through and give their input. Face validity was ensured by researcher going through the questionnaire with participants during pilot study. The questions were, therefore, adjusted accordingly, based on responses gathered during pilot study.

3.9 Bias

Bias is defined as any propensity which prevents fair consideration of a request. In research it occurs when systematic error is introduced into sampling or testing by selecting or encouraging one outcome or answer over others (Pannucci & Wilkins, 2010). In this study, selection bias was minimised by recruiting respondents who meet the selection criteria. Non-respondent bias was minimised by checking that the questionnaires were fully completed. Attention bias was minimised by providing detailed information about the study to the respondents to ensure that participants were aware of their involvement.

3.10 Ethical Considerations

3.10.1 Ethical approval and Permission to conduct the study

The proposal was submitted to the Senior Degrees Committee and, thereafter, to the Turfloop Research and Ethics Committee (TREC) for ethical clearance. Permission to collect data was sought from the Department of Health Research Committee - Limpopo

Province. Thereafter, the researcher obtained permission from the Capricorn District Health office and the primary health care facilities.

3.10.2 Informed consent

Informed consent is an ethical standard by which potential participants are informed of the topic, procedures, risks and benefits of participation prior to consenting to participate in a study (Adams & Lawrence, 2015). In this study, recruited participants were directed to the researcher's interview room where the aim and objectives of the study were explained to them. Thereafter, those who agreed to take part were asked to sign a consent form before starting with the interviews.

3.10.3 Voluntary participation

All the respondents who agreed to participate in the study were informed that they do so voluntarily and they were informed of their right to withdraw their participation in the study at any stage. They were assured that they would not be disadvantaged in any way if they chose to withdraw from the study.

3.10.4 Confidentiality and Anonymity

- **Confidentiality** refers to the fact that information provided by respondents in answering research questions will not be shared with anyone and that the information will remain protected from any third party (de Vos, Strydom, Fouché, Delport & Strydom, 2011). The completed questionnaires are kept in a locked cupboard for a period of 5 years after data analysis and reporting. The researchers ensured that no participants sat next to each other during the interview. In that way, participants did not hear how others answered their questions.
- **Anonymity** refers to the fact that no one, other than the researcher, can link the participant to his/her responses (Adams & Lawrence, 2015). In order to ensure anonymity of respondents, each questionnaire was assigned a code for identification purposes and the names of respondents were not captured.

3.10.5 Beneficence

Beneficence refers to the ethical principle that seeks to maximize the benefits for study participants and prevent harm (Polit & Beck, 2014). In this study beneficence was ensured by collecting data using only questionnaires. No physical contact occurred between the researcher and the participants; therefore, no physical harm could occur. No sensitive questions were included in the questionnaire, which ensured that the emotional being of the participants was protected. Participants who had infant feeding-related questions during the interview were referred to a dietician who worked at the facility.

3.11 Conclusion

In this chapter the methodology used in conducting this research was discussed. The chapter looked at the study design, sampling, inclusion criteria, data collection and analysis, reliability of the study and ethical considerations. The following chapter will focus on the presentation and interpretation of the findings (results) of the study.

CHAPTER 4: PRESENTATION AND INTERPRETATION OF THE FINDINGS

4.1 **Introduction**

In the previous chapter, the methodology used in this study was presented. In this chapter, the results of the study are presented and interpreted. The chapter is divided into three subsections, namely: (1) demographic information of the mother and the infant, (2) prevalence of exclusive breastfeeding and (3) factors influencing infant feeding practices.

4.2 Demographic characteristics of the study participants

4.2.1 Mothers demographic profile

The socio-demographic profiles of all mothers across the six sites are summarised in Table 4.1. One hundred and forty-six women, paired with their infants, from the six primary health care facilities, participated in the current study, of which 64 (44%) were from urban areas, 45 (31%) from peri-urban and 37 (25%) from rural areas. All participating women were African and were the biological mothers of the infants. Most of the participants were from Rethabile CHC (n=40) followed by Seshego Zone 4 (n=29), Buitestraat clinic (n=24), Chuene (n=21), Seshego Zone 3 (n=16) and Semenya (n=16). The majority of mothers (85%) were Sepedi speaking, followed by (1.4%) IsiNdebele with (0.1%), with Afrikaans speaking participants being the least. The response rate of participants in the current study was 98%.

Table 4.1 Socio - Demographic Information for the mother

		Age categories of mothers				p-value
		<18 yrs.	18-25 yrs.	26-35 yrs.	>35yrs.	
	n (%)	n (%)	n (%)	n (%)	n (%)	
Education						
Primary	2 (1.4)	-	-	2(100)	-	0.164
High	58 (39.7)	7 (12)	19 (32.8)	27(46.6)	5(8.6)	
Matric	40 (27.4)	1(2.5)	9(22.5)	23(57.5)	7(17.5)	
Tertiary	46 (31.5)	-	12(26.1)	27(58.7)	7(15.2)	
Employment status						
Employed	50(34.5)	-	8(16)	36(72)	6(12)	0.006
Unemployed	96(65.5)	8(8)	32(33)	43(45)	13(14)	
Birth order						
First born	53 (36.3)	8(15.1)	29((54.7)	16(30.2)	-	0.001
Second born	44 (30.1)	-	10(22.7)	32(72.7)	2(4.5)	
Third born	26 (17.8)	-	1(3.8)	20(76.9)	5(19.2)	
Fourth born	16 (11.0)	-	-	10(62.5)	6(37.5)	
Fifth born	7 (4.8)	-	-	1(14.3)	6(85.7)	
Support grant						
Yes	78 (53.4)	5(6.4)	21(26.9)	43(55.1)	9(11.5)	0.001
No	68 (46.6)	3(4.4)	19(27.9)	36(52.9)	10(14.7)	

Most participants (54%) were young mothers in the age category 25-35 years, followed by 18 – 25 years, above 35 years and lastly less than 18 years at 27.4%, 19% and 5.5% respectively. The majority of the participants (39.7%) had high school educational, followed by those with tertiary education at 31.5%. Mothers with tertiary education tend deliver at private health facilities while those with matric, secondary, and primary school education tend to deliver at public health facilities. With regard to employment status, the majority of mothers (65.5%) were unemployed and of those who were employed, the majority (72%) fell into the age group 25 – 35 years as illustrated in Table 4.1 above.

With regards to parity, the majority of participants were first time mothers (36.3%), followed by second and third time mothers at 30% and 17% respectively. Parity increased with an increase in age of the mother, particularly between the ages of 18 and 35 years. Results of the current study demonstrate that there is a significant relationship between mothers age and child bearing (p=0.001). Out of a total of 146 mothers, 78 (53.4%) were receiving child support grants. The majority of child support grant recipients (55.1%) were in the age group 25-35 years, followed by those in the age group 18-25 years, at 26.9%. Results (Table 4.1) show that receiving child support grants increases with increase in age of the mothers and the relationship is highly significant *(P= 0.001*).

4.2.2 Infant demographic profile

The socio-demographic profiles of all infants are summarised in Table 4.2. One hundred and forty-six mother-infant pair were included in the study. Fifty-one percent of the infants were boys and 49% were girls. Their ages ranged from at least two weeks old to just below six months old. The majority of the infants were in the age group 3-6 months, at 45.3%, followed by age category 1-3 months, at 45.9%, and 4.8% of the infants were in the age group less than one month. Most infants (84.2%) were delivered at public health facilities, followed by those delivered in private health facilities and those delivered at home at 14.4% and 1.4% respectively

Table 4.2 Socio - Demographic Information for the infant

INFANT'S GENDER	Frequency n (%)
Boy	75 (51.4)
Girl	71 (48.6)
AGE OF INFANT	
<1 month	7 (4.8)
1- 3 months	67 (45.9)
3-6 months	72 (49.3)
PLACE OF BIRTH	
Public hospital/clinic	123 (84.2)
Private hospital/clinic	21 (14.4)
Home	2 (1.4)
Total	**146**

4.3 Infant feeding practices

4.3.1 Breastfeeding initiation

Figure 4.1 presents results regarding the help available for mothers to initiate breastfeeding. The results indicate that just over a half of mothers (58%) had received help to initiate breastfeeding.

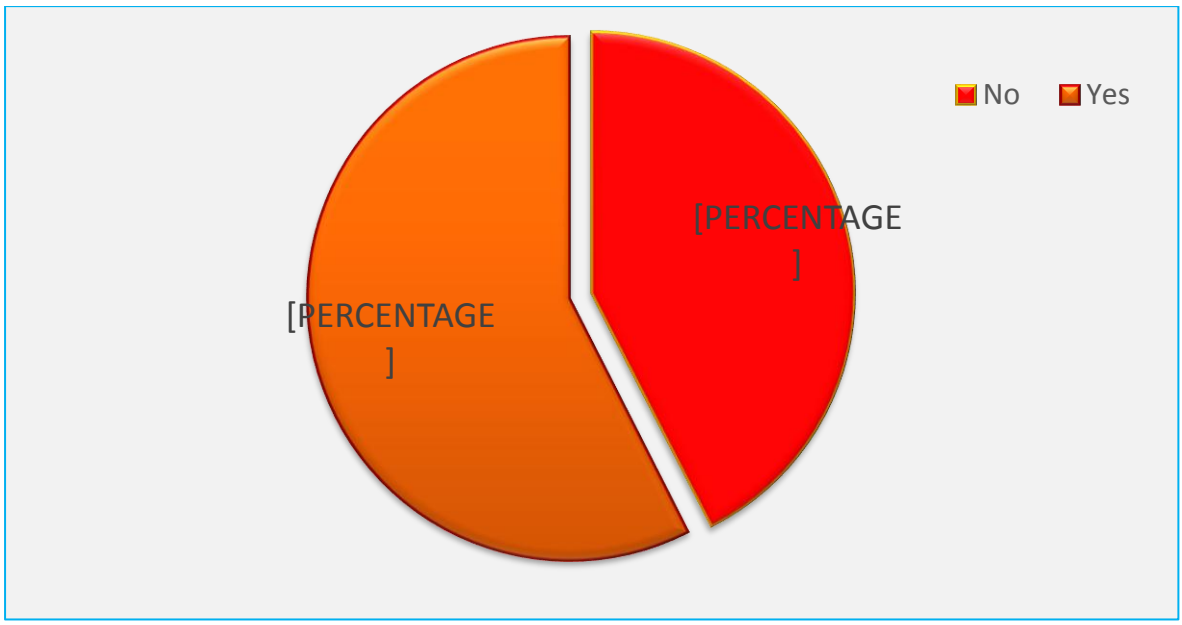
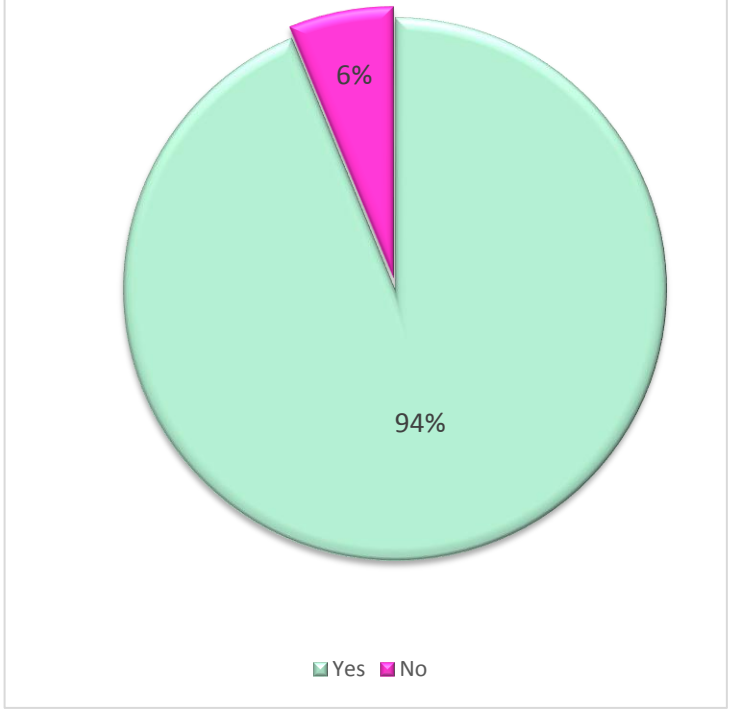


