UNIVERSITY OF KWAZULU-NATAL

EXPLORING THE KNOWLEDGE, ATTITUDES, AND PRACTICES OF PREGNANT WOMEN ON INFANT FEEDING METHODS FOR PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV IN A REGIONAL HOSPITAL OF ETHEKWINI DISTRICT

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EXPLORING THE KNOWLEDGE, ATTITUDES AND PRACTICES OF PREGNANT WOMEN ON INFANT FEEDING METHODS FOR PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV IN A REGIONAL HOSPITAL OF ETHEKWINI DISTRICT

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BY

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DECLARATION

I, Sibongile Thulisiwe Khanyile declare that this research topic entitled Exploring knowledge attitudes and practices of pregnant women on infant feeding methods for Prevention of Mother to Child Transmission of HIV in a regional hospital of eThekwini District represents original work by the author and has not been submitted in any form to another university. Where use was made of the work of others it has been duly acknowledged in the text by means of referencing.

Student's signature …….……....Date 16 February 2015

Ms Sibongile T. Khanyile

Supervisor's signature …….....Date 16 February 2015

Dr Sisana J. Majeke

DEDICATION

This dissertation is dedicated to my late mom Mrs K. Khanyile, my children, Phiwokuhle, Siyamthanda and Saphiwa for their support and encouragement throughout the study; they have been my pillar of strength throughout this study.

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ABSTRACT

Background:

HIV-infected mothers in high income countries are advised not to breast-feed and are family oriented regarding the decision of the choice of feeding method for their infants. In contrast, in low and middle income countries (LMIC) the responsibility of making an informed choice on feeding practice rests primarily on the woman herself. The choice of infant feeding method is important for HIV-positive mothers in order to optimize the chance of survival for their infants and to minimize the risk of HIV transmission.

Purpose of the study

The purpose of this study was to assess knowledge, attitudes, and practices of pregnant women with regard to the infant feeding method for prevention of mother to child transmission of HIV.

Methodology

This study used a quantitative and descriptive design. It was conducted at a regional hospital of eThekwini District. Systematic sampling was used to select 250 respondents. Data was collected data using semi-structured questions in a questionnaire. The data was analysed using simple descriptive statistics using SPSS version 19.

Results of the study

All 104 (100%) respondents infected with the HIV virus strongly agreed that transmission of the HIV virus occurred from mother to child at the time of pregnancy, during delivery or through breastfeeding. All 104 (100%) of the HIV infected women strongly agreed that formula feeding had no role in the transmission of the HIV virus and they were familiar with modes of transmission of the HIV virus.

Forty eight (46%) of the HIV infected respondents stated that they will exclusively breastfeed their infants; 34 (33%) will adopt the mixed feeding method that is

breastfeeding and the utilization of formula, while 22 (21%) will use the replacement feeding method milk that the government supplies.

Conclusion

The choice of feeding practices among the HIV infected and HIV uninfected respondents was varied. The majority 145 (58%) of the respondents selected exclusive breastfeeding as their choice of infant feeding method, while 38 (15.2%) selected replacement and 67 (26.8%) chose mixed feeding. Several factors influenced the mother's preferred feeding method for their infants.

Recommendations

Following the results from this study, the recommendations include: Health educate all the pregnant mothers and their relatives on the importance of PMTCT programs with an emphasis on adequate feeding practices, and provide the most recent feeding guidelines. Support to the HIV positive mothers with limited resources, in particular these breastfeeding.

LIST OF ABBREVIATIONS

AFASS	Affordable, feasible, acceptable, sustainable, safe
ARV	Antiretroviral therapy
HAART	Highly active antiretroviral therapy
HIV	Human immunodeficiency virus
LMIC	Low and middle income countries
LMP	Last menstrual period
MDG	Millennium Development Goal
MTCT	Mother to child transmission
PMTCT	Prevention of mother to child transmission
SA	South Africa
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1. BACKGROUND TO THE STUDY

There has been a global effort to expand access to HIV testing and counselling of pregnant women due to the increased availability of effective biomedical intervention that reduce the transmission of HIV from mother to infants (Baek and Rutenberg, 2010: 293; Mofenson, 2010: S130). Interventions to prevent mother to child transmission of human immunodeficiency virus (HIV) during childbirth and breastfeeding can reduce HIV infections in infants to less than 5% in low and middle income countries (LMIC). The World Health Organization (WHO) recommends all mothers, regardless of their HIV status, practice exclusive breastfeeding for the first six months of an infant's life (WHO, 2010b). In keeping with these recommendations and to promote and support breastfeeding the National Department of Health revised their HIV infant feeding guidelines, reinforcing the WHO recommendation of exclusive breastfeeding for the first six months followed by the introduction of other food and fluids, while continuing breastfeeding (Department of Health, 2011: 8). Additionally, at this time, breastfeeding should only be stopped if an alternative nutritionally adequate diet can be provided (WHO, 2010b: 2).

The HIV pandemic is contemporaneously in its 4th decade, nevertheless, one third of the population in countries, with the greatest burden of the HIV infection, reportedly have conducted medical tests (WHO, UNAIDS and UNICEF, 2010).Importantly, expansion of HIV testing to the total population of a country is pivotal to overcoming the HIV pandemic. Research indicates that early initiation of highly active antiretroviral therapy (HAART) not only reduces transmission but also prolongs life(Hammer, 2011: 561; Cohen, Chen, McCauley, Gamble, Hosseinipour, Kumarasamy et al., 2011: 493). In addition, the reduction of perinatal mother to child transmission to 3% and lower in South Africa, is mainly due to provider initiated testing and counselling (PITC) to pregnant women, as well as antiretroviral therapy, which is issued as required (Dinh, Goga, Jackson, Lombard, Woldesenbet and Puren, 2012: 14). Pediatric HIV remains an important public health

problem in HIV high-burden countries, with more than 90% of new HIV infections occurring in children through mother-to-child transmission (MTCT). In South Africa in 2006, an estimated 38 000 children acquired HIV infection at the time of birth, and an additional 26 000 children were infected through breastfeeding (Department of Health, 2008c: 9). The current goals are to reduce pediatric infections by 90% and rates of MTCT (mother to child transmission) in the breastfeeding population to < 5% by 2015 (Sidibe, 2010: 109).

AIDS is a collection of disease conditions which develop because of deficiencies in the body's immune system. AIDS is caused by a retrovirus, the Human Immunodeficiency Virus (HIV). The virus is transmitted mainly from human to human through sexual intercourse, use of contaminated needles and other sharps, blood and blood transfusions, as well as trans-placental or trans-vaginal routes, breast milk or other direct contact with infected human bodily fluids (Adler, 2000: 22).

Undoubtedly, HIV/AIDS is a major problem worldwide; nevertheless, the brunt of the epidemic occurs in middle and low income countries (LMIC). At present about 34 million people are infected with the HIV virus and most survivors live in LMIC (Gibb, Kizito, Russell, Chidziva, Zalwango, Nalumenya et al., 2012: 9). Despite the increased availability and improved efficacy of antiretroviral drugs, the HIV/AIDS epidemic has not abated particularly in sub Saharan Africa, which is inclusive of South Africa. Research estimates that about 450 000 children below 15 years of age were newly infected with the HIV virus in 2008. Notably more than 70% of these children live in sub Saharan Africa (Muluye, Woldeyohannes, Gizachew and Tiruneh, 2012: 241). The AIDS epidemic in Africa has claimed the lives of an estimated 1.5 million people in total, throughout the region. Records indicate that more than 11 million children were orphaned by AIDS (WHO, 2008). The World Health Organization (WHO) has called for the "virtual elimination'' of pediatric HIV, that is a mother-to child HIV transmission risk of less than 5% (Mahy, Stover, Kiragu, Hayashi, Akwara, Luo et al., 2010: 1148). Results from clinical trials and studies have shown that starting HAART early enables many more people in high burden areas to live longer and experience healthier lives (Hammer, 2011: 561).

Contemporary prevention efforts against HIV include the following strategies: the prevention of new infections, providing care and support to infected individuals, especially in LMIC.

Furthermore, the prevention of HIV infection has led to the adoption of a number of innovative strategies. Firstly, education about safe sexual practices was emphasized but with variable success. Secondly, in order to control the epidemic, the Health Departments of many African countries, including SA implemented the prevention of mother to child transmission (PMTCT) of HIV. Recently, progress was achieved in the expansion of PMTCT programs and the adoption of simpler and shorter antiretroviral prophylactic regimens, in LMIC, than those applied in high income countries (Jackson, Musoke, Fleming, Guay, Bagenda, Allen et al., 2003: 862).

Currently, most women in sub-Saharan Africa have their HIV status diagnosed during pregnancy. A positive diagnosis of HIV infection during pregnancy necessitates a complex decision making process about participation in the PMTCT programme and infant feeding methods the mother will employ after the birth of the child (Doherty, Chopra, Nkonki, Jackson and Persson, 2006b: 92). Unquestionably, the mother to child transmission of HIV via breastfeeding does not exist if HIV positive mothers strictly avoid breastfeeding (Miller, Iliff, Stoltzfus and Humphrey, 2002: 1246). In sub Saharan Africa, most infants are solely dependent upon the mother's milk and are the only source of protein rich diet. Breastfeeding is widely approved as the best policy for feeding young infants of HIV positive mothers. Breastfeeding improves child survival and reach Millennium Development Goal 4. HIV positive mothers in low and middle income including South Africa seldom practice the optimal infant feeding of exclusive breastfeeding for the first 6 months of infant's life. Studies have shown that MTCT of HIV through breastfeeding depends upon the pattern of breastfeeding (exclusive or mixed feeding and not simply on all breast feeding (Miller et al., 2002: 1247). Coutsoudis (2000: 471) has shown that the risk of postnatal mother to child transmission of HIV at 3 months of age who were exclusively breastfed was 45% lower than those who fed a combination of breast milk and formula or breast milk and other foods or liquids (mixed feeding).

Breast milk provides all of the nutrients and antibodies that protect the infant from the risk of childhood diseases such as diarrhoea and respiratory during the first few months of life. Where treatment for them is limited or inaccessible, an infant's health can be compromised. Similarly, unsafe and unreliable replacement feeding when clean water and resources are unavailable can also be a danger to an infant's health. Breastfeeding is therefore highly recommended in low- and middle-income countries (Pérez-Escamilla, Curry, Minhas, Taylor and Bradley, 2012).

The majority of women in LMIC usually make these complicated decisions alone as the HIV status disclosure rate is very low in Africa. Although stigma about HIV infection often appears to be decreasing in highly endemic countries of sub-Saharan Africa, it remained an important factor influencing infant feeding decisions. Mothers, in high income countries infected with HIV, have a disclosure rate ranging from 42-100% when compared to 17-32% for LMIC (WHO, 2004; Sowell, Seals, Phillips and Julious, 2003: 32). The disclosure of HIV positive status serves as an important prevention strategy in PMTCT, consequently, women benefit from starting ART prophylaxis early, practice safe infant feeding and practice family planning (WHO, 2004).

According to WHO infant feeding guidelines (WHO, 2010a: 2): (1) Mother takes ARVs from 14th week of pregnancy until one week after labor or for an indefinite amount of time if the mother is taking ARVs for their own health; (2) Long ARV regimen during breastfeeding period for either mother or infant. (3) Exclusive breast feeding for 6 months; (4) Gradually wean from breast milk over a one month period; (5) Mixed (complementary) feed after 6 months until breast feeding cessation at 12 months or when nutritionally adequate diet is accessible.

With current knowledge and interventions available, most cases of postnatal mother to child transmission of HIV, are preventable through antiretroviral (ARV) drugs and modifications in infant feeding practices. While interventions have reduced the MTCT rate to less than 2% in the high income group (WHO, 2008), cases of HIV infection remain unacceptably high in LMIC, with the case numbers of infection varying between 20-45% (De Cock, Fowler, Mercier, de Vincenzi, Saba, Hoff et al., 2000: 1175). Consequently,

antiretroviral drugs are administered either as lifelong treatment or as prophylaxis to prevent MTCT of HIV. Application of the above mentioned practices effectively impact on the rate of transmission of the HIV infection in infants, who are not breast fed and have reduced infection by < 1% (Dao, Mofenson, Ekpini, Gilks, Barnhart, Bolu et al., 2007: S42). In addition, the postnatal transmission can be reduced to < 1% provided the viral load is effectively suppressed in HIV positive women who breastfeed (De Vincenzi, 2011: 141).

The purpose of this study was to explore knowledge, attitudes and practices of pregnant women on the infant feeding practices for prevention of mother to child transmission of HIV in a regional hospital of eThekwini district, in order to enhance adequate evidence based practices.

Choosing an infant feeding method is complex for human immunodeficiency virus (HIV)-infected women. Human immunodeficiency virus (HIV)-infected mothers in sub-Saharan Africa face challenges at different stages of infant feeding. International HIV and infant feeding guidelines have changed rapidly (WHO, 2009b; Doherty, Chopra, Jackson, Goga, Colvin and Persson, 2007; UNAIDS, UNICEF and WHO, 1998; Organization, 1992). over the years since HIV was detected in the breast milk of HIV-positive mothers (Thiry, Sprecher-Goldberger, Jonckheer, Levy, Van de Perre, Henrivaux et al., 1985: 892); and since mother-to-child HIV transmission through breast milk was confirmed (Ziegler, Johnson, Cooper and Gold, 1985: 896).

Guidelines have rightly been changed in response to research results, but it has been hard for mothers and healthcare staff advising them to keep up with and interpret changing recommendations. The prevention of mother to child HIV transmission is referred to as PMTCT. HIV infected mothers enrol in PMTCT program, protecting their infants from possible transmission of the HIV virus from mother to child. Counselling and testing enables HIV infected mothers to learn about their status and obtain the benefits of a PMTCT program (WHO., 2009: 3).

Infant-feeding practices that carefully follow national guidelines can reduce the likelihood of MTCT through breastfeeding and reduce the risk of infant death from diarrhoea and other childhood infections. The various feeding options are: 1. Exclusive breastfeeding; 2. Replacement Feeding (Commercial infant formula, Home-modified animal milk); 3. Modified breastfeed: Heat treatment of expressed breast milk. While clearly favouring breastfeeding, the guidelines note that in some situations replacement feeding may be more appropriate, providing it is “acceptable, feasible, affordable, sustainable and safe”. If these provisions cannot be met, exclusive breastfeeding in the first few months of life (currently the first six months) is recommended (WHO, 2001: 2009). If no antiretroviral drugs are being taken, breastfeeding for two or more years can double the risk of the baby becoming infected to around 40 % (De Cock et al., 2000: 1175). It is thought that 5-20% of babies infected through mother-to-child transmission acquire HIV infection via breastfeeding (WHO, 2013a: 4).

In a study performed by Petrie, Schmidt, Schwarz, Koornhof and Marais (2008) at the vanguard community in the Western Cape regarding knowledge, attitudes and practices of women regarding the prevention of mother-to-child transmission (PMTCT) programme revealed that 33 of the 36 respondents reported that they believed that HIV causes AIDS (91.7%) and 8.3% indicated that they were unsure of the cause of AIDS. More than 80% of the women reported that Mother to Child Transmission of HIV is preventable, 3.8% reported that HIV is not preventable and 8.3% were unsure of the validity of the above latter statement. Only 4 (11.1%) women managed to explain the term ‘exclusive breast feeding’ correctly and 18(50%) indicated that they were ignorant of the meaning of the term ‘exclusive breast feeding’ and did not attempt an explanation of the terminology. Of the 14 who explained the term incorrectly, 6 (16.7%) erroneously thought that the term referred to total abstinence of breast feeding (Petrie et al., 2008: 71). Furthermore, these authors concluded that women were knowledgeable about HIV transmission and mother to child transmission (MTCT), but lacked knowledge about certain essential aspects of prevention, cure and infant feeding. Women’s attitudes towards breast milk or formula feeding were similar (Petrie et al., 2008).The literature regarding the Breast feeding practice, reveals that more than half of the women had access to clean water outside their

household and most had availability of outside flush toilets. Notably, hygiene, sanitation and income play a very important role in whether formula feeding should be considered as a feeding option, in the feeding method to be applied by the mother. Contaminated water, dirty bottles and mixing utensils can all lead to pathogenic infections of the infants which increase the infant morbidity rate. 5% of women exclusively breast fed their babies owing to the belief that exclusivity of breast feeding is the best method of feeding. In addition, 95% of women reported that they formula fed their infants. In low socio-economic areas the cost implications and sustainability of buying formula milk impacts on the decision making of women regarding the feeding method to be adopted (Petrie et al., 2008: 75).Indisputably, the suffering that HIV has caused in South Africa is inestimable. Statistics indicate that almost one in five adults is infected. Not only does HIV impact on individual's lives but also on the welfare of families (Israel and Huber, 1993: 4). Furthermore, Mother to Child Transmission programs, in South Africa and programs in other areas of high HIV infection, report that support of women attempting to cope with the disease, present numerous problematical issues. Health professionals and trained counselors experience severe time constraints to explain the multifaceted concepts such as the relative risks and personal risk assessment (Cargill and Stone, 2005).

It was found from the literature that thirty two (88.9%) of the respondents preferred to follow the health workers' advice rather than the advice of the family members (5.6%), friends (2.8%) or a partner (2.8%). More than half of the respondents felt that they made the best feeding choice and 20 were happy about their choice, 80.6% women stated that their choice to breast feed was agreeable (Petrie et al., 2008: 75).

In South Africa, the region of KwaZulu-Natal is the most affected by HIVAIDS. It situated on the north Eastern coast of South Africa, and is inhabited by 9.4 million people. In an antenatal survey, KZN recorded the highest rate of HIV infected pregnant woman in the country, 36.2 % (Eneroth, 2004: 6). In KwaZulu-Natal the PMTCT program provides all HIV infected mothers with free infant formula for 6 months of the baby's life, to be handed out either for the first 6 months of the baby's life or after a period of exclusive breast feeding (Department of Health, 2006).

Importantly, in a study conducted in Umlazi the finding of the study indicated that formula feeding women in Umlazi were criticized by labor and postnatal ward staff and 21.4% felt supported in the choice they made (Eneroth, 2004:14). The main reason for the staff reaction is the knowledge staff hold that the infant feeding formula is often used for purposes other than feeding infants. The finding also indicates that in Umlazi alone 20% of mothers were criticized by family members for formula feeding, for the mothers' in-laws desire breastfeeding exclusively for babies as the in-laws hold the belief that breast milk possesses essential nutrients required for the development of the baby (Eneroth, 2004).

In a another study conducted, in South Africa, seeking ways of preventing mother to child transmission of HIV and assessing the level of knowledge of mothers with HIV (Birdsall, Nkosi, Hajiyiannis and Parker, 2005: 5), was performed by analysing calls to the National AIDS Helpline. The results reveal that many women requested more information on the modes of transmission of HIV from mother to child, and also wanted information regarding the capability of HIV+ women to have more children. The study revealed that the designated group of women had a lack of information re-infant feeding methods.

1.2. PROBLEM STATEMENT

South Africa is seriously affected by AIDS, with the prevalence among pregnant woman recorded as 24.3% in 2000 (Eneroth, 2004: 26). According to previous research results 42% of women in South Africa are living with HIV (UNAIDS, 2008: 4). Notably, HIV positive women can transmit HIV to infants during pregnancy, childbirth or breastfeeding. The magnitude of the problem of mother to child transmission (MTCT) and the potential for prevention has made (PMTCT) an essential element of the worldwide HIV and AIDS control strategy (Leshabari, Blystad and Moland, 2007: 544). The estimated 90% of HIV infected children occur as a result of vertical transmission. Thus, interventions for prevention of mother to child transmission (PMTCT) include voluntary counselling and testing. An HIV positive diagnosis places great pressure on mothers during the antenatal period, especially, with regard to choosing an infant feeding method.

Although the literature show the importance of adequate feeding practices of infants from HIV positive mothers, there are issues which influence mothers infant feeding choices during the antenatal period, namely, the woman's knowledge and beliefs about breast feeding and subsequent experiences found in antenatal counselling (Doherty et al., 2006b: 4). Infant feeding practices by HIV infected mothers is a major global public health problem and a highly controversial matter. The controversy is reflected in the different series of WHO infant feeding guidelines released during the last 10 years (Moland, de Paoli, Sellen, van Esterik, Leshabari and Blystad, 2010).

According to Doherty et al (2006b: 4) out of 11 women who chose to breast feed, 7 elected to exclusively breast feed have had previous experience of breast feeding, as well as knowledge about the benefits of breast feeding.

The decision of mothers to either breast feed or formula feed is often informed by a desire to protect their babies. For mothers who choose breast feeding, the knowledge that breast milk is best often outweighs the perceived risk of HIV transmission through breast milk. Mothers who chose to formula feed reported that they wished to protect their babies from HIV infection, as the strongest influence on their decision regarding the method of infant feeding. However, fears of HIV transmission through breast milk depends on the information provided. The impact of the new information is generally overestimated (Doherty, Chopra, Nkonki, Jackson and Greiner, 2006a).

Mothers face an internal struggle between prevention of infant HIV infection and the desire to breastfeed. Community health workers are concerned about how HIV has created confusion about infant feeding because of mixed messages which some clinics are promoting breast feeding while others show posters that promote formula feeding (Doherty et al., 2006a: 9). Infant feeding takes place within a complex web of relationships. Women are not able to follow counsel from health care workers because the authority pertaining to infant feeding choices is not theirs alone. Doherty et al (2006a) reported that women experience inadequate support from health workers that can lead to the women changing their intended feeding methods. Many women traditionally also face pressure from family members to introduce other liquids, and a lack of disclosure creates

resistance to familial pressures difficult. According to Eneroth (2004: 26) In a study completed in KwaZulu Natal at Umlazi, infant formula provided by the PMTCT programme was used purposes other than for feeding the infant and that impact negatively on the nutritional status of the baby and increased risk of Mother to Child Transmission of HIV.

It was found from the literature that exclusive breast feeding is the most excellent method that most mothers choose for feeding their babies (Ladzani, Peltzer, Mlambo and Phaweni, 2011; McNiel, Labbok and Abrahams, 2010; Department of Health, 2008a; Doherty et al., 2006b). However there is a negative attitudes to it, as it would cause the transmission of HIV to the infants. This leads to the adoption of replacements. In countries with fewer resources, where replacement feeding can be hazardous, the recommendation for infant feeding usually depends on a mother's individual situation (Pérez-Escamilla et al., 2012). When replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breast feeding by HIV infected mothers is recommended; otherwise, in all other cases, exclusive breast feeding is recommended during the first 6 months of the infant's life (WHO, 2013b, 2009b; Chopra and Rollins, 2008).

Based on the above issues regarding the feeding practices of infants from the HIV positive mothers, this study therefore explores the knowledge, attitudes and practices of pregnant women on the infant feeding practices as part of prevention of mother to child transmission of HIV.

1.3. PURPOSE OF THE STUDY

The purpose of this study was to explore knowledge, attitudes and practices of pregnant women on the infant feeding practices for prevention of mother to child transmission of HIV, in order to enhance adequate evidence based practices.

1.4. OBJECTIVES OF THE STUDY

- Determine the knowledge of pregnant women on prevention of mother-to-child-transmission of HIV (PMTCT) though infant feeding methods.

- Identify attitudes that pregnant women have towards PMTCT through infant feeding methods
- Describe infant feeding practices that pregnant women intend to adopt in relation to PMTCT through infant feeding methods
- Identify the sources of information that pregnant woman have on PMTCT through infant feeding practices
- Describe the factors that influence the choice of infant feeding method

1.5. RESEARCH QUESTIONS

- What knowledge do pregnant women possess on PMTCT through infant feeding methods?
- What are the attitudes of pregnant women have regarding PMTCT in infant feeding practices?
- What infant feeding practices do pregnant women adopt in relation to PMTCT through infant feeding methods
- What are the sources of information about infant feeding practices and PMTCT for pregnant women?
- What are the factors which influence a pregnant women's choice of infant feeding methods?

1.6. SIGNIFICANCE OF THE STUDY

Most certainly, South Africa confronts one of the most serious HIV epidemics at the moment, with an estimated 3.2 million women with HIV infection, a national antenatal prevalence of 29.3%, and slow uptake of services for the prevention of MTCT (Department of Health, 2008b: 6; Rollins, Little, Mzolo, Horwood and Newell, 2007: 1341). Comprehensive PMTCT, including ARV treatment for HIV-infected women and HIV infected children, should be of paramount importance in LMIC. SA has recently revised the clinical guidelines for PMTCT of HIV, adopting many of the recommendations of WHO guidelines (WHO., 2009: 3).

Seemingly, a number of HIV infected women in KZN who have been counselled to make the decision to choose an infant feeding method, do not display an active understanding of information about PMTCT of HIV through the infant feeding method, or knowledge of the advantages and the disadvantages of the methods of feeding. The new SA clinical guidelines (Department of Health, 2009: 3) based on the new WHO guidelines (WHO., 2009: 3) PMTCT may have had an impact on MTCT rates in KZN. Thus information obtained particularly from the study period may provide important new evidence. The researcher was motivated to conduct this study as many of the counselled woman, arrived at the decision to choose an infant feeding method but lacked complete understanding of information regarding effective prevention of mother to child transmission of HIV through the infant feeding method. As well as the specific advantages and the particular disadvantages of the different feeding protocols (Eneroth, 2004: 6). A woman inhabiting in an area with a good infrastructure, may be anticipated to formula feed, nevertheless, the influence of custom and culture, in most cases induce her to adopt breast feeding (Leshabari et al., 2007).. This study will benefit the government, clients, institution and health professionals as outlined as follows:

1.6.1. To the Government

The results of the study will help to establish the gaps in Knowledge, Attitudes and practices, as well as challenges of using various feeding methods in HIV positive mothers,

therefore empowering the government institutions to ensure that reviews of PMTCT policies and protocol remain informed, in particular feeding methods of infants from HIV positive mothers.

1.6.2. To the clients

The survey will contribute to the knowledge, attitudes and practices of the pregnant women presently possess with regard to HIV status and decision making regarding the choices of infant feeding in the future.

1.6.3. To the institution and health professionals

The results from this study will be used by health institutions, health professionals in order to make informed decisions, and constructing management strategies that may strengthen the PMTCT program in particular the infants feeding from HIV positive mothers.

1.6.4. To the research

As new body of knowledge would be generated from this study. Future research may using the results from the current study in order to investigate further the feeding practices of infants from HIV positive mothers.

17. OPERATIONAL DEFINITION OF TERMS USED IN THE STUDY

1.7.1. Voluntary counseling and testing (VCT)

Participation of the client in the process of Voluntary Counseling and Testing (VCT) is by recommendation voluntary and test results must be kept confidential. Informed consent implies that the individual understands the aim of the test, why the test is necessary, and the benefits, risks alternative and possible social implications of the outcome (Department of Health, 1999:2). Voluntary counseling and testing in this study will refer to the process of pre-test counseling, HIV testing, and post-test counseling.

1.7.2. Prevention of Mother to Child Transmission (PMTCT)

PMTCT is the context of this study, and involves voluntary and confidential counseling, testing, revised obstetrical practices, provision of counseling on safe infant feeding practices and the delivery of a short course of antiretroviral drugs to HIV positive pregnant women and their new born infants. Imperative to the approach is the prerequisite of follow up care and prophylactic treatment to the HIV positive mothers and their children (Department of Health, 2012:4). In this study PMTCT will focus on the prevention of HIV spreading from the mother to the child through infant feeding methods.

1.7.3. HIV positive

If a rapid screening HIV blood test (determines or another rapid test approved for use in the PMTCT program) by the KwaZulu Natal Department of Health shows a positive result, a second rapid HIV blood test (Smart check or another rapid test approved for use in the PMTCT program by the KwaZulu Natal Department of Health) will be conducted to confirm the positive status. If the second blood test also shows positive results, the client is considered to be HIV positive (WHO, 2004: 3). In this study HIV positive refers to people who have taken an HIV test and whose results came back positive.

1.7.4. Exclusive breastfeeding

An infant receives breast milk and no other liquids or solids not even water with the exception of drops or syrup consisting of vitamins, mineral supplements or medicines from the hospital or clinic (WHO, 2008: 4). In this study, exclusive breast feeding means providing an infant with only breast milk from birth up to the first four to six months of life and excludes any other form of feeding, including water, tea, cereals, and formula feed.

1.7.5. Disclosure

A disclosure is an act of revealing one disease, and disclosing HIV status to a partner is important for preventing re-infection but the dilemma arises regarding the partner's acceptance of the news of the HIV status. Since most of the women live with their husbands in rented houses, they fear expulsion from the home and suffering a state of no care and protection, as the women are often unemployed (Leshabari et al., 2006: 544).

1.7.6. Stigma

According to Thairu et al (2005: 4) a stigma is negative attitude towards victims of the disease. This is very common in people living with HIV/AIDS. Victims of HIV are isolated and as a result of community attitude, face a very difficult decision about whether to disclose their HIV status once they learn their HIV positive status. This definition will be applied to this study.

1.7.7. Replacement feeding

Replacement feeding indicates that the infant receives no breast milk but is fed with formula or other breast milk substitutes such as: commercially prepared infant feeding, which requires clean water, accurate measurements of powder and water, good hygiene and the use of clean utensils (De Cock et al., 2000: 1175; UNAIDS et al., 1998). During the first 6 months of the life of the baby, replacement feeding should be adopted with a suitable substitute. The suitable breast milk substitute should be complemented with other foods after 6 months.

1.7.8. Mixed feeding

An infant feeding practice in which the infants receives both breast milk and other solids or liquids, including water and nonhuman milks, are recommended before 6 months of age (UNICEF., 2010: 7). Mixed feeding in the setting of HIV is often used interchangeably with non-exclusive breastfeeding and even complementary feeding. In this study mixed feeding is the infant feeding practice in which the infant receives both formula feeds and

breast milk during the first six months of life. In this study mixed feeding will mean that the infant receives both breast milk and other solids or liquids including water.

1.7.9. Complementary feeding

The term is used prescriptively to mean the appropriate addition of other solids, semisolids, and liquids to a breastfeeding infant's diet at the age of 6 months and thereafter (WHO, 2006).

1.8. CONCEPTUAL FRAMEWORK

This study adopted a framework for PMTCT behavior change from Moore (2003: 11). However for the purpose of this study, the focus has been on feeding practices as part of PMTCT.

According to Moore (2003: 11) women should be prevented from becoming HIV positive. If she is HIV positive, unwanted pregnancy must be prevented. If the mother has fallen pregnant, HIV must be prevented from being transmitted to the child and post-delivery the mother and the infant must be given support. Interventions to reduce mother to child transmission have been implemented, during pregnancy, during birth, postpartum and during breast feeding. These interventions are required for the prevention of mother to child transmission.

This conceptual framework is presented and discussed in details in Chapter two of the literature review.

1.9. STRUCTURE OF CHAPTERS OF THE DISSERTATION

The chapters of my dissertation are structured in the following way:

- **Chapter one: introduction:** In Chapter one I have introduced the topic for my dissertation entitled "Exploring knowledge, attitudes, and practice of pregnant women on infant feeding methods for Prevention of Mother to Child Transmission of HIV in a Regional Hospital of eThekwini District". I have listed strategies

promoted for prevention of HIV infection and the implementation of the prevention of mother to child transmission (PMTCT) of HIV, mother to child transmission of HIV, the risk factors for mother to child transmission (MTCT) of HIV, infant feeding practices, factors that influence the choice of infant feeding methods, nurse's and counsellor's knowledge, practices perception and beliefs about PMTCT. I also take account of strategies used to prevent MTCT of HIV and the concept of provider initiated counselling testing (PICT) of HIV.

- **Chapter Two: Literature Review:** In Chapter two I have reviewed and presented the relevant literature and the theories that form the framework of the study. In addition, I have reviewed the relevant literature and previous research studied encompassing the different infant feeding methods and the transmission of HIV. I have also reviewed the relevant literature and previous research studies on PMTCT and infant feeding practices in KwaZulu-Natal and South Africa as well as WHO and SA guidelines. In addition I have considered the strengths and limitations for success of PMTCT in the above mentioned literature and research.
- **Chapter Three: Methodology:** This chapter presents the methodology that was followed in this study. This was a questionnaire based study. The study also takes account of discussion of the setting, population and sampling technique that is used for the study. The analysis further presents the process of data collection and analysis, utilising statistical package for social sciences (SPSS) version 19 including ethical issues, observed and followed in this study.
- **Chapter Four: Data analysis and presentation of results:** The results of the study are presented in this chapter. This chapter presents the results of the study. Data was collected from 250 pregnant women and was analysed using a statistical package for social sciences (SPSS) version 19 for windows. The instrument consisted of a questionnaire consisting of 35 questions. Section A describes socio-demographic data of a pregnant woman and her husband/partner, Section B deals with the knowledge of pregnancy on HIV and HIV transmission. Section C presents the attitude of pregnant women towards PMTCT through infant feeding methods. Section D shows the practices that pregnant women intend to follow as a method

of feeding their infants. Section E defines the sources of information of pregnant women on health related issues and HIV. Section F focuses on the factors that influence the mothers' choice of infant feeding methods.

- **Chapter five**: **Discussion of results, conclusion and recommendations**: In this chapter a summary of the major results of the study are presented and compared with similar studies done in South Africa and worldwide. Conclusions were drawn from the main study presented in this chapter. I have also commented on the limitations of the study and made recommendations to improve PMTCT in South Africa.

1.10 CONCLUSION

This chapter covered the introduction and background to the study, problem statement, research objectives and questions, significance to the study; operational definitions; conceptual framework; structure of the chapters of the dissertation. The following chapter covers the literature review.

CHAPTER TWO

LITERATURE REVIEW

2.1. INTRODUCTION

The literature review is defined as a critical summary of research on a topic of interest, often prepared to put a research problem in context (Polit and Beck, 2008). Furthermore, a literature review involves the results, reading, understanding and formulation of conclusions concerning the published research and theory (Brink, Van der Walt and Van Rensburg, 2006: 76). Related research studies, articles from professional journals were reviewed in order to establish other researcher's results and researcher's views regarding exploring, knowledge, attitudes and the practices pregnant women adopt in their chosen infant feeding methods for Prevention of Mother to Child Transmission of HIV. Searches for academic literature were conducted in various electronic databases, including Google scholar; PubMed, MEDLINE, CINAHL, EMBASE, Web of Knowledge, PsycINFO, Global Health, EconLit, Social Sciences Citation Index, International Bibliography of Social Sciences, Social Services Abstracts, and Sociological Abstracts and International organizations such as WHO, UNICEF and UNDP.

2.2. MOTHER TO CHILD TRANSMISSION OF HIV/AIDS

Mother to child transmission (MTCT) is the primary means by which infants worldwide acquire the HIV infection. MTCT occurs during three major time points during pregnancy and the postpartum period: in utero, intrapartum, and breast feeding (Harambat, Fassinou, Becquet, Touré, Rouet, Dabis et al., 2008: 169; UNAIDS, 2008). Strategies to reduce MTCT focus on the above periods of exposure. In the absence of intervention to prevent MTCT, which occurs in about 5-10% of infants born to HIV infected mothers. The condition occurs during pregnancy, in approximately 10-20% infants, who may become infected, at the time of delivery (UNAIDS, 2009). With currently implemented prenatal and perinatal interventions, one-third to one-half of all MTCT is estimated to occur in the

postpartum period, i.e. through breastfeeding (WHO, UNICEF, UNAIDS and UNFPA, 2007: 14).

Rates of HIV transmission from mothers to children have varied in different parts of the world (Jebessa and Teka, 2006: 211). Most studies in US and Europe have documented transmission rates in untreated women as comprising a 12-30% (Jebessa and Teka, 2006: 211). In contrast, transmission rates in Africa and Haiti were reported to be higher (25%-52%) (Newell, Coovadia, Cortina-Borja, Rollins, Gaillard and Dabis, 2004: 1236). Generally, the view is accepted that 30-40% of newborn are infected in utero and that breastfeeding is also an important transmission route in LMIC.

The risk of transmission of the HIV virus depends on many factors including the timing of maternal infection, maternal viral load, immune function, nutritional status of the mother and infant, antiretroviral use, breast health, type of breast feeding (exclusive, mixed, or replacement) and presence of oral lesions in the infant (Lunney, Iliff, Mutasa, Ntozini, Magder, Moulton et al., 2010: 762; Liang, Gui, Zhang, Zhuang, Meyers and Ho, 2009: 682; Coovadia and Bland, 2007: 1116). Mother-to-child transmission (MTCT) of HIV through breast milk presents challenges and difficult decisions for HIV positive mothers in LMIC (Piwoz and Bentley, 2005: 933). The risks associated with not adopting breastfeeding include infections that result from the contamination of replacement foods or the use of fluids or foods that are inadequate to support growth and development of the infant.

