FACTORS THAT INFLUENCE EXCLUSIVE BREASTFEEDING IN WINDHOEK DISTRICT IN NAMIBIA

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A mini thesis submitted in partial fulfilment of the requirements for the degree of Master of Public Health in the Department of School of Public Health, University of the Western Cape.

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KEYWORDS

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Birth order

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Postpartum stay

ABSTRACT

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Factors that influence exclusive breastfeeding in Namibia are important, especially in light of the implementation of the Baby and Mother Friendly Initiative (BMFI). Infant feeding practices, especially breastfeeding, are important public health issues, particularly in the prevention of HIV transmission from mother to child. The mini thesis determines the prevalence of exclusive breastfeeding and measures the association of demographic and service-related factors on exclusive and non-exclusive breastfeeding practices. A cross sectional study was conducted in 10 clinics in the Windhoek district. The clinics were stratified into 3 groups according to low, medium and high attendance of mothers and a random sample of clinics were selected from each stratum. A time limited sampling procedure was used to select mothers with children 6 weeks to 11 months old. A structured questionnaire was used to interview the mothers. To determine the relationship between variables, the chi-squared test was used, with the observed significant level or p-values set at 5%. The data was stratified by all factors to determine if confounding exists. The prevalence of exclusive breastfeeding at 4 months was 48.5%. The factors that were significantly associated with exclusive breastfeeding are antenatal care attendance, birth order, showing attachment and experiencing breast problems. The age of the mother was a confounding factor in the relationship between birth order and exclusive breastfeeding. The type of delivery, breastfeeding education during pregnancy

and early postpartum, duration of postnatal stay and support for breastfeeding decisions were not significantly associated with exclusive breastfeeding. According to this study, most of mothers are not managing breast problems correctly.

Conclusion: The finding of the study indicates that the rate of exclusive breastfeeding can be increased if crucial breastfeeding management topics are identified and practiced.

March 2005

DECLARATION

I declare that, the thesis on Factors that influence exclusive breastfeeding in Windhoek district in Namibia is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged as complete references.

Justina-Nelago Amadhila March 2005

Signed …….

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LIST OF ABREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
BF	Breastfeeding
BFHI	Baby Friendly Hospital Initiative
BMFI	Baby and Mother Friendly Initiative
EBF	Exclusive breastfeeding
GRN	Government of Namibia
HIV	Human Immune-deficiency Syndrome
IBFAN	International Baby Food Action Network
Km	Kilometres
LBW	Low Birth Weight
MHSS	Ministry of Health and Social Services
NDHS	Namibia Demographic and Health Survey
Non-EBF	Non-Exclusive breastfeeding
SINAN	Swaziland Infant Nutrition Action Network
UNICEF	United Nations Children's Fund
WABA	World Alliance for Breastfeeding Action
WHO	World Health Organization

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CHAPTER 1:

INTRODUCTION

Breast milk is the safest and most natural food for an infant. It provides an infant's complete nutritional needs up to four to six months of age. There is no need for other food or drink before this age. When the baby is fed on breast milk only, it is called exclusive breastfeeding. Exclusive breastfeeding provides the best nutrition and growth for infants, and continued growth with the introduction of solid foods at six months (UNICEF, 1993).

Globally only 38% of infants are exclusively breastfed during the first four months of life and complimentary feeding practices are often ill timed, inappropriate and unsafe (WHO, 2002). In Africa, breastfeeding is the normal and cultural way of feeding infants, resulting in high rates of initiation and longer duration of breastfeeding. However, exclusive breastfeeding tends to decline with increased age in months. According to the International Baby Food Action Network (IBFAN) Africa Regional Office Report (2004), exclusive breastfeeding at 3-4 months in 2000 in the region was as follows: Botswana 29.7%, Eritrea 64%, Ghana 36%, Kenya 17%, Lesotho 54%, Malawi 11%, Nigeria 62%, Somalia 7%, Sudan 40.8%, Swaziland 53%, Tanzania 4.1%, Uganda 68% and Zimbabwe 2.5%. These rates compare well with those outside Africa. In Bolivia in 1995, exclusive breastfeeding for children 2-3 months was 48% declining to 27%, at the age of 4-5 months (Ludvigsson, 2003).

The aim of the study is to determine the prevalence of exclusive breastfeeding and measure the association of demographic and service-related factors on exclusive and non-exclusive breastfeeding practices in Windhoek district, Namibia.

1.1 Background information

Namibia has a surface area of 824,295 square kilometres and ranks as Africa's fifteenth largest country. It lies in the southwest of the continent and shares boarders with Angola, and Zambia in the north, Zimbabwe at the eastern end of the Caprivi Strip, Botswana to the east, and South Africa in the south and southeast. Although it is vast, it has a relatively small population of 1,826,854 million and an annual growth rate of 2.9%. About one third of the population live in urban areas and the rest (67%) live in rural areas including communal and commercial farms. There has been an increase in rural urban migration putting an extra burden on resources and infrastructure (Population and Housing Census, 2001).

Administratively, Namibia is divided in to 13 regions: Omusati, Oshana, Ohangwena, Oshikoto, Kavango, Caprivi, Kunene, Otjozondjupa, Omaheke, Erongo, Khomas, Hardap, and Karas. In order to provide comprehensive health services the Ministry of Health and Social Services (MHSS) administers 34 districts. Each region has one to three districts. Khomas region is one of the few with only one district, so Windhoek district covers the whole region.

The Ministry of Health and Social Services (MHSS) has adopted a primary health care strategy in the delivery of health services to the Namibian population. One of the components of PHC programmes is Maternal and child care including family planning, immunisations and promotion of breastfeeding and nutrition. The majority of women, 93% receive antenatal care and 69.1% attend more than 4 visits. However more than half, 52% of women do not receive postnatal care. Seventy five percent of births are

delivered in health facilities, while 25% take place at home. In 2000, immunisation coverage among children 12 – 23 months old was 65% (NDHS, 2000).

There are 10 clinics in Windhoek district. Donkerhoek, Hakahana, Katutura, Khomasdal, Okuryangava, Robert Mugabe and Wanaheda are situated in the urban area, while Baumgartensbrunn, Dordabis and Groot Aub are in the rural area. The distances between the urban clinics and the city centre range from 1 to 5 kilometres (Km). Baumgartensbrunn is 20 Km away, while Dordabis and Groot Aub are about 50 and 100 Km away, respectively.

1.2 Rationale

Breastfeeding practices and the introduction of complementary food are important determinants of the nutritional status of children. When babies are exclusively breastfed for up to six months, the benefits are highest. Exclusive breastfeeding provides the best nutrition, health and growth for infants (WABA, 2004).

In Namibia the Baby and Mother Friendly Initiative (BMFI) was launched in 1992 by His Excellency, President Sam Nujoma. The initiative aims to promote, support and protect breastfeeding practices and is adopted from the global Baby Friendly Hospital Initiative (BFHI). The BMFI policy and guidelines were developed and health workers were trained on breastfeeding management and promotion. Since 1996, 35 (100%) state and state-subsidised missionary hospitals were declared Baby and Mother Friendly according to the international laid down criteria of the Ten Steps to Successful Breastfeeding (MHSS, 1997).

1.3 Research problem and objectives

1.3.1 Research problem

Namibia has a strong breastfeeding culture, and 95% of children are breastfed for some period of time. The mean duration of breastfeeding is about 19 months. However, the mean duration of exclusive breastfeeding is only one month. Initiation of breastfeeding within one hour of birth increased from 52% in 1992 to 81% in 2000 and within one day from 80% in 1992 to 93% in 2000. Despite these improvements, the rate of exclusive breastfeeding remains unacceptably low, at 4.1% for babies 4-5 months old. In 1992, only 29% of infants under the age of 2 months were breastfed exclusively, declining to 16% and 3% at 2 – 3 months and 4 – 5 months, respectively. There was no significant improvement in 2000; about 37% of infants under 2 months were breastfed exclusively, declining further to 13.6% and 4.1% at 2-3 months and 4-5 months, respectively (NDHS, 1992; NDHS, 2000).

The BMFI policy was revised in 2003 to include infant feeding in HIV. The overall objectives are to minimize the transmission of HIV from mother to child through breastfeeding, and at the same time prevent the spill over of artificial feeding. Mixed feeding increases the risk of transmission of HIV infection from mother to child (MHSS, 2003), necessitating the promotion, supporting and protection of exclusive breastfeeding.