Figure 4.1: Help for mothers to start breastfeeding

The proportion of mothers who had initiated breastfeeding was 94%, of which only 64.4% had initiated breastfeeding within one hour after delivery (figures 4.2). Those who initiated breastfeeding after an hour (35.6%) attributed their delay to the mother's illness or to the fact that they were still unconscious or too weak to breastfeed the infant after delivery (12.3%). The second most often reason given by mothers for the delay in initiating breastfeeding was the fact that the infant was taken away from them and not given back to the mother earlier than one hour post-delivery (10.3%). Only 1.4% reported that they did not know how to initiate breastfeeding.

Figure 4.2a below presents the information about the initiation of breastfeeding and Figure 4.2b presents information about the time that mothers took to initiate breastfeeding after delivery.



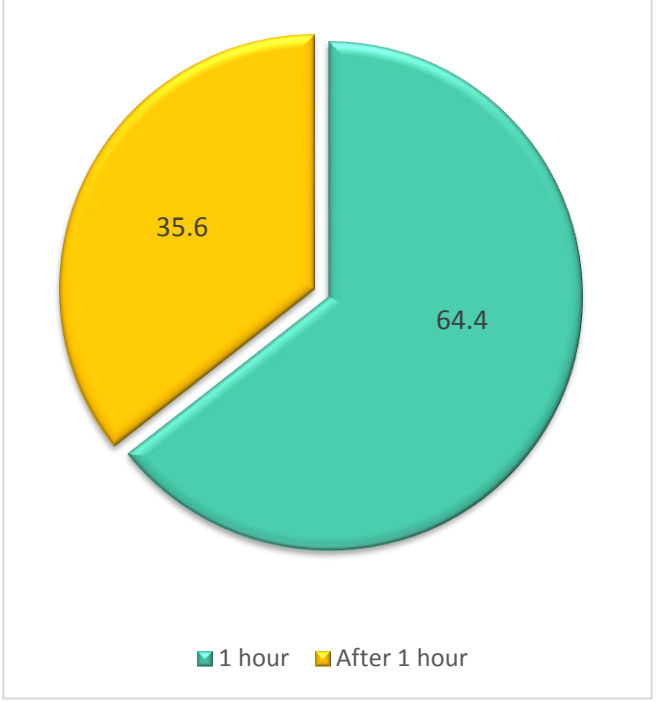


Figure 4.2a: Infant breastfeeding initiation

4.2b: Timing of infant breastfeeding after delivery

4.3.2 Breastfeeding cessation

Table 4.3 below presents reasons for mothers to stop breastfeeding.

Table 4.3 Reasons for mothers to stop breastfeeding

Reasons for stopping breastfeeding	Frequency N(%)
I was ill/infectious disease	5(45.4)
Breastfeeding conditions	1(9.1)
Not enough milk	2(18.2)
Going back to work/school	3(27.3)
Total	**11**

At the time of the interview, eleven mothers (8%) who had initiated breastfeeding at one time had stopped breastfeeding. The most frequently reported reasons for discontinuing breastfeeding were the perceptions that mothers had infectious diseases (45.4%), followed by mothers needed to return to work or school (27.3%) and that mothers were not producing enough milk (18.2%), with breast conditions being the least.

4.3.3 Factors that promote breastfeeding initiation

Mothers who initiated breastfeeding were allowed to give more than one reason for initiating breastfeeding and 137 responses were received. Table 4.4 presents reasons for mothers to initiate breastfeeding of their infants. The most frequently reported reasons for breastfeeding were the perception that breast milk was the perfect nutrition/food for infants (33.6%), and that breast milk is free of charge (2.2%). Only one mother (0.7%) reported that breastfeeding promotes bonding between mother and infant. Forty-one mothers (30%) indicated a combined reason for breastfeeding, namely, that breast milk provides perfect nutrition for infants/other as their reason for breastfeeding their infants.

Table 4.4: Reasons for initiating breastfeeding

Reasons For Breastfeeding	Frequency N(%)
Breastfeeding is perfect for babies	46(33.6)
Free of charge	3(2.2)
Bonding with the infant	1(0.7)
Other	9(6.6)
Breastfeeding is perfect for babies /Free of charge	11(8.0)
Breastfeeding is perfect for babies / No Need to Prepare	2(1.4)
Breastfeeding is perfect for babies /Infant was ill	5(3.6)
Breastfeeding is perfect nutrition for babies /OTHER	41(30
No Need to Prepare /OTHER	1(0.7)
Breastfeeding is perfect for babies /free of charge / No Need to Prepare	32.2)
Breastfeeding is perfect for babies / Free of charge /OTHER	3(2.2)
Breastfeeding is perfect for babies / Free of charge / Free of charge / Infant was ill / No Need to Prepare	4(3)
Breastfeeding is perfect for babies / infant was ill /OTHER	32.2)
Free of charge / No need to prepare /OTHER	53.6)
Total	***137**

Nine mothers (6%) decided not to initiate breastfeeding on their infants (Table 4.5). The mothers either cited the fact that they were ill, or did not have no enough breast milk or the fact that the infant refused to be breastfeed, all at 33.3%.

Table 4.5: Reasons for not initiating breastfeeding

Reasons For not Breastfeeding	Frequency N(%)
Mother was ill/medical condition	3(33.3)
Not enough breast milk	3(33.3)
Infant refused to breastfeed	3(33.3)

Total	**9**

4.3.4 Prevalence of exclusive breastfeeding and mixed feeding

The results show that 39% of mothers interviewed were exclusively breastfeeding their infants (Figure 4.3), with 61% of the mothers indicating that they were not exclusively breastfeeding their infants. Of those who exclusively breastfed their infants, the majority (57.9%) were in the age category 25-35 years, followed by (21%) in the age category >35 years. The remaining mothers were in the age categories <18 and 18-25 years, at 1.8% and 19.3% respectively. Infants who were not exclusively breastfed were given solid food (6.2%), water (4.1%) and both infant formula and solid food (12.3%), in addition to breast milk. The rates of exclusive breastfeeding were 3.4%, 19.9% and 15.4% at 1 month, 2-3 months and 4-6 months respectively.

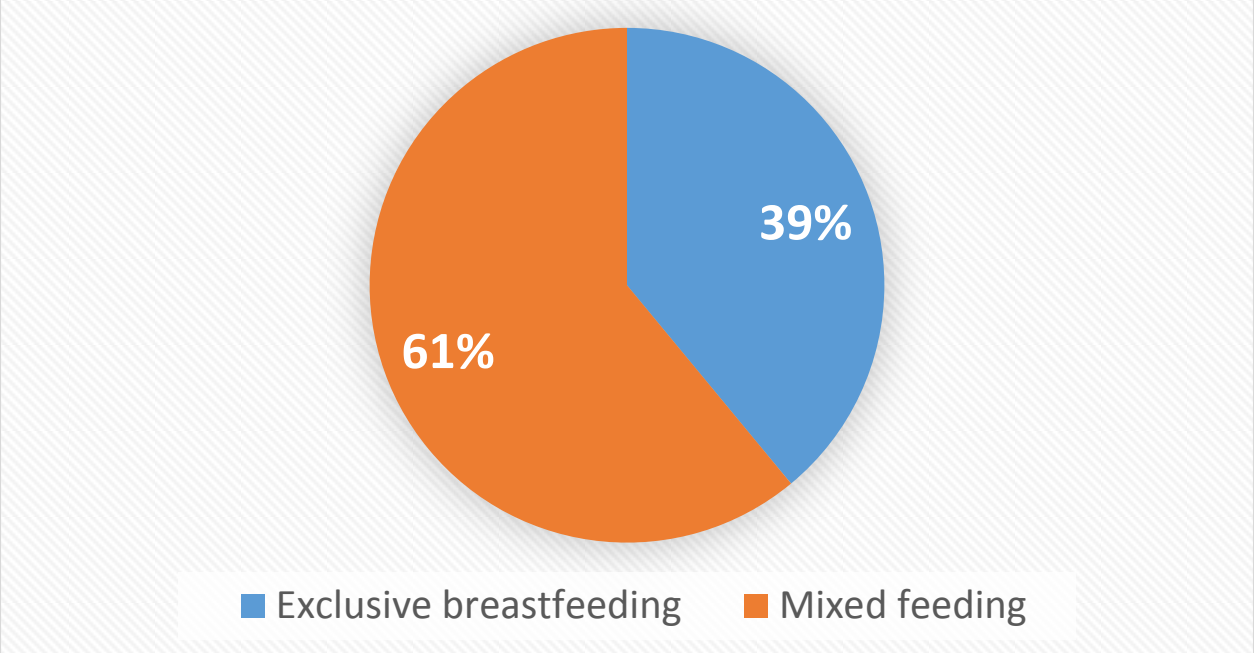


Figure 4.3: Distribution of infant feeding practices

4.4 Factors influencing infant feeding practices

Table 4.6 below presents the association between infant feeding practice and selected demographic information of the participants**.**

Table 4.6: Association between infant feeding practice and maternal demographics

		Exclusive breast feeding practices		
	Total	Exclusive breastfeeding n (%)	Not exclusively breastfeeding n (%)	p-value
Mothers age				
<18 years	8	1 (13)	7 (87)	0.036
18-25 years	40	12 (30)	28 (70)	
25-35 years	79	33 (42)	46 (58)	
>35 years	19	12 (63)	7 (37)	
Mothers employment status				
Employed	50	16 (32)	34 (68)	0.169
Unemployed	96	42 (44)	54 (56)	
Level of education				
Primary school	2	1 (50)	1 (50)	0.835
High school	58	21 (36.2)	37 (63.8)	
Matric	40	18 (45)	22 (55)	
Tertiary education	46	18(39.1)	28 (60.9)	
Support grant				
Yes	78	29 (37.2)	49 (62.8)	0.501
No	68	29 (42.6)	39(57.4)	
Advice on infant feeding				
Yes	138	58 (42)	80 (58)	0.018
No	8	0 (0)	8 (100)	
Timing of feeding advice				
During pregnancy	96	43 (44.8)	53 (55.2)	0.320
After delivery	42	15 (35.7)	27 (64.3)	
Source of advice after birth				
Family	9	6 (66.7)	3 (33.3)	0.624
Health worker	5	4 (80)	1 (20)	
Media	72	40 (55.6)	32 (44.4)	
Family/health worker	20	13 (65)	7 (35)	
Family/media	9	4 (44.4)	5 (55.6)	
Health worker/media	17	12 (70.6)	5 (29.4)	
Infant ever breastfed				
Yes	137	79 (57.7)	58 (42.3)	0.012
No	9	0 (0)	0 (100)	

Exclusive breastfeeding practice in the current study was significantly associated with an increase in the age of the mother (p =0.036), where older mothers tended to exclusively breastfeed when compared to younger mothers. The majority of employed mothers (68%) did not practice exclusive breastfeeding when compared to their unemployed counterparts (56%). The results of the current study imply that mothers who are in full or part-time employment rarely practice exclusive breastfeeding.