Despite evidence for effective prevention of MTCT of HIV through a combination of antiretroviral prophylaxis, elective caesarean section and abstinence from breastfeeding which has reduced MTCT of HIV to < 2% in high income countries, but elsewhere the achievements have not been possible to obtain in LMIC even in settings where there has been widespread implementation of PMTCT programs (Rollins et al., 2007: 1341). More recently, UNAIDS and partners have called for virtual elimination of MTCT of HIV (Michel and Tedstrom, 2010).

The collaborative effort of the partnership is to achieve the goal of reducing the number of new infant HIV infections by 90% between 2009 and 2015 and decreasing the MTCT to <5%. According to UNAIDS (2009), there were about 230 000 to 510 000 new HIV infections worldwide among children aged between 0–15 years of age (UNAIDS, 2010) with more than 95% of these infections occurred in LMIC through MTCT.

2.3. STRATEGIES TO PREVENT MOTHER TO CHILD TRANSMISSION OF HIV/AIDS

Some of the strategies used to respond to the global HIV epidemic include preventing new infections, the provision of care and support to infected individuals. With regard to the prevention effort, the reduction of HIV transmission from mother to children is seen as high priority (Musoke, 2005).

HIV positive mothers can transmit HIV to infants during pregnancy, childbirth and breast feeding. About 90% of the infections among the children worldwide occur as a result of mother to child transmission. The key prevention of mother to child transmission intervention of HIV includes access to voluntary counselling and testing to detect the woman's HIV status. In well developed countries, where such practices have become a standard part of ante-natal care, the MTCT rate has been reduced to less than 2% (WHO, 2008: 5). The World Health Organization (WHO, 2007: 3) recommends that women be encouraged to breast feed irrespective of HIV status. This guideline applies to over 90% of woman in developing countries, but one third to one half of the 3.6 million children, who are infected through mother to child transmission (MTCT) (Israel and Huber, 1993: 32).

The literature reveals that several approaches have been developed by WHO to prevent MTCT. In 2010; WHO (2010c: 1) recommended the following approaches to prevent MTCT:

(1) Primary prevention of HIV infection among women of childbearing age. (2) Prevention of unintended pregnancies among women infected with the HIV virus. (3) Preclusion of

HIV transmission from HIV infected women to their infants. (4) Provision of appropriate treatment, care and support to HIV infected mothers, their children and families.

In countries where breastfeeding is common practice, in the absence of any intervention the probability of MTCT is approximately 20-45%. Approximately 15-25% transmission occurs during pregnancy and 5-20% transmission during breastfeeding (De Cock et al., 2000: 1175). In high income countries, where all four prongs are well implemented and the most effective ARVs are provided to HIV-positive pregnant women with limited breastfeeding, the level of MTCT has decreased to below 2% (Townsend, Cortina-Borja, Peckham, de Ruiter, Lyall and Tookey, 2008: 973; McKenna and Hu, 2007: S10; European Collaborative Study, 2006: 1419). Until recently the WHO advised HIV infected mothers to avoid breastfeeding and nourish their infants with affordable, feasible, accessible, safe, and sustainable (AFASS) feed. Subsequently, with successful outcomes of research with antiretroviral treatment and feeding options the WHO published the HIV and infant feeding practices guidelines.

In 2006, WHO provided guidelines in HIV and infant feeding, and recommended to adopt exclusive breastfeeding for 6 months, introducing complementary foods at 6 months, limiting the duration of mixed feeding, and cessation of breastfeeding once a nutritionally adequate AFASS replacement diet could be provided (WHO, 2006: 9). In addition, WHO recommended that all pregnant HIV positive patients start HAART when their CD4 count falls to 200 cells /mm^3 or lower, at which point they typically show symptoms of the HIV disease (WHO, 2006).

Research by WHO (2006: 9) has since emerged particularly from LMIC, including South Africa, that shows a combination of exclusive breastfeeding and the use of ARV treatment, can significantly reduce the risk of transmitting HIV virus to babies by 42%. The Kesho Bora Study Group (2010) under the wings of WHO reported that whilst breastfeeding for 6 months, infants dispensed with the ARV drug, nevirapine daily, reduced the risk of transmitting HIV virus to babies through breast feeding (Parker, Bentley, Chasela, Adair, Piwoz, Jamieson et al., 2011: 281; Group, 2010: 533).

In 2009, WHO developed a Guidelines on HIV and Infant Feeding (WHO., 2009). This guideline recommended the provision of antiretroviral drugs during pregnancy and breastfeeding. Mothers should continue breastfeeding until 12 months with a gradual breastfeeding cessation, which should occur specifically with the commencement ofa nutritionally adequate diet provided exclusively by AFASS.

The WHO (2009) HIV and Infant Feeding Guidelines recommended further actions to improve health by reducing infections and save lives. Briefly, the WHO strategy places HIV infected pregnant women into a “priority category” which stipulates that ARV medications will be started within two weeks of the test showing that the woman is identified as being HIV positive and, consequently, has a CD4 count of < 350 cells /mm^3. Pregnant women with CD4 count > 350 cells/mm^3 will receive AZT from 14 weeks, during delivery and throughout the weaning period. In this recommendation, nevirapine (NVP) is given to the mother during labour; NVP is dispensed to the baby daily during the breast feeding period. The medication will reduce the risk of HIV transmission and improve the infant’s chance of survival. The new HIV treatment programs have the potential to reduce mother to child HIV transmission risk to 2% or lower together with improved infant feeding practices, the strategy can assist with improved child survival statistics. The associated costs of early treatment may offset decreased hospital costs, increased productivity owing to fewer sick days required by staff, fewer children may be orphaned by AIDS and a reduction in HIV infections would thereby be enabled. The WHO (2009) infant feeding guidelines is in disagreement with infant feeding practices in particular countries, including Malawi, where complementary feeding typically begins at 2 months of age and continued breastfeeding is sustained for 2 years (Corneli, Piwoz, Bentley, Moses, Nkhoma, Tohill et al., 2007: 59).

In 2012, WHO developed another Guideline for HIV treatment in pregnancy and the weaning period (WHO, 2012). HIV infected mothers should exclusively breastfeed their babies for the first six months of life, subsequently, introducing a gradual complementary food, and the mother should continue breastfeeding for the first 12 months of life. HIV infected mothers who decide to stop breastfeeding should do so gradually within one

month. It is not advisable to stop breastfeeding abruptly. HIV infected mothers should only give commercial infant formula milk as a replacement feed to their HIV uninfected infants or infants who are of unknown status, when specific conditions are met. The replacement feed should be acceptable, feasible, affordable, sustainable, and safe. HIV infected mothers should be provided with access to lifelong antiretroviral therapy or antiretroviral prophylaxis interventions.

WHO (2013a) issued new HIV and AIDS guidelines on treatment for PMTCT (preventing mother-to-child transmission) and on HIV and breastfeeding - intended primarily for use in low-and middle-income countries or resource-poor settings. Provide all HIV-positive pregnant or breastfeeding women with a course of antiretroviral drugs to prevent mother-to-child transmission. A triple-drug antiretroviral regimen should be taken throughout pregnancy, delivery and breastfeeding - continuing for life, regardless of CD4 count or clinical stage. Breastfeed exclusively: if there is little access to clean water, sanitation and health services continue breastfeeding: for 6 months, then introduce complementary foods and wean baby at 12 months administer HIV treatment: provide infant with once-daily nevirapine (NVP) for 6 weeks. WHO (2013b: 4) guidelines recommend that HIV-positive mothers in high-income countries avoid breastfeeding. The risk of HIV transmission is far greater with replacement feeding.

2.4. PMTCT PROGRAM IN SOUTH AFRICA

The implementation and operational effectiveness of the PMTCT program in South Africa reviewed in recent research (Nkonki, Doherty, Hill, Chopra, Schaay and Kendall, 2007: 27; Colvin, Chopra, Doherty, Jackson, Levin, Willumsen et al., 2007: 466; Coetzee, Hilderbrand, Boulle, Draper, Abdullah and Goemaere, 2005: 489) has provided policy makers and other stakeholders in the public health sector, with an understanding of challenges in the implementation of PMTCT program. The main challenges lay in the reluctance of women to be tested for HIV, incomplete follow-up of respondents, non-disclosure of HIV status and difficulties with infant feeding for HIV-positive mothers. However, guidance to local health service managers for ongoing monitoring of PMTCT coverage and quality of service delivery is limited.

The prevention of vertical transmission of HIV infection from the mother to the infant during the postpartum period through breast feeding is becoming increasingly essential with the widespread introduction of PMTCT programmes, containing ARVs prophylaxis. Exclusive breast feeding or complete avoidance of breast feeding through exclusive replacement feeding is currently the main focus of attention, but little information is known about how to achieve the practices (Doherty et al., 2006b: 2).

The HIV positive diagnosis places great pressure on the mother during the ante-natal period, especially when the mother chooses an infant feeding option. Issues that influence mothers' infant feeding choices are: their beliefs about breast feeding and their experiences of ante-natal counselling. During the early postnatal period both formula feeding and breast feeding mothers face pressures from health workers as well as family members that lead women to change their original feeding intention.

In a study completed in South Africa by Doherty, Chopra, Nkonki, Jackson and Greiner (2006a: 14) among formula feeding women, some respondents switched to breast feeding. Investigations showed that the women reported that they acted on health workers advice. Some women were apprehensive that their families would associate their formula feeding with HIV, which could force mothers to disclose their status to intimate members of their household. Many mothers experienced pressure from family members to modify their feeding method, particularly to introduce other liquids and in some cases women were told to add semi-solid foods (Doherty et al., 2006a: 5).

2.4.1. South African infant feeding suggestions on the clinical guidelines on PMTCT of HIV

2.4.1.1. All mothers

Counselling on infant feeding must commence after the first post-test counselling session in pregnancy. Infant feeding should be discussed with women at every antenatal visit. Mixed feeding during the first 6 months of life should be strongly discouraged as mixed feeding in fact increases the risk of childhood infections. Provide nutritional support for all

breastfeeding HIV infected mothers and for formula feeding mothers with food insecurity (WHO., 2009).

2.4.1.2. Breastfeeding in HIV infected women

All mothers diagnosed as HIV infected either on lifelong ART or not, who exclusively breastfeed their infants, should do so for 6 months, then introduce appropriate complementary foods, thereafter, the mother should continue breastfeeding for the first 12 months of life (WHO., 2009).

Trained health-care personnel should provide high quality, unambiguous and unbiased information about risks of HIV transmission through breastfeeding, ART prophylaxis to reduce this risk, and risks of replacement feeding. Mothers who are known to be HIV-infected, and not on lifelong ART, who decide to stop breastfeeding at any time should do so gradually during one month while the baby continues to receive daily NVP and should continue for one week after all breastfeeding has stopped (WHO, 2009).

2.4.1.3. Formula feeding in HIV-infected women

Free commercial infant formula will be provided to infants for at least 6 months. Women should receive practical support on how to prepare formula safely and feed the infant. At 6 months of age, infants with or at risk of poor growth should be referred for continued nutritional monitoring and dietary assistance. An appropriate formula milk product for the infant's age and circumstances should be chosen. In cases in which commercial formula is provided free of charge at health facilities, managers, supervisors and health care personnel should ensure an uninterrupted supply at the clinics. A reliable procurement and distribution system should be put in place (WHO, 2009).

2.5. HIV INFECTION, PMTCT IN THE KWAZULU NATAL REGION

KZN is the second largest and most populated Province in South Africa with the highest HIV infection rate. HIV/AIDS is a major cause of maternal and perinatal mortality in the province, According to the total of 33 488 women attending antenatal clinics across all

nine provinces, the South African Department of Health Study estimated that 28% of pregnant women are living with HIV. The KwaZulu-Natal province led other provinces by 37% in the year 2007, thereafter Mpumalanga obtained 32, 0%, followed by other provinces with the lowest statistic achieved by Western Cape with 12, 6% in the same year (Department of Health, 2007: 18).

In KZN the HIV prevalence is at 39.5% compared to the national figure of 30.2% according to the 2010 National ANC Sentinel HIV and Syphilis prevalence survey. In SA there are five districts with HIV prevalence of 40% and all of the districts with HIV predominance are in KZN. In 2010 the SA (Medical Research Council) conducted a SA PMTCT survey and KZN recorded the lowest transmission rate of 2.9% with an HIV exposure rate of 43.9%. The MTCT rate for HIV in KwaZulu-Natal has declined from 20.9% in 2005 to 2.1% in 2011, which is well within the reach of the Provincial Government target of less than 1.4% by 2016.

In 2008 the HIV prevalence rate among women attending antenatal clinics in KwaZulu-Natal was 38.7% (Department of Health, 2009). During the last ten years there were a number of MTCT prevention programmes instituted in South Africa. The programs have had variable success and further investigation shows that a short course and single dose regimen of ARV's in clinical practice do not achieve results reported in clinical trials. Importantly, pregnant woman cannot take steps to prevent HIV transmission if their own status remains unknown; voluntary counselling is the entry point for the PMTCT program (Department of Health, 2009).

2.6. FACTORS THAT INFLUENCE THE CHOICE OF INFANT FEEDING METHODS

Infant feeding practices by HIV infected mothers is a major global public health problem and a highly controversial matter (Moland et al., 2010). The controversy is reflected in the diverse series of WHO infant feeding guidelines released over the last 10 years. In LMIC, the best method for infant feeding for an HIV-exposed infant is complex. The risks of transmission of HIV through breastfeeding must be balanced against the many known

benefits of breastfeeding to reduce infant mortality and morbidity. The cost of replacement feeding is substantial and should be considered. The counselling of HIV infected mothers about feeding practices in the context of HIV is a critical issue (Chopra, Piwoz, Sengwana, Schaay, Dunnett and Sanders, 2002: 357).. According to Buskens and Jaffe (2008: 337) pregnant women who visit clinics during the course of their pregnancy do not have their feeding choices recorded and respected. Consequently, they complain about receiving confusing information and mixed messages from different clinics and the subsections of the same facility especially in baby friendly accredited hospitals. International prevention of mother-to-child-transmission (PMTCT) guidelines recommends that HIV-positive women should avoid all breastfeeding when replacement feeding is acceptable, feasible, affordable, sustainable and safe (AFASS). In the absence of AFASS conditions, breastfeeding should continue after 6 months, in combination with complementary feeding (WHO, 2006). As exclusive breastfeeding carries a lower risk of HIV transmission than mixed feeding, there is advocacy for its promotion in resource constrained settings (Kuhn, Sinkala, Kankasa, Semrau, Kasonde, Scott et al., 2007; Coovadia, Rollins, Bland, Little, Coutsoudis, Bennish et al., 2007: 1107; Piwoz, Humphrey, Tavengwa, Iliff, Marinda, Zunguza et al., 2007: 1249).

Leshabari, Blystad and Moland (2007: 18) finds that 7 mothers who received counselling found difficulty in understanding the advantages of exclusive breast feeding compared to mix feeding, and that exclusive breast feeding is hard to practice. The women then reported that inadequate information about HIV was provided and that the information was delivered on the same day that they received their HIV test results. Some of the women who choose replacement feeding after being counselled expressed uncertainty about preparing the formula or cow's milk, especially with regard to calculating the correct feeding quantities and frequency. Mothers are not afforded any written instruction to take home. The women indicated that mothers, who choose breast feeding, receive little or no guidance on exclusive breast feeding or breast care. In addition, the sample group stated that uncertainty prevailed about how to manage cracked nipples, bleeding nipples and oral thrush in the baby's mouth.

Nurse counsellors reported finding difficulty in promoting exclusive breast feeding as an option since they did not believe that mothers could adhere to the method, for a variety of reasons, especially for a period of more than two or three months after birth (Leshabari et al., 2007: 18). The counselling provided at some PMTCT sites, in LMIC, is usually delivered by the lay counsellors, who attend the course held by the government or by the non-governmental organisations. The lay counsellors attend a one week course on MTCT, breast feeding, positioning the infant, feeding methods, breast conditions, formula feeding preparation and confidence building in the mothers. The counsellor has to explain infant feeding methods clearly and the type of resources women require (Bland, Rollins, Coovadia, Coutsoudis and Newell, 2007).

Research indicates that community members who are not bio-medically trained have been highly effective in counseling (Bland, Little, Coovadia, Coutsoudis, Rollins and Newell, 2008: 883; Madeiro Leite, Fiorini Puccini, Atalah, Alves Da Cunha and Tavares Machado, 2005: 741). A study conducted in South Africa indicates that the deployment of peer mentor mothers has not only increased the number of medical follow up visits by HIV infected mothers to the PMTCT clinic but also increased the knowledge of the mothers about PMTCT (Futterman, Shea, Besser, Stafford, Desmond, Comulada et al., 2010: 1093). Furthermore, in India the results are that the introduction of peer counselors resulted in a six fold increase in the percentage of HIV infected mothers referred for care (UNICEF., 2010: 9).

Reports of insufficient, poor and inadequate counseling have emerged in the current PMTCT programs (Falnes, Tylleskär, De Paoli, Manongi and Engebretsen, 2010: 36; Nguyen, Oosterhoff, Ngoc, Wright and Hardon, 2008: 7). An earlier study has shown that counsellors within the same clinic give different advice (Eneroth, 2004: 24). Reports indicate that all counselors both medically trained and non-medically trained should receive standardized and updated counseling guidelines. Adoption of such a process will help to ease the misunderstandings when programs institute new changes in guidelines. The purpose of the counselling is to help the mother make the choice that will lead to the

best health outcome for her and her baby. The role of community counselors is to help HIV infected women to access services and adhere to guidelines.

The importance of adopting the above mentioned procedure is evident since the PMTCT service, especially in the postnatal period, has become non-existent in some countries (Horwood, Haskins, Vermaak, Phakathi, Subbaye and Doherty, 2010; Nassali, Nakanjako, Kyabayinze, Beyeza, Okoth and Mutyaba, 2009: 1124). A number of studies conducted in SA found that the quality of counselling was poor at the PMTCT sessions and also there was a lack of basic knowledge about infant feeding practices (Sibeko, Coutsoudis and Gray-Donald, 2009: 1983; Buskens and Jaffe, 2008: 337; Chopra, Jackson, Doherty and Ashworth, 2005: 357). Currently there are no guidelines regarding the transition from exclusive breast feeding to exclusive formula feeding. The HIV positive parent has a difficult decision to make, even when presented with all the relevant information. The counsellor must not resist in presenting all the above information by having to take responsibility for the outcome of the mother's choice.

2.7. A PMTCT AND BEHAVIOUR CHANGE MODEL

According to Moore (2003: 11) women should be prevented from becoming HIV positive. If she is HIV positive, unwanted pregnancy must be prevented. If the mother has fallen pregnant HIV must be prevented from being transmitted to the child and post-delivery the mother and the infant must be given support. Interventions to reduce mother to child transmission have been implemented, during pregnancy, during birth, postpartum and during breast feeding. These interventions are required for the prevention of mother to child transmission.

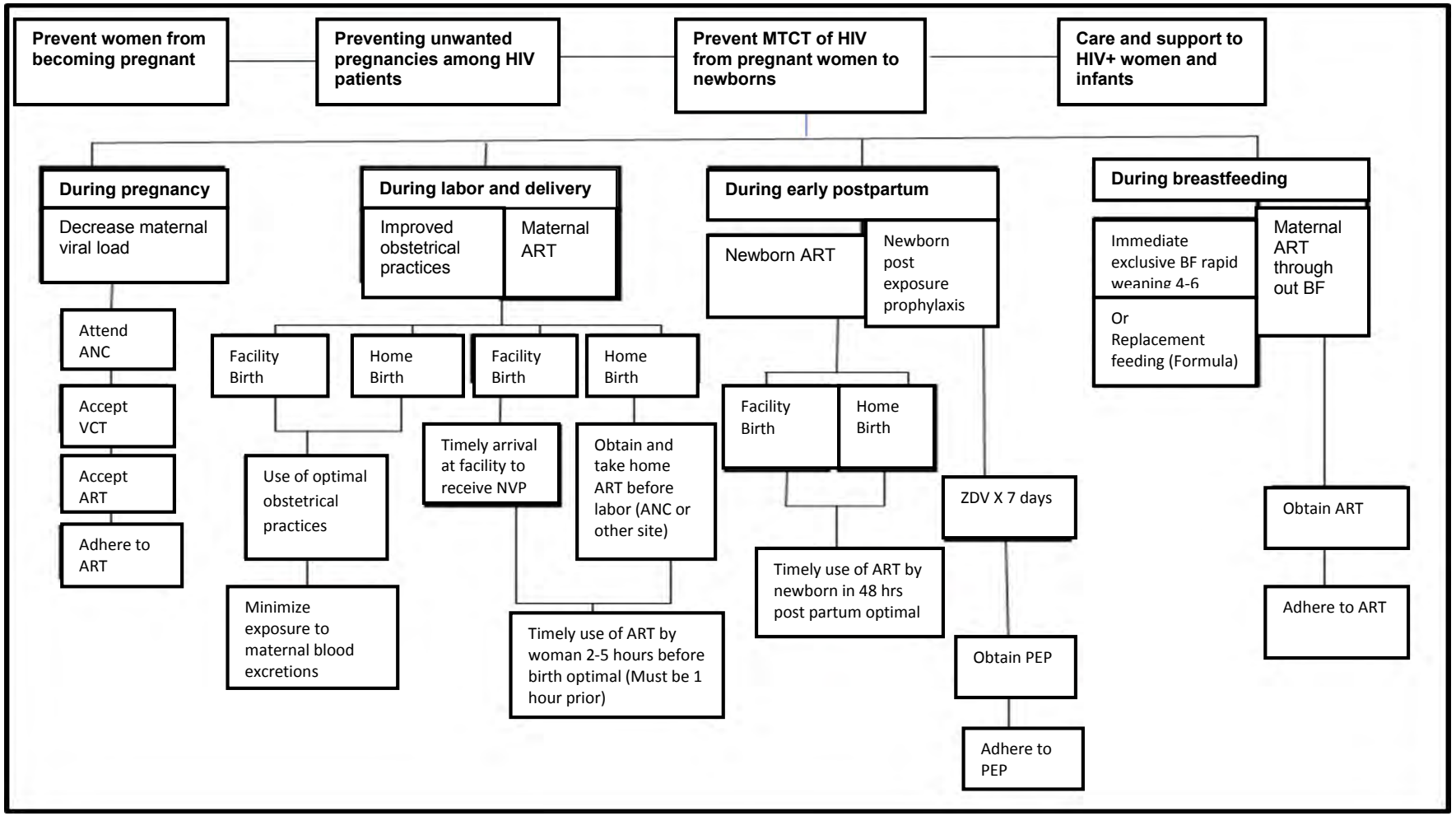

Figure 2.1: A framework for PMTCT behavior change from Moore (2003: 11).

2.7.1. During pregnancy

At her first PMTCT session following voluntary counselling and testing, post counselling, the viral load and the CD4 cell count are checked. If her results are below 200 the woman is introduced in antiretroviral therapy. The use of condoms is encouraged for further sexual activity to prevent re-infection (Moore, 2003: 10).

2.7.2. During labour

All the obstetrical practices, during labour, are modified to reduce the exposure of the new-borns to maternal fluids during delivery by providing maternal and the new-born with antiretroviral treatment before delivery. The baby is immediately provided with post exposure treatment and antiretroviral medication after delivery, notably, not later than 48 hours after birth (Moore, 2003: 16).

Results indicate that the use of antiseptic or antiviral agents, to cleanse the birth canal during labour and delivery, is a possible approach to reducing intrapartum transmission of HIV. The use of chlorhexidine lavage to reduce the transmission of group B streptococci is demonstrated, in Scandinavian studies. Chlorhexidine lavage is an inexpensive intervention, readily available in most health care settings (Moore, 2003: 20; UNAIDS et al., 1998) and, therefore, highly appropriate. In some countries, caesarean section has become a common mode of delivery for HIV positive women. In 1995 in the United Kingdom, 44% of HIV positive mothers were delivered by Caesarean section (Moore, 2003: 25; UNAIDS et al., 1998).

2.7.3. During postpartum period

If the mother chooses exclusive breast feeding, her choice is emphasised post-delivery. Alternatively, if her selection is replacement feeding the woman is also encouraged to formula feed exclusively. Furthermore, condom use is encouraged when the woman has resumed sexual intercourse. The interventions above address some aspects of perinatal HIV transmission, each intervention has associated behaviour, which deal with individual

pregnant woman, new mothers in addition to pregnant women and family members (Moore, 2003: 25; UNAIDS et al., 1998: 2).

2.7.4. Practices of infant feeding by HIV positive mothers

Infant feeding practices by HIV infected mothers is a major global public health problem and a highly controversial matter. The controversy is reflected in the different series of WHO infant feeding guidelines released during the last 10 years (Moland et al., 2010)..

The best choice of infant feeding for an HIV-exposed infant is a complex dilemma in LMIC. The risks of transmission of HIV through breastfeeding must be balanced against the many known benefits of breastfeeding that reduce infant mortality and morbidity. In particular, the cost of replacement feeding is substantial and also calls for further consideration. Counselling of HIV infected mothers about feeding practices in the context of HIV is a critical issue (Chopra et al., 2002: 298). According to Buskens and Jaffe (2008: 337) pregnant women, who visit clinics during the course of their pregnancy, do not have their feeding choices respected. Women tend to criticise about the confusing information along with mixed messages from different clinics and hospitals.

2.7.4.1. EXCLUSIVE BREAST FEEDING WITH EARLY CESSATION

The adoption of exclusive breast feeding with early cessation is recommended in order to prevent the transmission of HIV to infants. Exclusive breast feeding means nourishing an infant on breast milk alone with no other liquids or solid foods except for prescription medicine and vitamin mineral supplements. Exclusive breast milk is currently found to result in a lower rate of postnatal HIV transmission than mixed breast feeding. Doherty et al (2006a) reported that the cumulative postnatal HIV transmission risk of 4.4% occurs after 5 months of exclusive breast feeding..

Breast feeding is without doubt the best method to feed most babies and is also by far the most economical way of feeding an infant. The single most effective intervention to save the lives of millions of young children in LMIC is the promotion of exclusive breastfeeding (Jones, Steketee, Black, Bhutta and Morris, 2003: 65).

Breast milk provides all of the nutrients needed during the first few months of life; in addition, breast feeding strengthens the emotional bond between the mother and the child. Unequalled in the potential provided to infants, breastfeeding permits the provision of vital nutrients, indispensable for optimal development, growth and survival, is vital for the developing infant. Furthermore,breast milk contributes antibodies to infants that are necessary to protect babies against some common and deadly illnesses such as malnourishment, diarrhea and causes unrelated to HIV in LMIC (Black, Morris and Bryce, 2003: 2226) that are similarly experienced in high income countries (Stuebe, 2009: 222; Ip, Chung, Raman, Trikalinos and Lau, 2009: S17).

Based on the above observation, the WHO recommends that all mothers regardless of their HIV status, practice exclusive breastfeeding, which entails no provision of any other liquids or foods, in the first six months. Thereafter, the baby should start eating complementary foods. Mothers not infected with the HIV virus, should breastfeed until the infant is two years or older. Avoidance of any breast feeding eliminates the risk of postnatal mother to child transmission of HIV. For many woman in LMIC, complete avoidance of breast feeding is either not possible, or is not the most favourable method of feeding (WHO et al., 2010).

For HIV-negative women and those who do not know their status, the WHO recommends exclusive breast-feeding and continued breast-feeding with appropriate complimentary feeding up to 2 years of age or more (WHO, 2001).The distribution of formula feed, at no cost to HIV infected mothers to prevent mother to child transmission contributed to the greatest decline in breast feeding practices in LMIC, including South Africa. An unforeseen consequence of the initiative has undermined breastfeeding, which has led to HIV uninfected mothers to utilize formula feed (Doherty et al., 2006a).

During an outbreak of diarrhea in Botswana in 2006, HIV-exposed infants who received formula, provided free of charge, were at a much greater risk of death than breast-fed infants (Creek, Kim, Lu, Bowen, Masunge, Arvelo et al., 2010: 14; Mach, Lu, Creek, Bowen, Arvelo, Smit et al., 2009). According to WHO (2006), breastfeeding, in the first 6 months of life, provides 4- to 6-fold protection against mortality as opposed to no

breastfeeding. Reportedly, infants who are not exposed to HIV, replacement of breastfeeding with formula milks, animal milks, and other foods, face increased mortality, morbidity, poor growth, and development in LMIC (Jones et al., 2003: 65; Black et al., 2003: 2226) as well as the infants in high income countries (Duijts, Jaddoe, Hofman and Moll, 2010: 18; McNiel et al., 2010: 50).

The risk of HIV transmission endures for as long as breastfeeding continues (Coutsoudis, Coovadia and Wilfert, 2009). When women are advised to stop breastfeeding they should do so gradually and within a month (WHO, 2010b). Infants who were introduced to replacement foods after a longer period of breastfeeding also suffered increased serious infections, including diarrhea, pneumonia, and death (Onyango-Makumbi, Bagenda, Mwatha, Omer, Musoke, Mmiro et al., 2010: 6; Arpadi, Fawzy, Aldrovandi, Kankasa, Sinkala, Mwiya et al., 2009: 344).

In LMIC countries, breast-feeding is widely practiced and usually prolonged to at least one year after birth. HIV-infected pregnant women face a problem regarding the feeding practices of their forthcoming infant. On the other hand, in the absence of any specific nutritional counseling, non-breast-fed children have a greater risk of dying from infectious diseases, particularly early in infancy (WHO et al., 2010).

Breastfeeding practices have further declined owing to social and economic factors affecting women. In the current society struggling to survive in South Africa, while undergoing social upheaval, economic depression and fragmentation of the extended family, women have become not only head but also breadwinners in families. In many cases women are employed and fitting breastfeeding into their working schedule is difficult. In addition, many women consider formula feeding to be convenient. There is a need to provide more programs to boost the uptake and continuation of breastfeeding. A family approach to breastfeeding education is markedly needed in LMIC. The prerequisite for the recommended duration of breastfeeding for HIV exposed infants requires enforcement in policy for the general population. According to the recent WHO guidelines women are now encouraged to breastfeed for a minimum of 12 months and breastfeeding

should then only stop once a nutritionally adequate and safe diet can be provided (WHO., 2009).

Strong interventions are needed to promote exclusive breastfeeding with continued breastfeeding thereafter, amongst HIV-negative mothers, who are still the majority of mothers, in countries with high HIV rates, including South Africa. In regions where malnutrition, diarrhoeal diseases and respiratory infections account for most of the cases of infant death, breast-feeding is the obvious infant feeding method to promote. Moreover, breast-feeding is generally the best nutritional choice for infants, especially in areas where resources such as: clean water, formula feed, and provision of healthcare are scarce. Even if formula feed is available, formula-fed babies might be at higher risk of dying from diarrhoea and chest infections, which are more common in infants who are not breast-fed. Further investigations are on-going to evaluate fully the safety and effectiveness the formula feed intervention in reducing breast milk HIV transmission (WHO, 2008).

2.7.4.2. Exclusive replacement feeding (infant formula)

Replacement feeding means giving a baby commercial infant formula (prepared from powder and boiling water) or home-modified animal milk (boiled with added water, sugar and micronutrients) instead of breast milk in regions of the world where clean water and facilities are available; while receiving no breast milk. Exclusive replacement feeding with no breast milk given eliminates the rate of postnatal HIV transmission. Therefore, a preferred infant feeding method for HIV positive mothers is exclusive replacement feeding in developed countries. In low and middle income countries, replacement feeding is not considered as the automatic choice for the HIV positive woman due to the particular socio-economic environment of a country, which may not enable safe replacement feeding. Infants who are not breastfed and receive formula feed or other replacement feeding have a 6 fold increased risk of dying in the first 2 months of life (Doherty et al., 2006b: 21).

In 2001, the WHO introduced the words acceptable, feasible, affordable, sustainable, and safe (AFASS) criteria into their infant feeding guidelines. The recommendation was that all breastfeeding by HIV-infected mothers should be avoided when replacement feeding

was considered to be best (AFASS). In addition, each mother, with appropriate counseling support, should make the decision of whether the AFASS criteria were met. In the absence of AFASS criteria, infants should be exclusively breastfed for the first months of life. Notably, the latest recommendations did not use the AFASS criteria but instead stressed in more detail the environmental factors, which are: personal difficulties, the household situation, and health service conditions that make replacement feeding safer (WHO., 2009).

A study conducted in Kenya found that infants nourished with formula had a 40% lower risk of HIV transmission which was similar to infant nourished with breast milk but the infants fed with formula had increased risk of diarrhoea and upper respiratory infection in early months (Doherty, 2006:23). Researchers hypothesise that while breast milk is known to contain HIV, it may also contain antiretroviral factors, as well as protective antibodies that may help against HIV and other pathogens). The formula, on the other hand, may introduce new allergens or contaminants, which may increase the inflammation and absorption in the baby's intestinal tract. Infants can acquire the HIV infection from their mothers during pregnancy, labour and delivery or through breast feeding. If no interventions are in place to reduce MTCT an estimated 5 to 10% of HIV infected babies will perish. Also 15% of HIV infected infants may die during labour; and during delivery, a further 5 to 20% of HIV infected babies will pass away, through breast feeding of infants by an HIV infected mother (WHO, 2010c).

No reliable method exists for determining whether an infant is infected with HIV, until the baby is about six weeks of age. Good counselling can help an HIV positive woman select and practice the safest infant feeding strategy for her individual situation. One on one counselling can give counsellors valuable insight into the woman's most realistic feeding options (Evans and Ndirangu, 2009; Manuela de Paoli, Manongi and Klepp, 2002). Ideally woman should be counselled during pregnancy and after delivery to ensure that they have adequate time to make the infant feeding decision and for the counsellor to support and assess the implementation of the chosen method with the mother (Evans and Ndirangu, 2009; Sripipatana, Spensley, Miller, McIntyre, Sangiwa, Sawe et al., 2007; Manuela de

Paoli et al., 2002). A study in Kenya and Zambia, on the quality of information presented to pregnant women, found that the counsellors did not cover all the key issues involved in infant feeding in the context of HIV (Sripipatana et al., 2007).

In most cases, once a decision was made; mothers receive very little specific advice and no demonstration of how to feed safely (Chopra, 2004:2). Intervention studies show that good quality counselling and continued support can result in high levels of exclusive breast feeding. Contemporaneously, there is a significant weakness in the present counselling of the HIV mother regarding infant feeding in the South African PMTCT programme (Chopra, Doherty, Jackson and Ashworth, 2005). In a study in Zimbabwe, Iliff, Piwoz, Tavengwa, Zunguza, Marinda, Nathoo et al (2005: 45) found that early mixed feeding is associated with a four folds increased risk of HIV transmission at six months compared to exclusive breast feeding.

2.7.4.3. Commercial infant formula

Commercial infant formula is available to HIV-infected mothers free of cost as part of PMTCT policy in South Africa (Doherty, Sanders, Goga and Jackson, 2011: 3). In Botswana commercial infant formula is freely available to HIV-infected mothers through nongovernmental organizations (UNICEF) (de Wagt and Clark, 2004). The use of formula feed for infants has increased in both infected and non-infected mothers in both countries. In high income countries, AFASS feeding practices are used for most HIV-infected women; and currently the standard practice for women is to feed their infants formula. In USA, Center for Disease Control, the recommendation since 1985 is that HIV infected mothers do not breastfeed, which was reiterated in 2010 (Morrison, Israel-Ballard and Greiner, 2011). In high income countries, replacement feeding, together with ARV medicines and other intensive obstetric prevention strategies for infected mothers, has undoubtedly contributed to the very low rates of PMTCT (Townsend et al., 2008: 973; Paul, Chantry, Read, Frederick, Lu, Pitt et al., 2005: 46). However, replacement feeding in LMIC has not produced results similar to high-income countries. An initial study showed that replacement feeding ensures that HIV is not transmitted to the infant via

breastfeeding, thereby, suggesting that HIV-free survival was improved with replacement feeding (Mbori-Ngacha, Nduati, John, Reilly, Richardson, Mwatha et al., 2001: 2413).

