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# Factors associated with early infant breastfeeding practices in Namibia

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# FACTORS ASSOCIATED WITH EARLY INFANT BREASTFEEDING PRACTICES IN NAMIBIA

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A research report submitted in partial fulfilment of the requirements for the degree of Master of Public Health (MPH) in the School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg.

**Johannesburg, October 2021**

# DECLARATION

## DECLARATION

I, Nicole Amanda Angermund, declare that this research report is my original work. It is being submitted for the degree of Master of Public Health in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong. I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.

I have read the sections on referencing and plagiarism in the Wits Plagiarism Policy and I have followed the required conventions in referencing the thoughts and ideas of others. I understand that the University of the Witwatersrand may take disciplinary action including suspension or permanent expulsion against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.

Signature: 

Date: 21 October 2021

## DEDICATION

In memory of my loving husband, Gerhard Leon Angermund,

**27 November 1967 – 17 February 2018.**

Forever and always in my heart!

## ABSTRACT

**Background:** Breastfeeding is nearly universal in Namibia, with 94% of children being breastfeed in their life time. The national policy on Infant and Young Child Feeding (2003), include recommendations of optimal breastfeeding practices such as breastfeeding within the first hour after birth and recommendations against giving infants any other fluids before breastmilk (pre-lacteal feeds). The latest Namibia Demographic and Health Survey (2013) reported early initiation of breastfeeding within one hour after birth at 71% and the use of pre-lacteal feeds as high as 19% in some regions of the country. This showed that early breastfeeding practices were not optimal in the country

**Objectives:** Starting breastfeeding within an hour of birth, also known as early initiation of breastfeeding, and avoiding the introduction of pre-lacteal feeds is known to reduce newborn mortality and is recommended by the World Health Organization. The aims of this study were to describe characteristics of mothers who ever breastfed their infants, and to determine factors associated with early initiation of breastfeeding and the use of pre-lacteal feeds among newborn's in Namibia. The study also described the type of pre-lacteal feeds used to determine specific bottlenecks to optimal infant and young child feeding. The findings are meant to inform programmes in the country that protect and promote breastfeeding, providing needed information for targeted interventions and design of appropriate communication materials.

**Methodology:** The study was a secondary analysis of data from the Formative Assessment on Infant and Young Child Feeding Practices and Care in Namibia; which was a cross-sectional, nationally-representative household survey carried out in 2014. STATA ® 13 was used for data analysis. Sample weights were used for all analysis and all statistical tests used complex sample analysis to account for the cluster survey design. Bivariate analysis was carried out with simple logistic regression and multivariate logistic regression was used to quantify associations while controlling for other factors.

**Results:** There were 884 mothers with children from birth to 23 months in the study sample. The majority of mothers in the sample (58%) were from rural areas, and 77% of mothers delivered in a hospital setting. 90% of mothers had ever breastfed their child,

and among children who received pre-lacteal feeds, the main types of pre-lacteal feeds given were water (46%) and breastmilk substitutes (39%). Early initiation of breastfeeding within one hour (EIBF) after birth was low (49%) and the use of pre-lacteals was high (36%). The factors associated with the practice of EIBF were living in Zone 3 (Kunene, Otjozondjupa, Omaheke Regions) (AOR = 2.2; 95% CI: 1.38, 3.51); delivering in a hospital (AOR = 2.9; 95% CI: 2.02, 4.26); secondary level of education (AOR = 0.63; 95% CI 0.43, 0.93; ≥ four ante-natal care visits (AOR = 1.35; 95% CI 0.81, 2.26). Factors associated with the non-use of pre-lacteal feeds were delivering in a hospital (AOR = 3.6; 95% CI: 2.01, 633), ≥ four ante-natal care visits (AOR = 1.35; 95% CI 0.81, 2.26) and mothers who were from zone 4 (Erongo, Khomas, Hardap and //Kharas) (AOR = 1.97; 95% CI 0.93.4.13).

**Conclusions:** Considering the low EIBF rates and the high use of pre-lacteal feeds, strategic interventions need to be implemented to improve these practices. Efforts to reduce pre-lacteal feeding must focus on stopping the use of water and breastmilk substitutes. While delivery in a hospital was positively associated with the recommended feeding practices of early initiation and avoiding the use of pre-lacteal feeds, there remained a large percentage of women who delivered in a hospital and did not follow the recommended practices — illustrated by the gap between the 77% of mothers who deliver in a hospital and the 49% of mothers practicing early initiation. As hospital delivery becomes universal, the study findings suggest the need to improve breastfeeding practices (EIBF and the non-use of pre-lacteal feeds) through improved implementation of the Baby-Friendly Hospital Initiative, increased skills and knowledge of health and community health workers to counsel mothers and the development of a comprehensive communication strategy that could benefit both health workers and mothers.

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All my family, friends and colleagues, thank you for encouraging and motivating me, when I wanted to give up after my husband's passing and did not have the strength to continue.

Thank you to the Ministry of Health and Social Services for the permission to use the data from the Formative Assessment on Infant and Young Child Feeding Practices and Care, 2014-2015.

**To my Heavenly Father:** Your **grace** is sufficient for me!

**Psalm 23: 1-3**
**"**The Lord is my shepherd: I shall not want. He makes me to lie down in green pastures: He leaded me beside still waters. He restores my soul."

# Table of Contents

DECLARATION ..... ii
DEDICATION ..... iii
ABSTRACT ..... iv
ACKNOWLEDGEMENTS ..... vi
LIST OF FIGURES ..... x
ABBREVIATIONS AND ACRONYMS ..... xii
OPERATIONAL DEFINITION OF TERMS ..... xiii
CHAPTER 1 INTRODUCTION ..... 1
1.1 Background ..... 1
1.2 Literature Review ..... 3
1.2.1 Overview of breastfeeding ..... 4
1.2.2 Early initiation of breastfeeding ..... 4
1.2.3 Use of pre-lacteal feeds ..... 6
1.3 Problem statement ..... 7
1.4 Justification ..... 8
1.4 Research Question, Aim and Objectives ..... 9
CHAPTER 2 METHODOLOGY ..... 10
2.1 Introduction ..... 10
2.2 Study Design ..... 10
2.3 Study Site ..... 10
2.4 Study Population and sample ..... 11
2.5 Data Collection Procedures ..... 12
2.6 Variables ..... 13
2.6.1 Outcome variables ..... 13
2.6.2 Exposure variables ..... 14
2.7 Data Management and Analysis ..... 16
2.10 Ethics ..... 19

CHAPTER 3 RESULTS ..... 20
3.1 Description of the sample ..... 20
3.1.1 Socio-demographic variables ..... 20
3.1.2 Access to health services and information ..... 23
3.1.3 Early breastfeeding practices ..... 26
3.2.1 Ever breastfeeding ..... 28
3.2.2 Early initiation of breastfeeding (EIBF) ..... 29
3.2.3 The use of pre-lacteal feeds ..... 29
3.3 Factors associated with early initiation of breastfeeding (EIBF) ..... 37
3.3.1 Bivariate analysis ..... 37
3.3.2 Multiple logistic regression analysis ..... 39
3.4 Factors associated with the use of pre-lacteal feeds ..... 42
3.4.1 Bivariate analysis ..... 42
CHAPTER 4: DISCUSSION ..... 50
4.1 Introduction ..... 50
4.2 Characteristics of women in the study sample ..... 50
4.2.1 Socio-demographic characteristics ..... 50
4.2.2 Maternal and Child Characteristics ..... 51
4.2.3 Access to health services and information ..... 52
4.3 Characteristics of women who breastfed their children ..... 53
4.4 Factors associated with early infant feeding practices ..... 54
4.4.1 Early initiation of breastfeeding ..... 54
4.4.2. Use of pre-lacteal feeds ..... 57
4.4.3. Strengths and limitations of the study ..... 58
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS ..... 60
5.1 Study conclusions ..... 60
5.2 Recommendations ..... 60
REFERENCES ..... 63
ANNEX A: CONSENT LETTER AND FORM ..... 68
ANNEX B: ETHICAL APPROVAL LETTER FROM THE MINISTRY OF HEALTH AND SOCIAL SERVICES, REPUBLIC OF NAMIBIA ..... 69

ANNEX C: CARE GIVER QUESTIONNAIRE USED IN THE PRIMARY STUDY (SHORTENDED)..... 70
ANNEX D: LIST OF VARIABLES INCLUDED IN THIS ANALYSIS ..... 74
ANNEX E: EXTRACTION TOOL AS PER VARIABLES IDENTIFIED (2 pages)..... 78
ANNEX F: ETHICS CLEARANCE CERTIFICATE ..... 80

# LIST OF FIGURES

**Figure 1 Primary sampling units in 14 regions** ..... 11
**Figure 2 Selection of analytical study sample** ..... 17
**Figure 3 Geographical distribution of the study sample per zones** ..... 20
**Figure 3.4 Type of pre-lacteal feeds given** % ..... 26
**Figure 3.5 Breastfeeding practices per geographical location (zones) %** ..... 31
**Figure 3.6 Breastfeeding practices at place of delivery (%)** ..... 31

# LIST OF TABLES

Table 2.1:

**Data analysis by objectives** ..... 18
**1: Socio-demographic characteristics of the study sample (N=884)** ..... 21
**2: Descriptive statistics for maternal and children characteristics (N=884)** ..... 23
**3: Descriptive statistics on access to health services and information (N=884)** ..... 24
**4: Descriptive statistics on early breastfeeding practices amongst the study sample (N=884)** ..... 27
**5: Characteristics of mothers in relation to breastfeeding practices** ..... 32
**6: Bivariate analysis: Factors associated with early initiation of breastfeeding (N=436)** ..... 37
**7: Multiple logistic regression analysis: Factors associated with early initiation of breastfeeding (EIBF) (N=436)** ..... 41
**8 Bivariate analysis: Factors associated with the non-use of pre-lacteal feeds (N=567)** ..... 43
**9 Multiple logistic regression analysis: Factors associated with the non-use of pre-lacteal feeds (N=567)** ..... 47

## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| ANC | Ante-Natal Care |
| AO | Adjusted odds |
| AOR | Adjusted odds ratio |
| ARV's | Ani-retroviral drugs |
| BFHI | Baby Friendly Hospital Initiative |
| BMFHI | Baby Mother Friendly Hospital Initiative |
| CI | Confidence interval |
| DHS | Demographic and Health survey |
| EBF | Exclusive breastfeeding |
| EIBF | Early initiation of breastfeeding |
| LAM | Lactation Amenorrhea Method |
| MoHSS | Ministry of Health and Social Services |
| NSA | National Statistics Agency |
| PNC | Post-Natal Care |
| PSU's | Primary Sampling Units |
| ProPAN | Process for the Promotion of Child Feeding |
| UNICEF | United Nations Emergency Children's Fund |
| WHO | World Health Organisation |

## OPERATIONAL DEFINITION OF TERMS

**Anti-retroviral drugs:** drugs used to treat HIV infection

**Breastfeeding:** feeding a baby with milk directly from the mother's breast.

**Breast-milk substitutes:** includes infant formula, other **milk** products and therapeutic **milk**,

**Colostrum:** the first yellowish milk directly available after birth, highly nutritious and has antibodies that protect the newborn from diseases

**Culture**: the ideas, customs, and social behaviour of a particular people or society.

**Delivery outside of hospital:** place where mothers delivered that is at a health centre, clinic, at home or with the assistance of traditional birth attendant delivery

**Early initiation of breastfeeding**: infant to assume breastfeeding within one hour after birth

**Education status:** mothers attending primary or secondary education

**Employment status:** mothers that are paid for work outside the home

**Exclusive breastfeeding:** an infant receives only breastmilk and no other liquids or solids, not even water, with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines

**Infant:** a child aged between 0 - 11 months

**Marital status:** mothers who is single, divorced, widow, separated, married or living with a partner

**Optimal breastfeeding practices:** this include early initiation of breastfeeding, exclusive breastfeeding during the first six months of life, continued breastfeeding for up to two years of age and beyond

**Pre-lacteal feeding:** feeding to an infant with something other than breast milk after birth to three days

**Primary school education:** Grade 0-7 in the formal education system in Namibia

**Skin-to-skin contact:** where the infant laid directly on their mother's bare chest after birth and left for at least an hour or until after the first feed.

**Secondary school:** Grade 8-12 in the formal education system in Namibia

**Tradition:** the transmission of customs or beliefs that is passed on from generation to generation

**Young child**: a child aged between 12 - 23 months.

# CHAPTER 1 INTRODUCTION

## 1.1 Background

The World Health Organisation (WHO) recommends breastmilk only from birth to six months and continued breastfeeding up to two years or beyond (1, 2). A global target of at least 50% for exclusive breastfeeding up to six months was set as part of the global nutrition targets released by WHO in 2012 (3).

Low breastfeeding rates globally are a major concern, with only 44% of infants in the world being breastfed during the first hour of life, whilst only 40% under six months of age are exclusively breastfed. Only 45% of children are still breastfeeding at the age of two years (4). In Africa, especially in the middle and lower income countries the situation is much worse. In a report, mapping exclusive breastfeeding in Africa between 2000 and 2017, rates of exclusive breastfeeding (EBF) varied with Ethiopia (58%), Tanzania (57%), Democratic Republic of Congo (46%) and Kenya as low as 38% (5). This report showed that most countries will not be able to meet the World Health Organization's Global Nutrition Target of 50% EBF prevalence by 2025 (3, 5).

Optimal breastfeeding practices such as early initiation of breastfeeding within one hour after birth (EIBF) and the avoidance of pre-lacteal feeds are proven interventions to reduce deaths in newborns (1). Twelve percent of deaths amongst children less than five years of age are caused by sub-optimal breastfeeding. Coverage of initiation of breastfeeding within the first hour after birth is different among countries in Africa due to various factors. Low initiation of breastfeeding prevalence was reported in Kenya (59%), Uganda (55%), and Democratic Republic of the Congo (43%) despite the health benefits and the survival of the infants (6). The practice on the use of pre-lacteal feeds to infants after delivery is also concerning. The prevalence of pre-lacteal feeding is only 32% in Sub-Saharan Africa (6). Egypt had the highest prevalence at 60%, followed by Uganda (31%).and Ethiopia (29%) (6).

Pre-lacteal feeding practices were seen to be common in younger mothers and mothers with lower educational level (7).The general belief that colostrum is not adequate and that the infant might be crying because of hunger, also drives mothers to provide cow's milk, water and honey within the first day of delivery instead of waiting for the "milk to come in" (8). Socio-economic, cultural and environmental factors e.g. maternal age, place of residence, education, occupation, income, antenatal care, place of birth and cultural practices impacts optimal breastfeeding practices (8, 9).

Breastmilk is the ideal food for infants, because it meets all the energy and nutritional needs for infants under the age of six months and is immediately available (10). Breastfeeding is identified by the Lancet series as an effective intervention to reduce neonatal mortality and morbidity by 55-87% (11). A UNICEF report of 2015 states that one in every 12 children dies in Sub-Saharan Africa compared to one in 147 in the developed world among children under the age of five years (12). The Lancet series of 2016 states that if children were optimally breastfeed, more than 820 000 lives could be saved (13).

Breastfeeding carries significant benefits such as reduced incidence in chronic diseases in adulthood, lower risk of breast cancer for mothers and provides protection against pregnancy if mothers practiced the Lactation Amenorrhea Method which extends the postpartum infertility (14, 15). Not breastfeeding is associated with lower intelligence and economic losses estimated at 49% of world gross national income (11). Risks of not breastfeeding for infants includes higher risks of childhood obesity and diabetes type 1 and type 2 (14). There are lower odds for overweight and obesity in children who had breastmilk for 6 months or longer due to the protective effect of breastfeeding (16).

Namibia has adopted the WHO recommendations and developed appropriate policy and guidelines to guide implementation. The 2003 National Policy on Infant and Young Child Feeding, include recommendations of optimal breastfeeding practices such as breastfeeding within the first hour after birth and recommendations against giving infants any other fluids before breastmilk (pre-lacteal feeds) (2). It is recommended that infants are not given pre-lacteal feeds such as water, glucose water, teas or herbs as these interfere with initiation and exclusivity of breastfeeding (2, 17). Despite the implementation

of these optimal breastfeeding recommendations, the Namibia Demographic Health Survey (DHS) of 2013, reported the early initiation of breastfeeding at only 71%, although 87% of women in Namibia gave birth in health facilities. It also reported that in some regions of the country as high as 19% of infants received pre-lacteal feeds (18). The exclusive breastfeeding coverage in Namibia was also reported to be 48% amongst infants younger than six months of age (18). Although exclusive breastfeeding rates in the country is low compared to other countries in Africa, this study will not investigate factors associated with exclusive breastfeeding, but focus on EIBF and the use of pre-lacteal feeds (5).