The Namibia Demographic and Health Survey (NDHS) indicated the infant feeding practices prevalent in Namibia, but did not explain why. The purpose of this study is to measure the relationship between factors that affect breastfeeding practices. On the other hand there is limited information on exclusive breastfeeding in Namibia, hence the need

to identify the factors that affect exclusive breastfeeding practices, in order to take appropriate actions.

1.3.2 Research aim and objectives

The aim of the study is to identify factors associated with exclusive breastfeeding in Windhoek district in Namibia.

The specific objectives are:

- To determine the prevalence of exclusive breastfeeding and non-exclusive breastfeeding at four months in Windhoek District.
- To describe the demographic characteristics and breastfeeding practices of the two groups.
- To measure the association between the risk factors in the exclusive and non-exclusive breastfeeding groups.
- To make recommendations for appropriate interventions that increase the duration of exclusive breastfeeding.

1.4 Delimitation of the study

The study excludes private clinics in the Windhoek district, but not necessarily users of those clinics as it is assumed that some private clients make use of state primary health care services, particularly immunizations and family planning services. Since all the state and state-subsidized hospitals in Namibia are declared Baby and Mother friendly, it is expected that the majority of mothers visiting the clinics in Windhoek district have delivered in a Baby and Mother Friendly hospital. Out of the three private hospitals in Windhoek district only one, Medi-City Clinic, conducts deliveries. This hospital is not

officially assessed for baby and mother friendliness; however their staffs are trained on breastfeeding promotion and management (MHSS, 1997). Place of delivery is therefore not assumed to make a difference to the characteristics of the mothers.

1.5 The thesis outline

The thesis is presented in five chapters.

Chapter one introduces the study.

Chapter two covers related literature and its relevance to the discussions.

Chapter three presents the methodology used for the data collection.

Chapter four and five covers the findings of the study, discussions and conclusions.

CHAPTER 2:

LITERATURE REVIEW

In this chapter the literature on factors associated with exclusive breastfeeding, both locally and globally, was reviewed. The aim was to obtain information regarding the method used in other similar studies and the findings thereof.

2.1 Breastfeeding recommendations

Since 1979, the WHO recommendation for the duration of exclusive breastfeeding has been "4-6 months". This changed to 6 months in 2001, following the review and evaluation of more than 3,000 references by its Secretariat, which supported the recommendation (WHO, 2001).

Currently, as a result of HIV transmission from mother to child including through breastfeeding, different feeding options are being recommended. Exclusive breastfeeding is one of the options in Namibia (MHSS, 2003). A study carried out in Durban, South Africa to examine the influence of infant feeding pattern on early mother to child transmission of HIV reported a low risk (14.3%) of HIV infection in infants of HIV infected mothers who are exclusively breastfeeding for three months or more, compared to 24% of those receiving mixed feeding (formula and breast) before the age of three months (Coutsoudis, 2000). Further international guidance states that when replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding by HIV positive mothers is recommended (WHO, 2001). This recommendation has implications for Africa, since breastfeeding is culturally the way of feeding infants, and many HIV infected women are choosing to breastfeed (Iliff et al. 2005). In many resources-limited settings, replacement feeding that is acceptable,

feasible, affordable, sustainable and safe is uncommon (WHO, 2001); therefore in these settings breastfeeding may be the only option available.

2.2 Breastfeeding status in Windhoek district

In a study conducted by Hofnie (1996) on factors influencing infant feeding, exclusive breastfeeding for children under the age of 2 months was found to be 34%, declining to 30% at 4-6 months. A study by Ithindi (1997), which examined mothers' knowledge and practices, found the prevalence of exclusive breastfeeding to be 76% and 12% for children aged 0-3 months and 4-6 months, respectively. However, the definition of exclusive breastfeeding in this study included the use of water, which was given to 92% of children aged 6 months or less.

2. 3 Factors influencing breastfeeding.

Several studies have identified factors associated with breastfeeding. These factors are discussed in the following sections.

2.3.1 Breastfeeding Support and Education

A study conducted in Dhaka, Bangladesh looked at the effects of community-based peer counselling on exclusive breastfeeding practices. Results showed a significant increase in women who breastfed exclusively. Seventy percent of women in the intervention group were exclusively breastfeeding, compared to only 6% in the control group (Haider, Ashworth, Kabir et al. 2003). In three separate studies looking at community-based breastfeeding promotion and household level infant feeding practices with HIV, Morrow et al. (1999), Bhandari et al. (2003), and SINAN, NNC & MHSW (2000) each reported beneficial outcomes when breastfeeding mothers were supported. However, in a

randomised control trial study, which evaluated the effect of volunteer support from counsellors on breastfeeding rates in London and south Essex, Graffy (2003) reported no significant difference in the duration of exclusive breastfeeding between the intervention and the control groups. Sixty-five percent of women in the intervention group versus 63% in the control group were exclusively breastfeeding. The author attributed this to the fact that both groups had intentions to breastfeed long before the introduction of the intervention. However, 73% of women in the intervention group reported that they valued the support of the breastfeeding counsellor and were less likely to believe they were not producing enough milk

2.3.2 Breastfeeding information given to mothers during pregnancy and early postpartum

Informing pregnant women about the benefits of breastfeeding and showing breastfeeding mothers how to practice and maintain breastfeeding are part of the 10 Steps To Successful Breastfeeding, which promote exclusive breastfeeding (GRN, 1992). In a cohort study to investigate factors influencing continuation of breastfeeding in Wellington South, New Zealand, women were less likely to breastfeed exclusively at 6-10 weeks if they believed they needed more breastfeeding information before birth. In the same study, women were found to be less likely to breastfeed at 4 months if they had experienced breastfeeding problems (McLeod, Pullman & Cookson 2002). The information given to the women in the study included management of breastfeeding problems and correct positioning and attachment of the baby to the breast.

The culture of giving water to young babies seems to be associated with hospital practices. In a study by Almroth, Mohale & Latham (2000) to obtain data on water

supplement for babies in Lesotho, grandmothers reported that nurses were the source of advice for giving water and that they themselves have never given water to their own young babies as they considered it unnecessary and harmful.

The Baby Friendly Hospital Initiative (BFHI) is a programme to help maternity facilities change conventional practices that undermine breastfeeding. It requires that breastfeeding education be directed towards both mothers and health workers (UNICEF, 1993). The effect of the initiative was assessed in a comparative study on the impact of BFHI in Ile-Ife, Nigeria, which showed an increased duration of exclusive breastfeeding in 75% of mothers from the BFHI facility, compared to 35% from non-BFHI facility (Ojofeitime, Esimal & Owolabi, 2000). Apart from the data collected through NDHS during 1992 and 2000, which showed no significant increase in the duration of exclusive breastfeeding, the contribution of the BFHI was never investigated in Namibia.

2.3.3 Breastfeeding management and problems

Appropriate breastfeeding management including correct positioning and attachment of the baby to the breast, as well as breastfeeding on demand, are associated with fewer breastfeeding problems (UNICEF, 1993). On the other hand, Sheehan et al. (2001) investigated breastfeeding outcomes in Ontario, Canada and reported that perceived inadequate milk supply, difficulty with breastfeeding and sore nipples were the main reasons for switching to formula feeding at one month after birth. Cernades et al. (2003) examined maternal and perinatal factors influencing the duration of exclusive breastfeeding among mothers in Buenos Aires, Argentina and reported that appropriate suckling techniques and no nipple problems were associated with longer duration of exclusive breastfeeding.

2.3.4 Socio-cultural factors

Traditional and cultural beliefs influence breastfeeding practices. In some cultures it is believed that the mother's milk is poisoned if she has lost all her children. In this case, traditional beliefs indicate that she should not breastfeed at all. Other traditional beliefs state that a mother discontinue breastfeeding her baby boy if she is widowed while she is still breastfeeding or if the child (boy or girl) begins teething in the upper jaw instead of the lower jaw (SINANA & NNC, 2000). Additionally, the mother's milk is believed to become bad and causes the child not thrive if she has sexual intercourse (Cosminsky et. al. 1993 cited by Ithindi, 1997). These traditional and cultural beliefs negatively affect exclusivity and duration of breastfeeding. Hospital practices that separate mother and baby are believed to delay initiation of breastfeeding and promote the use of formula and bottles (GRN, 1992). Hofnie (1996) reported that the use of private doctors and hospitals, formula, bottles and teats are associated with non-exclusive breastfeeding. Ludvigsson (2003) investigated breastfeeding intentions, patterns and determinants in infants visiting hospitals in La Paz, Bolivia. He reported that mothers who were discarding colostrums and using prelacteal feeds, attributed to ethnic and cultural differences, were less likely to exclusively breastfeed for a longer duration.