More recently studies from sub-Saharan Africa suggest that reductions in HIV transmission achieved with formula feeding are offset by increases in HIV-unrelated mortality (Kuhn, Reitz and Abrams, 2009: 83). There is no benefit of replacement feeding with formula to HIV-free survival in sub-Saharan Africa, even when formula is provided free of cost. It is well known that the promotion of replacement feeding can have negative health consequences for infants who are not at risk of transmission; therefore, HIV-positive babies should not be fed replacement milk. However, the promotion of replacement feeding to HIV- infected mothers can result in HIV-infected infants not receiving breast milk (Kuhn and Aldrovandi, 2010: 843). For infants not exposed to HIV, the promotion of replacement feeding has led some women, who do not know their status to refuse to breastfeed for fear of infecting their infant. The latter action was termed the spillover effect (UNICEF, UNAIDS, WHO and UNFPA, 2003).

A major liability of replacement feeding is the expense, which is too costly for many women in the areas where the majority of MTCT occurs, namely sub-Saharan Africa. In places where breastfeeding is common, a woman's use of other feeding practices frequently labels her as HIV-infected in her family and the community (Cames, Mouquet-Rivier, Traoré, Ayassou, Kabore, Bruyeron et al., 2010: 779; Doherty et al., 2006b). Revealing the status of the woman to her can have serious consequences for the mother-infant. Decisions the mother makes related to child feeding and care may make her choose not to participate in PMTCT programs. The risk of MTCT associated with mixed feeding has been demonstrated and that lower non-HIV morbidity and mortality rates are observed among HIV-exposed, exclusive breastfed infants compared to mixed fed infants (Piwoz et al., 2007: 1249; Taha, Kumwenda, Hoover, Kafulafula, Fiscus, C et al., 2006: 546). Artificial feeding can prevent a large proportion of MTCT but is also associated with increases in morbidity and mortality among both HIV infected and HIV uninfected mothers. In LMIC the cost implications and sustainability of buying formula milk impacts on the decision regarding the feeding method.

2.7.4.4. Human milk banks

The WHO included donor milk as an acceptable feeding alternative for HIV infected mothers (Tully, 1999: 345). In most LMIC infant feeding with banked milk is not an option. In high-income countries, some HIV-infected mothers feed their infants with banked human milk. According to a breast consultant, we need to encourage and educate mothers on the ease and importance of expressing their breast milk to give to their baby while the woman is at work so that the baby can still get the best nutrition (Thea, Aldrovandi, Kankasa, Kasonde, Decker, Semrau et al., 2006: 1539).

2.7.4.5. Breast milk pasteurization

The use of heat-treated breast milk is a possible interim strategy. Knowledge about heat-treated breast milk use comes from the period of transition from exclusive breastfeeding to complementary feeding. Studies from South Africa (Sibeko, Nzuza, Coutsoudis and Gray-Donald, 2008), Tanzania (Chantry, Young, Rennie, Ngonyani, Mashio, Israel-Ballard et al., 2012; Young, Chantry, Ngonyani, Israel-Ballard, Ash and Nyambo, 2009: 443) and Zimbabwe (Mbuya, Humphrey, Majo, Chasekwa, Jenkins, Israel-Ballard et al., 2010: 1481) have indicated that heating breast milk is feasible, i.e., women can accomplish the method in LMIC, during the transition from exclusive breastfeeding to complementary feeding. According to the WHO guidelines (WHO, 2001), heat treatment of expressed breast milk was one of the main options (along with exclusive breast feeding and replacement feeding) must be explained to HIV infected women during counseling sessions.

2.8. HIV PREVENTION WITH ARV TREATMENT

2.8.1. ARV prophylaxis during breastfeeding

ARV intervention has been used to reduce the risk of prenatal and peripartum transmission in LMIC for more than a decade. The basis ARV prophylaxis for PMTCT worldwide is a single-dose of nevirapine (NVP), a regimen that consists of a maternal dose intrapartum and an infant dose within 72 hours postpartum. The success obtained

by providing ARV's together with testing, counselling within the PMTCT programs, is largely responsible for the steady decrease in the incidence of paediatric HIV over the past decade from 800 000 in 2001 (UNAIDS., 2002: 4) to 430 000 in 2008 (UNAIDS, 2009: 9).

The WHO guidelines recommend that all HIV infected pregnant, women with CD_4 counts < 350 cells/mm^3 should start with HAART indefinitely for their own health (WHO., 2009). In addition these guidelines recommended that ARV be administered prophylactically to pregnant women with CD_4 counts > 350 cells/mm3; the recommended regimen is either a 2-drug regimen (antepartum azidothymidine (AZT) plus intrapartum nevirapine) or HAART.

Following delivery, women receiving HAART should persist on ARVs throughout the breastfeeding period and infants receive nevirapine for 6 weeks. Women on HAART for their own health should continue on ARV lifelong and women on HAART as HIV-transmission prophylaxis should continue ARV's for one week, when weaning takes place. Infants born to women, who received antenatal AZT/intrapartum nevirapine, should receive daily nevirapine until one week after cessation of breastfeeding. Studies from some countries from sub Saharan Africa have all observed low rates (<5%) of HIV transmission (Marazzi, Liotta, Nielsen-Saines, Haswell, Magid, Buonomo et al., 2010: 2819; Shapiro, Hughes, Ogwu, Kitch, Lockman, Moffat et al., 2010: 2285; Kumwenda, Hoover, Mofenson, Thigpen, Kafulafula, Li et al., 2008: 119; Kilewo, Karlsson, Massawe, Lyamuya, Swai, Mhalu et al., 2008: 315).

2.8.2. Coverage of ARV prophylaxis

According to the WHO (2009a), there is a significant increase in the coverage of ARV, either NVP or HAART in LMIC from 15% in 2005 to 45% in 2008 to about 53% in 2009. The prophylaxis coverage among the 1.4 million infants born to HIV infected women has also increased slightly from 32% in 2008 to 35% in 2009. This steady increase in coverage represents progress toward the reduction of MTCT, but 80% coverage is desirable in countries with the highest rates of MTCT.

2.9. PROVIDER INITIATED COUNSELLING AND TESTING (PICT) FOR HIV

Worldwide efforts have focused primarily on voluntary counseling and testing (VCT) as the means of encouraging people to become aware of their HIV status. However, there has been a wide spread concern about the slow uptake of VCT in many parts of sub-Saharan Africa, including South Africa (WHO, 2003: 10), with the number of individuals tested, recorded as far lower than that required to identify the HIV infected, especially those requiring highly active antiretroviral therapy (Perez, Zvandaziva, Engelsmann and Dabis, 2006: 514; Scott, Bansi and Ivens, 2006: 213).

There is a shift from voluntary patient-initiated testing to provider-initiated testing and counselling, as the uptake of testing among pregnant women has increased (Touré, Audibert and Dabis, 2010). However, coverage remains far too low to prevent paediatric HIV infection (Mofenson, 2010: 130). In 2009, only 26% of pregnant women in LMIC received an HIV test (WHO, 2010d).

The National Department of Health in South Africa has promoted a 'know your status' effort and recommends health care initiated counselling and testing of all patients attending the National Department of Health, health care facilities. Studies show that testing for HIV and early initiation of HAART leads to a significant reduction in morbidity and prolongation of life in HIV infected individuals (Hammer, 2011: 561). The new approach of provider initiated testing and counselling recommended by the WHO, advises that all patients are offered HIV testing routinely by the clinician, as part of standard medical care in a wide range of clinical encounters, regardless of the patients presenting complaints. The testing is voluntary and the patient is given the option to decline testing. The aim of PITC is to decrease barriers to testing in order to increase testing rates and thereby facilitate earlier access to HIV intervention. Provider initiated HIV testing and counselling is of paramount importance, as the voluntary counselling and testing, in sub Saharan Africa, is mainly worryingly low possibly, there is fear of social stigmatisation, disgrace-and discrimination, as well as anxiety about the positive HIV results itself. Such

concerns can be overcome by appropriate counselling in health care facilities (Kalichman and Simbayi, 2003).

The National Department of Health (SA) has recommended that HIV testing be offered to all individuals coming in first contact with the health care system (Department of Health, 2011). The recommendation is very successful among antenatal attendees. Recent evidence suggests that above 95% of all antenatal attendees are tested for HIV and mother to child transmission rates are significantly reduced (approximately 2-3%). The major focus at present is to reduce the rate of new infection from 2.3% to 1% and decrease mother to child transmission to 1.4%. In an earlier study conducted in obstetric patients (Dalal, Lee, Farirai, Schilsky, Goldman, Moore et al., 2011: 19) and those with sexually transmitted diseases (Leon, Naidoo, Mathews, Lewin and Lombard, 2010: 8), a positive response to PITC was observed with an increased uptake of HIV.

2.10. CONCLUSION

Chapter 2 reviewed the literature which presented a variety of strategies that have been used to curb the pandemic of HIV and AIDS. Chapter 3 presents the methods which were used to execute data collection, sampling, and analysis.

CHAPTER THREE

METHODOLOGY

3.1. INTRODUCTION

Research methodology is defined by Terre Blanche and Durrheim (1999) as the manner in which a researcher goes about studying what s/he believes can be learnt.

This chapter outlines the methods which were used to execute the study entitled 'exploring knowledge, attitudes and practices of pregnant women on infant feeding methods for PMTCT transmission of HIV in a regional hospital of eThekwini District.' In this chapter, the study design, setting, target population, sampling, sample size, data collection and instrument, reliability in addition to validity, data analysis, ethical consideration and data management, are discussed.

3.2. THE PARADIGM AND THE APPROACH

The positivist paradigm, sometimes known as logical positivism, serves as a guide in this study. The positivist's scientific approach involves the use of orderly disciplined procedures with the tight control over the research situation (Polit and Beck, 2008). A quantitative approach, which is closely allied with the positivist tradition, was used in this study. Quantitative research is a formal, objective, rigorous, systematic process for generating new information, hence its use in this study (Burns and Grove, 2007).

3.3. RESEARCH DESIGN

A research design is the framework or guide used for the planning, implementation, and analysis of a study. Quantitative design most often reflects a deterministic philosophy that is rooted in the post-positivist paradigm or school of thought (Burns and Grove, 2010). A quantitative, non-experimental, descriptive design was used to explore knowledge, attitudes and practice of pregnant women in infant feeding methods for PMTCT transmission of HIV, in the regional hospital of eThekwini District.

The descriptive design was selected to obtain more information about the characteristics of the items being researched (Burns and Grove, 1999). Polit and Beck (2004), state that the purpose of the descriptive studies is to describe and document aspects of a situation as it occurs. The descriptive approach was used in this study to describe the relationship among variables, instead of assuming cause and effect relationship. By using the descriptive design, more information could be gathered regarding the characteristics of the pregnant women.

3.4. STUDY SETTING

This prospective study was conducted in the antenatal care clinic at the regional hospital of eThekwini District, which is the second largest hospital, providing regional services to the whole province of KwaZulu-Natal (KZN). The facility is in an urban setting, and serves a disadvantaged predominantly Black population of South Africa, whose HIV rates are high. The hospital is also a referral centre for all critically ill patients in the Central, Western and Northern Durban metropolitan areas. In addition to providing emergency obstetric services to women referred from other centers, the hospital also provides antenatal care and delivery services for both referred and un-booked high risk pregnant women. This regional hospital of eThekwini District is a 922 bedded hospital. The eThekwini District hospital is a teaching hospital for medical students studying at the University of KwaZulu-Natal, namely, the Nelson R Mandela School of Medicine, which has a Nursing College attached to the institution. The study was conducted over a period of 6 months, extending from the 1st March, 2011 to 31st August, 2011

3.5. TARGET POPULATION

The population is composed of a set of individuals, who hold some common characteristics and values (Polit and Beck, 2008). For this study the target population was pregnant women who are HIV positive and HIV negative, attending the antenatal clinic, at a regional hospital eThekwini District. The regional hospital of eThekwini district has an average of about 11 520 pregnant women attending the antenatal clinic for ante natal

care, in a year. There are around 960 pregnant women per month, who receive medical attention in the antenatal care at the regional hospital.

3.6. SAMPLING TECHNIQUE AND SAMPLE SIZE

3.6.1. Sampling

Sampling is the process used by the researcher to select the sample from the true population (Brink et al., 2006: 16). In this study, the respondents were randomly selected using a systematic random sampling method. According to Polit and Hungler (2001) systematic sampling involves every case from the list of the target population, such as every tenth person on a list. In this study the researcher selected every 2nd client on the antenatal care register of a particular day to participate in the study.

3.6.2. Sample size

A sample consists of a subset of the entities that make up the population (Polit and Hungler, 2001). Since this is a descriptive study, 30% of the population is adequate for the research (Terblanche, Durrheim and Painter, 2008: 50). Thus a sample size of 250 pregnant women irrespective of their HIV status, who were 18 years old and above, were recruited to participate in the study. A researcher was likely to acquire opinions that were representative of the target population of pregnant women, who are attending antenatal care at a regional hospital of eThekwini District.

Inclusion criteria

- Willingness to participate in this study
- Able to speak IsiZulu or English
- Pregnant women who were HIV positive and HIV negative attending high risk antenatal clinic at a regional hospital of eThekwini District.
- Being aged 18 age and above

3.7. THE INSTRUMENT

The instrument for data collection was developed by the researcher, in consultation with the research supervisor. The data collection instrument was constructed on the basis of information drawn from literature reviewed, the research objectives, and the conceptual framework underpinning this study, and which were related to the prevention of mother-to-child-transmission through infant feeding methods. The instrument is a semi-structured questionnaire which consists of sections with closed questions and 3 open ended questions (refer Appendix1). The instrument is described in Section A which describes socio-demographic data of a pregnant woman and her husband/partner. Section B addresses the knowledge of pregnant women regarding HIV and HIV transmission. Section C presents the attitude of pregnant women towards PMTCT through infant feeding methods. Section D shows the practices that pregnant women intend to follow as method of feeding their infants. Section E outlines the sources of information of pregnant women on health related issues and HIV. Section F deals with factors influencing choice of infant feeding methods.

3.8. VALIDITY AND RELIABILITY

3.8.1. Reliability

According to Polit and Beck **(**2004**)**, the instrument‘s reliability is the consistency with which it measures the targeted attributes. Reliability is also concerned with the questionnaire’s accuracy to reflect the true scores. Gerish and Lacey (2006) define reliability as “a measure of the consistency and accuracy of data collection”. In this study, reliability was measured using Cronbach’s Alpha coefficient, which is a method to evaluate the internal consistency of the instrument (Polit and Beck, 2004), with higher values reflecting a higher internal consistency. Polit and Beck (2004) indicate that a score of at least 0.7 is needed to be an acceptable reliability coefficient.

In this study test and retest of the instrument was used on 5 pregnant women selected at random, who were not part of the study. The instrument was distributed in an interval of

one week. The test of reliability revealed an internal consistency. In this study, Cronbach's Alpha was 0.879, and Cronbach's Alpha based on standardized Items was 0.935, which indicated a high internal consistence.

3.8.2. Content validity

The content of the self-reported questionnaire was based on the objectives of the study. Content validity is defined as an assessment of how well the instrument represents all the components of the variable to be measured (Polit and Beck, 2008). Table 1 is drawn to assist in checking how well the instrument represents all the components of the variable to be measured as indicated above (Polit and Beck, 2008). The aim of Table 1 is to ensure that research objectives and research questions are addressed or answered by certain item/s in the instrument that should also to be in line with the concepts in the conceptual framework.

3.8.3. Face validity

In this study, face validity of the instrument was insured by comparing the research objectives and to the questions in the research instruments. Questions were phrased appropriately and the respondents had appropriate responding options. The research supervisor reviewed the questionnaires and provided necessary guidance. The questionnaire was also checked for readability, consistency of style and formatting, and the clarity of the language used (English and Is Zulu).

Table 3. 1: Content validity of the instrument

Research objectives	Research questions	Conceptual Framework	Instruments' questions
Socio-demographic characteristics			Q1.1; Q1.2; Q1.3; Q1.4; Q1.5 Q1.6; Q1.7; Q1.8; Q1.9; Q1.10; Q1.11; Q1.12; Q1.13; Q1.14; Q1.15; Q1.16; Q1.17; Q1.18; Q1.19; Q1.20
To determine the knowledge of pregnant women on PMTCT through infant feeding method	What knowledge do pregnant women possess on PMTCT through infant feeding methods?	• Prevention of MTCT of HIV from pregnant women to new-born • Exclusive breastfeeding • Replacement formula (infant formula) • Maternal ART throughout breastfeeding • Obtain and adhere to ART	Q2.1, Q2.2, Q2.3, Q2.4
To identify attitudes that pregnant women have towards PMTCT through infant feeding methods	What are the attitudes of pregnant women have regarding PMTCT in infant feeding practices?	• Prevention of MTCT of HIV from pregnant women to new-born • Exclusive breastfeeding • Replacement formula infant formula) • Maternal ART throughout breastfeeding	Q3.1; Q3.2; Q3.3

Research objectives	Research questions	Conceptual Framework	Instruments' questions
		• Obtain and adhere to ART	
To describe infant feeding practices that pregnant women are likely to engage on in relation to PMTCT	What infant feeding practices do pregnant women adopt in relation to PMTCT through infant feeding methods	• Prevention of MTCT of HIV from pregnant women to new-born • Exclusive breastfeeding • Replacement formula (infant formula) • Maternal ART throughout breastfeeding • Obtain and adhere to ART	Q4.1; Q4.2; Q4.3; Q4.4
To identify sources of information that pregnant women have on PMTCT though discussing infant feeding methods	What are the sources of information about infant feeding practices and PMTCT for pregnant women?	• Replacement Exclusive breastfeeding • Replacement formula (infant formula) • Maternal ART throughout breastfeeding • Obtain and adhere to ART	Q5.1; Q5.2; Q5.3
To describe the factors that influence the choice of infant feeding method	What are the factors which influence a pregnant women's choice of infant feeding methods?	• Exclusive breastfeeding • Replacement formula (infant formula) • Maternal ART throughout breastfeeding • Obtain and adhere to ART	Q6.1; Q6.2; Q6.3; Q6.4; Q6.5; Q6.6

3.9. DATA COLLECTION PROCEDURE

The study started after obtaining the ethical clearance and the permission from the department of health. The researcher made an appointment to meet the managers of the hospital, and requested permission from management to conduct the study. In addition, the purpose of the study was explained to the managers and the researcher obtained permission to conduct the study. He assisted in selection of the respondents and introduced the researcher to the respondents.

Once all those who agreed to participate had been identified, a date for data collection was identified. Thereafter, the arrangement was made for a day and time to recruit pregnant women and the researcher also requested a suitable venue such as consultation room that was used as a private area by the researcher to meet with the prospective .respondents. Firstly, on the day of the data collection, nurse manager of the selected setting introduced the research respondents and the researcher explained the information sheet in the research, together with the purpose of the study to the selected pregnant women and requested them to participate in the study, if the women willingly signed informed consent.

The aims of the study were fully explained to the pregnant women with a view to obtaining their informed consent prior to the commencement of the study. Voluntary participation was emphasized, and the pregnant women were allowed to ask questions.

Secondly, the information sheets and informed consents were given to the respondents taking part in the study to keep as their own copy for future reference. 250 respondents participated in this study. The questionnaire (Appendix 5, 6), pregnant woman information leaflets (Appendix 1, 2) and informed consent (Appendix 3, 4) documents were in English and isiZulu.

The researcher was available to explain and clarify questions and to answer respondents' queries as suggested by Polit and Hungler (2001). The completed questionnaires were

collected and placed in a box for security reasons. Codes and numbers were used instead of respondents' names.

Data was collected for a period of 6 months, extending from the 1st March, 2011 to 31st August, 2011.

3.10. DATA ANALYSIS

The Statistical Package for Social Sciences (SPSS 19) was used for data analysis. The data was analysed using descriptive statistics with the use of frequency tables, figures percentages, and cross-tabulations.

3.11. ETHICAL CONSIDERATIONS

The ethical approval to conduct the study was obtained from the University of KwaZulu-Natal Ethics Committee. Permission to conduct the study at a regional hospital of eThekwini District was also obtained from the authorities of KwaZulu-Natal Department of Health and the Chief Executive Officer of the hospital where the study was conducted. The prospective respondents were informed that participation in this study was voluntary. Human rights of the respondents were adhered to by obtaining individual signed consent prior to the women participating in the study.

As prescribed by Brink, Van Der Walt and Van Rensburg (2006), and the World Medical Association Declaration of Helsinki (2004), the research study adhered to the ethical principles, and the following were considered:

- A two page participation Information letter was provided to each person explaining the purpose of the research and the nature of the questionnaire. They were also provided with a consent form to participate in the study which they signed before answering any questions.
- The principle of justice was adhered to by ensuring the respondents' confidentiality. During the data collection processes, the researcher informed the participant not to write their names on the questionnaires. It was explained to them that the completion

of the questionnaire required signing a consent form. The respondents were assured that no sensitive information would be divulged during the publication of the study results.

- All prospective respondents were informed of the purpose of the study and of the fact that the research results would be made available to all respondents
- The respondents had the right to decide voluntarily whether or not to participate in the study without any risk of penalty or prejudicial treatment. The principle of Respect was thus adhered to.
- The principle of beneficence rules that the wellbeing of the respondents was maintained. The researcher ensured that no discomfort or inconvenience occurred during the data collection.

In addition, Confidentiality of information and anonymity were maintained throughout the study. Respondents completed the questionnaires on their own to ensure the confidentiality and anonymity. The completed questionnaires were collected and placed in a box for security reasons. Codes and numbers were used instead of respondents' names to ensure confidentiality.

Similarly the researcher upholds the above undertaking when writing the dissertation and non-disclosure of any information regarding the respondents in any potential publication in the future.

3.12. DATA MANAGEMENT

The researcher stored the data in a secure place which was only accessible to the researcher and the supervisor. The data kept for five years in a secure place in a lock up cup board. After 5 years at the University of KwaZulu-Natal, the data sheet to be destroyed by shredding. The raw digital data is housed on the researcher's computer which is accessed and controlled through password protection. It was backed up onto the University system for safe keeping.

3.13. CONCLUSION

This chapter presented the research methodology of the study and its components that is research approach, the design, the setting, population, sampling, and sample size. The instrument was described as well as the validity was attended to regarding the research objective. Data collection procedure, analysis, management, storage, disposal, and ethical consideration were described. The following chapter covers the presentation of the results.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.1. INTRODUCTION

This section entails the analysis of data and the presentation of the results that was divided in to six sections. Section A describes the demographic data of a pregnant woman and her husband/partner. Section B presents the data regarding the knowledge of pregnant women on HIV and HIV transmission. Section C presents data regarding the attitude of pregnant women towards PMTCT through infant feeding methods. Section D shows data concerning the practices that pregnant women intend to follow in their chosen method of feeding their infants. Section E presents data on the sources of information of pregnant women on health related issues and HIV. Section F presents data on the factors influencing choice of infant feeding methods. The data was gathered, managed, and analysed using Statistical Package for Social Sciences (SPSS version 19. Descriptive statistics were used to analyse the data and presented as mean (range), frequencies and additionally data is likewise presented in the form of graphs and tables.

4.2. SECTION A: DEMOGRAPHIC DATA

Two hundred and fifty pregnant women irrespective of their HIV status were enrolled to participate in this questionnaire based study. The demographic and clinical characteristics are shown in Table 4.1.

Table 4. 1; General overview of demographic data of all the respondents enrolled in the study (n=250).

Variable	Frequency	Percentage
Age (years)	Mean age: 27 (18-44)	
Age groups		
18-20	36	14.4
21-25	82	32.8
26-30	66	26.4
31-35	43	17.2
36-44	23	9.2
Marital status		
Single	225	90
Married	15	6
Cohabiting	10	4
Racial groups		
Black	245	98
Others	5	2
Education		
No formal education	5	2
Primary	38	15
Secondary	189	76
Tertiary	18	7
Religion		
Christian	113	45
Zionist	45	18
Roman Catholic	32	13
Faith mission	27	11
Nazareth	23	9
Others	10	4

4.2.1.1. The age of the respondents (n=250)

The mean (range) age of the respondents was 27.0 (18-44) years. The majority of the respondents (n=82; 32.8%) were in the younger age group that is 21-25 years. This is the age group in whom HIV infection rates are high in the general population in KZN (National Department of Health, 2010:19). Two hundred and twenty five (90%) were single, 245 (98%) were Black with 207 (84.5%) possessing good educational background, 240 (96%) were of Christian faith and 195 (78%) resided in urban areas.

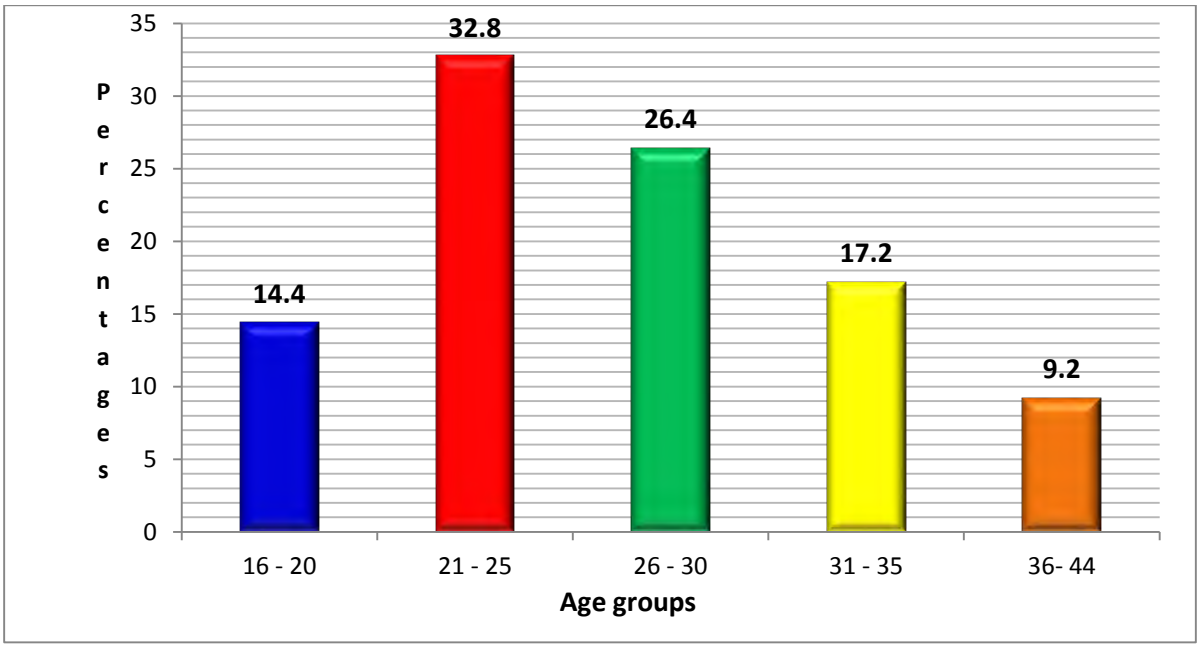

Figure 4. 1: Age groups of the respondents (n=250)

4.2.1.2. Record of respondents' marital status (n=250)

The majority 225 (90%) of our respondents were single while 15 (6%) were living with their husband. Fifteen (6%) of the respondents were living with their boyfriend and 10 (4%) this is referred to as cohabiting. It was disturbing to note that about half of our respondents were single parents, which was probably due to unplanned or untimed pregnancy. Clearly the respondents were not on any type of contraception or their partners failed to take precautions such as condoms with a dual preventive action i.e. of

preventing unplanned pregnancy and sexually transmitted infections including HIV. No mention was made if the respondent were engaged or widowed.

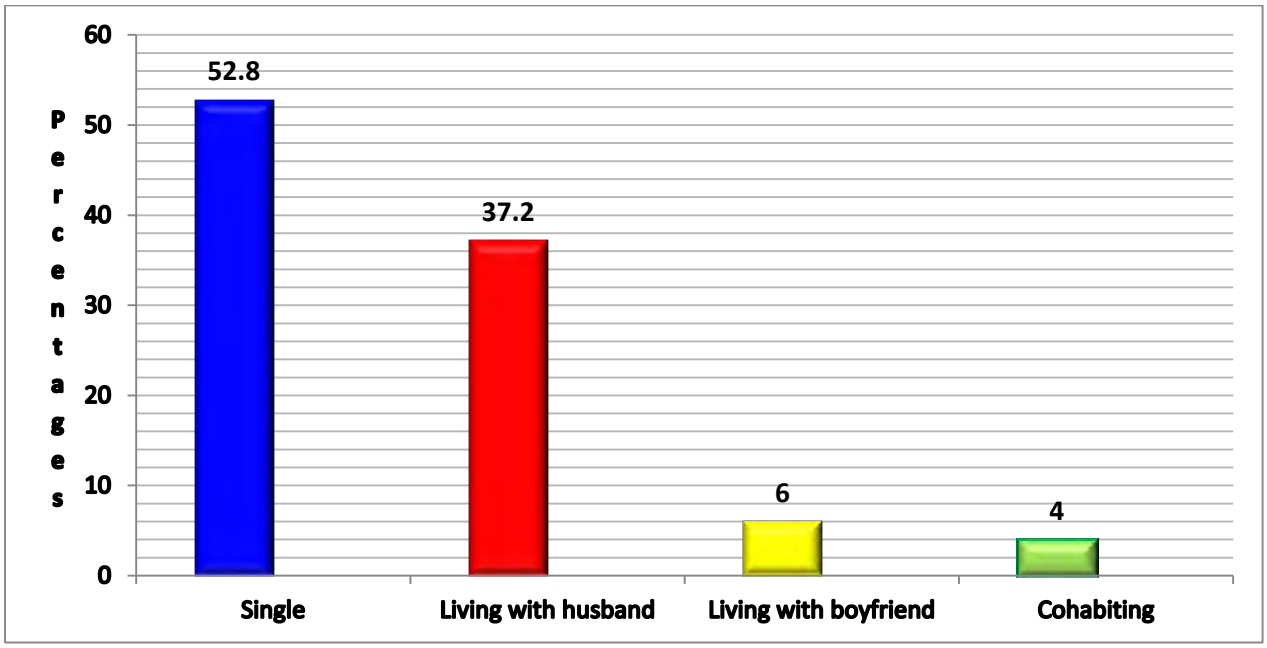

Figure 4. 2: Marital status (n=250)

4.2.1.3. Description of respondents' race (n=250)

Most of the respondents (n=245; 98%) were Black. The black population make up the majority of the population of the eThekwini region (SA statistics; 2009)). The remaining 5 (2%) respondents belonged to other racial groups that included Asians (n=3; 1.2%), Coloured (n=1; 0.4%) and White (n=1; 0.4%). All the respondents were high risk pregnant women referred from clinics, Level 1 and Level 2 hospitals for various indications of the need for a higher level of care to a regional hospital for further management to prevent negative outcomes such as perinatal and maternal mortality.

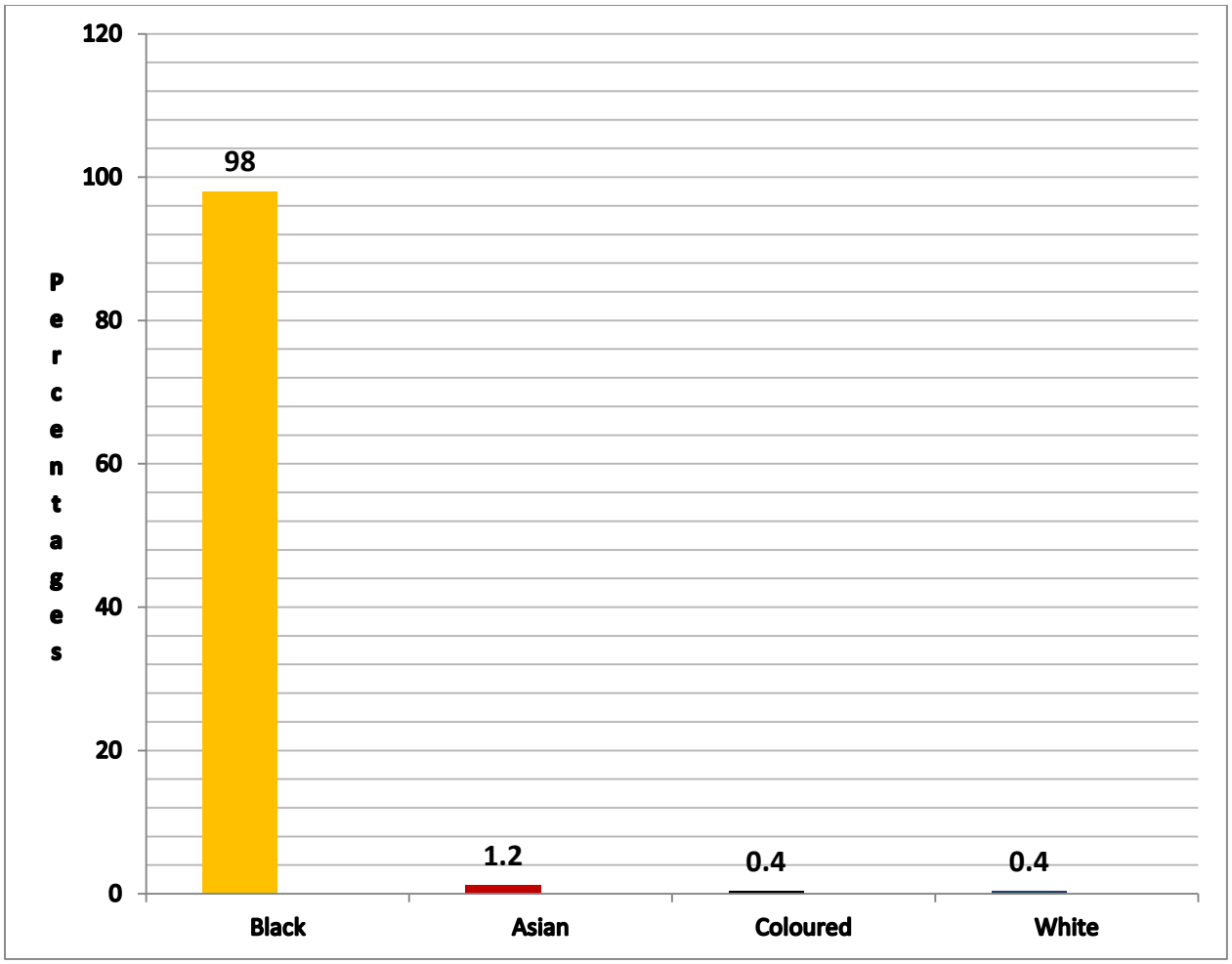

Figure 4. 3: Racial groups of the respondents (n=250)

4.2.1.4. The respondents' highest educational levels achieved (n=250)

One hundred and eighty nine (76%) of the respondents obtained secondary level education, 38 (15%) obtained primary level education, 18 (7%) obtained a post matric diploma or degree/ tertiary level of education and 5 (2%) had no formal schooling, which means that they did not attended school. The level of education of 207 (82.8%) of the respondents who had secondary and tertiary level of education were regarded as having adequate level of education that is enough for decision making regarding various aspects of life. In 43 (17.2%) of the respondents, who had no schooling and some had obtained primary level of schooling, these may require help with reading instructions on infant feeding and care. They will have to be reached by other educational options rather than

pamphlets or posters. The level of education obtained by our respondents was comparatively better than pre 1994 (KZN, Department of Education, 2006).

The results indicate that education has become a priority after 1994. Recent South African Census Oct 2012 confirms that South Africa is moving towards achievement of the Millennium Development Goal (MDG) Number 2 that promotes equal education among men and women. The educational level of the pregnant women is relevant to this study as education promotes the ability to perform decision making among the pregnant women, including women infected with the HIV virus and the importance of PMTCT. In addition, the mother will be able to read instructions on care and the powdered milk container.