One hundred and thirty-eight mothers (94.5%,) had received advice on how to feed their infants, of which 96 had received this advice during pregnancy. There was no statistically significant relationship between maternal feeding practice, employment status, level of education, support grant, timing of feeding advice and source of advice after birth. However, mothers who worked part-time, with a higher level of education, no support grant and who received feeding advice during pregnancy did not breastfeed as expected (*p-values > 0.05*). Of the total of 138 participants who received advice on how to feed their infants, a higher proportion of mothers (94%) reported to have breastfed their infants at some point after delivery. Of the 8 mothers (100%) who never received any advice on how to feed their infants, none of them exclusively breastfed their infants. However, despite receiving infant feeding advice, the majority of mothers (58%) did not practice exclusive breastfeeding.

Table 4.7: Reasons for mix feeding

Reasons for giving solids and liquids	Frequency N (%)
No enough milk /infant crying/Breast milk not enough	60(85.7)
Advice from health care worker	3(4.3)
Infant hungry/Infant crying/ infant crying/Breast milk not enough /advice from family member	2(2.9)
Advice from family member	4(5.7)
No enough milk	1(1.4)
Total	**70**

*76 mothers didn't have to respond as they did not give solids and liquids

Mothers were allowed to choose more than one reason for mix feeding their infants (Table 4.7). The most common reason mentioned by the majority of mothers (85.7%) was no enough milk/infant crying/breast milk not enough. Only 5.7% had received advice from a sole source, which was a family member.

In Table 4.8 the most common source of infant feeding advice was reported to be a health worker (45.8%), followed by media (6.2%) and family (5.2%).

Table 4.8: Source of infant feeding advice received during pregnancy

Source of advice during pregnancy	Frequency N (%)
Family	5(5.2)
Health worker	44(45.8)
Media	6(6.2)
Family/health worker	11(11.5)
Family/media	3(3.1)
Health worker/media	23(24)
Family/health worker/media	4(4.2)
Total	**96**

Table 4.9. Presents the association between feeding practice, infant gender, age and place of birth.

Table 4.9: Association between infant feeding practice and infant demographics

	Total	Infant feeding practices		p-value
		Exclusive breastfeeding	Not exclusive breastfeeding	
Boy	75	30(40)	45(60)	0.945
Girl	71	28(39.4)	43(60.6)	
Age of infant				
2 weeks -1 month	7	5(71.4)	2(28.6)	
1-3 months	67	30(44.8)	37(55.2)	0.065
3-6 months	72	23(31.9)	49(68.1)	
Place of birth				
Public clinic/hospital	123	52(42.3)	71(57.7)	
Private clinic/hospital	21	6(28.6)	15(71.4)	0.254
Home	2	0(0)	2(100)	

The results show that boys were more likely to be breastfed than were girls, although the relationship was not statistically significant. This results also show that majority of infants were not exclusively breastfeed, irrespective of gender (p=*0.945*). Exclusive breastfeeding practice decreased with increasing age of the infant, from 71.4% at age 2 weeks to 1 month and 44.8% and 31.9% at age 1-3 months and 3-6 months respectively.

The majority of infants (52%) were delivered at public health facilities, followed by those who delivered at private health facilities, however the difference was not statistically significant (*p >0.05*). Exclusive breastfeeding was practiced less by mothers who delivered at private health facilities (28%) when compared to those who delivered at public health facilities (42.3%).

4.5 Breastfeeding and HIV

Table 4.10 below presents the source of HIV information and perceptions of mothers regarding breastfeeding in the context of HIV.

Table 4.10: Source of HIV information and breastfeeding in HIV situation

HIV AND BREASTFEEDING	Frequency N (%)
Yes	83 (56.8)
No	55 (37.7)
Don't Know	8 (5.5)
Source of HIV Information	
father of baby	8 (5.5)
Health worker	112 (76.7)
Media	1(0.7)
Mother/health worker	1(0.7)
family member/media	24(16.4)
Total	**146**

When mothers were asked who was the source HIV information, an overwhelming majority (76.7%) indicated that they received the information from health workers, followed by a combination of their family member and media at 16.4%. With regards to whether or not the infant should be breastfed if the mothers are HIV positive, the majority of mothers (56.8%) responded with a “yes”, meaning that they thought that an HIV-exposed infant should be breastfed.

4.6 The use of un-prescribed medicines

Table 4.11 below illustrates the distribution of infants given unprescribed medicines and the reasons for giving such medicines.

Table 4.11: Association between infant feeding practices and medical information

	N (%)	Infant feeding practices		p-value
		Exclusive breastfeeding	No Exclusive breastfeeding	
UNPRESCRIBED MEDICATION				
Yes	110 (75.3)	33(30%)	77 (70%)	0.001
No	36 (24.7)	25(69)	11(30.1%)	
TYPE OF MEDICATION GIVEN				
Traditional medicine	3 (2.7)	3(9.1)	0	0.027
Over counter medicine	95 (86.4)	27(28.4)	68(71.6)	
Both	12(10.9)	3(25)	9(75)	
AGE OF GIVING MEDICATION				
< one month	48 (43.6)	15(31.2)	33(68.8)	0.726
1-2 months	39 (35.4)	10(25.6)	29(74.4)	
3-6 months	23 (21)	8(34.8)	15(65.2)	
REASONS FOR GIVING MEDICATION				
Prevent diseases/treat umbilical cord/prevent crying	2 (1.8)	0	2 (100)	0.057
Grow well	1 (0.9)	0	1 (100)	
To prevent disease	5 (4.6)	3 (60)	2 (40)	
Treat umbilical cord	63 (57.3)	16 (25.4)	47 (74.6)	
Prevent colic	6 (5.5)	0	6 (100)	
Grow well/prevent diseases/treat Umbilical cord/prevent crying	2 (1.8)	0	2 (100)	
Grow well/treat umbilical cord	2 (1.8)	0	2 (100)	
Prevent disease/treat umbilical cord	2 (1.8)	0	2 (100)	
Prevent diseases/prevent crying	1 (0.9)	1 (100)	0	
Treat umbilical cord/prevent disease	26 (23.6)	13 (16.9)	13 (39.4)	

The vast majority of mothers (75.3%) gave their infants un-prescribed medicines. The most offered medicines were that obtained over the counter (86.4%), followed by both traditional and over the counter medications (10.9%). Only three mothers (2.7) gave traditional medicine exclusively.

With regard to the timing of offering infants' medication, results show that the majority of mothers (32.9%) offered their infants medication before they were one month old, followed by those who did so at the age of 1-2 months (26.7%). Giving infants un-prescribed medication decreased with an increase in the age of infants (Table 4.11).

The main reason given by mothers for offering infants un-prescribed medicines was for the treatment of the umbilical cord (57.3%), followed by a combination of the prevention of diseases and treatment of the umbilical cord (26.4%). When probed to give other reasons, some of the said that that medication was given to treat fontanels and some traditional medicines given to improve infant growth.

Figure 4.4 below presents the source of advice received by mothers regarding the un-prescribed medication. The results show that the main source of advice given to mothers was from family members (65.1%), specifically; their own mother, grandmother or father. Very few mothers received this sort of advice from health workers (6.8%).

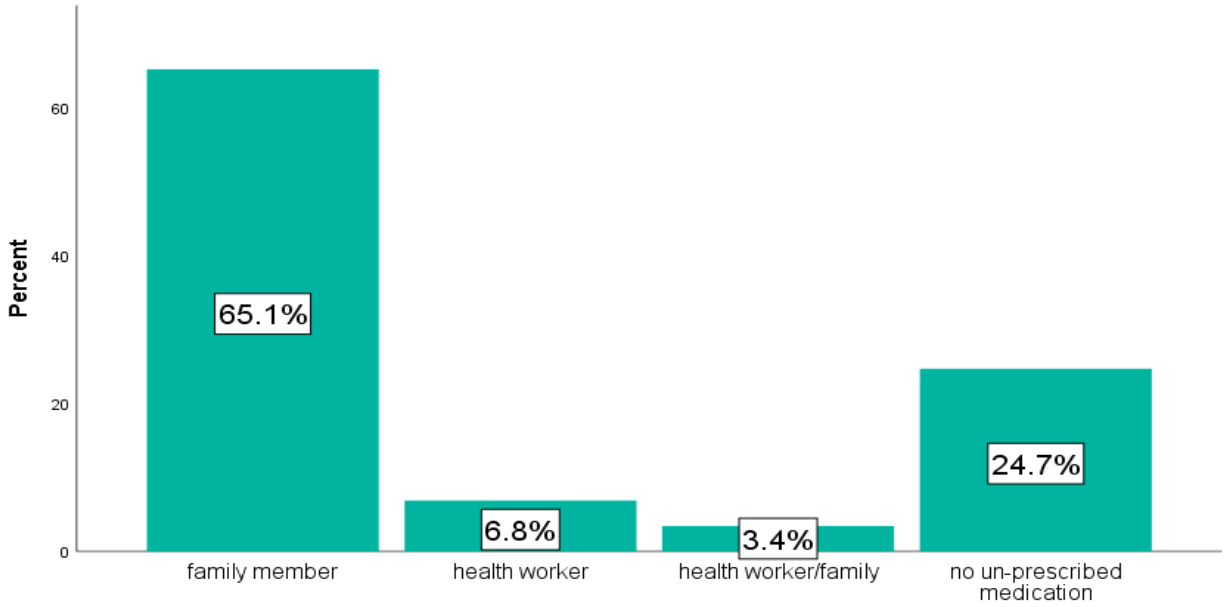


Figure 4.4 : Source of advice to give un-precribed medication

4.7 Conclusion

In this chapter, the results of the study were presented and interpreted. In the next chapter, the findings will be discussed and compared to literature.