The DHS also reports that only three percent of women did not receive antenatal care (ANC). It is policy in Namibia, that all pregnant women should attend ANC at least eight times during the pregnancy period (19). During these visits the importance and benefits of breastfeeding is explained to pregnant women and breastfeeding counselling is given and pregnant women are shown to breastfeed as per the ten steps to successful breastfeeding included in the Baby Mother Friendly Hospital Initiative (BMFHI) guidelines in the country (20).

Namibia has implemented the ten steps of successful breastfeeding through the Baby Mother Friendly Hospital Initiative (BMFHI) since 1992 in order to improve breastfeeding practices (20). The initiative includes the ten steps of successful breastfeeding and provides guidance to health workers on educating mothers at ANC and Post-natal Care (PNC) about breastfeeding management; initiation of breast-feeding within 30 minutes of giving birth and prohibiting pre-lacteal feeding in all public health facilities (20).

## 1.2 Literature Review

In this literature review, studies of breastfeeding practices amongst infants have been identified through an extensive literature search. Studies using different research methods were sourced. The following search terms such as “breastfeeding, exclusive breastfeeding, initiation, factors influencing breastfeeding practices, pre-lacteal” were used to search the databases (Pubmed, Google Scholar and Psychnet).

### 1.2.1 Overview of breastfeeding

The importance and benefits of breastfeeding are well documented. The superiority of breastmilk is proven because it contains all the nutrients to satisfy the needs of infants in the first six months of life (11, 13). It contains bioactive factors that improves and strengthen infants immune system and provides protection against infections such as pneumonia and diarrhoea and also protects against diseases such as otitis media, gastro-intestinal and allergic diseases (11). It. Breastmilk also helps digestion and absorption of nutrients (21). Higher intelligence levels are also observed in children who were breastfed for longer periods and evidence suggests that breastfeeding reduces the risk of overweight and diabetes later in life (13). The benefits for mothers who are breastfeeding are numerous. Breastfeeding reduces breast cancer, diabetes, hypertension and cardio-vascular disease, ovarian cancer, and reduces post- partum bleeding (13, 22).

Providing colostrum is very important for the baby. This is the first milk directly available after birth and provides immunity to the infant and remains available until “the milk comes in” within two to three days. It is also very nutritious due to its concentration (13). The provision of colostrum to the baby is ensured through early initiation of breastfeeding (EIBF) and the prevention on the use of pre-lacteal feeds.

Socio-economic, cultural and environmental factors e.g. maternal age, place of residence, education, occupation, income, ANC, place of birth and cultural practices impacts optimal breastfeeding practices (8, 9, 23). Poverty and women’s knowledge and attitude towards breastfeeding, is also associated with lower rates of breastfeeding (23). This was also proven in a study conducted in Jordan assessing women’s knowledge, attitude, and support and planning of breastfeeding where results were shown that 72% knew the WHO recommendations on breastfeeding and 97% expressed their intention to breastfeed (24).

### 1.2.2 Early initiation of breastfeeding

It is recommended that all infants are placed skin-to-skin with their mothers immediately after birth. This will support the initiation of breastfeeding within one hour after birth termed early initiation of breast feeding (EIBF) (14). EIBF helps to stimulate breastmilk

production, produces antibody protection for the infants and helps establish successful and longer duration of breastfeeding (25). In a systematic review by Moore et al, 2016, findings revealed that the practice of skin-to-skin placement and EIBF until the end of the first breastfeeding session extend the duration of breastfeeding and increase the chances of infants breastfeeding in the first  months of life, and may increase rates in exclusive breastfeeding ((26).

EIBF can prevent 22% of newborn deaths, which emphasizes the importance of starting early within the first hour after birth (27). Infants who start breastfeeding after one hour of birth have a 33% greater risk of dying (16).

Various factors or characteristics influence a mother's ability to breastfeed within one hour after birth. A secondary analysis by Takashishi et al using the WHO Global Survey on Maternal and Perinatal Health showed that maternal factors such as age, levels of education, marital status and number of antenatal care visits were observed to influence early initiation of breastfeeding practices EIBF (25). EIBF coverage was 58% amongst all births within the first hour after birth globally. Peru had the lowest country coverage of 18% followed by Sri Lanka and Cuba at 89% and 89 % respectively (26). Angola had the highest coverage at 98 % (25).

An American study by Abie and Goshu et al, reported that EIBF was practiced by 77% of mothers. This study indicated that younger mothers are more likely to practice EIBF. Cultural differences may also have been possible because respondents came from different towns or community (16). In another study conducted in rural-eastern Ethiopia, mothers with a primary education were two times more likely to EIBF and mothers with secondary education were three times more likely to EIBF (23). Also significant from this study was that mothers who attended ANC at least to-three times were more likely to initiate breastfeeding early within one hour after birth at 62% (28).

The place of delivery and implementation of breastfeeding initiatives influences optimal breastfeeding practices. In a study carried out in Bangladesh at public health facilities, 67% of mothers initiated breastfeeding within one hour after birth amongst mothers who

delivered in district hospitals; the environment was conducive for mothers to place their infant's skin–to-skin and to the breast when they started crying in the hospital settings (14).

EIBF is also dependent on support rendered by health workers with regards to positioning and attachment of the newborn to the breast. Placing the infant skin-to-skin with the mother as soon as possible after birth, helps establish bonding between mother and baby and also provides an opportunity for health workers to practically assist and counsel mothers to initiate breastfeeding early (4).This builds mother's confidence in breastfeeding and helps to establish breastfeeding and increases infant's chance of survival (29).

### 1.2.3 Use of pre-lacteal feeds

Pre-lacteal feeds are feeds given to an infant and is defined as giving the baby anything else to drink other than breastmilk within the first three days after delivery. These feeds interfere with breastfeeding and reduce the intake of colostrum that is an important part of early breastfeeding by the infant (6, 17). The recommended practice is to avoid pre-lacteal feeds such as water, glucose water, teas, herbs because it interferes with the intake of colostrum and delays the initiation of early breastfeeding (17). It reduces the protective and immunological benefits a newborn receives from colostrum (9).

Whilst Namibia's national rate of pre-lacteal feeding is 10%, this masks the disparity across different regions in the country, whereby the highest rate is 19% in Kavango region and there are two regions (//Kharas,and Erongo) with rates equal to or above 15% (18). Namibia is not the only country in the Africa region with high pre-lacteal feeding rates. Democratic Republic of the Congo reported 37% (2011), Ethiopia 27% (2011), Kenya 16% (2014) and Zimbabwe 13% (2013) (30). Malawi reported the lowest rate of 3% followed by Zambia at 4% (30). Eighty five percent of mothers reported providing pre-lacteal feeds to their infants in a study conducted in rural west-Nigeria in 2017 (7). The study also determined that plain water was the most common pre-lacteal feed given to infants (7).

Factors' influencing the provision of pre-lacteal feeds includes place of residence, place of delivery, ANC visits, time of initiation of breastfeeding, avoidance of colostrum and the mother's knowledge of breastfeeding as well as exposure to breastfeeding counselling (6). Mothers who not being aware of the risks of pre-lacteal feeding also have an influence on the use of pre-lacteal feeds (30). An Ethiopian study also found that the use of pre-lacteal feeds was higher among infants whose mothers were not working. Evidence from this study also revealed that pre-lacteal feeding practices were higher amongst infants with mothers aged between 21-34 years (31).

A review by Berde et al analysing the DHS data of 22 Sub-Saharan Africa countries found that fluids more commonly given as pre-lacteal feeds were plain water (22%), breast-milk substitutes (5%) and sugar or glucose water (4%). Demographic factors that were significantly associated with the use of pre-lacteal feeds were mothers with a lower level of education, fewer ANC visits and delivery at home. The age of mothers also influenced this practice with women 19 years or younger more likely to give pre-lacteal feeds (14).

## 1.3 Problem statement

According to the 2013 Namibia Demographic Health Survey, 87 % of women in Namibia gave birth in health facilities (18). Namibia has implemented the ten steps of successful breastfeeding through the Baby Mother Friendly Hospital Initiative (BMFHI) since 1992 (20). The ten steps of successful breastfeeding, forms part of the BMFHI and includes educating mothers about breastfeeding management; helping mothers and infants to initiate breast-feeding within 30 min of giving birth; supporting breastfeeding on demand and prohibiting pre-lacteal feeding (20).

It is therefore expected that the initiation of breastfeeding should take place within one hour after birth and that no other foods, fluids or liquids should be given to infants up to the age of six months (2, 17). However, the NDHS reported the early initiation of breastfeeding at only 71% at facility level compared to 77% when a women delivered at home. Pre-lacteal foods or fluids being given with frequencies as high as 20% in some regions of the country were reported (18).

This shows that there are sub-optimal breastfeeding practices in the country, hence the need to determine the factors influencing breastfeeding practices and the association between initiation of breastfeeding within one hour after birth and the use of pre-lacteal feeds.

## 1.4 Justification

Although there is a significant amount of global research about factors influencing mothers to initiate early breastfeeding within the first hour after birth and the use of pre-lacteal feeds, very little is known about which factors are significant in the context of Namibia. Currently the only source of data with breastfeeding information is the DHS of 2013, but it only provides frequency tables and does not provide information on factors that influenced these findings (18). The BFHI was implemented in 1992 in Namibia and all district hospitals with maternity wards were certified baby friendly, but no assessment has been done to assess the impact of the programme (20).

A population-based study named the Formative Assessment on Infant and Young Child Feeding Practices and Care was conducted in Namibia by the Ministry of Health and Social Services (MoHSS) in 2014 (32)..The formative assessment focused on 12 ideal practices for infant and young child feeding and thus captured more detailed information on breastfeeding practices compared to the routine DHS. The rationale to conduct the primary study was to better understand the barriers and facilitators that support recommended IYCF practices in the country. To date, no analysis has been conducted on this dataset to explore the factors associated with EIBF and the use of pre-lacteal feeds.

Although there are information on breastfeeding information available in the DHS report, the IYCF study provided the opportunity to delve into the findings, because it included more variables/data on IYCF practices and therefore provided the opportunity to analyse and determine associations. Also the study was done after the DHS of 2013, and thus provide more recent data. A secondary data analysis using this study aims to determine the factors associated with breastfeeding practices in Namibia. The study findings will be used to guide and inform infant and young child feeding policy and programmes with the

focus on developing strategies and approaches that will address the factors associated with EIBF and the use of pre-lacteal feeds in the country. The findings of this study will also be used to bring about improvement in the rendering of support to breastfeeding mothers post-delivery, strengthen BFHI implementation and increase duration of exclusive breastfeeding in the country

## 1.4 Research Question, Aim and Objectives

### Research question

What are the factors associated with early infant breastfeeding practices of infants and young children in Namibia?

### Study aim

To describe early infant breastfeeding practices and determine factors associated with early initiation of breastfeeding and the use of pre-lacteal feeds amongst infants and young children from birth to 23 months of age in Namibia, during 2014.

### Objectives

1. Describe characteristics of women who breastfed their infants from birth to 23 months of age in Namibia.
2. Describe early infant breastfeeding practices (early initiation of breastfeeding and the use of pre-lacteal feeds within the first three days after birth) and the type of pre-lacteal feeds used amongst infants and young children from birth to 23 months of age.
3. Determine factors associated with early infant breastfeeding practices (early initiation of breastfeeding and the use of pre-lacteal feeds) amongst infants and young children in Namibia.

# CHAPTER 2 METHODOLOGY

## 2.1 Introduction

This chapter outlines the methodology for this research study. A description of the study design, study site and study population and sample are provided. This is followed by an explanation of the data collection processes, the measurement and transformation of variables, data management and statistical analysis**.** The ethical considerations for the study are also elaborated on.

## 2.2 Study Design

This study is a secondary analysis of data collected from a population-based cross-sectional survey 'Formative Assessment of Infant and Young Child Feeding and Care Practices in Namibia', which was conducted in all fourteen (14) regions of Namibia, during 2014 (32).

The aim of the primary survey was to understand caregiver knowledge, attitudes and practices with respect to infant and young child feeding and care amongst children under five years old. Information on infant and young child feeding such as exclusive breastfeeding, early initiation of breastfeeding and the use of pre-lacteal feeds (amongst others) were collected.

## 2.3 Study Site

The mothers and infants in the primary study came from all 14 regions in Namibia. Namibia consists of 14 regions namely Caprivi, Kavango-East, Kavango–West, Ohangwena, Oshikoto, Oshana, Kunene, Erongo, Otjozondjupa, Omaheke, Khomas, Hardap and //Kharas. The regions were grouped into four zones based on geographical proximity and ethnic similarity and were as follows: Zone 1: Kavango- East, Kavango-West, Zambezi; Zone 2: Ohangwena, Oshana, Oshikoto, Omusati; Zone 3: Kunene, Omaheke, Otjozondjupa; and Zone 4: Erongo, Hardap, //Kharas, Khomas. A total of 108 existing PSU's were selected with the guidance of the National Statistics Agency (NSA) and included both urban and rural areas (32-34).

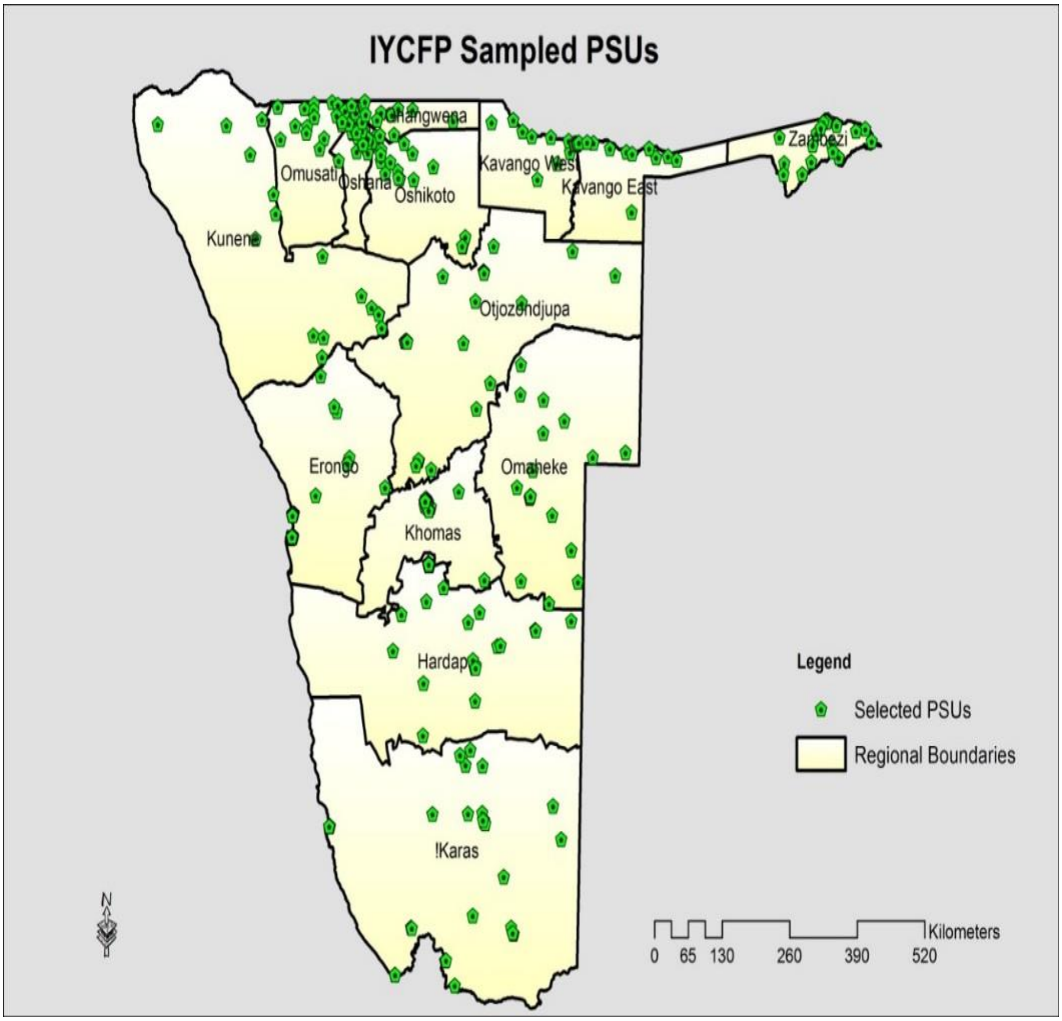


**Figure 1 Primary sampling units in 14 regions**

## 2.4 Study Population and sample

The target population for the primary study was mothers/caregivers with children aged zero -59 months from all 14 regions of Namibia. The sample design for the primary study was a stratified three-stage cluster sample, first stage was the selection of the PSU's, the second stage were the selection of household with children in the zero to fifty-nine months age groups and the third stage was to select the youngest child in the household in the PSU's (33).

