Comparison of infant feeding practices in two health sub-districts with different Baby Friendly status in Mpumalanga province

by
Susara Maria van der Merwe

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Supervisor: Ms Lisanne du Plessis
Co-supervisor: Dr Hendrik Jooste
Statistician: Prof Daan Nel

Faculty of Medicine and Health Sciences
Department of Interdisciplinary Health Sciences
Division of Human Nutrition

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DECLARATION

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

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ABSTRACT

Introduction

The Baby Friendly Hospital Initiative (BFHI) is a global intervention aimed at optimising infant feeding practices in maternity facilities. This research project aimed to assess the impact of the implementation of the BFHI on infant feeding practices in two sub-districts with different Baby Friendly status within Mpumalanga province. Infant feeding practices in Emalahleni sub-district (all public health maternity facilities were accredited as Baby Friendly) and Mbombela sub-district (none of the public health maternity facilities were accredited as Baby Friendly) were compared.

Method

The design was a cross sectional, descriptive, observational study with an analytical component.

The study population consisted of mothers with infants from birth to six months old, attending postnatal care at public sector primary health care facilities in the two health sub-districts on the days of data collection.

Home based caregivers from the respective sub-districts were trained as fieldworkers. Data was collected through two interviewer-administered questionnaires; a socio-demographic questionnaire and an infant feeding questionnaire. A total of 218 mother-and-infant pairs in Emalahleni sub-district and 217 mother-and-infant pairs in Mbombela sub-district took part in this study, with a total of 435 respondents.

Five infant feeding indicators, developed by the World Health Organisation, were used in data analysis, namely: early initiation of breastfeeding; exclusive breastfeeding, exclusive replacement feeding and mixed feeding rates; as well as the age of introduction of complementary foods.

Results

The average age of respondents was 26 years, ranging from 15 to 52 years. More than half of the mothers who took part in the study were unmarried (n=255; 58.6%).

Most of the mothers (n=332; 76.5%) were unemployed. The ages of the infants in this study varied from 1 day to 5 months and the number of girls (n=240; 55.3%) were slightly more than the boys (n=194; 44.7%).

Infant feeding practices in the Emalahleni (the sub-district with Baby Friendly status) was significantly better in terms of the early initiation of breastfeeding, as well as the exclusive breastfeeding and exclusive replacement feeding rates. The mixed feeding rate and age of introduction of complementary foods did not differ significantly between the two sub-districts.

In Emalahleni, 11.5% (n=25) of the infants received infant formula as a first feed, compared to 34.7% (n=75) of the infants in Mbombela. Early initiation of breastfeeding occurred in 70.2% (n=134) of the breastfed infants in Emalahleni, compared to only 39.4% (n=54) of the infants in Mbombela. These findings concur with the implementation of the BFHI in Emalahleni sub-district.

The exclusive breastfeeding rate was significantly higher in Emalahleni (n=131; 60.1%) compared to Mbombela (n=103; 47.5%). However, the mixed feeding rates did not differ significantly between the two sub-districts.

The mean age of introduction of complementary foods were 45 days, ranging from birth to 4 months, which is earlier than the recommended age of 6 months.

Conclusion

This study provides evidence that the implementation of the BFHI in a health sub-district is associated with more optimal infant feeding practices among mothers with children under 6 months of age. It is therefore concluded that strengthening of the implementation of the BFHI will improve infant feeding practices at a community level.

OPSOMMING

Inleiding

Die Baba-Vriendelike Hospitaal Inisiatief (BVHI) is ‘n wêreldwye intervensie wat daarop gemik is om babavoeding praktyke in kraamafdelings te optimaliseer. Hierdie studie het gepoog om die impak van die implementering van die BVHI op babavoeding praktyke in twee sub-distrikte in Mpumalanga provinsie met verskillende Baba Vriendelike akkreditasie status te bepaal. Die babavoeding praktyke in Emalahleni sub-distrik (alle openbare gesondheid kraamafdelings was geakkrediteer as Baba Vriendelik) en Mbombela sub-distrik (geen van die publieke gesondheid kraamafdelings was geakkrediteer as Baba Vriendelik nie) was met mekaar vergelyk.

Metodologie

Die ontwerp was ‘n dwarssnit, beskrywende, waarneming studie met ‘n analitiese komponent.

Die studie populasie het bestaan uit moeders en hul babas tussen geboorte en ses maande oud, wat na-geboorte sorg by ‘n publieke primêre gesondheidsorg kliniek bygewoon het in die twee gesondheids sub-distrikte, op die dae wat data ingesamel was.

Tuisversorgers vanuit die verskillende sub-distrikte was opgelei as veldwerkers. Data was ingesamel deur middel van twee vraelyste wat deur hierdie veldwerkers voltooi is; ‘n sosio-demografiese vraelys en ‘n babavoeding vraelys. In Emalahleni sub-distrik het 218 ma-en-baba pare deelgeneem aan die studie en 217 ma-en-baba pare in Mbombela sub-distrik, met ‘n totaal van 435 respondente.

Vyf babavoeding indikatore, ontwikkel deur die Wêreld Gesondheids Organisasie, was gebruik, naamlik: vroeë aanbieding van borsvoeding; ekslusiewe borsvoeding, ekslusiewe formule voeding en gemengde voeding syfers; asook die ouderdom waarop komplementêre kosse in die dieet bekend gestel is.

Resultate

Die gemiddelde ouderdom van die respondente was 26 jaar, en het gewissel tussen 15 en 52 jaar. Die meerderheid van die ma's wat aan die studie deelgeneem het was ongetroud (n=255; 58.6%). Die meeste ma's (n=332; 76.5%) was werkloos. Die ouderdomme van die babas in hierdie studie het gewissel tussen 1 dag en 5 maande en die aantal dogters (n=240; 55.3%) was effens meer as die seuns (n=194; 44.7%).

Babavoeding praktyke in Emalahleni (die sub-distrik met Baba Vriendelike status) was beduidend beter in terme van die vroeë aanbieding van borsvoeding, sowel as vir ekslusiewe borsvoeding en ekslusiewe formule voeding syfers. Die gemengde voeding syfers en ouderdom waarop komplementêre kosse bekend gestel was het egter nie beduidend verskil tussen die twee sub-distrikte nie.

In Emalahleni sub-distrik het 11.5% (n=25) van die babas formule melk ontvang as 'n eerste voeding, in vergelyking met 34.7% (n=75) van die babas in Emalahleni sub-distrik. Die vroeë aanbieding van borsvoeding het in 70.2% (n=134) van die borsgevoede babas in Emalahleni se geval geskied, in vergelyking met slegs 39.4% van die babas in Mbombela. Hierdie bevindinge is in lyn met die implementering van die BVHI in Emalahleni sub-distrik.

Eksklusiewe borsvoeding syfers was beduidend hoër in Emalahleni (n=131; 60.1%) vergeleke met Mbombela (47.5%). Die gemengde voeding syfers het egter nie beduidend verskil tussen die twee sub-distrikte nie.

Die gemiddelde ouderdom waarop komplementêre kos in die dieet bekend gestel is was 45 dae, en het gewissel van geboorte tot 4 maande, wat vroeër is as die internasionale aanbeveling van 6 maande.

Gevolgtrekking

Hierdie studie voorsien bewyse dat die implementering van die BVHI in 'n gesondheid sub-distrik geassosieer word met meer optimale babavoeding praktyke onder moeders met kinders onder die ouderdom van 6 maande. Om hierdie rede word dit afgelei dat 'n versterkte implementering van die BVHI ook die babavoeding praktyke in die gemeenskap sal bevorder.

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Ms Prudence Mhlabane – Matsulu CHC

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The principal researcher, Susara Maria van der Merwe, developed the idea and protocol, planned the study, undertook data collection with the assistance of the above fieldworkers, captured the data for analysis, analysed the data with the assistance of a statistician, Prof DG Nel, interpreted the data and drafted the thesis. Ms LM du Plessis and Dr H Jooste provided input at all stages and revised the protocol and thesis.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
BFHI	Baby Friendly Hospital Initiative
CHC	Community Health Centre
EBF	Exclusive breastfeeding
ERF	Exclusive replacement feeding
HIV	Human Immunodeficiency Virus
IYCF	Infant and Young Child Feeding
MBFI	Mother and Baby Friendly Initiative
MTCT	Mother-to-Child Transmission
NDOH	National Department of Health
NSDA	Negotiated Service Delivery Agreement
NVP	Nevirapine
PEM	Protein Energy Malnutrition
PIP	Problem Identification Programme
PMTCT	Prevention of Mother-to-Child Transmission
TB	Tuberculosis
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organisation

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTORY REMARKS

Appropriate infant feeding practices are high on the agenda of international agencies as well as the National Department of Health (NDOH), as reflected in recent successive policy changes impacting on infant feeding recommendations.[1,2,3,4] Breastfeeding is the preferred feeding option for infants. It reduces the risk of child morbidity and promotes child survival, as well as maternal health. The World Health Organisation (WHO) recommends that infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health.[5]

However, no more than 35% of children worldwide are exclusively breastfed; even for the first four months of life.[5] In 2003 South Africa had an exclusive breastfeeding (EBF) rate of 11.9% in infants aged 4 months.[6]

The Baby Friendly Hospital Initiative (BFHI)[i] is a global intervention aimed at optimising infant feeding practices in maternity facilities.[2] The Ten Steps to Successful Breastfeeding should assist mothers to continue breastfeeding successfully.

1.2 INFANT AND YOUNG CHILD FEEDING

1.2.1 THE GLOBAL STRATEGY FOR INFANT AND YOUNG CHILD FEEDING

The Global Strategy for Infant and Young Child Feeding[5] of the WHO and the United Nations Children's Fund (UNICEF) aims to improve the nutritional status, growth and development, health and therefore also survival of infants and young children, through optimal feeding. This strategy is intended to guide action, based on the evident significance of the early months and years of life for child growth and development. It identifies interventions that have been proven to have a positive

[i] The South African government has adopted the term "Mother and Baby Friendly Initiative" since August 2011. However, for the purpose of this research report, the term "Baby Friendly Hospital Initiative" will still be used.

impact on infants and young children. The Global strategy promotes breastfeeding as the best way of providing nutrition for the healthy growth and development of infants, with further benefits to the health of mothers.[5]

1.2.2 EXCLUSIVE BREASTFEEDING

The Global Strategy strongly recommends that infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, to meet their changing nutritional requirements, nutritionally adequate and safe complementary foods should be introduced to the infant's diet, with continued breastfeeding up to two years of age or beyond.[5] Exclusive breastfeeding from birth is feasible except for a few medical conditions. Unrestricted exclusive breastfeeding results in ample milk production.[2]

On 21 May 2010, the World Health Assembly recommended a scaling up in interventions aimed at improving infant and young child nutrition in an integrated manner with the protection, promotion and support of breastfeeding, among other initiatives.[1] Similarly, the NDOH has set a target of increasing the EBF rate at 6 months to 20% by 2013.[7] This target has since been reviewed to 50% of infants being exclusively breastfed by 2013 and 75% by 2016.[8] The BFHI is one of the interventions to strengthen practices that protect, promote and support breastfeeding and targets have been set to have at least 65% of hospitals accredited as Baby Friendly by 2013 and 90% by 2016.[8]

1.2.3 EXCLUSIVE REPLACEMENT FEEDING

The majority of mothers are able to and should practise breastfeeding and the majority of infants can and should be breastfed. Only under exceptional circumstances can a mother's milk be considered unsuitable for her infant.[5]

In those few health situations where infants cannot, or should not, be breastfed, the best alternative depends on individual circumstances. Possible alternatives could

include expressed breastmilk from the infant's own mother, breastmilk from a healthy wet-nurse or a human-milk bank, or a breast-milk substitute fed with a cup.[5]

In addition to orphaned and abandoned children, some instances where breastfeeding is impossible or contra-indicated include[9]:

Medical conditions in infants

- Infants with classic galactosemia
- Infants with maple syrup urine disease
- Infants with phenylketonuria

Maternal medical conditions

- Severe illness that prevents a mother from caring for her infant
- Herpes Simplex Virus 1 (until all lesions has cleared)
- Maternal medications, for example psycho-therapeutic drugs, anti-epileptic drugs and opioids

According to the WHO, if replacement feeding is considered as the best alternative for an infant, health care workers or other community workers should demonstrate feeding with a suitable breastmilk substitute if necessary and only to the mothers and other family members who need to use it. The information given to relevant caregivers of the infant should include instructions for preparation, as well as the health risks of inappropriate preparation and use. Infants who are not breastfed, for whatever reason, are considered an at risk group and should therefore receive special care from the health and social welfare system.[5]

1.2.4 INTRODUCTION OF COMPLEMENTARY FOODS

Poor complementary feeding practices are a risk factor for severe malnutrition[10]. The transition period when complementary feeding begins (recommended at age six months) is a time of vulnerability for infants; therefore the WHO[5] further recommends that complementary foods should be:

● *timely* –introduced when the energy and nutrient needs exceed what is provided through exclusive and frequent breastfeeding;

● *adequate* –provide sufficient energy, protein and micronutrients to meet a growing child's nutritional needs;

● *safe* –hygienically stored and prepared, and fed with clean hands using clean utensils and avoiding the use of feeding bottles and teats

1.2.5 INFANT FEEDING RECOMMENDATIONS IN THE CONTEXT OF HIV

The Human Immunodeficiency Virus (HIV) epidemic has changed the milieu in which infant feeding recommendations are made and implemented.[1] Breastfeeding is an important route of acquisition of HIV infection for infants, in the absence of antiretroviral prophylaxis.[1] However, mixed feeding rather than EBF, is associated with an increased HIV transmission risk[11]. HIV-positive mothers find it difficult to independently make decisions on infant feeding and are uncertain about the safety of breastfeeding[12]. Furthermore, in South Africa, health care workers have a great influence on a mother's infant feeding option, due to their role in the issuing of free-of-charge infant formula (up to March 2012). This has further resulted in mothers not being able to practise informed choice with regards to infant feeding options[13]. As a result, mixed feeding is widely practised by HIV infected women in South Africa.[14]

Exclusive replacement feeding (ERF) eliminates HIV transmission, but a risk of increased mortality due to infectious diseases is incurred. As infant feeding option, breastfeeding has many benefits, but involves the risk of HIV transmission. The risk of HIV transmission through breastfeeding for more than one year, which is estimated at between 10% and 20% globally, needs to be equated with the increased risk of morbidity and mortality of not breastfeeding.[15] The objective of any strategy to prevent Mother-to-Child Transmission (MTCT) must be to optimise overall child survival. Therefore, the risk of morbidity and death of breastfeeding versus not breastfeeding should be determined. In addition, the possible impact of infant feeding recommendations in the context of HIV and/or the provision of infant formula or other replacement feeds to HIV infected women on the feeding practices of uninfected mothers should also be taken into consideration.[15]

The WHO promotes for national maternal and child health services to primarily promote and support breastfeeding and antiretroviral (ARV) interventions as the strategy that will most likely give infants born to mothers known to be HIV infected the greatest chance of HIV-free survival.[1]

Furthermore, the 2010 WHO[1] guidelines recommend infant formula as a replacement feed should only be given to HIV-uninfected infants or infants of unknown HIV status, under the following conditions:

- Safe water and sanitation are ensured at the household level and in the community, and
- The mother, or caregiver, can sustain the supply of infant formula to support normal growth and development of the infant, and
- The mother, or caregiver, can prepare the infant formula hygienically and often enough to ensure its safety and a lower risk of diarrhoea and malnutrition, and
- The mother or caregiver can exclusively give infant formula for the first six months, and
- The family is supportive of the practice of replacement feeding, and
- The mother or caregiver can access comprehensive child health services

South Africa is facing a major challenge to improve EBF practices due to complexities such as the longstanding support of infant formula and a historic lack of breastfeeding support due to the high HIV prevalence. A study by Doherty concluded that, within operational settings in South Africa, the WHO guidelines were not being implemented effectively; which led to inappropriate infant feeding options and consequently lower HIV-free survival[16].

The 2nd edition 2010 clinical guidelines on the Prevention of Mother-to-Child Transmission (PMTCT) of HIV[3] prescribes an approach to infant feeding that maximises child survival, not only the avoidance of HIV transmission. These guidelines promote EBF during the first six months of life and continued breastfeeding up to 12 months, with Nevirapine (NVP) given to infants for as long as they are being breastfed. The guidelines further confirm that the South African Infant and Young Child Feeding (IYCF) Policy, its implementation guidelines and the BFHI

should be followed to facilitate feeding support for HIV-positive and HIV-negative woman alike.

The following recommendations are made in the national clinical guidelines[3] regarding infant feeding in the context of PMTCT of HIV:

- HIV infected mothers who exclusively breastfeed their infants should do so for 6 months, introducing appropriate complementary foods thereafter.
- Mothers who are willing to can continue breastfeeding for the first 12 months of life.
- Mothers who are known to be HIV infected and not on lifelong antiretroviral therapy (ART), who decide to stop breastfeeding at any time, should do so gradually over one month whilst the baby continues to receive daily NVP up to one week after all breastfeeding has been discontinued.
- It is necessary for either the mother or the baby to be receiving ART for the duration of breastfeeding

Furthermore, the following principles of safe infant feeding are prescribed:[3]

- Training of health care personnel, lay counsellors and community caregivers on infant feeding, counselling and HIV should be standardised
- High quality, unambiguous and unbiased information about risks of HIV transmission through breastfeeding, as well as ART prophylaxis to reduce the risk of transmission and the risks of replacement feeding should be provided by trained health care workers
- Counselling on infant feeding must commence after the first post-test counselling session in pregnancy
- Infant feeding should be discussed with women at every antenatal visit
- Mixed feeding during the first 6 months of life should be strongly discouraged as it increases the risk of childhood infections
- Mobilisation and communication on infant feeding and HIV should be done through different media, including education communication materials and community-based activities

In addition, the following guidelines are given concerning antenatal and postnatal counselling on infant feeding in the context of PMTCT of HIV:[3]

HIV-negative women

- HIV-negative women or women of unknown HIV status should be advised to exclusively breastfeed their babies during the first 6 months of life and to continue breastfeeding for at least 2 years, at every antenatal visit.

HIV-positive women

- HIV-positive women should be counselled on safe infant feeding at every antenatal visit
- Each pregnant HIV-positive woman should receive at least four antenatal counselling sessions on infant feeding and ARV prophylaxis

Postnatal support for infant feeding

- Mother-infant pairs should have a follow-up visit within 3 days after delivery to review feeding practices, check breast health, maternal health and child health, and provide general support
- All HIV-positive infants should continue breastfeeding for at least 2 years

Further to the national policy guidelines, the recommendations of the first triennial report of the Committee on Morbidity and Mortality in Children Under 5 Years (2008 to 2010) [17] includes the need to strengthen and complement existing priority programmes that addresses the principle contributors to under-five mortality. This includes breastfeeding, whereby the report recommends that all counselling on HIV and infant feeding should emphasise the value of breastfeeding in the light of ARV prophylaxis while breastfeeding.

Up to March 2012, the practice in eight provinces, including Mpumalanga, was to supply infant formula free of charge to HIV–positive women who opt to practise replacement feeding, irrespective of meeting the WHO recommendations with regard to safe preparation and application of this infant feeding option due to socio-demographic factors. This contradiction in recommendations, allowing for free-of-charge infant formula, while simultaneously recommending EBF as the most appropriate feeding option, necessitated policy changes in line with the WHO

recommendation for countries to choose one infant feeding strategy that health services can advise for HIV-positive mothers.[1]

1.2.6 THE TSHWANE DECLARATION IN SUPPORT OF BREASTFEEDING

During August 2011, a national breastfeeding consultative meeting was held, with the Tshwane Declaration in support of breastfeeding[4] resulting from this meeting. Through the Tshwane Declaration and consequent policy updates, the NDOH has committed itself to strengthening interventions aimed at the advocacy and promotion of breastfeeding, including the BFHI and the phasing out of the routine supply of free infant formula at health facilities.

Recommendations within the Tshwane Declaration include, among other, the following:

- Comprehensive services are provided to ensure that all mothers are supported to exclusively breastfeed their infants for six months and thereafter to give appropriate complementary foods and continue breastfeeding up to two years of age and beyond
- Implementation of the BFHI are mandated such that all public hospitals and health facilities are BFHI accredited by 2015
- South Africa adopts the 2010 WHO guidelines on HIV and infant feeding and recommends that all HIV infected mothers should breastfeed their infants and receive ARV medication to prevent HIV transmission

1.3 THE BABY FRIENDLY HOSPITAL INITIATIVE (BFHI)

In a global effort to implement practices to protect, promote and support breastfeeding, the WHO and UNICEF launched the BFHI in 1991.[2]

The Ten Steps to Successful Breastfeeding (Table 1.1), a summary of the guidelines for maternity care facilities presented in the Joint WHO/UNICEF Statement “Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity Services” has been accepted as the minimum global criteria for attaining the status of

a Baby Friendly Hospital. In 2009, the Ten Steps were amended with three additional steps added in the assessment criteria, namely the 1) Code of Marketing of Breastmilk Substitutes, 2) Mother Friendly Care and 3) Infant Feeding in the Context of HIV/AIDS.[2]

Table 1.1: The Ten Steps to Successful Breastfeeding

Every facility providing maternity services and care for newborn infants should:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and managements of breastfeeding.
4. Help mothers initiate breastfeeding within a half-hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breastmilk unless medically indicated.
7. Practice rooming in – allow mothers and infants to remain together – 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

South Africa has adopted the BFHI as a key strategy towards the promotion and support of EBF, in order to contribute towards a reduction in infant and child mortality. The BFHI was launched in the country in Bloemfontein in 1994 and St. Monica's Maternity Hospital in Cape Town was the first facility in South Africa to be declared as Baby Friendly in the same year.

1.4 INFANT AND CHILD HEALTH IN MPUMALANGA PROVINCE

Mpumalanga has an estimated population of 3,657,181 people, of which 373,264 are children under 5 years of age.[18] The province is divided into three health districts, namely Ehlanzeni, Gert Sibande and Nkangala (refer to figure 1.1).