CHAPTER 5: DISCUSSION OF RESULTS

5.1 Introduction

In 2011, South Africa declared its commitment to actively protect, promote and support exclusive breastfeeding as a public health intervention to optimise child survival. This provides a strong basis for role-players to influence the health system, communities, families, mothers and the media to dedicate themselves to breastfeeding and establishing a culture of exclusive breastfeeding during the first six months of life (The Tshwane declaration of support of breastfeeding in South Africa, 2011). This study aimed to determine the feeding practices of mothers and care givers of infants (0-6 months) and the influencing factors in six communities in the Polokwane Municipality, Limpopo Province of South Africa.

5.2 Socio demographic findings

One hundred and forty-six women, paired with their infants, from the six primary health care facilities participated in the current study of which 44% were from urban areas, 31% from peri-urban areas and 25% from rural areas. All participating women were African and were the biological mothers of their infants. The findings of this study are in contrast to the findings of a study conducted in Mauritius by Motee, Ramasawmy, Pugo-Gunsam, & Jeewon (2013), which reported that 42% of their study participants were from urban areas while 58% were from rural areas. The ages of mothers ranged from 18 to > 35 years and the majority (54.1%) were in the age category 25-35 years. Results of the current study are in agreement with the findings of a study conducted in Mauritius by Motee, Ramasawmy, Pugo-Gunsam & Jeewon (2013) regarding the assessment of the breastfeeding practices and infant feeding patterns, namely, that the age of their study participants ranged from18 to 45 years old. Nonetheless, the majority of the participants in the current study differ with that of a comparable study (Motee, Ramasawmy, Pugo-Gunsam & Jeewon, 2013), where 38.4% of the mothers belonged to the age group 25–35 years. This difference may be due to the fact that their study was conducted in the country as a whole, while the current study focused on one sub-district only.

There were more male (51.4%) than female infants (48.6%) in the current study while in South Africa, 48.7% of the population is male and 51.3% female (Statistics South Africa, 2011). More than half (51%) of the infants were younger than six months, when an expected equal distribution among the same age group would be expected. The gender and age distribution of the infants did not differ much with that of the South African population. This was likely influenced by mothers who returned to work or school and had no other family members at home at the time of the sampling. The current study shows that 1.4% of the deliveries occurred at home, which is in contrary to a study conducted in a rural area of north India where about 50% of the deliveries occurred at home (Mahmood, Srivastava, Shrotriya & Mishra, 2012). The difference could be that primary health care services in South Africa provide maternity services free of charge while the service gets charged in India.

5.3 Infant feeding practices

5.3.1 Breastfeeding initiation

The results of this study revealed that majority of mothers (94%) of mothers had initiated breastfeeding. This finding is consistent with the results of a study conducted by Siziba, Jerling, Hanekom, Wentzel-Viljoen (2015) in four provinces of South Africa, who reported breastfeeding initiation at 90%. Similarly, a study conducted in Taiwan reported the overall prevalence of initial breastfeeding at 83.7% (Chuang, Chang, Chen a, Hsieh, Hurng, Lin, & Chen b, 2010). The current study also revealed that, of the mothers who initiated breastfeeding, 64.4% percent had done so within one hour of delivery. In addition, the findings of this study are in contrast with that of a study conducted in Sudan by Tongun, Sebit, Mukunya, Ndeezi *et al.* (2018), which reported that 48% of the mothers initiated breastfeeding, while Goosen, McLachlan & Schübl (2014) found that a mere 5% of mothers had initiated breastfeeding within one hour of delivery. The practice of early initiation of breastfeeding may help reduce childhood illnesses as well as improve infant growth. Debes, Kohli, Walker *&* *et al.* (2013) conducted a study on the effect of time to initiation of breastfeeding on neonatal mortality and morbidity which concluded that early breastfeeding initiation is a simple intervention that has the

potential to significantly improve neonatal outcomes and should be universally recommended.

5.3.2 Prevalence of breastfeeding

The results of the current study revealed that 86% mothers were still breastfeeding at the time of data collection. Similarly, a study in the slum areas of Ethiopia reported prevalence of breastfeeding prevalence rates of 84% (Demilew, Tadese & Abitew, 2017). These findings are in contrast with that of the study conducted in four provinces of South Africa which reported breastfeeding prevalence of 60% (Siziba, Jerling, Hanekom & Wentzel-Viljoen, 2015). The difference may be due to the fact the current study was only based in one district while the other was a national study. In the current study, exclusive breastfeeding practice decreased with increasing age of the infant, from 71.4% at the age < 1 month, 44.8% and 31.9% at 1-3 months and 3-6 months respectively.

5.3.3 Exclusive breastfeeding practices

Of the 86% of mothers who were still breastfeeding, the prevalence of exclusive breast feeding (EBF) was 39%. These findings are in line with those of the South African Demographic and Health survey (2015) and Siziba, Jerling, Hanekom, Wentzel-Viljoen (2015), which reported six months exclusive breastfeeding rates of 32%. Whilst the recorded increase in exclusive breastfeeding rates for children under 6 months is positive,

the continuing disparities across different reports create uncertainty about the actual progress made (Martin-Wiesner,2018). The same results are contrary to those of a study conducted in Mauritius which reported that 17.9% of mothers practiced EBF for the first 6 months of their infant's life (Motee, Ramasawmy, Pugo-Gunsam & Jeewon, 2013). The difference may be due to different study settings. When compared to the abovementioned studies, a high prevalence of EBF (77.2%) was reported in a study conducted in rural India (Mahmood, Srivastava, Shrotriya & Mishra, 2012).

5.3.4 Replacement feeding practices

The current study reports that 61% of mothers were not exclusively breastfeeding instead gave formula and solid food. Similarly, Siziba, Jerling, Hanekom, Wentzel-Viljoen (2015) reported that 54% of mothers were not exclusively breastfeeding their infants and that those mothers gave other liquids or food to their infants. The current study reports that 4.1% of mothers gave their infants water before they were six months old. Findings of the current study are contrary with the findings of the studies by Siziba, Jerling, Hanekom, Wentzel-Viljoen (2015) and Goosen, McLachlan & Schübl (2014) at 32% and 49% which reported that the infants were given water before the age of six months.

A study by Jara-Palacios, Cornejo, Peláez, Verdesoto & Galvis (2015) in Quito, Ecuador reported that mothers who fed their child with other types of liquid or food, besides breast milk, before age six months introduced formula (45.2%), 25.6% received "coladas" (a beverage made out of water and any kind of cereal flour), water (17.1%) and other food (12.1%) to their infant's diet. Similarly, the current study reports that infants who were not exclusively breastfed were given solid food (6.2%) and in 12.3% of the cases, both infant formula and solid food, in addition to breast milk. In this study 6% of mothers did not initiate breastfeed at all, as opposed to 31% in the Goosen, McLachlan & Schübl (2014) study. The reason for this disparity in results between the two studies could not be established. Goosen, McLachlan & Schübl (2014) reported that 94% of their participants applied suboptimal breastfeeding practices, whereas the current study reported mixed feeding at 61%. This difference may be due to educational level.

5.4 Factors influencing infant feeding practices

There are several factors which influence infant feeding practices, such as age of the mother and the infant, the advice received from health practitioners and family members and, lastly, the use of medicines.

5.4.1 Age of the mother

The results of this study found that exclusive breastfeeding practices significantly increased with an increase in the age of the mother (p=0.036). Older mothers tended to exclusively breastfeed when compared to younger mothers. The findings of the current study concur with those of a study conducted in United Arab Emirates by Radwan (2013), which reported that the initiation and duration of exclusive breastfeeding rates were influenced by the mother's age (p=0.034). Kimani-Murage *et al*. (2015) reported that young mothers do not exclusively breastfeed their infants due to their busy lifestyles and the fact that they are still at school. The authors further reported that lack of confidence in breastfeeding has also been identified as a factor preventing young mothers from practicing exclusive breastfeeding.

5.4.2 Advice on infant feeding

The current study found that approximately 95% of mothers received advice on infant feeding. In contrast, a study by Mahmood *et al.* (2012) in Bhojipura Block of Bareilly district of India reported that only 30% of the mothers received advice on infant feeding. The reason for the difference in the results may be the fact that more mothers in the current study were unemployed and, therefore, had time to sit in the facility to obtain health education. Receiving advice during pregnancy did not seem to have an effect on the practice of exclusive breastfeeding since more mothers practiced mixed feeding. In addition, Nor, Ahlberg, Doherty, Zembe, Jackson & Ekström (2011) concluded that mothers are unlikely to change infant feeding behaviour based on health care messages alone.

5.4.3 Cessation of breastfeeding

At the time of data collection, eleven mothers had stopped breastfeeding, of which 4.8% did so while the infant was less than a month, while the remaining mothers stopped breastfeeding when the infant was between 1- 6 months old. The results of this study differ with the results of a study conducted by Siziba *et al.* (2015), which reported that 40% of mothers had ceased breastfeeding within one month of the birth of their infant. In the current study, the main reasons for stopping breastfeeding at that age was reported

as mother's illness (45.4%), going back to school (27.3%) and not producing enough milk (18.2%). The findings of the current study are in contrast to the findings in a study conducted by Parrilla-Rodríguez, Gorrín-Peralta, Pellicier & Vázquez-Rivera (2016) in Puerto Rico, which identified that the barriers to breastfeeding included: maternity leave of less than six weeks (18.4%); inadequate support from husband or partner (12.4%) and unavailability of pumping station (35.9%).

5.4.5 Employment status and level of education of the mother

The current study reported that there is a relationship between employment status of the mother and their exclusive breastfeeding feeding practice, although the relationship was not statistically significant (p=0.169). This finding is contrary to the findings of a study conducted by Mandal, Roe & Fein (2010) in the United States of America, which found that full-time employment status was negatively correlated with breastfeeding initiation and duration, suggesting that full-time employment remains a significant barrier to breastfeeding ($p < 0.05$).

5.4.6 Breastfeeding in the context of HIV and AIDS

The results of the current study revealed that the majority of mothers (76.7%) received the HIV-related information from health workers, followed by a combination of the mother and media at 16.4%. With regards to whether or not the infant should breastfeed if the mothers are HIV positive, the majority of mothers (83%) responded with a "yes", indicating that they agreed that an HIV-exposed infant should be breastfed.