The sampling weights (base weight or design weight) for the data collected from the sampled households were constructed so that the responses could be properly expanded to represent the zones. The design weights, which are the inverse sampling rate (ISR) for the PSU and households are assigned to each case interviewed to enable estimates at country level. The total sample for the primary survey consisted of 1596 primary caregivers (e.g. mothers, grandmothers, fathers) of children under five years of age (34).

A total of 884 mothers with infants and young children under the age of 24 months were included in the analytical sample for this study. These included all mothers irrespective of whether they breastfed their infants or not. Since the same design weights was used in the primary study, it can be representative considering population in the different zones.

## 2.5 Data Collection Procedures

The primary survey data were collected over a seven-week period in all regions of Namibia. ProPAN (Process for the Promotion of Child Feeding), a set of tools specifically developed to investigate Infant and Young Child Feeding (IYCF),were used and consisted of a caregiver survey, 24-hour dietary recall and market survey, semi-structured interviews and opportunistic observations (35). A caregiver survey tool was used to collect data that included breastfeeding practices, demographic, household and socio-economic information. A dietary recall tool was used to gather data on complementary foods for children aged 6-23 months. The market survey tool focused on the availability of foods and liquids that were given to children between ages 6-23 months (locally produced or purchased) as well as the prices of these if they were bought. The unofficial observations were drawn from the semi-structured interviews conducted with mothers (33).

Enumerators from all 14 regions in the country, with experience working on surveys such as the census and demographic health surveys were recruited. They were trained on the survey tools, household listing and sampling as well as basic information on infant and young child feeding prior to data collection. They were grouped into teams in the various regions and interviewed mothers/caregivers at household level during the data collection

period using the survey questionnaire (Annex D). Each team had a supervisor to ensure correct and truthful completion of the assessment tools.

Data were collected and stored in a MS Excel database. An extraction tool (Annex E) was used to extract the data needed for this study. Most of the data were extracted from the caregiver survey tool. Data from the dietary recall tool and the market survey tool was not useful for this study. Findings from the unofficial observations drawn from the semi-structured interviews were included and use in the analysis such as the interpretation of practical support and advice by health workers and factors perceived by mothers that influences breastfeeding practices e.g. mothers going back to work, cultural practices, etc (33). Data checking and cleaning was undertaken using MS Excel to identify any potential errors or inexplicable values before analysis.

## 2.6 Variables

### 2.6.1 Outcome variables

Although the primary study also focused on exclusive breastfeeding, this study will only focus on two early infant breastfeeding practices i.e. early initiation of breastfeeding and use of pre-lacteal feeds, thus indicator of exclusive breastfeeding was not assessed in this study.

**Early initiation of breastfeeding within one hour after birth (EIBF)**

This was determined by asking the mother how many hours after birth she started breastfeeding the infant. Initiating breastfeeding within one hour after birth received a 'yes' response, which was coded as '1'; and a 'no' response was if the mother delayed initiation of breastfeeding after one hour after birth, which was coded as '0'.

**Use of pre-lacteal feeds within the first three days after birth**

The practice of giving pre-lacteal feeds was determined by asking the mother if she gave the infant anything else other than breast milk within the first three days. A 'no' response

meant that the mother avoided giving anything else than breast milk which meant that the recommended practice was followed and the ‘no’ response was coded as ‘1’. A ‘yes’ response meant that the mother gave other fluids/liquids e.g. water, sugary water or a breast milk substitute which meant that recommendations was not followed and a ‘yes” response was coded as ‘0’.

### 2.6.2 Exposure variables

**Socio-demographic characteristics**

Various socio-demographic characteristics were included.

The mothers were asked whether they lived in a rural ‘1’ or urban ‘0’ area. The regions where mothers resided were analysed individually. Geographical locations were divided into 4 zones and coded as follows: Zone 1: Kavango East, Kavango West, and Zambezi regions ‘1’; Zone 2: Ohangwena, Oshana, Oshikoto and Omusati regions ‘2’; Zone 3: Kunene, Omaheke, and Otjozondjupa regions ‘3’; and Zone 4: Erongo, Hardap, //Kharas and Khomas regions ‘4’. The place of delivery was also determined by asking the mothers where the delivery took place, i.e. in a hospital ‘1’, delivery outside of a hospital 2’.

**Maternal and children characteristics**

Mothers responses about whether they were single separated/ divorced/ widowed were coded as ‘0’ and if married or having a partner coded as ‘1’. Formal education level was assessed by asking the mothers if they have attended school as per the different grades in the Namibian school system (5). Responses were coded as no primary school to grade zero to seven (0-7) as ‘0’; or grade eight to 12 (8-12) as ‘1’. Mothers were also asked if they performed paid work out of home to assess employment status and the ‘yes’ response was coded ‘1’ and ‘no’ was coded as ‘0’. The type of occupation: vendor, education and research was coded as ‘0’ and office workers service worker and agricultural workers as ‘1’. The age of mothers was determined by asking the age in years and categorised as 14-24 years ‘1’, 25-34 years ‘2’ and 35 years and above ‘3’.

The age of the infant was determined by asking the mother the age of the infant/child in months. The gender of infant was determined by maternal report and coded as male ‘0’ or female ‘1’.

**Access to health services and information**

Mothers were also asked if they attended antenatal care (ANC) during this pregnancy and how often. Responses were coded as ‘0’ for less than four visits and four visits or more as ‘1’.

The mother’s knowledge of infant and young child feeding (IYCF) was assessed by asking if they had heard any messages on child feeding in the last three months, whereby ‘yes’ was coded ‘1’ and ‘no’ coded as ‘0’. This was followed by where, whom or how did she get the information, i.e. health facility, through a community health worker, traditional provider, family member, neighbour/friend, community gatherings, radio, television, internet, mobile phone messaging, printed materials, religious institution and mother-to-mother groups. The mothers were also asked if they could remember the message; ‘yes’ coded as ‘1’ and ‘no’ coded as ‘0’.

Mothers were asked if they heard of HIV before this pregnancy and the responses were coded “yes” as ‘1’ and “no’ as ‘0’. The mother’s knowledge of transmission of HIV from mother-to-child (MTCT) through pregnancy, delivery and breastfeeding was coded ‘yes’ as ‘1’ or ‘no’ as ‘0’. If the mother knew about ways to prevent MTCT of HIV during breastfeeding, the response was coded yes; ‘as 1’ or ‘no’ as ‘0’. The source of the mother’s knowledge about transmission through breastfeeding was also determined, i.e. health personnel, community health worker, peer counsellor, traditional health provider, family member, neighbour / friend or school. The mother also needed to respond to whether she was tested for HIV, a ‘yes’ response was coded as ‘1’ and a ‘no’ response as ‘0’. Mother’s knowledge of anti-retroviral medicine (special drugs) to reduce MTCT was also assessed by a ‘yes’ response and was coded as ‘1’ and a ‘no’ response as ‘0’.

**Early infant breastfeeding practices**

Ever breastfeeding was assessed by asking if the mother started breastfeeding this baby within the first three days after birth. All mothers in the study sample answered this question, A ‘yes’ with the response was coded ‘1’ or and a ‘no’ response as ‘0’..The practice of giving colostrum given was also assessed and coded ‘yes’ as ‘1’ and ‘no’ as ‘0’. The practical support and advice by health workers after delivery was assessed by asking the mothers if the health workers provided practical support and advice and coded ‘yes’ as ‘1’ and ‘no’ as ‘0’.

## 2.7 Data Management and Analysis

Continuous variables (e.g. mother’s age, ANC visits and formal school education of mothers) were analysed and recoded into categorical variables for description and reporting purposes.

Maternal age was captured as mother’s age in years. However, due to the variation in the age of mothers (14 – 58 years) and low numbers of the younger age groups, it was decided to also categorise this variable for analysis as 14-24 years, 25-34 years and ≥35 years.

The number of ANC visits attended by the mother were captured as continuous values. This variable was also categorised as <4 and ≥4 visits. At the time of the study, in Namibia the four focal ANC visits (FANC) approach was practiced according to WHO recommendations. This has since been revised and eight ANC contact visits are now recommended (5, 6). These recommendations from WHO and the Namibian strategy guided the categorisation of this variable.

From the original data of 1596 participants in the primary study, information from only 884 women with infants and young children younger than 24 months of age were extracted for this analysis**. Figure 2** shows how the study sample of 884 was derived.

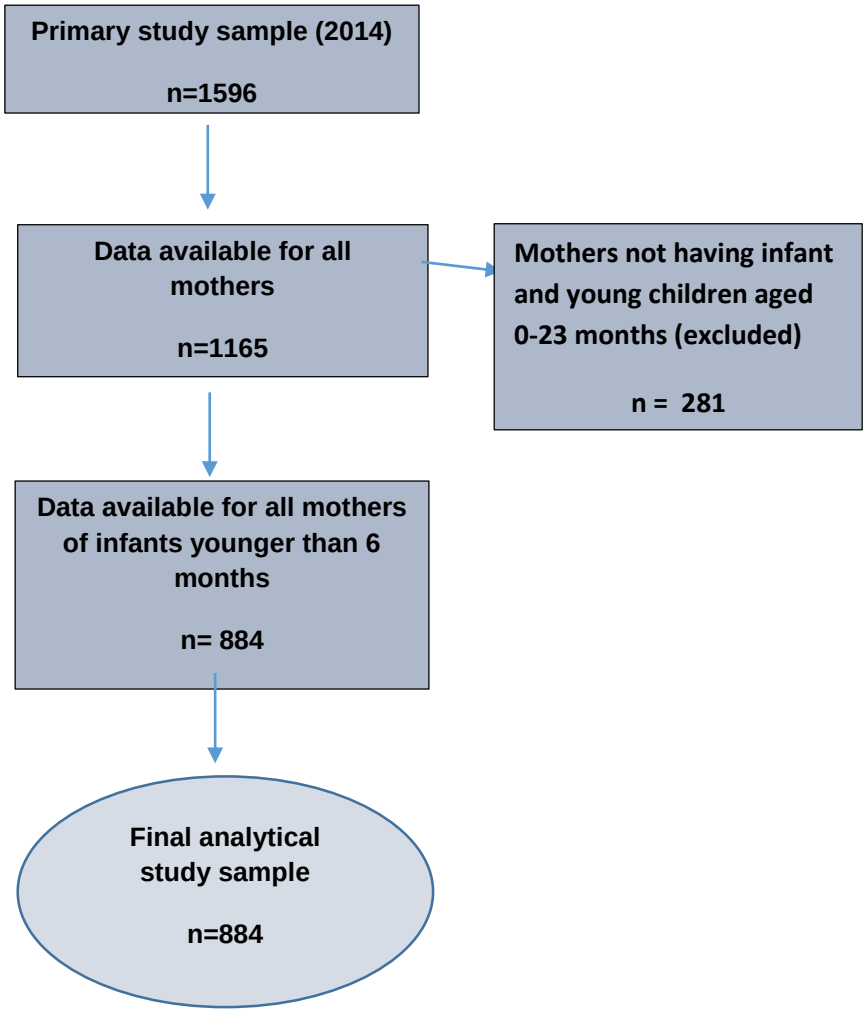


**Figure 2 Selection of analytical study sample**

Data analysis was conducted using Stata 13.1 (Stata Corporation, College Station, TX, USA) (36).

All analyses employed sampling weights to account for unequal probability of selection; and all statistical tests (bivariate analysis of associations and logistic regression) utilized complex sample analysis techniques to account for the cluster design of the survey, resulting in p-values and confidence intervals adjusted for the design effect.

Categorical variables are described using frequencies and percentages. Bivariate analyses were conducted to determine the unadjusted association between each exposure and the respective outcome variables. The outcome variables were early initiation of breastfeeding within one hour after birth and avoiding the use of pre-lacteal feeds within the first three days after birth. The exposure variables were socio-demographic, maternal and infant characteristics, maternal access to health services and information and early breastfeeding practices. Chi-squared tests were used to test associations between the outcome variables (which are categorical) and categorised exposure variables.

Bivariate analyses were conducted to determine the unadjusted association between each exposure and the respective outcome variables. The outcome variables were early initiation of breastfeeding within one hour after birth; and the use of pre-lacteal feeds within the first three days after birth. The exposure variables were socio-demographic, maternal and infant characteristics, maternal access to health services and information and early breastfeeding practices.

Multivariate logistic regression analysis was conducted. For the full multiple regression model (model 1), variables significant at $P<0.25$ in the bivariate analysis were included. For the analysis of model 2 (parsimonious model), a backwards stepwise approach using a threshold of $P<0.25$ was used to remove insignificant predictors one at a time. A 5% significance level was used to identify exposure variables with a statistically significant association with the specified outcomes. Odds ratios and 95% Confidence Intervals were calculated. Tests for interactions were performed between predictors included in the parsimonious model, and no significant interactions were found.

**Table 2.1** shows the variables and analysis by objectives.

**Table 2.1: Data analysis by objectives**

| **Data analysis** | | | |
|---|---|---|---|
| | **Objective** | **Variables** | **Analysis** |

| | | | |
|---|---|---|---|
| 1 | Describe characteristics of women who breastfed their infants during the study period. | Place of residence<br>Infant's age<br>Infant's gender<br>Place of delivery<br>Maternal age<br>Marital status<br>Maternal education<br>Employment status<br>ANC attendance<br>Mother's knowledge on infant feeding<br>Mother's knowledge on HIV and transmission and prevention of HIV during pregnancy, delivery and breastfeeding<br>Early breastfeeding practices and support by health workers | Expressed in percentages and frequencies |
| 2 | Describe early infant breastfeeding practices (early initiation of breastfeeding and the use of pre-lacteal feeds within the first three days after birth) amongst infants up to six months of age. | | |
| 3 | Determine factors associated with early infant breastfeeding practices (early initiation of breastfeeding and the use of pre-lacteal feeds) amongst infants in Namibia. | | Simple and multivariate logistic regression analysis were used to determine associations between exposures and outcomes |

## 2.10 Ethics

Consent was obtained from participants before participation in the primary study (Annex A). The Ministry of Health and Social Services (MoHSS), Directorate Planning and Research provided approval (Ref 17/3/3) for the primary study (Annex B). Permission to use this data for the secondary analysis was obtained from the Executive Director, MoHSS, Namibia (Annex C). Ethical approval for this study was sought from the Human Research Ethics Committee (Medical) at the University of the Witwatersrand (ethics clearance certificate no.M190269) (Annex F).

# CHAPTER 3 RESULTS

## 3.1 Description of the sample

Eight hundred and eighty-four mothers were included in the analytical sample for this study.

### 3.1.1 Socio-demographic variables

**Table 3.1** includes a description of socio-demographics of the mothers included in the study sample.

Khomas region had the highest number of respondents with 155 (18%) and Zambezi region had the least number of respondents 27 (3%). The 14 regions were grouped divided into four zones and the number of respondents are displayed in figure below.

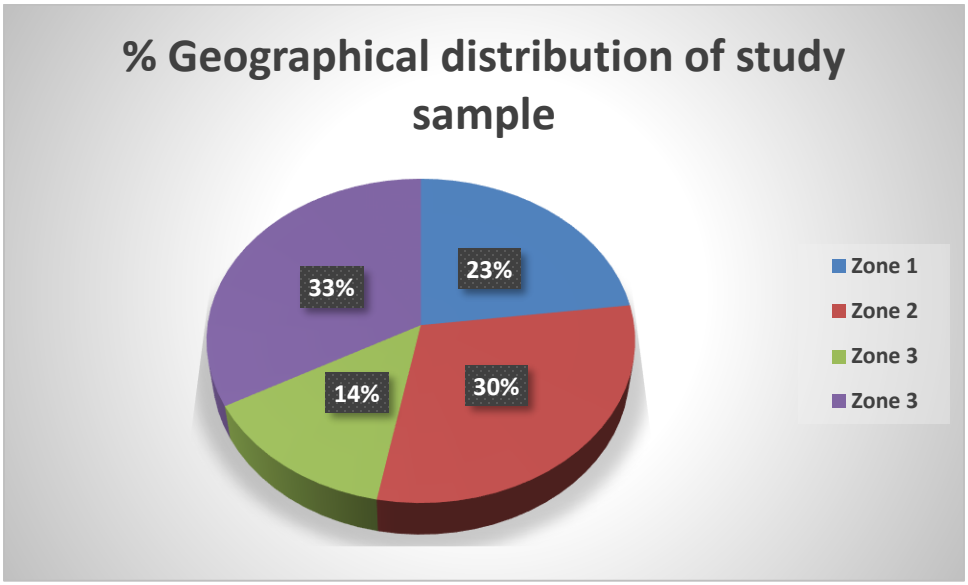


**Figure 3 Geographical distribution of the study sample per zones**

More rural 517 (58%) than urban 367 (42%) participants were included in the study sample. A higher percentage of mothers delivered in a hospital facility 606 (77%) compared to 182 (23%) of mothers who delivered outside of a hospital.