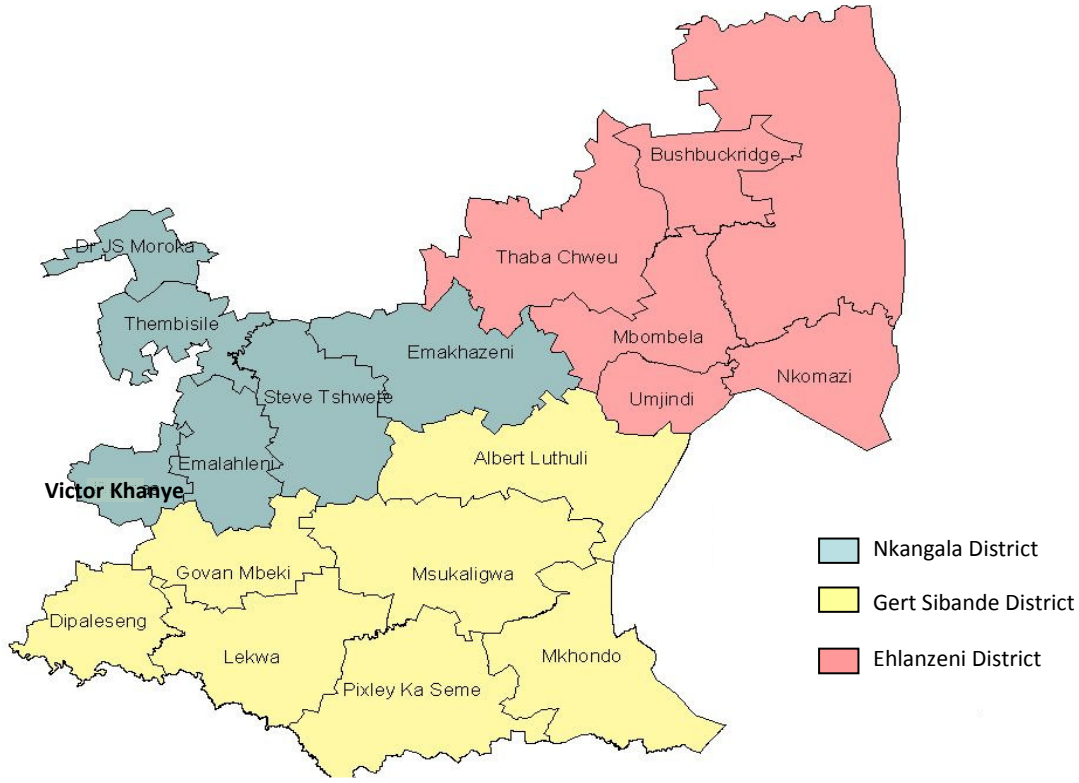

Figure 1.1 Map of Mpumalanga Province

Public health services are provided by the Provincial Department of Health, at three main tiers of service delivery, namely tertiary care (tertiary hospital), secondary care (regional and district hospitals), as well as primary health care (community health centre and clinics). In addition, local government provides primary health services at local authority clinics in some areas. There are also five specialised hospitals in the province, providing care for patients with tuberculosis. The population and public health facilities per district are summarised in Table 1.2.

Table 1.2: Public health facilities in Mpumalanga

	EHLANZENI DISTRICT	GERT SIBANDE DISTRICT	NKANGALA DISTRICT	TOTAL
Population estimate[18]	1,563,854	943,138	1,128,194	3,635,186
Tertiary hospital	1	-	1	2
Regional hospitals	2	1	-	3
District hospitals	8	8	7	23
Specialised (TB) hospitals	2	2	1	5
Community health centres	14	17	17	48
Clinics	105	62	69	236
Total number of health facilities	**132**	**90**	**95**	**317**

According to the South African Health Review 2010[19], the estimated infant mortality rate is 36.4 per 1000 in Mpumalanga for 2012, compared to an estimated national infant mortality rate of 33.2 per 1000. Similarly, the estimated provincial under five mortality rate is 52.7 per 1000 for the same period compared to a national rate of 47.7 per 1000.

Table 1.3 is a summary of the current status with regards to relevant infant and young child indicators in the province, in comparison with the two sub-districts in which the study reported in this thesis, was undertaken (Mbombela and Emalahleni sub-districts) for 2011. As illustrated in this table, both the facility mortality rate under 1 year and the facility mortality rate under 5 years were higher in Mbombela sub-district than in Emalahleni sub-district.

With regards to antenatal services, Mbombela had a higher antenatal visit before 20 weeks rate compared to Emalahleni and also had a higher rate of antenatal visits per antenatal client than Emalahleni or the provincial overage.

In both sub-districts, the proportion of antenatal clients tested for HIV exceeds 100%, possibly due to some antenatal clients being tested for HIV at more than one occasion or due to data challenges with regards to the number of clients eligible for HIV testing. In addition, the HIV prevalence rate among antenatal clients tested in

Mbombela was higher than in Emalahleni, while a greater proportion of antenatal clients were tested for HIV in Emalahleni.

Table 1.3: Infant and young child health indicators during 2011[20]

INDICATOR	UNIT OF MEASURE	MPUMALANGA PROVINCE	EMALAHLENI SUB-DISTRICT	MBOMBELA SUB-DISTRICT
Facility mortality under 1 year rate	%	9.8	8.4	9.5
Facility mortality under 5 years rate	%	5.9	5.9	6.5
Antenatal visits before 20 weeks rate	%	37.8	32.1	35.2
Antenatal visits per antenatal client rate	No	3.6	3.8	3.9
Caesarean section rate	%	16.5	22.7	19.9
Proportion antenatal clients tested for HIV	%	101.5	105.5	97
HIV prevalence among antenatal clients tested	%	29.7	28.4	35

1.5 IMPLEMENTATION OF THE BABY FRIENDLY HOSPITAL INITIATIVE IN MPUMALANGA

Themba Hospital, in the Mbombela sub-district in Ehlanzeni, was the first health facility in Mpumalanga province to be accredited as Baby Friendly in 2000. During the past twelve years, a total of thirty-one health facilities (sixteen hospitals and fifteen Community Health Centres) in the province have managed to attain and retain accreditation as Baby Friendly.

Twenty-two (seven hospitals and fifteen CHC's) of the thirty-one Baby Friendly accredited health facilities are located in Nkangala district (Table 1.4). In contrast, only two hospitals in Ehlanzeni district are accredited as Baby Friendly. Three more hospitals in Ehlanzeni district were previously accredited as Baby Friendly, but have failed to retain their accreditation status during 2008 and have since not managed to regain accreditation. Since Themba Hospital failed to retain accreditation during 2008, none of the health facilities in Mbombela sub-district are accredited as Baby Friendly. The remaining seven hospitals accredited as Baby Friendly in Mpumalanga

are located in Gert Sibande district. Neither Ehlanzeni nor Gert Sibande districts currently have any CHC's accredited as Baby Friendly.

Table 1.4: Baby Friendly Hospital Initiative status of health facilities

	EHLANZENI DISTRICT	GERT SIBANDE DISTRICT	NKANGALA DISTRICT	TOTAL
Mother and Baby Friendly Tertiary Hospital	0 / 1 (0%)	n/a	1 / 1 (100%)	**1 / 2 (50%)**
Mother and Baby Friendly Regional Hospital	1 / 2 (50%)	1 / 1 (100%)	n/a	**2 / 3 (66%)**
Mother and Baby Friendly District Hospital	1 / 8 (13%)	6 / 8 (88%)	6 / 7 (86%)	**13 / 23 (57%)**
Mother and Baby Friendly Community Health Centre	0 / 10 (0%)	0 / 8 (0%)	15 / 18 (83%)	**15 / 36 (42%)**
Total Mother and Baby Friendly Health Facilities	**2 / 21 (10%)**	**7 / 17 (41%)**	**22 / 26 (85%)**	**31 / 64 (48%)**

1.6 MOTIVATION FOR THE STUDY

1.6.1 NATIONAL STRATEGIC GOALS

The Negotiated Service Delivery Agreement (NSDA)[21] of the Minister of Health has been built around four strategic outputs to be achieved by 2014, namely:

Output 1: Increasing life expectancy at birth

Output 2: Reducing maternal and child mortality rates

Output 3: Combating HIV and AIDS and TB

Output 4: Strengthening the effectiveness of health systems

A reduction in infant, child and maternal mortality is linked to the achievement of Output 2 of the NSDA. Consequently, the strategic plan for maternal, newborn, child and women's health and nutrition in South Africa for 2012 to 2016[8] has been drafted to address these key indicators.

The priority health interventions for reducing maternal and child mortality in South Africa include the following:[8]

Newborn health

- promotion of early and exclusive breastfeeding including ensuring that breastfeeding is made as safe as possible for HIV-exposed infants
- Kangaroo Mother Care for stable low birth weight infants
- post-natal visits within six days which include newborn care and supporting mothers to practise exclusive breastfeeding

Child Health

- promotion of breastfeeding and appropriate complementary feeding practices for infants and young children

The percentage of children under six months who are exclusively breastfed will be one of the indicators used to monitor trends in the health and nutrition of mothers, newborns and children in the country. The target is to have 75% of children below six months of age being exclusively breastfed by 2016. In addition, a target of 90% of hospitals which provide appropriate infant feeding support and are BFHI accredited has been set for 2016.[8]

1.6.2 CURRENT KNOWLEDGE ON INFANT FEEDING PRACTICES IN THE MPUMALANGA PROVINCE

The Mpumalanga province has the second highest HIV prevalence among pregnant women in the country at 30.8%, compared to the national prevalence of 29.5%.[22] Considering that many women do not have the resources to safely practise replacement feeding,[17] EBF for the first six months is an appropriate choice. Proper counselling and support to both HIV infected and uninfected women is required during antenatal care, as well as the neonatal and postnatal periods, in order to limit the spill-over of suboptimal feeding practices.[22] The BFHI, as adapted during 2009 to include guidelines on infant feeding in the context of PMTCT of HIV, provides for this counselling and support and is therefore a relevant initiative to support, promote and protect appropriate infant feeding practices irrespective of HIV prevalence.[1]

Emalahleni sub-district is located within the Nkangala district municipality, with Witbank as the main centre. There are fourteen (14) fixed public health facilities, including one (1) tertiary hospital, one (1) district hospital, three (3) community health

centres and nine (9) clinics. The HIV test positive rate among antenatal women within Emalahleni sub-district was 28.4% during 2011.[19]

Mbombela sub-district is located in Ehlanzeni district municipality. The main centre is Nelspruit, with White River and Hazyview as other main towns in the sub-district. There are thirty five (35) fixed public health facilities – one (1) tertiary hospital, one (1) regional hospital, one (1) specialised (TB) hospital, five (5) community health centres and twenty seven (27) clinics within Mbombela local municipality. The HIV test positive rate among antenatal women within Mbombela sub-district was 35.0% during 2011.[19]

There is no evidence of any studies conducted in a rural province in South Africa, like Mpumalanga, to determine the possible impact of BFHI on infant feeding practices. The purpose of the study therefore, was to investigate if there are any differences in infant feeding practices by mothers residing in a health sub-district where all the public health facilities offering maternity services were Baby Friendly (Emalahleni sub-district) compared to mothers residing in a health sub-district where none of the public health maternity services were Baby Friendly (Mbombela sub-district). The outcome of this study will be utilised to determine whether this accreditation had translated into better practices among the community served by these health facilities.

As further described in the next chapter, sufficient evidence exist to illustrate the benefits of breastfeeding. However, current feeding practices, both internationally and locally, do not reflect sufficient promotion, protection and support of breastfeeding as a key child survival strategy. As an intervention aimed at supporting breastfeeding, the BFHI supports the early establishment of breastfeeding practices, as well as community based support for breastfeeding. Should this intervention be proven to have a positive outcome with regards to infant feeding practices in the community, strengthening of this intervention should be further supported.

CHAPTER 2: REVIEW OF RELATED LITERATURE

2.1 INTRODUCTORY STATEMENT

In a review[23] of evidence for interventions to reduce child mortality, breastfeeding (exclusive breastfeeding in the first 6 months of life and continued breastfeeding from age 6 to 11 months) was classified as having sufficient evidence as a preventive intervention for diarrhoea, pneumonia and neonatal sepsis. The working group in this review believed that a causal relationship had been established between breastfeeding and reductions in cause-specific mortality among children younger than 5 years in developing countries. The review further estimated that breastfeeding could prevent 13% of all under 5 deaths, in the 42 countries where 90% of worldwide child deaths occurred during 2000. In addition, a combination of effective nutrition interventions including breastfeeding, complementary feeding, vitamin A and zinc supplementation could save about 2.4 million children each year in these countries, which constitutes a quarter of total child deaths.

2.2 THE BENEFITS OF BREASTFEEDING

Breastfeeding is an unsurpassed method of providing nutrition for the optimal growth and development of infants.[5] The important role of nutrition in the first months and years of life, as well as the importance of appropriate feeding practices in achieving optimal health outcomes, has led to the WHO and UNICEF recommendation that exclusive breastfeeding should be practised for the first six months of life, with continued breastfeeding up to two years or beyond.[5]

Breastfeeding reduces morbidity and mortality from infectious diseases, thereby promoting child health.[24,25] Among the benefits for an infant, breastmilk provides most of the necessary nutrients, growth factors and immunological components a healthy term infant needs. Further possible advantages of breastfeeding include reduction of incidences and severity of infections,[10,26,27,28,29,30] prevention of allergies; enhancement of cognitive development[31] and prevention of obesity,[32,33,34,35,36,37]

hypertension and insulin-dependent diabetes mellitus[38] in later life as well as a possible beneficial effect on cardio-respiratory fitness in children and adolescents.[39]

Analysis of data from a multicentre randomise controlled trial in Ghana, India and Peru have shown that, although the risk of death between children who were exclusively breastfed and those who were predominantly breastfed did not differ significantly; non-breastfed infants had a higher risk of dying when compared with those who had been predominantly breastfed, as did partially breastfed infants.[40]

The benefits of breastfeeding in terms of child survival have been clearly demonstrated. Unfortunately, the realisation of these benefits has not resulted in optimal infant feeding practices in most countries.

2.3 INFANT FEEDING PRACTICES

2.3.1 INFANT FEEDING PRACTICES IN DEVELOPING COUNTRIES

Data from 94 developing countries have shown the prevalence of EBF to be 39% at six months and the prevalence of no breastfeeding 5.6%.[41] Further data gathered through household surveys in 28 developing countries have shown that only 25% of 0 to 5 month-olds was exclusively breastfed.[42] These EBF rates are low, especially when the benefits of EBF are considered, even more so in under resourced settings including South Africa.

2.3.2 INFANT FEEDING PRACTICES IN AFRICA

The United States Agency for International Development (USAID) infant and young child feeding update of 2006[43] provides data on key indicators related to optimal feeding practices. The data are taken from the results of the Demographic and Health Surveys conducted between 1998 and 2004 in 25 sub-Saharan Africa countries. This survey has shown the percentage of all children born in the five years preceding the survey and living with their mother, who were ever breastfed varied between 86.2% (Gabon) and 98.4% (Burkina Faso, Chad, Zambia). Among children ever breastfed, the percentage who started breastfeeding within one hour after birth,

varied between 18.9% (Togo) and 80.9% (Namibia). Furthermore, between 10.8% (Malawi) and 75.2% (Burkina Faso) of children received a prelacteal feed. The percentage of all children under six months living with their mother who were exclusively breastfed among the sub-Saharan countries included in this survey varied between 0.8% (Niger) and 83.3% (Rwanda). The median duration of EBF among all children born in the three years preceding the survey varied between 0.4 months (Guinea) and 4.9 months (Rwanda). The median duration of any breastfeeding among all children during the same period varied between 12.1 months (Gabon) and 25.5 months (Ethiopia).

A study undertaken to determine predictors of EBF in Tanzania found that women with sufficient knowledge of EBF, women who delivered at health facilities and women who did not have breast-related problems (like engorgement/cracked nipples) were more likely to exclusively breastfeed compared to others.[44]

On the contrary, factors associated with sub-optimal infant feeding practices in urban informal settlements in Nairobi, Kenya, included the child's gender, perceived size at birth, mother's marital status, ethnicity, education level, family planning (pregnancy desirability), health seeking behaviour (place of delivery) and neighbourhood (slum of residence).[45]

Infant feeding practices in the context of HIV differ from that within the general population. A study comparing data from two cross-sectional surveys conducted in Eastern Uganda has demonstrated that EBF of infants under the age of 6 months was more common in the general population (54%) than among the HIV-positive mothers (24%).[46] Both groups of mothers predominantly practised mixed feeding. Complementary foods were introduced to more than half of the infants under 5 months old among the HIV-positive mothers and to a quarter of the infants in the general population. In many respects, HIV-positive mothers fed their infants less favourably than mothers in the general population, having possible harmful effects on both the child's nutrition, as well as increasing the risk of HIV transmission. A higher education level and higher socio-economic status were associated with more optimal infant feeding practices.

In a cross-sectional survey among HIV-positive mothers in Eastern Uganda, pre-lacteal feeds were given to 64% of infants, while only 28% practised EBF during the first three days. The median duration of breastfeeding was 3 months among the most educated mothers and 18 months among uneducated mothers and an overall median of 12 months. [47]

The high prevalence of mixed feeding among HIV-positive mothers does however not seem to be consistent across the continent. In a cross sectional study undertaken among HIV-positive mothers with a child under 2 years attending PMTCT and ART clinics in Gondar Town health institutions in Northwest Ethiopia, recommended infant feeding (either EBF or ERF) was practised by 89.5% of the mothers, while 10.5% practised mixed breastfeeding. Disclosure of HIV status with their spouse, insufficient breastmilk and occupational status were found to be independently associated with recommended infant feeding practice. Lack of resources, stigma of HIV/AIDS and husband opposition were reported as factors that influenced choice of infant feeding. [48]

2.3.3 INFANT FEEDING PRACTICES IN SOUTH AFRICA

Although breastfeeding seems to be the infant feeding option of choice to most mothers, EBF is still the exception.

A cross-sectional study conducted by MacIntyre[49] among mothers of infants 8 weeks of age or younger, attending the postnatal clinic at Ga-Rankuwa Hospital, Gauteng, South Africa, found that, although almost all the infants were breastfed, EBF was practised by less than 5% of the sample. Water was given to 88%, infant formula to 43% and complementary feeds to 37%. Similarly, a study among mother-infant pairs in the Vhembe district of Limpopo found that all the mothers had initiated breastfeeding and the majority (97%) of mothers were still breastfeeding at the time of the interviews. However, only 7.6% practised EBF.[50] A cross-sectional survey by Faber among 6 to 12 month old infants in a rural area of KwaZulu Natal has found that breastfeeding had been initiated in the case of 96% of the infants.[51]

In practice, foods other than breastmilk are frequently fed to infants before the recommended age of 6 months. MacIntyre found that 34% of all infants in a study group in Ga-Rankuwa received complementary feeds by 7 weeks of age, despite a breastfeeding initiation rate of 99.3%.[49] Similarly, studies in KwaZulu-Natal[51] and Limpopo[50] found complementary foods being introduced at an average age of 3 months and exclusive breastfeeding up to the age of 6 months being almost non-existent.

Once again, infant feeding options and practices within the context of HIV are even more complex. In a HIV-impacted urban community in South Africa[52], mothers identified feeding in the context of HIV infection as a concern, especially aspects involving stigma and disclosure of HIV, confusion and intimidation, as well as diarrhoea, sickness and free infant formula. Mixed feeding, which is highly risky for HIV transmission, remained a common feeding practice in the absence of quality infant feeding counselling. Exclusive breastfeeding was best practised with support, following disclosure of HIV status. The availability of free infant formula did not guarantee ERF, but rather lead to inappropriate feeding practices.

In KwaZulu Natal, the antenatal feeding intentions of HIV infected women were 73% exclusive breastfeeding, 9% replacement feeding and 18% undecided. Significantly more HIV infected women intending to exclusively breastfeed, rather than replacement feed, adhered to their intention in week one – EBF 78%, mixed feeding 10.7%, ERF 3.6% and data missing for 6.5%. Of the HIV-uninfected women, 82% intended to exclusively breastfeed, 2% to replacement feed and 16% were undecided. Seventy-five percent of the mothers who intended to exclusively breastfeed adhered to this intention postnatally. Overall, less than 1% of infants received no breastmilk. Adherence to feeding intention among HIV infected women was higher in those who chose to EBF than to ERF.[53]

The high occurrence of mixed feeding among HIV infected women is further illustrated in a prospective cohort study conducted in a high HIV prevalence rural district of KwaZulu-Natal[14]. In this study, the vast majority (96%) of mothers initiated breastfeeding at birth. Within 24 hours after delivery, less than one-third of mothers declared an intention to practise mixed feeding in the next 14 weeks, but by the 14th

week post-partum over three-quarters practised mixed feeding. At 14 weeks, the prevalence of EBF was 18%, with 52% of infants having been offered water and 73% solids. The majority (87%) of HIV infected mothers chose breastfeeding at birth. However, these mothers were significantly more likely to infant formula feed their infants when compared to HIV negative mothers. By 14 weeks, only 11% of HIV infected mothers were still exclusively breastfeeding, while almost two-thirds practised mixed feeding. This change was mostly attributed to the mothers' need to return to school (40%) or to work (20%). In this study, routine PMTCT of HIV services was shown to be ineffective in influencing mothers to follow any feeding regimen exclusively.

Routine PMTCT programme data from 18 pilot sites have highlighted provincial variations in infant feeding intentions. For example, in KwaZulu Natal and the Free State more than 60% of HIV positive women intended to exclusively breastfeed; whilst in the Western Cape and Gauteng, more than 80% of HIV positive women intended to practise ERF. These large inter-provincial differences related to provincial or facility policies on infant feeding, as well as varying prioritisation of infant feeding counselling training. Interviews with health care workers revealed concern and confusion over infant feeding advice to women when the free infant formula supply ended at six months. The solution often adopted was to transfer infants to the Nutrition Supplementation Programme, funded by the provincial Nutrition Sub-Directorates, in order for them to continue to receive free infant formula.[54]

2.3.4 INFANT FEEDING PRACTICES IN MPUMALANGA

In a study conducted during 1999 in the former Highveld region of Mpumalanga (now Nkangala district), with one exception, all children (aged 3 to 12 months) were breastfed at the time of the study (n=41). With regards to the introduction of fluids other than breastmilk, 88% of children received fluids before the age of 4 months (38% by 1 week of age, 25% commenced at 12 weeks of age). Complementary foods were introduced in 92% before 4 months and 36% at 1 month.[55]

A cross-sectional survey including 815 HIV-positive mothers at 47 postnatal clinics in Gert Sibande district of Mpumalanga, South Africa, found that 50% of the mothers were practising ERF, 35.6% breastfed exclusively and 12.4% mix fed. The following factors were associated with mixed feeding: having a vaginal delivery, infant hospital admissions and currently being pregnant. Older age, known HIV status of the infant and better knowledge on HIV transmission through breastfeeding was associated with infant formula feeding.[56]

Similarly, a smaller study conducted at a primary health care clinic in White River in Mbombela sub-district of Mpumalanga found that 50% of the mothers attending the clinic for post-delivery PMTCT of HIV follow-up care during a four month period practised ERF, 27% practised EBF and 23% practised mixed feeding. This study also highlighted the change in choice of infant feeding practice that often occurs from before delivery to after delivery. As such, of the mothers who decided on ERF, 13% changed their minds and embarked on EBF immediately after delivery, while 6% practised mixed feeding and 81% practised ERF. The mothers who decided on EBF before delivery, practised mixed feeding after delivery in 33% of the cases, while the remaining 67% practised EBF. Of the mothers who did not make any choice of infant feeding option before delivery, 40% practised ERF after delivery and 60% practised mixed feeding.[57]

2.4 BARRIERS TO BREASTFEEDING

As seen above, EBF rates seem to remain low, in spite of the clear benefits of breastfeeding and high breastfeeding initiation rates.