5.4.7 Unprescribed medicines

A vast majority of mothers (75.3%) offered their infants un-prescribed medicines. The findings of the current study are in contrast to those of a study conducted by Mushapi *et al*. (2008), which reported that 36% of mothers gave infants un-prescribed medicines. Of those mothers who offered their infants un-prescribed medicine, 62.5% had exclusively breastfed their infants. The current study found that most of medicines offered to the infants were obtained over the counter (86.4%) followed by traditional medicine (2.7). These findings are different to those found by Mokori & Orikushaba (2012), who reported

that the most common medicines offered to infants before six months of age are traditional medicine and dry tea, in contrast only three mothers (2.7%) in the current study gave traditional medicine. The current study suggests that most mothers believe that medication offered to an infant forms part of exclusive breastfeeding practice (p=0.027).

With regard to the timing of offering infant medication, the results of the current study show that 43.6% of the mothers offered their infants medication before one month of age. Giving infants un-prescribed medication decreased with an increase in the age of infant. A highly significant association (p=0.001) was observed between exclusive breastfeeding practice and the timing of offering an infant un-prescribed medication. The main reason given by mothers for offering infants un-prescribed medicines was for the treatment of umbilical cords (57.3%), followed by a combination of prevention of diseases and treatment of umbilical cord (23.6%). When probed to give other reasons, some of the reasons given were that medication was given to treat fontanels and some traditional medicines given to improve growth of the infant.

5.5 Conclusion

In this chapter the findings of the study were discussed. The next chapter will draw conclusions from the results and make appropriate recommendations.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

The early initiation of breastfeeding following delivery, as recommended by the WHO (2009) is being practised in the Polokwane Municipality. However, exclusive breastfeeding during the first six months of an infant's life was a rare practice within these communities. Water, formula milk and/or food were introduced to the infants at an early age. Having to go back to school or work contributed to replacement feeding and mixed feeding practices. Media seems to be the most reported source of infant feeding advice during pregnancy. Mother's age seemed to influence infant feeding practices. Mothers strongly perceive the giving traditional and over the counter medication as a norm and a traditional way of raising infants. Family members are the main source of information for giving the un-prescribed medicines, especially to young mothers. Mothers believe that HIV-positive mothers should breastfeed their infants.

6.2 RECOMMENDATIONS

- The practice of introducing food earlier than six months is common among mothers from the communities studied and it seems to be influenced by a variety of factors. Some of the influencing factors include the fact that mothers go back to school or work, not enough milk and the inability of first time mothers to breastfeed their infants. The findings of this study suggest that the there is need for a review of the exclusive breastfeeding period from the current and strict six months to at least four to six months;
- The study shows that there is high use of traditional medicine among mothers, therefore, there is a need to properly implement the South African Traditional Health Act (No. 22 of 2007) with the aim of regulating the prescription of traditional medicine;
- It would also be beneficial to the country to speed up a review of labour regulations to increase maternity leave to six months in order to afford mothers

more time for breastfeeding. Workplace support for breastfeeding will be more effective if it includes lactation breaks and breastfeeding rooms;

- Given that older mothers practice exclusive breastfeeding for a longer duration than do younger mothers, there is a need to raise awareness on the significance of exclusive breastfeeding among young mothers.

6.3 LIMITATIONS OF THE STUDY

The data was only collected using a structured questionnaire, with a small sample size, which could have resulted in the omission of valuable responses. It would be more informative if qualitative data was also collected so that mothers could share more insights into their infant feeding experiences. The use of a questionnaire is bound to introduce bias. Data for this study was mostly collected from black South Africans and a very limited number of inter-racial mothers, therefore, the findings of this study cannot be generalised to other racial groups residing within the Polokwane Municipality. The use of chi-square to determine factors influencing infant feeding practices could be coupled with regression analysis to test the factors influencing infant feeding practices.

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LIST OF ANNEXURES

Annexure A: Consent Form

Participant's code			

UNIVERSITY OF LIMPOPO ENGLISH CONSENT FORM

Statement concerning participation in practical

To whom it may concern:

I Maishataba Solomon Makwela, student of University of Limpopo would like to conduct research on: Factors Influencing Infant feeding practices of mothers and caregivers in The Polokwane Municipality, Limpopo Province.

The aim of the research is to determine factors influencing infant feeding practices of mothers and caregivers and the objectives of the research are:

- To describe infant feeding practices of mothers and caregivers in the Polokwane municipality
- To determine the factors influencing infant feeding practices of mothers and caregivers in the Polokwane municipality

Statement by mother/caregiver

I have read the information on the aim and objectives of the research and was provided the opportunity to ask questions and given adequate time to rethink the issue. The aim and objective of the study are sufficiently clear to me. I have not been pressurized to participate in any way.

I understand that participation in this research is completely voluntary and that I may withdraw from it at any time and without supplying reasons and hereby give consent to participate in this practical.

Signature:_____

Statement by the researcher

I provided written information regarding this research and agree to answer any future questions concerning the research as best as I am able to and I will adhere to the approved protocol.

Researcher:_____

Annexure B: Participants' Information leaflet for non-clinical research

Title of the study: FACTORS INFLUENCING INFANT FEEDING PRACTICES OF MOTHERS AND CAREGIVERS IN THE POLOKWANE MUNICIPALITY- LIMPOPO PROVINCE

Mokgatha tema yo a rategago,

Dear Participant,

1. Matseno

1. Introduction

Re go mema go tšea karolo mo thuto nyakišišong. Letlakala tshedimošo le le tla go thuša go tšea sephetho ge o na le kganyogo go tšea karolo mo thutong ye. Pele o dumela go tšea karolo, o swanetše go kwišiša gore thuto nyakišišsong ye. Poledišano ye e tlo tšea metsotso ye masome a mararo (30) go iša go iri (60). Ge o na le potšišo ye Letlakala tshedimošo le e sa e arabego ka botlalo, o se ke wa tshaba go botšiša Monyakišiši, Morena Maishataba Makwela

We invite you to participate in a research study. This information leaflet will help you to decide if you want to participate in the study. Before you agree to take part, you should fully understand what is involved. It will take almost 30 minutes to 60 minutes to complete the interview. If you have any questions that this leaflet does not fully explain, please do not hesitate to ask the investigator, Mr Maishataba Makwela.

2. Semelo le maikemišotšo a thuto nyakišišong ye

2. The nature and purpose of this research study

Maikemišetšo a magolo a thuto nyakišišo ye ke hlabolla ya phepo ya bana le go nyakišiša tšeo di amanago le mekgwa yay o fepa bana go tšwa go batswadi ka masepaleng wa Polokwane – Provensing ya Limpopo

The main purpose of this research study is to investigate the infant feeding practices and to determine the factors influencing infant feeding practices of mothers and care givers of infants in the Polokwane Municipality - Limpopo Province. You as a participant, you are a very important source of information on the infant feeding practices.

3. Kotsi le go hloka kgothatšo go leng gona

3. Risk and discomfort involved

Ga go na kotsi mo go tšeeng karolo mo thuto nyakišišo, le ge o ka ikwa o kare o nyaka go tlogela go tšea karolo o dumelwetšwe go ka tlogela.

There are no risks in participating in this research study and should you at any time during the interview feel that you no longer want to take part, you can withdraw.

4. Kgonagalo ya go holega ka thuto nyakišišo ye

4. Possible benefits of this research study

Le ge o ka se holege semetseng go tšwa go thuto nyakišio ye, di poelo tša thuto nyakišišo di tla re thušsa go hlabolla hlokomelo le phepo ya bana.

Although you will not benefit directly from the research study, the results of the research study will enable us to improve infant feeding practices.

6. Di tokelo tša gago bjalo ka motšea karolo ke di fe?

6. What are your rights as a participant?

Go tšea karolo ga gago mo thuto nyakišišong ye ke ka boithaopo. O ka gana go tšea karolo goba o ka tlogela nako ye ngwe le yengwe gare ga polediano ntle le go fa lebaka. Go tlogela ga gago go ka go ame felo goba tswaro ya gago mo kliniking.

Your participation in this study is entirely voluntary. You can refuse to participate or stop at any time during the interview without giving any reason. Your withdrawal will not affect you or any treatment at the clinic in any way.

7. A thuto nyakišišo e hweditše tumelelo ya maleba?

7. Has the research study received ethical approval?

Thuto nyakišišo ye e hweditše tumelelo go tšwa go ba Yunibesithi ya Limpopo le Kgoro ya tša Maphelo ka Profenseng ya Limpopo. Ge o rata go hwetša se ngwalolla tumelelo o ka fiwa sona.

This research study has received written approval from the Research Ethics Committee of the University of Limpopo and the Department of Health in Limpopo Province. Copies of the approval letters are available if you wish to have one.

Annexure C: Approved permission to collect data – Department of Health

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH

Enquiries: Stols M.L (015 293 6169) Ref:4/2/2

Makwela MS
Department of Public Health
University of Limpopo
Private Bag X1106
Sovenga
0727

Greetings,

RE: Factors Influencing Infant feeding Practices of Mothers and Caregivers in the Polokwane Municipality – Limpopo Province.

The above matter refers.

1. Permission to conduct the above mentioned study is hereby granted.
2. Kindly be informed that:-
   - Research must be loaded on the NHRD site (http://nhrd.hst.org.za) by the researcher.
   - Further arrangement should be made with the targeted institutions, after consultation with the District Executive Manager.
   - In the course of your study there should be no action that disrupts the services.
   - After completion of the study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
   - The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
   - The above approval is valid for a 3 year period.
   - If the proposal has been amended, a new approval should be sought from the Department of Health.
   - Kindly note, that the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated.

Head of Department

Date 12/09/2017

18 College Street, Polokwane, 0700, Private Bag x9302, POLOLKWANE, 0700
Tel: (015) 293 6000, Fax: (015) 293 6211/20 Website: http/www.limpopo.gov.za

Annexure D: Ethics Committee Clearance Certificate – University of Limpopo

University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 2212, Fax: (015) 268 2306, Email:noko.monene@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE CLEARANCE CERTIFICATE

MEETING:	**04 July 2017**
PROJECT NUMBER:	**TREC/115/2017: PG**
PROJECT:	
Title:	Factors influencing infant feeding practices of mothers and caregivers in the Polokwane Municipality – Limpopo Province
Researcher:	MS Makwela
Supervisor:	Dr E Maimela
Co-Supervisor:	Ms MM Bopape
School:	Health Care Sciences
Degree:	Masters in Public Health

PROF TAB MASHEGO
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: **REC-0310111-031**

Note:
i) **Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee.**
ii) **The budget for the research will be considered separately from the protocol.**
PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

Finding solutions for Africa

Annexure E: Approval for data collection - Capricorn District

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH
CAPRICORN DISTRICT

Enq : **Mashao M.E**

Tel : **015 290 9025**

From : **Primary Health Care**
Date : **20 September 2017**

To : **Makwela M.S**
University of Limpopo
Turfloop

Cc : **Assistant Managers Polokwane West**

Subject : **Research on factors influencing infant feeding practices of mothers and caregivers.**

The above matter refers

1. Permission to conduct the above mentioned research is hereby granted.

2. Kindly be informed that :
   - In the course of your consultation there should be no action that disrupts the services.
   - After completion of the research, it is mandatory that the findings should be submitted to the Department to serve as a resource.
   - The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
   - Kindly note, that the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated.