2.3.5 Maternal Age and Parity

In a study to examine the association between solids and formula feeds with the pattern and duration of breastfeeding in Upssala, Sweden, Hornell, Hofvander & Kylberg (2001) reported that mothers less than 24 years of age were less likely to breastfeed than older mothers. They attributed this to lack of breastfeeding experience in young mothers. However, Chezen, Friesen & Boettcher (2003), who investigated the effects of breastfeeding knowledge, confidence and infant feeding plans on the actual feeding

practices in Muncie, USA, found that knowledge and plans for breastfeeding were significantly associated with increased duration of exclusive breastfeeding in first-time breastfeeding mothers. On the other hand, Butler, Willem & Tukwitonga (2004), who examined factors associated with non- exclusive breastfeeding in New Zealand, reported that high parity was significantly associated with not exclusive breastfeeding. Hofnie (1996) also reported that 49% of mothers with three or more babies were exclusively breastfeeding, compared to 31% exclusive breastfeeding for first-time mothers.

2.3.6 Marital status

According to Hofnie (1996), 65.1% of married mothers did not breastfeed exclusively. The author attributed this to the fathers' perception and attitudes towards breastfeeding that discourage married mothers to breastfeed. However, Morrow, Guerero, Shults et al. (1999), reported no relationship between marital status and breastfeeding practice.

2.3.7 Maternal education and employment

Hofnie (1996) found an association between education, employment and breastfeeding practice; most (63.2%) of mothers with secondary education did not breastfeed exclusively; about 73% of the women who were employed did not breastfeed exclusively. Both education and employment were associated with factors such as the use of private doctor and hospital, formula and bottle feeding, reinforcing other factors that affect breastfeeding. Ludvigsson (2003) reported the same that increased duration of exclusive breastfeeding was associated with less education. In the same study, Ludvigsson (2003) also found that breastfeeding on demand was less common in mothers with gainful employment. In contrast, Hornell, Hofvander & Kylberg (2001)

reported that 39% of mothers with a university degree were exclusively breastfeeding compared to 24% of those with less education ($p = 0.01$).

2.3.8 Duration of postpartum stay

In a study to examine the relationship between the timing of postpartum discharge and breastfeeding, a shorter duration of postpartum stay (one night compared to two or three) was found to be associated with increased duration of breastfeeding (Margolis & Swartz, 2000). Sheehan et al. (2001) investigated breastfeeding outcomes in Ontario, Canada and reported that a postpartum stay longer than 48 hours was a risk factor for not breastfeeding. This may be attributed to hospital practices that undermine breastfeeding, including separating mothers and babies and not feeding on demand (GRN, 1992).

2.3.9 Family support and influence on feeding decisions

Cernades, Nocada, Barrera, et al. (2003) examined maternal and perinatal factors influencing the duration of exclusive breastfeeding during the first six months of life in Buenos Aires, Argentina. They found that positive maternal attitudes towards breastfeeding and adequate family support were significantly associated with longer duration of exclusive breastfeeding. The associations were so even after controlling for maternal education. However, Hannon et al. (2000) investigated adolescent mothers' infant feeding decisions and breastfeeding practices in Chicago and found that mothers made their own feeding decisions, without any influence.

2.4 Conclusion

It is clear that factors affecting exclusive breastfeeding are interrelated and may confound each other. Careful consideration should be taken when analysing such data.

CHAPTER 3:

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The first two chapters presented the background and literature review upon which this study is based. This chapter will explain the research design, study population, sampling procedure and sample size, and development and pre-testing of the instrument. The sequence of the discussion is the data collection and analysis, validity and reliability, as well as the limitations and ethical considerations involved.

3.2 Research design

This was a descriptive cross-sectional study, measuring the association of socio-demographic and service related factors on exclusive and non-exclusive breastfeeding practices. A positivist research approach and quantitative data collection method was used.

3.3 Population

The study population included mothers with infants 6 weeks to 11 months old visiting the selected clinics in the district.

3.4 Sampling and sample size

The prevalence rate of exclusive breastfeeding in Windhoek district is estimated around 30% (Hofnie, 1996). To be able to detect a difference at 5% significance with 80% power, using a risk ratio of 2:1, the required sample size was 202 of unexposed (predetermined factors) and 105 of exposed, giving the total sample of 307.

Distribution of the sample

There are 10 clinics in the district. These clinics were stratified into 3 groups according to the average attendance of the mothers. High attendance clinics: 1000 - 2500 target population of children < 1 year (Katutura and Khomasdal). Medium attendance clinics: 800 – 900 target population of children < 1 year (Robert Mugabe, Hakahana, Okuryangava, Donkerhoek and Wanaheda). Low attendance clinics less than 200 target population of children < 1 year (Groot Aub, Baumgartsbrunn and Dordabis). All the clinics that fall under high and medium attendance were urban and those with low attendance were rural. A random sample of clinics was then selected from each stratum to represent the study population. The sample was allocated between the strata proportionally to their size as follows:

- Katutura, high attendance (2391), serves 67.6% of the target population – sample size 208
- Robert Mugabe, medium attendance (828), serves 28.7% of the population – sample size 88
- Groot Aub, low attendance (81), serves 3.7% of the population - sample size 11

The total size was 307.

A time limited sampling procedure was used. This means that all mothers with children aged 6 weeks to 11 months visiting the selected clinics during the study period were interviewed until the desired number at that clinic was reached. This was the only method that could be used to achieve the target sample population in a limited time.

3.5 Development of instrument

A questionnaire was developed in English to collect information (see Annex II). Demographic information included age, marital status, education and employment. Information on service related factors included antenatal care (ANC) attendance, type of delivery, pre- and postnatal breastfeeding information provided, initiation of breastfeeding, and duration of postpartum stay. Breastfeeding practices included age of supplementation/complementation, reasons for supplementation/complementation, and breast problem management. Questions on influences and support for feeding decisions in general were also developed.

3.6 Pre-testing

The questionnaire was pre-tested at Donkerhoek clinic, which was not included in the actual study, in order to assess the appropriateness of the questionnaire. The necessary adjustments were made accordingly.

3.7 Data collection

A research assistant, who holds a master degree in Community Disability Studies, was recruited to assist in data collection. The assistant researcher was trained before and during the pre-testing. The researchers identified all registered mothers with infants aged 6 weeks to 11 months on the clinic visit day. To avoid overlap in survey responses, mothers were asked if completed survey already. After the children were immunized or treated, the mothers were directed to a private room for the interview. Each interview lasted about 10-15 minutes. The maximum interviews per interviewer and day were 20 in total. The data was collected from 18 October to 6 November 2004. In order to

address confidentiality and anonymity in data collection the questionnaires were coded to track from which facility they came.

3.8 Data processing and analysis

The data were cleaned and entered into Epi Info 2002 in duplicate. The duplicate data files were validated against each other to further verify the data. Frequencies were calculated for all variables to describe their characteristics. Erroneous data values were checked against the field records to ensure that no data entry errors were made.

Descriptive statistics (frequencies and percentages) were calculated. Cross tabulations and a Chi square test were used to determine the relationship between certain variables and breastfeeding practices. The data were stratified to identify if education, age of the mother, marital status, birth order, and employment were potential confounding factors. Odd ratios and p-values were used to interpret the significance of the statistical tests.

Exclusive breastfeeding in this study referred to babies given only breast milk from birth to the age of 4 months, allowing water occasionally.

All variables were categorical and defined as follows:

Mothers' age was defined as "Young" if less than 29 years old and "Old" if 29 years old or older. **Babies' age** was defined as "Less than 4 months" and "4 months or older". **Marital status** was defined as "Married" if they were married or living together with the father of the present child, "Single" if never married, "Divorced" or "Widowed". **Education** was categorized by "No or low education" for none or lower primary education and "Education" for upper primary, secondary and tertiary education.