In a qualitative study exploring mothers' experiences of infant feeding after receiving peer counselling promoting EBF or ERF, Nor *et al* found that several barriers to EBF remained. These barriers seem to have contributed to a preference for mixed feeding. As one example, the understanding of the promotional message of 'exclusive' feeding was limited to 'not mixing two milks' – breast or infant formula – and excluded the early introduction of complementary foods or liquids other than milk. Further, an infant who cried or did not sleep well at night were cited as reasons

for the premature introduction of complementary foods. In addition, adherence to cultural practices of 'cleansing' and knowledge that this practice is not compatible with EBF appeared to promote the decision by HIV-positive mothers to practise replacement feeding. [58]

A study by Kruger in a rural area of South Africa has shown that 98.1% of the babies in the study group were given complementary foods by age 4 months. The reasons mentioned most frequently were that the mother did not have enough milk to satisfy the baby (45.8% of the responses), that the baby was crying (22.9%) and that the mother did not cope well with breastfeeding (13.1%). Crying seemed to be interpreted as the mother not having enough milk. They assumed that the breastmilk alone did not satisfy the hunger and complementary foods were therefore introduced to the diet to supplement the breastmilk. 'Not having enough milk' was mentioned by 68.6% of the mothers. In this study, cessation of breastfeeding was only reported in the age category 12 months and older – indicating that younger children were not taken off the breast completely.[59]

A mother's infant feeding option is often influenced by external factors. As an example, in a rural district of Limpopo,[50] about 45% of the mothers reported having introduced complementary foods because they had been advised by relatives or friends or health care workers. In addition 35% introduced complementary foods because their babies "were hungry" and 3.5% because their babies "had not been sleeping". Additional reasons cited for not practicing EBF included: giving water to prevent constipation, giving infant formula because of the perception that breastmilk was insufficient for their infant's needs,[46] as well as going back to school or work[50] and health reasons.

In contrast to the finding of studies in a rural setting, an observational descriptive study by Sowden among high socio-economic class mothers in the Cape Metropole have shown that the majority of mothers (80%) only decided after the birth of their infant to opt for infant formula feeding. Barriers to breastfeeding include a lack of knowledge and experience (38%), as well as a lack of facilities at public places (75%) and at work (71%) to breastfeed. Mothers perceived the convenience of the father helping with the workload (67%) and thereby not feeling left out (38%), as well as the

mother being aware of the volume of milk the infant consumed (84%) and the convenience to working mothers (64%) as benefits to infant formula feeding. Breast physiology was not regarded as a factor that prevented breastfeeding.[60]

In the context of HIV, there are even more barriers to breastfeeding. In a study in Uganda[46], breastfeeding had been stopped at the time of the interview by half of the HIV-positive mothers with infants under two years of age. The main reasons reported for stopping breastfeeding included advice from health care workers, the mother's ill health and HIV-positive status. Further reasons for stopping breastfeeding were: breastfeeding difficulties, perceived insufficient milk production, the belief that the child was 'old enough' or 'big enough' and could eat without help. Only a few mothers reported family pressure, work and new pregnancies. Less than half of the breastfeeding mothers reported experiencing breastfeeding problems, with a fifth having problems related to illness, such as generalised pain, frequent fever and a feeling of weakness. Breast-related problems, including painful, sore and cracked nipples and swelling of the breast burdened 19% of mothers. Only three mothers (1%) were diagnosed with mastitis or breast abscess.

2.5 HIV AND INFANT FEEDING

The prevention of peri-partum and postnatal transmission and timely assessment of HIV infection in infants, along with the initiation of ARV care and support for HIV infected children is a health priority in the context of HIV.[3] Infant feeding recommendations should be considered as part of this health service priority, namely to prevent MTCT of HIV and to optimise growth and development in infants and children. The HIV epidemic has changed the context in which infant feeding options are chosen and implemented. Breastfeeding remains an important route of acquisition of HIV infection for infants, in the absence of ARV prophylaxis.

2.5.1 THE BURDEN OF MOTHER-TO-CHILD TRANSMISSION OF HIV

HIV contributes greatly to infant and child mortality in Africa and South Africa, either directly or indirectly. A pooled analysis of individual data of all available intervention

cohorts and randomised trials on PMTCT of HIV in Africa illustrates mortality rates per 1,000 child-years follow up were 39.3 and 381.6 for HIV-uninfected and infected children respectively. One year after acquisition of HIV infection, it is estimated that a quarter of the postnatally and half of the perinatally infected children would have died and 4% uninfected children by age 1 year. In this study, mortality was independently associated with maternal death, maternal CD4 <350 cells/ml, postnatal or peri-partum HIV infection.[61]

Similarly, in South Africa, the findings of the national perinatal morbidity and mortality committee report (2005 to 2009) included that about 37% of babies dying in hospital were either HIV-exposed or already diagnosed as infected with HIV. For almost half of the babies who died, it was unknown whether they received perinatal ARV medication or not. Furthermore, nearly half of the babies known to have been eligible for perinatal ART did not receive it. With regards to feeding options, 28% of neonates were fed exclusively on infant formula, 26% were exclusively breastfed, 9% received mixed feeding and the feeding option was unknown for 37%.[62]

With regards to child deaths, 49.9% of child deaths that were audited through the Child Problem Identification Program (PIP) system were found to be HIV-exposed or infected. This figure however underestimates the contribution of HIV infection to child deaths, as the HIV status of 35% of children was not known.[17]

2.5.2 THE RISK OF MOTHER-TO-CHILD TRANSMISSION OF HIV

Mechanisms of HIV transmission through breastmilk remain poorly understood and multiple mechanisms are likely to be at stake. In a study undertaken by Neveu, postnatally infected infants were found to be exclusively breastfed for longer than the uninfected control infants, although the overall duration of any breastfeeding was not significantly different between the two groups.[63] Although breastfeeding is a route of acquisition of HIV in the infant, breastfed infants had a significantly lower risk of diarrhoea and hospitalisation at 3 months. Breastfeeding was also significantly associated with better development scores and growth parameters in infants[64] and reduced mortality among infants and children.[65]

Overall, the risk of MTCT of HIV through breastmilk, without any interventions, is about 4% for every 6 months of breastfeeding.[15] Infants who were mixed fed were significantly more likely to acquire infection than exclusively breastfed babies. Cumulative 3-month mortality in exclusively breastfed infants was 6.1% versus 15.1% in infants given replacement feeds. Exclusive breastfeeding protects the integrity of the intestinal mucosa, presenting a more effective barrier to HIV. In addition, EBF is associated with fewer breast health problems (such as mastitis and breast abscesses) than is mixed feeding. These breast health problems are associated with increased breastmilk viral load. This concludes that EBF carries a significantly lower risk of HIV transmission than do all types of mixed breastfeeding.[66, 67]

The objective of any strategy to prevent MTCT of HIV must be to optimise overall child survival. Determining the risk of morbidity and mortality of breastfeeding versus not breastfeeding is an important consideration, as well as the possible impact the recommendation and/or provision of infant formula or other replacement feeds to HIV infected women may have on the feeding options of uninfected mothers.[3]

Apart from the benefits of breastfeeding to the infant, the impact of feeding option on the mother's health and wellbeing also needs consideration. More infant formula feeding mothers compared to the breastfeeding mothers, seem to progress to WHO stage 3 or higher. This provides evidence that lactation is not harmful for HIV infected mothers. In addition, breastfeeding mothers had significantly lower events of high depression scores.[65]

2.5.3 FACTORS ASSOCIATED WITH MOTHER-TO-CHILD TRANSMISSION OF HIV

Risk factors with strong evidence for breastfeeding transmission of HIV include:

- high plasma viral load
- advanced disease/low CD4 count
- breast pathology (mastitis, abscesses, cracked bleeding nipples)
- new infection/re-infection and prolonged duration of breastfeeding.

ART to the mother and / or infant is likely to offer the possibility of maintaining breastfeeding as a safe option for HIV infected women.[68]

Other contextual factors and challenges contributing to PMTCT failure needs to be taken into account in the planning and delivery of health interventions. The findings of a qualitatively exploration of such factors have highlighted a number of challenges. These include: failure of ARV strategies for infants and/or mothers, maternal refusal of treatment, high prevalence of preterm delivery among HIV infected infants, delayed antenatal care attendance due to health facility related barriers and maternal anxiety around HIV testing, fear of stigma, maternal difficulty with administering ARVs and maternal confusion about infant feeding.[68]

Most women in South Africa have their HIV status diagnosed during pregnancy through the PMTCT of HIV programme. A diagnosis of HIV during pregnancy forces the woman to make decisions about participation in PMTCT programmes, as well as with regards to infant feeding options. In addition, neither EBF nor ERF are the cultural norms in most African settings, with mixed feeding the predominant method of infant feeding.[69]

A study into the infant feeding experiences of HIV-positive women at three PMTCT pilot sites in South Africa has shown that health care workers seemed to have the greatest influence over mothers' initial infant feeding options, with some mothers feeling 'forced' to choose a particular feeding option because of their HIV status. This influence seems to diminish in the postpartum period. For the participants in this study, intentions to practise exclusive feeding options were quickly affected by family members who encouraged early introduction of other liquids. Eighty percent of the women who had chosen EBF had introduced other liquids within the first month because of pressures placed on them by family. Seventy five percent of the mothers lived with their mother, mother-in-law or grandmother, making them extremely vulnerable to the influence of family members. These participants were financially dependent on family members in the absence of their partners or fathers of their children.[12]

A study among nurse counsellors at PMTCT sites in northern Tanzania further highlights the burden placed on nurses in their role as infant feeding counsellors in PMTCT programmes, as well as the urgent need to provide the training and support structures necessary to promote professional confidence and skills. Counselling services should primarily consider the local realities in which nurses provide counselling to HIV-positive childbearing women. In this study, the nurses regarded themselves unable to give appropriate advice to HIV-positive women on infant feeding and were confused regarding the appropriateness of the prescribed feeding options. They also perceived both EBF and ERF as culturally and socially unsuitable and expressed a lack of confidence in their own knowledge of HIV and infant feeding, as well as their own skills in assessing a woman's possibilities of adhering to a particular method of feeding.[70]

These findings highlight the importance of not only having appropriate, evidence-based guidelines on infant feeding in the context of PMTCT of HIV, but also the critical role that health care workers and follow-up support play in the mother's infant feeding decision making and practice. Once again, the BFHI Ten Steps to Successful Breastfeeding, as amended during 2009 to include a component on infant feeding in the context of HIV, provides a vehicle through which health care workers are trained to support a mother on infant feeding, as well as a structure for follow-up and support.

2.5.4 STRATEGIES TO REDUCE MOTHER-TO-CHILD TRANSMISSION OF HIV

The following strategies are recommended by Coovadia to reduce breastfeeding transmission of HIV and to improve child survival:[66]

- Experienced support should be available for women who choose or need to breastfeed, to ensure good EBF practices so as to minimise breast pathology, HIV viral load and disruptions to the gut environment and therefore to reduce the risk of HIV transmission.
- Breastfeeding should be discouraged for those women who have progressed to Acquired Immunodeficiency Syndrome (AIDS) and have very low CD4 counts – a quantitative measure used to assess immune status.

Strategies to minimise risk of transmission during breastfeeding includes:[66]

- EBF during the first 6 months
- A shorter duration of breastfeeding – about 6 months
- Good lactation management must be provided so that the breastfeeding problems such as cracked nipples, engorgement and mastitis are prevented
- In the presence of mastitis or abscesses, the mother must frequently express and discard milk from the affected side, and feed from the unaffected side
- Condoms must be used throughout the lactation period
- If the infant has oral thrush, it must be treated promptly

NVP prophylaxis, as prescribed in the 2010 PMTCT guidelines,[3] can safely be used to provide protection from MTCT of HIV via breastfeeding and appropriate prophylaxis along with breastfeeding is therefore the recommendation in order to minimise the risk of MTCT of HIV, while optimising child survival.[71]

2.5.5 EXCLUSIVE REPLACEMENT FEEDING AS A STRATEGY TO REDUCE MOTHER-TO-CHILD TRANSMISSION OF HIV

With regards to ERF, Doherty found three criteria to be associated with improved infant HIV-free survival amongst women choosing to infant formula feed: piped water, electricity, gas or paraffin for fuel and disclosing HIV status. In a prospective cohort study of 635 HIV-positive mother-infant pairs across three sites in South Africa, more than two-thirds of women who did not meet these criteria chose to infant formula feed. The infants of these women had the highest risk of HIV transmission / death (hazard ratio 3.63, 95% confidence interval, 1.48 – 8.89).[16]

Infant formula eliminates HIV transmission, but a risk is incurred of increased mortality.[72] Breastfeeding has multiple benefits but entails a risk of HIV transmission. The argument against the provision of free or subsidised infant formula to HIV infected mothers is based on the following: it aggravates disadvantages of infant formula feeding, compromises free choice, wrongly targets beneficiaries, creates a false perception of backing by health care workers, compromises breastfeeding, results in disclosure of HIV status, ignores hidden costs of preparation of infant

formula, increases mixed breastfeeding, which is an inappropriate method for all women; requires organisation and management of programmes that are complicated and costly and increases the 'spill-over' effect into the normal breastfeeding population.[73] The use of affordable ARV medication to reduce MTCT, investments in high-quality, widely available HIV counselling, support for choice of feeding and EBF for those who choose to breastfeed are possible ways to overcome these obstacles.[73]

While the South African government has taken the first step towards the promotion of breastfeeding rather than the distribution of free infant formula with the Tshwane Declaration[4] in August 2011 and the phasing out of infant formula as from 1 April 2012, other critical areas of successful MTCT of HIV, including uninterrupted supply of ARV medication and appropriate infant feeding counselling still requires further strengthening.

2.6 THE BABY FRIENDLY HOSPITAL INITIATIVE

Following the Innocenti Declaration of 1990 and in a global effort to implement practices to protect, promote and support breastfeeding, the WHO and UNICEF launched the BFHI in 1991.[2] The Ten Steps to Successful Breastfeeding has been accepted as the minimum global criteria for attaining the status of a Baby Friendly Hospital.[2]

Studies have shown the benefits of the BFHI to include an average annual increase in the rate of EBF of infants less than six months.[74, 75] A structured programme of breastfeeding promotion, compared with standard care, positively influence the initiation and duration of any breastfeeding, including exclusive breastfeeding.[76]

However, as the BFHI is mainly focused at maternity units, with Step 10 focusing on community support, it seems that the influence of the BFHI past the initiation of breastfeeding may not be maintained.[74] Interventions made only at one moment (such as in the maternity ward) and based only in hospitals may increase breastfeeding rates but will only have a short-term effect unless it is combined with

complementary strategies. The strengthened implementation of step 10, which seeks the establishment of support groups for mothers who breastfeed after discharge from the maternity ward, may result in more sustainable results.[74]

It is recognised that health care workers play the biggest role in conveying information on breastfeeding. Breastfeeding counselling delivered by trained health professionals and community health care workers is an effective intervention to improve exclusive breastfeeding rates.[77]

In summary, breastfeeding is undisputed as the best infant feeding option, including in the context of resource poor settings and PMTCT of HIV. Through investigating the possible impact of the implementation of the BFHI on infant feeding options in the community, this research project anticipated to provide further evidence in support of this intervention as a vehicle for the promotion, protection and support of breastfeeding.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 STUDY AIM AND OBJECTIVES

3.1.1 RESEARCH AIM

To investigate the differences in infant feeding practices between a health sub-district (Emalahleni) where all public health facilities offering maternity services are accredited as Baby Friendly, and a health sub-district (Mbombela) where none of the public health facilities are Baby Friendly.

3.1.2 SPECIFIC OBJECTIVES

To describe:
- infant feeding practices in two health sub-district (Emalahleni and Mbombela) in the Mpumalanga province, with regards to the rates of EBF, ERF and mixed feeding, as well as the early initiation of breastfeeding and the age of introduction of complementary foods

To investigate the relationship, if any, between:
- Baby Friendly accreditation status and infant feeding practices, with regards to EBF, ERF and mixed feeding rates, as well as the early initiation of breastfeeding and the age of introduction of complementary foods in two sub-districts of Mpumalanga province

3.2 HYPOTHESIS STATEMENT

There will be significant differences between the feeding practices of babies born in facilities with Baby Friendly status compared to those born in facilities without Baby Friendly status.

3.3 STUDY DOMAIN

The study domain was mainly quantitative, with provision for qualitative responses from the respondents.

3.4 STUDY DESIGN

The study design was a cross sectional, descriptive, observational study. An analytical component was added through comparing the results of the two sub-districts with each other.

3.5 STUDY TECHNIQUES

Interviewer-administered questionnaires were used.

3.6 STUDY POPULATION

The study was conducted in the Emalahleni and Mbombela sub-districts of Mpumalanga province.

The study population consisted of women with infants from birth to six months old, attending postnatal care at public sector primary health care facilities in two health sub-districts (Emalahleni and Mbombela) in Mpumalanga province on the days of data collection.

3.6.1 SAMPLE SELECTION

All mother-infant-pairs, with infants under 6 months of age and meeting all the inclusion criteria, attending routine well-baby or follow-up visits were identified as the study population. Mother-infant pairs who attended the identified health facilities on the days of data collection were purposively selected for inclusion in this study.

3.6.2 SAMPLE SIZE

Based on the estimated population size for children under 6 months (2 968 in Emalahleni and 5 474 in Mbombela),[18] a sample size of 220 subjects was the aim for each sub-district, with a confidence level of 95% and a standard error of 5.

After the initial interviews, targeting 220 subjects per sub-districts, a total of 86 of the questionnaires were disqualified based on the inclusion and exclusion criteria. Additional interviews were then conducted on a later date. The total number of mothers interviewed per facility are summarised in Table 3.1 , as well as the number of mothers included in this study from each facility (after disqualification of questionnaires based on the inclusion and exclusion criteria), with a total of 435 study participants.

Table 3.1 Number of participants per selected health facility

SUB-DISTRICT	COMMUNITY HEALTH CENTRE	NUMBER OF MOTHERS INTERVIEWED	NUMBER OF MOTHERS MEETING INCLUSION CRITERIA
Mbombela	Matsulu	45	39
	Kanyamazane	49	34
	Bhuga	47	46
	Kabokweni	77	68
	Phola Nsikazi	47	30
Emalahleni	Empumelelweni	88	79
	Siphosensimbi	85	70
	Phola	83	69
	TOTAL	**521**	**435**

3.6.3 INCLUSION CRITERIA

All mothers and infant pairs, of which the infants were born in the six months prior to data collection, at a public health facility within the same sub-district, attending post natal care or well baby clinics at a selected primary health care facility within Emalahleni or Mbombela sub-district during the period of data collection, were purposively selected for inclusion in the study.

The age group of infants below six months were chosen for this study, in order to compare the current infant feeding practices of the study population against the international recommendation of exclusive breastfeeding for the first six months of life.

In addition, the mother had to reside within the boundaries of the two local municipalities included in the study and have delivered a live-born infant weighing more than 2 500g (as infants with a low birth weight may have medical complications that could influence infant feeding immediately after birth).

Out of the 521 mothers attending post natal follow-up care at the study sites on the dates of data collection, 435 (83.5%) met the inclusion criteria.

3.6.4 EXCLUSION CRITERIA

Based on the likelihood of affecting infant feeding practices, mothers/infant pairs were excluded from this study, where the infant:

- was older than six months at the time of data collection
- was born at a private health facility or a public health facility outside the two identified sub-districts
- weighed less than 2 500g at birth or were born premature (before 36 weeks gestation)
- was a twin/triplet

Out of the 521 mothers who attended postnatal follow up care at the study sites on the dates of data collection, 86 were excluded from the study. Reasons for exclusion

were: older than 6 months on the date of data collection (41), born outside of the sub-districts under study (18), born in a private health care facility (15), newborns – born on the date of data collection and not attending the clinic for post natal care (4), incomplete data (4), born at home (2) and twins (2).

3.7 METHODS OF DATA COLLECTION

Data was collected through two sets of interviewer-administered questionnaires. The first questionnaire addressed general biographic, socio-demographic information and the second one infant feeding practice.

3.7.1 LOGISTICAL CONSIDERATION

Eighteen field workers (six for data collection at the three CHCs in Emalahleni sub-district and twelve for data collection at the five CHCs in Mbombela sub-district) assisted with the collection of data at the selected sites. Mothers attending the clinic during data collection days and who indicated willingness to participate in the study were interviewed by the field workers. After obtaining informed consent (Addenda 1-3) from each participant, each questionnaire (Addenda 4-6) was completed by the field worker with information provided by the mother, for each mother/infant pair taking part in the study in English or one of the other two spoken languages (Ndebele for Emalahleni sub-district and Siswati for Mbombela sub-district).

The field workers for each facility were recruited from the groups of home based care workers, as proposed and supported by the facility operational manager. A one-day training session for field workers was conducted in each sub-district, by the researcher. This training focused on the following:

- The role of the field workers as data collectors
- Obtaining informed consent
- Confidentiality of participant's identity and information
- The research questionnaires
- Interview skills

Following to the formal training by the researcher, the field workers were given an opportunity to familiarise themselves with the consent forms and questionnaires, through structured role play during the training sessions.

Since the field workers were recruited from the home based care workers, they were each paid an honorarium by the investigator. In addition, all costs relating to their participation in this research study was covered by the researcher, including travelling cost and meals.

In addition to the field workers, three field worker supervisors assisted with supervision and support of the field workers. The field worker supervisors assisted with quality assurance for the study, through monitoring the data collection process. The supervisors observed data collection by each of the field workers and used a check-list to record the quality of the data collection process and to record any challenges experienced during data collection.

Table 3.2 summarises the Community Health Centres where data was collected, as well as the dates of data collection per facility.

Table 3.2 Data collection sites and dates

SUB-DISTRICT	COMMUNITY HEALTH CENTRE	DATES OF DATA COLLECTION
Mbombela	Matsulu	19 to 22 March 2012
	Kanyamazane	18 to 22 March 2012
	Bhuga	19 to 23 March 2012
	Kabokweni	19 to 22 March 2012 and 24 April 2012
	Phola Nsikazi	19 to 23 March 2012
Emalahleni	Empumelelweni	20 to 27 March 2012 and 23 April 2012
	Siphosensimbi	20 to 28 March 2012 and 23 April 2012
	Phola	27 March to 3 April 2012

3.7.2 SOCIO-DEMOGRAPHIC INFORMATION

In order to allow further investigation of possible factors that have an influence on infant feeding practices, the following socio-demographic information was obtained (Addendum 4):

- Mother's date of birth
- Mother's age
- Mother's marital status
- Mother's level of education
- Mother's employment status
- Source of income
- Infant's date of birth
- Infant's age
- Infant's gender
- Members in household
- Child's caregiver during the day

3.7.3 INFORMATION ON INFANT FEEDING PRACTICES

A structured questionnaire (Addenda 7-9) was completed by a field worker, for each participant.

3.7.3.1 QUESTIONNAIRE DESCRIPTION

The infant feeding practice questionnaire consisted of two sections. Section A included questions on the related health services provided to the mother during antenatal, delivery and post-delivery periods. Section B included questions on the current infant feeding practices of the participant. The questions were coded after pre-testing through a pilot study. As the questionnaires were completed by field workers, the primary investigator coded the answers to each questionnaire after completion.

Section A consisted of six questions, of which five were closed-ended questions and one open-ended. Three of the questions had follow-up questions, depending on the mother's response to the primary question.

Section B consisted of seven questions, of which the first questions funnelled to two possible follow-up questions, depending on the respondents reply to the question. Four of the questions further allowed for open-ended responses in a follow-up to the primary question.