.....
Acting Director PHC

2017.9.20
.....
Date

Annexure F: Questionnaire (English version)

Participants' number				Date of interview	D	D	M	M	Y	Y	Y	Y
Interviewer :	Clinic code :											
Infant's birth order									1st	2nd	3rd	4th

Questionnaire on factors influencing infant feeding practices of mothers and caregivers in Polokwane Municipality - Limpopo province

- This questionnaire should only to be completed by *mothers and caregivers* * of infants aged 0-6 months.
- *The primary caregiver is anyone who assumes the principal role of looking after and providing care and attention to the infant on a daily basis. The person could either be the infant's biological mother, father, grandmother, aunt, sister, uncle or anyone else in charge of nurturing the infant.
- All answers provided in this questionnaire shall be kept confidential and there will not be any link between the participant and the answers.
- Neither the caregiver's nor the infant's name will be written in the questionnaire.
- Please feel free to answer the questions and remember there is no right or wrong answer.
- Duration of the questionnaire is 10-20 minutes.

Instructions for completing the questionnaire

- Answer all the relevant questions.
- Options are provided on the right hand side for every questions asked, cross in the box opposite the selected option ☒
- Do not cross/write on the shaded areas

If you have made any mistake, cancel and sign on the right hand side, then select your answer of choice

A: BACKGROUND OF THE MOTHER			X	Researcher's Section	
1.	What is your home language? **Only one answer**	Sepedi		1	
		Tsonga		3	
		Venda		4	
		IsiNdebele		5	
		Afrikaans		6	
		English/Shona		7	
2.	What is your highest education level? **Only one answer**	Never attended any school		1	
		Primary school		2	
		High school		3	
		Matric		4	
		Tertiary education		5	
3.	What is your current employment status? **Only one answer**	Permanent		1	
		Part time worker		2	
		Self-employed		3	
		Unemployed		4	
4.	How old are you ?	< 18 years		1	
		18 – 25 years		2	
		25 – 35 years		3	
		>35 years		4	
5.	Do you receive any support grant for the infant?	Yes		1	Go to 6
		No		2	Go to 7
6.	Which type of grant do you receive? Multiple answers accepted	Child support		1	
		Foster care grant		2	
		Disability grant		3	

B: BACKGROUND OF THE INFANT			X	Researcher's section	
7.	What is the infants' Gender?	Boy		1	
		Girl		2	
8.	How old is the infant?	2 weeks – 1 month		1	
		2-3 months		2	
		4-6 months		3	
9.	Where was the infant delivered?	Public clinic /hospital		1	
		Private clinic / hospital		2	
		At home		3	

C: INFANT FEEDING PRACTICES					
10.	Have you ever been offered advice on how to feed the infant?	Yes		1	**Go to 11**
		No		2	**Go to 15**
11.	When did you receive advice on how to feed the infant?	During pregnancy		1	
		After delivery		2	**Go to 14**
12.	From whom did you receive advice on infant feeding while pregnant? **Multiple answers accepted. Do not read the list. Probe by only asking: 'anyone or anything else'**	Father of the infant		1	
		Own mother		2	
		Friend		3	
		Other family member		4	
		Heath worker		5	
		Community support group		6	
		Media (print, TV/ radio)		7	
13.	Did you ever receive advice on Feeding the infant after she/he was born?	Yes		1	
		No		2	**Go to 22**
14.	From whom did you receive advice on infant feeding after birth? **Multiple answers accepted. Do not read the list. Probe by only asking: 'anyone or anything else'**	Own mother		1	
		Other family		2	
		Health worker		3	
		Friend		4	
		Media (print, electronic)		5	
15.	Was the infant ever breastfed?	Yes		1	**Go to 16**
		No		2	**Go to 17**
16.	Why did you choose to breastfeed the infant? **Multiple answers accepted. Do not read the list. Probe by only asking: "*Anything else*"**	Perfect nutrition for babies		1	
		Free of charge		2	
		Bonding with infant		3	**Go to 18**
		No need to prepare		4	
		Other		5	
17.	Why did you choose not to breastfeed the infant? **Multiple answers accepted Do not read the list**	I was ill/ Medical condition		1	
		Infant was ill		2	
		Not enough breastmilk		3	
		Back to work work/school		4	**Go to 21**
		Infant refused to breastfeed		5	
		Advice of family member/friend		6	
18.	After birth how long did it take you to breastfeed the infant?	Within one hour		1	**Go to 21**
		After three hours		2	**Go to 19**
19.	What was the reasons for not starting breastfeeding soon after birth? **Multiple answers allowed**	I was ill		1	
		Infant was ill		2	
		Not given the infant early		3	
		I was unconscious		4	
		Didn't know how to start		5	

20.	Did you receive help to start breastfeeding the infant? **Only one answer.** ***If no skip to 22, if yes continue to 21.** ***If no and not breastfeeding (from Q15) go to 26, if yes and not breastfeeding (from Q15) continue to 21 – then skip to 26**	Yes		1	
		No		2	
21.	Who mainly offered you help to start breastfeeding? **Multiple answers accepted.** **Do not read the list.**	Health care worker		1	
		Own mother		2	
		Other family member		3	
		A Friend		4	
22.	Are you still breastfeeding the infant?	Yes		1	
		No		2	**Go to 24**
23.	Up to what age do you plan on breastfeeding the infant? **Round to nearest month if mother answers in weeks or years. If less than 1 month, enter "0" months.**	2- 3 months		1	
		4- 6 months		2	
		6 months – 1 year		3	**Go to 27**
		Up to two years		4	
24.	For how long did you breastfeed the infant? **Round to nearest month if respondent answers in weeks.** **If less than 1 month, enter "0" months.**	< 1 month		1	
		2-3 months		2	
		4-6 months		3	
25.	Why was breastfeeding stopped? **Multiple answers accepted.** **Do not read the list.** **Probe by only asking: "*Anything else*" once.** **Make a cross for all answers mentioned**	I was ill/ Infectious diseases		1	
		Infant was ill		2	
		Breast conditions		3	
		Not enough milk		4	
		Going back to work/school		5	
		Infant refused breastfeed		6	
26.	Since the infant is not being breastfed, what do you feed him/her instead of breast milk? **Only one answer.**	Infant formula		1	
		Animal milk (e.g. cow or goat milk)		2	
		Soft porridge		3	
		Commercial infant food		4	
27.	Have you ever given the infant water to drink?	Yes		1	**Go to 28**
		No		2	**Go to 30**

28.	How old was the infant when you first give water?	2 weeks to 1 month		1	
		2-3 months		2	
		4-6 months		3	
29.	Why did you give the infant water ?	To quench thirst		1	
		Prevent constipation		2	
		Advice from health worker		3	
30.	Have you ever given the infant soft food or other liquids to drink?	Yes		1	
		No		2	Go to 34
31.	How old was infant when you first gave soft food or other liquids? **Choose one category**	2 weeks – 1 month		1	
		2-3 months		2	
		4-6 months		3	
32.	Which soft foods or liquids did you give the infant? **Multiple answers accepted. Do not read the list. Probe by only asking: "*Anything else*" once.**	Infant formula milk		1	
		Sugar water		2	
		Tea/Coffee		3	
		Cold drink		4	
		Fruit juice		5	
		Animal milk (cow or goat)		6	
		Maize meal porridge		7	
		Vegetables		8	
33.	Why did you feed her soft foods or other liquids? **Multiple answers accepted. Do not read the list. Probe by only asking: "*Anything else*" Cross for all answers mentioned.**	Not enough milk		1	
		Infant was hungry		2	
		Infant was crying		3	
		Infant needs more than only		4	
		Advice from health care		5	
		Advice from family member		6	
		Advice from a friend		7	

D: INFANT FEEDING KNOWLEDGE OF MOTHERS					
34.	What do you think should the first feed of a newborn baby be? **Only one answer.**	Water		1	
		Sugar water		2	
		Breast milk		3	
		Infant formula milk		4	
		Traditional Medicines		5	
		Do not know		6	
35.	In your opinion, how soon after birth should a baby start breastfeeding? **Only one answer.**	Immediately		1	
		2 hours later		2	
		3-6 hours later		3	
		1-2 days		4	
36.	At what age should a baby start to drink water?	Immediately after birth		1	
		1- 3 months		2	
		4-6 months		3	
		After 6 months		4	
37.	For how long do you think should a baby receive only breast milk and nothing else? **Round to nearest month if respondent answers in weeks. If less than one month, enter "0" months.**	2 weeks		1	
		1-2 months		2	
		3-5 months		3	
		6 months		4	
38.	If a woman is struggling to breastfeed, what can she do to have more breast milk? **Multiple answers accepted.** **Do not read the list.** **Probe by only asking: "*Anything else*" once.** **Circle "Y" for all answers mentioned**	Breastfeed more often		1	
		Consume more food/liquids		2	
		Massage breasts		3	
		Drink rooibos tea		4	
39.	What do you think are the benefits of breastfeeding for the baby? **Multiple answers accepted.** **Do not read the list.** **Probe by only asking: "Anything else" once.** **Circle "Y" for all answers mentioned.**	Perfect food for babies		1	
		Protects against diseases		2	
		Bonding of mother and baby		3	
		No advantages		4	
40.	At what age should a baby start to feed solid foods? **Cross nearest month if respondent answers in weeks. If less than 1 month, enter "0" months.**	From birth		1	
		After 2 weeks		2	
		1-2 months		3	
		After 6 months		4	

	D: MEDICAL INFORMATION				
41.	From whom did you receive most of the information about HIV and AIDS?	Father of the infant		1	
		Own mother		2	
		Health care worker		3	
		Media (print & electronic)		4	
42.	Do you think that an HIV positive mother should breastfeed her infant?	Yes		1	
		No		2	
		Don't know		3	
43.	Have you ever given the infant unprescribed medicine?	Yes		1	Go to 44
		No		2	Thank you
44.	Which medicine did you give ?	Traditional medicine		1	
		Over counter medicine		2	
		Both		3	
45.	How old was the infant when you gave these medicines?	Immediately after birth		1	
		less than one month		2	
		1-2 months		3	
		3-6 months		4	
46.	Why did you give the infant medication to drink?	So she can grow well		1	
		To prevent diseases		2	
		To treat umbilical cord/fontanelle		3	
		To prevent crying/colic		4	
47.	From who did you get advice to give the infant unprescribed/traditional medicine?	From my mother		1	
		From my grand mother		2	
		Health worker		3	
		From my friend		4	

Researchers' Notes :

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Questions will end here. Thank you very much for your valuable time