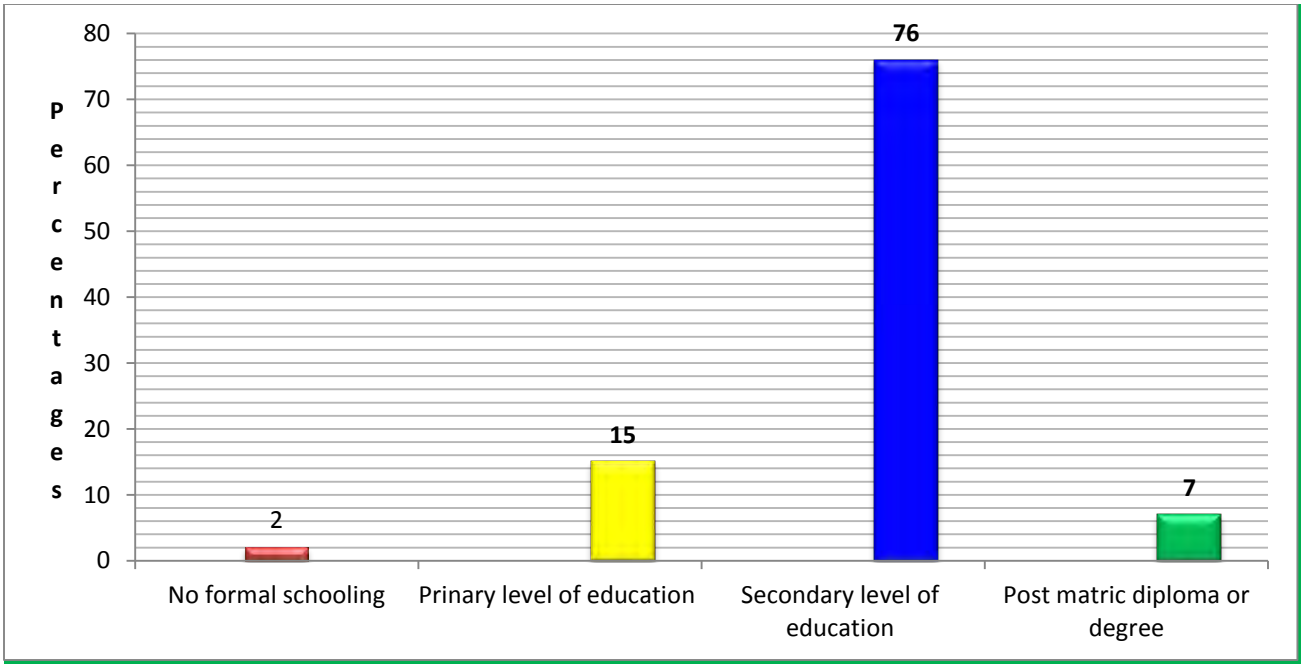

Figure 4. 4: Educational status of the respondents (n=250)

4.2.1.5. Religious affiliation of respondents (n=250)

Respondents selected from the following: Roman Catholic / a Zionist / a Faith Mission member / other (specify). One hundred and thirteen (45%) of the respondents indicated that they belonged to the Christian religion, 45 (18%) to the Zionist faith, 32 (13%) to the

Roman Catholic religion, 27 (11%) to the Faith Mission, 23 (9%) to the Nazareth faith and 10(4) (1.2%) followed other religions (Hinduism). Religious affiliation is important to this study because religion determines people's belief regarding the use of contraception to prevent unplanned or unwanted pregnancy and sexual transmitted infections including HIV. In addition, religion plays a role in attitude, the way the mother sees the world and may influence her decision making.

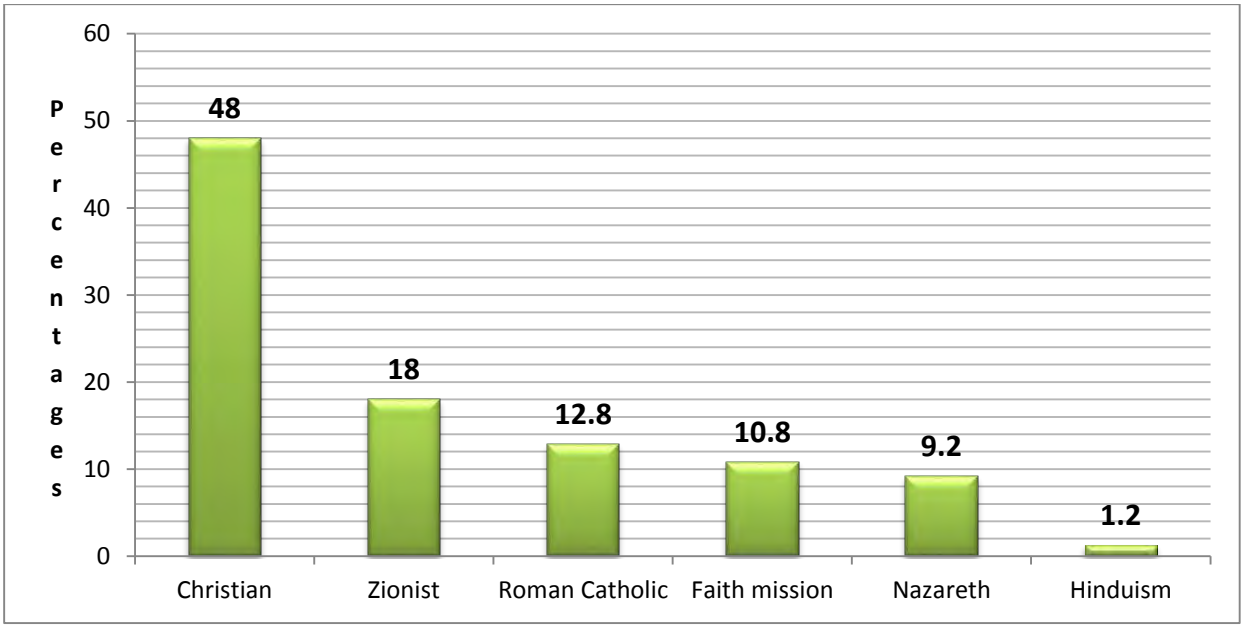

Figure 4. 5: Religious affiliation of the respondents (n=250)

4.2.1.6. Employment history and income of respondents (n=250

Table 4. 2: Employment history and income of respondents (n=250)

Variable	Frequency	Percentage
Employed		
Yes	150	60
No	100	40
Occupation (n=150)		
Labourer	96	64
Nurse	19	12.67
Teacher	13	8.67
Other	22	14.67
Income (month) (n=150)		
Less than R1000	80	53.33
R1000-R2000	31	20.67
R2000-R3000	12	8
R3000-R4000	5	3.33
R4000-R5000	2	1.33
More than R5000	20	13.33

4.2.1.7. Employment status of the respondents (n=250)

One hundred and fifty (60%) of the respondents were employed and 100 (40%) were unemployed. The news that a large number of females are presently gainfully employed and can support them is welcoming; consequently, their families are not totally reliant on husbands/partners. This pattern is in line with the progress towards achievement of MDG Number 3 that encourages gender equality and empowerment of women, in addition to the promotion of women's independence and a woman's ability to make her own choices.

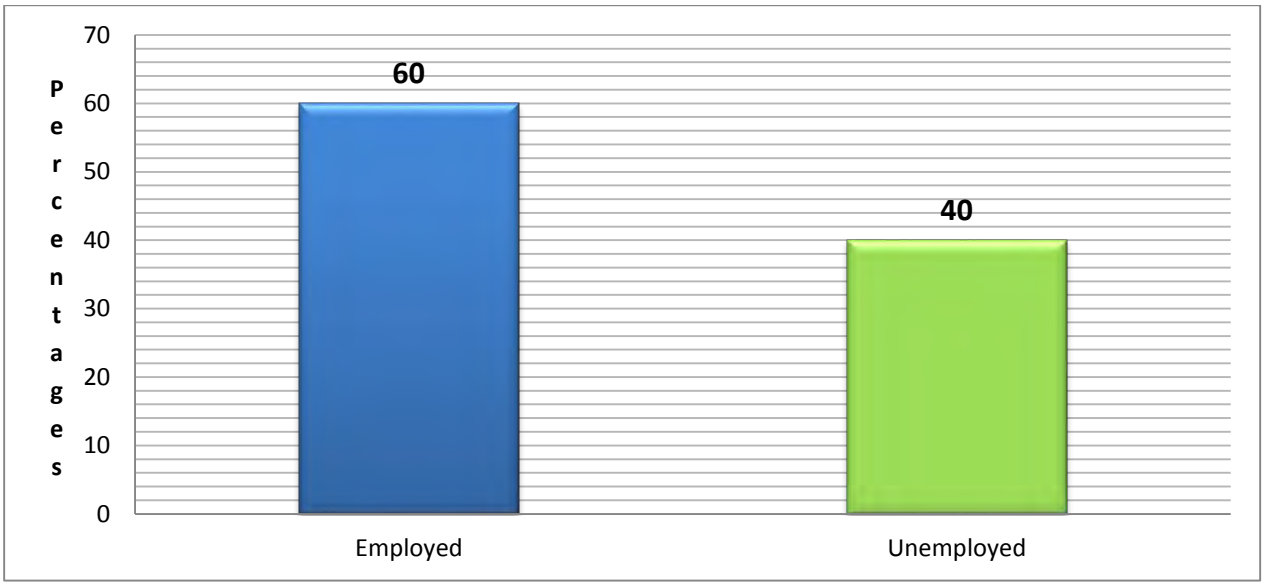

Figure 4. 6: Employment status of the respondents (n=250)

4.2.1.8. Types of employment or occupation of the respondents (n=250)

The majority of the women (n=96; 64%) were employed as labourers. Thirty two (21%) of the respondents were professionals and employed as nurses (n=19; 12.67%) and teachers (n=13; 8.67%). The remaining 22 (14.67%) of the respondents were self-employed in the following types of work: selling fruit and vegetables, maids, including tuck shops owners. Females tend to have limited choices in terms of employment in comparison to their male counterparts as revealed in the results of this study where the majority 96 (64%) of pregnant women were employed as labourers.

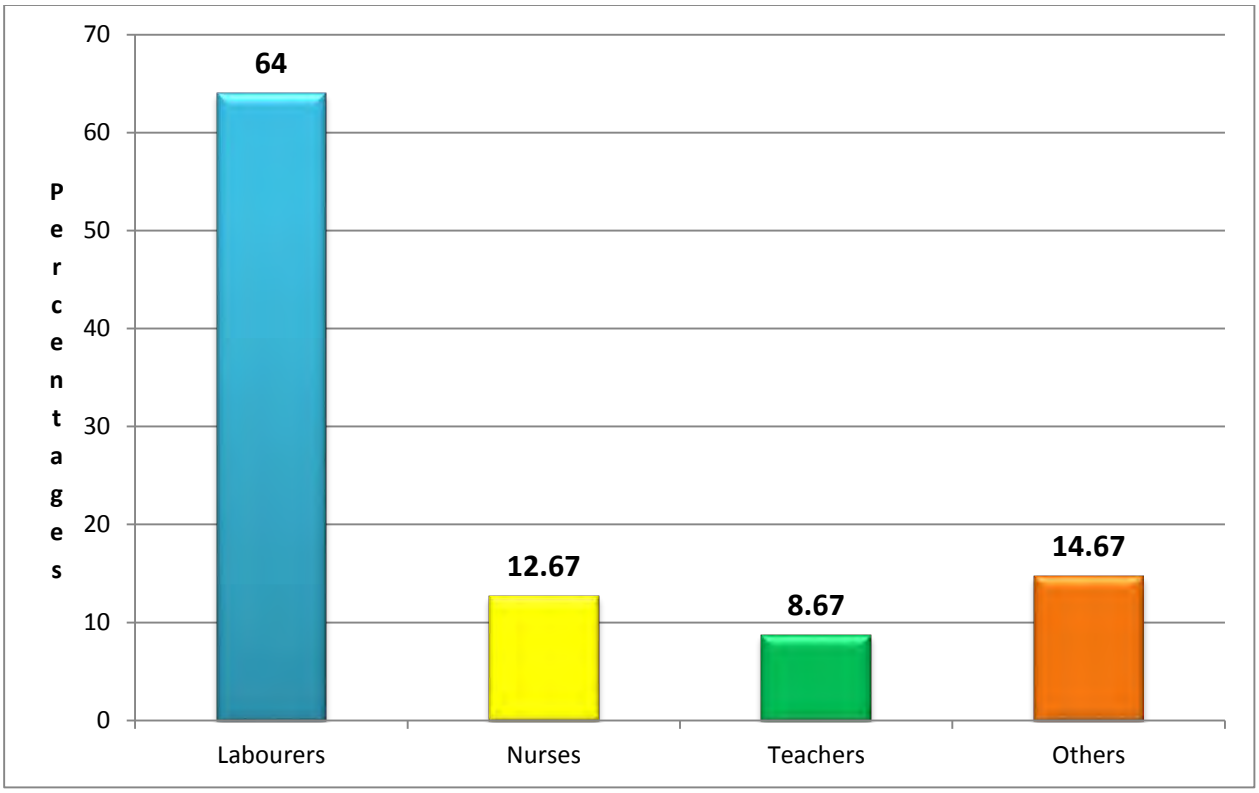

Figure 4. 7: Type of employment or occupation of the respondents (n=250)

4.2.1.9. The average income per month of the respondents (n=250)

A disturbing to note was revealed in the research, namely, regarding the majority of the respondents (n=80; 32%) who were earning less than R1 000.00 per month. The study showed that forty three (28.6%) were earning R1 000-R3 000 per month. Seven of the respondents were earning a reasonable level that is R3 000-R5000 per month and 20 (8%) more than R5 000.00 per month. The high cost of living observed in the past few years, has contributed to a salary of less than R3 000 per month being categorised as a low socioeconomic strata of our population. With a high cost of living being currently experienced in our country, the earning capacity of the majority (n=123; 82%) of the sample, is inadequate to maintain their baby, themselves and their family members.

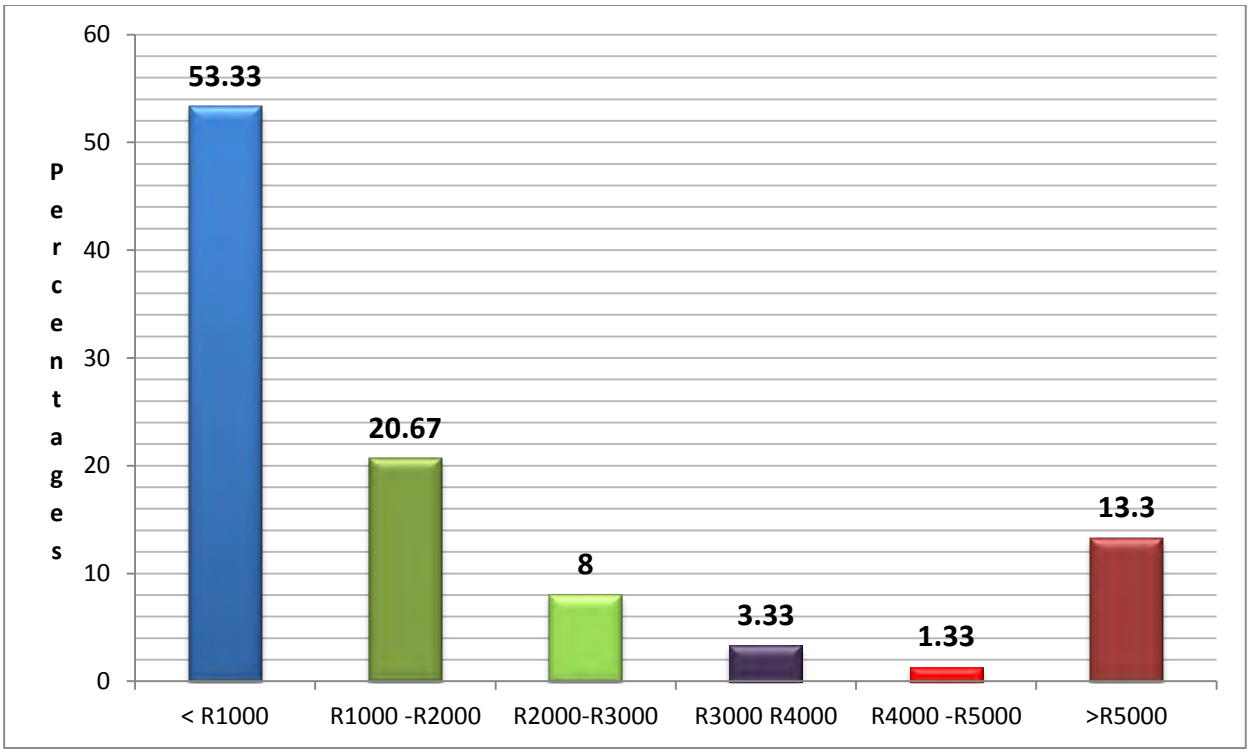

Figure 4. 8: Monthly income of the respondents (n=250)

4.2.1.10. Respondent partner or husband demographic data (n=250)

The following section presents demographic and socio-economic data of the partner/ husband of the 80 (32%) respondents. Demographic data of the partner/ husband regarding their different variables as presented in Table 4.3.

Table 4. 3; **Summary of demographic and socio-economic data of husband or partner (n=250)**

Variable	Frequency	Percentage
Age (years)	31 ±11.2 (18-58)	
Age groups		
18-22	19	7.6
23-27	67	26.8
28-32	71	28,4
33-37	54	21.6
38-42	28	11.2
➢ 42	11	4.4
Educational status		
Primary	10	4
Secondary	217	86.8
Tertiary	23	9.2
Employed		
Yes	185	74
No	65	26
Occupation (n=185)		
Labourer	154	83.24
Nurse	11	5.95
Teacher	2	1.08
Other	11	5.95
Police	7	3.78
Income (month) (n=190)		
< R1000	12	6.32
R1000-R2000	73	38.42
R2000-R3000	5	2.63
R3000-R4000	3	1.58
>R5000	97	51.05

4.2.1.11. The age of the respondents' partner or husband (n=250)

The mean (range) age of the partner or husband was 31 (18-58). The majority (n=138; 55.2%) of partners or husbands were aged between 23-32 years; 217 (86.8%) had secondary level educational, 185 (74%) were employed, 154 (83.24%) worked as labourers and 97 (51.05%) earned more than R5000.00 per month.

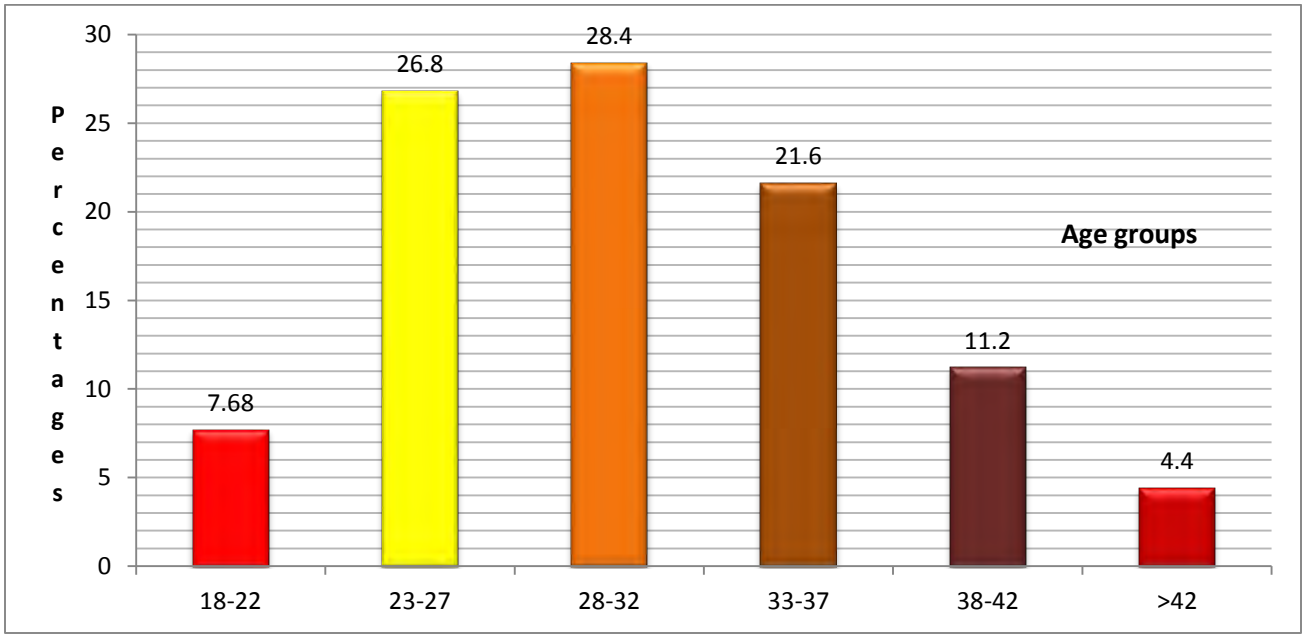

Figure 4. 9: Age groups of the respondents partner or husband (n=250)

4.2.1.12. The respondents partner's or husband's highest level of education passed (n=250)

Two hundred and seventeen (86.8%) of the partner or husband / had secondary level education, 10 (4%) had primary level education and 23 (9.2%) had a post matric degree or diploma. Evidently, education has become a priority among the diverse population groups which enables many of black men to acquire suitable employment, with adequate income to support their families. In addition, education can help men to understand the importance of safe sex, family planning, the problems associated with sexually transmitted infections including HIV infection (PMTCT) and the importance of family.

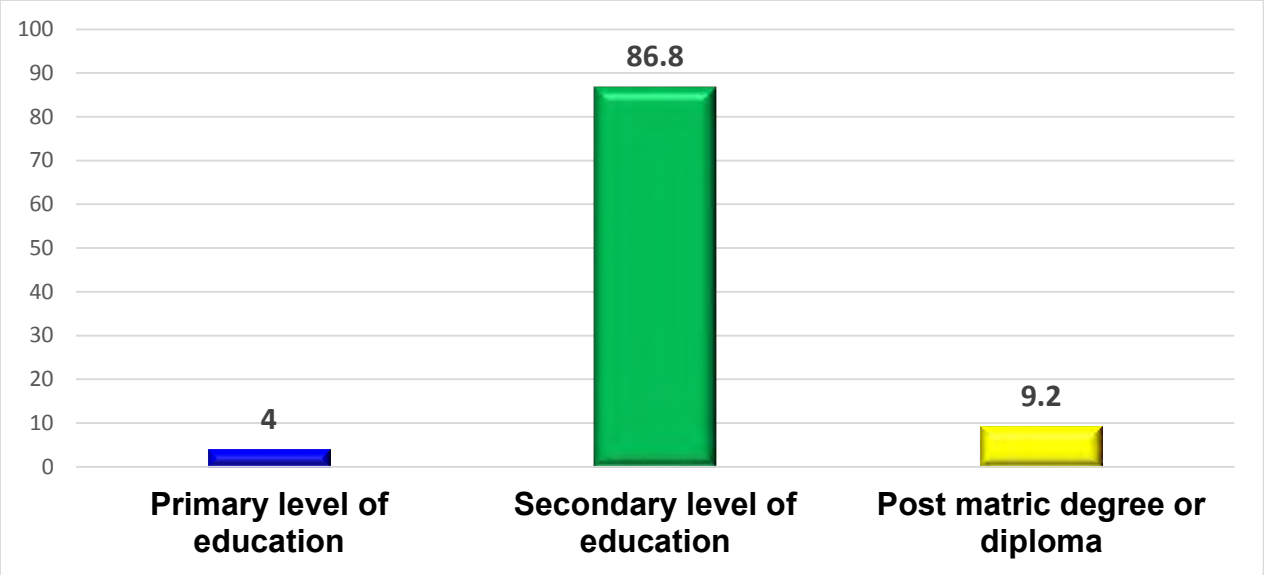

Figure 4. 10: Educational status of respondents partner or husband (n=250)

4.2.1.13. Employment status of respondent partner or husband (n=250)

One hundred and eighty five (74%) were employed and 65 (26%) were not employed.

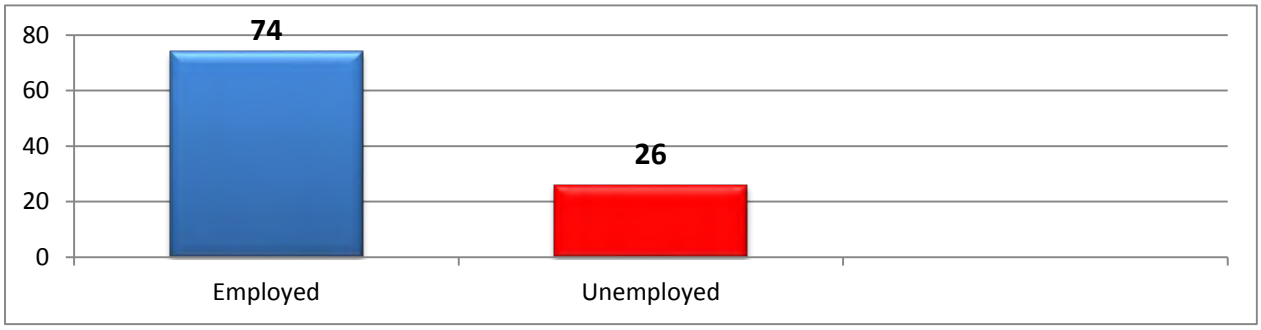

Figure 4. 11: Employment status of respondents partner or husband (n=250)

4.2.1.14. The employment of the respondents' partner or husband occupation (n=250)

One hundred and fifty four (83.2%) of the respondent partner s were employed as labourers, 11(5.9%) nurses, 2 (1%) teachers, 7 (3.7%) police and 11 (5.9%) were self-employed (tuck shop, or door to door vendors, and or sellers at fruit stalls).

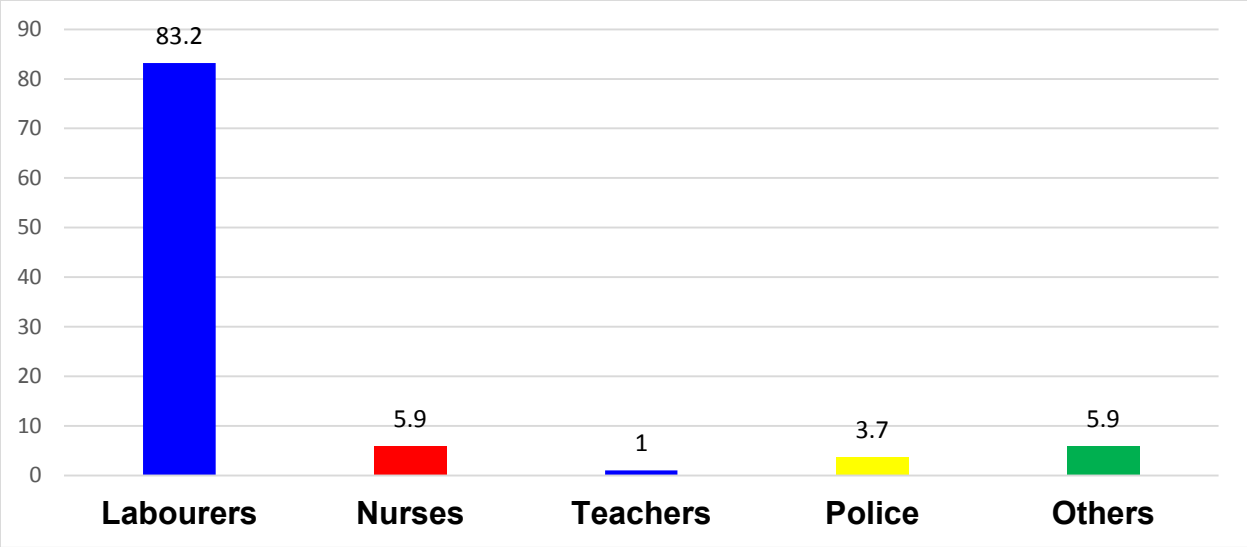

Figure 4. 12: Type of employment/occupation of respondent partner or husband (n=250)

4.2.1.15. The respondent partner's or husband's average income per month (n=190)

Ninety seven (51.05%) of husbands/partners earned more than R5000 per month, 73 (38.46%) earned between R1000 to R2000, 12 (6.49%) earned less than R1000 per month, 5 (2.7%) earned between R2000 to R3000 per month and 3 (1.62%) earned between R3000 to R4000 per month. Although the majority (n=97; 49.73%) of the partners earned a reasonable income, their salary mostly contributed to the care, in addition to the needs of the baby and the family.

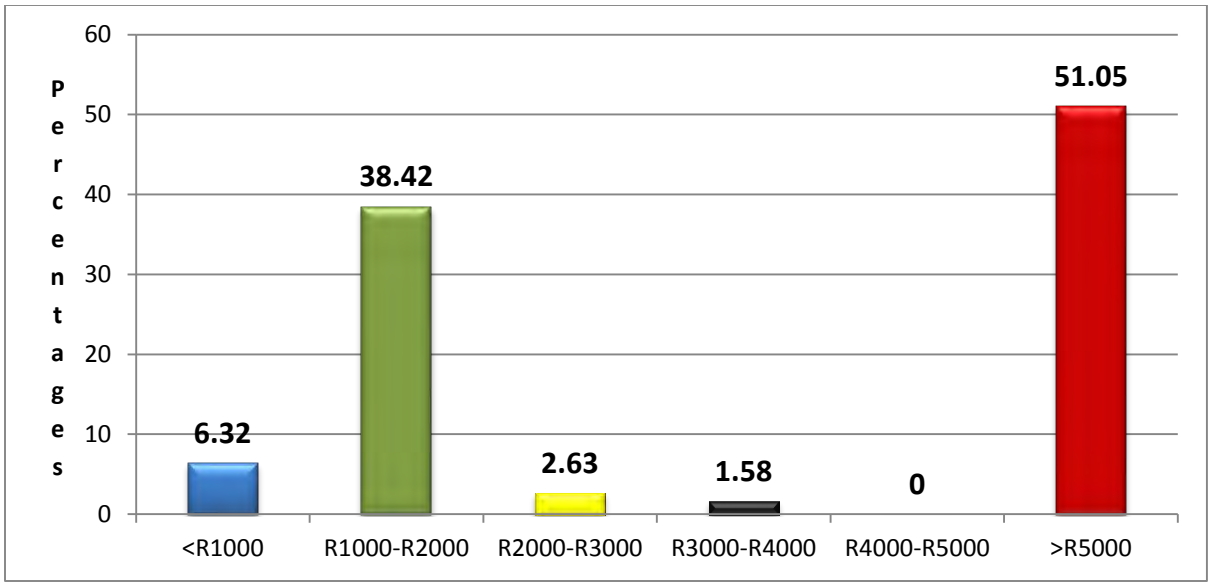

Figure 4. 13: Monthly income of respondent partner or husband (n=190)

4.2.1.16. The main bread winner or source of income in the respondents' families (n=250)

In 87 (44.6%) families, income was earned by the respondent and in 18 (9.2%) families the husband / partner was the main source of income, in 45 (23.1%) families the source of income was from other sources and 45 (23.1%) there was no source of income. Females are aptly termed as 'modern breadwinners' in many households. Females carry the responsibility of caring for the whole family provided they are employed. Most of our respondents were single mothers who basically could not rely on their partners for help and sought any type of employment to provide for the needs of their family. The responsibility in most households today falls on the mother. Surprisingly, all the partners or husbands, who were employed, provided a negligible contribution to the household expenditure.

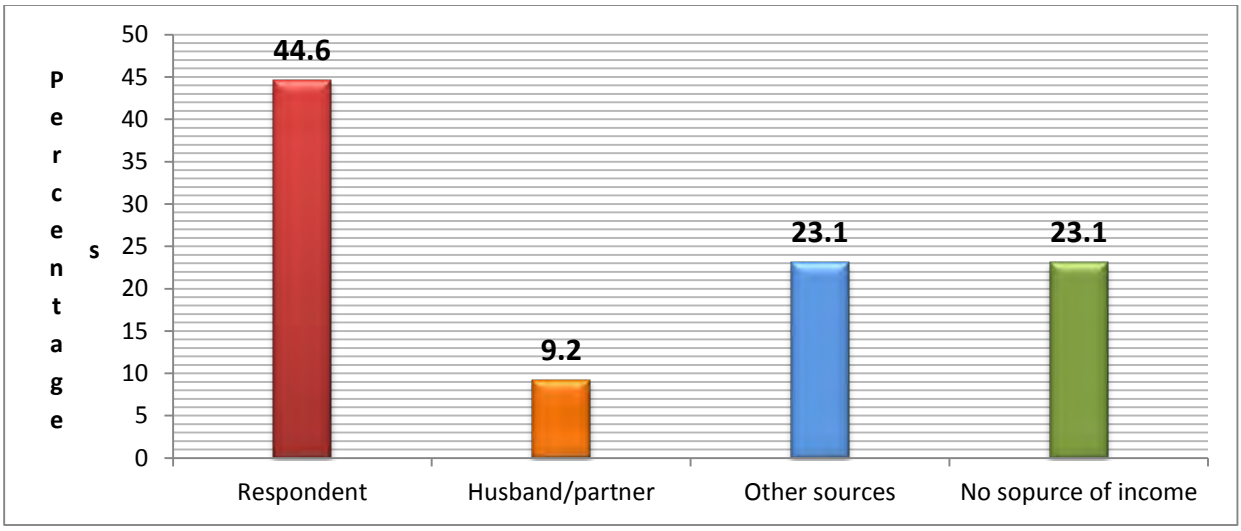

Figure 4. 14: Main bread winner in the family (n=250)

4.2.1.17. The family income per month of the respondents (n=250)

The family's income per month in one hundred and one (40.4%) families was between R1000-R2000, 97 (38.8%) families had a recorded income that was between R2000-R3000, in 15 (6%) families the income was between R3000-R4000, 13 (5.2%) families had an income of less than R1000 and in 24 (9.6%) families the income was over R5000.

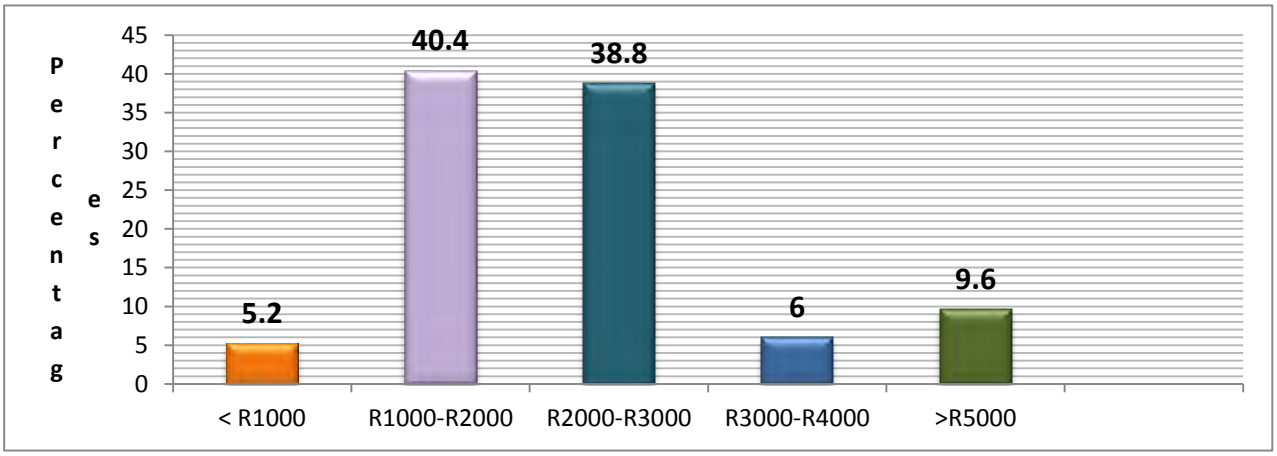

Figure 4. 15: Monthly income of the family (n=250)

4.2.1.18. Description of the area in which respondent reside (n=250)

The majority 195 (78%) of respondents were from urban areas and the remaining 55 (22%) resided in rural areas. This study was conducted in a regional hospital situated in an urban area. The respondents who were from rural areas were referred to the regional hospital for further management for different indications. These results indicate that higher level of care is not possible in rural areas.