3.7.3.2 QUESTIONNAIRE VALIDITY

The questionnaires were translated into the local languages (Ndebele for Emalahleni sub-district and Siswati for Mbombela sub-district) by the Language Centre of Stellenbosch University. In addition, the field workers were all fluent in these local languages and were able to conduct the structured interviews with participants in their home language. This assisted in ensuring that the participants understood each question and that their responses were accurately captured by the field workers.

Some of the questions in the infant feeding practice questionnaire were derived from the external assessment tool of the Baby Friendly Hospital Initiative[78] in order to ensure criterion-related validity of the questions.

The research questionnaires were reviewed by an experienced national BFHI assessor for content validity. A pilot study was carried out to ensure face validity (also see section 3.8). Furthermore, the field workers and supervisors received training, where the contents of the questionnaires were handled in detail and different scenarios and possible responses from respondents were practised in role-play format, in order to further improve the quality of the data collected.

3.8 PILOT STUDY

A pilot study was conducted on 14 March 2012 at Kabokweni CHC in Mbombela sub-district, to test the face validity of the questionnaires. A total of 11 mothers were

interviewed as part of the pilot study. During the pilot study it was determined that it took on average 16 minutes to complete the informed consent form and two questionnaires for each respondent. No changes were made to the questionnaires after the pilot study. Responses from the pilot study assisted the investigator in updating the codes for possible responses for each question.

3.9 ANALYSIS OF DATA

The data collected were captured in Microsoft Excel 2007 by the primary investigator. Variables were listed vertically with each record running horizontally.

A statistician, Prof DG Nel, appointed by the Faculty of Medicine and Health Sciences, Stellenbosch University, assisted in the analyses of the data. STATISTICA version 8 was used to analyse the data.

Both descriptive and inferential statistics were used to analyse and compare the data for the two sub-districts.

The following components were described by using descriptive statistics:
- Initiation of breastfeeding rate
- Exclusive breastfeeding rate (in predetermined age categories)
- Exclusive replacement feeding rate (in predetermined age categories)
- Mixed feeding rates (in predetermined age categories)
- Average age of introduction of complementary foods

The relationship (correlation) between the descriptive components for the two identified sub-districts, were determined by using inferential statistics.

3.9.1 INDICATORS TO ASSESS INFANT AND YOUNG CHILD FEEDING PRACTICES

The hypothesis was explored utilising a set of simple, valid and reliable indicators to assess infant and young child feeding practices as developed by the WHO.[2] These population-based indicators was used to make national and sub-national

comparisons and was adapted and used to compare the infant feeding practices between two sub-districts in Mpumalanga. The following indicators were tested:

3.9.1.1 INITIATION OF BREASTFEEDING

The initiation of breastfeeding was calculated as the number of children within the study who was put to their mother's breast within an hour after birth as a percentage of the total number of children in the study.

3.9.1.2 EXCLUSIVE BREASTFEEDING

The EBF rate was calculated as the number of infants in pre-determined age categories who receive only breastmilk at the time of data collection, as a percentage of the total number of children in each of these age categories who took part in the study.

3.9.1.3 EXCLUSIVE REPLACEMENT FEEDING

The ERF rate for this study was calculated as the number of infants in pre-determined age categories that had not received any breastmilk since birth and had been fed a diet that provides adequate nutrients, usually in the form of commercial infant formula, as a percentage of the total number of infants in each age category.

3.9.1.4 MIXED FEEDING

The mixed feeding rate was calculated as the number of infants in pre-determined age categories who had received a combination of breastmilk and other feeds during any time after birth, as a percentage of the total number of infants in each of the age categories that took part in the study.

3.9.1.5 INTRODUCTION OF COMPLEMENTARY FOODS

The age at which complementary foods were introduced was recorded as part of the information on the infant feeding practices questionnaire (see addendum 2) and was expressed as the following:

- mean age at which complementary foods are introduced
- average age at which complementary foods are introduced
- proportion of infants in each age category that receives complementary foods at the time of the study.

The relationship (correlation) between the above descriptive components for the two identified sub-districts was determined by using inferential statistics.

3.10 ETHICS CONSIDERATIONS

3.10.1 ETHICS REVIEW COMMITTEES

The study was approved by the Committee for Human Research, Faculty of Medicine and Health Sciences, Stellenbosch University (Addendum 13); as well as at the Research and Ethics Committee of the Mpumalanga Department of Health (Addendum 14).

3.10.2 INFORMED CONSENT

Each participant was provided with an informed consent form by the field workers, translated to the commonly used local languages (Siswati and Ndebele). This informed consent form was read by or to each participant and signed by the participant and the field worker collecting the data.

3.10.3 PATIENT CONFIDENTIALITY

All information collected as part of this study was treated as confidential and will only be included in this dissertation, possible scientific congress presentation/s, peer-reviewed journal publication/s and a presentation or report to Mpumalanga

Department of Health. At no point in time or for no purpose what so ever will the identity of any participant be disclosed. The participants were assured verbally by the field workers and by means of the informed consent form that all the information provided to the representative of the researcher would be regarded as confidential.

Patient identification information was omitted from study related material to ensure participant confidentiality. Each participant was allocated a subject identification number which has been used on all study material and documentation to further ensure confidentiality.

This study was designed in order to provide sufficient information to describe the infant feeding practices in the two health sub-districts, with regards to the five identified infant feeding indicators and to further investigate of the relationship, if any, between Baby Friendly Hospital accreditation status and infant feeding practices. The results of the study are described in the next chapter, against these study objectives.

CHAPTER 4: RESULTS

4.1 INTRODUCTORY REMARKS

A total of 435 mothers were selected as part of this research project, of which 217 mothers (49.9%) were from Mbombela sub-district and 218 mothers (50.1%) from Emalahleni sub-district.

The study aimed to have equal representation per facility, but since some of the mother-infant pairs initially interviewed by the field workers did not meet the entry criteria, these questionnaires were excluded from the study. A second round of data collection was done at Kabokweni CHC, Siphosensimbi CHC and Empumelelweni CHC, resulting in the final participation representation per health facility as summarised in Table 4.1.

Table 4.1 Participant representation per selected health facility

SUB-DISTRICT	FACILITY NAME	PARTICIPANTS	PERCENTAGE OF SUB-DISTRICT PARTICIPANTS
Mbombela	Matsulu CHC	39	18.0%
	Kanyamazane CHC	34	15.7%
	Bhuga CHC	46	21.2%
	Kabokweni CHC	68	31.3%
	Phola Nsikazi CHC	30	13.8%
Emalahleni	Empumelelweni CHC	79	36.2%
	Siphosensimbi CHC	70	32.1%
	Phola CHC	69	31.7%

4.2 SOCIO-DEMOGRAPHIC INFORMATION

4.2.1 MOTHER'S AGE

The average age of respondents was 26 years, with a minimum age of 15 and maximum age of 52 years (standard deviation 6.59). The median age of respondents was 26 years and the mode 23 years.

4.2.2 MARITAL STATUS

A total of 255 (60.1%) of the mothers who reported their marital status (n=424) were unmarried, 35 (8.3%) were legally married, 66 (15.6%) were traditionally married, 4 (0.9%) were widowed, 12 (2.8%) were separated, 1 (0.2%) was divorced and 51 (12%) reported to be 'living together.' The marital status of mothers per sub-district is summarised in Table 4.2:

Table 4.2 Marital status of mothers per sub-district

MARITAL STATUS	EMALAHLENI	%	MBOMBELA	%	TOTAL	%
Unmarried	149	68.4	106	48.9	255	60.1
Traditionally married	30	13.8	36	16.6	66	15.6
Living together	9	4.3	42	19.4	51	12.0
Legally married	23	10.6	12	5.5	35	8.3
Separated	-	-	12	5.5	12	2.8
Widowed	1	0.5	3	1.4	4	0.9
Divorced	1	0.5	-	-	1	0.2

4.2.3 EDUCATION LEVEL

Out of the mothers who reported their education level (n=436), 33 (7.6%) only received education up to primary level (grade 7 or lower), while 316 (72.8%) had some secondary education, with 104 (24%) having completed grade 11 and 100 (23%) having completed grade 12.

In addition, 85 of the respondents (19.6%) completed some form of tertiary qualification, with 69 (15.9%) having obtained a diploma, 14 (3.2%) a degree and 2 (0.5%) a post-graduate qualification (Table 4.3).

Table 4.3 Education level of mothers per sub-district

HIGHEST QUALIFICATION	EMALAHLENI	%	MBOMBELA	%	TOTAL	%
Grade 1	2	0.9	3	1.4	5	1.1
Grade 2	-	-	1	0.5	1	0.2
Grade 3	-	-	1	0.5	1	0.2
Grade 4	1	0.5	4	1.9	5	1.1
Grade 5	3	1.4	3	1.4	6	1.4
Grade 6	-	-	3	1.4	3	0.7
Grade 7	5	2.3	7	3.2	12	2.8
Grade 8	15	6.9	19	8.8	34	7.8
Grade 9	16	7.3	14	6.5	30	6.9
Grade 10	36	16.5	12	5.6	48	11.0
Grade 11	62	28.4	42	19.4	104	23.9
Grade 12	39	17.9	61	28.2	100	22.9
Post-matric certificate / diploma	33	15.1	36	16.7	69	15.8
Degree	5	2.3	9	4.2	14	3.2
Post-graduate	1	0.5	1	0.5	2	0.5
TOTAL	**218**		**216**		**436**	

4.2.4 EMPLOYMENT STATUS

Out of the respondents (n=434), 16 of the mothers (3.7%) were scholars and 332 (76.5%) reported to be unemployed. Only 86 (19.8%) of the mothers reported to be employed, of which 15 (17.4%) were in casual employment, 15 (17.4%) employed on contract, 31 (36.0%) permanently employed, 22 (25.6%) were self-employed and 3 (3.5%) had not specified the terms of their employment (Table 4.4).

Table 4.4 Employment status of mothers per sub-district

EMPLOYMENT STATUS	EMALAHLENI	%	MBOMBELA	%	TOTAL	%
Unemployed	171	79.9	161	74.2	332	77.0
Employed - permanent	12	5.6	19	8.8	31	7.2
Self-employed	6	2.8	16	7.4	22	5.1
Scholar	8	3.7	8	3.7	16	3.7
Employed - casual	9	4.2	6	2.8	15	3.5
Employed - contract	8	3.7	7	3.2	15	3.5
TOTAL	**214**		**217**		**431**	

4.2.5 SOURCE OF INCOME

A total of 406 respondents reported on their source of income. Of these, 128 mothers (31.5%) reported that the child support grant was the main source of income for their household. In addition, 152 (37.4%) reported that contributions by family members and 52 (12.8%) contributions by the baby's father were the main source of income. Furthermore, 71 mothers (17.5%) reported to earn their own income. Two respondents (0.5%) reported the disability grant as their household source of income and one respondent (0.25%) reported not having any source of income for the household (Table 4.5).

Table 4.5 Source of household income

	EMALAHLENI	%	MBOMBELA	%	TOTAL	%
Family members	79	38.5	73	36.3	152	37.4
Child grant	55	26.8	73	36.3	128	31.5
Own income	34	16.6	37	18.4	71	17.5
Infant's father	35	17.1	17	8.5	52	12.8
Disability grant	2	1.0	-	-	2	0.5
No income	0	0.0	1	0.5	1	0.2
TOTAL	**205**		**201**		**406**	

4.2.6 CHILD CARE

Out of 427 respondents, 300 (70.3%) of the mothers reported that they look after their own babies during the day. In addition, 60 mothers (14.1%) reported that the child was cared for by his/her grandmother during the day. Other caregivers during the day included the mother's grandmother (3.5%) or sister (3.5%), as well as crèche (3.5%), mother-in-law (2.8%) and a few babies were cared for by their fathers (0.7%), a child minder (0.7%), an aunt (0.5%) or a sibling (0.5%) (Table 4.6).

Table 4.6 Child care during daytime

CAREGIVER	EMALAHLENI	%	MBOMBELA	%	TOTAL	%
Self	140	65.1	160	75.5	300	70.3
Mother	39	18.1	21	9.9	60	14.1
Crèche	9	4.2	6	2.8	15	3.5
Grandmother	7	3.3	8	3.8	15	3.5
Mother's sister	10	4.7	5	2.4	15	3.5
Mother-in-law	3	1.4	9	4.2	12	2.8
Child minder	3	1.4		0.0	3	0.7
Infant's father	2	0.9	1	0.5	3	0.7
Mother's aunt	1	0.5	1	0.5	2	0.5
Sibling	1	0.5	1	0.5	2	0.5
TOTAL	**215**		**212**		**427**	

4.2.7 INFANT'S AGE

Infants (n=434) ages varied from 1 day to 5 months. In total, 53 infants (12.2%) were aged below 1 month, 113 (26.0%) were aged between 1 and 2 months month, 82 (18.9%) between 2 and 3 months, 73 (16.8%) between 3 and 4 months, 57 (13.1%) between 4 and 5 months and 56 (12.9%) between 5 and 6 months.

4.2.8 INFANT'S GENDER

Out of 334 respondents, 194 (44.7%) of the infants were boys and 240 (55.3%) were girls.

4.2.9 NUMBER OF SIBLINGS

Most of the infants (n=160; 36.8%) in the study were first-borns, while 32.4% (n=141) had one sibling, 18.2% (n=79) had two siblings 12.6% (n=55) had three or more siblings. Table 4.7 gives a summary of the number of siblings per sub-district.

Table 4.7 Number of siblings, per sub-district

NUMBER OF SIBLINGS	EMALAHLENI	%	MBOMBELA	%	TOTAL	%
None	90	41.3	70	32.3	160	36.8
1	70	32.1	71	32.7	141	32.4
2	37	17.0	42	19.4	79	18.2
3	13	6.0	21	9.7	34	7.8
4	5	2.3	9	4.1	14	3.2
5	1	0.5	2	0.9	3	0.7
6	1	0.5	1	0.5	2	0.5
7	1	0.5	-	-	1	0.2
8	-	-	1	0.5	1	0.2
TOTAL	**218**		**217**		**435**	

4.3 INFANT FEEDING

4.3.1 ANTENATAL INFANT FEEDING COUNSELLING

Out of the participants (n=433), 430 mothers (99.3%) reported to have received antenatal infant feeding counselling and only 3 (0.7%) reported not receiving infant feeding counselling.

In total, 379 (92%) mothers reported to have received infant feeding counselling in group sessions, while 18 (4.4%) received individual counselling and 15 (3.6%) received both individual and group session counselling.

4.3.2 INFANT FEEDING OPTIONS

A total of 430 mothers (98.9%) decided on an infant feeding option before delivery. Two hundred and eighty mothers (65.1%) reported to have chosen EBF, 99 (23%) ERF and 51 (11.9%) wanted to practise mixed feeding (Figure 4.1).

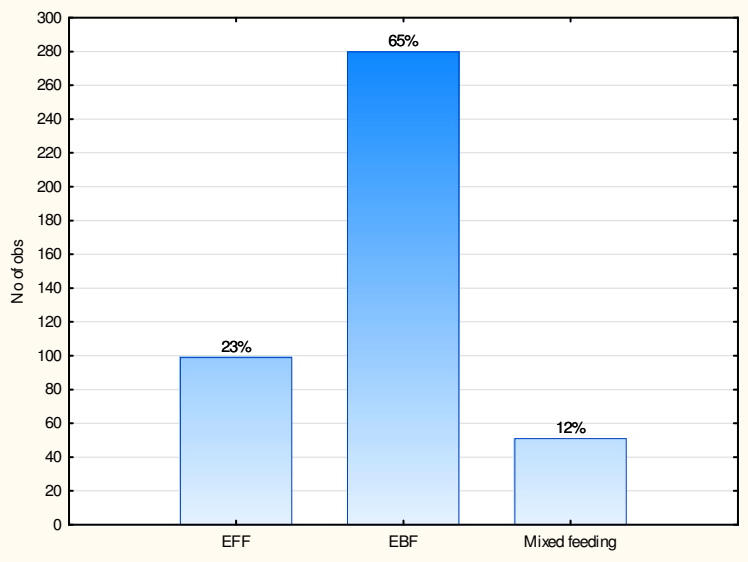

Figure 4.1 Infant feeding options before delivery for all participants

In Mbombela sub-district (n=214), 75 (35%) mothers chose ERF as the infant feeding option before delivery, while 108 (50.5%) chose EBF and 31 (14.5%) chose mixed feeding.

In Emalahleni sub-district (n=216), 24 (11.1%) mothers chose ERF, 172 (79.6%) chose EBF and 20 (9.2%) chose to practise mixed feeding.

Using the Pearson chi-square test to compare the infant feeding options between sub-districts, the sub-district as a variable has been shown to significantly impact on infant feeding option (p=0.0000). Significantly more mothers in Emalahleni sub-district (p=0.00013) chose EBF, while significantly more mothers (p=0.00000) in Mbombela sub-district chose ERF as the infant feeding option of choice before delivery.

However, the choice of mixed feeding did not significantly differ between the two sub-districts (p=0.12349).

4.3.3 INFANT FEEDING PRACTICES

4.3.3.1 FIRST FEED

The first feed received for a combined total of 434 babies, was 332 (76.5%) breastmilk, 100 (23%) infant formula, while 1 (0.23%) received water and sweetened water respectively.

In Mbombela sub-district (n=216), 75 (34.7%) of the infants in this study received infant formula as a first feed, while 139 (64.4%) received breastmilk. In addition, 1 infant received water and one received sweetened water as a first feed in this sub-district.

In Emalahleni sub-district (n=218), 25 (11.5%) infants received infant formula as a first feed, while 193 (88.5%) received breastmilk. No other feeds were given as a first feed to infants in Emalahleni sub-district.

Using Pearson chi-square analysis, the preference for infant formula as a first feed differed significantly between the two sub-districts (p=0.00000), but the preference for breastmilk as a first feed did not differ significantly between the sub-districts (p=0.10384).

As portrayed in Figure 4.2, using the univariate test of significance (p=0.00044), as well as the Mann-Whitney U test (p=0.00011) the mother's age was significantly related to the choice of the first feed in the combined sample, with older mothers (mean age 28.5 years) tending to give infant formula as a first feed and younger mothers (mean age 25.8 years) tending to give breastmilk as a first feed.

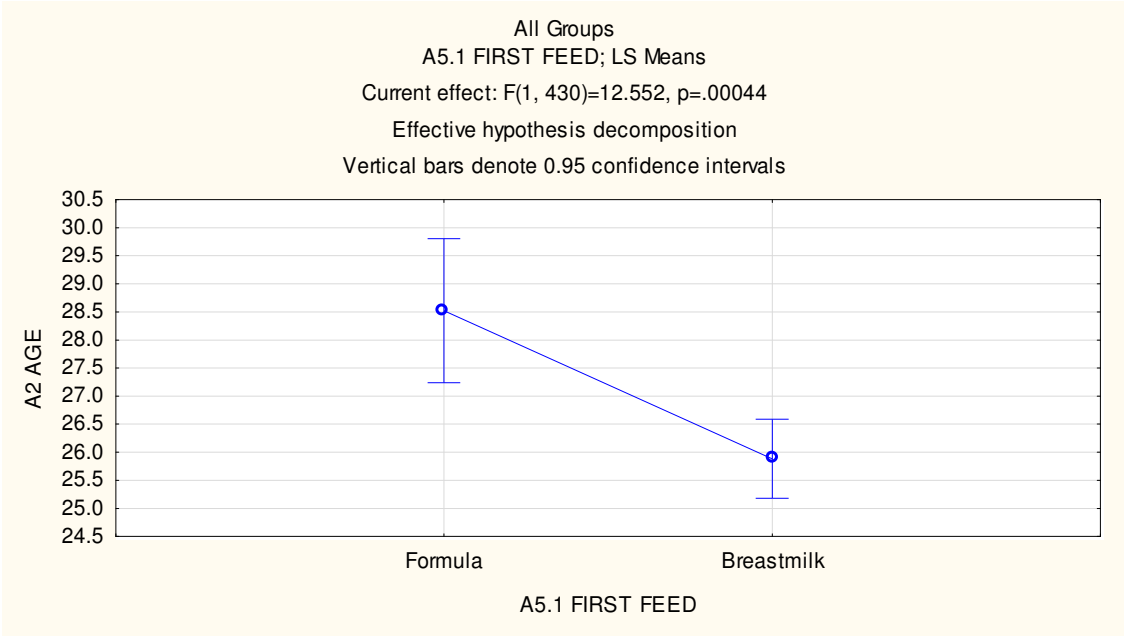

Figure 4.2 Mother's age as a predictor for choice of first feed for all participants

On further data analysis per sub-district, the same trend was found in Mbombela sub-district, where the mother's age significantly influenced the first feed (p=0.00009), while this was not found in Emalahleni (p=0.47002).

4.3.3.2 EARLY INITIATION OF BREASTFEEDING

Out of the 328 infants who received breastmilk as a first feed, 188 (57.3%) was placed to breast within one hour and 140 (42.7%) in more than an hour (Figure 4.8).

Table 4.8 Comparison of timing of initiation of breastfeeding between sub-districts

SUB-DISTRICT	MORE THAN AN HOUR	WITHIN AN HOUR	TOTAL
Emalahleni	57	134	191
Mbombela	83	54	137
TOTAL	**140**	**188**	**328**

In Mbombela (n=137), only 54 (39.4%) of the infants who received breastmilk as a first feed had been placed on the breast within an hour, while 134 (70.2%) of the breastfed infants in Emalahleni were put to the breast within an hour after delivery.

A Pearson chi-square analysis showed the initiation of breastfeeding to be dependent on sub-district. As such, significantly more infants were breastfed within an hour after birth in Emalahleni sub-district than in Mbombela sub-district (p=0.00000) and significantly more children were breastfed after more than an hour after birth in Mbombela than in Emalahleni (p=0.01277).

Reasons given for first feed as alternative to milk (Table 4.9) in a total of 86 mothers, included 39 (45.3%) that was due to 'not enough milk', followed by 17 (19.8%) that reported the infant's medical condition, 8 (9.3%) stated it was the mother's own decision and 6 (7%) did not know the reason for this practice. In addition, 3 (3.5%) reported HIV status, working mother, and advice by medical practitioner as the reasons for not giving the infant breastmilk as a first feed respectively, while 2 (2.3%) reported breast problems as the reason for not giving breastmilk and 1 (1.2%) each having to go back to school, standard practice at the facility and infant refusing breastmilk.

Table 4.9 Reasons given for alternative feed to breastmilk as first feed

REASON GIVEN	NUMBER OF RESPONDENTS	PERCENTAGE
Not enough milk	39	45.3
Infant's medical condition	17	19.8
Mother's choice	8	9.3
Don't know	6	6.8
Mother working	3	3.5
Doctor's advice	3	3.5
HIV status	3	3.5
Mother's medical condition	3	3.5
Breast problems	2	2.3
Return to school	1	1.2
Practice at facility	1	1.2
Infant refused breastmilk	1	1.2

4.3.3.3 CURRENT FEEDING PRACTICE

Current feeding practice among all the infants in the study (n=435) included 234 (53.8%) EBF, 74 (17%) mixed breastfeeding, 110 (25.3%) ERF, 16 (3.7%) mixed infant formula feeding and 1 infant (0.2%) receiving only soft porridge and no milk.