Employment was defined as " currently employed (yes or no)". **Antenatal and postnatal breastfeeding education** included information on the benefits of breastfeeding, exclusive breastfeeding and how to position and attach the baby to the breast.

Reasons for complementation were defined as follows:

- "Returning to work/school"
- "Not enough milk"
- "To supplement the breast"
- "Baby ill", the exact wording from mothers included "baby was premature" and "baby is in the PMTCT programme"
- "Mother ill "
- "Right age", the age that the mothers felt was the right age for the child to start solid foods
- "To teach child to eat", the exact wording from the mother.

Initiation of breastfeeding done immediately and 30 minutes after birth was defined as "Immediate". Initiation of breastfeeding done after an hour or more up to days after birth was defined as "Delayed".

Postnatal stay less than one day was defined as "Short", while that of more than 1 to 2 days was defined as "Long".

Breast problems were defined as engorgement, blocked duct, sore or cracked nipples, mastitis and abscess. The problem of not enough milk was also included in breast problem although it is not a breast problem as such. The reasons were that they are all managed the same way and also the idea to capture all the associated factors.

Breast problem management included correct attachment, frequent breastfeeding, expression of breast milk and exposing the breast to the air.

Influence and support meant to whom the mother turned to for support on feeding decisions in general.

3.9 Validity and reliability

Variables were created based on their use in other studies and experts in the field reviewed the questionnaire. The questionnaire was administered in languages, understood by both respondents and interviewers. A research assistant was trained on how to ask questions and record the answers in order to ensure standardisation and to avoid interviewer bias. Data quality control checks were done in the field as well as before and during the data processing for completeness and consistency.

3.10 Study Limitations

The time limited sampling procedure could have introduced selection bias into the study. This was a facility-based study, and only those who made use of the health facility were selected. Those mothers who did not visit the health facilities may have different characteristics as those who visited. Mothers were asked as to what age their child would be given food, yet the responses may not have reflected actual practice. In addition there is a possibility of recall bias, from those mothers with older children as they might have forgotten what happened in the past. The target population for a given clinic as determined by the Ministry may be different from the actual attendance. However, upon visit to the clinics, actual attendance appeared to match the target population. This reduced any potential bias that may have occurred if clinics' target

populations were different from actual population served. Bias in the data collection instrument was limited through the use of highly objective, close-ended questions.

3.11 Ethical consideration

The research protocol was submitted to the relevant Health Authorities, Research Units and Ethics Committees. Verbal consent was obtained from the mothers. They were informed of their rights to choose not to participate in the study without affecting the care their children receive from the facility; that they can withdraw anytime they want to should they not feel comfortable with the study; that the information collected will remain confidential and no personal information will be disclosed to any other person and will only be utilised for the purpose of the research.

3.12 Summary

This chapter explained the study methodology and design used. The next chapter covers data analysis.

CHAPTER 4:

RESULTS: PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter presents the findings from the interviews with mothers from all three types of facilities: high, medium and low attendance, namely Katutura, Robert Mugabe and Groot Aub in that order. The findings are presented as descriptive statistics, using percentages, means, frequency distributions, as well as cross tabulations and stratification, to describe the data.

4.2 Number and Type of Facilities

A total number of 307 mothers were interviewed at three facilities, 208 (67.6%) at Katutura, 88 (28.7%) at Robert Mugabe and 11 (3.7%) at Groot Aub.

4.3 Demographic description of the study population

Mothers' ages ranged from 16 – 44 years with a mean age of 26 years (standard deviation 5.6). As shown in table 1, 204 (66.9%) mothers were young, less than 29 years. Nearly two-thirds of women, 197 (64.2%), were either married or living together with the father of their present child. Most of the mothers 232 (75.6%) had completed upper primary, secondary or tertiary education. Just over two-thirds of mothers, 208 (67.8%), were unemployed. The smallest percentage, 23 (7.5 %), reported selling goods to make a living. Oshiwambo was reported as the home language for 154 (49.5%) mothers. Damara-Nama was reported as the home language for 71 (23.1%) mothers, and Otjiherero for 50 (16.3%) mothers. Sixteen (5.2%) mothers spoke other languages. Only 2 (0.7%) reported English, the official language, as their home language, while 16 (5.2%) reported Afrikaans, which was the official language before independence, being

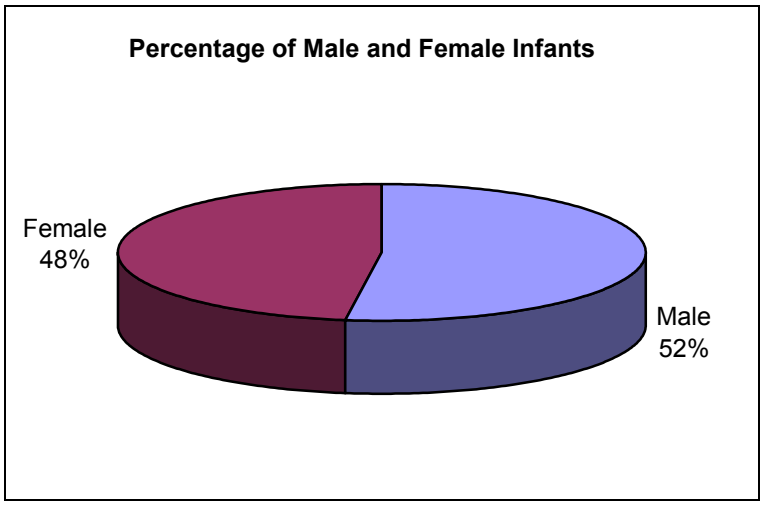
their home language. The data show that just over half of the babies 155 (50.5%) were less than 4 months old and the rest 152 (49.5%) were 4 months or older. Most of the babies, 195 (63.1%), were at least second born. As shown in Figure 1, there were slightly more male babies than female babies, 160 (51.9%) compared to 147 (48.1%).

Table 1: Distribution of demographic characteristics of participants.

Characteristic	Frequency	Percentage
Age:		
Below 29 years	204	66.9
29 years and above	101	33.1
Total †	**305**	**100**
Marital Status:		
Married/living together	197	64.2
Single/divorced/widowed	110	35.8
Total	**307**	**100**
Education:		
No Education*	75	24.4
Education*	232	75.6
Total	**307**	**100**
Employment:		
Yes	99	32.2
No	208	67.8
Total	**307**	**100**

† 2 missing data
*No education means none education or completion of lower primary education. *Education means completion of upper, secondary or tertiary education

Figure 1: Percentage of Male and Female Infants



4.4 Service-related factors.

4.4.1 Antenatal attendance and breastfeeding education

Four (1.3%) out of 307 mothers interviewed did not attend antenatal clinic. Most of the women, 202 (65.8%), responded that someone had talked to them about breastfeeding while they were pregnant with the present baby. Of these, 122 (60.3%) were told about at least two topics of breastfeeding management. On the other hand, out of 63 (22.2%) mothers given breastfeeding education during early postpartum, 31 (49.2%) were given at least two topics on breastfeeding management. Fifty-eight (28.7%) of the mothers were given information on exclusive breastfeeding. Most of the mothers, 187 (62,3%), were not shown how to breastfeed. Out of the remaining mothers who were shown how to breastfeed, 108 reported being shown how to attach and 102 reported being shown how to position their babies to the breast.

4.4.2 Type of delivery

The data show that 260 (85.0%) of mothers had vaginal deliveries, with 228 (74.3%) of them conducted by the nurses and 62 (20.2%) by the doctors. Traditional birth attendants and family and friends conducted the remaining 17 (5.5%) of deliveries. Forty-seven (15%) of mothers had Caesarean section deliveries.

4.4.3 Initiation of breastfeeding

Most mothers, 202 (65.8.%), initiated breastfeeding within 30 minutes of birth, while 100 (32.6%) took an hour, a day and or more days. Five (1.6%) of the mothers never breastfed.

4.4.4 Prelacteal feeding and reasons

The majority of babies, 279 (92.4%), were not given anything to drink or eat before breastfeeding had started. Of the remaining 23 (7.6%), excluding 5 babies who were never breastfed, 6 (26.1%), were given prelacteal feeds because of delayed milk production, another 6 (26.1%) because they were ill, 5 (21.7%) because of low birth weight (LBW), 4 (17.4%) for other reasons and 2 (8.7%) because the mothers were ill (data not shown).