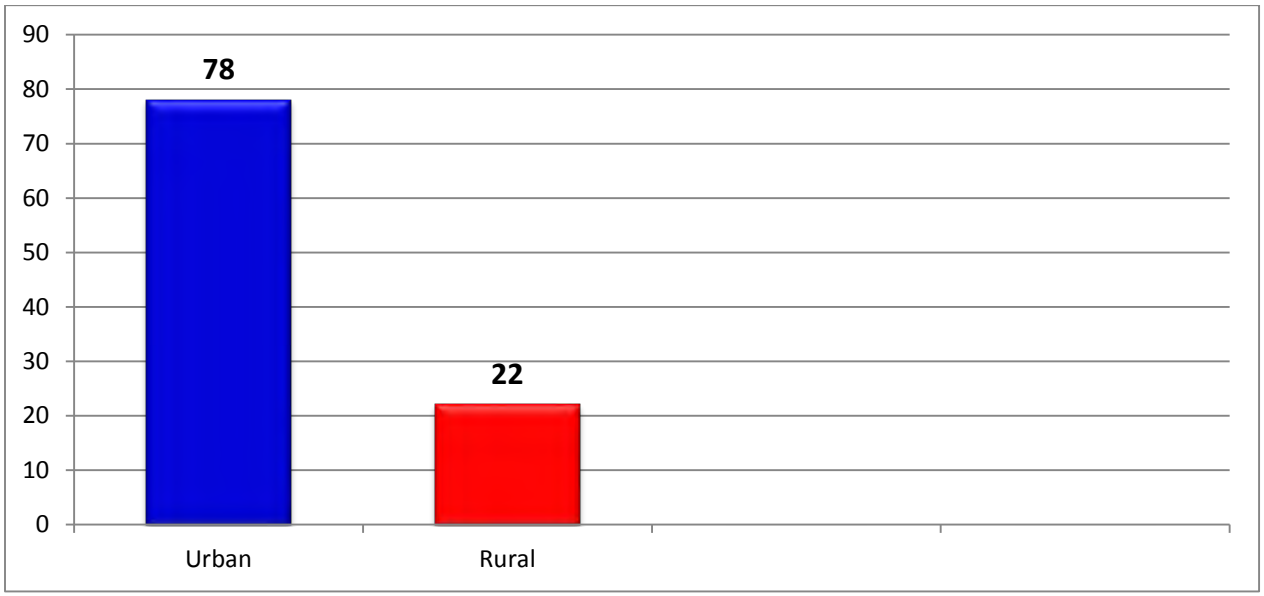

Figure 4. 16: Area of residence (n=250)

4.2.1.19. Where respondents obtained water for use household usage (n=250)

Water is an essential commodity in any household provided that the water is clean. In this study, all respondents reported that water was available in their household. In one hundred and fifty two families (61%) piped tap water was located outside the house and in 98 (39%) the piped taps were indoors. For those women who would opt to feed their babies with formula, feed clean tap water is essential not only for drinking purposes but also for preparing infant feed. Should the water be contaminated there is a risk not only to the baby but also to other members of the family. The source of water is a major problem for respondents living in rural areas where their source of water is from contaminated rivers and ponds. If the water is not boiled sufficiently enough to destroy

infective organisms the whole family becomes vulnerable to infections. Although all the respondents in our study had piped tap water, it is still advisable to boil the water especially when preparing the feed for the baby because the utensil might not be clean and this could contaminate the feed.

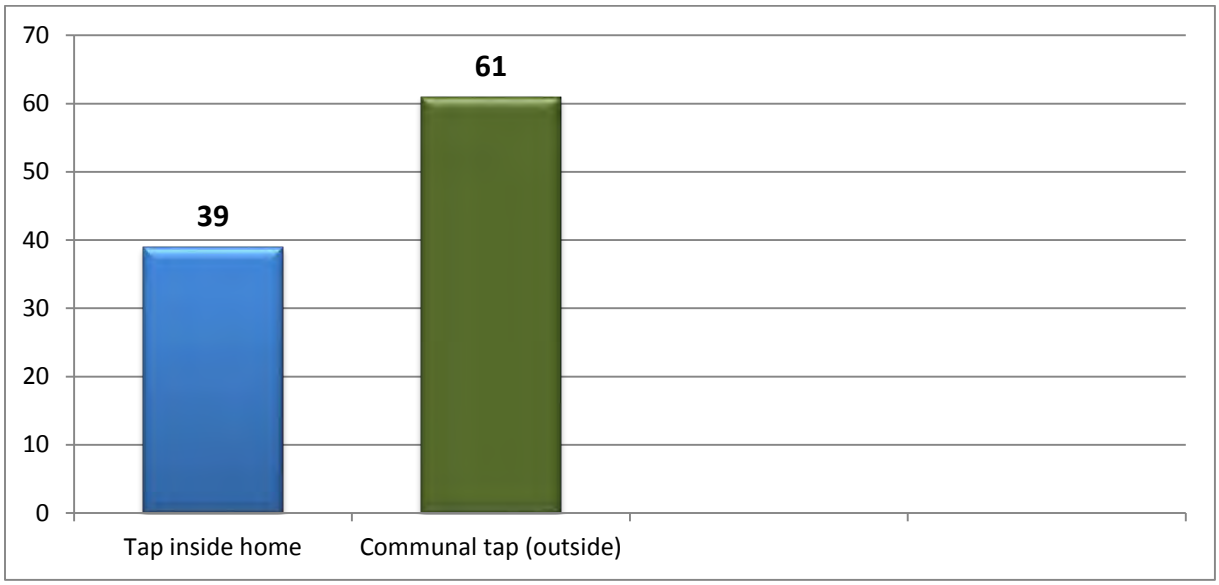

Figure 4. 17: Source of water (n=250)

4.2.1.20. The presence of a fridge in the home of the respondents (n=250)

Refrigerators are important kitchenware in any household for storing essential items that are perishable or food stuff that may contaminate easily e.g. fresh milk and formula. In this study, only 150 (60%) of the respondents had fridges in their homes while 100 (40%) did not have fridges. At the time of preparation of feed for the baby, all the ingredients, importantly, should be clean and wholesome. All the remaining over food including baby's milk can be kept in the fridge. In the case of the respondents who did not have fridges, all the food that was prepared had to be consumed at one time. In addition, working mothers who express breast milk before they go to work, may keep that milk in a refrigerator for future feed for the baby.

4.2.1.21. The presence of a separate area for cooking in the household (n=250)

Two hundred and forty eight families (99%) had a separate area for cooking in their home while in 2 (1%) families there was no separate area for cooking in their home. A separate cooking area in a home is associated with good hygiene and the majority of the respondents were fortunate to have such an area. Disturbingly, 2 families had no separate area for cooking which meant they cooked, ate and slept in the same area. Using one room as a place for all family activities is often unhygienic and causes congestion. In this case of overcrowding the family immediately becomes highly vulnerable to widespread infections.

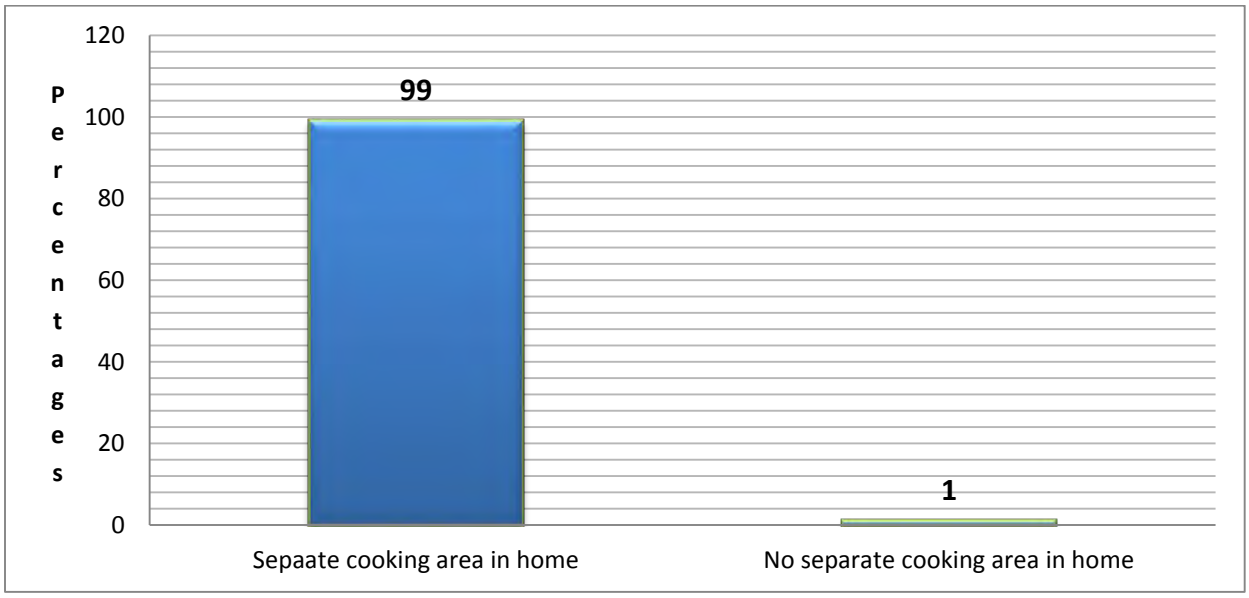

Figure 4. 18: Cooking area in homes of respondents (n=250)

4.2.1.22. Access to waste disposed in the area of the respondents' household (n=250)

The municipality disposed of waste materials from 246 (99%) homes and waste from 4 (1%) homes was disposed at a communal waste dump. Imperatively, the local municipality should dispose of all waste because a communal waste dump is hazardous to health. Therefore, the proper disposal of waste aids is necessary to implement in the prevention of infection and air pollution.

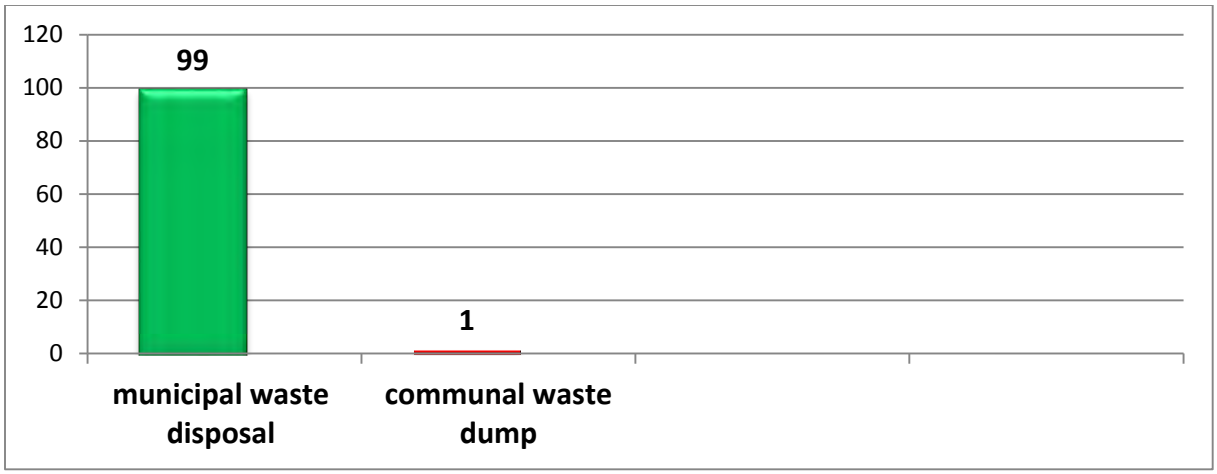

Figure 4. 19: Waste disposal (n=250)

4.2.1.23. The number of people sharing the respondents' household (n=154)

Ninety three (60.4%) of the 154 respondents lived together with their husbands, in laws and their children. Thirty six (23.4%) of the respondents lived with a boyfriend, parents or their children. Thirteen (8.4%) of the respondents lived with parents, grandparents and their children and 12 (7.8%) of the respondents lived with the respondents fiancé, other family friends and the women's children.

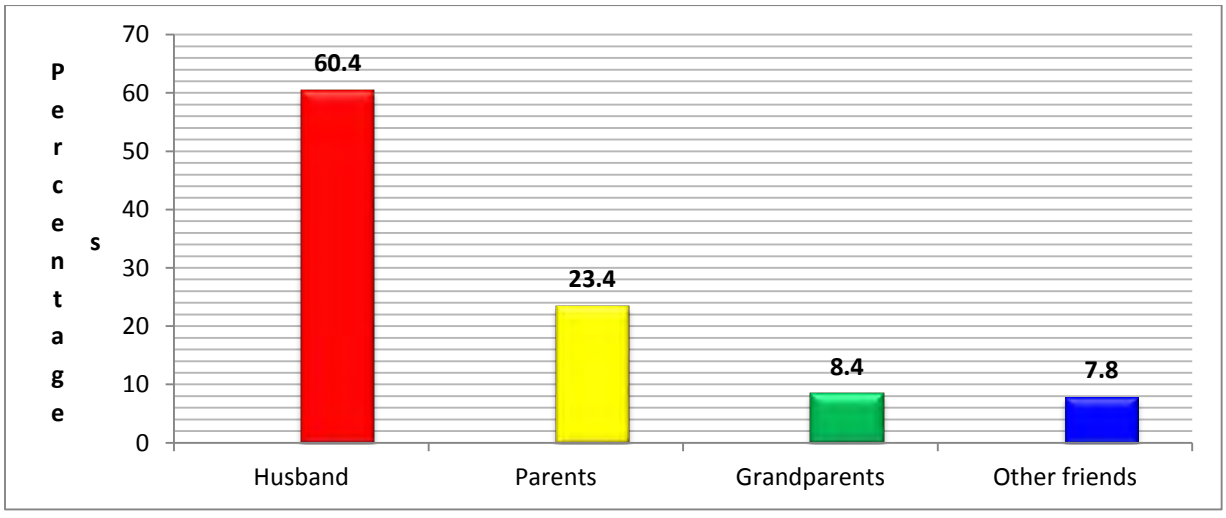

Figure 4. 20: Number of people living in the household (n=250)

4.2.1.24. The number of people, including the respondent, who live in her household (for at least three months of the year) (n=250)

In 146 (58.4%) households, each household had 8 to 10 family members, in 69 (27.6%) households each abode contained 5 to 7 family members and in 35 (14%) households each habitation encompassed 2 to 4 family members. The above mentioned figures included the respondents for a period of at least three months in the year of the data collection.

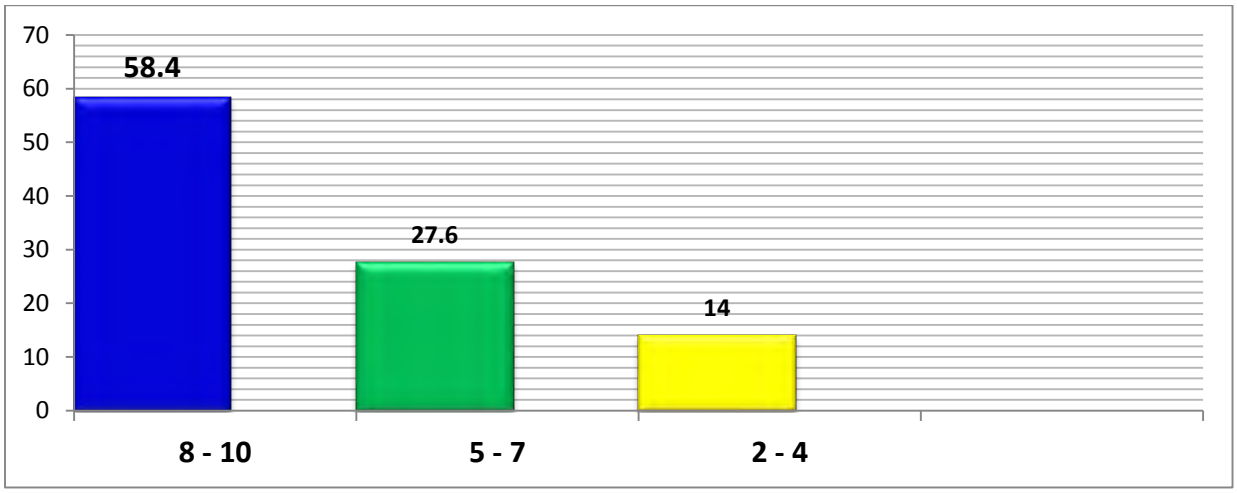

Figure 4. 21: Number of people living with you (n=250)

4.2.1.25. Parity of respondents who had children (n=250)

One hundred and fifty four (61.6%) of the 250 respondents had children while remaining 96 (38.4%) were pregnant for the first time.

4.2.1.26. Number of children of the respondents (n=250)

Forty seven (18.8%) of the respondents had five children, 58 (23.4%) of the respondents had four children, 97 (38.96%) of the respondents had three children, 30 (11.7%) of the respondents had two children and 18 (7.1%) of the respondents had one child.

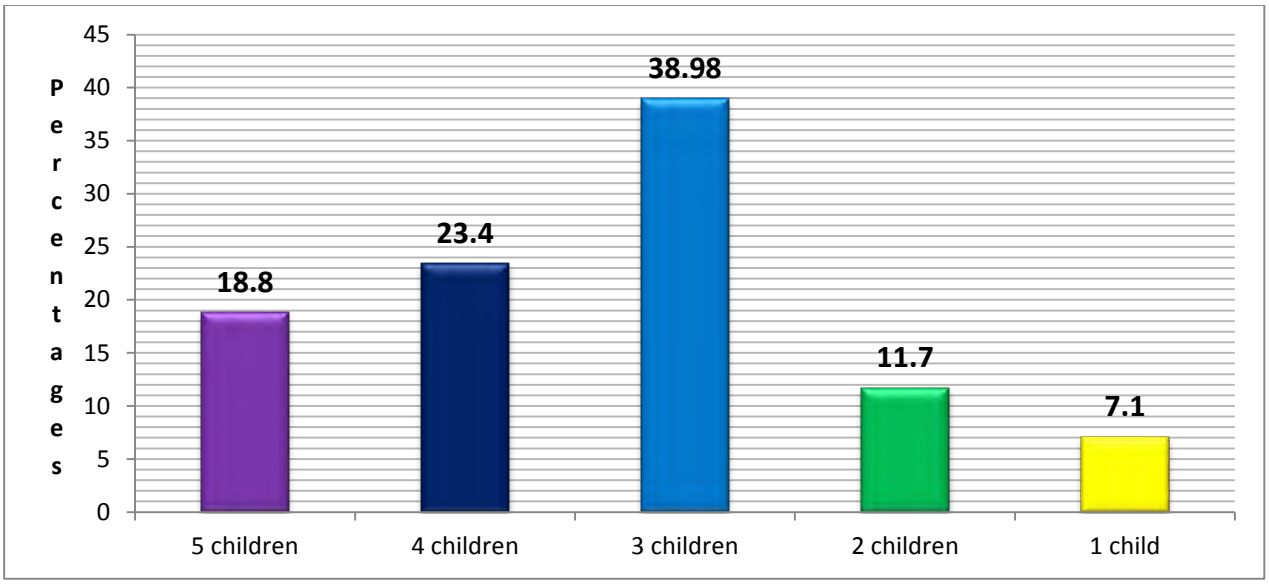

Figure 4. 22: Number of children of the respondents (n=250)

4.2.1.27. Last normal menstrual period of the respondents (n=250)

Twenty (8%) of the respondents had their last normal menstrual period about one year beforehand and 27 (10.8%) of the respondents had their last normal menstrual period about six months formerly, 22 (8.8%) of the respondents had the last normal menstrual period about 2 months ago and 181 (72.4%) of the respondents had the last normal menstrual period about a month earlier, that is about a month before the survey.

4.2.1.28. Expected date of delivery (n=250)

Ninety eight (39.2%) of the study respondents expected date of delivery was in the month of August of 2011 when data was collected, followed by 86 (34.4%) whose expected date of delivery would occur in January, 55 (22%) had an expected date for delivery on September and 11 (4.4%) respondents had an expected date of delivery in December.

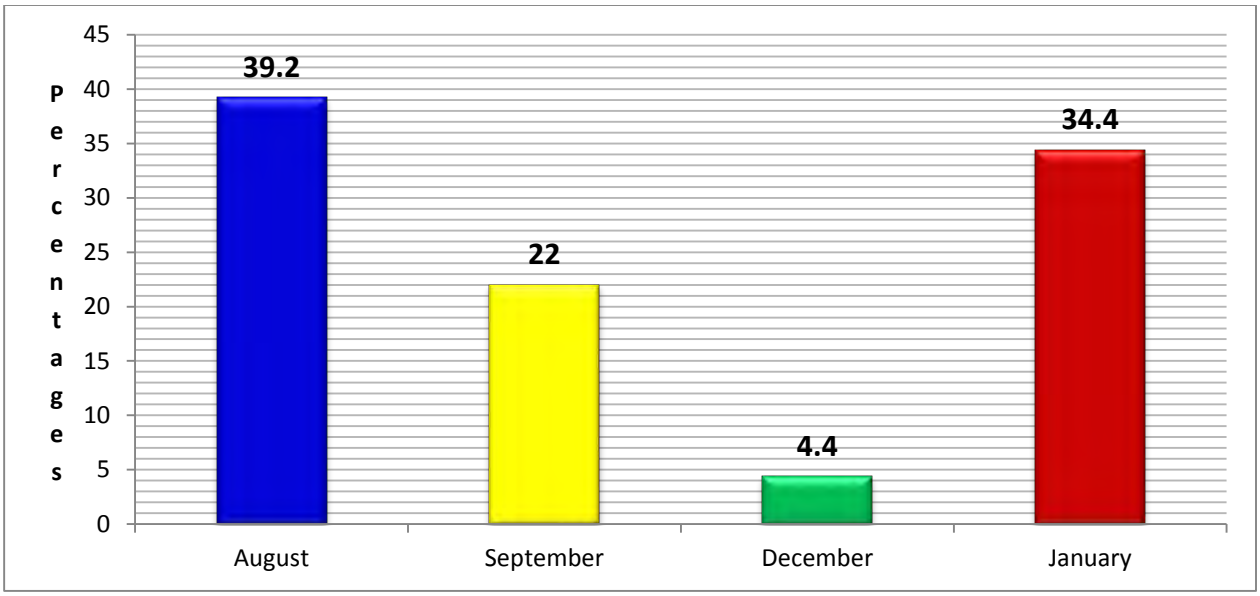

Figure 4. 23: Expected date of delivery in current pregnancy of the respondents (n=250)

4.2.1.29. Respondents booking status (in weeks) for first antenatal care in the current pregnancy (n=250)

Twenty eight (11.2%) of the respondents booked at 12-14 weeks for antenatal care, 36 (14.4%) booked at 16-18 weeks, 77 (30.8%) booked at 20-24 weeks, 109 (43.6%) booked at 28-30 weeks. Antenatal care is free of cost in SA but pregnant women patients still book late for antenatal care. The recommended number of visits is 4 and according to the results only 64 (25.6%) of the respondents will achieve the recommended number of visits of 4.

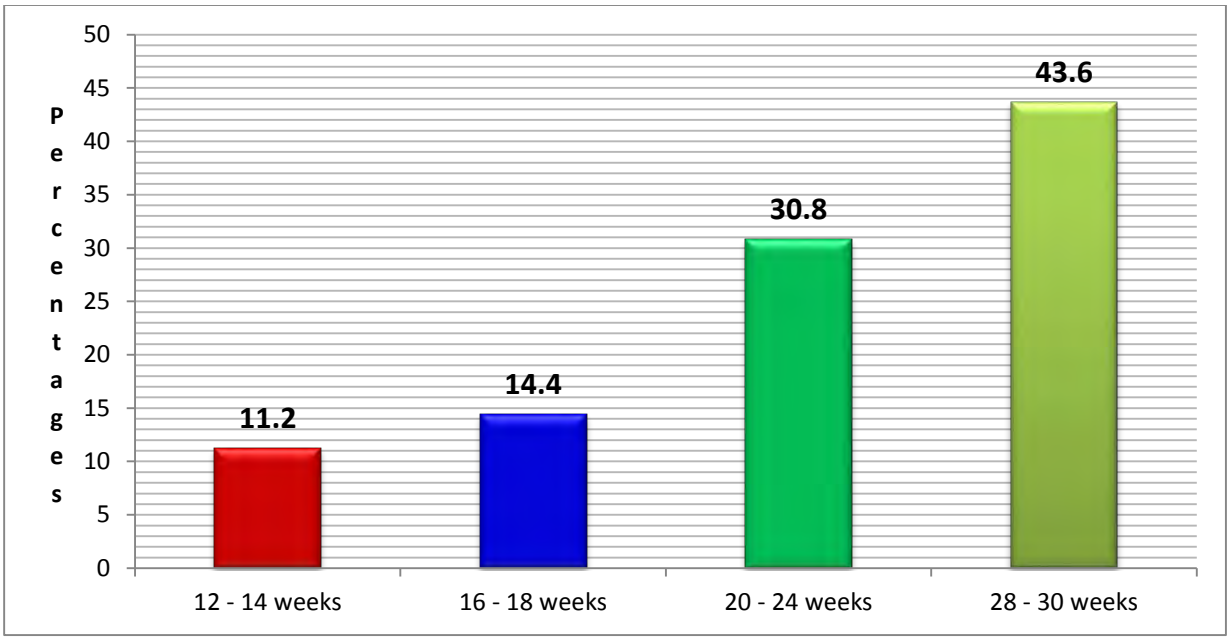

Figure 4. 24: Booking status (in weeks) for first antenatal visit in the current pregnancy (n=250)

The results of the following sections, B to F will be presented according to the HIV status of the pregnant woman who was part of the study.

4.3. SECTION B: KNOWLEDGE OF PREGNANT WOMEN ON HIV AND TRANSMISSION OF THE HIV VIRUS

4.3.1. Formal tuition of the respondents about HIV (n=250)

All the respondents (n=250; 100%) were taught about HIV. One hundred and four (42%) were infected with the HIV virus while the remaining 146 (58%) were uninfected with the HIV virus.

4.3.2. The respondents' knowledge of transmission of HIV from one person to another (n=250)

- **HIV infected respondents (n=104)**

One hundred and four (42%) of the HIV infected pregnant women strongly agreed that HIV was transmitted though sex, sharing of razor blades, contact with blood and sores on the breast. In addition, four respondents indicated that they agreed that HIV infection is transmitted by kissing and saliva. All the respondents (n=104; 100%) strongly agreed that hugging, sharing of utensils and sharing a bath did not play any role in the transmission of the HIV infection.

- **HIV uninfected respondents (n=146)**

One hundred and forty six (100%) of the pregnant women who were uninfected with the HIV virus strongly agreed that HIV disease is transmitted through sex and contact with blood. In addition, twelve of the respondents indicated that they agreed that the HIV infection could be transmitted by kissing and saliva. Most of the respondents (n= 141; 96.6%) strongly agreed that hugging, sharing of utensils and sharing a bath did not play any role in the transmission of the HIV infection while the remaining 5 (3.4%) of the respondents did not respond to this particular question.

After 40 years since the first outbreak of the HIV infection, a few women (n=16; 6.4%) were still of the belief that HIV is transmitted through kissing and saliva, this indicates that some of the respondents were not sure about the mode of transmission of HIV.

4.3.3. Record of the knowledge of respondents of how the HIV virus spreads from the mother to the baby during pregnancy

- **HIV infected respondents (n=104)**

All one hundred and four (100%) of the respondents infected with the HIV virus strongly agreed that transmission of the HIV virus occurred from mother to child at the time of pregnancy, during delivery and through breastfeeding. All the respondents (n=104; 100%)

strongly agreed that formula feeding had no role in the transmission of the HIV virus. All HIV infected women (n=104; 100%) were familiar with modes of transmission of the HIV virus. This information was most probably acquired during the PMTCT sessions at the dedicated HIV clinic.

- **HIV uninfected respondents (n=146)**

One hundred and four (71.2%) of the 146 respondents, who tested negative for the HIV virus, strongly agreed that transmission of the virus occurred at delivery and breast feeding while the remaining 42 (28.8%) of respondents agreed that transmission happened primarily through breastfeeding. All the respondents (n=146; 100%) strongly agreed that formula feeding had no role in the transmission of the HIV virus.

These results show that the majority of women (n=104; 71.2%) not infected with the HIV virus had knowledge about the mode of transmission of the HIV virus which occurs through breast feeding and during delivery. However, the remaining 42 (28.8%) indicated that transmission occurred primarily through breast feeding. None of the HIV negative respondents (n=146; 100%) who were uninfected with the HIV virus mentioned that the virus can be transmitted during pregnancy.

4.3.4. The knowledge held by respondents about preventing the transfer of HIV from mother to the child

- **HIV infected respondents (n=104)**

All (n=104; 100%) of the respondents stated that breastfeeding for the first six months was essential. In addition, 72 (69.2%) of 104 respondents stated that they would not use formula and 32 (30.8%) 104 respondents stated they would not mix feed.

- **HIV uninfected respondents (n=146)**

All (n=146; 100%) stated that breast feeding would be used as the only choice of feeding method. One hundred and twenty three (84.24%) stated that they would breast feeding for 6 months and 23 (15.76%) stated that breast feeding would continue for one year.

The previous section dealt with modes of transmission from person to person and from mother to child and the following chapter deals with methods of prevention of HIV from mother to child through nutrition

4.4. SECTION C: ATTITUDES OF PREGNANT WOMEN AND THEIR IN LAWS TOWARDS PMTCT THROUGH INFANT FEEDING METHODS

4.4.1. Respondents' beliefs about PMTCT

- **HIV infected respondents (n=104)**

All 104 (100%) pregnant women infected with the HIV virus responded that PMTCT program concerned both the mother and baby.

- **HIV uninfected respondents (n=146)**

In the HIV uninfected respondents the response varied, 101 (69.2%) of the 146 respondents reported that the PMTCT concerned mother and the baby while 45 (30.8%) of the respondents thought that the PMTCT concerned the baby.

4.4.2. Attitude of the in-laws regarding infant feeding practices

- **HIV infected respondents (n=104)**

In the HIV infected group, 72 (69.2%) of the 104 respondents stated that their in-laws preferred bottle feeding, while 32 (30.8%) of the respondents indicated that their in-laws had a negative attitude towards bottle feeding. This may be due to the fact that that the in laws may not have had any dwell with in-laws while 32 (30.8%) of the respondents lived with their in-laws. Eighteen (56.3%) of the 32 respondents, who resided with their in-laws knowledge about HIV and PMTCT or feasibly the respondent did not disclose her HIV status to her in laws.

- **HIV uninfected respondents (n=146)**

One hundred and one (69.2%) of the 146 respondents were single and did not reside with in-laws while 45 (30.8%) stayed with their in-laws. Thirty six (80%) of the 45 respondents who lived with their in-laws stated that their in-laws preferred bottle feeding while 9 (20%) stated that in-laws were in opposition to bottle feeding.

In any racial group the family members play an important role in decision making and the upbringing of the child. Specifically, in the target group the respondents tended to agree with their elders regarding the best method to feed the baby, the matter of how the baby is fed is a joint family decision in this study. This finding implies that most respondents have good family backup and support.

4.4.3. Record of participation of the respondents in a PMTCT program

In HIV infected respondents (n=104),

One hundred and four (42%) of the respondents, who were infected with HIV virus replied that they attended programmes on PMTCT about the HIV virus opposed to 146 (58%) who were uninfected with the HIV virus and did not participate in any PMTCT program.

The previous section, Section C presented the results of the respondents that deals with the PMTCT whereas Section D that follows presents results about practices that pregnant women intended to follow as a method of feeding their infants.

4.5. SECTION D: PRACTICES THAT PREGNANT WOMEN INTENDED TO FOLLOW AS A METHOD OF FEEDING THEIR INFANTS

This section presents the results about practices that pregnant women intended to follow as a method of feeding their infants. These results will also be presented according to the HIV status of the pregnant women who were part of the study.

4.5.1. Practices that the respondents intended to follow as a method of feeding

- **HIV infected respondents (n=104)**

Forty eight (46%) of the patients indicated that they will exclusively breastfeed their infants; 34 (33%) will adopt the mixed feeding method that is breastfeeding and formula, while 22 (21%) will use the replacement feeding method milk they are provided with e.g. Nan. This finding indicates that most respondents, who were infected with HIV preferred to breast, feed their babies rather than implement artificial feeding.

- **HIV uninfected respondents (n=146)**

Ninety seven (66%) of the women, uninfected with the HIV virus reported that they will exclusively breastfeed the baby. Thirty three (23%) will adopt the mixed feeding that is breastfeeding and formula feed and the remaining 16 (11%) will opt for replacement feeding. This result indicates that respondents, who were not infected, preferred breastfeeding, as opposed to mixed or replacement feeding.

The respondents in both groups would give their babies medication provided by the hospital / clinic and did not give their infants vegetable or fruit, traditional medicines, tea or juice or animal milk. This shows that respondents knew that they should not mix feed. Thus there were two infant feeding groups. One hundred and forty four (57.6%) breastfed their infants and 106 (42.4%) would resort to artificial feeding.

Table 4. 4: Feeding plans for baby (n=250)

Plans for feeding method	HIV uninfected respondents (n=146)		HIV infected respondents (n=104)	
	Frequency	Percentage	Frequency	Percentage
Exclusive breast feeding	97	66.4%	48	46.2 %
Mixed feeding	33	22.6 %	34	32.7 %
Replacement feeding	16	11 %	22	21.1 %

4.5.2. The respondents' chosen method of feeding milk for the baby

- HIV infected respondents (n=104)

Forty eight (46.2%) of the pregnant women would breast feed their babies. Fifty six (53.8%) of the pregnant women would use different modes to feed the baby. Twenty eight (50%) of the 56 pregnant women used infant milk bottles for feeding; 19 (34%) spoon-feed and 9 (16%) cup-feed their baby.

- **HIV uninfected respondents (n=146)**

Ninety seven (66.4%) of the respondents breast would breast their infants. Forty nine (33.6%) of the respondents would use utensils to feed their baby. Thirty one (63.3%) of the 49 respondents used bottles for feeding; 11 (22.4%) would use spoons and 7 (14.3%) cups to feed their baby. The outcome indicates that among the HIV uninfected respondents, the respondents would prefer bottle feeding as opposed to utensils.

4.5.3. Method of cleaning the container after use (n=250)

All 250 (100%) respondents in both the HIV infected and HIV uninfected pregnant mothers indicated that they would either use bottles, spoons or cups to feed their baby.

- **HIV infected respondents (n=104)**

Ninety eight (94.23%) of the respondents would clean and wash the bottle, spoon or cup with warm water and soap after each item was used, while 6 (5.77%) respondents would boil the bottle, spoon or cup after they had washed the article.

- **HIV uninfected respondents (n=146)**

One hundred and thirty one (89.73%) of pregnant mothers would wash the bottle, spoon or cup and then immerse the item in warm water while the remaining 15 (10.27%) of the pregnant mothers would wash the object before every use.

All the respondents (n=250; 100%) stated that they would clean and wash the bottle, spoon or cup with warm water and soap after each use. None of the pregnant mothers in both the HIV infected and the HIV uninfected mothers mentioned immersing the washed utensils in Milton solution that contains an antiseptic or an antibacterial agent to make sure the utensils were clean and germ free.

4.5.4. What to be done when the baby gets sick (n=250)

- **HIV infected respondents (n=104)**

Eighty nine (85.6%) of the pregnant mothers stated that they will take her sick child to a clinic for medical attention while the remaining 15 (14.4%) would convey the sick child to a hospital for medical help.

- **HIV uninfected respondents (n=146)**

One hundred and forty three (97.9 %) stated that they would accompany the sick child to the nearby clinic or hospital, while the remaining 3 (2.1 %) would take the sick baby to the clinic. This consequence indicates that most respondents were more comfortable with the health care services, as opposed to taking them to traditional healers, when the baby becomes sick.

The following section deals with responses regarding respondent's sources of information regarding HIV.

4.6. SECTION E: SOURCES OF INFORMATION FOR PREGNANT WOMEN ON HEALTH RELATED ISSUES AND HIV

4.6.1. The respondents with HIV reveal their health information and infant feeding advice options to the members of the health team

- **HIV infected respondents (n=104)**

Eight seven (87.65%) of the 104 HIV positive respondents would give their HIV and AIDS results to the nurses and 17 (16.35%) of the respondents would discuss their HIV/AIDS result with the doctor.

- **HIV uninfected respondents (n=146)**

One hundred and six (72.6%) of the respondents would give their HIV/AIDS result to the nurse and 33 (22.6%) to the doctor and 7 (4.8%) to the lay counsellor. These results indicate that the respondents were more comfortable in giving their HIV/AIDS result, a sensitive issue, to nurses and doctors and to a lesser extent to the lay counsellors.

4.6.2. THE SOURCE OF ADVICE ON WHAT TO FEED THE BABY

- **HIV infected respondents (n=104)**

Sixty one (58.65%) of the respondents were advised by nurses or midwives and 43 (41.35%) by HIV and AIDS counsellors.