**Table 2.1: Socio-demographic characteristics of the study sample (N=884)**

| Socio-demographics variables | Category | n (%) |
|---|---|---|
| Region [n=884] | Zambezi | 27 (3%) |
| | Kavango-East | 87 (10%) |
| | Kavango-West | 94 (11% |
| | Ohangwena | 65 (7% |
| | Oshikoto | 102 (12%) |
| | Oshana | 28 (3%) |
| | Kunene | 27 (3%) |
| | Erongo | 54 (6%) |
| | Otjozondjupa | 51 (6%) |
| | Omaheke | 47 (5%) |
| | Omusati | 67 (8%) |
| | Khomas | 155 (18%) |
| | Hardap | 43 (5%) |
| | //Kharas | 38 (4%) |
| Geographical location<br><br>[n= 884] | Zone 1 (Kavango East, Kavango-West, and Zambezi regions) | 209 (24%) |
| | Zone 2 (Ohangwena, Oshana, Oshikoto and Omusati regions) | 262 (30%) |

| | | |
|---|---|---|
| | Zone 3 (Kunene, Omaheke, and Otjozondjupa regions) | 124 (14%) |
| | Zone 4 (Erongo, Hardap, //Kharas and Khomas regions) | 289 (33%) |
| Residence [n=884] | Rural | 517 (58%) |
| | Urban | 367 (42%) |
| Place of delivery [n=884] | Hospital | 606 (77%) |
| | Health centre, clinic, home, traditional birth attendant and other | 182 (23%) |

**Table 3.2** includes a description of the characteristics of mothers and children included in the study sample.

Most mothers (57%) in the sample were single, separated or divorced compared to 43% who were married or living with a partner. Maternal educational status revealed that 44% of mothers did not attend or only attended primary school (grade 0-7). More mothers (56%) attended secondary school (grade 8-12). Although years of schooling were low for many mothers, 86% of mothers were able to read and write. The majority of mothers (72%) were not performing paid work outside the home.

A relative majority of mothers involved in the study were aged 25-34 (41%). The mean age of mothers was 32 years ±9.8; the youngest mother was 14 years and the oldest, 58 years old.

A relative majority of children were aged 12-23 months (45%), followed by children 0-5 months (30%) and lastly followed by children 6-11 months of age (25%). The mean age of children was 11 months, ± 6.8. The majority of children were females 474 (54%) compared to males at 410 (46%).

**Table 3.2: Descriptive statistics for maternal and children characteristics (N=884)**

| Maternal characteristics | Category | n (%) |
|---|---|---|
| Marital status [n = 884] | Single / Separated / Divorced/ Widowed | 503 (57%) |
| | Married/Partner | 381 (43%) |
| Maternal education status [n = 881] | Grade 0-7 | 389 (44%) |
| | Grade 8 – 12 | 487 (56%) |
| Mother's ability to read and write [n = 884] | Yes | 759 (86%) |
| | No (cannot read at all) | 125 (14%) |
| Employment status) [n = 881] | Yes | 250 (28%) |
| | No | 632 (72%) |
| Maternal age [n = 850] | 10 to 24 years | 216 (25%) |
| | 25 – 34 years | 345 (41%) |
| | 35 years and above | 289 (34%) |
| **Child characteristics** | | |
| Child age in months [884] | 0-5 months | 267 (30%) |
| | 6-11 months | 220 (25%) |
| | 12-23 months | 398 (45%) |
| Child's gender [n = 884] | Male | 410 (46% |
| | Female | 474 (54%) |

### 3.1.2 Access to health services and information

**Table 3.3** includes a description on mother's access to health services and information.

Most of the mothers (67%) attended four or more ANC visits compared to 33% who attended less than four ANC visits. Nearly all mothers (96%) who participated in the study were tested for HIV during their last pregnancy, and 94% indicated that they heard of HIV before this pregnancy. Mothers had knowledge of MTCT of HIV during pregnancy, delivery and breastfeeding and 90% knew about special drugs (anti-retroviral drugs) that could reduce the risk of transmission. Mothers learned about prevention of HIV transmission through breastfeeding mostly from health workers (76%). Sixty-eight percent of mothers knew about ways to prevent the transmission of HIV through breastfeeding. Seventy-seven percent of mothers heard about infant and young child feeding (IYCF) and heard it mostly at the health facility (44%) and the radio (28%).

**Table 4.3: Descriptive statistics on access to health services and information (N=884)**

| Access to health services and information | Category | n (%) |
|---|---|---|
| Number of ANC visits attended mother [n=884] | < 4 visits | 292 (33%) |
| | ≥ 4 visits | 592 (67%) |
| Heard IYCF messages [n=883] | Yes | 684 (77%) |
| | No | 199 (23%) |
| Source of IYCF messages ([n = 259] | Health facility | 99 (44%) |
| | Community health worker | 17 (7%) |
| | Family member | 24 (11%) |
| | Neighbour/friend | 14 (6%) |
| | Radio | 64 (28%) |
| | TV | 28 (2%) |
| | Read from printed materials | 13 (6%) |

| | | |
|---|---|---|
| Mother's knowledge of HIV before this pregnancy [n = 868] | Yes | 816 (94%) |
| | No | 52 (6%) |
| Mother tested for HIV [n = 733] | Yes | 704 (96%) |
| | No | 29 (4%) |
| Mother's knowledge about MTCT of HIV during pregnancy [n= 830] | Yes | 682 (83%) |
| | No | 143 (17%) |
| Mother's knowledge about MTCT of HIV during delivery [n = 724] | Yes | 630 (87%) |
| | No | 94 (13%) |
| Mother's knowledge about MTCT of HIV during breastfeeding [n= 741] | Yes | 677 (91%) |
| | No | 64 (9%) |
| Mother's knowledge about anti-retroviral drugs [n = 713] | Yes | 643 (90%) |
| | No | 70 (19%) |
| Mother's knowledge of ways to prevent MTCT of HIV during breastfeeding [n = 799] | Yes | 542 (68%) |
| | No | 257 (32%) |
| Source of information to mothers about MTCT of HIV [n = 610] | Health personnel (doctor, nurse, midwife) | 465 (76%) |
| Source of information to mothers about MTCT of HIV from community health worker [n = 729] | Community health worker, peer counsellor | 643 (88%) |
| Source of information to mothers about MTCT of HIV from family member [n = 788] | Family member | 74 (9%) |
| Source of information to mothers about MTCT of HIV from neighbour / friend/child at school [n = 759] | Neighbour /friend/child at school | 76 (10%) |
| Source of information to mothers about MTCT of HIV from radio, internet and print materials | Read from print materials, or internet | 101 (14%) |

| | | |
|---|---|---|
| [n = 740] | | |
| Source of information to mothers about MTCT of HIV on the radio and television (TV) [n = 740] | Radio and TV | 49 (7%) |

* ANC –Antenatal care **IYCF – Infant and young child feeding ***MTCT – Mother to child transmission

### 3.1.3 Early breastfeeding practices

**Table 3.4** includes a description of early breastfeeding practices amongst the study sample.

Ninety percent of mothers practiced ever breastfeeding during the study. Only 436 (49%) mothers practiced EIBF compared to 447 (51%) that delayed breastfeeding to after one hour or later or did not breastfeed. Colostrum was given to 663 (75%) of children. Most mothers (64%) followed the correct practice not to use pre-lacteal feeds. Type of pre-lacteal feeds most commonly given was water, breast-milk substitutes, herbal and traditional drinks and juice. Practical support and advice on breastfeeding from health workers was only provided to 48% of mothers.

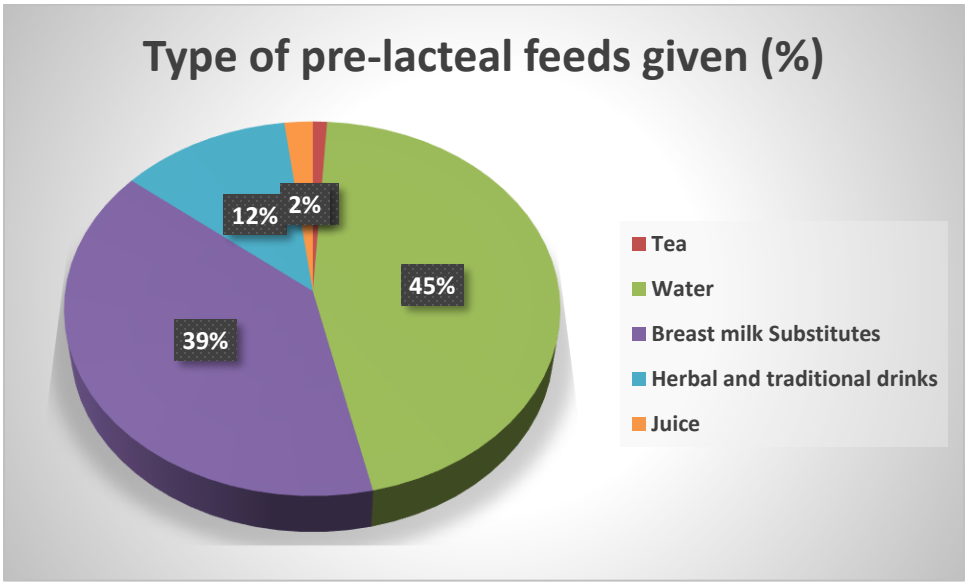


**Figure 3.4 Type of pre-lacteal feeds given** %

**Table 5.4: Descriptive statistics on early breastfeeding practices amongst the study sample (N=884)**

| Early breastfeeding practices | Category | n (%) |
|---|---|---|
| Children ever breastfed [n = 882] | Yes | 786 (90%) |
| | No | 96 (11%) |
| Initiation of breastfeeding [n= 883] | Breastfeeding within one hour after birth | 436 (49%) |
| | More than one hour after birth | 447 (51%) |
| Colostrum given [n= 884] | Yes | 663 (75%) |
| | No | 221 (25%) |
| Use of pre-lacteal feeds [n = 884] | Yes | 317 (36%) |
| | No | 567 (64%) |
| Practical support and advice given to mothers after delivery [n = 715] | Yes | 343 (48%) |
| | No | 372 (52%) |
| Type of pre-lacteal given [n = 99] | Tea | 1 (1%) |
| | Water | 45 (45%) |
| | Breast milk Substitutes | 39 (39%) |
| | Herbal and traditional drinks | 11 (12%) |
| | Juice | 3 (2% |

**Table 3.5** includes a description of the characteristics of mothers who breastfed their children, viz. those who ever breastfed, practised early initiation of breastfeeding and describes the use of pre-lacteal feeds.

### 3.2.1 Ever breastfeeding

A total number of 786 (90%) mothers reported to ever breastfed their children. Ninety-six (11%) only mothers never breastfed their children between birth and 23 months of age.

All mothers in Omusati and Zambezi region ever breastfed their children whilst in Oshana and Ohangwena regions only children 72% and 71% were ever breastfed. More mothers (88%) who ever breastfed lived in rural areas. Most mothers in zone four (95%) followed by zone one (92%), zone three (89%) and zone two (80%) ever breastfed. Most mothers (77%) who delivered in a hospital 598 (77%) ever breastfed.

More single mothers (91%) ever breastfed their children. More mothers aged 25-34 years of age (97%) ever breastfed their children compared to mothers aged ≤24 years (92%) and ≥35 years and above (81%).

More mothers with secondary school education (grade 8-12) ever breastfed their children (93%), whilst 89% of mothers were able to read and write. The majority of mothers who ever breastfed (93%) did not perform paid work outside the home.

Ninety-nine percent of mothers who ever breastfed their children attended ≥ 4 ANC visits. Messages on infant and young child feeding were heard by 88% of mothers and 91% of mothers had previous knowledge of HIV before. The majority of mothers were tested for HIV during the pregnancy of this child (97%). Ninety-one percent of mothers who ever breastfed knew about antiretroviral drugs that could reduce MTCT of HIV. Ninety-three percent of mothers knew about ways to prevent MTCT during the breastfeeding period.

Ninety-nine percent of mothers who ever breastfed their children, did so within one hour after birth. Most mothers did not use pre-lacteal feeds (72%). The majority of mothers provided colostrum to the child (84%). Only (48%) mothers received practical support and advice on breastfeeding from the health worker.

### 3.2.2 Early initiation of breastfeeding (EIBF)

EIBF was practiced by 436 (49%) of mothers. Omusati region (66%) had the highest percentage and Kavango-West (36%) and Ohangwena (36%) the lowest. Mothers (49%) from rural areas practiced EIBF compared to urban (50%). More mothers from zone three (70%) compared to zone one (42%) practiced EIBF. Most mothers who practiced EIBF delivered in a hospital (57%).
More single mothers (51%) practiced EIBF. Fifty-six percent of mothers attended secondary school and 50% were able to read and write. Fifty-two percent of mothers were not working. Mothers aged 25-34 years of age (59%) practiced EIBF compared to mothers aged ≥14-24 years (52%) and ≥ 35 years (38%) practiced EIBF.

More mothers who attended ≥ 4 ANC visits (56%) practiced EIBF, whilst only 48% heard IYCF messages. Fifty-one percent knew about HIV and 56% was tested for HIV. Mother's with knowledge about MTCT of HIV during pregnancy (84), delivery (52%) and breastfeeding (53%) practiced EIBF. Only 50% of mothers knew about ARV's. Forty-nine percent of mothers knew about ways to prevent MTCT of HIV during the breastfeeding period.

Most mothers who practiced EIBF did not use pre-lacteal feeds (61%) and 60% provided colostrum to their children. Sixty-four percent of mothers who practised EIBF received practical support and advice about breastfeeding.

### 3.2.3 The use of pre-lacteal feeds

Sixty-four percent of mothers did not use pre-lacteal feeds. Hardap region (81%) had the highest percentage of mothers who did not use pre-lacteal feeds. Kavango-East (50%) and Kavango-West (47%) had the lowest percentages of mothers that avoided pre-lacteal feeds. Zone one (52%) reported the lowest percentage of mothers, whilst zone four (75%) had the highest percentage of mothers who avoided the use of pre-lacteal feeds.

More urban mothers (70%) compared to mothers in rural areas (60%) avoided pre-lacteal feeds. Out of the total deliveries, 76% of mothers who delivered in a hospital avoided pre-lacteal feeds compared to mothers who delivered at a health centre, clinic, at home or with a traditional birth attendant.

Most mothers who avoided pre-lacteal feeds were single (66%) and attended secondary education (grade 8-12) (69%) Sixty-one percent of mothers who did not use pre-lacteal feeds were employed. More mothers aged 25-34 years of age (70%) did not use pre-lacteal feeds compared to mothers in the younger and older age groups.

Seventy-one percent of mothers who attended ≥4 ANC visits and 62% that heard IYCF messages avoided pre-lacteal feeds. Sixty-six percent of mothers who avoided pre-lacteal feeds had previous knowledge of HIV and 71% were tested for HIV.

Most mothers (80%) that practiced EIBF did not use pre-lacteal feeds and 91% provided colostrum to their children. Only 50% of mothers received practical support and advice on breastfeeding after birth.

The figure below shows children ever breastfeed, early initiation of breastfeeding and the avoidance of the use of pre-lacteal feeds in relation to geographical location (zones). There is marked differences in the practices per zone.

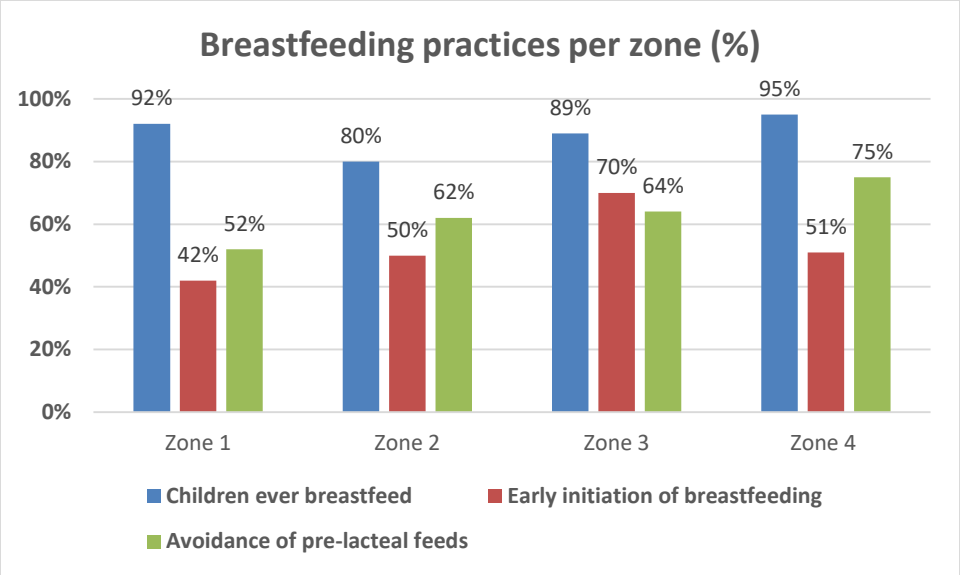


**Figure 3.5 Breastfeeding practices per geographical location (zones) %**

The figure below shows the children ever breastfeed, early initiation of breastfeeding and the avoidance of the use of pre-lacteal feeds in relation to place of delivery. There is marked differences in the practices where deliveries took place at hospital or somewhere else.