Table 4.10 gives a summary of the current infant feeding practices of participants in the study, according to age group.

Table 4.10 Current infant feeding practices according to age category

CURRENT FEEDING PRACTICE	BELOW 1 MONTH	1-2 MONTHS	2-3 MONTHS	3-4 MONTHS	4-5 MONTHS	5-6 MONTHS	TOTAL
Exclusive breastfeeding	41 (77.4%)	77 (68.1%)	44 (53.7%)	30 (41.1%)	21 (36.8%)	20 (35.7%)	233 (53.8%)
Mixed breastfeeding	4 (7.5%)	9 (8.0%)	13 (15.9%)	14 (19.2%)	17 (29.8%)	17 (30.6%)	74 (17.0%)
Exclusive replacement feeding	8 (15.1%)	26 (23.0%)	23 (28.0%)	28 (39.4%)	12 (21.1%)	13 (23.2%)	110 (25.3%)
Mixed infant formula feeding	-	1 (0.9%)	2 (2.4%)	1 (1.4%)	7 (12.3%)	5 (8.9%)	16 (3.7%)
Soft porridge only	-	-	-	-	-	1 (1.8%)	1 (0.2%)
TOTAL	**53**	**113**	**82**	**73**	**57**	**56**	**434**

In comparison, the EBF rate for all participants in Emalahleni sub-district was higher than that in Mbombela (Table 4.11). The mixed breastfeeding (infant receiving breastmilk and other complementary feeds), ERF and mixed infant formula feeding (infant receiving infant formula and other complementary feeds) rates were higher in Mbombela sub-district.

Table 4.11 Current feeding practice per sub-district

CURRENT FEEDING PRACTICE	EMALAHLENI	MBOMBELA
Exclusive breastfeeding	131 (60.1%)	103 (47.5%)
Mixed breastfeeding	42 (19.3%)	32 (14.7%)
Exclusive replacement feeding	39 (17.9%)	71 (32.7%)
Mixed infant formula feeding	5 (2.3%)	11 (5.1%)
Soft porridge only	1 (0.5%)	-
TOTAL	**218**	**217**

Comparing the current infant feeding practices per age category between the two sub-districts, the EBF rates in both sub-districts steadily declined from birth to the age of six months (Figure 4.3). However, the EBF rate in Emalahleni sub-district was higher than in Mbombela sub-district, except for the age category of between 4 and 5 months.

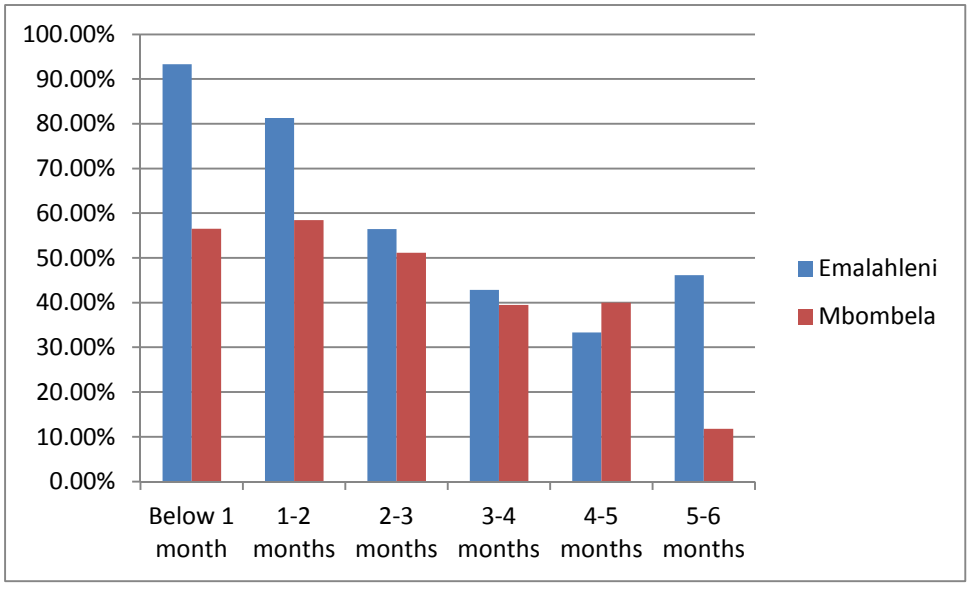

Figure 4.3 Exclusive breastfeeding rates per district, according to age category

The ERF rate in Mbombela sub-district was higher than in Emalahleni sub-district, up to the age of 3 to 4 months, where after the ERF rate in Emalahleni sub-district exceeded that of Mbombela sub-district (Figure 4.4).

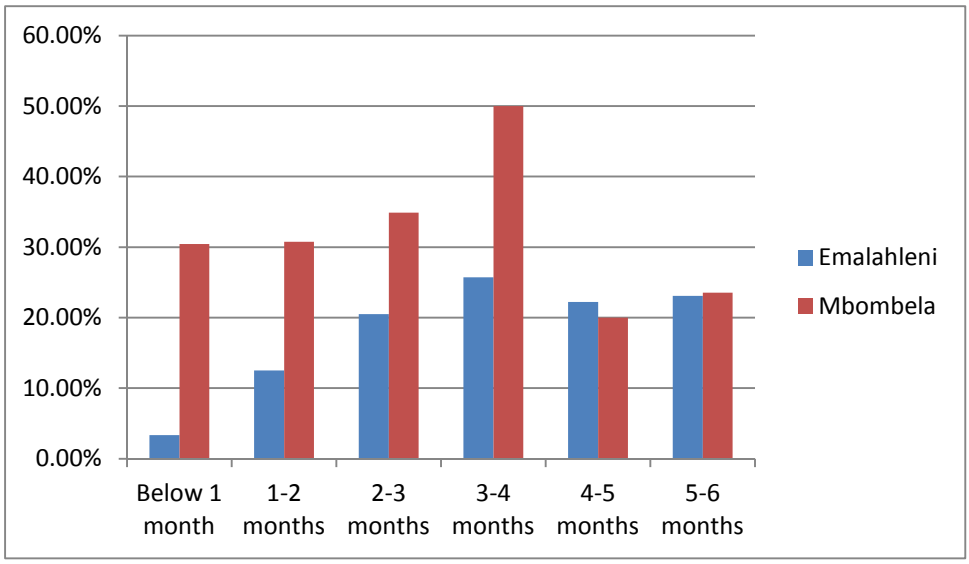

Figure 4.4 Exclusive replacement feeding rates per district, according to age category

The practice of exclusive infant feeding, including both EBF and ERF, was higher in Emalahleni sub-district up to the age of 2 months, and again after the age of 5 months. Between the ages of 2 months and 5 months, the combined exclusive feeding practice rate in Mbombela sub-district exceeded that of Emalahleni sub-district.

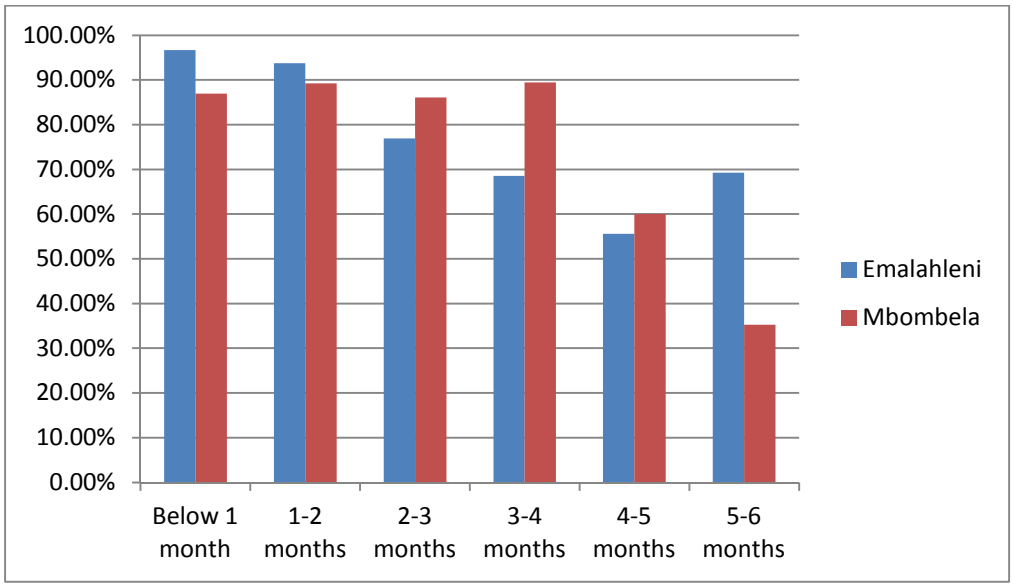

Figure 4.5 Combined exclusive feeding rates per district, according to age category

Table 4.12 illustrates the cumulative feeding practices per age category, whereby only 15.1% of children below 1 month of age were receiving ERF, with the proportion of infants receiving ERF gradually increasing over age, up to 25.3% of children below 6 months receiving ERF.

Table 4.12 Cumulative current feeding practice per age category

CURRENT FEEDING PRACTICE	BELOW 1 MONTH	BELOW 2 MONTHS	BELOW 3 MONTHS	BELOW 4 MONTHS	BELOW 5 MONTHS	BELOW 6 MONTHS
Exclusive breastfeeding	41 (77.4%)	118 (71.1%)	162 (65.3%)	192 (59.8%)	214 (56.5%)	234 (53.8%)
Mixed breastfeeding	4 (7.5%)	13 (7.8%)	26 (10.5%)	40 (12.5%)	57 (15.0%)	74 (17.0%)
Exclusive replacement feeding	8 (15.1%)	34 (20.5%)	57 (23.0%)	85 (26.5%)	97 (25.6%)	110 (25.3%)
Mixed infant formula feeding	-	1 (0.6%)	3 (1.2%)	4 (1.2%)	11 (2.9%)	16 (3.7%)
Soft porridge only	-	-	-	-	-	1 (0.2%)
TOTAL	**53**	**166**	**248**	**321**	**379**	**435**

Figure 4.6 illustrates that the early initiation of breastfeeding (within an hour) had a statistically significant effect on current feeding practices (p=0.00069). More infants who were fed within an hour after birth were being mixed fed compared to infants who received breastmilk more than an hour after birth. Similarly, more of the infants who were fed after an hour after birth were being exclusively breastfed than the ones who had been breastfed within an hour after birth.

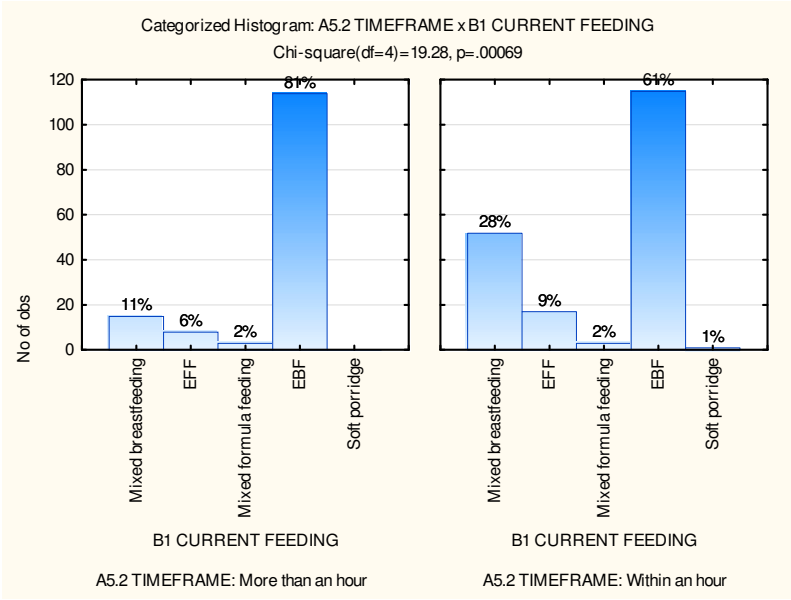

Figure 4.6 Timeframe of initiation of breastfeeding compared to current feeding practice

A further finding relating to the current feeding practice was the relation between the number of other children (siblings to the infant) and current feeding practice (Figure 4.7). Mothers to whom the infant in this study was a first born were more likely to practise any form of mixed feeding, while mothers with at least one older child were more likely to practise either EBF or ERF. Using the Univariate test of significance (p=0.0174), the number of other children was significant in relation to current feeding practice revealed.

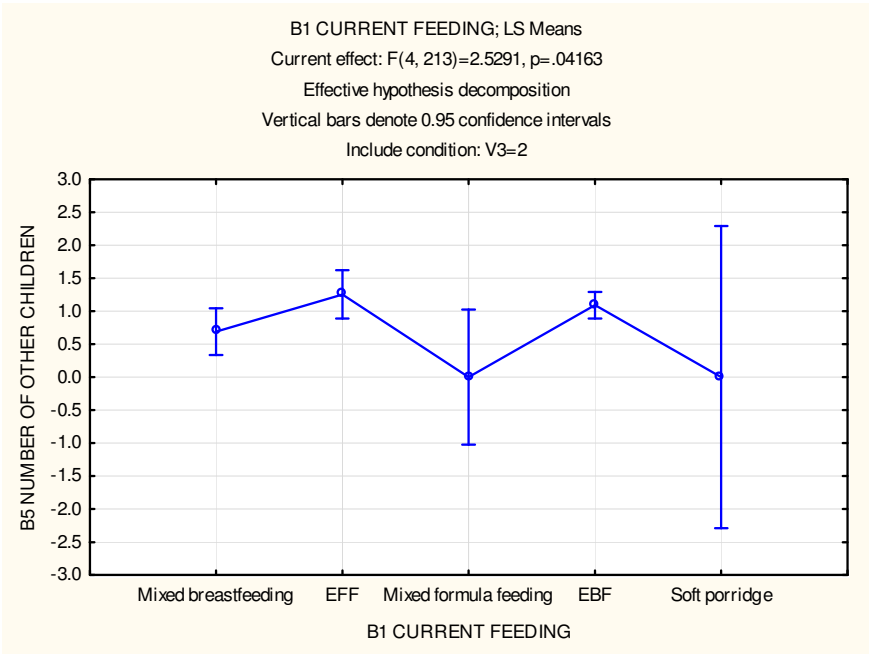

Figure 4.7 Current feeding practice compared to number of other children

4.3.3.4 ALTERNATIVE FEEDS TO MILK

The most common feed given as an alternative to milk in infants where a form of mixed feeding was practised (n=91) was infant formula (48.4%), followed by soft porridge (34.1%), a combination of infant formula and soft porridge (5.5%), as well as commercial complementary foods (2.2%), sweetened water (2.2%), yoghurt (1.1%), water (1.1%), and juice (1.1%).

4.3.3.5 FEEDING MODALITY

A total of 415 mothers reported on the mode of infant feeding. Of these, 242 (58.3%) reported that their infants were fed through suckling only, 8 (2%) through a combination of expressed milk and suckling, 40 (9.6%) suckling and feeding bottle and 6 (1.4%) were fed complementary foods by spoon in addition to suckling. Furthermore, 108 (26%) infants were fed by feeding bottle only, 4 (1%) were spoon fed only, 1 (0.2%) infant was fed by a syringe and 1 (0.2%) received cup feeding only.

4.3.3.6 AGE OF INTRODUCTION OF COMPLEMENTARY FOODS

The mean age of introduction of complementary foods for 72 (16.6%) of the infants were 45 days (1 ½ months), the median age 30 days, ranging from birth to 4 months (Standard deviation 37.383).

Of these 72 infants receiving complementary foods, the feeds were introduced before 1 month of age for 42 (58.3%) infants and all had received complementary foods by 4 months.

When comparing the mean age of introduction of complementary foods between the two sub-districts (Figure 4.8), infants in Emalahleni received complementary foods at a mean age of 50 days, compared to 35 days in Mbombela. This difference was however not statistically significant (p=0.07). Levene's Test for Homogeneity of Variances for the mean age of introduction of complementary foods between districts showed a p value of 0.53312, indicating non-significance.

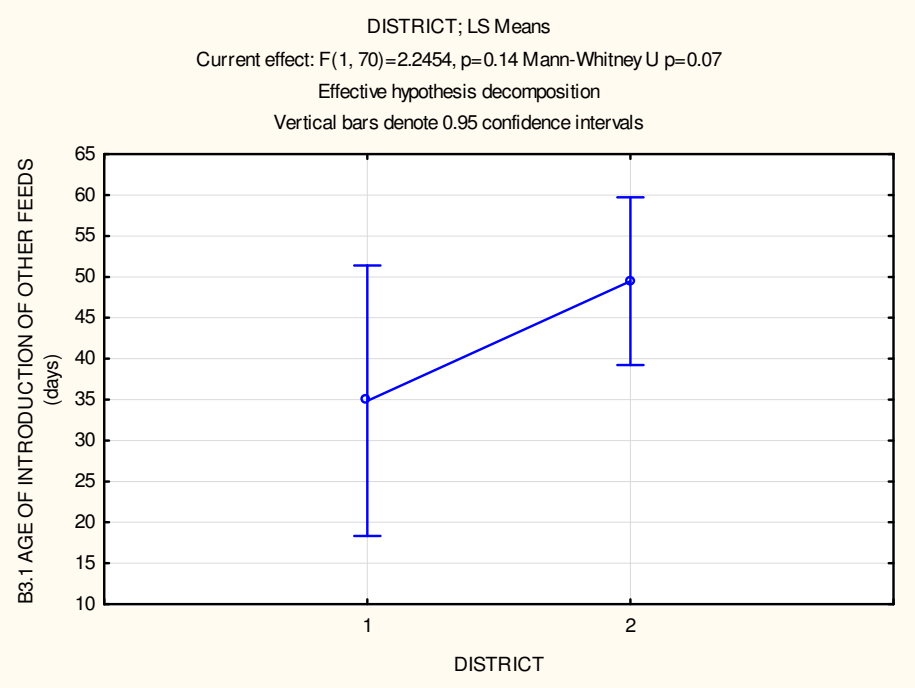

Figure 4.8 Mean age of introduction of other feeds, per sub-district (District 1 - Mbombela, District 2 - Emalahleni)

4.3.3.7 AGE OF DISCONTINUATION OF BREASTFEEDING

Twenty-eight mothers reported discontinuing any breastfeeding, with the mean age of discontinuation 1 month, varying between birth and 3 months (Standard deviation 30.322). Of these mothers, 21 (75%) had discontinued breastfeeding by the time the infant was 1 month old and the median at 17 days.

Reasons cited for the discontinuation of breastfeeding included not having enough milk (27%), the mother's ill health (21.6%), going back to work (18.2%) or school (13%), infant refusing breastmilk (10.8%), as well as the infant's medical condition (1%), mother's own choice (1%) and HIV status (1%).

4.3.3.8 APPROPRIATENESS OF ALTERNATIVE FEEDS

Out of 168 mothers who reported giving infants formula (either ERF or mixed feeding), 148 (88.1%) reported to always have infant formula available and 20 (11.9%) did not always have infant formula available.

In addition to the availability of infant formula, 124 (72.1%) respondents reported the use of electricity as source of energy for heating water for infant formula preparation, while 31 (18%) used gas, 13 (7.6%) used paraffin and 4 (2.3%) used fire wood. Furthermore, 150 (86.7%) mothers reported to have access to clean water and 23 (13.3%) did not have access to clean water.

4.3.4 DELIVERY METHOD

Out of 434 infants, 357 (82.3%) were born through normal vaginal delivery and 77 (17.7%) by Caesarean section. Of the 71 mothers who provided further information on Caesarean birth, 61 (85.9%) had general anaesthesia.

Significantly more infants who had been delivered by Caesarean section received infant formula as a first feed (36%), compared to the infants delivered through normal vaginal birth who received infant formula as a first feed (20%).

4.3.5 INFLUENCE ON INFANT FEEDING DECISION

Out of 386 responses, 254 (65.8%) of mothers reported that health care workers had influenced their infant feeding option, followed by her own mother (8.3%), her own decision (4.7%), advice from her grandmother (3.9%) or another unspecified relative (3.9%) and mother-in-law (3.7%) or the mother's sister (3.7%). Other influences included the infant's father (1.8%) or her own father (1%).

4.3.6 SOURCE OF INFANT FEEDING INFORMATION

Out of 427 respondents, 404 (94.6%) reported that health care workers were their main source of information on infant feeding practices, while 20 (4.7%) said that they would consult with a relative if they needed information.

Considering the results as described above, this study has managed to illustrate the infant feeding practices in the two identified sub-districts. It has further established that feeding practices of babies born in facilities with Baby Friendly status differ from those without Baby Friendly status with regards to some of the selected indicators.

CHAPTER 5: DISCUSSION

This study set out to describe infant feeding practices in two health sub-districts in Mpumalanga province with different Baby Friendly accreditation status. It further attempted to ascertain whether feeding practices of babies born in facilities with Baby Friendly status differ from those without Baby Friendly status.

The hypothesis that there will be significant differences between the feeding practices of babies born in facilities with Baby Friendly status compared to those born in facilities without Baby Friendly status has been supported for three of the five indicators that were tested, namely: early initiation of breastfeeding, EBF rate and ERF rate. The age of introduction of complementary foods, as well as the mixed feeding rate did not differ significantly between the two sub-districts.

Early initiation of breastfeeding

It is encouraging to note that significantly more infants were put to the breast within an hour in a sub-district where all the maternity facilities were Baby Friendly (Emalahleni). However, the early initiation rate in this sub-district was lower than what would be expected in facilities that are accredited as Baby Friendly. This should be followed-up and should be improved.

This study furthermore found that the mother's age was significantly related to the choice of the first feed, with older mothers tending to give infant formula as a first feed and younger mothers tending to give breastmilk as a first feed. This concurs with the findings of an earlier study in Mpumalanga province, where the older mothers tended to be associated with the choice of infant formula feeding.[55] With this in mind, health care workers should ensure that quality infant feeding counselling is provided to all pregnant women, irrespective of their age or perceived experience in infant feeding or the number of children they already have.

Although the majority of infants received breastmilk as the first feed, almost a quarter of the infants received infant formula as a first feed. In these instances, the mother's

perception of 'not having enough milk' was cited as the most common reason for not giving breastmilk as a first feed. This perception of a mother not having sufficient milk supply to sustain the infant's growth and development was also given by mothers as the primary reason for the early discontinuation of breastfeeding. This is similar to the findings of several studies,[48,49,54,58] confirming that the perception of a mother's milk supply to be insufficient is a common challenge with regards to sustaining exclusive breastfeeding. Community health care workers could play a significant role in overcoming this perception, through providing support to mothers to improve and sustain milk supply. In addition, cultural beliefs and misconceptions regarding infants' needs for food in addition to breastmilk need to be addressed at community level through involving all role-players, including men, mothers-in-law, as well as lay and peer counsellors.[79,80,81]

In addition, significantly more infants that were delivered by Caesarean section received infant formula as a first feed when compared to infants delivered through normal vaginal delivery. This finding pinpoints another area of concern and potential intervention towards promoting exclusive breastfeeding, as infants born through Caesarean section are more likely to receive infant formula.[82,83,84] The caesarean section rate in Mpumalanga province[20] was 16.5% during 2011, with Emalahleni sub-district (22.7%) and Mbombela sub-district (19.9%) both exceeding the provincial rate. This resulted in a substantial proportion of infants being predisposed to not receiving breastmilk as a first feed due to the mode of delivery. The infant feeding policies at maternity sections should be specific in prescribing the infant feeding practice and support recommended to this vulnerable group of infants and their mothers.