- **HIV uninfected respondents (n=146)**

One hundred and fifteen (78.77%) of the women were advised by family members which included the husbands and 31 (21.23%) by nurses or midwives.

This tendency indicates that respondents who were infected with the HIV virus were advised by health care workers when they attended the PMTCT program while the majority (n=115; 79%) of respondents not infected with HIV virus, received the information mostly from family members.

The friends played no role in delivering the results of the respondents' status. Although the mothers were informed appropriately on feeding methods for the baby, the mothers finally makes the ultimate decision of the feeding method based on the availability and circumstances.

4.6.3. Reading books and watch television programme on HIV by the respondents

- **HIV infected respondents (n=104)**

All 104 (n=100%) respondents stated that they read books given to them at the PMTCT sessions and watched TV serials and advertisements about HIV.

- **HIV uninfected respondents (n=146)**

One hundred and two (69.9%) of the pregnant women stated that they read books and watched television programmes on various aspects of the HIV disease. Forty four (30.1%) of the respondents did not respond to this question.

Ninety seven (66.4%) of the 146 HIV negative respondents had adequate sources of information and were knowledgeable about the mode of transmission of the disease, how infection takes place and the precautions that need to be taken to prevent exposure to the disease.

4.7. SECTION F: FACTORS INFLUENCING CHOICE OF INFANT FEEDING METHOD

4.7.1. Important considerations that the respondents held as vital when they decided on the type of infant feeding method for their baby

respondents selected from the following: not to transmit the virus to their baby / make sure nobody finds out the respondent is HIV positive / to feed the baby the same way friends do / to feed the baby the same way their mother/grandmother did / to get the milk free / the opinion of your husband / fiancé / boyfriend / the opinion of your family/ the opinion of friends / the opinion of the sisters at hospital / clinic / media reports on bottle feeding.

This section presents the results from the respondents that were only required to respond to what was important to them at the time of deciding on the method of their infant feeding only, not on all the alternatives that were given in the questionnaire.

- **HIV infected respondents (n=104)**

Most (anonymity, n=73; 70.2%) of the mothers felt the importance of nobody found out that they were infected with the HIV virus. Thereafter, followed the concern not to transmit the virus (MTCT, n=96; 92.0%). Some respondents (n=46; 44.2%), indicated that they wanted to feed their babies in the same way their friends did. Others (n=43; 41.3%), planned to feed their baby the same way as their mother / grandmother did while in some instances the respondent wanted free milk (n=31; 29.8%). For (n=22; 21.2%) of the respondents, the opinion of her husband/fiancé/boyfriend carried weight. In (n=47; 45.2%) of the cases, the opinion of the woman's family would be of consequence. A further (n=17; 16.3%) women expressed the opinion that her friends held importance. Lastly (n=11; 10.6%) assumed that the sisters at hospital / clinic or media reports on bottle feeding would guide their decision (n=3; 2.9%). These factors need consideration when the HIV infected women are counselled.

- **HIV uninfected respondents (n=146)**

Most (anonymity, n=96; 65.8%) of the mothers felt that nobody should find out about their HIV status. Thereafter followed not to transmit the virus (MTCT, n=91; 62.3.%) , to feed your baby the same way your friends do (n=34; 23.3%) , to feed your baby the same way your mother/grandmother did (n=49; 33.6%), to get the milk for free (n=51; 34.9%), the opinion of your husband/fiancé/boyfriend (n=32; 21.9%), the opinion of your family (n=77; 52.7%), the opinion of your friends (n=27; 18.5%), the opinion of the sisters at hospital/clinic (n=21; 14.4%) or observing media reports on bottle feeding (n=1; 0.7%).

4.6.2 How do most of your friends feed their baby?

Among the options of how do most of your friends feed the baby were: the free NAN milk provided / other tinned milk (S26, Lactogen) / breast milk / animal milk such as cow or goat milk.

- **HIV infected respondents (n=104)**

The friends choice of feed to nourish their baby were free NAN (n=14; 13.5 %), S26 or Lactogen (n=21; 20.2%) breast milk (n=47; 45.2%) animal milk (cow / goat) (n=5; 4.8%) and porridge (n=17; 16.3%). In the previous paragraph 18.5% of the respondents said it was important to them, when making a feeding choice, to feed their babies the way their friends do.

- **HIV uninfected respondents (n=146)**

The friends' choice of feeding to nourish the baby were free NAN (n=18; 12.3%), S26 or Lactogen (n=19; 13.0%) breast milk (n=97; 66.4%) animal milk (cow / goat) (n=1; 0.7%) and porridge (n=11; 7.5%). In the previous paragraph 18.5% of the respondents said it was important to them, when making a feeding choice, to feed their babies the way their friends do. This choice indicates that breast feeding was the most popular choice of feed to nourish the baby in both the groups.

4.7.2. Are you not going to feel guilty for whatever method you plan to choose?

- **HIV uninfected respondents (n=146**)

All (n=146; 100%) pregnant women were happy about the feeding method chosen for their infant.

- **HIV infected respondents (n=104)**

Eighty four (80.77%) of the HIV infected pregnant women were happy about the feeding method chosen for their infant while 20 (19.23%) of pregnant women felt guilty about their choice.

This results shows that a small (n=6; 5.8%) of HIV infected women were sensitive to this issue and some of the choices she will make may be forced upon her such as unacceptability and / or affordability of the type of infant feeding method planned to be chosen.

4.7.3. Attitude of the people at home towards 'bottle feeding' the baby

- **HIV uninfected respondents (n=146)**

One hundred and ten (75%) of the respondents stated that their family members were very much in favour of bottle feeding while the remaining 36 (25%) were in favour of bottle feeding.

- **HIV infected respondents (n=104**)

All the family members were in favour of bottle feeding. In both the groups families were very much in favour of bottle feeding. These responses could be due to the fact mothers were employed and the baby was cared for by other family members. This is understandable. Possibly, the HIV infected mothers did not disclose her HIV status to her family or that families did not understand the benefits of breastfeeding during first six months of the infant's life. Overall the results show the impact of family members in decision making regarding the method of feeding.

4.7.4. Who taught you how to prepare milk?

- **HIV infected respondents (n=104)**

Sixty nine (66.3%) of the women were advised by HIV/AIDS counsellors. 11 (10.6%) women were told by family members and 24 (23.1%) by a nurse/ sister about how to make milk. The majority (n=89.4 %) of the HIV infected mothers were advised by health care workers on methods used to prepare milk prior to feeding the baby.

- **HIV uninfected respondents (n=146)**

One hundred and twenty seven (86.9%) of the respondents stated that they were advised by the family members about how to make milk; 19 (10.9%) by the nurses and midwives. The above mentioned women did not attend a HIV clinic as most of respondents were single mothers staying with families, so as expected the respondent's family did impact on the decision the woman made regarding the well-being of the baby. The friends did not play a role in advising the respondents how to make milk.

4.7.5. Who told how much milk your baby should get?

- **HIV infected respondents (n=104)**

Respondents were advised by nurses (n=26; 25%), (n=48; 46.2%), family / friends informed her (n=12; 11.5 %), looked at back of the tin (n= 18; 17.3%) gave the baby as much as he/she will take (n=0) guessed on the amount.

- **HIV uninfected respondents (n=146)**

Ninety nine (67.8%) of the pregnant women consulted their family / friends about how much milk the baby should obtain. The women also learnt how to prepare the milk prior to feeding the baby. 15(10.3%) were advised by the nurses and 32 (21.9 %) will give the baby much as feed he / she will take.

The families play an important role in choices about infant feeding primarily because they know how to feed children, the family members are more experienced and their advice makes the respondents more comfortable.

4.8. CONCLUSION

This chapter presented a comprehensive review of the results obtained from the analysis of data. The key results included pregnant women's knowledge about HIV and HIV transmission, the attitudes of pregnant women towards PMTCT through infant feeding methods, the complexity of a pregnant woman's choice of the methods of feeding for the infants and factors that influence choice. The following chapter covers the discussion, the conclusion and recommendations to the study.

CHAPTER FIVE

DISCUSSION OF MAJOR RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

5.1. INTRODUCTION

A questionnaire based research design was employed to explore the knowledge, attitude and practice of pregnant women's infant feeding methods for PMTCT transmission of HIV in a Regional Hospital of eThekwini District. The key results of this study are presented based on the research objectives of this study and further compared with the results of the other relevant studies done elsewhere.

5.2. DEMOGRAPHIC, SOCIOECONOMIC STATUS OF THE RESPONDENTS

Two hundred and twenty five (90%) were single, 245 (98%) were Black. Two hundred and seven (84.5%) had a good educational background, 240 (96%) were of Christian faith and 195 (78%) were stayed in urban areas. The poor socio-economic status of the household probably influenced the choice of feeding for their infants in this study. Research has established in the field that breast feeding counseling becomes more complicated in LMIC where HIV rates are extremely high. A major problem in LMIC is that most of the HIV infected women do not have the resources for safe replacement feeding, and instead choose to exclusively breastfeed (Swarts, Kruger and Dolman, 2010).

Doherty et al (2006b) mentions two issues that influence the mothers' infant feeding practices, namely, their own beliefs about breast feeding and their experiences of antenatal counselling. It is well known that exclusive breastfeeding not only decreases the transmission of the virus from HIV infected mother to child but also prevents child mortality (Bhutta, Ahmed, Black, Cousens, Dewey, Giugliani et al., 2008: 417). However, most alarming is the low exclusive breast-feeding rate and exceptionally high administration of supplementary feed to infants indicated in this study. In a recent study

involving 209 HIV infected mothers, 187 (89%) of the mothers followed infant feeding practices as recommended by counselors while 22 (11%) opted for mixed feeding (Muluye et al., 2012: 79) and factors that influenced their choice of infant feeding options were a lack of resources, husband opposition and the stigma associated with being HIV positive.

The mean age of our HIV infected mothers was 26.5 (range: 18-44) years which is in keeping within the age of the HIV infected population in the province of KZN, where HIV infection rates are high (Department of Health, 2010: 7). Forty per cent of HIV infected mothers were unemployed and were probably supported by husbands / partners and the 60% that were employed earned < R1000 per month. Most of our respondents lived with extended families. Their poor socio-economic status, providing for more than 6 individuals per household and stoppage of free supply of formula added to their problems. Therefore, more than 60% of HIV infected mothers chose breastfeeding.

All 250 (100%) of the pregnant women in this study had access to running piped tap water and 245 (98% of the women had a separate cooking space in their homes. One hundred and fifty (40%) respondents had a fridge in their homes. A refrigerator is important for storage of items that can become contaminated easily such as milk, formula and other perishable foods. The municipality disposed of waste materials from most (245; 98%) of homes and waste material from the remaining 5(2%) of the homes was disposed of at a communal dump. It is important that the municipality dispose of all waste from homes as communal dumps can be a hazardous site. Fjeld, Siziya, Katepa-Bwalya and Kankasa (2008: 29) reported that preference of complementary feeding to breastfeeding may be the caused by the fear of making the infant totally reliant on breast milk. This is particularly true for HIV-positive mothers who are single and in search of employment, as it would be difficult to have their babies at a work place. Other studies showed that mixed feeding increases incidence of MTCT than exclusive breastfeeding for infants of HIV-infected mothers (Coovadia and Kindra, 2008; Black, Allen, Bhutta, Caulfield, De Onis, Ezzati et al., 2008: 109; Coovadia and Bland, 2007). Furthermore Bland, Rollins, Coovadia, Coutsoudis and Newell (2007: 62) stated that exclusive breastfeeding is protective and

reduces risk of infant health problems. In this study, HIV infected mothers opted for either mixed or replacement feeding for the fear of transmitting the HIV virus to their baby.A higher HIV-free child survival rate has been observed with breastfeeding compared to formula feeding (Coovadia et al., 2007: 49; Kuhn, Stein and Susser, 2004). Unfortunately, this study did not focus on respondents at delivery and therefore it cannot be commented on the neonatal outcome.

5.3. KNOWLEDGE OF THE RESPONDENTS ABOUT THE TRANSMISSION OF HIV

The results from this study revealed that the respondents were aware of the mode of transmission of HIV virus. All the HIV infected pregnant women strongly agreed that HIV is transmitted though sex, sharing of razor blades, contact with blood and sores on the breast. In addition, it was surprising that four (3.8%) respondents indicated that they agreed that the HIV infection could be transmitted by kissing and saliva. All the HIV + respondents (n=104; 100%) strongly agreed that hugging, sharing of utensils and sharing a bath did not play any role in the transmission of the HIV infection.

The literature show that HIV may be transmitted though sex, sharing of razor blades, contact with blood and sores on the breast, and mother to child (Lewis, 2011; Coovadia et al., 2007; Bulterys and Lepage, 1998). However the sexual transmission is reported to be the predominant mode (Lewis, 2011; Fleming and Wasserheit, 1999).

Similar to the results of this study , Lamina (2012: 98) found in his study that the majority of the respondents identified sexual intercourse as a route of transmission of HIV. Sharing of sharp objects and blood transfusion were identified as routes of transmission 99 (61.5%) and 82 (50.9%) respectively and 120 (74.5%) were aware of MTCT of HIV (Lamina, 2012: 98). Hembah-Hilekaan, Swende and Bito (2012: 27) in a study on knowledge, attitudes and barriers towards prevention of mother-to-child transmission of HIV among women attending antenatal clinics reported that a high number of patients knew that unprotected sex were a risk factor for transmission, 281 (73.2%) of the women aware that an HIV infected woman could get pregnant; while 275 (71.6%) knew that

infection can be transmitted from the mother to her unborn child. Only 214 (55.7%) of the study patients had done the HIV test because of inadequate VCT centers, issues of stigma, absence of family support and the negative attitudes of nursing staff.

It was found from this study that all the HIV positive respondents strongly agreed that transmission of the HIV virus occurred from mother to child at the time of pregnancy, during delivery and through breastfeeding. These results are in line with the literature which shows that mother to child transmission (MTCT) may occur during three major time points during pregnancy and the postpartum period: in utero, intrapartum, and breast feeding (Harambat et al., 2008: 169; UNAIDS, 2008).

In line to the results from this study, Falnes, Tylleskär, De Paoli, Manongi and Engebretsen (2010), found in their study on the knowledge of the mothers about MTC that the 426 mothers were well informed of the risk of MTCT of HIV through breastfeeding (99.8%) and during labor (97.2%), but only 61.5% knew that it could be transmitted during pregnancy. In general, the mothers overestimated the risk of infection. The majority of the mothers knew that it was possible to reduce the risk of transmission during pregnancy (82.2%) and the breastfeeding period (71.6%). However, knowledge of the preventive effect of condoms had not reached all the mothers; 54.5% confirmed it as a preventive during pregnancy and 37.3% during the breastfeeding period. Further, only half of the mothers knew that exclusive breastfeeding would reduce the risk of transmission during the breastfeeding period (Falnes et al., 2010).

5.4. KNOWLEDGE OF PREGNANT WOMEN ON MTCT AND PMTCT THROUGH INFANT FEEDING METHODS

The results from this study revealed that 245 (98%) of women knew that mother to child transmission of HIV virus can occur during pregnancy, delivery and breast milk feeding The results from this study are higher compared to the results (70%) from a local study (Ladzani et al., 2011: 538).

It was found from this study that all (n=104; 100%) of the HIV infected respondents stated that breastfeeding for the first six months was essential. In addition, 72 (69.2%) of 104 respondents stated that they would not use formula and 32 (30.8%) 104 respondents stated they would not mix feed. This study also revealed that in HIV uninfected respondents (n=146), all respondents (n=146; 100%) stated breast feeding would be used as the only choice of feeding method. One hundred and twenty three (84.24%) stated they would breast feeding for 6 months and 23 (15.76%) stated breast feeding would continue for one year.

The results from this study are in line with the recommendations from WHO (2009) all mothers diagnosed as HIV infected either on lifelong ART or not, who exclusively breastfeed their infants, should do so for 6 months, then introduce appropriate complementary foods, thereafter, the mother should continue breastfeeding for the first 12 months of life (WHO., 2009). It was found from a study conducted by Owoaje, Omidokun, and Ige (2012), that respondent had various knowledge on the method to prevent the Mother to Child Transmission of HIV use of anti-retroviral treatment (ART) during pregnancy (75.0%), ART at birth (65.8%) and not breastfeeding (61.8%).

The literature further shows that the prevention of vertical transmission of HIV infection from the mother to the infant during the postpartum period through breast feeding is becoming increasingly essential with the widespread introduction of PMTCT programmes, containing ARVs prophylaxis. Exclusive breast feeding or complete avoidance of breast feeding through exclusive replacement feeding is currently the main focus of attention, but little information is known about how to achieve the practices (Doherty et al., 2006b: 2).

5.5. ATTITUDE OF THE RESPONDENTS TOWARD INFANTS FEEDING AND PREVENTION OF MTCT

In assessing the attitude of the respondents regarding the prevention of transfer of HIV from mother to the child the surveyed showed that all (n=104; 100%) of the HIV infected respondents stated that they would breastfeed for the first six months. In addition, 72

(69.2%) of 104 respondent stated they would not use formula and 32 (30.8%) of the 104 respondents stated they would not mix feed.

It was also found from this study that seventy one (68%) of the family members of HIV infected respondents stated that they were very much in favour of bottle feeding.

Regarding the prevention of mother to child f HIV, All the respondents (n=104; 100%) strongly agreed that formula feeding had no role in the transmission of the HIV virus. Forty eight (46%) of the HIV infected respondents stated that they will exclusively breastfeed; 34 (33%) adopted the mixed feeding method while 22 (21%) they used the replacement feeding. Similarly, a study conducted in Kenya on infant Feeding Plans and Practices by Kiarie, Richardson, Mbori-Ngacha, Nduati and John-Stewart (2004) that at 36 weeks of gestation, 59 (42%) women planned not to breast feed, 53 (46%) planned to breast feed, and 16 (12%) were undecided. After delivery 76 (64%) women who had made infant feeding plans fed their infants according to their preference during pregnancy. Women who planned to breast feed were more likely to feed their infants according to their preference than those who planned not to breast feed (86% vs. 55%).

5.6. PRACTICES THAT PREGNANT WOMEN OF INFANT FEEDING PRACTICES IN RELATION TO PMTCT

5.6.1. The mode of Infants feeding chosen by the respondents

The results from this study revealed that 48 (46.2%) of the 104 HIV infected mothers exclusively breastfed; 34 (32.7%) adopted the mixed feeding method while 22 (21.2%) used the replacement feeding. In comparison, in the HIV uninfected respondents, 97 (66.4%) breast fed their infants; 33 (22.6%) adopted mixed feeding and 16 (11%) used replacement feeding.

In a study conducted by Maru et al.(2009: 1114) involving 91 HIV infected women, it was found that 68 (75%) exclusively formula fed, 7(8%) exclusively breastfed, and 16(18%) practised mixed feeding. The literature has indicated that some women chose infant feeding methods that met AFASS criteria (Doherty et al., 2007: 1791). Voluntary testing

and counselling is routinely offered at antenatal care clinics and has enabled most of them to know their status. Antenatal care attendance is high (95%), but only a small percentage attend before the 20 weeks' gestation period. Most attend only in the late second and early third trimester which means that many women know their HIV status late in pregnancy.

This study revealed that there were differences in the feeding practices among the HIV infected mothers.One possible reason for the low uptake of PMTCT recommendations was due to the fact that most of the HIV infected mothers were employed and breastfeeding did not fit into their working schedule. According to a breast consultant, we need to encourage and educate mothers on the ease and importance of expressing their breast milk to give to their baby while the woman is at work so that the baby can still get the best nutrition. This can be overcome by convincing industry to allow mothers to breastfeed after returning to work or to provide time and private space for her to express breast milk which will be a boost for breastfeeding uptake and continuation. It has been stated that the reintroduction of breastfeeding after initial cessation followed by replacement feeding is particularly risky in terms of mother-to-child transmission of HIV (Thea et al., 2006: 1539).

5.6.2. Practices of respondents regarding the preparation of feed

In LMIC, recommendations for the safe and hygienic preparation of infant formula are not followed in the home environment. Commonly most parents do not consistently wash their hands before they prepare formula for feeding and reconstitution of powdered infant formula with warm water, tap water. The need for safe drinking water is vital considering that many mothers tend to ignore breast feeding recommendations.

The results from this study revealed that 98 (94.23%) of 104 HIV infected respondents cleaned feeding utensils thoroughly. It was also found that all women had access to clean and piped tap water and were well educated about methods used for cleaning feeding bottles and teats, cups and spoons prior to preparing baby feed. This study revealed that ninety eight (94.23%) of the respondents cleaned and washed the bottles, spoons or cups

with warm water and soap after each use. While a small number of the respondents 6 (5.77%) respondents' immersed feeding bottle, spoon, or cup in warm water.

The literature show that the contamination of the tools and water used to feed the baby is very dangerous. It was found that they might be contaminated with faecal bacteria (Andresen, Rollins, Sturm, Conana and Greiner, 2007: 409)..These issues of contaminations may affect both HIV positive and negative mothers using formula milk. A recent study revealed that use of formula among HIV-negative women was significantly higher than formula use among breastfeeding HIV-infected women (Goga, Van Wyk, Doherty, Colvin, Jackson, Chopra et al., 2009: 16). South Africa began implemented the Prevention of Mother-to-Child Transmission of HIV (PMTCT) programme in 2001 which included free supply of formula milk for infants up to 6 months of age at all public health care facilities. We found that 51 (49%) of the HIV infected respondents choice of feeding method was determined by free formula. At times the Provincial government fails to supply free formula feed which forces mothers to resort to mixed or replacement feeding for their infants. Such incidents where the state failed to supply free formula were observed in South Africa (SA) and Botswana (Creek et al., 2010: 14). The supply of free formula has probably done more harm than good.

However In 2011, KwaZulu-Natal became the first province to stop the supply of free formula to prevent risky feeding practices and the National Department of Health adopted promotion of exclusive breastfeeding (Ijumba, Doherty, Jackson, Tomlinson, Sanders and Persson, 2012: 761).It is imperative to reiterate to both HIV infected and HIV uninfected mothers, that exclusive breastfeeding is an important child-survival strategy. Extensive investigation into childhood diseases shows that unsafe drinking water is a major cause of diarrhoeal disease and death in young children in LMIC. There is an urgent need for safe and clean drinking water for young children born to HIV-positive mothers especially HIV-infected mothers that choose replacement feed (Binagwaho, Fawzi, Drobac, Franke, Ivers, Kim et al., 2009: A-B; Coutsoudis et al., 2009: 47). The first condition set in the new WHO guidelines is the provision of safe water and proper sanitation for all mothers irrespective of their HIV status (WHO., 2009). In this study all the HIV infected and HIV

uninfected mothers' households had fresh piped tap water. In addition, infants of mothers who chose to breast feed may be exposed to waterborne pathogens; therefore, water treatment by boiling water is essential to reduce diarrhea and other infections associated with contaminated water (Chiller et al., 2006: 28). Past research shows that in the absence of breast feeding, contamination of the water can have devastating effects on infants (Creek, Arvelo, Kim, Lu, Bowen, Finkbeiner et al., 2007).

The results from this study reported that eighty nine (85.6%) and 15 (14.4%) of the 104 HIV + respondents stated that they would take their sick child to clinic and hospital for medical attention respectively. The respondents recognized common health problems and reported that they could take the infant immediately to the clinic or hospital.

5.7. SOURCES OF INFORMATION OF PREGNANT WOMEN ON PMTCT THROUGH INFANT FEEDING PRACTICES

The results from this study revealed that the main sources of information were television 93 (57.8%), radio 77 (47.8%), health workers 53 (32.9%), friends, relatives and neighbours 41 (25.5%) and posters 34 (21.1%). In this study, it was found that respondents had various sources of advices on how to feed the infants, twenty six (25%) of the respondents were advised by a nurse of how much milk their infants should receive as they were advised by a nurse, forty eight (46.2%) were advised by family / friends, 12 (11.5%) followed instructions at the back of the formula tin (n=12) and 18 (17.3%) would give the baby as much as he/she would take.

It was found from the literature that pregnant women who visit clinics during the course of their pregnancy do not have their feeding choices recorded and respected. Consequently, they complain about receiving confusing information and mixed messages from different clinics and the subsections of the same facility especially in baby friendly accredited hospitals (Buskens and Jaffe, 2008; Kuhn et al., 2007; Coovadia et al., 2007: 1107; Piwoz et al., 2007: 1249).

The literature shows that the knowledge of the health care workers are necessary as they are the ideal source of information. A health care workers' lack of up-to-date evidence

and informed knowledge subsequently impacts on a mothers' ability to provide safe infant feeding to their children, with women often not adhering to best infant feeding practices to reduce HIV transmission (Van Lettow, Bedell, Landes, Gawa, Gatto, Mayuni et al., 2011: 426; Blystad, van Esterik, Sellen, de Paoli, Leshabari and Moland, 2010: 18). Concern regarding up-to-date health care worker knowledge of safe infant feeding practices is well documented in Southern Africa (Rujumba, Tumwine, Tylleskär, Neema and Heggenhougen, 2012: 3; Sprague, Chersich and Black, 2011: 10).

5.8. FACTORS INFLUENCING CHOICE OF INFANT FEEING

The literature shows that choosing an infant feeding method is complex for human immunodeficiency virus (HIV)-infected women. Human immunodeficiency virus (HIV)-infected mothers in sub-Saharan Africa face challenges at different stages of infant feeding. International HIV and infant feeding guidelines have changed rapidly (WHO, 2009b; Doherty et al., 2007; UNAIDS et al., 1998; Organization, 1992).

In this study several factors were reported by the respondents who are HIV positive to influence the choices of infants feeding: Anonymity and fear that someone might know that they are HIV positive was reported by the majority of the respondents (n=73; 70.2%). The majority of the respondents (n=96; 92.0%), reported that they fear to transmit the virus through the breast milk. There is also inability to get the milk for free was reported (n=51; 34.9%), following the methods used by family members or mother and grandmother (n=46; 44.2%).

However a small percentage of the respondents reported that their choices are guides by the health care personnel (n=11; 10.6%). Similarly results have been reported by the literature that a lot of factors affect the infant feeding among the HIV positive mothers such the large number of children and other family members, poor socio-economic status of the household, financial help from partner or husband, family pressure andnon-affordability of alternative feeding were factors that influenced choice of infant feeding by HIV positive patients. (Doherty et al., 2006b: 90; Thairu, Pelto, Rollins, Bland and Ntshangase, 2005: 2).

The results from this study showed that in (n=77; 52.7%) of the cases, the opinion of the woman's family would be of consequence. The literature show that family members attitudes play an important role in the decision of mothers regarding breastfeeding (Thairu et al., 2005). A study conducted by Thairu et al (2005) demonstrated the difficulty of practising exclusive breastfeeding in social conditions where family members do not understand its value is by no means limited to the situation of HIV positive women, and is likely to be most acute for young women. Adolescent mothers frequently noted that they received advice from their families to practice mixed feeding. Although there is a paucity of data on how adolescent mothers in sub-Saharan Africa negotiate conflicting advice from their families and health care providers, it is likely that, as with adolescents everywhere, they may hesitate to contradict families' opinions regarding infant feeding, especially if they are financially and emotionally dependent upon them. As described by Bentley et al. (1999) cited by Thairu et (2005), adolescents may also be inexperienced and insecure about their own beliefs and logically turn to their families, particularly their mothers and grandmothers, for parenting help. Even when adolescent mothers express disagreement, families may insist on their own decisions or, less frequently, implement their preferred feeding practices without the mother's consent (Thairu et al., 2005). Accommodating the family's wishes may be an adaptive coping strategy as adolescent mothers struggle with the enormous challenge of parenting in the midst of their own development.(Thairu et al., 2005).

5.9. LIMITATIONS OF THE STUDY

HIV infected respondents who attended PMTCT sessions may have answered questions accurately. The results of this study must be approached with caution as the number of HIV infected mothers is too small. The inclusion of HIV uninfected mothers have contributed little to the study and should be excluded in further studies on this topic. The questionnaire was too long, the respondents spend a long time at these clinics and the attainment of the result of a long questionnaire is very time consuming and this could lead to the respondent giving untrue responses.

The researcher needed a lot of time to collect data from the respondents, which was not always possible because some of them reported to be in a hurry. This might have affected the way respondents to the research instruments.

5.10. CONCLUSION

The results from this study revealed that the majority of the respondents were single mothers, and the majority also were black women. It was also reported that the majority of respondents had a good educational background. The mean age of the respondents was 26.5 (range: 18-44) years.

Regarding the knowledge held by the respondents about the transmission of HIV, it was found that the respondents were aware of the mode of transmission of HIV virus. All the HIV infected pregnant women strongly agreed that HIV is transmitted though sex, sharing of razor blades, contact with blood and sores on the breast, and all the HIV + respondents (100%) strongly agreed that hugging, sharing of utensils and sharing a bath did not play any role in the transmission of the HIV infection.

It was found from this study that all the HIV positive respondents strongly agreed that transmission of the HIV virus occurred from mother to child at the time of pregnancy, during delivery and through breastfeeding.

Regarding knowledge of pregnant women on MTCT AND PMTCT through infant feeding methods, the results from this study revealed that the majority (98%) of women knew that mother to child transmission of HIV virus can occur during pregnancy, delivery and breast milk feeding It was found from this study that all (100%) of the HIV infected respondents stated that breastfeeding for the first six months was essential. In addition, a significant number (69.2%) of respondents stated that they would not use formula and (30.8%) respondents stated they would not mix feed. This study also revealed that the majority in HIV uninfected respondents (100%) stated breast feeding would be used as the only choice of feeding method. One hundred and twenty three (84.24%) stated they would

breast feeding for 6 months and only (15.76%) stated breast feeding would continue for one year.

In assessing the attitude of the respondents regarding the prevention of transfer of HIV from mother to the child the surveyed showed that all (100%) of the HIV infected respondents stated that they would breastfeed for the first six months. In addition, 72 (69.2%) of respondents stated they would not use formula and (30.8%) of respondents stated they would not mix feed.

Regarding the prevention of mother to child of HIV, All the respondents (100%) strongly agreed that formula feeding had no role in the transmission of the HIV virus. A significant percentage (46%) of the HIV infected respondents stated that they will exclusively breastfeed; 34 (33%) adopted the mixed feeding method while 22 (21%) they used the replacement feeding.

Regarding the Practices that pregnant women of infant feeding practices in relation to PMTCT, the results from this study revealed that (46.2%) of the 104 HIV infected mothers exclusively breastfed; (32.7%) adopted the mixed feeding method while (21.2%) used the replacement feeding. In comparison, in the HIV uninfected respondents, 97 (66.4%) breast fed their infants; (22.6%) adopted mixed feeding and (11%) used replacement feeding.

It was also found from this study that the majority of the respondents 98 (94.23%) of HIV infected respondents cleaned feeding utensils thoroughly. It was also found that all women had access to clean and piped tap water and were well educated about methods used for cleaning feeding bottles and teats, cups and spoons prior to preparing baby feed. This study revealed that 94.23% of the respondents cleaned and washed the bottles, spoons or cups with warm water and soap after each use. It was found from this study that respondents had various resources on PMTCT through infant feeding practices: television (57.8%), radio (47.8%), health workers (32.9%), friends, relatives and neighbors (25.5%) and posters (21.1%).

Finally, several factors influencing choice of infant feeing, have been reported by the HIV positive respondents: Anonymity and fear that someone might know that they are HIV positive was reported by the majority of the respondents (70.2%); fear to transmit the virus through the breast milk (92.0%); inability to get the milk for free was reported (34.9%), following the methods used by family members or mother and grandmother (44.2%). However a small percentage of the respondents reported that their choices are guides by the health care personnel (10.6%). The results from this study showed that in (52.7%) of the cases, the opinion of the woman's family would be of consequence.

5.11. RECOMMENDATIONS

Counselling and testing should be incorporated in all reproductive and child health clinics, so that the status of the mothers would be detected early for early interventions to be started. More health care providers should be trained and resourced to provide services efficiently. Great efforts need to be made to get the men convinced so that they can support their wives and they too get tested.

Poverty is a major barrier to mothers who would prefer to use replacement feeding. Since they are sometimes unable to buy the feed, they are forced to mix feed by continuing feeds with the breast milk. If the mothers get support to buy the feed it may help them to adhere to instructions of not giving mixed feeds. Greater emphasis needs to be placed on ensuring the most recent feeding guidelines are disseminated and implemented immediately in clinical practice.

5.11.1. Further study

The study needs to be repeated involving a bigger number of HIV infected mothers and there is no need to have an HIV uninfected respondents. A quantitative study would be recommended to explore the lived experiences of HIV positive mothers on their infants feeding practices.

5.11.2. Information to be given to pregnant women about prevention of HIV transmission through infant feeding

Midwives and doctors should be actively involved in the counselling of clients and giving clients information about infant feeding options and do not rely on lay councillors only because some of the important information that the clients need to know may be missed out. Lay counsellors still need support and some more in-service training to perform their job well.

5.11.3. Family and community members

Families and community members must be taught about HIV/AIDS and prevention of mother to child transmission of HIV through infant feeding methods. This can be achieved in health institutions and everywhere in the community. It is also important to health educate family members that it is imperative to avoid to stigmatize the HIV positive mothers and on how they can offer their supports

5.11.4. Policy makers such as Government

Primary prevention of HIV transmission remains a key component of HIV/AIDS programmes, and should be led by Governments and donor agencies. Lastly, the government should take infant feeding for HIV-positive mothers as one of their policy priorities.

5.11.5. Health care professionals

Trained health-care personnel should provide high quality, unambiguous and unbiased information about risks of HIV transmission through breastfeeding, ART prophylaxis to reduce this risk, and risks of replacement feeding. Mothers who are known to be HIV-infected, and not on lifelong ART, who decide to stop breastfeeding at any time should do so gradually during one month while the baby continues to receive daily NVP and should continue for one week after all breastfeeding has stopped.

REFERENCES

ADLER, M. V. 2000. *ABC of AIDS". BMJ Publishing Group* [Online]. Available: Bristolwww.study hungary.hu/file/sotebooks [Accessed 14th March 2010].

ANDRESEN, E., ROLLINS, N., STURM, A., CONANA, N. & GREINER, T. 2007. Bacterial contamination and over-dilution of commercial infant formula prepared by HIV-infected mothers in a prevention of mother-to-child transmission (PMTCT) programme, South Africa. *Journal of Tropical Pediatrics,* 53**,** 409-414.

ARPADI, S., FAWZY, A., ALDROVANDI, G. M., KANKASA, C., SINKALA, M., MWIYA, M., THEA, D. M. & KUHN, L. 2009. Growth faltering due to breastfeeding cessation in uninfected children born to HIV-infected mothers in Zambia. *The American Journal of Clinical Nutrition,* 90**,** 344-353.

BAEK, C. & RUTENBERG, N. 2010. Implementing programs for the prevention of mother-to-child HIV transmission in resource-constrained settings: Horizons studies, 1999–2007. *Public Health Reports,* 125**,** 293-304.

BHUTTA, Z. A., AHMED, T., BLACK, R. E., COUSENS, S., DEWEY, K., GIUGLIANI, E., HAIDER, B. A., KIRKWOOD, B., MORRIS, S. S. & SACHDEV, H. 2008. What works? Interventions for maternal and child undernutrition and survival. *The Lancet,* 371**,** 417-440.

BINAGWAHO, A., FAWZI, M. C. S., DROBAC, P., FRANKE, M., IVERS, L., KIM, J. Y., MUKHERJEE, J., NOGUCHI, J., RICH, M. & STULAC, S. 2009. HIV, infant feeding and implementation failure: advancing policies for women with HIV infection and attaining the Millennium Development Goals. *Bulletin of the World Health Organization,* 87**,** a-b.

BIRDSALL, K., NKOSI, Z., HAJIYIANNIS, H. & PARKER, W. 2005. *Prevention of Mother-to-Child Transmission in South Africa: analysis of calls to the National AIDS Helpline* [Online]. Available: http: //www.cadre.org.za.

BLACK, R. E., ALLEN, L. H., BHUTTA, Z. A., CAULFIELD, L. E., DE ONIS, M., EZZATI, M., MATHERS, C. & RIVERA, J. 2008. Maternal and child undernutrition: global and regional exposures and health consequences. *The lancet,* 371**,** 243-260.