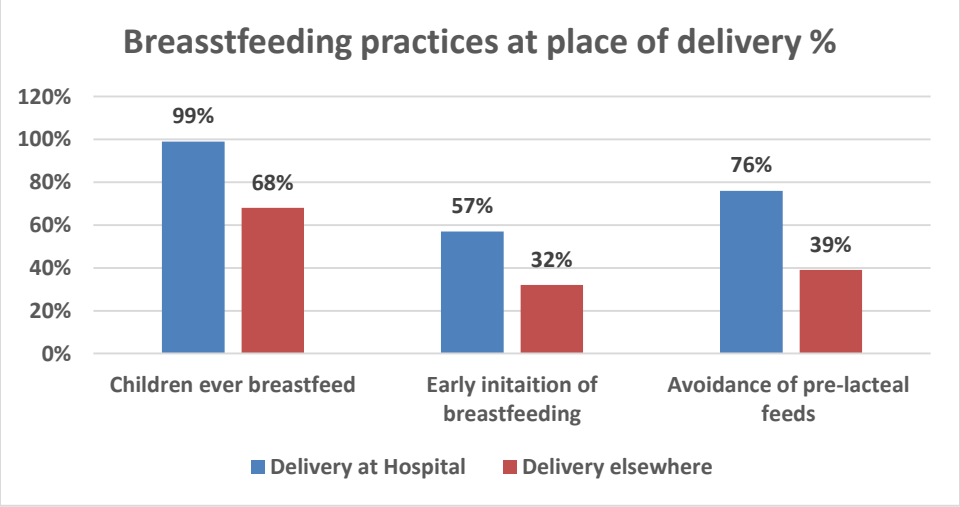


**Figure 3.6 Breastfeeding practices at place of delivery (%)**

## Table 6.5: Characteristics of mothers in relation to breastfeeding practices

| Variables /characteristics | Breastfeeding and the avoidance of pre-lacteal feeds | | |
|---|---|---|---|
| | **Ever breastfed (n=786) n (%)** | **EIBF (n=436) n (%)** | **Avoidance of pre-lacteal feeds (n=567) n (%)** |
| **Socio-demographic characteristics** | | | |
| **Region** | | | |
| Zambezi | 27 (100%) | 14 (51%) | 20 (73%) |
| Kavango-East | 76 (97%) | 38 (44%) | 43 (50%) |
| Kavango-West | 87 (93%) | 34 (36%) | 45 (47%) |
| Ohangwena | 46 (71%) | 24 (36%) | 39 (61%) |
| Oshikoto | 77 (75%) | 52 (51%) | 56 (55%) |
| Oshana | 20 (72%) | 11 (40%) | 20 (72%) |
| Kunene | 26 (97%) | 16 (59%) | 17 (64%) |
| Erongo | 51 (95%) | 25 (47%) | 38 (71%) |
| Otjozondjupa | 44 (86%) | 26 (50%) | 32 (62%) |
| Omaheke | 41 (587%) | 28 (59%) | 31 (66%) |
| Omusati | 67 (100%) | 45 (66%) | 45 (67%) |
| Khomas | 144 (94%) | 82 (53%) | 120 (77%) |
| Hardap | 42 (99%) | 21 (48%) | 35 (81%) |
| //Kharas | 37 (97%) | 22 (58%) | 26 (69%) |
| **Geographical Location** | | | |
| Zone 1 | 192 (92%) | 87 (42%) | 109 (52%) |

| | | | |
|---|---|---|---|
| Zone 2 | 210 (80%) | 131 (50%) | 161 (62%) |
| Zone 3 | 110 (89%) | 70 (70%) | 79 (64%) |
| Zone 4 | 274 (95%) | 148 (51%) | 218 (75%) |
| **Residence** | | | |
| Rural | 453 (88%) | 254 (49%) | 311 (60%) |
| Urban | 333 (91%) | 182 (50%) | 256 (70%) |
| **Place of delivery** | | | |
| Hospital | 595 (99%) | 346 (57%) | 457 (76%) |
| Delivery at health centre, clinic, home, traditional birth attendant and other | 191 (68%) | 90 (32%) | 110 (39%) |
| **Maternal characteristics** | | | |
| **Marital status** | | | |
| Single / Separated / Divorced/ Widowed | 458 91%) | 257 (51%) | 314 (63%) |
| Married/Partner | 328 (86%) | 179 (47%) | 253 (66%) |
| **Educational status** | | | |
| Grade 0-7 | 335 (86%) | 165 (42%) | 231 (59%) |
| Grade 8 – 12 | 451 (93%) | 271 (56%) | 336 (69%) |
| **Ability to read and write** | | | |
| Able to read and write | 678 (89%) | 379 (50%) | 501 (66%) |
| Cannot read at all | 108 (86%) | 57 (46%) | 66 (53%) |

| | | | |
|---|---|---|---|
| **Employment status** | | | |
| Employed | 231 (93%) | 106 (42%) | 180 (72%) |
| Not employed | 554 (88%) | 329 (52%) | 385 (61%) |
| **Maternal age** | | | |
| 14 to 24 years | 198 (92%) | 113 (52%) | 146 (68%) |
| 25 – 34 years | 333 (97%) | 202 (59%) | 243 (70%) |
| 35 years and above | 233 (81%) | 110 (38%) | 162 (56%) |
| **Access to health services and information** | | | |
| **Number of ANC visits attended by mother** | | | |
| < 4 visits | 197 (68%) | 103 (35%) | 148 (51%) |
| >= 4 visits | 589 (99%) | 334 (56%) | 419 (71%) |

| | | | |
|---|---|---|---|
| **Mother heard messages on IYCF** | | | |
| Heard or receive messages on IYCF | 598 (88%) | 326 (48%) | 422 (62%) |
| Not heard or receive messages on IYCF | 189 (95%) | 110 (55%) | 145 (73%) |
| **Mother's knowledge of HIV before this pregnancy** | | | |
| Had knowledge | 745 (91%) | 419 (51%) | 541 (66%) |
| No knowledge | 41 (79%) | 18 (34%) | 26 (50%) |
| **Mother tested for HIV during the pregnancy of this child** | | | |
| Mother tested | 680 (97%) | 393 (56%) | 499 (71%) |
| Mother not tested | 27 (93%) | 11 (39%) | 21 (71%) |
| **Mother's knowledge about MTCT of HIV during pregnancy** | | | |
| Had knowledge | 621 (91%) | 333 (49%) | 457 (67%) |
| No knowledge | 133 (93%) | 80 (56%) | 90 (63%) |
| **Mother's knowledge about MTCT of HIV during delivery** | | | |
| Had knowledge | 578 (92%) | 330 (52%) | 428 (68%) |
| No knowledge | 89 (94%) | 49 (52%) | 63 (67%) |
| **Mother's knowledge about MTCT of HIV during breastfeeding** | | | |
| Had knowledge | 624 (92%) | 361 (53%) | 453 (67%) |
| No knowledge | 59 (92%) | 23 (35%) | 48 (75%) |
| **Mother's knowledge of antiretroviral medicines** | | | |
| Had knowledge | 583 (91%) | 321 (50%) | 431 (67%) |
| No knowledge | 67 (96%) | 43 (61%) | 46 (66%) |

| | | | |
|---|---|---|---|
| **Mother's knowledge of ways to prevent MTCT during breastfeeding** | | | |
| Had knowledge | 502 (93%) | 265 (49%) | 375 (69%) |
| No knowledge | 231 (90%) | 146 (57%) | 160 (62%) |
| **Early breastfeeding practices** | | | |
| **Initiation of breastfeeding** | | | |
| Breastfeeding within one hour after birth | 434 (99%) | | 347 (80%) |
| More than one hour after birth | 351 (79%) | | 220 (49%) |
| **Use of pre-lacteal feeds** | | | |
| Pre-lacteal feeds used | 220 (6%) | 90 (28%) | |
| Pre-lacteal feeds not used | 566 (72%) | 347 (61%) | |
| **Colostrum provided** | | | |
| Colostrum provided | 662 (84%) | 399 (60%) | 517 (91%) |
| Colostrum not provided | 124 (6%) | 37 (17%) | 50 (46%) |
| **Practical support and advice given to mothers after delivery** | | | |
| Practical support and advice given | 342 (48%) | 220 (64 %) | 275 (50%) |
| Practical support and advice not given | 1 (100%) | 123 (56 %) | 68 (41%) |

*EIBF – Early initiation of breastfeeding **IYCF – Infant and young child feeding
***MTCT – Mother to child transmission

## 3.3 Factors associated with early initiation of breastfeeding (EIBF)

### 3.3.1 Bivariate analysis

**Table 3.6** below presents the results of the bivariate analysis.

Mothers living in zone 2 and 3 were more likely to practice EIBF compared to zone 1. Mothers who delivered in a hospital were 2.8 times more likely to practice EIBF (OR = 2.8; 95% CI: 2.00, 3.99). Mothers who only attended primary education (grade 0 -7) were less likely to practice EIBF than mothers with secondary education (OR = 0.6; 95% CI: 1.50, 0.82). Mothers aged 35 years and above were less likely to practice EIBF (OR = 0.6; 95%CI: 0.35, 0.90). In addition, unemployed mothers were 1.5 more likely to practice EIBF compared to mothers who were working (OR = 1.5; 95% CI: 1.02, 2.12). Mothers aged 35 years and above were 0.5 times more likely to practice EIBF than younger mothers (OR = 1.6; 95% CI: 0.35, 0.90). Mothers, who attended ≥ 4 visits, were 2.4 times more likely to practice EIBF (OR = 2.4; 95% CI: 1.57, 3.6).

**Table 7.6: Bivariate analysis: Factors associated with early initiation of breastfeeding (N=436)**

| Variables | Unadjusted OR | 95% CI |
|---|---|---|
| **Socio-demographics characteristics** | | |
| Erongo | | |
| Hardap | 1.02 | 0.36 – 2.94 |
| Karas | 1.46 | 0.59 -4.05 |
| Kavango-East | 0.86 | 0.40 -1.83 |
| Kavango-West | 0.63 | 0.30 – 1.32* |
| Khomas | 1.23 | 0.60 – 2.52 |
| Kunene | 1.61 | 0.67 -3.87 |
| Ohangwena | 0.64 | 0.62 -1.55 |

| | | |
|---|---|---|
| Omaheke | 1.62 | 0.65 – 4.05 |
| Omusati | 2.20 | 0.80 – 6.03* |
| Oshana | 0.74 | 0.27 -2.04 |
| Oshikoto | 1.16 | 0.44 – 3.07 |
| Otjozondjupa | 1.11 | 0.49 – 2.50 |
| Zambezi | 1.17 | 0.36 – 3.79 |
| **Residence** | | |
| Rural | Reference | |
| Urban | 1.02 | 0.73 – 1.42 |
| **Geographical location** | | |
| Zone 1 | Reference | |
| Zone 2 | 1.40 | 0.88 – 2.22* |
| Zone 3 | 1.81 | 1.20 – 2.74*** |
| Zone 4 | 1.48 | 1.05 – 2.09*** |
| **Place of delivery** | | |
| Health Centre, clinic, TBA or other | Reference | |
| Hospital | 2.83 | 2.00 -3.99*** |
| **Maternal characteristics** | | |
| **Mother's educational status** | | |
| Grade 8-12 | Reference | |
| Grade 0-7 | 0.59 | 1.50 -0.82** |
| **Mother's employment status** | | |
| Paid work | Reference | |
| Not working | 1.47 | 1.02 – 2.12*** |
| **Mother's age** | | |
| 10 – 24 years of age | Reference | |

| | | |
|---|---|---|
| 25-34 years of age | 1.30 | 0.82 – 2.04 |
| 35 years and above | 0.56 | 0.35 – 0.90*** |
| **Access to health services and information** | | |
| **Number of ANC visits attended by mother** | | |
| Less than 4 visits | Reference | |
| ≥ 4 visits | 2.38 | 1.57 – 3.62*** |
| **Mother heard information on IYCF messages** | | |
| Did not hear | Reference | |
| Heard messages | 0.74 | 0.46 – 1.21* |
| **Mother had an HIV test done during this pregnancy** | | |
| Not tested | Reference | |
| Test | 1.98 | 0.71 – 5.50* |
| **Mother's knowledge on HIV (heard of HIV before)** | | |
| Had no knowledge | Reference | |
| Had knowledge | 2.05 | 0.85 – 4.92** |
| **Mother's knowledge about MTCT of HIV during pregnancy** | | |
| Had no knowledge | Reference | |
| Had knowledge | 2.105 | 0.90 – 4.94 |
| **Mother's knowledge about MTCT of HIV during breastfeeding** | | |
| Had no knowledge | Reference | |
| Had knowledge | 0.625 | 0.28 -0.38* |

*p<0.05 **p<0.01 ***p<0.001 *ANC- Antenatal care **MTCT – Mother to child transmission

### 3.3.2 Multiple logistic regression analysis

**Table 3.7** below displays the results of the multiple logistic regression analysis.

In the multiple logistic regression model for EIBF, variables such as zonal distribution, residence, place of delivery, maternal education and employment status, mother's employment, maternal age, ANC visits, mothers heard messages on infant and young child feeding were included because of their significance at $p<0.25$ in the unadjusted analysis.

In model 1 (the full model), mothers living in zone 3 were three times more likely to practice EIBF compared to mothers in zone 1 (AOR = 3.12; 95% CI: 1.76, 5.61). Mothers who delivered in hospitals were 1.7 times more likely to practice EIBF, than mothers who deliver somewhere else (AOR = 1.74; 95% CI: 1.15, -2.64). Mothers who were not working were 2.4 times more likely to practice EIBF (AOR = 2.433; 95% CI: 1.56 -3.79).

The number of ANC visits attended was no longer associated with EIBF in the multiple regression analysis.

In model 2 (the parsimonious model), the odds of mothers practicing EIBF in zone 3 was 2.2 times more likely than in mothers from zone one (AOR = 2.2; 95% CI: 1.38, -3.51). Mothers who delivered in a hospital were also 2.9 times likely to practice EIBF than mothers who delivered somewhere else (AOR = 2.9; 95% CI: 2.02, 4.26). Mothers who were not employed were almost 2 times as likely to EIBF as mothers who were employed at the time of the study (AOR = 2.01; 95% CI: 1.31, 3.09). Mothers who only completed primary education were 0.6 less times likely to practice EIBF (AOR = 0.63; 95% CI: 0.43, 0.93) as compared to mothers with secondary education (grade 8-12).

Maternal age, whether the mother was tested for HIV and whether she heard messages on IYCF in the last month were no longer associated with EIBF in the parsimonious model.