4.4.5 Duration of postpartum stay

Most of mothers, 192 (67.4%), stayed in the hospital for 1 – 2 days after delivery. Only 19 (6.6%) stayed in the hospital less than one day after delivery. Seventy-four (26%), of mothers stayed for more than one day after delivery.

4.4.6 Reasons for complementary feeding

Approximately 36.5 % of mothers introduced supplementary/complimentary feeds because they felt they needed to teach the child to eat. Seventy-nine (26.2%) mothers felt it was the right age to do so, 55 (18.3%) felt they did not have enough milk, 43 (14.3%) did so because they returned to work. Another 12 (4.0%) did so because they felt they had to supplement the breast. Only 2 (0.7%) of the mothers introduced supplementary/complimentary feeds because the baby was ill. However, none of the mothers introduced supplementary/complimentary feeds because they themselves were ill.

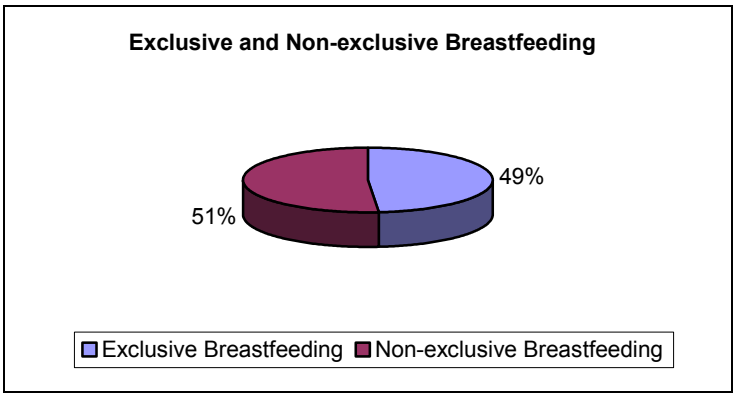
4.4.7 Breast problems and management

Few mothers experienced breast problems, 42 (14.0%). However, of the mothers with breast problems, sore and cracked nipples were the common problems, 15 (35.7%). The second problem was blocked duct 13 (31.0%), followed by not enough milk 7 (16.7%), abscess 4 (9.5%) and mastitis 2 (4.8%). Only 1 (2.4%) of the women experienced breast engorgement. The majority of mothers that experienced breast problems, 31 (75.6%), managed sore and cracked nipples with Vaseline. The use of Vaseline to treat breast problems is not recommended due to the potential for interference with natural lubrication of the breast and ingestion by the baby.

4.5 Breastfeeding practices

4.5.1 Exclusive Breastfeeding

Figure 2: Percentage of Non-Exclusive and Exclusive Breastfeeding



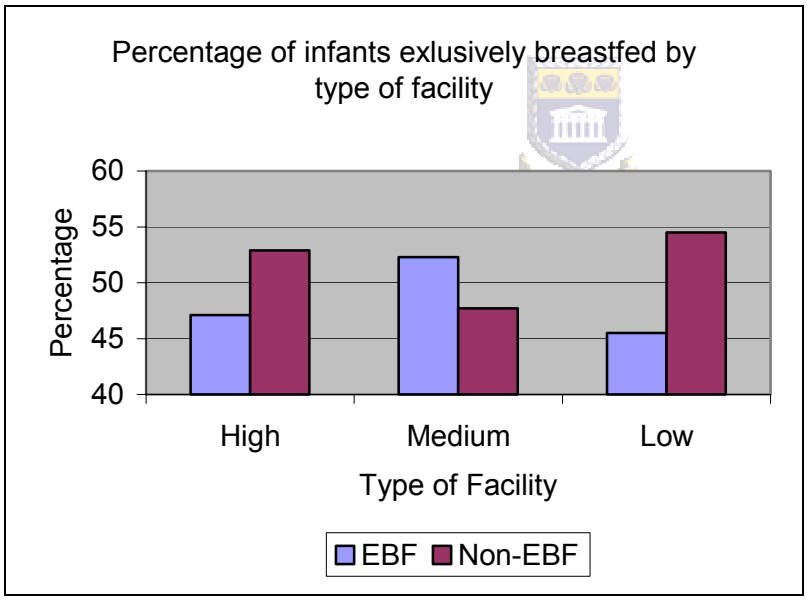
Almost half of the women, 149 (48.5%), reported exclusive breastfeeding at 4 months as shown in Figure 2. This variable was obtained through answers to Questions 37 or 38 on the survey. Mothers who reported introducing solid foods or other milk before 4 months for Q37 or Q38 were considered not exclusively breastfeeding. Conversely, if mothers

reported beginning solid foods or other drinks at 4 months or more, they were considered to have exclusively breastfed their babies. Water was given to 53 (35.5%) out of 149 exclusively breastfed babies. However, none of the babies in the exclusive breastfeeding group was given formula or any other drinks or foods.

4.5.2 Exclusive breastfeeding by type of facility

As shown by Figure 3, Groot Aub (low attendance and rural) had the highest rate of non-exclusive breastfeeding at 54.5% while, Robert Mugabe (medium attendance and urban) had the lowest rate at 47.7%.

Figure 3: Percentage of Exclusive Breastfeeding by Type of Facility



4.6 Support and influence on feeding decisions

A common influential person was the respondents' own mothers, as reported by 69 (22.7%) mothers. However, 134 (44.3%) of the mothers made feeding decisions without being influenced by anyone. The common persons the mothers turned to for support for feeding decisions were their spouses and partners, 97 (32.3%), followed by their

mothers, 67 (22.1%). Twenty-four (24.1%) of the women did not have anyone to turn to for support, while only 22 (7.3%). turned to health workers for support.

4.7 Cross-tabulation Analysis

Table 2 and 3 present the summary of cross tabulations and statistical tests. The Chi-squared test and P-values were used to measure the null hypothesis that the distribution of variables is independent of each other and to make conclusions.

Significant associations with exclusive breastfeeding include birth order, antenatal attendance, being shown attachment at breastfeeding education, and having breast problems. Approximately 58% of first-born babies were not exclusively breastfed ($p = 0.02$). All of the women who did not attend antenatal care services were exclusively breastfeeding ($p = 0.05$). However, the number of mothers who did not attend antenatal care was very small, only 4. Out of the mothers who were shown attachment, there was a significant association towards exclusively breastfeeding, (52.8% vs. 42.7%, $p = 0.02$). All of the mothers who were not shown attachment did not exclusively breastfeed. More women (66%) who had breast problems tended to exclusively breastfeed their babies. The relationship was statistically significant, $p = 0.01$.

4.7.1 Distribution of exclusive and non-exclusive breastfeeding according to demographic data in the sample

Table 2: Distribution of exclusive (EBF) and non-exclusive (Non-EBF) breastfeeding by demographic characteristics

Variable	EBF N (%)	Non-EBF N (%)	Total Respondents N (%)	X^2 value (M-H)	P-value**
Age group, mother:					
Less than 29 years	101 (49.5%)	103 (50.5%)	204 (66.9%)		
29 years and above	48 (47.5%)	53 (52.5%)	101 (33.1%)	0.1065	0.8
Age group, baby:					
Below 4 months	106 (69.7%)	46 (30.3%)	152 (49.5%)		
4 months and above	43 (27.7%)	112 (72.3%)	155 (50.5%)	54.0066	0.001
Marital Status					
Married /living together	98 (49.7%)	99 (50.3%)	197 (64.2%)		
Single/widowed/divorced	51 (46.4%)	59 (53.6%)	110 (35.8%)	0.3223	0.6
Level of Education					
No or low education*	39 (52.0%)	36 (48.0%)	75 (24.4%)		
Education*	110 (47.4%)	122 (52.6%)	232 (75.6%)	0.4773	0.2
Employment					
Yes	44 (44.4%)	55 (55.6%)	99 (32.2%)		
No	105 (50.5%)	103 (49.5%)	208 (67.8%)	0.9753	0.1

*No or low education means none education or completion of lower primary education. *Education means completion of upper, secondary or tertiary education.
** Mid-p Exact test used for p-values.

Table 2 shows the distribution of non-exclusive and exclusive breastfeeding by demographic characteristics in the sample.

4.7.2 Distribution of possible association of exclusive and non-exclusive breastfeeding in the sample

Table 3 shows the distribution of possible association of exclusive and non-exclusive breastfeeding in the sample.