BLACK, R. E., MORRIS, S. S. & BRYCE, J. 2003. Where and why are 10 million children dying every year? *The Lancet,* 361**,** 2226-2234.

BLAND, R., ROLLINS, N., COOVADIA, H., COUTSOUDIS, A. & NEWELL, M. 2007. Infant feeding counselling for HIV-infected and uninfected women: appropriateness of choice and practice. *Bulletin of the World Health Organization,* 85**,** 289-296.

BLAND, R. M., LITTLE, K. E., COOVADIA, H. M., COUTSOUDIS, A., ROLLINS, N. C. & NEWELL, M.-L. 2008. Intervention to promote exclusive breast-feeding for the first 6 months of life in a high HIV prevalence area. *Aids,* 22**,** 883-891.

BLYSTAD, A., VAN ESTERIK, P., SELLEN, D., DE PAOLI, M., LESHABARI, S. C. & MOLAND, K. M. I. 2010. Reflections on global policy documents and the WHOLs infant feeding guidelines: lessons learnt. *International Breastfeeding Journal,* 5**,** 18.

BRINK, H., VAN DER WALT, C. & VAN RENSBURG, G. 2006. *Fundamentals Of Research Methodology For Health Care Professionals,* Cape Town, Juta and Company Ltd.

BULTERYS, M. & LEPAGE, P. 1998. Mother-to-child transmission of HIV. *Current Opinion in Pediatrics,* 10**,** 143-150.

BURNS, N. & GROVE, S. 1999. *Understanding Nursing Research,* Philadelphia, WB Saunders Company.

BURNS, N. & GROVE, S. K. 2007. *Understanding Nursing Research: Building Evidence Based Practice,* Philadelphia, WB Saunders Company.

BURNS, N. & GROVE, S. K. 2010. *Understanding nursing research: Building an evidence-based practice,* Philadelphia, Elsevier Health Sciences.

BUSKENS, I. & JAFFE, A. 2008. Demotivating infant feeding counselling encounters in southern Africa: Do counsellors need more or different training? *AIDS Care,* 20**,** 337-345.

CAMES, C., MOUQUET-RIVIER, C., TRAORÉ, T., AYASSOU, K. A., KABORE, C., BRUYERON, O. & SIMONDON, K. B. 2010. A sustainable food support for non-breastfed infants: implementation and acceptability within a WHO mother-to-child HIV transmission prevention trial in Burkina Faso. *Public Health Nutrition,* 13**,** 779-786.

CARGILL, V. A. & STONE, V. E. 2005. HIV/AIDS: a minority health issue. *Medical Clinics of North America,* 89**,** 895-912.

CHANTRY, C. J., YOUNG, S. L., RENNIE, W., NGONYANI, M., MASHIO, C., ISRAEL-BALLARD, K., PEERSON, J., NYAMBO, M., MATEE, M. & ASH, D. 2012. Feasibility of using flash-heated breastmilk as an infant feeding option for HIV-exposed, uninfected infants after 6 months of age in urban Tanzania. *Journal of Acquired Immune Deficiency Syndromes,* 60**,** 43-50.

CHOPRA, M., DOHERTY, T., JACKSON, D. & ASHWORTH, A. 2005. Preventing HIV transmission to children: quality of counselling of mothers in South Africa. *Acta Paediatrica,* 94**,** 357-363.

CHOPRA, M., JACKSON, D., DOHERTY, T. & ASHWORTH, A. 2005. Evaluation of quality of Counselling Provided to Respondents in three MTCT sites in South Africa. *Acta Pædiatrica,* 94**,** 357-363.

CHOPRA, M., PIWOZ, E., SENGWANA, J., SCHAAY, N., DUNNETT, L. & SANDERS, D. 2002. Effect of a mother-to-child HIV prevention programme on infant feeding and caring practices in South Africa. *South African Medical Journal,* 92**,** 298-302.

CHOPRA, M. & ROLLINS, N. 2008. Infant feeding in the time of HIV: rapid assessment of infant feeding policy and programmes in four African countries scaling up prevention of mother to child transmission programmes. *Archives of Disease in Childhood,* 93**,** 288-291.

COETZEE, D., HILDERBRAND, K., BOULLE, A., DRAPER, B., ABDULLAH, F. & GOEMAERE, E. 2005. Effectiveness of the first district-wide programme for the prevention of mother-to-child transmission of HIV in South Africa. *Bulletin of the World Health Organization,* 83**,** 489-494.

COHEN, M. S., CHEN, Y. Q., MCCAULEY, M., GAMBLE, T., HOSSEINIPOUR, M. C., KUMARASAMY, N., HAKIM, J. G., KUMWENDA, J., GRINSZTEJN, B. & PILOTTO, J. H. 2011. Prevention of HIV-1 infection with early antiretroviral therapy. *New England Journal of Medicine,* 365**,** 493-505.

COLVIN, M., CHOPRA, M., DOHERTY, T., JACKSON, D., LEVIN, J., WILLUMSEN, J., GOGA, A. & MOODLEY, P. 2007. Operational effectiveness of single-dose nevirapine in preventing mother-to-child transmission of HIV. *Bulletin of the World Health Organization,* 85**,** 466-473.

COOVADIA, H. & BLAND, R. 2007. Preserving breastfeeding practice through the HIV pandemic. *Tropical Medicine & International Health,* 12**,** 1116-1133.

COOVADIA, H. & KINDRA, G. 2008. Breastfeeding to prevent HIV transmission in infants: balancing pros and cons. *Current Opinion in Infectious Diseases,* 21**,** 11-15.

COOVADIA, H. M., ROLLINS, N. C., BLAND, R. M., LITTLE, K., COUTSOUDIS, A., BENNISH, M. L. & NEWELL, M.-L. 2007. Mother-to-child transmission of HIV-1 infection during exclusive breastfeeding in the first 6 months of life: an intervention cohort study. *The Lancet,* 369**,** 1107-1116.

CORNELI, A. L., PIWOZ, E. G., BENTLEY, M. E., MOSES, A., NKHOMA, J. R., TOHILL, B. C., ADAIR, L., MTIMUNI, B., AHMED, Y. & DUERR, A. 2007. Involving communities in the design of clinical trial protocols: the BAN Study in Lilongwe, Malawi. *Contemporary Clinical Trials,* 28**,** 59-67.

COUTSOUDIS, A. 2000. Influence of Infant Feeding Patterns on Early Mother-to-Child Transmission of HIV-1 in Durban, South Africa. *Annals of the New York Academy of Sciences,* 918**,** 136-144.

COUTSOUDIS, A., COOVADIA, H. M. & WILFERT, C. M. 2009. Formula-feeding is not a sustainable solution. *Bulletin of the World Health Organization,* 87**,** B-C.

CREEK, T., ARVELO, W., KIM, A., LU, L., BOWEN, A., FINKBEINER, T., ZAKS, L., MASUNGE, J., SHAFFER, N. & DAVIS, M. 2007. Role of infant feeding and HIV in a severe outbreak of diarrhea and malnutrition among young children, Botswana, XIV Conference on Retroviruses and Opportunistic Infections.

CREEK, T. L., KIM, A., LU, L., BOWEN, A., MASUNGE, J., ARVELO, W., SMIT, M., MACH, O., LEGWAILA, K. & MOTSWERE, C. 2010. Hospitalization and mortality among primarily nonbreastfed children during a large outbreak of diarrhea and malnutrition in Botswana, 2006. *Journal of Acquired Immune Deficiency Syndromes,* 53**,** 14-19.

DALAL, S., LEE, C.-W., FARIRAI, T., SCHILSKY, A., GOLDMAN, T., MOORE, J. & BOCK, N. N. 2011. Provider-initiated HIV testing and counseling: increased uptake in two public community health centers in South Africa and implications for scale-up. *PloS One,* 6**,** e27293.

DAO, H., MOFENSON, L. M., EKPINI, R., GILKS, C. F., BARNHART, M., BOLU, O. & SHAFFER, N. 2007. International recommendations on antiretroviral drugs for treatment of HIV-infected women and prevention of mother-to-child HIV transmission in resource-limited settings: 2006 update. *American Journal of Obstetrics and Gynecology,* 197**,** S42-S55.

DE COCK, K. M., FOWLER, M. G., MERCIER, E., DE VINCENZI, I., SABA, J., HOFF, E., ALNWICK, D. J., ROGERS, M. & SHAFFER, N. 2000. Prevention of mother-to-child HIV transmission in resource-poor countries: translating research into policy and practice. *Jama,* 283**,** 1175-1182.

DE VINCENZI, I. 2011. Triple antiretroviral compared with zidovudine and single-dose nevirapine prophylaxis during pregnancy and breastfeeding for prevention of mother-to-child transmission of HIV-1 (Kesho Bora study): a randomised controlled trial. *The Lancet Infectious Diseases,* 11**,** 171-180.

DE WAGT, A. & CLARK, D. 2004. *A review of UNICEF experience with the distribution of free infant formula for infants of HIV-infected respondents in Africa.Presented at the LINKAGES Art and Science of Breastfeeding Presentation Series,* Washington, DC, Academy for Educational Development.

DEPARTMENT OF HEALTH 2007. *Report on HIV and AIDS Statistics for South Africa,* Pretoria, Department of Health.

DEPARTMENT OF HEALTH 2008a. *HIV and Infant Feeding,* Pretoria, Department of Health.

DEPARTMENT OF HEALTH 2008b. *Implementation of the PMTCT Programme,* Pretoria, Department of Health.

DEPARTMENT OF HEALTH 2008c. *National Antenatal Sentinel HIV & Syphilis Prevalence Survey in South Africa,* Pretoria, Department of Health.

DEPARTMENT OF HEALTH 2009. *Antenatal survey 2008: National HIV and syphilis antenatal seroprevalence survey in South Africa 2008,* Pretoria, National Department of Health.

DEPARTMENT OF HEALTH 2010. *Policy and Guidelinesfor the Implementation of the PMTCT Programme,* Pretoria, Department of Health.

DEPARTMENT OF HEALTH 2011. *Presidential Announcement: Implementation Of The New PMTCT Program,* Pretoria, Department of Health.

DINH, T., GOGA, A., JACKSON, D., LOMBARD, C., WOLDESENBET, S. & PUREN, A. 2012. Impact of the South Africa's PMTCT programs on perinatal HIV transmission: results of the 1st year implementing the 2010 WHO recommended guidelines. Fourth International Workshop on HIV Pediatrics, Washington DC.

DOHERTY, T., CHOPRA, M., JACKSON, D., GOGA, A., COLVIN, M. & PERSSON, L.-A. 2007. Effectiveness of the WHO/UNICEF guidelines on infant feeding for HIV-positive women: results from a prospective cohort study in South Africa. *Aids,* 21**,** 1791-1797.

DOHERTY, T., CHOPRA, M., NKONKI, L., JACKSON, D. & GREINER, T. 2006a. Effect of the HIV epidemic on infant feeding in South Africa:" When they see me coming with the tins they laugh at me". *Bulletin of the World Health Organization,* 84**,** 90-96.

DOHERTY, T., CHOPRA, M., NKONKI, L., JACKSON, D. & PERSSON, L.-A. 2006b. A longitudinal qualitative study of infant-feeding decision making and practices among HIV-positive women in South Africa. *The Journal of Nutrition,* 136**,** 2421-2426.

DOHERTY, T., SANDERS, D., GOGA, A. & JACKSON, D. 2011. Implications of the new WHO guidelines on HIV and infant feeding for child survival in South Africa. *Bulletin of the World Health Organization,* 89**,** 62-67.

DUIJTS, L., JADDOE, V. W., HOFMAN, A. & MOLL, H. A. 2010. Prolonged and exclusive breastfeeding reduces the risk of infectious diseases in infancy. *Pediatrics,* 126**,** e18-e25.

ENEROTH, H. 2004. *Responses of HIV-Positive Mothers to Infant Feeding Counselling as Part of the KwaZulu-Natal Provincial Prevention of Mother to Child*

Transmission of HIV Programme in South Africa. Masters of Science Thesis, Uppsala University.

EUROPEAN COLLABORATIVE STUDY 2006. The mother-to-child HIV transmission epidemic in Europe: evolving in the East and established in the West. *AIDS (London, England),* 20**,** 1419-1427.

EVANS, C. & NDIRANGU, E. 2009. The nursing implications of routine provider-initiated HIV testing and counselling in sub-Saharan Africa: a critical review of new policy guidance from WHO/UNAIDS. *International Journal of Nursing Studies,* 46**,** 723-731.

FALNES, E. F., TYLLESKÄR, T., DE PAOLI, M. M., MANONGI, R. & ENGEBRETSEN, I. M. 2010. Mothers' knowledge and utilization of prevention of mother to child transmission services in northern Tanzania. *Journal of the International AIDS Society,* 13**,** 1-15.

FJELD, E., SIZIYA, S., KATEPA-BWALYA, M. & KANKASA, C. 2008. Assessment of potentials and barriers in the promotion of exclusive breastfeeding in southern Zambia. *International Breastfeeding Journal,* 3**,** 1-12.

FLEMING, D. T. & WASSERHEIT, J. N. 1999. From epidemiological synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. *Sexually Transmitted Infections,* 75**,** 3-17.

FUTTERMAN, D., SHEA, J., BESSER, M., STAFFORD, S., DESMOND, K., COMULADA, W. S. & GRECO, E. 2010. Mamekhaya: a pilot study combining a cognitive-behavioral intervention and mentor mothers with PMTCT services in South Africa. *AIDS Care,* 22**,** 1093-1100.

GERISH, K. & LACEY, A. 2006. *The Research Process In Nursing,* Oxford, Blackwell.

GIBB, D. M., KIZITO, H., RUSSELL, E. C., CHIDZIVA, E., ZALWANGO, E., NALUMENYA, R., SPYER, M., TUMUKUNDE, D., NATHOO, K. & MUNDERI, P. 2012. Pregnancy and infant outcomes among HIV-infected women taking long-term ART with and without tenofovir in the DART trial. *PLoS Medicine,* 9**,** e1001217.

GOGA, A. E., VAN WYK, B., DOHERTY, T., COLVIN, M., JACKSON, D. J., CHOPRA, M. & GROUP, G. S. S. 2009. Operational effectiveness of guidelines on complete breast-feeding cessation to reduce mother-to-child transmission of HIV: results from a prospective observational cohort study at routine prevention of mother-to-child transmission sites, South Africa. *JAIDS Journal of Acquired Immune Deficiency Syndromes,* 50**,** 521-528.

GROUP, K. B. S. 2010. Eighteen-month follow-up of HIV-1-infected mothers and their children enrolled in the Kesho Bora study observational cohorts. *Journal of Acquired Immune Deficiency Syndromes,* 54**,** 533-541.

HAMMER, S. M. 2011. Antiretroviral treatment as prevention. *New England Journal of Medicine,* 365**,** 561-562.

HARAMBAT, J., FASSINOU, P., BECQUET, R., TOURÉ, P., ROUET, F., DABIS, F., MSELLATI, P., BLANCHE, S., TIMITÉ-KONAN, M. & SALAMON, R. 2008. 18-month occurrence of severe events among early diagnosed HIV-infected children before antiretroviral therapy in Abidjan, Côte d'Ivoire: a cohort study. *BMC Public Health,* 8**,** 169.

HEMBAH-HILEKAAN, S. K., SWENDE, T. Z. & BITO, T. T. 2012. Knowledge, attitudes and barriers towards prevention of mother-to-child transmission of HIV among women attending antenatal clinics in Uyam District of Zaki-Biam in Benue State, Nigeria: original research article. *African Journal of Reproductive Health,* 16**,** 27-34.

HORWOOD, C., HASKINS, L., VERMAAK, K., PHAKATHI, S., SUBBAYE, R. & DOHERTY, T. 2010. Prevention of mother to child transmission of HIV (PMTCT) programme in KwaZulu-Natal, South Africa: an evaluation of PMTCT implementation and integration into routine maternal, child and women's health services. *Tropical Medicine & International Health,* 15**,** 992-999.

IJUMBA, P., DOHERTY, T., JACKSON, D., TOMLINSON, M., SANDERS, D. & PERSSON, L.-Å. 2012. Free formula milk in the prevention of mother-to-child transmission programme: voices of a peri-urban community in South Africa on policy change. *Health Policy and Planning***,** 23, 761-768.

ILIFF, P. J., PIWOZ, E. G., TAVENGWA, N. V., ZUNGUZA, C. D., MARINDA, E. T., NATHOO, K. J., MOULTON, L. H., WARD, B. J., HUMPHREY, J. H. & GROUP, Z. S. 2005. Early exclusive breastfeeding reduces the risk of postnatal HIV-1 transmission and increases HIV-free survival. *Aids,* 19**,** 699-708.

IP, S., CHUNG, M., RAMAN, G., TRIKALINOS, T. A. & LAU, J. 2009. A summary of the Agency for Healthcare Research and Quality's evidence report on breastfeeding in developed countries. *Breastfeeding Medicine,* 4**,** S-17-S-30.

ISRAEL, E. & HUBER, D. 1993. *HIV Transmission Through Breast Feeding. Pathfinder International Technical Guidance Series,* Watertown Massachusetts, Pathfinder International.

JACKSON, J. B., MUSOKE, P., FLEMING, T., GUAY, L. A., BAGENDA, D., ALLEN, M., NAKABIITO, C., SHERMAN, J., BAKAKI, P. & OWOR, M. 2003. Intrapartum and neonatal single-dose nevirapine compared with zidovudine for prevention of

mother-to-child transmission of HIV-1 in Kampala, Uganda: 18-month follow-up of the HIVNET 012 randomised trial. *The Lancet,* 362**,** 859-868.

JEBESSA, S. & TEKA, T. 2006. Knowledge and attitude towards mother to child transmission of HIV and it's prevention among post natal mothers in Tikur Anbessa and Zewditu Memorial Hospitals, Addis Ababa. *Ethiopian Journal of Health Development,* 19**,** 211-218.

JONES, G., STEKETEE, R. W., BLACK, R. E., BHUTTA, Z. A. & MORRIS, S. S. 2003. How many child deaths can we prevent this year? *The Lancet,* 362**,** 65-71.

KALICHMAN, S. C. & SIMBAYI, L. C. 2003. HIV testing attitudes, AIDS stigma, and voluntary HIV counselling and testing in a black township in Cape Town, South Africa. *Sexually Transmitted Infections,* 79**,** 442-447.

KIARIE, J. N., RICHARDSON, B. A., MBORI-NGACHA, D., NDUATI, R. W. & JOHN-STEWART, G. C. 2004. Infant feeding practices of women in a perinatal HIV-1 prevention study in Nairobi, Kenya. *Journal of Acquired Immune Deficiency syndromes* 1999*,* 35**,** 75.

KILEWO, C., KARLSSON, K., MASSAWE, A., LYAMUYA, E., SWAI, A., MHALU, F., BIBERFELD, G. & TEAM, M. S. 2008. Prevention of mother-to-child transmission of HIV-1 through breast-feeding by treating infants prophylactically with lamivudine in Dar es Salaam, Tanzania: the Mitra Study. *JAIDS Journal of Acquired Immune Deficiency Syndromes,* 48**,** 315-323.

KUHN, L. & ALDROVANDI, G. 2010. Survival and health benefits of breastfeeding versus artificial feeding in infants of HIV-infected women: developing versus developed world. *Clinics in Perinatology,* 37**,** 843-862.

KUHN, L., REITZ, C. & ABRAMS, E. J. 2009. Breastfeeding and AIDS in the developing world. *Current Opinion in Pediatrics,* 21**,** 83-93.

KUHN, L., SINKALA, M., KANKASA, C., SEMRAU, K., KASONDE, P., SCOTT, N., MWIYA, M., VWALIKA, C., WALTER, J. & TSAI, W.-Y. 2007. High uptake of exclusive breastfeeding and reduced early post-natal HIV transmission. *PLoS One,* 2**,** e1363.

KUHN, L., STEIN, Z. & SUSSER, M. 2004. Preventing mother-to-child HIV transmission in the new millennium: the challenge of breast feeding. *Paediatric and Perinatal Epidemiology,* 18**,** 10-16.

KUMWENDA, N. I., HOOVER, D. R., MOFENSON, L. M., THIGPEN, M. C., KAFULAFULA, G., LI, Q., MIPANDO, L., NKANAUNENA, K., MEBRAHTU, T. & BULTERYS, M. 2008. Extended antiretroviral prophylaxis to reduce breast-milk HIV-1 transmission. *New England Journal of Medicine,* 359**,** 119-129.

LADZANI, R., PELTZER, K., MLAMBO, M. G. & PHAWENI, K. 2011. Infant-feeding practices and associated factors of HIV-positive mothers at Gert Sibande, South Africa. *Acta Pædiatrica,* 100**,** 538-542.

LAMINA, M. A. 2012. A survey of awareness and knowledge of mother-to-child transmission of HIV in pregnant women attending Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria. O*pen Journal of Obstetrics and Gynecology,* 2, 98-105.

LEON, N., NAIDOO, P., MATHEWS, C., LEWIN, S. & LOMBARD, C. 2010. The impact of provider-initiated (opt-out) HIV testing and counseling of patients with sexually transmitted infection in Cape Town, South Africa: a controlled trial. *Implementation Science,* 5**,** 1-11.

LESHABARI, S. C., BLYSTAD, A. & MOLAND, K. M. 2007. Difficult choices: infant feeding experiences of HIV-positive mothers in northern Tanzania. *SAHARA-J: Journal of Social Aspects of HIV/AIDS,* 4**,** 544-555.

LEWIS, D. A. 2011. HIV/sexually transmitted infection epidemiology, management and control in the IUSTI Africa region: focus on sub-Saharan Africa. *Sexually Transmitted Infections,* 87**,** ii10-ii13.

LIANG, K., GUI, X., ZHANG, Y.-Z., ZHUANG, K., MEYERS, K. & HO, D. D. 2009. A case series of 104 women infected with HIV-1 via blood transfusion postnatally: high rate of HIV-1 transmission to infants through breast-feeding. *Journal of Infectious Diseases,* 200**,** 682-686.

LUNNEY, K. M., ILIFF, P., MUTASA, K., NTOZINI, R., MAGDER, L. S., MOULTON, L. H. & HUMPHREY, J. H. 2010. Associations between breast milk viral load, mastitis, exclusive breast-feeding, and postnatal transmission of HIV. *Clinical Infectious Diseases,* 50**,** 762-769.

MACH, O., LU, L., CREEK, T., BOWEN, A., ARVELO, W., SMIT, M., MASUNGE, J., BRENNAN, M. & HANDZEL, T. 2009. Population-based study of a widespread outbreak of diarrhea associated with increased mortality and malnutrition in Botswana, January–March, 2006. *The American Journal of Tropical Medicine and Hygiene,* 80**,** 812-818.

MADEIRO LEITE, Á. J., FIORINI PUCCINI, R., ATALAH, Á. N., ALVES DA CUNHA, A. L. & TAVARES MACHADO, M. 2005. Effectiveness of home-based peer counselling to promote breastfeeding in the northeast of Brazil: A randomized clinical trial. *Acta Paediatrica,* 94**,** 741-746.

MAHY, M., STOVER, J., KIRAGU, K., HAYASHI, C., AKWARA, P., LUO, C., STANECKI, K., EKPINI, R. & SHAFFER, N. 2010. What will it take to achieve virtual elimination of mother-to-child transmission of HIV? An assessment of current progress and future needs. *Sexually Transmitted Infections,* 86**,** ii48-ii55.

MANUELA DE PAOLI, M., MANONGI, R. & KLEPP, K.-I. 2002. Counsellors' perspectives on antenatal HIV testing and infant feeding dilemmas facing women with HIV in northern Tanzania. *Reproductive Health Matters,* 10**,** 144-156.

MARAZZI, M. C., LIOTTA, G., NIELSEN-SAINES, K., HASWELL, J., MAGID, N. A., BUONOMO, E., SCARCELLA, P., ALTAN, A. M. D., MANCINELLI, S. & PALOMBI, L. 2010. Extended antenatal antiretroviral use correlates with improved infant outcomes throughout the first year of life. *Aids,* 24**,** 2819-2826.

MARU, S., DATONG, P., SELLENG, D., MANG, E., INYANG, B., AJENE, A., GUYIT, R., CHARURAT, M. & ABIMIKU, A. L. 2009. Social determinants of mixed feeding behavior among HIV-infected mothers in Jos, Nigeria. *AIDS Care,* 21**,** 1114-1123.

MBORI-NGACHA, D., NDUATI, R., JOHN, G., REILLY, M., RICHARDSON, B., MWATHA, A., NDINYA-ACHOLA, J., BWAYO, J. & KREISS, J. 2001. Morbidity and mortality in breastfed and formula-fed infants of HIV-1–infected women: a randomized clinical trial. *Jama,* 286**,** 2413-2420.

MBUYA, M. N., HUMPHREY, J. H., MAJO, F., CHASEKWA, B., JENKINS, A., ISRAEL-BALLARD, K., MUTI, M., PAUL, K. H., MADZIMA, R. C. & MOULTON, L. H. 2010. Heat treatment of expressed breast milk is a feasible option for feeding HIV-exposed, uninfected children after 6 months of age in rural Zimbabwe. *The Journal of Nutrition,* 140**,** 1481-1488.

MCKENNA, M. T. & HU, X. 2007. Recent trends in the incidence and morbidity that are associated with perinatal human immunodeficiency virus infection in the United States. *American journal of Obstetrics and Gynecology,* 197**,** S10-S16.

MCNIEL, M. E., LABBOK, M. H. & ABRAHAMS, S. W. 2010. What are the risks associated with formula feeding? A re-analysis and review. *Birth,* 37**,** 50-58.

MICHEL, S. & TEDSTROM, J. 2010. The business of eliminating mother-to-Child HIV transmission. *The Huffington Post* [Online]. Available: http://scholar.google.com/scholar_lookup?title=The%20business%20of%20eliminating%20mother-to-Child%20HIV%20transmission&author=S%20Michel&author=J%20Tedstrom&publication_year=2010&journal=The%20Huffington%20Post [Accessed 7Th March, 2010].

MILLER, M., ILIFF, P., STOLTZFUS, R. J. & HUMPHREY, J. 2002. Breastmilk erythropoietin and mother-to-child HIV transmission through breastmilk. *The Lancet,* 360**,** 1246-1248.

MOFENSON, L. M. 2010. Prevention in neglected subpopulations: prevention of mother-to-child transmission of HIV infection. *Clinical Infectious Diseases,* 50**,** S130-S148.

MOLAND, K., DE PAOLI, M. M., SELLEN, D. W., VAN ESTERIK, P., LESHABARI, S. C. & BLYSTAD, A. 2010. Breastfeeding and HIV: experiences from a decade of prevention of postnatal HIV transmission in sub-Saharan Africa. *International Breastfeeding Journal,* 5**,** 1-7.

MOORE, M. 2003. A behavior change perspective on integrating PMTCT and Safe Motherhood programs. A discussion paper. Washington, D.C: Academy for Educational Development.

MORRISON, P., ISRAEL-BALLARD, K. & GREINER, T. 2011. Informed choice in infant feeding decisions can be supported for HIV-infected women even in industrialized countries. *AIDS,* 25**,** 1807-1811.

MULUYE, D., WOLDEYOHANNES, D., GIZACHEW, M. & TIRUNEH, M. 2012. Infant feeding practice and associated factors of HIV positive mothers attending prevention of mother to child transmission and antiretroviral therapy clinics in Gondar Town health institutions, Northwest Ethiopia. *BMC Public Health,* 12**,** 240-248.

MUSOKE, P. 2005. Recent advances in prevention of mother to child (PMTCT) of HIV. *African Health Sciences,* 4**,** 144-145.

NASSALI, M., NAKANJAKO, D., KYABAYINZE, D., BEYEZA, J., OKOTH, A. & MUTYABA, T. 2009. Access to HIV/AIDS care for mothers and children in sub-Saharan Africa: adherence to the postnatal PMTCT program. *AIDS Care,* 21**,** 1124-1131.

NEWELL, M.-L., COOVADIA, H., CORTINA-BORJA, M., ROLLINS, N., GAILLARD, P. & DABIS, F. 2004. Mortality of infected and uninfected infants born to HIV-infected mothers in Africa: a pooled analysis. *The Lancet,* 364**,** 1236-1243.

NGUYEN, T. A., OOSTERHOFF, P., NGOC, Y. P., WRIGHT, P. & HARDON, A. 2008. Barriers to access prevention of mother-to-child transmission for HIV positive women in a well-resourced setting in Vietnam. *AIDS Res Ther,* 5**,** 1-12.

NKONKI, L. L., DOHERTY, T. M., HILL, Z., CHOPRA, M., SCHAAY, N. & KENDALL, C. 2007. Missed opportunities for participation in prevention of mother to child transmission programmes: simplicity of nevirapine does not necessarily lead to optimal uptake, a qualitative study. *AIDS Research Therapy,* 4**,** 1-5.

ONYANGO-MAKUMBI, C., BAGENDA, D., MWATHA, A., OMER, S. B., MUSOKE, P., MMIRO, F., ZWERSKI, S. L., KATEERA, B. A., MUSISI, M. & FOWLER, M. G. 2010. Early weaning of HIV-exposed uninfected infants and risk of serious gastroenteritis: findings from two perinatal HIV prevention trials in Kampala, Uganda. *Journal of acquired immune deficiency syndromes (1999)* [Online]. Available: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2888913/ [Accessed 4th April 2012].

ORGANIZATION, W. H. 1992. Consensus statement from the WHO/UNICEF consultation on HIV transmission and breast-feeding. *Wkly Epidemiol Rec,* 67**,** 177-179.

OWOAJE, E. T., OMIDOKUN, A. D. & IGE, O. K. 2012. Knowledge and perception of Prevention of Mother to Child services amongst pregnant women accessing antenatal clinic in a Primary Health Care centre in Nigeria: original research. *African Primary Health Care and Family Medicine,* 4**,** 1-7.

PARKER, M. E., BENTLEY, M. E., CHASELA, C., ADAIR, L., PIWOZ, E. G., JAMIESON, D. J., ELLINGTON, S., KAYIRA, D., SOKO, A. & MKHOMAWANTHU, C. 2011. The acceptance and feasibility of replacement feeding at 6 months as an HIV prevention method in Lilongwe, Malawi: Results from the BAN study. *Aids Education And Prevention: Official Publication Of The International Society For Aids Education,* 23**,** 281-295.

PAUL, M. E., CHANTRY, C. J., READ, J. S., FREDERICK, M. M., LU, M., PITT, J., TURPIN, D. B., COOPER, E. R. & HANDELSMAN, E. L. 2005. Morbidity and mortality during the first two years of life among uninfected children born to human immunodeficiency virus type 1-infected women: the women and infants transmission study. *The Pediatric Infectious Disease Journal,* 24**,** 46-56.

PÉREZ-ESCAMILLA, R., CURRY, L., MINHAS, D., TAYLOR, L. & BRADLEY, E. 2012. Scaling up of breastfeeding promotion programs in low-and middle-income countries: the “breastfeeding gear” model. *Advances in Nutrition: An International Review Journal,* 3**,** 790-800.

PEREZ, F., ZVANDAZIVA, C., ENGELSMANN, B. & DABIS, F. 2006. Acceptability of routine HIV testing (" opt-out") in antenatal services in two rural districts of Zimbabwe. *JAIDS Journal of Acquired Immune Deficiency Syndromes,* 41**,** 514-520.

PETRIE, K., SCHMIDT, S., SCHWARZ, C., KOORNHOF, H. & MARAIS, D. 2008. Knowledge, attitudes and practices of women regarding the prevention of mother-to-child transmission (PMTCT) programme at the Vanguard Community Health Centre, Western Cape–a pilot study. *South African Journal of Clinical Nutrition,* 20**,** 71-78.

PIWOZ, E. G. & BENTLEY, M. E. 2005. Women's voices, women's choices: the challenge of nutrition and HIV/AIDS. *The Journal of Nutrition,* 135**,** 933-937.

PIWOZ, E. G., HUMPHREY, J. H., TAVENGWA, N. V., ILIFF, P. J., MARINDA, E. T., ZUNGUZA, C. D., NATHOO, K. J., MUTASA, K., MOULTON, L. H. & WARD, B. J. 2007. The impact of safer breastfeeding practices on postnatal HIV-1 transmission in Zimbabwe. *Journal Information,* 97**,** 1249-1254.

POLIT, D. & BECK, C. 2008. *Nursing Research Principle And Methods,* Philadelphia, Lippincott.

POLIT, D. F. & BECK, C. T. 2004. *Nursing Research: Principles and Methods: Principles and Methods,* Philadelphia, J.B. Lippincott Williams and Wilkins.

POLIT, D. F. & HUNGLER, B. P. 2001. *Nursing Research; Principles And Methods,* Philadelphia, Lippincott.

ROLLINS, N., LITTLE, K., MZOLO, S., HORWOOD, C. & NEWELL, M.-L. 2007. Surveillance of mother-to-child transmission prevention programmes at immunization clinics: the case for universal screening. *Aids,* 21**,** 1341-1347.

RUJUMBA, J., TUMWINE, J. K., TYLLESKÄR, T., NEEMA, S. & HEGGENHOUGEN, H. K. 2012. Listening to health workers: lessons from Eastern Uganda for strengthening the programme for the prevention of mother-to-child transmission of HIV. *BMC health services research* [Online], 12. Available: http://www.biomedcentral.com/1472-6963/12/3 [Accessed 14th July 2013].

SCOTT, J., BANSI, L. & IVENS, D. 2006. HIV test uptake after introducing an opt-out screening system. *International Journal of STD & AIDS,* 17**,** 213-213.

SHAPIRO, R., HUGHES, M., OGWU, A., KITCH, D., LOCKMAN, S., MOFFAT, C., MAKHEMA, J., MOYO, S., THIOR, I. & MCINTOSH, K. 2010. Antiretroviral regimens in pregnancy and breast-feeding in Botswana. *New England Journal of Medicine,* 362**,** 2282-2294.

SIBEKO, L., COUTSOUDIS, A. & GRAY-DONALD, K. 2009. Mothers' infant feeding experiences: constraints and supports for optimal feeding in an HIV-impacted urban community in South Africa. *Public Health Nutrition,* 12**,** 1983-1990.

SIBEKO, L., NZUZA, S., COUTSOUDIS, A. & GRAY-DONALD, K. 2008. Heat-treated expressed breast milk is a feasible feeding option for South African respondents living with HIV: a mixed methods approach. *XVII International AIDS Conference.* Mexico City.

SIDIBE, M. 2010. *UNAIDS 2011–2015 Strategy: Getting to Zero,* Geneva, Joint United Nations Programme on HIV/AIDS.

SOWELL, R. L., SEALS, B. F., PHILLIPS, K. D. & JULIOUS, C. H. 2003. Disclosure of HIV infection: how do women decide to tell? *Health Education Research,* 18**,** 32-44.

SPRAGUE, C., CHERSICH, M. F. & BLACK, V. 2011. Health system weaknesses constrain access to PMTCT and maternal HIV services in South Africa: a qualitative enquiry. *AIDS Research Therapy,* 8**,** 1-9.

SRIPIPATANA, T., SPENSLEY, A., MILLER, A., MCINTYRE, J., SANGIWA, G., SAWE, F., JONES, D. & WILFERT, C. M. 2007. Site-specific interventions to improve prevention of mother-to-child transmission of human immunodeficiency virus programs in less developed settings. *American Journal of Obstetrics and Gynecology,* 197**,** S107-S112.

STUEBE, A. 2009. The risks of not breastfeeding for mothers and infants. *Reviews in Obstetrics and Gynecology,* 2**,** 222-231.

SWARTS, S., KRUGER, H. S. & DOLMAN, R. C. 2010. Factors aff ecting mothers' choice of breastfeeding vs. formula feeding in the lower Umfolozi district war memorial hospital, KwaZulu-Natal. Health SA Gesondheid, 15, 475. doi: 410.4102/hsag.v4115i4101.4475. .

TAHA, T., KUMWENDA, N., HOOVER, D., KAFULAFULA, G., FISCUS, S., C, N., CHEN, S. & BROADHEAD, R. 2006. The impact of breastfeeding on the health of HIV-positive mothers and their children in sub-Saharan Africa. *Bull World Health Organ,* 84, 546-554.

TERBLANCHE, M., DURRHEIM, K. & PAINTER, D. 2008. *Research In Practice,* Cape Town, University of Cape Town.