**Table 8.7: Multiple logistic regression analysis: Factors associated with early initiation of breastfeeding (EIBF) (N=436)**

| Variables | Model 1 (full) | Model 2 (parsimonious) |
|---|---|---|
| | Adjusted OR (95% CI) | Adjusted OR (95% CI) |
| **Socio-demographic variables** | | |
| **Geographical location per zones** | | |
| Zone 1 | Reference | |
| Zone 2 | 1.87 (1.09 – 3.21)*** | 1.300 (0.83 – 2.05) |
| Zone 3 | 3.15 (1.76 – 5.61)*** | 2.263 (1.45 – 3.54)*** |
| Zone 4 | 1.51 (0.92 – 2.50)** | 1.377 (0.89 – 2.12)* |
| **Residence** | | |
| Urban | Reference | |
| Rural | 0.835 (0.58 – 1.21) | 0.714 (0.51 – 1.00)** |
| **Place of delivery** | | |
| Delivery outside of the hospital | Reference | |
| Hospital | 1.740 (1.15 – 2.64)*** | 2.928 (2.02 – 4.25)*** |
| **Maternal characteristics** | | |
| **Mother's employment status** | | |
| Employed | Reference | |
| Not employed | 2.433 (1.56 – 3.79)*** | 2.008 (1.31 – 3.09)*** |
| **Mother's educational status** | | |
| Grade 8-12 | Reference | |
| Grade 0 -7 | 0.546 (0.35 – 0.84)*** | 0.63 (0.43 – 0.93)*** |
| **Mother's age** | | |
| 14-24 years | Reference | |
| 25 – 34 years | 1.376 (0.0.84 – 2.24)* | |
| ≤≥ 35 years | 0.918 (0.54 – 1.55) | |

| Access to health services and information | | |
|---|---|---|
| **Mother tested for HIV during this pregnancy** | | |
| Not tested | Reference | |
| Tested | 1.996 (0.68 – 5.84)* | |
| **Mother heard messages on IYCF during the last month** | | |
| Not heard messages | Reference | |
| Heard messages | 0.698 (0.41 – 1.18)* | |
| **Number of ANC visits attended by mother** | | |
| < 4 visits | Reference | |
| ≥ 4 visits | 1.352 (0.81 – 2.26) | |

*p<0.05 **p<0.01 ***p<0.001 *ANC- Antenatal care **MTCT – Mother to child transmission

## 3.4 Factors associated with the use of pre-lacteal feeds

### 3.4.1 Bivariate analysis

**Table 3.8** below presents the results of the bivariate analysis.

Mothers living in Oshikoto region were 0.49 times less likely to avoid a pre-lacteal feed than mothers were in Erongo Region (OR = 0.50, 95% CI: 0.22, 1.10). Mothers in zone 4 were 2.8 more likely to avoid pre-lacteal feeds than mothers in zone 1 (OR = 2.81; 95% CI: 1.52, 5.17). In addition mothers delivering in a hospital were almost 4.8 times more likely to avoid pre-lacteals than mothers who delivered somewhere else (OR = 4.83, 95% CI: 2.93, 7.99).

Mothers who only attended primary school education were 0.6 times less likely to avoid pre-lacteal feeds compared to mothers who attended secondary school (OR = 0.66; 95% CI: 0.45, 0.96). Mothers not employed were 0.6 times less like to avoid pre-lacteal feeds than mothers who were employed working (OR = 0.60; 95% CI: 0.37, 0.97). Mothers with female children were 1.3 times more likely to avoid pre-lacteal feeds (OR = 1.30; 95% CI: 0.92, 1.83).

Mothers who attended ≥ 4 ANC visits were 2.4 times more likely to avoid pre-lacteals (OR = 2.37; 95% CI: 1.45, 3.85). Mothers who practiced EIBF were 4 times more likely to avoid pre-lacteal feeds (OR = 4.02: 95% CI: 2.84, 5.68) than those who did not practice EIBF. Children who received colostrum were 12 times more likely not to receive a pre-lacteal feed (OR = 12.06; 95% CI: 6.91, 20.97).

**Table 9.8 Bivariate analysis: Factors associated with the non-use of pre-lacteal feeds (N=567)**

| Variables | Unadjusted OR | 95% CI |
|---|---|---|
| **Socio-demographic characteristics** | | |
| **Regional distribution** | | |
| Erongo | Reference | |
| Hardap | 1.71 | 0.60 – 4.86 |
| Karas | 0.89 | 0.55 – 1.45 |
| Kavango-East | 0.41 | 0.18 – 0.91* |
| Kavango-West | 0.36 | 0.15 – 0.87* |
| Khomas | 1.39 | 0.70 – 2.76 |
| Kunene | 0.73 | 0.39 – 1.37 |
| Ohangwena | 0.62 | 0.31 – 1.24* |
| Omaheke | 0.78 | 0.38 – 1.59 |
| Omusati | 0.83 | 0.41 – 1.69 |
| Oshana | 1.02 | 0.33 – 3.15 |
| Oshikoto | 0.49 | 0.22 – 1.10** |
| Otjozondjupa | 0.67 | 0.37 – 1.22* |
| Zambezi | 1.10 | 0.43 – 2.80 |

| | | |
|---|---|---|
| **Residence** | | |
| Rural | Reference | |
| Urban | 1.52 | 0.99 – 2.39 |
| **Geographical location in zones** | | |
| Zone 1 | Reference | |
| Zone 2 | 1.46 | 0.78 – 2.76* |
| Zone 3 | 1.61 | 0.88 – 2.94* |
| Zone 4 | 2.81 | 1.52 – 5.17*** |
| **Place of delivery** | | |
| Health Centre, clinic, TBA or other | Reference | |
| Hospital | 4.83 | 2.93 – 7.99*** |
| **Maternal Characteristics** | | |
| **Mother's educational status** | | |
| Grade 8-12 | Reference | |
| Grade 0-7 | 0.66 | 0.45 – 0.96*** |
| **Mother's ability to read and write** | | |
| Able to read and write | Reference | |
| No (cannot read at all) | 0.58 | 0.32 – 1.05** |
| **Mother's employment status** | | |
| Paid work | Reference | |
| Not working | 0.60 | 0.37 – 0.97*** |
| **Type of occupation (mother)** | | |
| Service workers | Reference | |
| Office workers | 1.73 | 0.71 – 4.25* |
| **Mother's age** | | |
| 10 – 24 years of age | Reference | |

| | | |
|---|---|---|
| 25-34 years of age | 1.14 | 0.71 – 1.82 |
| 35 years and above | 0.61 | 0.32 – 1.14* |
| **Child characteristics** | | |
| **Child's age** | | |
| 0-5 months | Reference | |
| 6-11 months | 1.63 | 1.00 -2.66 *** |
| 12-23 months | 1.77 | 1.16 – 2.72 *** |
| **Child's gender** | | |
| Male | Reference | |
| Female | 1.30 | 0.92 – 1.83** |
| **Access to health services and information** | | |
| **Number of ANC visits attended by mothers** | | |
| Less than 4 visits | Reference | |
| >= 4 visits | 2.37 | 1.45 – 3.85*** |
| **Mother heard messages on infant and young child feeding in the last month** | | |
| Heard no messages | Reference | |
| Heard messages | 0.61 | 0.33 – 1.10** |
| **Mother had an HIV test done during this pregnancy** | | |
| Not tested | Reference | |
| Tested | 0.98 | 0.36 – 2.63 |
| **Mother's knowledge on HIV (heard of HIV before)** | | |
| Had no knowledge | Reference | |
| Had knowledge | 1.19 | 0.84 – 4.48** |
| **Mother's knowledge about MTCT of HIV during pregnancy** | | |
| Had no knowledge | Reference | |
| Had knowledge | 1.19 | 0.63 – 2.28 |

| | | |
|---|---|---|
| **Mother's knowledge about MTCT of HIV during delivery** | | |
| Had no knowledge | Reference | |
| Had knowledge | 1.02 | 0.55 – 1.90 |
| **Mother's knowledge of ways to prevent MTCT during breastfeeding** | | |
| Had no knowledge | Reference | |
| Had knowledge | 0.67 | 0.26 – 1.88 |
| **Early breastfeeding practices** | | |
| **Initiation of breastfeeding** | | |
| More than one hour after birth | Reference | |
| Breastfeeding within one hour after birth | 4.20 | 2.84 – 5.68*** |
| **Colostrum given** | | |
| No | Reference | |
| Yes | 12.04 | 6.91 – 20.97*** |
| **Practical support and advice given to mother to start breastfeeding** | | |
| Not given | Reference | |
| Given | 1.42 | 0.83 – 2.42* |

***p<0.05; **p<0.10; *p<0.25 *ANC – Antenatal care **MTCT – Mother to child transmission

**Table 3.9** below displays the results of the multivariable logistic regression analysis.

In model 1 (the full model), mothers who delivered in hospital were 3.5 times more likely to avoid pre-lacteal feeds (AOR = 3.48; 95% CI: 1.02, 11.89). Children who received colostrum, were 3.3 more likely not to receive pre-lacteal feeds (AOR = 3.206, 95% CI: 0.95, 11.15).

Residence (urban/rural), education, mother's ability to read and write, mother's type of occupation, maternal age, whether mother was tested for HIV, MTCT during pregnancy, delivery and breastfeeding, practical support and advice was no longer associated with non-use of pre-lacteal feeds in the full model.

In model 2 (the parsimonious model), mothers in zone 4 were 1.9 times more likely to avoid pre-lacteal feeds compared to zone 1 (AOR = 1.97; 95% CI: 0.93, 4.13). Mothers who delivered in a hospital were also 3.6 times more likely not to use a pre-lacteal feed (AOR = 3.6; 95% CI: 2.01, 6.33) compared to mothers who delivered elsewhere. Mothers who practiced EIBF were 3.3 times more likely to avoid pre-lacteals feeds (AOR = 3.3 95% CI: 2.25, 4.86).

ANC visits, whether mother heard of messages on IYCF in the last month, child given colostrum and practical support and advice was no longer associated with the non-use of pre-lacteal feeds in the parsimonious model.

**Table 10.9 Multiple logistic regression analysis: Factors associated with the non-use of pre-lacteal feeds (N=567)**

| **Variables** | **Model 1 (full)** | **Model 2 (parsimonious)** |
|---|---|---|
| | **Adjusted OR (95% CI)** | **Adjusted OR (95% CI)** |
| **Socio-demographic characteristics** | | |
| **Geographical location per zones** | | |
| Zone 1 | Reference | |
| Zone 2 | 12.01 (1.60 – 90.57)* | 1.32 (0.65 – 2.70) |
| Zone 3 | 3.049 (0.62 – 15.06)* | 1.36 (0.64 – 2.89) |
| Zone 4 | 1.723 (0.46 – 6.50) | 1.96 (0.93 – 4.13)** |
| **Residence** | | |
| Urban | Reference | |
| Rural | 0.563 (0.10 – 3.12) | |
| **Place of delivery** | | |
| Delivery outside of the hospital | Reference | |
| Hospital | 3.48 (1.02 – 11.89)*** | 3.57 (2.01 – 6.33)*** |

| | | |
|---|---|---|
| **Maternal characteristics** | | |
| **Mother's educational status** | | |
| Grade 8-12 | Reference | |
| Grade 0-7 | 1.665 (0.56 – 4.94) | |
| **Mother's ability to read and write** | | |
| Able to read and write | Reference | |
| Not able to read and write | 0.881 (0.10 – 7.76) | |
| **Mother's type of occupation** | | |
| Service workers | Reference | |
| Office workers | 1.625 (0.59 – 4.49) | |
| **Mother's age** | | |
| 10 – 24 years of age | Reference | |
| 25-34 years of age | 0.6990.(16 – 3.05) | |
| 35 years and above | 1.200. (27– 5.42) | |
| **Child characteristics** | | |
| **Child's age** | | |
| 0-5 months | Reference | |
| 6-11 months | 1.85 (0.44 – 7.77) | 1.58 (0.97 – 2.58)** |
| 12-23 months | 1.61 (0.52 - 4.98) | 1.52 (0.98 – 2.35)** |
| **Child's gender** | | |
| Male | Reference | |
| Female | 1.48 (0.57 – 3.81) | 1.42 (0.963 – 2.10** |
| **Access to health services and information** | | |
| **ANC visits attended by mother** | | |
| < 4 visits | Reference | |
| ≥ 4 visits | 0.399 (0.01– 1.87)* | |

| | | |
|---|---|---|
| **Mother heard messages on infant and young child feeding** | | |
| Not heard | Reference | |
| Heard messages | 0.973 | 0.14 – 6.54 |
| **Early breastfeeding practices** | | |
| **Initiation of breastfeeding** | | |
| More than one hour after birth | Reference | |
| Breastfeeding within one hour after birth | 1.96 (0.78 – 4.96)* | 3.31 (2.25 – 4.86) *** |
| **Child given colostrum** | | |
| Not given | Reference | |
| Colostrum given | 3.26 (0.95 – 11.15)** | |
| **Practical support and advice given to mother to start breastfeeding** | | |
| Not given | Reference | |
| Given | 1.745 (0.65 – 4.71) | |

***p<0.05; **p<0.10; *p<0.25

# CHAPTER 4: DISCUSSION

## 4.1 Introduction

This is one of the first studies in Namibia that set out to determine factors associated with early breastfeeding practices. The study specifically aimed to describe the characteristics of women who breastfed their children and determine factors associated with early infant breastfeeding practices (early initiation of breastfeeding and the use of pre-lacteal feeds within the first three days after birth) amongst infants and young children in Namibia. Key findings of the study are discussed in light of the study objectives and context of the literature reviewed. Strengths and limitations of this study will also be discussed, as well as recommendations and conclusions.

During this study we looked at the characteristics of women in the study sample and key findings of women in relation to women place of residence, place of delivery, employment and education status. We also looked the characteristics of women who ever breastfeed their children in relation to women who were not able to practice EIBF. Lastly we investigated the factors associated with EIBF and the use of pre-lacteal feeding combining the bivariate and multiple logistic regression analysis.

## 4.2 Characteristics of women in the study sample

### 4.2.1 Socio-demographic characteristics

The demographic characteristics of women with children from birth to 23 months of age has been examined in this study. Namibia is a vast country with most of its areas defined as rural areas (69%), therefore most of the respondents were from rural areas (37).

There are district hospitals in each region and pregnant women are encouraged to go to hospitals to deliver with the assistance of skilled birth attendants (2). All the public maternity hospitals were designated “Baby Mother Friendly” through practicing the ten

steps to successful breastfeeding, when the BMFHI was implemented in the country. (20). Some maternity wards in the hospitals continues to practice implementing some of the ten steps .e.g. skin-to-skin contact, breastfeeding initiation within one hour of birth, rooming in and no bottles and teats allowed in the ward. However, no official evaluation has been done on the implementation to assess the quality of counselling and practical support provided by health workers on breastfeeding. Most mothers included in the study sample delivered in a hospital setting compared to only a fifth of mothers who gave birth outside of a hospital. The finding of this study can be compared to the findings in the DHS, since both these studies were nationally representative household surveys. Similar findings were reported in the DHS of 2013 where 88% of mothers gave birth with a skilled provider in a health facility (18). These findings are important for future programme interventions on breastfeeding because knowledge and skills of health workers on breastfeeding and lactation management can be improved with the implementation of the BFHI. The country is currently revising the BFHI guidelines to accommodate the revised guidance of implementation by WHO and the revision of the ten steps (4).

### 4.2.2 Maternal and Child Characteristics

More than half of mothers attended secondary school (grade 8-12) and most mothers (80%) were able to read and write. The 2013 DHS reported the literacy rate to be as high as 93% of women (18). A further analysis conducted on the DHS 2013 data, also reported that 48% of women aged 15-49 have some level of secondary school education (38). Only 28% of mothers were employed outside the home in this study. This may influence their decision making with regards to whether they choose to breastfeed their children or not. There is currently no law in the country that forces employers to make a place of employment breastfeeding friendly. The Infant and Young Child Feeding Policy of 2003 however states that employers should be encouraged to allow breastfeeding breaks and make breastfeeding possible for mothers where possible (2). The Legal Assistance Centre in Namibia has started lobbying for extended maternity leave for breastfeeding women in 2016, since the current provision in the Labour Act no. 11 of 2007 only makes provision for 12 weeks of maternity leave which is not in accordance with the International

Labour Organisation (ILO)'s Maternity Protection Convention, 2000 (No. 183) recommended 14 weeks (39, 40).

Mothers' education status, as well as their employment status, may have impacted their decision making with regards to breastfeeding their children or not. The high literacy level of mothers will enable future programmes to develop communication materials such as posters, leaflets and social media campaigns to educate mothers on breastfeeding.

### 4.2.3 Access to health services and information

Two-thirds of mothers in the study attended four or more ANC visits. It is however lower than the 97% that was reported in the 2013 DHS (18). Nearly all of mothers who participated in the study were tested for HIV during their last pregnancy and most indicated that they heard of HIV before this pregnancy. This study did not assess women's HIV status but assessed mother's knowledge of HIV. Since most mothers received HIV information and counselling during their pregnancy, mothers had knowledge of MTCT of HIV during pregnancy, delivery and breastfeeding and nearly all knew about ARV's. In Namibia, the current guidelines on infant and young child feeding recommends HIV positive mothers to breastfeed with the use of ARV's and to regularly test during the breastfeeding period (17).

The fact that mothers had knowledge of HIV or had HIV themselves, may have influenced the practice of early initiation of breastfeeding. This evidence highlights how important maternal health services such as ANC are for delivering counselling about breastfeeding and breastfeeding within the context of HIV. It also highlights why it is important that health workers providing maternal health care services are adequately equipped with knowledge and skills on how to counsel mothers to understand the benefits of breastfeeding and to support mothers to initiate breastfeeding early, and to discourage the provision of pre-lacteal feeds.