Table 3: Distribution of exclusive and non-exclusive breastfeeding association in the sample

	EBF N (%)	Non-EBF N (%)	Total Respondents N (%)	X^2 value (M-H)	P-value**
ANC Attendance	145 (48.0%)	158 (52.0%)	303 (99.0 %)		
Non-Attendance	4 (100%)	0 (0)	4 (1.0 %)	4.2836	0.05
Caesarean delivery	19 (40.4%)	28 (59.6%)	47 (15.3%)		
Normal delivery	130 (50.0%)	130 (50.0%)	206 (84.7%)	1.4608	0.1
First born	47 (41.6%)	66 (58.4%)	113 (37.0%)		
Second and above	102 (52.8%)	91 (47.2%)	193 (63.0%)	3.6031	0.02
Baby boy	79 (49.4%)	81 (50.6%)	160 (52.1%)		
Baby girl	70 (47.6%)	77 (52.4%)	147 (47.9%)	0.0943	0.3
Shown BF*	57 (50.4%)	85 (45.5%)	113 (37.7%)		
Not shown BF	56 (49.6%)	102 (54.5%)	187 (62.3%)	0.7030	0.2
Shown positioning	52 (51.0%)	50 (49.0%)	102 (90.3%)		
Not shown positioning	5 (45.5%)	6 (54.5%)	11 (9.7%)	0.1202	0.3
Shown attachment	57 (52.8%)	51 (47.2%)	108 (95.6%)		
Not shown attachment	0 (0)	5 (100.0%)	5 (4.4%)	5.2778	0.02
ANC/bf education	99 (49.0%)	103 (51.0%)	202 (65.8%)		
No ANC education	50 (47.6%)	55 (52.4%)	105 (34.2%)	0.0533	0.4
Postnatal education	31 (49.2%)	32 (50.8%)	69 (22.2%)		
No post education	102 (46.2%)	119 (53.8%)	221 (77.8%)	0.1828	0.3
Delayed initiation	43(45.3%)	52(54.7%)	95 (32.0%)		
Immediate	101(50.0%)	101(50.0%)	202 (68.0%)	0.5804	0.2
Prelacteal feeds	9 (39.0%)	14 (61.0%)	23 (7.6%)		
No prelacteal feeds	136 (48.7%)	143 (51.3%)	279 (92.4%)	0.7844	0.1
Long postnatal stay	30 (40.5%)	44 (59.5%)	74 (26.0%)		
Short post stay	104 (49.3%)	107 (50.7%)	211 (74.0%)	1.6774	0.09
EBF education	31 (53.4%)	27 (46.6%)	58 (28.7%)		
No EBF education	68 (47.2%)	76 (52.8%)	258 (71.3%)	0.6414	0.2
Breast problem	27 (66.0%)	14 (34.0%)	41 (13.7%)		
No breast problem	117 (45.3%)	141 (54.7%)	258 (86.3%)	5.9380	0.01
Support	107 (46.5%)	123 (53.5%)	230 (75.9.%)		
No support	38 (52.1%)	35 (47.9%)	73 (24.1%)	0.6798	0.2

* BF = Breastfeeding

** Mid-p exact test used for p-value (except for "ANC" and "Attachment" where Fisher's exact test was used).

Although the following findings were not significant, they may shed light on additional factors related to exclusive breastfeeding. About 60% of the women who delivered by

Caesarean section did not exclusively breastfeed (p = 0.1). Nearly an equal percentage of boys and girls, 81 (50.6%) and 77 (52%), respectively were not exclusively breastfed (p = 0.3). Most of the babies (61%) who were given prelacteal feeds were not exclusively breastfed. Fifty-three of single mothers did not breastfeed exclusively, p = 0.6. More than half (55.6%) of the employed women were not breastfeeding exclusively, p = 0.1. Just over half (52.6%) of educated women did not breastfeed exclusively, p = 0.2. Approximately 52% of mothers 29 years old and above did not breastfeed exclusively, p = 0.8. Breastfeeding education given during antenatal care services and early postnatal did not significantly influence exclusive breastfeeding. Fifty-two percent of the women who did not receive breastfeeding education during pregnancy did not breastfeed exclusively, p = 0.4. About 54% of the women who did not receive breastfeeding education during early postnatal, did not exclusively breastfeed, p = 0.3. Fifty-three percent of the women who received education on exclusive breastfeeding did exclusively breastfeed, p = 0.2. Just over half of the women (54.7%) who delayed initiation did not exclusively breastfeed, p = 0.2. Forty-four (59.5%) of women who had a long postnatal stay (3days or more) compared to 107 (50.7%) of those who had a short postnatal stay (less than 2 days), did not exclusively breastfeed their babies (p-value is 0.1). More than half (53.5%) of women who received support for feeding decisions did not exclusively breastfeed. p-value is 0.2.

4.8 Stratified Analysis

The data were stratified to identify if education, age of the mother, marital status, birth order, and employment were potential confounding factors. For the purpose of stratification age of the mothers was defined in 4 groups, namely less than 20 years, 20 –

29 years, 30 – 39 years and 40 years and above (Table 4). The following conclusion was made:

- The age of the mother was a confounding factor in the relationship between birth order and exclusive breastfeeding. The data showed that 49 (62.8%) of the mothers in the age group 20 – 29 years were not exclusively breast-feeding their first-born babies. This was seen in the difference between the Crude OR 1.5401, and Adjusted OR 1.8406 (p = 0.01).
- Variables such as education, marital status and employment did not confound any other factors (data not shown).

Table 4: Stratification of Birth Order by Mother's Age.

Factor: Birth Order	**Stratified by: Mother's Age**	**EBF N (%)**	**Non-EBF N (%)**	**P-value**	**Overall P-value**	**Summary Odd Ratios**
First Born	< 20 years	15 (55.6%)	12 (44.4%)	0.1	**0.01**	**Crude OR: 1.5401**
	20 – 29 years	29 (37.2%)	49 (62.8%)	0.004		
	30- 39 years	3 (43.0%)	4 (57.0%)	0.5		**Adjusted OR: 1.8406**
	≥ 40 years	0 (0.0%)	0 (0.0%)	**		
Second and above	< 20 years	0 (0.0%)	2 (100%)	0.1		
	20 – 29 years	63 (56.8%)	48 (43.2%)	0.004		
	30- 39 years	35 (48.0%)	38 (52.0%)	0.5		
	≥ 40 years	4 (66.7%)	2 (33.3%)	**		

** P-value not computed for these categories due to small values.

4.9 Summary

The prevalence of exclusive breastfeeding at 4 months in Windhoek District was 48.5%. The factors that were significantly associated with exclusive breastfeeding were antenatal care service attendance, birth order, showing attachment, and experiencing breast problems. However, type of delivery, breastfeeding education during pregnancy and

early postnatal, duration of postpartum stay and support for feeding decisions were not associated with exclusive breastfeeding. The study showed that maternal age confounded the relationship between birth order and exclusive breastfeeding.

The next chapter will discuss the findings and highlight the important facts in order to draw conclusions and to make recommendations.

CHAPTER 5:

CONCLUSION AND RECOMMENDATIONS

5.1 Prevalence and factors associated with exclusive breastfeeding

The aim of this study was to determine the prevalence of exclusive breastfeeding as well as the associated factors. The prevalence of exclusive breastfeeding in Windhoek district at 4 months was 48.5%, which was relatively higher compared to those found in other studies such as 30% and 12% by Hofnie (1997) and Ithindi (1996), respectively. The difference may be due to the fact that these earlier studies were carried out before the Katutura and Windhoek hospitals were declared Baby and Mother friendly (MHSS, 1997).

The duration of exclusive breastfeeding decreased with increased age of the child. Seventy-two percent of the babies in the age group 4 months and above were not exclusively breastfed. Other studies reported the same trend (Bhandari, Bahi, Mazumdar et al. 2003; Haider, Ashworth, Kabir et al. 2000; Lawoyin, Olawuyi & Onadeko, 2001; Morrow, Guerrero, Shults et al. 1999; NDHS, 2000). The findings in this study suggests that at an early age, before 4 months, mothers felt they needed to teach their babies how to eat.