Exclusive breastfeeding

One of the major finding of this study was that more mothers chose to exclusively breastfeed before delivery in Emalahleni sub-district, with accredited facilities, compared to Mbombela sub-district, with no accredited facilities. Almost all mothers reported that they received ante-natal feeding counselling, and the majority of mothers indicated health care workers had influenced their infant feeding option. The deduction can thus be made that health care workers in Emalahleni sub-district

predominantly promoted breastfeeding and health care workers in Mbombela sub-district predominantly promoted infant formula feeding to mothers-to-be. Furthermore, although this study did not include any information on the mother's HIV status, the HIV prevalence among antenatal women in Emalahleni district was 28.4% and 35.0% in Mbombela (2011). It could therefore be postulated that, due to the historic promotion of replacement feeding as the infant feeding option of choice in the context of PMTCT of HIV, that the HIV status of woman may have contributed to the higher rate of exclusive replacement feeding in Mbombela sub-district.

Since health care workers are such a trusted source of information they should be kept up to date on infant feeding recommendations. Pre-service and in-service training in South Africa should be aligned with the latest Infant and Young Child Feeding (IYCF) policy of the country.[85] This would allow a mother to access skilled practical help from health workers, who can help build mothers' confidence, improve feeding technique and prevent or resolve breastfeeding problems. Such support is even more important in the context of PMTCT of HIV, where recent policy changes may leave both health care workers and community members confused with regards to appropriate options.[16]

The EBF rate for all participants in Emalahleni sub-district was higher than in Mbombela sub-district, up to the age of 4 months. Overall, the EBF rate among all participants under 6 months in this study was significantly higher than reported in the 2008 South African HIV Prevalence, Incidence, Behaviour and Communication Survey,[86] (53.8% compared to 25.7%). However, the EBF rate of infants aged 5 to 6 months in this study was 35.7%, as an indication of the exclusive breastfeeding rate at 6 months of age.

Once again, in the context of HIV, the practice of EBF should be encouraged as opposed to mixed breastfeeding, since mixed feeding poses a higher risk of MTCT of HIV. This finding is promising, in that the EBF rate in both sub-districts seem to be higher than that established during a national survey and in line with the 2013 target of 50%.

As far as the practice of any form of breastfeeding is concerned, the majority of infants in this study were still receiving some form of breastmilk. Similarly, a study conducted in KwaZulu Natal and the Eastern Cape have found that, up to the age of 6 months, more than 80% of the infants were still receiving breastmilk in both provinces.[62] Once again, the concern is that although the infants were receiving breastmilk, this was done in combination with other complementary foods in almost one-fifth of the instances, which constitutes mixed feeding with a resultant increased risk of infectious diseases and MTCT of HIV.

Considering the health and developmental benefits of breastfeeding, the findings of this study is encouraging, as the promotion of EBF up to 6 months is a national health priority and it seems as if the BFHI may be an effective intervention to promote breastfeeding beyond early initiation and practices in maternity facilities.

To strengthen Step 10 of the Ten Steps of Successful Breastfeeding, peer support interventions could be implemented to further raise and sustain EBF rates up to 6 months. This support intervention is relatively affordable, with a positive outcome and therefore appropriate within a resource limited setting. This could successfully be linked to mentoring and community support services. Several studies have illustrated the benefits of a combination of peer counsellors and home support in breastfeeding promotion. [87, 88, 89]

Exclusive replacement feeding

The overall ERF rate in Mbombela sub-district was significantly higher than in Emalahleni sub-district. A point for consideration is the timing of data collection for this study, which took place during the end of March and beginning of April 2012. Following the Tshwane Declaration, Mpumalanga province started the phasing out of free infant formula to newborn infants enrolled in the PMTCT programme as from 1 April 2012, in line with the national policy directive in this regard. The phasing out of the routine supply of free infant formula, along with the promotion of EBF may therefore have contributed to the lower ERF rate among younger infants in this study.

As a result of this policy change, the ERF rate in Emalahleni sub-district progressively declined in younger infants (born after the policy announcement) as compared to older infants. The same does not apply to Mbombela sub-district, where the policy announcement seems not to have had the same effect in increasing EBF. In this regard, it is concluded that the policy directive may not have been well communicated and implemented in Mbombela sub-district. Sufficient orientation and information sharing should form part of a policy change of this magnitude, to ensure that health care workers not only follow the directive, but are able to support the policy change and also allow for attitudes and perceptions of health care workers to be addressed sufficiently. This would then in turn translate into accurate information being disseminated to communities during infant feeding counselling sessions and allowing mothers to make informed decisions on infant feeding options.

It should also be kept in mind that the WHO regards all infants who are not breastfed as an at risk group, who should receive special attention from both the health and social welfare system.[5] Infant feeding policies at maternity sections, as well as general infant and young child health policies should stress the importance of extra care to this category of infants.

Mixed feeding

It is concerning to note that, although proportionally more mothers in Emalahleni sub-district were practicing exclusive breastfeeding, the mixed feeding rate in this sub-district was slightly higher compared to Mbombela. In addition, the exclusive breastfeeding rate in Emalahleni sub-district progressively decreased according to the age of the infants, with the mixed feeding rate increasing as a result.

A further point of concern is that most of the mothers who practised mixed feeding were using breastmilk as the milk feed rather than infant formula in both sub-districts. Mixed breastfeeding poses the highest risk of MTCT of HIV, as well as an increased risk of infectious diseases and is therefore discouraged.[11] Although exclusive breastfeeding is effectively promoted in the sub-district with accredited facilities, it seems that mothers were not advised on the dangers associated with mixed feeding and supported to practise exclusive breastfeeding for the first 6 months of life.

Introduction of complementary foods

For the infants who were given other feeds apart from milk (breastmilk or infant formula) at the time of the study, the mean age of introduction of these feeds were 45 days. The majority of these infants had received complementary foods by 1 month of age and all by age 4 months. These findings are consistent with an earlier study in Mpumalanga, where complementary foods were introduced at 1 month in 36% and before 4 months in 92% of cases. The first complementary foods given in this earlier study were mostly “pap” (soft porridge) (31%), water (29%), cereal (14%), infant formula (14%) and sugar-salt-solution (10%).[54]

Although the majority of children in this study were still receiving exclusive milk feeds, the infants who were receiving complementary foods at an inappropriate time were at risk, since infants are particularly vulnerable during the transition period when complementary feeding begins. This finding once again highlights the critical need for the public health system to not only promote EBF for 6 months, but to also provide support to breastfeeding mothers to achieve this goal. As a first step, all community health care workers should be adequately trained in lactation management, in order to provide appropriate advice and support to mothers, to prevent and overcome breastfeeding challenges and to prevent the early introduction of complementary foods through sustaining the supply of breastmilk.

This support should further be strengthened through breastfeeding support groups, as prescribed in Step 10 of the Ten Steps to Successful Breastfeeding,[2] as well as social mobilisation, such as community dialogues and breastfeeding campaigns.

In addition to the targeted implementation of the BFHI at all public health maternity units by 2015, the NDOH is in the process of regulating foodstuffs for infants and children.[90] Once promulgated, these regulations will prevent the undue marketing and promotion of inappropriate foodstuffs for infants and children and further protect exclusive breastfeeding.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTORY REMARKS

This study was conducted in order to investigate the differences in infant feeding practices between a health sub-district (Emalahleni) where most health facilities offering maternity services were accredited as Baby Friendly, and a health sub-district (Mbombela) where none of the facilities were Baby Friendly.

The results illustrate the differences in infant feeding practices between the two health sub-districts, with regards to the rates of EBF, ERF and mixed feeding, as well as the early initiation of breastfeeding and the age of introduction of complementary foods.

In addition, the results from this study has shown a relationship between Baby Friendly Hospital accreditation status and infant feeding practices, with regards to the same infant feeding indicators.

6.2 CONCLUSIONS

The findings of this study illustrate that the infant feeding practices of mothers residing in a sub-district where all the public health maternity facilities were Baby Friendly were more optimal with regards to early initiation of breastfeeding and EBF compared to a sub-district where none of the facilities were Baby Friendly, supporting the study hypothesis. It therefore seems that BFHI is successful in improving infant feeding practices for at least the first 6 months of life. This is a positive step in the right direction and supports the national directive with regards to transforming all public health maternity sections to be Baby Friendly by 2015.

6.3 RECOMMENDATIONS

The following recommendations can be made from this study:

6.3.1 The support for appropriate infant feeding options and practices to all mothers should be strengthened. Regardless of mothers' decision regarding infant feeding, they should be supported in their choices in order to practise it as safely as possible.

6.3.2 The infant feeding policies of maternity sections should pay attention to infants found to be vulnerable to not being breastfed, including infants born by Caesarean section, infants born to older mothers and to mothers who have other children.

6.3.3 The quality of PMTCT services should be improved, especially with regards to infant feeding counselling and adherence to medication. This could successfully be linked to mentoring and community support services.[91]

6.3.4 Health care workers should be kept up to date on infant feeding recommendations. Breastfeeding promotion should be communicated widely, including messages targeted at partners (men) and grandmothers, due to the influence these individuals may have on infant feeding options and practices.[1,78,79,92]

6.3.5 Development of community-based support networks should be promoted to help ensure appropriate infant and young child feeding, for example mother-to-mother support groups and peer or lay counsellors, to which hospitals and clinics can refer mothers on discharge.

The BFHI provides a framework for all the above recommendations and therefore public health structures at all levels of care should work towards achieving and sustaining accreditation of all public health maternity facilities. This study provides evidence that the implementation of the BFHI in a health sub-district is associated with more optimal infant feeding practices among women with children under 6 months of age. It is therefore concluded that strengthening of the implementation of the BFHI will improve infant feeding practices at a community level.

6.4 STUDY LIMITATIONS

The period of data collection for this study coincided with the phasing out of the routine supply of free infant formula to infants born to HIV-positive women. However, it is argued that any possible effect that the timing of data collection may have had on the infant feeding options of mothers would be equal between the two sub-districts included in this study.

The study did not collect any information on the respondents' HIV status. In this regard, the lower HIV prevalence (28.4%) among pregnant women in Emalahleni compared to Mbombela (35%) is noted and may have played a role in infant feeding options preferred by the respondents at a time of transition between infant feeding recommendations for HIV exposed infants.

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ADDENDA

ADDENDUM 1: PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT:

Comparison of infant feeding practices in two health sub-districts with different Baby Friendly Hospital status in Mpumalanga province,

REFERENCE NUMBER: S11/12/051

PRINCIPAL INVESTIGATOR: Ms M van der Merwe RD(SA)

ADDRESS: PO Box 1882, White River, 1240

CONTACT NUMBER: Tel: 013 766 3413 / 082 307 5345

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the **Health Research Ethics Committee (HREC) at Stellenbosch University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

What is this research study all about?

The study will look at baby feeding practices in Emalahleni, and in Mbombela

All mothers and infant pairs, of which the infants are younger than six months old, who take their babies to the community health centres within Emalahleni or Mbombela sub-district during the period of data collection will be interviewed by field workers.

Information on baby feeding practices will be collected using two questionnaires. One questionnaire will ask questions about the mother's situation and the second questionnaire will look at baby feeding practices.

In total, we want to interview 440 mother and infant pairs as part of this study, from the two sub-districts (Emalahleni and Mbombela).

Why have you been invited to participate?

All mothers and infant pairs, of which the infants are younger than six months old, who take their babies to the community health centres within Emalahleni or Mbombela sub-district during the period of data collection will be interviewed by field workers.

What will your responsibilities be?

During your visit to the community health centre, you will be asked questions about what and how your baby is being fed.

Will you benefit from taking part in this research?

Information from this study will be used to promote good infant feeding practices in the province; to improve child health and reduce illness in children in the future.

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

This study involves no risks to participants

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

To take part in this study is your choice. You may say that you do not want to take part and even if you said yes in the beginning, you may stop to take part at any time.

Who will have access to your medical records?

All information collected as part of this study will be treated as confidential. Your name will not be recorded and your medical records will not be accessed as part of this research.

Findings and recommendations of this study will be written in a report to the Mpumalanga Department of Health and will be shared with other people who work to make baby feeding better in the country.

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

No you will not be paid to take part in the study. There will be no costs involved for you, if you do take part. You will be interviewed during your routine visit to the community health centre.

Is there anything else that you should know or do?
Should you at any time during this study require any further information with regards to the study, please contact Mrs M van der Merwe at 013 766 3413 or 082 307 5345.

You can contact the **Health Research Ethics Committee** at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by your study team.

Declaration by participant

By signing below, I ……..…….. agree to take part in a research study entitled 'Comparison of infant feeding practices in two health sub-district with different baby friendly hospital status in Mpumalanga province'

I declare that:

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

Signed at (*place*) ....…..…….. on (*date*) ……...…….. 2012.

....

Signature of participant **Signature of witness**

Declaration by investigator

I *(name)* ……..…… declare that:

- I explained the information in this document to ……..
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- This conversation was conducted in English / siSwati / Ndebele / Sotho / other ..... and no translator was used.

Signed at (*place*) ....…..…….. on (*date*) ……...…….. 2012.

....

Signature of investigator **Signature of witness**

ADDENDUM 2: PARTICIPANT INFORMATION AND CONSENT FORM (SISWATI)

LIKHASI LELWATI NELIFOMU LESIVUMELWANO LWALONGENELAKO

SIHLOKO SEPHROJEKTHI YELUCWANINGO:

Kucatsaniswa kwetindlela tekondla tinswane etigodzini letimbili tetemphilo etibhedlela letimbili letehlukene letinakekela bantfwana esifundzeni saseMpumalanga,

INOMBOLO YEREFERENSI: S11/12/051

UMCWANINGI LOMKHULU: Nkst M van der Merwe (Sati semitsetfo yekudla lesibhalisiwe i-(RD) (SA)

IKHELI: PO Box 1882, White River, 1240

INOMBOLO YEKUMTSINTSA: Lucingo: 013 766 3413 / 082 307 5345

Uyamenywa kutsi utoba yincenye yephrojekthi yelucwaningo. Uyacelwa tsatsa sikhatsi ufundze lolwati lowetfulelwa lona lapha, lolutawuchaza imininingwane yalephrojekthi. Kucelwa kutsi utibute tisebenti talolucwaningo noma ngimiphi imibuto longayivisisi mayelana nanoma nguyiphi incenye yalephrojekthi. Kubaluleke kakhulu kutsi wenetiseke ngalokugcwele kutsi uvisise kahle kutsi isho kutsini lephrojekthi nekutsi wena ungambandzakanyeka kanjani. Kutimbandzakanya kwakho futsi **kukutsandza kwakho** futsi ukhululekile kutsi uyekele kutimbandzakanya. Uma utsi cha, loku ngeke kukuphatse kabi nganobe ngayiphi indlela. Ukhululekile futsi kuphuma kulolucwaningo nobe nini, ngisho nobe bewuvumile kuba yincenye yalo.

Lolucwaningo luvunyelwe yi**Health Research Ethics Committee (HREC) eStellenbosch University** futsi lutawuhambisana nelwati lwenchubo leyamukelekako yesive nangekwesimisomtsetfo semave ngekuNcuma kweHelsnki, iNingizimu Afrika kuTe Kuhanjiswe Kahle Tetemphilo neMkhandlu weluCwaningo Lwetekwelapha (i-MRC) Nelwati loluhambisana nenchubo Leyemukelekako esiveni yeLucwaningo.

Ngabe lolocwaningo lumayelana nani?

Lolucwaningo lotabuka tindlela tekondliwa kwebantfwana Emalahleni, naseMbombela.

Bonkhe bomake netinswane letimbili, labo bantfwana bangaphasi kwetinyanga letisitfupha budzala, labatsatsa tinswane tabo batihambise etikhungweni tetemphili temphakatsi esigodzini sasEmalahleni noma eMbombela imibuto ngalesikhatsi kucocwa lolwati batawubutwa tisebenti telucwaningo.

Lwati ngetindlela tekondliwa kwemntfwana lotawucocwa ngekusebentisa emafomu lamabili lanemibuto. Linye lifomu litawubuta imibuto ngesimo samake bese kutsi lifomu lesibili libe nemibuto lebukene netindlela tekondliwa kweluswane.

Sebabonkhe sifuna kubuta imibuto bomake labangema-440 nentinswane letihamba ngatimbili njengencenye yalolucwaningo, kuletigodzi letimbili (Emalahleni nase Mbombela).

Umenyelweni kutsi utimbandzakanye?

Bonkhe bomake netinswane ngatimbili, labo bantfwana bangaphasi kwetinyanga letisitfupha budzala, labahambisa bantfwana etikhungweni tetemphilo temphakatsi esigodzini sasEmalahleni noma Mbombela ngalesikhatsi sekucoca lolwati batawubutwa imibuto tisebenti telucwaningo.

Kutakuba yini umsebenti wakho?

Ngesikhatsi uvakashela sikhungo setemphilo semphakatsi, utawubutwa imibuto mayelana nekudla lakudlako nangendlela ludla ngayo.

Ngabe utawuzuza ngekutimbandzakanya kulolucwaningo?

Lwati lolutawutfolakala ngalolucwaningo lutawusetjentiswa kutfutfukisa tindlela letinhle tekondliwa kweluswane kulesifundza; kwenta ncono imphilo yemntfwana nekunciphisa kugula kubantfwana esikhatsini lesitako.

Ngabe kunabo bungoti kuba yincenye yalolucwaningo?

Lolucwaningo alunabo bungoti kulabalungenele

Uma ungavumi kulungenela, nguliphi lelinye litfuba lonalo lekukhetsa?

Kungenela lolucwaningo utikhetsela wena. Ungasho kutsi awufuni kulungenela futsi nobe bewutsite yebo ekucaleni, ungayekela noma nini kuba yincenye yalo.

Ngubani lotawufinyelela kumarekhodi akho etemphilo?

Lonkhe lwati lolucociwe njengencenye yalolucwaningo lutawutsatfwa njengemfihlo. Ligama lakho ngeke libhalwe phasi futsi ngeke kufinyelelwe kumarekhodi akho etemphilo njengencenye yalolucwaningo.

Lokutfolakele kulolupheny netincomo talolucwaningo kutawubhalwa kumbiko lotawuhanjiswa kumNyango weTemphilo eMpumalanga futsi kutakwabelwana nalabanye labasebenta kwenta kondliwa kwebantfwana eveni kube ncono kulelive.

Ngabe utawukhokhelwa ngekungenela lolucwaningo futsi ikhona yini imali kulolucwaningo?

Cha ngeke ukhokhelwe ngekungenela lolucwaningo. Atikho tindleko lotawungena kuto, uma ulungenela. Utawubutwa ngesikhatsi losuke ute ngaso utovakshela lesikhungo setemphilo.

Ngabe kukhona lokunye lokufanele ukwati noma ukwente?

Uma ufuna lwati noma ngasiphi sikhatsi salolucwaningo ufuna lolunye lwati mayelana nalolucwaningo, kucelwa utsintse Nkst. M van der Merwe ku- 013 766 3413 noma ku- 082 307 5345.

Ungatsintsana ne**Health Research Ethics Committee** ku-021-938 9207 uma kukhona lokusolako noma unetikhalo ngalokungakachazwa kahle licembu lakho lelucwaningo.

Satiso salongenele

Ngekusayina ngentasi, mine ……..…….. ngiyavuma kungenela lucwaningo lolusihloko lesitsi 'Kucatsanisa tindlela tekondla tinswane etibhedlela letimbili letinakekela bantfwana etigodzini letehlukene esifundzeni saseMpumalanga'

Ngiyavuma kutsi:

- Ngifundzile nma ngifundzelwe lolwati nelifomu lesivumelwane futsi libhalwe ngelulwimi lwami lingilukhulumako futsi ngikhululekile.
- Ngibe nalo litfuba lekubuta imibuto futsi yonkhe imibuto yami iphendvulwe ngalokwenetisako.
- Niyevisisa kutsi kungenela lolucwaningo **kuyintsandvo yemuntfu** futsi angikacindzetelwa kuba ngilungenele.
- Ngingatikhetsela kuluyekela lolucwaningo noma nini futsi ngeke ngijeziswe nobe ngibandlululwe noma ngayiphi indlela.
- Ngingacelwa kutsi ngiphume kulolucwaningo ngaphambi kwekuba luphele noma uma umcwaningi abona kutsi ngitsandza kuyekela.

Sayina *(indzawo)* .....…….mhla ka*(lusuku)* ……...…….. 2012.

.....

Kusayina longenele **Kusayina fakazi**

Satiso semcwaningi

Mine *(ligama)* ……..…… ngiyatisa kutsi:

- Ngimchazele ngalelifomu……...
- Ngamkhutsata/kutsi abute imibuto nekutsi atsatse sikhatsi lesanele kuyipihemdvula.
- Ngenelisekile kutsi/utivisisile tonkhe tinhlangotsi talolucwaningo, njengoba kuchaziwe ngenhla
- Lengcoco yetiwe ngeSingisi / siSwati / Ndebele / Sotho / lolunye ..... futsi akekho umhumushi losetjentisiwe.

Sayina (indzawo) .....…….. mhla ka-(lusuku) ……...…….. 2012.

....

Kusayina umcwaningi **Kusayina fakazi**

ADDENDUM 3: PARTICIPANT INFORMATION AND CONSENT FORM (NDEBELE)

IPHETJHANA LELEMUKO LABAZIBANDAKANYAKO KANYE NEFOROMO LEMVUMO

ISIHLOKO SEPHROJEKTHI YERHUBHULULO:

Ukumanyaniswa kweendlela zokupha amasana ukudla eemfundaneni zezepilo ezimbili ezineembhedlela ezahlukene ezinesitafu esitjheja khulu abantwana ePhrovinsini yeMpumalanga

INOMBORO YEREFERENSI: S11/12/51

UMPHENYI OMKHULU: Ks M van der Merwe (RD) (Isazi Kwezokudla Okunepilo) (SA)

IKHELI: PO Box 1882, White River, 1240

IINOMBORO ZOMTATO: Umtato: 013-766 3413/ 082 307 5345

Uyamenywa bona uzibandakanye ephrojekthini le yezerhubhululo. Sibawa bona uziphe isikhathi ukufunda ilemuko elitlolwe lapha, elizakurhelebha ngokuhlathulula imininingwana yalephrojekthi. Uvumelekile bona ungabuza isitafu esiqalela iphenyweli nanyana ngimuphi umbuzo nofana ngiyiphi incenye yephrojekthi ongayiziwisisi kuhle. Kuqakathekile khulu bona uzwisise kuhle begodu waneliseke ngokuzeleko kobana irhubhululweli liphathelene nani begodu nokobana ulindeleke bona uzibandakanye njani. Okhunye godu, ukuzibandakanya kwakho kuya **ngokuzithandela kwakho** begodu uvumelekile bona wale ukuzibandakanya. Nangabe uthi, awa, lokhu angeze kwaba nemiphumela emimbi kuwe nangayiphi indlela. Begodu uvumelekile ukuzitsomula ephenyweneli nanyana kungaba kunini, nangabe kwenzeka uvumile ukuzibandakanya emathomeni.