Annexure G: Questionnaire (Sepedi version)

Factors Influencing Infant Feeding Practices of Mothers and Caregivers in the Polokwane Municipality – Limpopo Province

A: TSHEDIMOŠO MABAPI LE MMAGO LESEA					Karolo ya monyakišisi
1.	Naa le šomiša polelo efe ka gae? **karabo e tee feela.**	Sepedi		1	
		Tsonga		2	
		Venda		3	
		Ndebele		4	
		Afrikaans		5	
		English/Shona		6	
2.	Naa o fihleletše legato lefe la dithuto? **karabo e tee feela.**	Ga kea tsena sekolo le gatee		1	
		Maemeo a Praemari		2	
		Maemo a sekondari		3	
		Ke tšweletše mphatong wa marematlou		4	
		Dithutong tša godomo- university/kholetšhe		5	
3.	Naa maemo a lena a mošomo afe? **karabo e tee feela.**	Ke a Goyagoile		1	
		Ke a lebakanyana		2	
		Ke Moipereki		3	
		Ga ke šome		4	
4.	Naa le na le mengwaga e mekae?	<18 ya mengwaga		1	
		19-25 ya mengwaga		2	
		26-35 ya mengwaga		3	
		> 36 ya mengwaga		4	
5.	Naa o amogela mphiwa feela wa hlokomelo ya lesea? **karabo e tee feela.**	Ee		1	**Fetela 6**
		Aowa		2	**Fetela 7**
6.	Naa ke mohuta ofe wa mphiwa feela woo le o amogelago?	Hlokomelo ya lesea (Child support)		1	
		Wa ditšhiwana (Foster care)		2	
		Wa bogolofadi (Disability)		3	

B: TSHEDIMOŠO MABAPI LE LESEA					
7.	Naa bong bja lesea bofe? **Karabo e tee feela**	Mošimanyana		1	
		Ngwanenyana		2	
8.	Naa lesea le le na le kgwedi tše kae? **karabo e tee feela.**	Dibeke tše 2 – Kgwedi ye 1		1	
		Kgwedi tše 2-3		2	
		Kgwedi tše 4-6		3	
9.	Naa lesea le belegetšwe kae? **Karabo e tee feela**	Kliniking/bookelong bja/sa mmušo		1	
		Kliniking/bookelongbja/sa poraebete		2	
		Ka gae		3	

1

C: MEKGWA YEO E ŠOMIŠWAGO KE BOMMA PHEPONG YA MASEA					
10.	Na o kile wa fiwa maele mabapi le phepo ya lesea? **Karabo e tee feela.**	Ee		1	**Fetela 11**
		Aowa		2	**Fetela 15**
11.	Naa maele ao o a filwe neng?	Ge ke sale mmeleng		1	
		Morago ga pelego		2	Fetela 14
12.	Naa o hweditše kae maele a go fepa lesea? **Karabo tša go feta etee.** **Botšišiša: 'yo mongwe goba sesengwe?'**	Go tatago lesea		1	
		Go koko wa lesea		2	
		Go mogwera waka		3	
		Go leleoko la lapa		4	
		Mošomedi wa tša maphelo		5	
		Leloko la thekgo la setšhaba		6	
				7	
13.	Naa o kile wa hwetša maele a go fepa lesea mola a belegwago?	Ee		1	
		Aowa		2	**Fetela 22**
14.	Naa maele ao o a hweditše go mang? **Karabo tša go feta etee** **O Seke wa bala tšeo di lego lenaneong.** **Botšišiša: 'yo mongwe goba sesengwe?'**	Go tatago lesea		1	
		Go kokoagwe lesea		2	
		Go mogwera waka		3	
		Go leleoko la lapa		4	
		Mošomedi wa tša maphelo		5	
		Leloko la thekgo la setšhaba		6	
		Raditaba (kgatišo, TV,radiong)		7	
15.	Naa o kile wa nyantšha lesea la gago? **Karabo e tee feela.**	Ee		1	**Fetela 16**
		Aowa		2	**Fetela 17**
16.	Naa ke ka baka la eng o kgethile go mo nyantšha matutu? **Karabo tša go feta etee.Botšišiša: 'yo mongwe goba sesengwe?'**	A phethagetšego phepong ya		1	
		A šireletša lesea go ditwatši		2	
		Ga a rekwe		3	**Fetela 18**
		Kamagano go lesea le		4	
		Ga a hloke go beakanywa pele		5	
17.	Naa o reng o kgethile go se mo nyantšhe? **Karabo e tee feela.** **Botšišiša: 'yo mongwe goba sesengwe?'**	Mmagwe /lesea le a babja		1	
		Matutu a hlaela/ga a nene		2	
		ke be ke boela		3	
		Lesea le ganne go nyanya		4	**Fetela 21**
		Ke na le twatši malwetsi		5	
		Maitemogelo a mabe ao a		6	
		Maele a mošomedi wa maphelo		7	
		Maele Mogwera		8	
		Maele a lesogana laka/tatagwe		9	
18.	Naa o beile lesea letsweleng ka morago ga nako e kaakang morago ga pelego? **Karabo e tee feela.**	Metsotso ye 30 - Iri e tee		1	**Fetela 21**
		Morago ga matšatši a mararo		2	**Fetela 19**
19.	Naa ke ka baka la eng o se wa nyantšha ka pejana morago aga pelego?	ke be ke babja		1	
		Lesea le be le babja		2	
		Ga ka fiwa lesea ka pejana		3	
		Ke be ke sa kgone		4	

20.	Naa o kile wa hwetša thušo ka go nyantšha lesea? **Karabo e tee feela** **Ge karabo ele aowa fetela 22, gee le Ee fetela 21** **Ge ele Aowa o sa nyantšhe (gotswa 15) fetela 26,** **gee le Ee o sa nyantšhe, fetela 21**	Ee		1	
		Aowa		2	
21.	Naa ke mang yoo a go thušitšego ka gore o thome go nyantšha? **Karabo tša go feta etee.** **Botšišiša: 'yo mongwe goba sesengwe?'**	Mošomedi wa maphelo		1	
		Mma waka		2	
		Koko waka		3	
		Leloko la lapa		4	
		Mogwera waka		5	
22.	Naa o sa nyantšha lesea? **Karabo et tee feela.**	Ee		1	
		Aowa		2	**Fetela 24**
23.	Naa o ikemišeditše go mo nyantšha go fihlela a eba le nako e kaakang? **Ge karabo e filwe ka dibeke, ngwala Kgwedi ya kgauswi le yona.**	Kgwedi tše 2-3		1	
		Kgwedi tše4-6		2	**Fetela 27**
		Kgwedi tše 6 – 12		3	
		Go fihlela mengwaga ye mebedi		4	
24.	Naa o mo nyantšhitše lebaka le le kaakang? **Ge karabo e filwe ka dibeke, tšea Kgwedi ya kgauswi le yona.**	< Kgwedi e tee		1	
		Kgwedi tše 2-3		2	
		Kgwedi tše 4-6		3	
25.	Naa ke ka baka la eng o emišitše go mo nyantšha? **Karabo tša go feta etee.** **Botšišiša: 'yo mongwe goba sesengwe?'**	ke be ke babja babja		1	
		Lesea le be le babja		2	
		Mathata a matswele		3	
		hlaelelo ya matutu		4	
		ke be ke boela		5	
		Lesea le ganne letswele		6	
		Malwetši a go fetela		7	
26.	Ka gore lesea ga le sa nyanya, naa le mo fepa ka eng? **karabo e tee feela**	Maswi a fomula		1	
		Maswi a phoofolo (e.g.		2	
		Motepa (wa go rekwa/goitirela)		3	
		Dijo tša go rekwa eg puree		4	
27.	Naa o kile wa nweša lesea meetse? **karabo e tee feela**	Ee		1	**Fetela 28**
		Aowa		2	**Fetela 30**
28.	Naa o be a le yo mo kaakang (matšatši / beke / Kgwedi) ge o nweša meetse? **Ge karabo e filwe ka dibeke, ngwala Kgwedi ya kgauswi le yona.**	Beke tše 2 – Kgwedi e tee		1	
		Kgwedi tše 2-3		2	
		Kgwedi tše 4-6		3	
29.	Naa ke ka baka laeng o nwesitse lesea meetse ?	Go tlosa lenyora		1	
		Go thibela pipelo		2	
		Maele a mosomedi wa maphelo		3	
30.	Naa o kile wa ješa lesea dijo tša boleta goba go mo nweša diela le dinwamaphodi? **Only one answer**	Ee		1	
		Aowa		2	**Fetela 34**

31.	Naa o be a le kaakang ge o mo ješa dijo tša boleta goba go mo nweša diela le dinwamaphodi?	Beke tše 2 – Kgwedi e tee		1	
		Kgwedi tše 2-3		2	
		Kgwedi tše 4-6		3	
32.	Naa Ke dijo goba diela dife tšeo le mo fepilego ka tšona? **Karabo tša go feta e tee**	Maswi a lerwele		1	
		Meetse a swikiri		2	
		Tee/kofi		3	
		Dinwamaphodi		4	
		Juice		5	
		Maswi a phoofolo (pudi,kgomo)		6	
		Motepa		7	
		Merogo (matapola , carrots)		8	
33.	Naa o reng o fepile lesea ka dijo/diela?	Hlaelelo ya maswi		1	
		Ngwana o swara ke tlala		2	
		Ngwana o b a lla		3	
		Ngwana o hloka phepo ya go feta maswi feela		4	
		Keletšo ya mosomedi wa maphelo		5	
		Keletšo ya leloko la lapa		6	
		Keletšo ya mogwera		7	
D: TSEBO YA MME MABAPI LE PHEPO YA LESEA					
34.	Naa o akanya gore lesea le swanetše jeswa/nweŠwa eng? **Karabo e tee feela.**	Meetse		1	
		Meetse a go tšhelwa swikiri		2	
		Matutu		3	
		Maswi a lerwele		4	
		Dihlare tša setšo		5	
		Ga ke tsebe		6	
35.	Naa lesea le swanetše go thoma neng go nyanya matutu ka morago ga pelego? **Karabo e tee feela.**	Kapejana morago ga pelego		1	
		Morago ga iri go ya go tše Pedi		2	
		Morago ga Iri tše 3-6		3	
		Letšatši le tee – matšatši a mabedi		4	
36.	Naa lesea le swanetše go nwa meetse ka morago ga nako ye kaakang?	Ka pejana morago ga pelego		1	
		Morago ga kgwedi 13		2	
		Morago ga kgwedi tše 4–6		3	
		Morago ga kgwedi tše 6		4	
37.	Naa lesea le swanetše go fepya matutu feela sebaka sa kgwedi tše kae? **Ge karabo e filwe ka dibeke, e fetolele go kgwedi ya kgauswi. Ge ele ka tlase ga kgwedi, ngwala 0.**	Di beke tše pedi		1	
		kgwedi tše1-2		2	
		Kgwedi tše 3-5		3	
		Kgwedi tše 6		4	