It was interesting to note that the mothers who did not attend antenatal care services (n = 4) were exclusively breastfeeding. Although the number was small, the statistical tests showed a significant relationship. Family communication and support among non-antenatal care attendance mothers may have contributed to their practice of exclusive breastfeeding. However there is a need to identify and prioritise the most crucial

breastfeeding management topics at antenatal care services, such as showing attachment to mothers, which improve exclusive breastfeeding.

The data showed an association between showing attachment and exclusive breastfeeding, implying that mothers would breastfeed exclusively if shown how to attach their babies to the breast. The finding reflected the importance of the fifth step of the Ten Steps to Successful Breastfeeding: Show mothers how to breastfeed and how to maintain lactation, even if they should be separated from their infants (UNICEF/WHO, 1993). Although the majority of mothers reported that they were given breastfeeding education during pregnancy and early postnatal as well as information on exclusive breastfeeding, the relationships between these factors and exclusively breastfeeding were not statistically significant. These findings that breastfeeding education did not affect exclusive breastfeeding may mean that the information given was not adequate, appropriate or timely. This interpretation is further supported by two studies having looked at home and community based peer counselling on exclusive breastfeeding (Haider, Ashworth, Kabir et al., 2000; Marrow, Guerrero, Shults et al., 1999). They reported that mothers found breastfeeding counselling and support offered soon after birth more helpful, as it came at a time when they were more likely to experience breastfeeding problems.

It is interesting to note that more women who had breast problems tended to exclusively breastfeed their babies. The findings were in contrast with what McLeod, Pullon & Cookson (2002) reported that mothers were less likely to be fully breastfeeding at 4 months if they had experienced breastfeeding problems. The explanation for the findings in the current study is that these mothers might have the knowledge and understanding

that the management for most, if not all breast problems is breastfeeding continuation. This is a good practice and should be encouraged.

Sore and cracked nipples were the common breast problems experienced by the mothers. Most (71%) of the mothers were not managing these problems correctly. They tried unhelpful solutions, for example rubbing Vaseline, an indication that they were not given appropriate breast problem management information. The use of Vaseline to treat breast problems is not recommended due to the potential for interference with natural lubrication of the breast and ingestion by the baby. These findings suggest that the mothers may stop breastfeeding early, even before 4 months. This interpretation is supported by Cernades et al. (2003); Collin & Scott (2002); McLeod, Pullon & Cookson (2002); and Sheehan et al. (2001) who all found that breast problems were associated with early cessation of breastfeeding. Correct breastfeeding management is likely to prevent breast problems and increase exclusive breastfeeding.

Almost half of the mothers responded that they made their own feeding decisions, without anyone's influence. This is similar to the findings of a study by Hannon et al. 2000, on the perception of breastfeeding and influences on infant feeding choices among adolescent mothers in Chicago, that showed no single influence that determined infant feeding choice of adolescent mothers. The finding in this study suggests that health workers do not play a big role to influence mothers in (feeding) decision-making. Although most women made their own feeding decisions without being influenced, their spouses and partners supported most of those decisions. This suggests that as long as the mothers are empowered to make informed decisions, their spouses and partners would support them. Cernades et al. (2003) reported that family support was associated with

increased duration of exclusive breastfeeding. Support for feeding decisions in the current study was not associated with exclusive breastfeeding. Acknowledgement of the factors that support feeding decisions could lead to appropriate interventions for the promotion of exclusive breastfeeding.

Of the mothers who reported supplementing the breast with formula, 36.6% did so because they felt they needed to teach the child to eat and 26.2% did so as they felt this was the right age. This means that if a mother was supplementing the breast milk because she had to return to work, she was more likely to breastfeed exclusively than a mother who was doing so because she feels it was the right age for supplementation.

More than half, 52.2%, of exclusively breastfed babies were at least born second in the family. The findings differ from those reported by two studies having examined the factors affecting breastfeeding (Hofnie, 1996; Butler, Willem & Tukwitonga, 2004). They reported that high parity was significantly associated with non-exclusive breastfeeding. The result of this study suggests that first time mothers may be at risk of non-exclusive breastfeeding due to lack of experience. They should therefore be identified during pregnancy and early postpartum periods and shown how to attach their babies to the breast.

One-third (35.5%) of women gave water to their babies before the age of 4 months, in addition to breast milk. Ithindi (1997) reported (97%) of babies who were given water before 4 months of age. The current study shows a 61,5% reduction in this practice. These findings suggest that the implementation of the Baby and Mother Friendly Initiative is likely to improve exclusive breastfeeding practices. Further, Ojofeitime,

Esimal & Owolabi (2000) assessed the impact of BFHI, which reported increased duration in exclusive breastfeeding in facilities. The results showed that just over half (52.5%) of the women had started to supplement/compliment breastfeeding at the age of 4 months and older. However, the rest gave other foods or drinks at the age of less than 4 months. Furthermore, Ithindi (1997) reported that mothers were introducing solids in the first month of life. Early introduction of other food or drinks is a cause of concern for the reasons that it marks the end of exclusive breastfeeding with its protective and nutritious benefits to the baby. At the same time, other foods or drinks may not be hygienically prepared, thus introducing infections to the baby. In addition, this means that mothers were practising mixed feeding, which is dangerous in the era of HIVAIDS. According to Coutsoudis (2000) in a study on the influence of infant feeding patterns on early mother-to-child transmission of HIV-1 in Durban, South Africa, children exclusively breastfed for at least three months were less likely to be infected than those receiving mixed feeding before three months.

The results showed no difference in age among non-exclusive breastfeeding mothers. Of those who did not exclusively breastfeed, 50.5% were less than 29 years old and 52.5% were 29 years or older. These findings differ from those of Hornell, Hofvander & Kylberg (2001), who reported that young mothers were less likely to breastfeed exclusively than older mothers. The findings are however similar to those of Chezen, Friesen & Boettcher (2003) who reported that breastfeeding knowledge and plans to exclusively breastfeed longer were associated with longer duration of breastfeeding in first-time mothers. Young mothers can therefore breastfeed exclusively for longer periods, provided they are given the information at appropriate times in order to make informed feeding decisions and plans.

The data showed no significant relationship between marital status, type of delivery, and sex of the baby and exclusive breastfeeding. Similarly, Morrow, Guerrero, Shults et al. (1999) found no association between the same factors and exclusive breastfeeding when they studied the effect of home-based peer counselling on exclusive breastfeeding among peri-urban mothers. In the case of marital status, the relationship in the current study remained non-significant even after the number of married women were collapsed with those living together and compared to the single mothers. However, these findings differed from what Hofnie (1996) reported that most of the mothers who breastfeed exclusively were living single.

There was no significant difference between maternal education and non-exclusive breastfeeding. In contrast, Ojofeitime, Esimal & Owolabi, 2000; Hornell, Hofvander & Kylberg, 2001 reported that mothers with higher education were more likely to exclusively breastfeed than those with lower education. Even after stratification in this study, education did not confound the relationship between any factor and exclusive breastfeeding. These findings suggest that breastfeeding education topics, such as correct attachment, play an important role in exclusive breastfeeding practices.

Groot Aub (low attendance and rural) had the highest rate of non-exclusive breastfeeding at 54.5%, while Robert Mugabe (medium attendance and urban) had the lowest rate at 47.7%. However, this was not statistically significant, which may be due to the fact that the sample size from the rural facility was too small as it only represented 3.7% of the Windhoek population.

Except for mother's age and birth order of the child, other factors such as maternal education, marital status and employment were not found to confound the relationship between other factors and exclusive breastfeeding.

5.2 Conclusion

Based on the results of the study the following assumptions about care of mothers and babies were made:

- Antenatal care services could be used to teach mothers about exclusive breastfeeding.
- Mothers at risk of not breastfeeding exclusively, including first-time mothers, are not identified and targeted for breastfeeding management education.
- Giving water to "exclusively breastfed" children is an indication that emphasis is not put on the importance of exclusive breastfeeding.
- Mothers are not taught how to manage breast problems.
- Since most women made their own feeding decisions without anyone's influence, health workers are not playing their part as role models.
- The findings of this study can be generalised to similar districts and clinics in Namibia.

5.3 Recommendations

Based on the findings of the study and the conclusions, the following recommendations are made:

5.3.1 Feedback to relevant stakeholders

Arrange workshops to present the findings of this study to the relevant health workers and stakeholders in Windhoek district in order to make them aware of the situation.