Irhubhululweli liphasiswe yi-**Health Research Ethics Committee (i-HREC)** (yiKomiti yezokuRhubhulula ngezamaPhilo nokuziPhatha) **eYunivesithi ye-Stellenbosch**, begodu lizakuragwa ngokulandela imihlahlandlela yokuziphatha kuhle kanye nemigomo yokwendlala koke ye-Helenski, yeSewula Afrika ye-Good Clinical Practice kanye neMihlahlandlela yokuziphatha kuhle yomKhandlu wezeRhubhululo kezeeNhlahla (i-Medical Research Council (MRC)

Ingabe iphenyweli liphathelene nani?

Iphenyweli lizakuqala iindlela zokupha amasana ukudla eMalahleni neMbombela. Boke abomma kanye namasanabo, isana libe ngaphasi kweenyanga ezisithandathu, abasa amasana lawo kumasentha wezamaphilo eemfundaneni zeMalahleni namkha zeMbombela ngesikhathi sokubuthelelwa kwedatha, bazakubuzwa imibuzo ngilabo ababuthelela ilwazeli emphakathini.

Ilemuko ngokuphiwa kwamasana ukudla lizakubuthelelwa kusetjenziswa amahlelo-mibuzo amabili. Ihlelo-mibuzo elilodwa lizakubuza imibuzo ngamajamo kamma wesana kanti ihlelo-mibuzo elilandelako lizakuqala iindlela zokuphiwa kwesana ukudla. Nasele kuphelele, sifuna ukubuza abomma abanamasana abama-440 njengencenye yephenyweli, abavela eemfundaneni ezimbili (Emalahleni neMbombela).

Kubayini ubawiwe bona uzibandakanye?

Boke abomma abanamasana, amasanabo angaphasi kweenyanga eziyisithandathu, abasa abantwababo emasentha womphakathi wezamaphilo esifundaneni seMalahleni neMbombela ngesikhathi sokubuthelelwa kwedatha, bazakubuzwa imibuzo ngilabo ababuthelela ilwazeli emphakathini.

Kuzaba yini isibopho sakho?

Ngesikhathi uvakatjhela isentha yezamaphilo emphakathini, uzakubuzwa imibuzo yokobana isana lakho uliphani begodu ulipha njani.

Uzakuzuza ngokuzibandakanya erhubhululweneli?

Ilwazi elizakutholakala ephenyweneli lizakusetjenziswa ukuphuhlisa iinkambiso ezihle zokupha amasana ukudla ephrovinsini; ukuphuhlisa ipilo yabentwana kanye nokuphungula amalwele ebantwaneni esikhathini esizako.

Ingabe kunamariskhi (iingozi) ongahlangana nawo nawuzibandakanya erhubhululweneli?

Iphenyweli alinazinto ezingaba yiriskhi (yingozi) kilabo abazazibandakanya.

Nangabe awufuni ukuzibandakanya, khuyini okhunye ongakwenza?

Ukuzibandakanya ephenyenweli, kubiza bona uzikhethele wena ngokuthanda kwakho. Unelungelo lokuthi awuthandi ukuzibandakanya nanyana bewuvumile emathomeni. Ungala ukuragela phambili nokuzibandakanya nanyana ngasiphi isikhathi sokuzibandakanya.

Ngubani ongakwazi ukuhlola amarekhodakho wezamaphilo?

Loke ilwazi elibuthelelwe ngesikhathi kwenziwa iphenyo lizakuphathwa ngokwefihlo. Igama lakho angeze latlolwa kanti amarekhodakho angeze athintwa mumuntu, njengencenye yerhubhululweli.

Okufunyenweko kanye neemphakamiso zerhubhululo zizakutlolwa embikweni ozakuya kumNyango wezamaPhilo eMpumalanga begodu uzakuhletjhulelwa nabanye abantu abasebenzela ukwenza ncono ukuphiwa kwamasana ukudla enarheni.

Uzakubhadelwa ngokuzibandakanya kwakho ephenyweneli begodu ingabe kuneendleko ezizakuba khona?

Awa, angeze wabhadelwa bona uzibandakanye ephenyweneli. Akunaziindleko ezimayelana nawe nakwenzeka bona uzibandakanye. Uzakubuzwa ihlelo-mibuzo ngesikhathi uvakatjhelwe esentha yezamaphililo yomphakathi.

Kunokuthile okhunye ekufanele bona ukwazi namkha ukwenze?

Nakwenzeka bona ngesikhathi sephenyweli utlhoga elinye ilwazi manqophana nephenyo, sibawa bona uthintane noKsk M van der Merwe ku-013 766 3413 namkha ku-082 307 5345.

Ungathinta neKomiti i-Health Research Ethics Committee ku-021 938 9207 nangabe unemibuzo namkha iinghonghoyilo ezingakaphendulwa siqhema sephenyo ngendlela ekunelisako.

Isivumo sozakuzibandakanya

Ngokutlikitla enzasapha, mina.....ngiyavuma ukuzibandakanya ephenyweni lerhubhululo elibizwa bona 'Ukumanyaniswa kweendlela zokupha amasana ukudla eemfundaneni zezepilo ezimbili ezineembhedlela ezahlukene ezinesitafu esitjheja khulu abantwana ePhrovinsini yeMpumalanga.'

Ngiyavuma bona

- Ngifundile namkha ngifundelwe ilwazeli kanye neforomo lesivumo begodu kutlolwe ngelimi engilisebenzisako begodu nengililemukako
- Ngibe nethuba lokubuza imibuzo begodu yoke imibuzwami iphendulwe ngendlela enelisako
- Ngiyazwisisa bona ukuzibandakanya erhubhululweneli **kuya ngokuzithandela** begodu angikakatelelwa bona ngizibandakanye
- Ngingakhetha ukulisa ngingasarageli phambili nerhubhululweli nanyana kukunini begodu angeze ngatlhoriswa namkha ngakatelelwa nanyana ngayiphi indlela
- Ngingabawiwa bona ngilise erhubhululweneli ngaphambi kobana liphele namkha ngesikhathi umrhubhululi abona bona lokho kungaba kuhle emajameni engiqalene nawo

Sitlikitlwe e(*indawo*).....ngomhla ka (*ilanga*)..... 2012.

....

Umtlikitlo wozazibandakanya **Umtlikitlo kafakazi**

Isivumo somphenyi

Mina (*igama*)..... ngivuma bona

- Ngihlathulule ilwazi emtlolweni lo ku.....
- Ngimkhuthaze bona abuze imibuzo begodu ngathatha isikhathi sokuyiphendula
- Ngenelisekile bona uyazwisisa woke amahlangothi werhubhululo njengombana kuhlathululwa ehla
- Ikulumethu sasiyiraga ngelimi lesiNgisi/siSwati/isiNdebele/Sesotho/elinye ilimi.....begodu akunamtjhugululi obekasetjenziswa

Itlikitlwe e(*indawo*) .....ngomhla ka (ilanga) ……..…….. 2012.

....

Umtlikitlo womphenyi **Umtlikitlo kafakazi**

ADDENDUM 4: SOCIO-DEMOGRAPHIC QUESTIONNAIRE (ENGLISH)

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

Date of interview

d	d	m	m	y	y	y	y

District Code		
Facility Code		
Respondent Code		

Obtain this information from the mother.

A. MOTHER'S INFORMATION						RESPONSE		CODE
A1. What is your birth date? (this information can be verified from records in the child's Road-to-Health booklet or the mother's identify document)						__ / __ / ____ dd/mm/yyyy		
A2. How old are you currently? (this information can be verified from records in the child's Road-to-Health booklet or the mother's identify document)						_____ years _____ months		
A3. What is your marital status?								
Unmarried	Married: legal	Married: traditional	Separated	Widowed	Living together	Divorced	Other: Specify	
A4.1 What is the highest grade that you have passed at school? If the mother has passed grade twelve, continue with question A4.2 A4.2 What is your highest qualification obtained?						grade _____ _____ certificate _____ diploma _____ degree _____ postgraduate		
A5.1 Are you currently employed?						_____ yes _____ no		

A. MOTHER'S INFORMATION	RESPONSE	CODE
A5.2 If "no" – are you looking for employment or are you unemployed by choice (e.g. home maker)? A5.3 If yes, please indicate the nature of employment with regards to the term of employment.	_____ unemployed _____ unemployed by choice _____ casual _____ contract _____ permanent _____ self employed	
A6. What is the main source of income for your household? If other, please provide further details	_____ own salary _____ child grant _____ contribution by family members _____other	
A7. Who do you stay with? Tick all the appropriate responses. If other, please provide further details	_____ husband _____ boyfriend _____ mother _____ siblings _____ other family members _____ friend _____ other	
A8. Who looks after your youngest child during the day? If other, please provide further details	_____ self _____ my mother _____ my grandmother _____ mother-in-law _____ my sister _____ baby's sibling _____ baby's father _____ crèche _____ other	

B. INFANT'S INFORMATION	RESPONSE	CODE
B1. What is your baby's birth date? (this information can be verified from the child's Road-to-Health booklet)	__ / __ / ____ dd/mm/yyyy	
B2. How old is your baby currently? (this information can be verified from the child's Road-to-Health booklet)	_____ months	
B3.1 Where was the baby born? B3.2 If the baby was born at a health facility (hospital or clinic) – indicate the facility name: _____ If the baby was born elsewhere, provide further details:	_____ hospital _____ CHC _____ clinic _____ at home _____ other	
B4. Is the baby a boy or a girl?	_____ boy _____ girl	
B5.1 Is this your first baby? B5.2 If no, how many babies did you have before this one? B5.3 How many of these other babies/children are still alive?	_____ yes _____ no _____ _____	

ADDENDUM 5: SOCIO-DEMOGRAPHIC QUESTIONNAIRE (SISWATI)

LIPHEPHA LELINEMAHLELO EMIBUTO YEKUBALA BANTFU EMMANGWENI

Lelihlelo lemibuto lidzinga kucedzelwa ngumcwangingi loceceshiwe, emva kokutfola lifomu lesivumelwane kumake wemntfwana lofanele kufakwa kulolucwaningo.

Lusuku lwe-inthavyu

d	d	m	m	y	y	y	y

Ikhodi yeDistrithi		
Ikhodi yaKliniki		
Ikhodi yaLophendvula imibuto		

Tfola lolwati kumake.

A. LWATI LWAMAKE						IMPHENDVULO		IKHODI
A1. Watalwa nini? (lolwati lungaciniseksiswa kumarekhodi elibhukwana lemntfwana i-Road-to-Health noma epasini lenina)						__ / __ / ____ dd/mm/yyyy		
A2. Uneminyaka lemingaki nyalo? (lolwati lungaciniseksiswa kumarekhodi elibhukwana lemntfwana i Road-to-Health noma epasini lenina)						_____ iminyaka _____ tinyanga		
A3. Ushadile?								
Akashadi	Ushade: emtsetfweni	Ushade: ngesintfu	Uhlukanisile	Umfelokati	Masihlalisane	Udivosile	Lokunye: Beka kahle kucace	
A4.1 Ugcine kabani esikolweni? Uma lomake aliphasile libanga lelishumi nakubili, chubeka nembuto A4.2 A4.2 Ngutiphi ticu lonato?						Libanga _____ _____ sitifiketi _____ idiploma _____ sicu semfundvo _____ ticu letingetulu temfundvo		

A. LWATI LWAMAKE	IMPHENDVULO	IKHODI
A5.1 Uyasebenta nyalo? A5.2 Uma “cha” - uyawufuna umsebenti noma awusebenti ngoba utsandza (sib. utsandza kuhlala ekhaya)? A5.3 Uma kunguyebo, ngicela ulusho luhlobo lwemsebenti mayelana nesikhatsi semnyaka uchashiwe.	_____ yebo _____ cha _____ awusebenti _____ awusebenti ngobe utsandza _____ kwesikhashana _____ igontilaki _____ kwesikhatsi sonkhe _____ uyatisebenta	
A6. Yini leletsa imali emndenini wakho? Uma kunalokunye, kucelwa uchaze kabanti	_____ umholo wakho _____ sabelo semntfwana ____ uyiphiwa ngemalunga emndeni _____lokunye	
A7. Uhlala nabani? Thikha tonkhe timphendvulo letifanele. Uma kunalokunye, kucelwa uchaze kabanti	_____ nendvodza _____ singani _____ make _____ bantfwana bakini _____ lamanye emalunga emndeni _____ umngani _____ lokunye	
A8. Ngubani logadza umntfwana wakho lomncane emini? Uma kunalokunye, kucelwa uchaze kabanti	_____ uyatigadzela _____ ngumake wakho _____ ngugogo wamir _____ maketala _____ dzadzewetfu _____ umntfwana wakabo _____ uyise wemntfwana _____ inkhulisa _____ lokunye	

B. LWATI LWEMNTFWANA	IMPHENDVULO	IKHODI
B1. Watalwa nini umntfwanakho? (lolwati lungacinisekiswa ebhukwini lemntfwana i-Road-to-Health)	__ / __ / ____ dd/mm/yyyy	
B2. Unganani umntfwanakho nyalo? (lolwati lungacinisekiswa ebhukwini lemntfwana i-Road-to-Health)	_____ tinyanga	
B3.1 Watalelwa kuphi lomntfwana? B3.2 Uma lomntfwana atalelwa esikhungweni setemphilo (esibhedlela noma ekliniki) – shano ligama lesikhungo: Uma umntfwana atalelwa kulenye indzawo, chaza imininingwane kabanti:	_____ sibhedlela _____ i-CHC (Sikhungo Setemphilo Semphakatsi) _____ ikliniki _____ ekhaya _____ lokunye	
B4. Lomntfwana ngumfana nobe yintfombatana?	_____ ngumfana _____ yintfombatanel	
B5.1 Ngumntfwana wakho wekucala lona? B5.2 Uma kungenjalo, bangaki bantfwana lonabo ngembi kwalona? B5.3 Bangaki kulabantfwana labasaphila?	_____ yebo _____ cha _____ _____	

ADDENDUM 6: SOCIO-DEMOGRAPHIC QUESTIONNAIRE (NDEBELE)

IPHEPHA-MIBUZO LEZEHLALISWANO NEZOBUJAMO EMPHAKATHINI

Iphepha-mibuzweli lifanele lizaliswe sisebenzi esibandulwe ngefanelo, ngemva kobana sithole imvumo etloliweko kamma wesana elamukelekako ukungafakwa erhubhululweneli.

Ilanga Lekulumiswano

d	d	m	M	y	y	y	y

Ikhowudi Yesifunda		
Ikhowudi Yetliniki		
Ikhowudi Yophendulako		

Thola ilwazeli kunina wesana.

A. IMININGWANA KANINA WESANA	IPENDULO	IKHOWUDI
A1. Lithini ilanga lakho lamabeletho? (imininingwana le ingaqinisekiswa ngamarekhodi eencwajaneni yomntwana i-Road-to-Health namkha umazisa kanina wesana)	__ / __ / ____ dd/mm/yyyy	
A2. Uneminyaka emingakhi gadesi? (imininingwana le ingaqinisekiswa ngamarekhodi eencwajaneni yomntwana i-Road-to-Health namkha umazisi kanina wesana)	_____ iminyaka _____ iinyanga	
A3. Ujame njani kwezomtjhado?		
Awukatjhadi / Utjhadile: ngokomthetho / Utjhadile: ngokwesiko / Nihlukene / Wahlongakalelwa mlingani / Nihlalisene / Nitlhalene / Okhunye: Nqophisa		
A4.1 Uphase yiphi igreyidi ephezulu esikolweni? Nangabe unina wesana uphase ugreyidi 12, ragela phambili nombuzo A4.2 A4.2 Ngiliphi izinga eliphezulu lefundo olizuzile?	igreyidi _____ _____ isitifikethi _____ idiploma _____ iziqu _____ iziqu ezilekako (postgraduate)	

A. IMININGWANA KANINA WESANA	IPENDULO	IKHOWUDI
A5.1 Ingabe gadesi uyasebenza? A5.2 Nangabe ngu- “awa”, usafuna umsebenzi namkha awusebenzi ngebanga lokobana ungafuni umsebenzi (isib. Umma wekhaya)? A5.3 Nangabe ipendulo ngu-“iye”, sibawa utjengise ihlobo lomsebenzi manqophana nehlelo lesikhathi olisebenzako.	_____ iye _____ awa _____ awusebenzi _____ awusebenzi ngokuzithandela _____ amatorho _____ ikontraga _____ safuthi _____ uzisebenza wena	
A6. Ingabe umlinganakho uyitholaphi imali engiyo athembele kiyo yomrholo yomndeni? Uma kunenye indlela yokungenisa umrholo, sibawa unikele imininingwana	_____ umrholwakhe _____ isabelo somrholo wabentwana _____ imali evela kumalunga womndeni _____okhunye	
A7. Uhlala nobani? Tshwaya zoke iimpendulo ezifaneleko. Nangabe ipendulo ithi, “okhunye”, sipha imininingwana	_____ indodakho _____ isoka lakho _____ ummakho _____ bakwenu _____ amanye amalunga womndeni _____ umngani _____ okhunye	
A8. Ngubani otjheja umntwanakho omncani emini? Nangabe ipendulo ithi, “okhunye”, sipha imininingwana	_____ uyaziqalela _____ ngummakho _____ ngugogwakho _____ ngumamezalakho _____ ngudadwenu _____ bantwana bakwabo _____ nguyise lomntwana _____ yikhretjhi _____ okhunye	

B. IMININGWANA YESANA	IPENDULO	IKHOWUDI
B1. Labelethwa nini isana lakho? (imininingwana le ingaqinisekiswa ngamarekhodi eencwajaneni yomntwana i-Road-to-Health)	__ / __ / ____ dd/mm/yyyy	
B2. Isana lakho lingangani gadesi? (imininingwana le ingaqinisekiswa ngamarekhodi eencwajaneni yomntwana i-Road-to-Health)	_____ iinyanga	
B3.1 Labelethelwa kuphi isana lakho? B3.2 Nangabe isana labelethelwa endaweni yezamaphilo (isibhedlela namkha itlinigi) – yitjho igama lendawo leyo: Nangabe isana labelethelwa kenye indawo, nikela imininingwana enabileko:	_____ esibhedlela _____Isentha YezamaPhilo Yomphakathi (i-CHC) _____ etlinigi _____ ekhaya _____ okhunye	
B4. Isana limsana namkha mntazana?	_____ msana _____ mntazana	
B5.1 Ingabe mntwanakho wokuthoma lo? B5.2 Nangabe ipendulo ngu- “awa”, bangakhi abanye abantwana onabo ngaphandle kwalo? B5.3 Bangakhi ebantwanenabo abasaphilako?	_____ iye _____ awa _____ _____	

ADDENDUM 7: INFANT FEEDING PRACTICES QUESTIONNAIRE (ENGLISH)

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

Date of interview

d	d	m	m	y	y	y	y

District Code		
Facility Code		
Respondent Code		

Obtain this information from the mother.

A. HEALTH CARE INFORMATION	RESPONSE	CODE
A.1. Did you attend a health facility for antenatal care during your pregnancy? Specify facility's name: _____	_____ yes _____ no	
A.2.1 During antenatal care, has a health worker talked to you individually or in a group session about breastfeeding? A.2.2 If "yes", was it individually or in a group session?	_____ yes _____ no _____ individually _____ group session _____ both _____ other	
A.3. Before the birth of your baby, what method of infant feeding did you want to practise? EBF = exclusive breastfeeding EFF = exclusive formula feeding Mixed feeding = combination of breastfeeding and other food/drinks	_____ EBF _____ EFF _____ Mixed feeding	
A.4.1 What type of delivery did you have? A.4.2 If you had a c-section, were you given general anaesthesia?	_____ vaginal _____ C-section _____ yes _____ no	

A. HEALTH CARE INFORMATION	RESPONSE	CODE
A.5.1 What did the baby receive as the first feed after birth?	_____ Breastmilk _____ Formula _____ Fresh milk _____ Plain water _____ Sweetened water _____ Other	
A.5.2 If the baby was put to the breast: How soon after birth was the baby put to the breast?	Within an hour _____ More than an hour ____	
A.5.3 If other, provide further detail on what the baby was given to drink immediately after birth.	_____ infant formula _____ medication _____ don't know	
A.5.4 If the baby was fed anything other than breastmilk, please put in plain words why?	_____ infant's medical condition _____ mother didn't have enough milk _____ standard practice in the facility _____ don't know	
A.6 If the choice of the first feed mentioned in A.5 differed from the answer given in A3, ask what influenced her decision to change her mind?		

B. INFANT FEEDING	RESPONSE	CODE
B.1.1 What is your baby receiving to drink / eat today? Tick all the applicable answers. B.1.2 If other, please indicate full details below.	_____ Breastmilk _____ Formula _____ Water _____ Juice _____ Yoghurt _____ Soft porridge _____ Other (please give details)	
INSTRUCTION TO INTERVIEWER If the baby is receiving breastmilk, continue to question B2.1. If the baby is receiving anything other than breast milk, continue to question B3.1 It is possible that the baby could receive breast milk and other feeds, in which case both B2.1 and B3.1 should be completed.		
B.2.1 If receiving breastmilk: B.2.1.1 How is this feed given to the baby? B.2.1.2 How often do you feed the baby breastmilk?	_____ suckling on the breast _____ expressed milk in a cup _____ in a bottle _____ with a spoon _____ with a dropper _____ other (please specify) _____ times during the day _____ times during the night	

B. INFANT FEEDING	RESPONSE	CODE
B.3.1 If receiving formula or any drinks other than breastmilk:		
B.3.1.1 At what age was this food/drink first given to the baby?	_____ weeks _____ months _____ don't know	
B.3.1.2 How is this feed given to the baby?	_____ bottle feeding _____ cup feeding _____ other (please specify)	
B.3.1.3 Do you always have the following when you prepare your baby's milk feed?	_____ formula powder _____ fuel Specify fuel source: _____ gas _____ fire, wood, _____ paraffin _____ electricity _____ other (please specify) _____ clean water _____ other (please specify)	
B.4.1 If you have breastfed the baby at any time and are no longer giving him/her breastmilk, give reason/s for this decision?	_____ not enough milk _____ advised to discontinue by family member _____ advised to discontinue by a health worker _____ baby doesn't want to take breastmilk _____ painful _____ HIV status _____ other (please specify)	
B.4.2. If you no longer breast feed your baby, at what age did you stop giving your baby any breastmilk?	_____ weeks _____ months	

B. INFANT FEEDING	RESPONSE	CODE
B.5. Who played the major role in influencing your infant feeding choices and practices:	_____ health workers _____ relative Specify: _____grandmother _____sister _____aunt _____mother-in-law _____sister-in-law _____ other (please specify) _____ friend _____ media messages _____ other (please specify)	
B.7. Where do you go if you want to know more about feeding your infant? If other, please give further details.	_____ CHC / clinic _____ hospital _____ relative _____ friends _____ traditional health practitioner _____ other (please specify)	

ADDENDUM 8: SOCIO-DEMOGRAPHIC QUESTIONNAIRE (SISWATI)

LIPHEPHA LELINEMAHLELO EMIBUTO NGETINDLELA TEKONDLA LUSWANE

Lemibuto kudzingeka icedzelwe ngumcwaningi loceceshiwe, emuva kwekutfola imvume kumake wemntfwana lofanele kufakwa kulolucwaningo.