The country has embarked on several in-service trainings for health workers and community health workers at all levels of health care on infant and young child feeding and counselling and integrated the content into various other programmes e.g. Prevention

of Mother to Child Transmission (PMTCT), Anti-retro viral Therapy (ART) Integrated Management of Childhood Illnesses (IMCI) and the Expanded Programme on Immunisation (EPI) as set out in the national policy and guidelines (2, 17). Although formal evaluation assessing the impact of counselling has not been done, exclusive breastfeeding rates have improved over the years to 48% in 2013, which may have been influenced by counselling and support provided by nurses (18). There is however a turn-over of staff in maternity wards, which meant that not all staff are trained.

About three quarters of mothers heard about infant and young child feeding (IYCF), which provides an indication that mothers can be reached with IYCF messages. Almost half of the mothers heard about IYCF at the health facility and almost one third heard about IYCF via the radio. This finding provides a basis for future messages that can be delivered by through health workers and broadcasted over the radio in different languages in order to reach as many mothers as possible, especially those who may not be able to visit the health facility.

### 4.3 Characteristics of women who breastfed their children

Findings from this study revealed that 90% of mother's breastfed, viz. those who ever breastfed, their children out of the total sample. This is slightly lower than 96% reported in DHIS, 2013 (3). The 10% of women who never breastfeed their children (and thus did not practice EIBF) in this sample would also have used pre-lacteal feeds.

There is a shift in most low and middle-income countries, for mothers to deliver in health facilities (including primarily health care settings in both rural and urban areas) (5). Nearly all women who ever breastfed in this sample, delivered in a hospital setting. This finding is consistent with data indicating that the majority of deliveries takes place in a health facility with skilled health workers, i.e. in a hospital setting, in Namibia (3). The rate of mothers who breastfed their children was above 71% in most of the regions. This is lower than what was reported in the DHS (2013), where prevalence was above 90% in almost all regions (2). Most mothers who ever breastfed lived in rural areas. This finding is consistent with the DHS 2013, which reported more mothers residing in rural areas ever

breastfed (97%) (3). This finding is also comparable with the fact that most of the respondents were from rural areas and most of the country consists of rural areas (37).

The majority of mothers who ever breastfed did not perform paid work outside the home. Although the DHIS 2013 did not report employment status of mothers who ever breastfed, the results showed that 97% of mothers from the lowest health quintile ever breastfed (3). An assumption can thus be made that mothers who are not employed will avoid the use of pre-lacteal feeds, where possible. This finding could be attributed to the fact the majority of mothers in this study were unemployed and spend more time with their infants than mothers with employment. A study by Akello et al, in Eastern Uganda, supported this evidence that mothers who were not employed were less likely to use pre-lacteal feeds ( (41).

## 4.4 Factors associated with early infant feeding practices

### 4.4.1 Early initiation of breastfeeding

Just under half of mothers initiated breastfeeding within one hour after delivery, which is much than lower than was reported in the DHS of 2013 (71%) (3). This could be explained by the fact that mothers in this study had less recall bias since the recall period in this study was shorter (24 months) compared to the three-year recall period of the DHS. This finding is comparable with the global prevalence of EIBF that is 50% (42).

In this study, mothers who practiced EIBF were more likely to have delivered in a hospital facility compared to mothers who delivered elsewhere. This result is similar to findings of Ndirangu et al, where the odds of EIBF among health professional-assisted deliveries at facility were nearly four times higher compared with TBAs-assisted deliveries (43). It is also comparable to findings from a multi-country study using data from Sub-Saharan Africa, which showed that women delivering in hospital were more likely to EIBF compared to women who had home deliveries. Community health workers are included in the training on infant and young child feeding counselling and are provided with

counselling cards as job aids, they are able to counsel mothers who delivers at home on breastfeeding within their demarcated area of work.

Given that 97% of Namibian women deliver in a health facility, the proportion of those mothers practicing EIBF is still lower than expected and therefore efforts to improve implementation of the BFHI programme should be prioritized to improve the EIBF rates countrywide (18) More investment is needed to improve the knowledge and skills of health workers using the WHO ten steps to successful breastfeeding as a guide, with special emphasis on step four to facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth (within one hour) (20).

The geographical location of mothers was positively associated with EIBF. Mothers in Zone 3 were more than twice as likely to practice EIBF as mothers from Zone 1. This was also true for mothers in Zone 4. Both zone one and three consist of more rural than urban areas, but Zone 4 consists mostly of urban locations. Mothers from Zone 3 (Kunene, Otjozondjupa and Omaheke regions) consist of a particular ethnic group who are traditionally more inclined to breastfeed. Most of the mothers residing in zone three is from the Herero tribe that include the Ovahimba tribe which is well known for their semi-nomadic traits. It is anecdotally believed that due to their nature of moving around and adhering to their cultural habits to live as naturally as possible, mother's breastfeed more and longer but this cannot be substantiated by any evidence and more studies may be needed to study their breastfeeding practices.

A Nigerian study also reported the urban prevalence of EIBF to be higher at 42% compared to 31% in rural areas (44). The higher prevalence of EIBF in urban versus rural areas may be explained partially by the fact that the majority of hospitals are located in urban or semi-urban areas and as the practice of delivering in hospitals with a skilled attendant increases, so may the likelihood of EIBF. Nkoka et al, in a Malawian study, also reported that delivering at a health facility increased the likelihood of EIBF (45). In Namibia, the bigger hospitals are mostly situated in urban locations, which highlight the

need to ensure that all interventions planned in future with regards to EIBF should be implemented in all areas of the country.

Slightly more than half of mothers with a secondary education practiced EIBF in this sample. Higher level of maternal education was positively associated with the practice of EIBF (14). A systematic review conducted to understand the enablers and barriers to appropriate infant and young child feeding in India revealed that higher maternal education was associated with EIBF (46)

The unemployment rate in Namibia is 33% and more males are employed than women (47). In this study, mothers who were not employed were almost twice as likely to practice EIBF as mothers who were employed at the time of the study. This was found to be similar to a study about predictors of EIBF in Indonesia, where non-working mothers had a higher rate of EIBF than working mothers (48). Evidence shows that mothers who successfully practiced EIBF, have an increased chance to exclusively breastfeed their children and also for a longer period (13). It can thus be assumed that it would be easier for non-working mothers to exclusively breastfeed and breastfeed for longer.

More than half of the mothers who attended ≥4 ANC visits practiced EIBF. During ANC visits, pregnant women receive breastfeeding counselling that includes information on EIBF. Higher rates of EIBF are improved through ANC counselling as was found in a study about the effect of antenatal breastfeeding counselling in hospitals in India, whereby nearly two-thirds of freshly counselled mothers initiated breastfeeding early (9). ANC attendance ≥ four visits was significantly associated with EIBF (49).

Older mothers aged were less likely to practice EIBF in this study as compared to their younger counterparts. Women aged 35-39 (32%) and 45-49 (32%) had the highest prevalence of HIV according to the Namibian HIV Sentinel Survey report (50). With the low prevalence of EIBF in this study and the good knowledge and awareness that mothers have around HIV, it can be assumed that HIV status may have impacted mother's decisions to practice EIBF. Evidence from a study conducted in South Africa assessing infant feeding knowledge and practices among women with and without HIV, reported

that mothers had knowledge on safe infant feeding practices in general and in the context of HIV (51). Also, there was a positive association with reported intention to breastfeed in women with a negative HIV status (51). Although the findings showed that mothers were aware of breastfeeding and had knowledge on how to prevent mother to child transmission, they still opted to not breastfed. In a South African study about Infant feeding knowledge, perceptions and practices among women with and without HIV in Johannesburg, HIV negative status was positively associated with the intention to breastfeed (51)

### 4.4.2. Use of pre-lacteal feeds

Nearly two-thirds of mothers followed the correct practice not to use pre-lacteal feeds. Most hospitals in the country implement the WHO Ten Steps to Successful Breastfeeding and does not allow bottles and teats and this may have contributed to this high rate. However, over a third of newborn infants were still receiving pre-lacteal feeds. Amongst the pre-lacteal feeds given were water, breast-milk substitutes and herbal and traditional drinks.

Mothers who delivered in a hospital were more likely not to use a pre-lacteal feed compared to deliveries outside of hospital. A study conducted in Ethiopia, supported the findings of higher odds of pre-lacteal feeding at home (6). Assessing the risk factors for pre-lacteal feeds in Sub-Saharan Africa, mothers who delivered at home had higher odds of giving pre-lacteal feeds compared to mothers who delivered in a hospital (30).

Another observation from this study, is that mothers who practiced EIBF were more likely to avoid pre-lacteals feeds. EIBF is encouraged in all public health hospitals in the country as part of the BMFHI and therefore mothers are advised not to give a pre-lacteal feed (20). In this study, children who received colostrum were much more likely not to receive pre-lacteal feeds compared to those who did not receive colostrum. The belief that colostrum is ‘bad milk’ and will make children sick, leads to the practice of colostrum being discarded (34). Lack of breastfeeding counselling and mothers who avoid colostrum are predictors of pre-lacteal feeding practice (52).These findings signal the strengthening of

breastfeeding counselling at health facilities and awareness raising at community level about the benefits of colostrum and thus reduced practice of providing pre-lacteal feeds.

The DHS of 2013, however, reported that the use of pre-lacteal feeds was less amongst mothers with no education (5%) and most common in mothers with more than a secondary education (19%) (3). Another study investigating the factors associated with pre-lacteal feeding in northern Nigeria, indicated that the use of pre-lacteal feeds is reduced with a higher education level (13). The contradiction in findings between this and other studies, highlights the need for further investigations about the association between education and the use of pre-lacteal feeds.

Almost three-quarters of mothers who attended ≥4 ANC visits did not use pre-lacteal feeds. Information on optimal breastfeeding practices are shared with pregnant women at ANC. Sixty-two percent of mothers who heard IYCF messages avoided pre-lacteal feeds in this study. The use of pre-lacteal feeds is higher in mothers with a lack of knowledge on the risks associated with pre-lacteal feeding and misconceptions about breastfeeding (14).

Mothers in Zone 4 (Khomas, Erongo, Hardap and //Kharas regions) were more likely to avoid pre-lacteal feeds compared to Zone 1 (Zambezi, Kavango-East and Kavango-West regions). Since two-thirds of mothers who attended secondary education (grade 8-12) did not use pre-lacteal feeds, it can be assumed that these mothers were from the urban areas. Zone 1 consists of Kavango-East region and Kavango-West which had a high prevalence on the use of pre-lacteal feeds have traditional and cultural beliefs infants that are thirsty and need water and herbal traditional drinks (18). A better understanding of traditional and cultural practices with regards to the use of pre-lacteal feeds is necessary and future research on these practices and their impact on optimal breastfeeding practices is recommended.

### 4.4.3. Strengths and limitations of the study

This is one of the first studies to determine factors associated with early breastfeeding practices in Namibia. This study is a secondary analysis of data collected from a

population-based cross-sectional survey, ‘Formative Assessment of Infant and Young Child Feeding and Care Practices in Namibia’, which was conducted in all fourteen (14) regions of Namibia, during 2014 (34). Thus, the required data was available and sample size large enough to conduct the required analysis, which involved complex sample analysis for statistical tests. Sample weights were accounted for to enable greater generalizability of findings.

There was some information missing information for some variables in the original data set. There were also some limitations to the data available for the secondary analysis. The HIV status of mothers was not assessed in the original data set. HIV prevalence is still high in some regions of the country and may have impacted mothers’ decision making not to breastfeed, so no conclusive analysis could be done on this. The method of delivery was also not captured in the primary survey. Delayed initiation of breastfeeding could be caused by caesarian sections and traumatic deliveries may have contributed to the low prevalence of EIBF. No information was captured on the health condition of both mother and child post-delivery. If either the mother of child was not well after delivery, it could lead to possible delay in EIBF and promote the use of pre-lacteal feeds.

# CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Study conclusions

This study set out to determine factors associated with early breastfeeding practices. The government of Namibia is committed to improve breastfeeding programmes in the country in order for children and mothers to receive the maximum benefits. It was surprising to note the low prevalence of EIBF and the high rates of the use of pre-lacteal feeds during this study. Some of the key findings from this study are consistent with other published studies, but need to be considered in the country context. Taken together, these study findings indicate that a range of factors influence EIBF and the use of pre-lacteal feeds. Although all factors contributing to the low practice of EIBF and the use of pre-lacteal feeds may not completely be eliminated, certain measures can be introduced to reduce their impact. These study findings and recommendations can be beneficial for programme implementation at national, regional, district and community level and ultimately improve these outcomes.

## 5.2 Recommendations

In this section, the key study findings were used to propose recommendations. The recommendations are directed at the national IYCF programme, hospitals rendering maternity services and newborn health care as well as the individual health worker in contact with mothers.

Ensuring the implementation of current programmes that exist in the country to improve breastfeeding practices including updating the existing policies and guidelines that are outdated e.g. Policy on Infant and Young Child Feeding Counselling (2003) and National Infant and Young Child Feeding Guidelines (2011).

Strengthening the implementation of the BFHI programme. Clear and updated guidelines should be developed for implementation by health facilities delivering maternal and newborn care, including the revised WHO ten steps for successful breastfeeding and

standards of care to improve optimal breastfeeding practices and quality of care. These guidelines need to be accompanied by adequate financial resources for implementation. These guidelines should also be integrated in the current standards of care to ensure effective monitoring and evaluation. Implementation should include both public and private health facilities Programme implementation should include pre- and in-service training for health workers on the 20-hour BFHI training course. Regular evaluation assessments of health facilities should be conducted to monitor and support health facilities

Strengthening of breastfeeding counselling at ANC, delivery and PNC, Health workers and community health extension workers should be trained on breastfeeding counselling (integrated IYCF counselling package). Develop appropriate tools/job aids for counselling that can be used by health workers and community health workers. Strengthen counseling on breastfeeding in the context of HIV with regards to initiation of breastfeeding and adherence to ARV's Health workers should be trained on lactation management (tertiary and regional hospitals).

Equip health workers with knowledge and skills to offer support to mothers immediately after delivery with focus on skin-to-skin contact, initiation of breastfeeding and the non-use of pre-lacteal feeds. On-going trainings for health workers on the Integrated Infant and Young Child Feeding Counselling are recommended in the country, due to the high number of health workers and community health workers that needs to be trained. The availability of funds, high turn-over of staff and increased workload should be considered when planning and prioritisation of training in various hospitals and regions.

Develop a comprehensive communications strategy for IYFC that includes EIBF and the use of pre-lacteal feeds that includes developing zonal/regional appropriate messages for mothers about EIBF and the use of pre-lacteal feeds, in local languages. Messages should also be developed that can be broadcasted at various radio stations across the country. Development of brochures and leaflets with information on EIBF and the use of pre-lacteal feeds which can be given to mothers as take-away material after counselling

Further research should be conducted on cultural and traditional practices and their impact on EIBF and the use of pre-lacteal feeds. There is need to investigate traditional practices in the country and their influence on the practice of EIBF and the use of pre-lacteal feeds and how problematic practices can be corrected and beneficial practices be promoted. We also need to develop a more in-depth understanding of how a mother's

HIV positive status impacts her breastfeeding decisions and practices. This should be explored qualitatively and should include HIV positive women's perceptions about breastfeeding, stigma, risks and adherence on life-long ARV's to decrease the risk of transmission to their children. We also require future research, which assesses the barriers and enablers for EIBF and the non-use of pre-lacteal feeds amongst health workers and mothers.

Further advocacy and lobbying with the Employers Federation in Namibia is needed to encourage employers to allow breastfeeding mothers to take breastfeeding breaks or allow time for the babies to be brought to them at the workplace where possible. At the same time, lobbying should be done to amend the current law to increase maternity leave from 12 -14 weeks and perhaps to 6 months paid leave.

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# ANNEX A: CONSENT LETTER AND FORM

**Ministry of Health and Social Services**

**Infant and Young Child Feeding (IYCF) and Care Practices Formative Assessment**

**CONSENT LETTER AND FORM**

**_____ 2014**

Dear Ms./Mir (Name of caregiver)

You are invited to participate in a study about feeding practices of children less than 5 years of age. If you decide to participate, I will ask you questions about (child's name), such as, for example, the age at which (child's name) was first offered foods other than breast milk, how many times a day (child's name) eats, how much of each food (child's name) eats, and how you prepare the foods for (child's name). It will take approximately 1 hour.

You have the right to decline to participate, and you also have the right to leave the study at any time. The information you will provide during the interviews is strictly confidential, will only be available to the project investigators and no one else. Declining to participate will not affect your access to health and nutrition services offered in the community or at health facilities.