38.	Ge mma palelwa go nyantšha, naa a ka dirang go oketša matutu? **Karabo tša go feta etee.** **Botšišiša: 'yo mongwe goba sesengwe?'**	Nyantšha kgafetša-kgafetša		1	
		A je dijo tšentši , a nwe diela		2	
		A Masatše letswele		3	
		Awe tee ya rooibos		4	
39.	Naa go nyantšha go na le mehola ofe go lesea? **Karabo tša go feta etee.** **Botšišiša: 'yo mongwe goba sesengwe?'**	Phepo ye phethagetšego		1	
		Šireletša malwetši		2	
		Godiša segwera go mma le		3	
		Ga a na mohola		4	
40.	Naa lesea le swanetše go thoma neng dijo tše bothatana?	Go tloga ge a belegwa		1	
		Go tloga go beke tše 2		2	
		Dikgwedi tše 1-2		3	
		Dikgwedi tše 3-6		4	

	E: TSHEDIMOŠO MABAPI LE MALWETŠI				
41.	Naa o hweditše go mang /kae tshedimošo mabapi le HIV? **Karabo tša go feta etee.** **Botšišiša: 'yo mongwe goba sesengwe?'**	Papago lesea		**1**	
		Mma waka		**2**	
		Mošomedi wa maphelo		**3**	
		Raditaba (kgatišo, TV or radio)		**4**	
42.	Go ya ka wena, naa mosadi yoo a nago le HIV o swanetše go nyantšha?	Ee		**1**	
		Aowa		**2**	
		Ga ke tsebe		**3**	
43.	Naa o kile wa nweša lesea dihlare tšeo di sego tša laelwa ke ngaka?	Ee		**1**	**Fetela 44**
		Aowa		**2**	**Leboga**
44.	Naa ke dihlare dife tšeo o mo nwešitšego?	Tša setšo		**1**	
		Tša go rekiwa/sekgowa		**2**	
45.	Naa o be a na le kgwedi tše kae ge o mo nweša?	Ka pejana morago ga pelego		**1**	
		ka tlasana ga kgwedi		**2**	
		Kgwedi tše 1-2		**3**	
		Kgwedi tše 3 – 6		**4**	
46.	Naa ke ka baka laeng o mo nwešitše tšona?	Gore a gole ga botse		**1**	
		Go thibela malwetši		**2**	
		Go alafa nogana		**3**	
		Go thibela go lla		**4**	
47.	Naa maele ago nweša lesea dihlare tšeo di sa laelwago ke ngaka o a hweditše go mang?	Go tšwa go mma waka		**1**	
		Go tšwa go koko		**2**	
		Mošomedi wa maphelo		**3**	
		Gotšwa go mogwera		**4**	

Dipotsiso di tla felela gona mo. Keleboga nako ya lena ye bohlokwa

Monyakišiši:

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Annexure H: Respondents Register

Respondent's name	Code			Contact details	Language
	0	**0**	**1**		
	0	**0**	**2**		
	0	**0**	**3**		
	0	**0**	**4**		
	0	**0**	**5**		
	0	**0**	**6**		
	0	**0**	**7**		
	0	**0**	**8**		
	0	**0**	**9**		
	0	**1**	**0**		
	0	**1**	**1**		

Annexure I: Map of Capricorn District

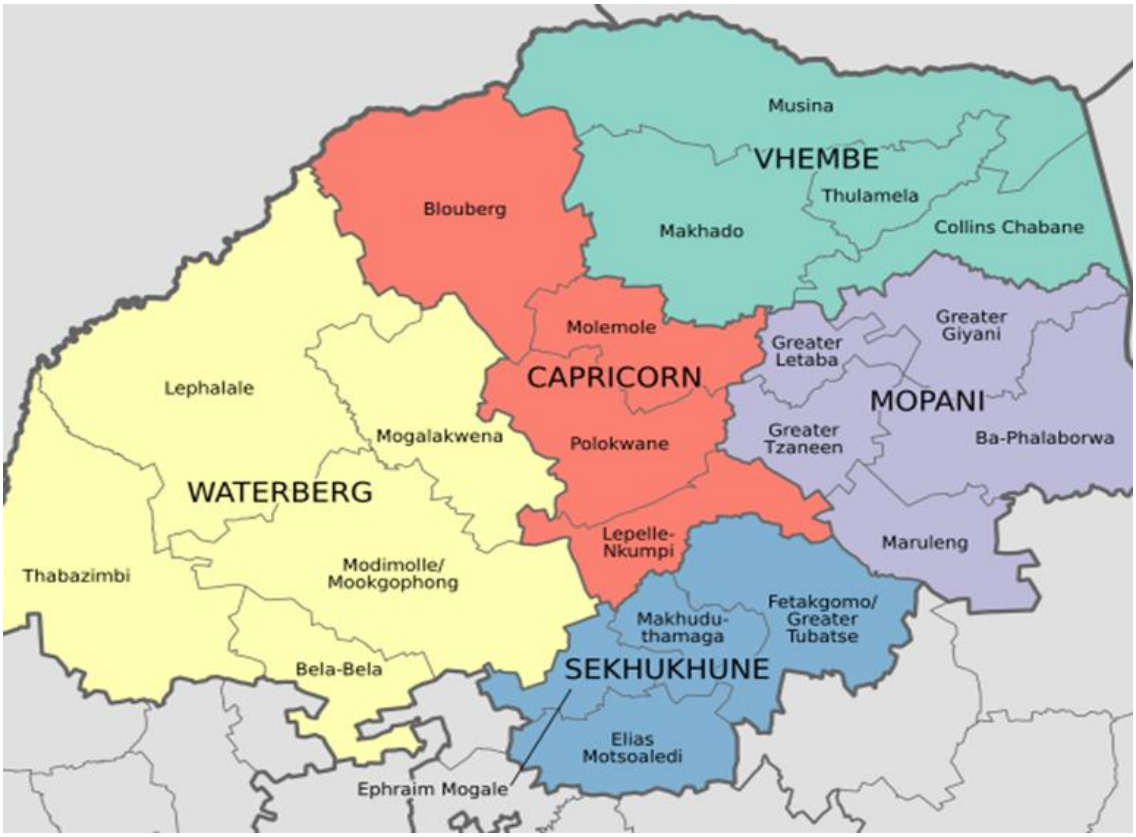

Figure 1: A map of Capricorn district

Annexure J: Map of Polokwane Municipality

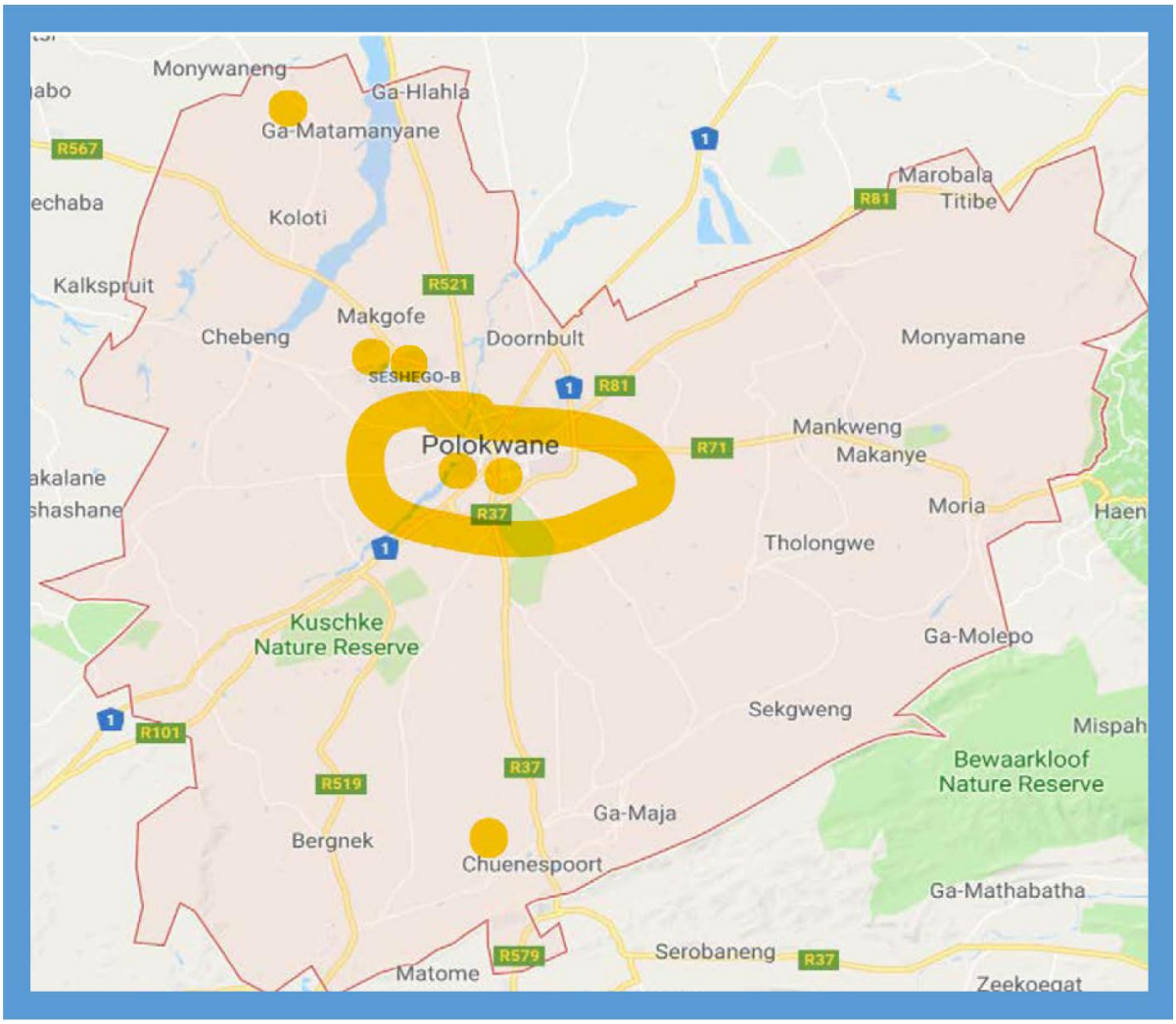

Figure 2: A map of Polokwane local municipality

Annexure K: **Language editing certificate**

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To Whom it May Concern

I hereby confirm that I have proof-read the document entitled: "Factors Influencing Infant Feeding Practices of Mothers and Caregivers in the Polokwane Municipality - Limpopo Province" authored by Mr. Maishataba Makwela.

Each of us has our **own** unique voice as far as both spoken and written language is concerned. In my role as proof-reader I try not to let my own "written voice" overshadow the voice of the authors, while at the same time attempting to ensure a readable document.

Please refer any queries to me.

Andrew Scholtz