Lusuku lwe-inthavyu

d	d	m	m	y	y	y	y

Ikhodi yeDistrithi		
Ikhodi yeKliniki		
Ikhodi yaLophendvula imibuto		

Tfola lolwati kumake.

A. LWATI LWEKUNAKEKELWA KWETEMPHILO	IMPHENDVULO	IKHODI
A.1. Bewuta esikhungweni setemphilo utfole kunakekelwa usakhulelwe? Shano ngalokucacile ligama lesikhungo:	_____ yebo _____ cha	
A.2.1 Ngesikhatsi sekunakelwa ukhulelwe, sisebenti setemphilo sakhuluma nawe wedvwa noma nilicembu ngekumunyisa libele? A.2.2 Uma “yebo”, uwedvwana noma nilicembu?	_____ yeb _____ cha _____ uwedvwa _____ nilicembu _____ kokubili _____ lokunye	
A.3. Ngembi kwekutalwa kwemntfwanakho, nguyiphi indlela bewufuna kondla ngayo umntfwanakho? I-EBF = kummunyisa libele lodvwa I-EFF = kummunyisa lubisi lwesikotela lodvwa Kumondla lokucutjiwe = inhlanganisela yelibele nalokunye kudla/ tinatfo	_____ I-EBF _____ I-EFF _____ Kubondla lokucutjiwe	
A.4.1 Wabeleka kanjani? A.4.2 Uma babeleka ngekuhlintwa, waniketwa sibulala buhlungu lesetayelekile?	_____ ngekwemvelo _____ Ngekuhlintwa _____ yebo _____ cha	

A. LWATI LWEKUNAKEKELWA KWETEMPHILO	IMPHENDVULO	IKHODI
A.5.1 Wanikwa ini umntfwa njengekudla kwekucala emva kwekutalwa?	_____ Lubisi lwelibele _____ lubisi lwesikotela _____ Lubisi lwenkhomo _____ Emanti odvwa _____ Emanti lanongotelako _____ Lokunye	
A.5.2 Uma umntfwana wamunyiswa libele: Wamunyiswa libele emva kwesikhatsi lesinganani atelwe?	Ngeli-awa _____ Ngetulu kweli-awa ____	
A.5.3 Uma kunalokunye, niketa imininingwane lebanti ngaloko laniketwa kona umntfwana emva kwekutalwa.	_____ lubisi lwebantfwana _____ umutsi _____ angati	
A.5.4 Uma kukhona laniketwa kona umntfwana ngaphandle kwelubisi lwelibele, uyacelwa kubeke ngemagama lacondzile kutsi kungani?	_____ simo semntfwana setemphilo _____ make bekangenalo lubisi lolwenele _____ yindlela lebenta ngayo kulesikhungo _____ angati	
A.6 Uma indlela lekhetsiwe yekudla kwekucala lokushiwo ku-A.5 ihlukile kule mphendvulo loniketwe yona ku-A3, buta kutsi yini leyamenta wagucula sincumo sakhe kute agucula umcondvo wakhe?		

B. KONDLIWA KWELUSWANE	IMPHENDVULO	IKHODI
B.1.1 Umntfwanakho unatseni /udleni lamuhla? Thikha tonkhe timphendvulo letifanele. B.1.2 Uma kunalokunye, kucelwa uchaza kabanti ngentasi.	_____ Lubisi lwelibele _____ Lubisi lwesikotela _____ Emanti _____ Ijusi _____ Iyogathi _____ Umdoko _____ Lokunye (uyacelwa chaza kabanti)	
IMILAYETHO YALO-INTHAVYUWAKO Uma umntfwana amunya libele, chubeka nembuto- B2.1. Uma umntfwana kukhona lokunye lakudlako ngaphandle kwelibele, chubeka nembuto- B3.1 Kungenteka kutsi umntfwana amunye libele aphindze adle nalokunye, kuleso simo kokubili-B2.1 na-B3.1 kufanele kucedzelwe.		
B.2.1 Uma amunya lubisi lwelibele: B.2.1.1 Uniketwa kanjani lomntfwana? B.2.1.2 Umupha kangani umntfwana lubisi lwelibele?	 _____ umunye ebeleni _____ bamekhamela lubisi enkomishini _____ ebhodleleni _____ ngesipunu _____ nge-dropper _____ ngalokunye (chaza ucacise) _____ tikhatsi emini _____ tikhatsi ebusuku	

B. KONDLIWA KWELUSWANE	IMPHENDVULO	IKHODI
B.3.1 Uma adla lubisi lwesikotela noma ngusiphi sinatfo ngaphandle kwelubisi: B.3.1.1 Wacala asangakanani lomntfwana kuniketwa lokudla/sinatfo? B.3.1.2 Uniketwa njani lomntfwana? B.3.1.3 Unako loku lokulandzelako njalo uma ulungisa lubisi loludliwa ngumntfwanakho?	_____ emaviki _____ tinyanga _____ angati _____ umunya libhodlela _____ unatsa ngenkomishi _____ lokunye (uyacelwa chaza kucace) _____ lubisi lwebantfwana loluyimphuphu _____ emafutsa Chaza kutsi aphumaphi emafutsa: _____ gezi _____ umlilo, tinkhuni, _____ phalafini _____ gesi _____ lokunye (chaza ngalokucacile) _____ emanti lahlobile _____ lokunye (uyacelwa chaza ngalokucacile)	
B.4.1 Uma uke wamniketa lubisi lwelibele noma ngasiphi sikhatsi lomntfwana futsi wase uyayekela kumniketa/ libisi lwelibele, niketa sizatfu/ tizatfu talesincumo sakho?	_____ lubisi luncane _____ ngelulekwa lilunga lemndeni kutsi ngiyekele _____ ngelulekwa sisebenti setemphilo kutsi ngiyeke _____ umntfwana akalufuni lubisi lwelibele _____ kubuhlungu _____ simo se-HIV _____ lokunye (uyacelwa chaza ucacise) _____ emaviki _____ tinyanga	

B. KONDLIWA KWELUSWANE	IMPHENDVULO	IKHODI
B.4.2. Uma ungasammunyisi lubisi lwelibele umnfwanakho, wagcina kumniketa lubisi lwelibele asangakanani budzala umntfwanakho?		
B.5. Ngubani lodlala indzima lenkhulu ngemtselela ngekukhetsa tindlela tekondla umntfwanakho:	_____ sisebenti setemphilo _____ sihlobo Chaza ucacise: _____ngugogo _____ngudzadze _____ngu-anti _____ngumaketala _____ngusikoni _____ lomunye (chaza ucacise) _____ umngani _____ umbiko webetindzaba _____ lokunye (chaza ucacise)	
B.7. Uya kuphi uma ufuna kwati kabanti ngekondla luswane lwakho? Uma kunalokunye, uyacelwa chaza kabanti.	_____ I-CHC / ekliniki _____ esibhedlela _____ sihlobo _____ bangani _____ inyanga yesintfu Sisebenti setemphilo _____ Lokunye (chaza ucacise)	

ADDENDUM 9: SOCIO-DEMOGRAPHIC QUESTIONNAIRE (NDEBELE)

IPHEPHA-MIBUZO LEENDLELA ZOKUPHA ISANA UKUDLA

Iphepha-mibuzweli lifanele lizaliswe sisebenzi esibandulwe ngefanelo, ngemva kobana sithole imvumo etloliweko kamma wesana elamukelekako ukungafakwa erhubhululweneli.

Ilanga Lekulumiswano

d	d	m	m	y	y	y	y	

Ikhowudi Yesifunda		
Ikhowudi Yetlinigi		
Ikhowudi Yophendulako		

Thola imininingwana le kunina wesana.

A. IMININGWANA YETJHEJO LEZEPILO	IPENDULO	IKHOWUDI
A.1. Ukhe wakhambela ibandulo namkha iyeleliso lezamaphilo lezetjhejo langemva kokubeletha, ngesikhathi usidisi? Nqophisa igama lendawo lapho uye wayeleliswa khona:	_____ iye _____ awa	
A.2.1 Ngesikhathi setjhejo lezamaphilo langemva kokubeletha, ingabe isisebenzi sezamaphilo sikhulume nawe uwedwa namkha nisiqhema, ngendaba yokumunyisa ngebele? A.2.2 Nangabe ipendulo ngu-“iye”, ingabe lokho kwenziwa uwedwa namkha nisiqhema?	_____ iye _____ awa _____ ngingedwa _____ sisiqhema _____ kokubili _____ okhunye	
A.3. Ngaphambi kokubelethwa kwesana lakho, ngiyiphi indlela yokupha isana ogade ufuna ukuyilandela? EBF = exclusive breastfeeding (ukumunyisa kwaphela ibele) EFF = exclusive formula feeding (ukumunyisa kwaphela ibhodlelo) Mixed feeding = ukupha ngokuvanga	_____ EBF (ukumunyisa kwaphela ibele) _____ EFF (ukumunyisa kwaphela ibhodlelo) _____ Ukupha ngokuvanga	

A. IMININGWANA YETJHEJO LEZEPILO	IPENDULO	IKHOWUDI
A.4.1 Ubelethe ngayiphi indlela? A.4.2 Nangabe kube nge-c-section (ukusikwa), uye wanikelwa kokubulala iinhlabi?	_____ ngesifazi _____ C-section (ukusikwa) _____ iye _____ awa	
A.5.1 Isana liye laphiwani kokuthoma emva kokubelethwa? A.5.2 Nangabe isana lamunyiswa ibele: Lidle esikhathini esingangani libelethiwe? A.5.3 Nangabe ipendulo ithi, “okhunye”, nikela imininingwana yokobana isana laphiwani bona lisele msinyazana ngemva kokubelethwa. A.5.4 Nangabe isana laphiwa okuthileko okhunye ngaphandle kwebisi lebele, tlola ngamagama azwakalako bona kubayini kwenziwa njalo?	_____ Ibisi lebele _____ Ibisi lepuyere _____ Ibisi lekomo _____ Amanzi awodwa _____ Amanzi aneswigiri _____ Okhunye E-irini linye _____ Ngaphezu kwe-iri____ _____ ibisi lepuyere _____ iinhlahla _____ angazi _____ amajamo wesana kwezepilo _____ unina wesana ubanganabisi elaneleko _____ yindlela okuragwa ngayo endaweni leyo yezamaphilo _____ awazi	
A.6 Nangabe ifuno yokudla kokuthoma ebalwe ku- A.5 ihlukile kunependulo enikelwe ku- A3, buza bona khuyini okwenza bona athathe isiqunto sokutjhugulula umkhumbulo?		

B. UKUPHIWA KWESANA	IPENDULO	IKHOWUDI
B.1.1 Ingabe isana lakho liseleni/ lidleni namhlanjesi? Tshwaya zoke iimpendulo ezilungileko. B.1.2 Nangabe ipendulo ithi, “okhunye”, sibawa unikele imininingwana ezeleko ngenzasi.	_____ Ibisi lebele _____ Ibisi lepuyere _____ Amanzi _____ Ijuzi _____ Iyogathi _____ Umdoko _____ Okhunye (sibawa unikele imininingwana ezeleko)	
IINYELELISO KILOYO OBUZA IMIBUZO Nangabe isana lisela ibisi lebele, ragela phambili embuzweni B2.1. Nangabe isana lidla okhunye ngaphandle kwebisi lebele, ragela phambili embuzweni B3.1 Kuyakghoneka bona isana lingadla ibisi lebele nokhunye ukudla, nakunjalo ragela phambili uzalise imibuzo B2.1 no- B3.1.		
B.2.1 Nangabe lithola ibisi lebele: B.2.1.1 Ingabe ukudlokhu isana linikelwa njani? B.2.1.2 Ulipha kangakhi isana ibisi lebele?	 _____ limunya ebelenei _____ ngebisi elisebhigirini eputjuzwako _____ ngebhodlelo _____ ngesigobho _____ ngetjhubhana/ idropha _____ okhunye (sibawa bona unqophise) ka_____ emini ka_____ ebusuku	

B. UKUPHIWA KWESANA	IPENDULO	IKHOWUDI
B.3.1 Nangabe isana lidla ibisi lepuyere nanyana esinye isiselo ngaphandle kwebisi lebele: B.3.1.1 Lithome ukusela/ukudla lokhu lineminyaka emingakhi? B.3.1.2 Ingabe isana liphiwa njani ukudlokhu? B.3.1.3 Ingabe uhlala unakho lokhu nawulungisa ibisi lesana?	_____ iimveke _____ iinyanga _____ awazi _____ lisela ngebhodlelo _____ lidla ngebhigiri _____ okhunye (sibawa bona unqophise) _____ Ibisi lepuyere _____ iimbaseli Nqophisa okusebenzisela ukubasa: _____ irhasi _____ umlilo, iinkuni, _____ ipharafini _____ igezi _____ okhunye (sibawa bona unqophise) _____ amanzi ahlanzekile _____ okhunye (sibawa bona unqophise)	
B.4.1 Nangabe umunyise isana lakho kesinye isikhathi begodu gadesi awusalimunyisi, nikela amabanga wesiquntwesi?	_____ akunabisi elaneleko _____ wayeleliswa malunga womndeni bona ulise _____ wayeleliswa sisebenzi sezepilo bona ulise _____ isana alifuni ukumunya ibele _____ kubuhlungu _____ unomulwani i-HIV	

B. UKUPHIWA KWESANA	IPENDULO	IKHOWUDI
B.4.2. Nangabe awumunyisi isana lakho ibele gadesi, walilisisa nini isana lakho ukumunya. Lalinesikhathi esingangani nalilisa?	_____ okhunye (sibawa bona unqophise) _____ iimveke _____ iinyanga	
B.5. Ngubani obamba indawo eqakathekile ekukusizeni bona uthathe iinqunto zalokho ongakupha isana lakho begodu nokukhetha indlela ongalipha ngayo:	_____ iinsebenzi zezepilo _____ iinhlobo Nqophisa: _____ngugogo _____ngudade _____ngukghari _____ngumamazala _____ngumrharibo _____ okhunye (sibawa bona unqophise) _____ bangani _____ ilemukiso ngabezokurhatjhwa kweendaba _____ okhunye (sibawa bona unqophise)	
B.7. Uya kuphi nawufuna ukuthola ilwazi ngokuphiwa kwamasana ukudla? Nangabe ipendulo ithi, ‘okhunye’, sibawa usiphe imininingwana ezeleko.	_____ CHC / tlinigi _____ esibhedlela _____ esihlobeni _____ ebanganini _____ edorhodereni wesintu _____ okhunye (sibawa bona unqophise)	

ADDENDUM 10: SUPERVISOR INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT:

Comparison of infant feeding practices in two health sub-districts with different Baby Friendly Hospital status in Mpumalanga province

REFERENCE NUMBER: S11/12/051

PRINCIPAL INVESTIGATOR: Ms M van der Merwe RD(SA)

ADDRESS: PO Box 1882, White River, 1240

CONTACT NUMBER: Tel: 013 766 3413 / 082 307 5345

You have been invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the principle investigator any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary**.

This study has been approved by the **Health Research Ethics Committee (HREC) at Stellenbosch University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

What is this research study all about?

The study will look at baby feeding practices in Emalahleni, and in Mbombela

All mothers and infant pairs, of which the infants are younger than six months old, who take their babies to the community health centres within Emalahleni or Mbombela sub-district during the period of data collection will be interviewed by field workers.

Information on baby feeding practices will be collected using two questionnaires. One questionnaire will ask questions about the mother's situation and the second questionnaire will look at baby feeding practices.

In total, we want to interview 440 mother and infant pairs as part of this study, from the two sub-districts (Emalahleni and Mbombela).

Why have you been invited to participate?
All mothers and infant pairs, of which the infants are younger than six months old, who take their babies to the community health centres within Emalahleni or Mbombela sub-district during the period of data collection will be interviewed by field workers. As such, home based caregivers from the above areas have been identified as field workers to collect data for this project. You have been identified as a project supervisor for this research project.

What will your responsibilities be?
As a supervisor, you will be requested to attend the field workers training. There after, you are expected to visit each site of data collection at least ones during the period of data collection.

You are responsible to ensure that the field workers comply with the prescriptions of the research project, that the data collected and recorded is factual and a true reflection of the answers given by respondents.

In addition, you are required to assist the field workers with any queries or difficulties arising during the period of data collection and to revert such to the primary investigator.

Will you benefit from taking part in this research?
Information from this study will be used to promote good infant feeding practices in the province; to improve child health and reduce illness in children in the future.

Are there in risks involved in your taking part in this research?
This study involves no risks to participants

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

All direct costs (e.g. travelling to the training session) will be reimbursed. There will be no costs involved for you, if you do take part.

Is there any thing else that you should know or do?
Should you at any time during this study require any further information with regards to the study, please contact Mrs M van der Merwe at 013 766 3413 or 082 307 5345.

You can contact the **Health Research Ethics Committee** at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by your study team.

Declaration by supervisor

By signing below, I ……..……. agree to take part in a research study entitled 'Comparison of infant feeding practices in two health sub-district with different baby friendly hospital stati in Mpumalanga province' as a supervisor, to supervise data collection for the purpose of this study at ..... sub-district.

I declare that:

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I undertake to treat all information given to me by participants of this study as confidential
- I understand the role and functions of the principle investigator and the study supervisors

Signed at (*place*) .....…..…….. on (*date*) ……..…….. 2012.

....

Signature of participant **Signature of witness**

ADDENDUM 11: SUPERVISOR'S RESPONSIBILITIES

- Visit each facility at least once during the period of data collection
- Complete at least one observation report for each field worker
- Maintain a good working relationship with facility management and field workers
- Address any concerns/queries from facility management
- Check all questionnaires for completeness prior to closing off data collection period at each facility
- Revert any queries/concerns to the principle investigator, as needed
- Provide support to field workers as required and address any concerns raised or experienced
- Liaise between the field workers and principle investigator
- Compile a short fieldwork report at the end of data collection period, detailing the procedures used and the difficulties experienced during data collection

SUPERVISOR	**DATE**
PRIMARY INVESTIGATOR	**DATE**

ADDENDUM 12: SUPERVISORS' CHECKLIST

SUB-DISTRICT:	
FACILITY NAME	
SUPERVISOR NAME	
DATE OF VISIT	
FIELD WORKER NAME	

A. Observation of interview with respondent

OBSERVATION	YES/NO
Does the field worker introduce herself to the respondent?	
Is the purpose of the study explained to the respondent?	
Has the respondent been given an opportunity to ask questions relating to the study?	
Was the consent form discussed and explained to the respondent prior to the interview?	
Was the interview conducted in a language that is understood by the respondent?	
Did the field worker ask questions directly from the questionnaire, without changing the words/sentence structure?	
If a question was not understood by the respondent, did the field worker probe/elaborate on the question to explain it to the respondent?	
Did the field worker accurately record the answer as given by the respondent?	
Is the infant younger than six months?	
Is the infant accompanied by his/her birth-mother?	

B.Review of completed questionnaires (at least 5)

OBSERVATION	YES/NO
Consent form completed in full and signed by both the field worker and respondent	
Correct district, facility and respondent codes recorded	
All relevant questions answered/responded to and recorded	
If 'other' marked, explanation or detail given in full	
Copy of participant information leaflet given to the respondent	

SUPERVISOR **FIELD WORKER**

ADDENDUM 13: ETHICS APPROVAL STELLENBOSCH UNIVERSITY HEALTH RESEARCH ETHICS COMMITTEE

UNIVERSITEIT·STELLENBOSCH·UNIVERSITY
jou kennisvennoot · your knowledge partner

Approval Notice
New Application

01-Mar-2012
VAN DER MERWE, Susara Maria

Protocol #: S11/12/051
Title: Comparison of infant feeding practices in two health sun-districts with different baby friendly Hospital stati in Mpumalanga province

Dear Mrs Susara VAN DER MERWE,

The **New Application** received on **06-Dec-2011**, was reviewed by members of **Health Research Ethics Committee 1** via Expedited review procedures on **27-Feb-2012** and was approved.
Please note the following information about your approved research protocol:

Protocol Approval Period: **27-Feb-2012 -27-Feb-2013**

Please remember to use your **protocol number** (**S11/12/051**) on any documents or correspondence with the REC concerning your research protocol.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review:
Please note a template of the progress report is obtainable on www.sun.ac.za/rds and should be submitted to the Committee before the year has expired.
The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number projects may be selected randomly for an external audit.
Translation of the consent document in the language applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372
Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Department of Health (healthres@pgwc.gov.za Tel: +27 21 483 9907) and Dr Hine Visser at City Health (Helene.Visser@capetown.gov.za Tel: +27 21 400 3981). Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.
For standard REC forms and documents please visit: www.sun.ac.za/rds

If you have any questions or need further help, please contact the REC office at 0219389657.

Included Documents:
Investigators declaration
Protocol
Synopsis
Application form

Sincerely,

Franklin Weber
REC Coordinator
Health Research Ethics Committee 1

ADDENDUM 14: ETHICS APPROVAL MPUMALANGA DEPARTMENT OF HEALTH RESEARCH AND ETHICS COMMITTEE

MPUMALANGA PROVINCIAL GOVERNMENT
Building No.3
No. 7 Government Boulevard
Riverside Park Extension 2
Nelspruit
1200
Republic of South Africa

Private Bag X 11285
Nelspruit, 1200
Tel: 013 766 3429
int: +27 13 766 3429
Fax: 013 766 3458
int: +27 13 766 3458

Office of the HOD

Litiko Letemphilo | Umnyango WezaMaphilo | Departement van Gesondheid

Enquiries: Mr M.T. Matlou
Chief Director: Integrated Health Planning
Tel: 013-766 3293

Ms M van der Merwe
P.O. Box 1882
White River
1240

Contact Number: 013 766 3413 (082 307 5345)

Dear Ms van der Merwe,

RE: APPROVAL TO CONDUCT RESEARCH AT PUBLIC HEALTH FACILITIES WITHIN MPUMALANGA DEPARTMENT OF HEALTH AS PART OF REQUIREMENTS FOR MASTERS IN NUTRITIONS

1. The Provincial Research and Ethics Committee hereby grants approval for your research project in principle, provided that you supply the Department of Health with your ethical clearance from the University of Stellenbosch.

2. It is noted the research will be conducted as part of your Masters Degree in Nutrition on the differences in infant feeding practices between a health sub-district (Emalahleni) where most health facilities offering maternity services are accredited as Baby Friendly and a health sub-district (Mbombela) where none of the facilities are Baby Friendly.

3. No issues of ethical consideration were identified

4. The onus lies with the researcher to seek approval from the mentioned public health facilities prior to conducting the research.

5. It should be noted however, that the department will be expecting a report on the findings, once the research project has been completed.

Yours faithfully,

ACTING HEAD OF DEPARTMENT
MR M.R. MNISI
DATE: 02/02/2012

cc: Chief Director: Primary Health Care: Ms I Makwetla
Director: Primary Health Care: Ms S Motau
Deputy Director: Maternal, Child and Women's Health: Ms D Mdluli