5.3.2 Improve the quality of breastfeeding through the promotion of exclusive breastfeeding:

- Strengthen breastfeeding education during antenatal care and early postpartum by identifying first time mothers and showing mothers correct breastfeeding management, such as positioning and attachment and hand expression of breast milk to prevent breast problems.
- Implement a mechanism to record and check that each post-partum mother independently demonstrates correct positioning and attachment and breast milk expression before leaving the facility.
- Develop a leaflet on exclusive breastfeeding to be given to mothers at antenatal care services and in postnatal wards.
- Involve all health workers, fathers and other family members in the support of exclusive breastfeeding decisions. Provide education about the advantages of exclusive breastfeeding, including correct positioning and attachment and breast milk expression.
- Re-assess Katutura and Windhoek hospitals for baby and mother friendliness and use the result of reassessments to improve breastfeeding practices in heath facilities.
- Provide continuous in-service trainings for health workers in the areas of: breastfeeding management and promotion, knowledge and skill updates and attitude changes regarding breastfeeding.

- Conduct further research on fathers' roles, recognition and support for infant feeding.

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ANNEX I: DEFINITION OF TERMS

Abscess – area in the breast that feels hot and painful, and is full of fluid. It result from untreated mastitis

Blocked duct – milk from one part of the breast does not flow well and forms a lump of thickened milk that blocks the milk duct.

Complimentary feeds – any solid foods

Engorgement – swelling in the breast that blocks milk flow, caused by inadequate or infrequent milk removal.

Exclusive breastfeeding in this study means that the baby is given breast milk only from birth up to the age of 4 months, allowing water occasionally.

Mastitis – infection in the breast that produces localised tenderness, redness and heat. The mother may have a fever, feel tired or have nausea and headache.

Prelacteal feed is any fluid given after birth before breastfeeding has started.

Supplementary feeds - any type of milk given to the baby in addition to breast milk.

Sore nipples – breastfeeding is hurting or the nipples are cracked.

ANNEX II: DATA COLLECTION TOOL

MINI-THESIS ON FACTORS ASSOCIATED WITH EXCLUSIVE BREASTFEEDING IN WINDHOEK DISTRICT, NAMIBIA

SECTION A: FOR OFFICIAL USE

Q001	Questionnaire Number	…….	
Q002	Name of the Health Facility	……..	
Q003	Date of interview	……..	
Q004	Name of interviewer	……..	
Q005	Language interview is conducted in?	……..	
Q006	What is your relationship to this child?	Mother Other caregiver	1 2
NB: THE MOTHER MUST BE INTERVIEWED **If it is not the mother of the child, end the interview. Do not discard this questionnaire. Give it back to the Principal Investigator.**			

SECTION 1: DEMOGRAPHIC INFORMATION

Q1	How old are you? (Age in completed years):	…….	
Q2	What is your date of birth?	…./…../19…… dd/mm/yyyy	
Q3	What is your marital status?	Married Living together Single Widowed Divorced	1 2 3 4 5
Q4	What is the highest level of schooling you completed? ***(If none, go to Q5, otherwise go to Q6)***	None Primary: Grade 1 – 4 Grade 5 – 7 Secondary Tertiary	1 2 3 4 5
Q5	Can you read and write?	Yes No	1 2
Q6	Are you currently employed? **(If no go to Q8)**	Yes No	1 2
Q7	Do you work outside the home	Yes No	1 2
Q8	What is the source of your income?	Salary – self Salary – others Selling goods Other, specify…	1 2 3 4
Q9	What is the language spoken in your home?	English Afrikaans Oshiwambo Herero Damara-Nama Other, specify……..	1 2 3 4 5 6
Q10	How many (living) children do you have?	……..	
Q11	How old is your baby?	……...	

Q12	What is the birth order for this child?	1 2 3 More than 3	1 2 3 4

Continue with interview if the baby is 6 weeks to 11 months.
Ask: What is the name of this baby? ***(Use this baby's name to continue the following questions)***

SECTION 2: FEEDING PRACTICES

Q13	What is (name)'s date of birth?	…./…../…… dd/mm/yyyy	
Q14	Is (name) a boy or a girl?	Male Female	1 2
Q15	When you were pregnant with (name), did you attend antenatal care services?	Yes No	1 2
Q16	Did anyone talk to you about breastfeeding? (**If no go to Q19**)	Yes No	1 2
Q17	What were you told? ***(2 out of 5 will qualify for adequate info given)***	Benefits of breastfeeding Exclusive breastfeeding Breastfeeding on demand Rooming in Expression of breast milk Positioning and attachment Mother mentioned two or more of the above. Not related to BF mgt	1 2 3 4 5 6 7 8
Q18	Who talked to you about breastfeeding?	Health worker (define?) Friend/Family member	1 2
Q19	Where was (name) born?	Windhoek Central Hospital Katutura Hospital Medi City Clinic Home Other, specify ……	1 2 3 4 5
Q20	How was (name) born?	Normal Delivery Caesarean/Section Assisted Delivery	1 2 3
Q21	Who conducted the delivery?	Nurse/sister Doctor TBA Other, specify ……	1 2 3 4
Q22	How long after birth (or when your were able to respond in case of C/Section) was (name) put to the breast? ***(IF NEVER BREASTFED END THE INTERVIEW)***	Immediately 30 minutes 1 hour More than 1 hour ….Days Never breastfed	1 2 3 4 5 6
Q23	Has anyone shown you how to breastfeed? ***(If no go toQ26)***	Yes No	1 2

Q24	Has anyone shown you how to position the baby?	Yes No	1 2
Q25	Has anyone shown you how to attach the baby to the breast?	Yes No	1 2
Q26	Did name receive any drink/food before breastfeeding has started? (**If no go to Q28)**	Yes No	1 2
Q27	What were the reasons for giving this?	Milk did not come in yet LBW Baby ill Mother ill Other, specify……	1 2 3 4 5
Q28	Did you receive any breastfeeding information during your hospital stay (before and after delivery)? **(if no go to Q30)**	Yes No	1 2
Q29	What were you told? ***(2 out of 5 will qualify for adequate info given)***	The benefits of breastfeeding Exclusive breastfeeding Positioning and attachment Breastfeeding on demand Expression and storing of breast milk Mother mentioned two or more of the above Not related to breastfeeding management	1 2 3 4 5 6 7
Q30	How long did you stay in the health facility before delivery?	Less than one day 1 – 2 Days 3 days and more	1 2 3
Q31	How long did you stay in the health facility after delivery?	Less than one day 1 – 2 Days 3 days and more	1 2 3
Q32	Is (name) still breastfeeding? ***(If no go to Q34)***	Yes No	1 2
Q33	Is (name) given anything to drink or eat in addition to breast milk? ***(if no go to Q37)***	Yes No	1 2
Q34	What other food or drink is given? ***(if water only go to Q37)***	**Food given** / **Yes** / **No** Water Juice Baby formula Fresh / sour milk Other liquids? Any solid food	
Q35	How many bottles/feeds per day?	One More than one	1 2
Q36	How many bottles/feeds per week? **(Skip to Q38)**	Two More than two	1 2

Q37	At what age would (name) be given other drinks or food? **(Skip to Q39)**		
Q38	What age was (name) when she/he was first given this additional drink/food?		
Q39	Why specific at this age?	Returning to work/school Not enough milk Baby ill Mother ill To supplement breast milk Right age for complementation To teach the child to eat.	1 2 3 4 5 6 7
Q40	Did you experience any breastfeeding problems? ***(If no, go to Q 44)***	Yes No	1 2
Q41	What problems have you experienced?	Engorgement Painful breast (blocked duct) Sore / cracked nipples Mastitis (painful breast and fever) Abscess (swollen, warm and painful lump in breast) Not enough milk	1 2 3 4 5 6
Q42	How did you manage?	Correct attachment Breastfeed more frequently Express breast milk Expose breast to sun and air Rub Vaseline	1 2 3 4 5
Q43	Where did you hear this information?	Health worker Friends Family/mother/sister Breastfeeding counsellors Other, specify……	1 2 3 4 5
Q44	In general, whom do you think influenced you decisions and/or the way you feed your baby?	My spouse/partner My mother Other family members Health worker Nobody/Myself	1 2 3 4 5
Q45	Who supports the decisions and the way you feed your baby?	My spouse/partner My mother Other family members Health worker Nobody/Myself	1 2 3 4 5

This is the end of the interview. Thank the participant.