TERRE BLANCHE, M. & DURRHEIM, K. 1999. Social constructionsit Methods. *In:* TERRE BLANCHE, M. & DURRHEIM, K. (eds.) *Research in Practice: Applied methods for social sciences.* Cape Town: UCT Press.

THAIRU, L. N., PELTO, G. H., ROLLINS, N. C., BLAND, R. M. & NTSHANGASE, N. 2005. Sociocultural influences on infant feeding decisions among HIV-infected women in rural Kwa-Zulu Natal, South Africa. *Maternal & Child Nutrition,* 1**,** 2-10.

THEA, D. M., ALDROVANDI, G., KANKASA, C., KASONDE, P., DECKER, W. D., SEMRAU, K., SINKALA, M. & KUHN, L. 2006. Post-weaning breast milk HIV-1 viral load, blood prolactin levels and breast milk volume. *AIDS (London, England),* 20**,** 1539-1547.

THIRY, L., SPRECHER-GOLDBERGER, S., JONCKHEER, T., LEVY, J., VAN DE PERRE, P., HENRIVAUX, P., COGNIAUX-LECLERC, J. & CLUMECK, N. 1985. Isolation of AIDS virus from cell-free breast milk of three healthy virus carriers. *The Lancet,* 326**,** 891-892.

TOURÉ, H., AUDIBERT, M. & DABIS, F. 2010. To what extent could performance-based schemes help increase the effectiveness of prevention of mother-to-child transmission of HIV (PMTCT) programs in resource-limited settings? A summary of the published evidence. *BMC Public Health,* 10**,** 1-8.

TOWNSEND, C. L., CORTINA-BORJA, M., PECKHAM, C. S., DE RUITER, A., LYALL, H. & TOOKEY, P. A. 2008. Low rates of mother-to-child transmission of HIV

following effective pregnancy interventions in the United Kingdom and Ireland, 2000-2006. *Aids,* 22**,** 973-981.

TULLY, M. 1999. Is pasteurized mother's own or donor milk an answer to the HIV crisis? *J Hum Lact,* 15**,** 345-346.

UNAIDS 2002. *Report on the global HIV/AIDS epidemic.,* Geneva, UNAIDS.

UNAIDS 2008. *Report On The Global Aids Epidemic,* Genvea, UNAIDS.

UNAIDS 2009. *Report On The Global HIV/AIDS Epidemic,* Geneva, UNAIDS.

UNAIDS 2010. *UNAIDS Report on the Global AIDS Epidemic,* Geneva, UNAIDS.

UNAIDS, UNICEF & WHO 1998. *HIV and Infant Feeding Guidelines for Decision-makers. ,* Geneva, Switzerland, UNAIDS/UNICEF/WHO.

UNICEF, UNAIDS, WHO & UNFPA 2003. *Hiv And Infant Feeding: A Guide For Health-Care Managers And Supervisors,* Geneva, UNICEF, UNAIDS, WHO, UNFPA.

UNICEF. 2010. *Children and AIDS. Fifth Stocktaking Report,* Geneva, UNICEF.

VAN LETTOW, M., BEDELL, R., LANDES, M., GAWA, L., GATTO, S., MAYUNI, I., CHAN, A. K., TENTHANI, L. & SCHOUTEN, E. 2011. Uptake and outcomes of a prevention-of mother-to-child transmission (PMTCT) program in Zomba district, Malawi. *BMC Public Health,* 11**,** 1-8.

WHO 2001. *Technical Consultation. New data on the prevention of mother to- child transmission of HIV and their policy implications,* Geneva, WHO

WHO 2003. *Global strategy for in¬fant and young child feeding. Geneva: World Health Organization,* Geneva, WHO.

WHO 2004. *HIV Status Disclosure to Sexual Partner,* Geneva, WHO.

WHO 2006. *HIV and Infant Feeding Technical Consultation held on behalf of the Inter-agency Task Team (IATT) on Prevention of HIV Infections in Pregnant Women, Respondents and Their Infants,* Geneva, WHO.

WHO 2007. *HIV and Infant Feeding: New evidence and Programmatic Experience. Report of a technical consultation held in Geneva, Switzerland, 25–27 October, 2006,* Geneva, Switzerland, WHO.

WHO 2008. *Towards Universal Access, Scaling Up Priority HIV/AIDS Interventions In The Health Sector,* Geneva, WHO.

WHO 2009. *Guidelines On HIV And Infant Feeding. Principles And Recommendations For Infant Feeding In The Context Of HIV And A Summary Of Evidence,* Geneva, WHO.

WHO 2009a. *HIV and infant feeding. Revised principles and recommendations. Rapid Advice,* Geneva, WHO.

WHO 2009b. *HIV and Infant Feeding: Revised Principles and Recommendations. Rapid Advice,* Geneva, WHO.

WHO 2010a. *HIV And Infant Feeding,* Geneva, WHO.

WHO 2010b. *Infant Feeding Options In The Context Of HIV,* Geneva, WHO.

WHO 2010c. *PMTCT strategic vision 2010–2015. Preventing mother to child transmission of HIV to reach the UNGASS and Millenium Goals.Movingtowards the elimination of Paediatric HIV,* Geneva, WHO.

WHO 2010d. *Rapid Advice: Use Of Antiretroviral Drugs For Treating Pregnant Women And Preventing Hiv Infection In Infants,* Geneva, WHO.

WHO 2013a. *Global Update on HIV Treatment 2013: Results, Impact and Opportunities,* Geneva, WHO.

WHO 2013b. *HIV and Infant Feeding,* Geneva, WHO.

WHO, UNAIDS & UNICEF 2010. *Towards universal access: Scaling up priority HIV/AIDS intervention in the health sector: progress report 2010,* WHO, Geneva.

WHO, UNICEF, UNAIDS & UNFPA 2007. *HIV and infant feeding. Update. Based on the technical consultation held on behalf of the Inter-agency Task Team (IATT) on Prevention of HIV Infection in Pregnant Women, Respondents and their Infants; 2006 Oct 25–27,* Geneva, Switzerland, WHO, UNICEF, UNAIDS, UNFPA.

WORLD MEDICAL ASSOCIATION DECLARATION OF HELSINKI. 2004. *WMA Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects* [Online]. Available: http://www.wma.net/en/30publications/10policies/b3/ [Accessed 11 April 2012].

YOUNG, S. L., CHANTRY, C., NGONYANI, M., ISRAEL-BALLARD, K., ASH, D. & NYAMBO, M. 2009. Flash-heating breastmilk is feasible in Dar es Salaam Tanzania. *FASEB J,* 23**,** LB443.

ZIEGLER, J., JOHNSON, R., COOPER, D. & GOLD, J. 1985. Postnatal transmission of AIDS-associated retrovirus from mother to infant. *The Lancet,* 325**,** 896-898.

APPENDICES

Appendix 1: Information sheet

Title: Exploring knowledge, attitudes and practices of pregnant women on infant feeding methods for Prevention of Mother to Child Transmission of HIV in a Regional hospital of EThekwini District.

You have been asked to be a part of a research study. This information sheet gives information on the study in order to help you decide if you want to participate. Take as much time as you like to read over this information carefully. Please ask any question you may have on the study. It is okay if you decide not to participate. If you decide to participate, you may stop participating in the study at any time**.**

A. Purpose

The purpose of this study is to assess the level of knowledge of pregnant women on the infant feeding practices on prevention of mother to child transmission of HIV.

The results from the study will be used to contribute to improvement in the knowledge of patients on infant feeding practices and for the health professionals to improve their performance in the PMTCT clinic.

B. Study contacts

The investigator in charge of this study is S.T. Khanyile (Master's Degree student). She can be reached at the contact information below.

C. Procedures

If you agree to participate in the study, the following will take place:

1. The data will be collected using a questionnaire.
2. The questionnaire will take 10 minutes minimum to complete and maximum one hour.
3. Before the completion of the questionnaire begins you will be given an opportunity to ask questions.

4. The researcher will clarify any questions that you may have regarding the questionnaires
5. Your answers will be recorded in to SPSS 15, by the researcher, by way of a notebook/laptop computer. Thus there will be no paper work to complete

D. Costs

There are no costs associated with participation in this study.

E. Confidentiality

1. There will be no reference to names of the respondents or the name of clinic. Title headings will be used to group data to allow for analysis e.g. age etc.
2. The researcher will keep all information in strict confidence
3. The published report and any published article that may occur from the study will make no reference to clinic or respondents name
4. The data will be destroyed after 5 years after data analysis
5. You do not have to answer any questions that you do not want to answer.

F. Benefits

There may be no direct benefit for your participation in this study. Your part participation is voluntarily.

G. Risk and discomfort

1. Your participation in this research may cause a loss of privacy. Everything will be done to assure that this does not occur.
2. You will be asked questions about your personal life in addition to your health and sexual relationship that may make you feel uncomfortable. You do not have to answer any questions that you do not want to answer. You can also stop participating in the study at any time.

3. If you feel upset about any of the questions that you were asked to answer, the principal investigator, MS S.T. Khanyile, will be happy to meet with you at your convenience to discuss your concerns and answer any of your questions.
4. You may become tired during the survey. If you do become tired, you will be able to rest and answer the questions at your own pace.

H Alternatives

You are free to participate in this study or not. It is okay to not participate in this study and there are no negative feelings or problems if you decide not to participate in the project.

The researchers will keep information about you as confidential as possible. You will not need to provide us with your name.

Office 031 360 3897 (Cell) 0725376362

Appendix 2: Inyuvesi yakwa Zulu-Natal Okufanele ukwazi

Isihloko: Ukubheka ulwazi nendlela yokuziphatha nokwenza yowesifazane okhulelwe ngohlobo lokondla umntwana nokuvikela ukutheleleka komtwana ngesifo sengculazi kwesinye sezibhedlela zesifunda saseThekwini

Uyacelwa ukuba ube ingxenye yalolucwaningo.Okubhalwe kuleli liphepha

kuzokusiza ukuthi ubone noma uyavuma ukubamba iqhaza kulolucwaningo noma cha.Ungabuza imibuzo ofuna ukuyibuza mayelana nocwaningo.Uvumelekile ukubamba iqhaza kulolucwaningo ,kanti futhi uvumelekile ukungalibambi iqhaza uma uthanda.

A. Inhloso yocwaningo

Inhloso yalolucwaningo ukubheka ulwazi abanalo omama ngokufida abantwana ukuda kanye nokuvikela umtwana egciwaneni lengculaza.

B. Ongathintana naye

Ongamthinta uma ufuna ulwazi oluthexaxa u Sibongile T.Khanyile(Masters student). Utholakala kule namba (0725376362).

C. Inqubo

Uma uvuma ukubamba iqhaza kulolucwaningo, nakhu okuzokwenzeka.

1. Ulwazi luzoqoqwa kusettshenziswa iphpha elinemibuzo.
2. Kuzothatha imizuzu eyishumi kuphela

ukuphendula imibuzo.

3. Ngaphambi kokuphendula imibuzo yocwaningo, uvumelekile ukubuza
4. uma kukhona ongakuqondi.

D. Izindleko

Akukho zindleko ozongena kuzo ngokubandakanyeka kwakho kulolucwaningo.

E. Imfihlo

1. Akukho lapho kuzovela khona igama lakho kulolucwaningo.

2. Umcwaningi uzolugcina luyimfihlo ulwazi.

3. Noma ingakhishelwa umphakathiimiphumela yalolucwaningo kodwa akukho lapho kuyovelaq khona igama lakho noma igama lesikhungo lapho lolucwaningo ;lwenziwa khona.

4. Ulwazi lwalolucwaningo luyoshiswa emumva kweminyaka emihlanu .

5. Uvumelekile ukuqhubeki nokubamba iqhaza kulolucwaningo noma kusiphi isigaba socwaningo.

F. Inzuzo

Akukho ozokuzuza ngokubamba iqhqza kulolucwaningo, kodwa nje uyacelwa ngesihle.

G. Okungenzeka

1. Sizoqinisekisa ukuthi konke sikwenza ngasese, ayikho imfihlo yakho ezovezelwa abantu.

2. Uzobuzwa imibuzo ngokuncelisa umtwana ubisi lwebele moma lwekopi, nokuphathelene nesifo sengulaza.

3. Uma uzizwa ungakhululekile kahle ngokuphendula enye yemibuzo, u S.T. Khanyile ongumcwaningi uzoxoxa nawe ngalokho okungakuphathi kahle

4. Kungenzeka uzizwe usukhathele ,uvumelekile ukuphumula ungajahi.

H.Okufanele ukwazi

Ukhululekile ukubamba noma ukungabambi iqhaza kulucwaningo. Uma ukhatha ukungabandakanyeki kulolucwango, yazi ukuthi akukho okubi okuzokwenzeka kuwe.

Umcwaningi uzogcina ulwazi luyimfihlo, ungalifaki igama lakho kunoma iyiphi ingxenye yawlolucwaningo Office 031 360 3897 (Cell) 0725376362

Appendix 3: Consent to participate in research project.

TITLE: Exploring knowledge, attitudes and practices of pregnant women on infant feeding methods for prevention of Mother to Child Transmission (PMTCT)of HIV in a regional hospital of EThekwini District.

Please answer the following questions:

Questions	Yes	No
Have you read and understood the information sheet about this study		
Have you been able to ask questions about this study		
Have you received enough information about this study		
Do you understand that you are free to withdraw from this study?		
At any time?		
Without giving a reason for your withdrawal?		
Your responses will be anonymised before they are analysed		
Do you give permission for members of the research team to have access to your anonymised responses?		
Do you agree to take part in this study		

Your signature will certify that you have voluntarily decided to take part in this research study having read and understood the information in the sheet for respondents. It will also certify that you have had adequate opportunity to discuss the study with an investigator and that all questions have been answered to your satisfaction.

Signature of participant : Date :

Signature of investigator : Date :

Appendix 4: Imvume yokubamba iqhaza kulolucwaningo

Isihloko: Ukubheka ulwazi nendlela yokuziphatha nokwenza yowesifazane okhulelwe ngohlobo lokondla umntwana nokuvikela ukutheleleka komtwana ngesifo sengculazi kwesinye sezibhedlela zesifunda saseThekwini.

Ngicela uphendule lemibuzo elandelayo:

Imibuzo	**Yebo**	**cha**
Ufundile waqonda ukuthi lifunani leliphepha onikwe lona ngalolucwaningo		
Ukwazile ukubuza Imibuzo ngalolucwaningo?		
Ulutholile ulwazi olwanele ngalolucwaningoHave?		
Uyazi ukuthi ukhululelkile ukuhoxa kulolucwaningo uma ungasathandi ukubamba iqhaza kulo?		
Noma nini		
Ngaphandle kokunika isizathu sokuhoxa kwakho		
Izimpendulo zakho ziyakuba imfihlo ngaphambi kokuhlaziywa.		
Uyavuma ukunika imvume kumalungu ocwaningo ukufinyelela ezimpendulweni zakho?		
Uyavuma ukubamba iqhaza kulolucwaningo?		

Ukusayina kwakho kusho ukuthi Uyavuma ukubamba iqhaza kulolucwaningo, Ufundile amaphepha owanikiwe wawaqonda ukuthi asho ukuthini.futhi kuzobe kusho ukuthi ubenesikhathi esenele nomcwaningi ukuthi kenixoxe ngalolucwaningo, nemibuzo obunayo iphenduleke ngendlela ekugculisayo

Obamb'iqhaza ocwaningweni : Date :

Umcwaningi : Date :

Appendix 5: Questionnaire (English version)

Title: Exploring knowledge, attitudes, and practices of pregnant women on infant feeding methods for prevention of mother to child Transmission (PMTCT) of HIV in a regional hospital of eThekwini District.

Respondent's Number….....Date …….....Time……

Section A: Demographic Data

1.1 How old are you …….years)

1.2 What is your current marital status?

Single	
Engaged	
Cohabiting	
Married	
Widow	
Other (specify)…….....	

1.3 What is your race?

African	
Indian	
Coloured	
Whites	

1.4 What is your highest educational level that you have passed?

No formal schooling	
Primary Level	
Secondary Level	
Grade 12	
Post Matric Diploma or Certificate	
Degree(s)	

1.5 What is your religion?

Roman Catholic	
Zionist	
Faith Mission	
Other (specify)…….	

1.6 Are you employed?

Yes	
No	

1.6.1 If working or employed please ask questions 1.6.1.1 and 1.6.1.2. If not working

Skip the following two questions and ask question 1.7.

1.6.1.1 What is your type of occupation?

Labourer	
Nurse	
Teacher	
Other (specify)……..	

1.6.1.2 How much is your average income per month?

Below R 1000	
R1000 – R2000	
R 2001 – R3000	
R 3001 – R 4000	
R 4001 – R 5000	
Above R5000	

Respondent partner and or husband

1.7 How old is your partner / husband ……. (Years)

1.8 What is your partner's highest educational level that he has passed?

No formal schooling	
Primary Level	
Secondary Level	
Grade 12	
Post Matric Diploma or Certificate	
Degree(s)	

1.9 Is your partner / husband employed?

Yes	
No	

If employed please answer the following questions and answer question

1.9.1. What is your partner's employment or occupation?

Labourer	
Police	
Teacher	
Other (specify)…….	

1.9.2 How much is your partner's average income per month?

Below R1000	
R1000–R2000	
R2001–R3000	
R3001-R4000	
R4001–R5000	
Above R5000	

1.9.4 Who is the main bread winner or source of income in the family?

None	
Father	
Mother	
Other (specify)……..	

1.9.5 How much is the family's income per month?

Below R1000	
R1000 – R2000	
R2001 – R3000	
R3001 – R4000	
R4001 – R5000	
Above- R5000	

Housing

1.10 How would you describe the area in which you are residing?

Urban (City)	
Rural (Country side)	
Any other (specify)……..	

1.11 Where do you get water for use in your house?

Tap running water in the “house”	
Tap outside	
Communal tap	
Stream/River/Dam	
Other (specify)……...	

1.12 Do you have fridge in your house?

Yes	
No	

1.13 Do you have a separate area for cooking in your “house”?

Yes	
No	

1.14 How is waste disposed from where you live?

Municipality removes it	
Communal waste dump	
Dumped in stream/river/dam	
Other (specify)……..	

1.15 Which of the following people live with you in your house dwelling?

Husband	
Boyfriend	
Fiance	
Parents/in-laws	
Grandparents	
Siblings or other family	
Child/ children	
Other (specify)……	

1.16 How many people, including yourself, live in your house dwelling (for at least three months of the year)?

2 - 4	
5 – 7	
8 – 10	
11 or More	

1.17 Do you have children?

Yes	
No	

1.17.1 If yes, how many children do you have (1,2 3 etc)?.....

1.18 When is you last normal menstrual period (month) .....?

1.19 When is expected date of delivery.....

1.20 At how many weeks of your pregnancy did you first book your antenatal care?

SECTION B: KNOWLEDGE OF PREGNANT WOMEN ON HIV AND TRANSMISSION

2.1 Have you ever been taught about HIV?

yes	
no	

2.2 How is HIV transmitted from one person to the other?

Statement	Strongly agree	Agree	Disagree	Strongly Disagree
Hugging				
Kissing				
Saliva				
Sex				
Sharing utensils				
Sharing razor blades				
Sores on the breast				
Contact with blood				
Sharing a bath				

2.3 How does the spread of the HIV virus occur from the mother to the baby?

Statement	Strongly agree	Agree	Disagree	Strongly Disagree
During pregnancy				
During delivery				
Breast -feeding				
Formula feeding				

2.4 What do you know about preventing transfer of HIV from mother to the Child?

…….

…….

…….

Section C: Attitudes of pregnant women towards PMTCT through infant feeding methods

3.1 Whom do you want to give you health information regarding HIV in the antenatal

Care?

doctor	
Nurse	
Lay counsellor	

3.1.1 Do you think that PMTCT is about the baby only not you?

yes	
no	

3.2 What is the attitude of your in-laws regarding infant feeding practices (breast feeding or bottle feeding)?

……

……

……..

3.3 Have you ever been part of PMTCT programme?

yes	
no	

SECTION D: PRACTICES THAT PREGNANT WOMEN INTEND FOLLOW AS METHODS OF FEEDING THEIR INFANTS.

4.1 Do you plan to feed/give your baby before 6 months the following to drink?

	Yes	**No**
The milk you are provided with (NAN Pelagon)		
Breast milk		
Animal milk (e.g. cow/goat)		
Water		
Tea or juice		
Cereals or porridge		
Vegetables or fruit		
Medication (hospital/clinic)		
Traditional medicines		

4.2 How will you feed the milk to the baby?

Cup	
Bottle	
Spoon	

4.3 How will you clean the container afterwards?

……..

……

.....

4.4 When your baby gets sick, where do you take him/her for help?

A family member or friend	
The clinic	
The hospital	
Traditional healer	
Wait until baby gets better	
Any other: (specify)	

SECTION E: SOURCES OF INFORMATION OF PREGNANT WOMEN ON HEALTH RELATED ISSUES AND HIV

5.1 Who gave you advice on what to feed your baby?

Husband	
Nurse/sister	
Family	
Friend(s)	
HIV/AIDS Counsellors	

5.2 Whom do you want to give you health information regarding HIV in the antenatal

Care?

doctor	
Nurse	
Lay counsellor	

5.3. Do you read books, watch television programmes on HIV?

yes	
no	

SECTION F: FACTORS INFLUENCING CHOICE OF INFANT FEEDING METHOD

6.1. Which of the following responses are important to you, when you decided on the type of infant feeding method of your baby?

	Yes	**No**
Not to transmit the virus to your baby		
To make sure nobody finds out you are HIV positive		
To feed your baby the same way your friends do		
To feed your baby the same way your mother/grandmother did		
To get the milk for free		

The opinion of your husband/fiancé/boyfriend		
The opinion of your family		
The opinion of your friends		
The opinion of the sisters at hospital/clinic		
Media reports on bottle feeding		

6.2 What do most of your friends feed their babies?

The milk you are provided with (NAN)	
Other tin milk (S26, Lactogen)	
Breast milk	
Animal milk (cow/goat)	
Other (specify) ……..	

6.3 Will you feel guilty for whatever method you plan to choose?

yes	
no	

6.4 Are people at home in favour of you "bottle feeding" your baby?

"bottle feeding"

Very much in favour of "bottle feeding"	
In favour of "bottle feeding"	
Against "bottle feeding" against it	

Very much against “bottle feeding”	

6.5 Who taught you to make the milk?

Nurse/sister	
HIV/AIDS Counsellors	
Family	
Friends	

6.6 How do you know how much milk your baby should get?

The nurse told me	
Family / friends told me	
You look at the back of the tin	
You give the baby as much as he/she will take	
You guess	

THANK YOU FOR YOUR TIME AND FOR PARTICIPATING IN THE STUDY!

Appendix 6: Imibuzo yocwaningo kamama okhulelwe

Isihloko: Ukubheka ulwazi nendlela yokuziphatha nokwenza yowesifazane okhulelwe ngohlobo lokondla umntwana nokuvikela ukutheleleka komtwana ngesifo sengculazi kwesinye sezibhedlela zesifunda saseThekwini.

Uyacelwa ukuba ufake loluphawu x ebhokisini lempendulo yakho.

Isigaba A

1.1 Uneminyaka emingaki?

1.2 Ushadile?

Faka ux maqondana nempendulo yakho kulokhu okungezansi

Ushadile	
awushadile	
uthembisile	
unomasihlalisane	

1.3 Ubuzwebakho?

ungumAfrika	
iNdiya	
iKhalathi	

1.4Izinga lakho lemfundo ephakeme

No formal schooling	
Primary level	
Secondary level	
Grade 12	
Post Matric diploma or certificate	
Degree (s)	

1.5 Iliphi ibandla okhonza kulo kulawa alandelayo?

Roman Catholic	
Iziyoni	
Faith Mission	
Okunye…….	

1.6 Uyasebenza?

yebo	
cha	

1**.6.1 Uma usebenza phendula unamba 1.6.1 no 1.6.2**

1.6.1Uma usebenza wenza msebenzimuni?

Usebenza ezindlini	
unesi	
Unguthisha	
Okunye…….	

1.6.2 Uhola malini ngenyanga?

< R1000	
R1000-R2000	
R2001-3000	
R3001-4000	
R4001-5000	
>R5000	

1.7 Lineminyaka emingaki isoka noma umyeni wakho?

1.8 Izinga lemfundo lomyeni wakho/ isoka

akafundile	
eprimary	
esecondary	
Grade 12	
Post matric diploma or certificate	
enyuvesi	

1.9 Uyasebenza umyeni/ isoka lakho?

yebo	
cha	

Uma esebenza ,phendula umbuzo1.9.1 no1.9.2

1.9.1.1 Uma esebenza usebenza msebenzi muni?

iphoyisa	
uthisha	
unogada	
Okunye…….	

1.9.1.2 Uhola malini?

< R1000	
R1000-R2000	
R2001-3000	
R3001-4000	
R4001-5000	
>R5000	

1.9.2 Ubani owondlayo ekhaya?

akukho	
ubaba	
umama	
Noma omunye(chaza)	

1.9.3 Imalini eniyitholayo emndenini ngenyanga?

< R1000	
R1000-R2000	
R2001-3000	
R3001-4000	
R4001-5000	
>R5000	

Ezezindlu

1.10 Uhlala kuphi?

edolobheni	
emakhaya	
Enye indawo……..	

1.11 Uwathola kuphi amanzi?

Umpompi wamanzi endlini	
Umpompi ngaphandle	
Umpompi wamphakathi	
emfuleni . idam	
Okunye…….	

1.12 Unaso isiqandisi ekhaya?

Yebo	
Cha	

1.13 Unalo ixhiba lokupheka ekhaya?

Yebo	
Cha	

1.14 Uthuthwa kanjani udoti nendle lapho uhlalakhona?

Umasipala	
Ibhakede	
Niya entabeni	
Okunye	

1.15 Ubani ohlala naye kulaba abalandelayo?

Umyeni	
isoka	
abazali	
Ugogo nomkhulu	
Izingane zakini	
okunye	

1.16 Bangaki abantu ohlala nabo

2-4	
5-7	
8-10	
11 noma ngaphezulu	

1.17 Unabo abantwana?

yebo	
cha	

1.17.1Uma ethi unabo buza lombuzo olandelayo

1.17.2 Bangaki abantwana bakho?

1.18 Wagcinanini esikhathini?

1.19 Uyobeletha nini?

1.20 Uyiqale unamaviki amangaki I ikliniki yokuxukuza

2 Isigaba B

2.1 Wake wezwa nge HIV?

yebo	
cha	

2.2 Uma wake wezwa, kuthiwa umuntu utheleleka ngakuphi kulokhu okulandelayo?

isitatimende	Ngivumelana kakhulu	Ngiyavuma nje	angivumelani	Angivumelani impela
ukuhagana				
ukuqabulana				
amathe				
ucansi				
Ukudla ngeisipuni somunye				
Ukusebenzisa ileza eyodwa uma sigcaba				
Izilonda emabeleni				
Ukuthinta igazi lomunye				
Ulusebenzisa u bhavu oyodwa wokugeza				

2.3 Itheleleka kanjani ingane nge ngculaza?

isitatimende	Ngivumelana kakhulu	Ngiyavuma nje	angivumelani	Angivumi impela
Ngesikhathi ukhulelwe				
Ngesikhathi ubeletha				
Ngesikhathi uncelisa				
Ukuncelisa ibhodlela				

2.4 Yikuphi okwaziyo ngokuvikela ukuthelela umtwana esiswini nge ngculazi?

……..……..... ....

Isigaba C

3.1 Ubani ofuna akufundise nge ngculaza ekliniki

udokotela	
unesi	
Amalay khansela	

3.1.1Ucabanga ukuthi ukuvikela ingane kuphela okusemqoka hayi wena?

yebo	
cha	

3.2 Bacabangani abasemzini wakho ngokuncelisa noma ukunika ithini uma usubelethe?

……..... ……

3.3 Wake waba ingxenye yokuvikela ingane ekuthelelekeni yingculazi?

Yebo	
cha	

4. Isigaba D

4.1 Uhlela ukondla/ ukunika umtwana wakho lokhu okulandelayo?

	yebo	Cha
Ubisi lwethini		
Ubisi lwebele		
Ubisi lwesilwane (njenkomo noma imbuzi)		
amanzi		
itiye		
ijusi		
Umuthi kadokotela		
Imithi yesizulu		
izithelo		

4.2 Uzomnika kanjani umtwana ubisi?

ngenkomishi	yebo	cha
ngebhodlela		
ngetispuni		

4.3 Uzoyihlanza kanjani into obukade ufida ngayo ingane?

……
…….
……

4.4 Uma umtwana wakho egula umusa kuphi ukuthola usizo lwezempilo?

`kumngani	
ekiliniki	
esibhedlela	
Kumelaphi wendabuko	
Ulinda aze abengcono	
Okunye……	

5. Isigaba E

5.1Ubani owakweluleka ngokuthi kufanele uyinikeni ingane?

Umyeni wakho	
unesi	
abomndeni	
abangani	
Amakhansela afundisa ngengculaza	

5.2 Ubani ofuna akunike ulwazi ngesifo sengculazi emtholampilo?

udokotela	
unesi	
amakhansela	

5.3 uyazifunda izincwadi?

Yebo	
cha	

6 Isigaba F

6.1 kumele abe ngu 6.1 Ngesikhathi wenza isinqumo sendlela yokondla umntwana kwakusemqoka kuwe lokhu okulandelayo?

Ukungatheleli ingane nge HIV		
Kungazi muntu ukuthi une HIV		
Ufide ingane njengona kwenza abangani bakho		
Ukufida ingane njengoba kwakwenza umama wakho		
Njengokusho kuka myeni wakho		
Njengokusho komndeni wakho		
Okushiwo imisakazo		

6.2 Abangani bakho abaningi bazifida ngani izingane zabo?

Ubisi iNAN	
S26	
Ubisi lwebele	
Ubisi lwenkomo	
Okunye…….	

6.3 Angeke yini uzisole ngozokhetha ukukupha ingane yakho/ ibele noma ikopi?

yebo	
cha	

6.4 Ekhaya bayakusaphotha ngokufida ingane ibhodlela?

Bangisaphotha kakhulu	
Bayangisaphotha nje	
Abafuni ngifide ibhodlela	
Abafuni nokulibona ibhodlela	
Okunye	

6.5 Ubani owakufundisa ukwenza ubisi?

unesi	
Ikhansela lengculazi	
umndeni	
abangani	
Okunye…….	

6.6 Wazi ngani ukuthi lungakanani ubisi okufanele lutholwe ingane yakho?

Watshelwa unesi	
Watshelwa umndeni	
Wabona ethinini	
Umnika okuningi angakwazi ukukudla akuqede	
Uyaqagela nje	
Watshelwa omunye (chaza)	
Okunye	

NGIYABONGA NGOKUBAMBA KWAKHO IQHAZA KULOLUCWANINGO

Appendix 7: Application for permission to conduct research project

The University of KwaZulu-Natal
Department of Nursing Science
DURBAN
4001

16 September 2010

The Head of Department
The Department of Health
Province of KwaZulu-Natal
Private Bag 95051
3200

Dear Sir/Madam

APPLICATION FOR PERMISSION TO CONDUCT RESEARCH PROJECT

I am a registered learner at the University of KwaZulu-Natal. As a requirement to the fulfilment of a coursework Master's Degree in Maternal and Child Health, I need to complete a research study entitled: Exploring knowledge, attitudes and practices of pregnant women on infant feeding methods for Prevention of Mother to Child Transmission (PMTCT) of HIV in a regional hospital of Ethekwini District.

I am requesting for your permission to access and survey pregnant women in your institution.

Copies of research proposal, letter requesting permission from the Chief Executive Officer of a regional hospital where this study will be conducted, approval from the University of KwaZulu-Natal ethics committee, the information document about the study to respondents and consent to participate to the research project will be enclosed for your attention.

I hope my application will receive your favourable consideration, because the information obtained will be of relevance to the institution and even the province itself.

Your assistance in this matter and your written permission will be appreciated.

Yours truly,

Yours truly,

Sibongile Thulisiwe Khanyile

CC: University of KwaZulu-Natal Committee

Research Supervisor: Mrs S. Majeke

University of KwaZulu-Natal, Howard College Campus,

Email address: majekes3@ukzn.ac.za

Tel no. (031) 2603317 Fax 031 2601543

Appendix 8: Application for permission to conduct research project

University of KwaZulu-Natal
Howard College Campus
School of Nursing, 4001
29 July 2010

The Chief Executive Officer
King Edward VIII Hospital
P/Bag Congella
4013

Dear Sir/Madam

Application for permission to conduct research project

I am a registered learner at the University of Kwa Zulu-Natal. As a requirement to the fulfilment of a coursework Master's Degree in Maternal and Child Health, I need to complete a research study entitled: Exploring knowledge, attitudes and practices of pregnant women on infant feeding methods for Prevention of Mother to Child Transmission (PMTCT) of HIV in a regional hospital of Ethekwini District.

I am requesting for your permission to access and survey pregnant women in your institution.

Copies of research proposal, letter requesting permission from the KwaZulu –Natal Department of Health, approval from the University of KwaZulu-Natal ethics committee, the information document about the study to respondents and consent to participate to the research project will be enclosed for your attention.

I hope my application will receive your favorable consideration, because the information obtained will be of relevance to the institution and even the province itself.

Your assistance in this matter and your written permission will be appreciated.

Yours truly,

Sibongile Thulisiwe Khanyile

CC: University of KwaZulu-Natal Committee

Research Supervisor: Mrs S. Majeke

University of KwaZulu-Natal, Howard College Campus,

School of Nursing

Email address: majekes3@ukzn.ac.za

Tel. No. (031) 2603317 Fax 031 2601543

Appendix 9: Approval from the Department of Health of KwaZulu Natal

HEALTH
KwaZulu-Natal

KING EDWARD VIII HOSPITAL
Private Bag X02, CONGELLA 4013
Corner of François & Sydney Road
Tel.:031-3603853, Fax: 031-2061457
Email.:rejoice.khuzwayo@.kznhealth.gov.za
www.kznhealth.gov.za

Enq.:Miss. R.Khuzwayo
Ref.: KE 2/7/1/ (08/2011)
Research Programming

3 February 2011

Miss. ST Khanyile
25 Campile Crescent
Avoca Hills
DURBAN
4051

Dear Ms. Khanyile

Protocol : "Exploring knowledge, attitude and practices of pregnant women on infant feeding methods for PMTCT in a regional hospital of Ethekwini District "

Permission to conduct research at King Edward VIII Hospital is provisionally granted, pending approval by the Provincial Health Research Committee, KZN Department of Health.

Kindly note the following:-

- The research will only commence once confirmation from the Provincial Health Research Committee in the KZN Department of Health has been received.
- Signing of an indemnity form at Room 8, CEO Complex before commencement with your study.
- King Edward VIII Hospital received full acknowledgment in the study on all Publications and reports and also kindly present a copy of the publication or report on completion.

The Management of King Edward VIII Hospital reserves the right to terminate the permission for the study should circumstances so dictate.

Yours faithfully

SUPPORTED/~~NOT SUPPORTED~~

04/07/2011

DR. OSB BALOYI
ACTING CEO & MEDICAL MANAGER

DATE

uMnyango Wezempilo . Departement van Gesondheid

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 10: Ethics approval from University Of Kwa Zulu Natal

UNIVERSITY OF
KWAZULU-NATAL

Research Office
Govan Mbeki Centre
Westville Campus
University Road
Chiltern Hills
Westville
3629
South Africa
Tel No: +27 31 260 3587
Fax No: +27 31 260 2546
E-mail: mahoodd@ukzn.ac.za

10 August 2010

Miss S T Khanyile
25 Campile Crescent
Avoca Hills
DURBAN
4051

Dear Miss Khanyile

PROTOCOL: Exploring knowledge, attitude and practices of pregnant woman on infant feeding methods for PMTCT in a regional hospital of Ethekwini District
ETHICAL APPROVAL NUMBER: HSS/0856/2010 H: Faculty of Humanities, Development and Social Sciences

In response to your application dated 02 August 2010, Student Number: **207519167** the Humanities & Social Sciences Ethics Committee has considered the abovementioned application and the protocol has been given **FULL APPROVAL.**

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Professor Steve Collings (Chair)
HUMANITIES & SOCIAL SCIENCES ETHICS COMMITTEE

SC/sn

cc: S J Majeke (Supervisor)
cc: Mr S. Reddy