There will be no immediate benefit for you or (child's name) for participating in this project. However, the information you provide will help strengthen child nutrition programs in Namibia. Participation in the project poses no risk to you or (child's name).

If you have any questions, comments, or complaints about the study, please contact Ms. Marjorie Van Wyk, Study Coordinator, by calling 061 203 2722/203 2712

Sincerely,

_____

**Mr. A. Ndishishi**

**Permanent Secretary : Ministry of Health and Social Services**

**Private Bag 13198, Ministerial Building, Harvey Street, Windhoek, Namibia**

# ANNEX B: ETHICAL APPROVAL LETTER FROM THE MINISTRY OF HEALTH AND SOCIAL SERVICES, REPUBLIC OF NAMIBIA

9 – 0/0001

**REPUBLIC OF NAMIBIA**

*Ministry of Health and Social Services*


Private Bag 13198
Windhoek
Namibia

Ministerial Building
Harvey Street
Windhoek

Tel: 061 – 203 2510
Fax: 061 – 222558
E-mail: eshaama@mhss.na


**OFFICE OF THE PERMANENT SECRETARY**

**Ref:** 17/3/3
**Enquiries:** Ms. E. Shaama

**Date:** 05 June 2014

**Ms. M. Nghatanga**
**Director: Primary Health Care**
**Ministry of Health and Social Services**
**Windhoek**

Attention: Ms. M. Van Wyk

***Re: Formative Assessment of Infant and Young Child Feeding and Care Practices in Namibia***

1. Reference is made to your application to conduct the above-mentioned study.

2. The proposal has been evaluated and found to have merit.

3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**

3.1 The data to be collected must only be used for operational purpose;
3.2 No other data should be collected other than the data stated in the proposal;
3.3 A quarterly report to be submitted to the Ministry's Research Unit;
3.4 Preliminary findings to be submitted upon completion of the study;
3.5 Final report to be submitted upon completion of the study;
3.6 Separate permission should be sought from the Ministry for the publication of the findings.

Yours sincerely,

**Andrew Ndishishi (Mr)**
**Permanent Secretary**

*"Health for All"*

# ANNEX C: CARE GIVER QUESTIONNAIRE USED IN THE PRIMARY STUDY (SHORTENDED)



**Republic of Namibia**

**Ministry of Health and Social Services**

**CAREGIVER SURVEY for infants aged 0-59months**

Good morning/afternoon, my name is _____ and I'm working for the Ministry of Health and Social Services to carry out a study about feeding and care practices of children under 5 years of age. The information collected from this survey will be used by the MoHSS to develop a program to support mothers and caregivers to improve the feeding and care practices of children.

Could you please confirm that you are the mother of a child less than 5 years of age? (If THE CHILD'S CAREGIVER IS NOT PRESENT, STOP THE SURVEY AND RETURN TO THE HOME, UP TO 2 TIMES AT A LATER DATE. If the mother is no longer present in the child's life, interview the main caregiver.)

Could I ask you some questions regarding the feeding of the child less than 5 years of age living in the home? The information that you provide will be 100% confidential. (READ THE CONSENT LETTER, HAVE IT SIGNED AND GIVE THE PERSON A COPY.)

**IDENTIFICATION**

| | | |
|---|---|---|
| 1. | Date survey is applied | Date…… *day* *month* *year* |
| 2. | Full Address | _____ |

**INTRODUCTION**

| | | | |
|---|---|---|---|
| 3. | What is your relation to CHILD's NAME? | Mother…… 01<br>Father…… 02<br>Other, specify: _____ 77 | |
| 4 | What is CHILD'S NAME's birth date? | Date…… day month year | |
| 5 | How many months old is CHILD'S NAME? | | |

| | | | |
|---|---|---|---|
| 6 | Is CHILD'S NAME a boy or a girl? | Male……..01<br>Female……02 | |
| 7 | During your pregnancy with CHILD'S NAME, how many times did you visit a health care center for an ANC visit? | Number of visits……..…___ ___<br>Does not know……99 | |
| 8 | Where was CHILD'S NAME born? | In the hospital……..….01<br>In the health center or clinic…….02<br>In the home…….……..03<br>In the TBA's home…….……..…04<br>Other, specify:_____77<br>Does not know……99 | |
| 9 | Did you ever breastfeed CHILD'S NAME? | Yes……01<br>No……02<br>Does not know……99 | |
| 10 | How many hours after birth did you breastfeed CHILD'S NAME for the first time? | Within 1 hour after birth……01<br>From 1 to 3 hours after birth……02<br>More than 3 hours after birth……03<br>Does not know……99 | |
| 11 | Did you feed colostrum (the first breast milk) | Yes……01<br>No……02<br>Does not know……99 | |
| 12 | During the first 3 days after birth, was CHILD'S NAME given anything other than breast milk? | Yes……01<br>No……02<br>Does not know……..99 | |
| 13 | What was CHILD'S NAME given? | Tea……01<br>Water (includes sugar water) ……...02<br>Infant formula……...…03<br>Other non-breastmilk milks……..04<br>Thin porridge……05<br>Other, specify:_____77<br>Does not now……99 | |
| 14 | During the first 3 days after birth, were you offered any practical support or advice to help you start breastfeeding CHILD'S NAME? | Yes……01<br>No……..…02<br>Does not know……..99 | |
| 16 | Yesterday, what liquids other than breastmilk was CHILD'S NAME given? (READ ALL OPTIONS) | None……..……01<br>Tea……02<br>Water (includes sugar water) ……..03<br>Infant formula……04<br>Other milks……..05<br>Other, specify:_____77<br>Does not know……...99 | |

| | | | |
|---|---|---|---|
| 17 | In the past 1month, did you hear or receive any messages or information on child feeding? | Yes……01<br>No……..02<br>Does not know……..99 | <br>02→93<br>99→93 |
| 18 | Where or from whom did you receive the messages? (DO NOT READ LIST) (MULTIPLE ANSWERS, CHOOSE ALL THAT APPLY) | <br>01 - Health facility<br>02 - Community health worker<br>03 - Traditional health providers<br>04 - A family member<br>05 - Neighbor/friend<br>06 - A child who attends school<br>07 - Community gathering<br>08 - Radio<br>09 - Television<br>10 - Internet<br>11 - Mobile phone messaging<br>12 - Printed materials<br>13 - Religious institution<br>14 - Mother-to-mother group<br>77 - Other, specify _____<br>99 - Does not know/remember | Yes<br>01<br>01<br>01<br>01<br>01<br>01<br>01<br>01<br>01<br>01<br>01<br>01<br>01<br>01<br>01 |
| 19 | Do you remember what the message(s) said? | Yes……01<br>Please describe:<br>No……...02 | |

| | | | |
|---|---|---|---|
| 20 | How old are you? | Age…..…….___ ___<br>Does not know……..……99 | |
| 21 | Are you<br>(READ THE FIRST THREE OPTIONS) | Single……..…01<br>Married/have a partner……...02<br>Separated/divorced/widowed……...03<br>Other (specify)…….....……..77<br>Does not know……...99 | |
| 22 | What is the highest grade/form/year of school that you completed? | Grade/form/year..……..…___ ___<br>Did not study…….…..00<br>Other (specify)_____77<br>Does not know……...……..…99 | |
| 23 | Aside from your own housework, have you done any paid work in the last seven days? | Yes……01<br>No……..…….02<br>Does not know……..99 | |
| 24 | If yes, what is your occupation, that is, what kind of work do you mainly do? | Vendor…….……..01<br>Agricultural worker……..02<br>Office worker……03<br>Service worker……..04<br>Education/research……..…....05<br>Healthcare……06<br>Other, specify_____77 | |
| 25 | Have you ever heard of HIV? | Yes……....01<br>No…….02 | |

| | | | |
|---|---|---|---|
| 26 | Can HIV be transmitted from a mother to her baby:<br>During pregnancy?<br>During delivery?<br>By breastfeeding? | Yes No Does not know<br>During pregnancy 01 02 99<br>During delivery 01 02 99<br>By breastfeeding 01 02 99<br>Other, specify 01 02 99<br>_____ | |
| 27 | Are there any special drugs that a doctor or a nurse can give to a woman infected with HIV to reduce the risk of transmission to the baby? | Yes……...…01<br>No……...….02<br>Does not know……...99 | |
| 28 | Have you learned about ways to prevent passing HIV from mother to child during breastfeeding? | Yes…….01<br>No……..02 | |
| 29 | From who did you learn about ways to prevent passing HIV from mother to child during breastfeeding? (DO NOT READ OUT THE LIST) | Yes<br>01 - Health personnel (doctor, nurse, midwife) 01<br>02 - Community health worker, peer counselor 01<br>03 - Traditional health provider (healer, TBA) 01<br>04 - Family member 01<br>05 - Neighbor/friend 01<br>77 - Other, specify_____ 01<br>99 - Does not know 01 | |
| 30 | Were you tested for the HIV during your pregnancy with CHILD'S NAME? | Yes…….…01<br>No……..….02<br>Not applicable……...03<br>Does not know……...99 | |

## ANNEX D: LIST OF VARIABLES INCLUDED IN THIS ANALYSIS

| Variable | Definition | How was the variable captured |
|---|---|---|
| **Sociodemographic characteristics** | | |
| Place of residence | Where the mother was living at the time of the study. | The mother were requested to provide her full Address: (region, constituency, urban rural area) |
| Place of delivery | Information on where the infant was delivered. | In the hospital……..…….. 01<br>In the health center/ clinic……..... 02<br>In the home…….…… 03<br>In the TBA's home……. 04<br>Other, specify …….……. 77<br>Does not know……..... 99 |
| **Maternal and Child characteristics** | | |
| Maternal age | Age of the mother in years | Age …..……___ ___<br>Does not know ……...… 99 |
| Marital status | Whether the mother was single, married, separated/divorced/ widowed or in any kind of relationship at the time of the study. | Single ……..…….…… 01<br>Married/have a partner …….…… 02<br>Separated/divorced/widowed ……... 03<br>Other (specify) ……..……....…….. 77<br>Does not know ….…….. 99 |
| Maternal education | What is the highest grade/form/year of school that you completed? | Grade/form/year ……...…… ___ ___<br>Did not study ……..……..…..……. 01<br>Other (specify) ……. 77<br>Does not know ……....…..… 99 |
| Employment status/ Occupation: | If the mother had any paid work done besides her own housework and if so what kind of work it was. | Yes ……..…….…… 01<br>No ……..…….……..…. 02<br>Does not know ……. 99 |
| | The mother's employment status was determined by the kind of work she was doing at the time | Vendor …….…….…... 01<br>Agricultural worker …….…… 02<br>Office worker …….…….…… 03<br>Service worker …….…….... 04<br>Education/research ……..…..... 05 |

| | | |
|---|---|---|
| | | Healthcare …….……..…….. 06<br>Other, specify …….. 77 |
| **Access to health services and information** | | |
| ANC Attendance | Data on ANC attendance was collected by asking how many time did she visit the health facility with her last pregnancy. | Number of visits ……..……__ ___<br>Does not know …….....  99 |
| Mother's knowledge of breast-feeding and source of knowledge | Mothers were requested if they have heard or received any information on child feeding in the past month. | Yes ……... 01<br>No ……..…… 02<br>Does not know ……..... ..99 |
| | Where or from whom did you receive the messages? | Health facility …… 01<br>Community health worker …….. 02<br>Traditional health providers ……..... 03<br>A family member …….. 04<br>Neighbor/friend ……..… 05<br>A child who attends school ……..… 06<br>Community gathering …….. 07<br>Radio …….. 08<br>Television …….. 09<br>Internet ……..…. 10<br>Mobile phone messaging …….. 11<br>Printed materials …….. 12<br>Religious institution …….. 13<br>Mother-to-mother group …….. 14<br>Other, specify …… 77<br>Does not know/remember …… 99 |
| | Do you remember what the message(s) said? | Yes …… 01<br>Please describe: .<br>No ……..…. 02 |
| | Have you ever heard of HIV? | Yes ……... 01<br>No ……..…… 02 |
| | Can HIV be transmitted from a mother to her baby:<br>During pregnancy?<br>During delivery?<br>By breast-feeding? | Yes / No / Does not know<br>During pregnancy 01 02 99<br>During delivery 01 02 99<br>By breast-feeding 01 02 99 |

| | | |
|---|---|---|
| | | Other, specify 01 02 99<br>……..... |
| | Have you learned about ways to prevent passing HIV from mother to child during breast-feeding? | Yes ……..…… 01<br>No ……..……...…. 02 |
| | From who did you learn about ways to prevent passing HIV from mother to child during breast-feeding? | Yes<br>Health personnel (doctor, nurse, midwife) 01<br>Community health worker, peer counselor 02<br>Traditional health provider (healer, TBA) 03<br>Family member 04<br>Neighbor/friend 05<br>Other, specify_____ 77<br>Does not know 99 |
| Mother's knowledge of IYCF and source of knowledge | Mothers were requested if they have heard or received any information on child feeding in the past month. | Yes……..…01<br>No……..….02<br>Does not know……..……..99 |
| | Where or from whom did you receive the messages? | 01 - Health facility<br>02 - Community health worker<br>03 - Traditional health providers<br>04 - A family member<br>05 - Neighbor/friend<br>06 - A child who attends school<br>07 - Community gathering<br>08 - Radio<br>09 - Television<br>10 - Internet<br>11 - Mobile phone messaging<br>12 - Printed materials<br>13 - Religious institution<br>14 - Mother-to-mother group<br>77 - Other, specify _____<br>99 - Does not know/remember |
| | Do you remember what the message(s) said? | Yes……01<br>Please describe:<br>_____ |

| | | |
|---|---|---|
| | | No……02 |
| Child age | The age of the child was requested in months | ……..__ __ months |
| Child sex | The mother was asked whether the child was a boy or a girl to determine gender | Male ……..…… 01<br>Female …….……..……... 02 |
| **Early breast-feeding practices** | | |
| Women initiating or not breast-feeding | Data was collected on whether the mother ever breastfed the child yes or no. This was to establish breast-feeding of this particular infant at the time of the study. | Yes ……..……..…… 01<br>No ……..……..…. 02<br>Does not know ……...……..…. 99 |
| Breast-feeding within 1 hour | This was assessed by asking the mother how many hours after birth did she started breast-feeding the baby. | Within 1 hour after birth ……..... 01<br>After 1 hour …… …… 02 |
| | Did you feed the infant colostrum (the first breast milk) | Yes ……..…..… 01<br>No ……...…...… 02<br>Does not know ……..…... 99 |
| Practical breast-feeding support and advice given by health workers | Were mother shown and assisted how to breastfeed after giving birth so mothers (regarding positioning and attachment to initiate breast-feeding and if advice was given on breast-feeding. | Yes ……..…. 01<br>No ……..…… 02<br>Does not know ……..……..…… 99 |
| Pre-lacteal feeds and type of feeds given | Mother was asked if she gave the infant anything other than breast milk within the first 3 days and the type of feed/liquid given. | Yes……..…01<br>No……..……02<br>Does not know……..…..99 |

## ANNEX E: EXTRACTION TOOL AS PER VARIABLES IDENTIFIED (2 pages)

| Reference Number | Place of residence | Gender | Childs Age | Maternal Age | Marital status | Maternal education | Employment Status of | Type of employment | ANC visits | Place of delivery | Breastfeeding (BF) | Time of ffirst_BF initiation | Colostrum fed | Pre-lacteal feeds given | Type of pre-lacteal Type Tvne of feeds given | Practical support given |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | |

| Reference number | Information on BF message received | Source of information | Mother's retention of information heard | Mother's level of information about HIV | Mother's knowledge of HIV of transmission during BF | Source of information about HIV | HIV testing during pregnancy (mother tested) |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| 3 | | | | | | | |
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| 18 | | | | | | | |
| 19 | | | | | | | |

# ANNEX F: ETHICS CLEARANCE CERTIFICATE

| UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL) |
|---|---|

**Office of the Deputy Vice-Chancellor (Research & Post Graduate Affairs)**

**TO:** Ms NA Angermund
School of Public Health
Medical School
University

E-mail: angermundnicole@gmail.com

**CC:** Supervisor: Dr W Slemming <Wiedaad.Slemming@wits.ac.za>
and <HREC-Medical.ResearchOffice@wits.ac.za>

**FROM:** Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

**DATE:** 01/04/2019

**REF:** *R14/49*

**PROTOCOL NO:** **M190269** *(This is your ethics application study reference number. Please quote this reference number in all correspondence relating to this study)*

**PROJECT TITLE:** *Factors associated with infant breastfeeding practices in Namibia*

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to the Government funding of the University.

MSWorks2000/Iain0007/Clearscan.wps