



**Assessment of Knowledge, Attitude, and Practice of Pregnant Women in  
Respect of Prevention of Mother-To-Child Transmission (PMTCT) of  
HIV/AIDS at a Selected Antenatal Clinic in Durban, South Africa.**

Dissertation submitted to the school of Nursing and Public Health  
College of Health Sciences  
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In partial fulfilment for Coursework Master's in Nursing  
(Advanced Midwifery, Maternal and Child Health Nursing)

by  
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## **DECLARATION**

I, Samira Navazandeh Haghdoost, declare that:

This research project: “Assessment of Knowledge, Attitude, and Practice of Pregnant Women in Respect of Prevention of Mother-To-Child Transmission (PMTCT) of HIV/AIDS at a Selected Antenatal Clinic in Durban, South Africa” is my own unaided work. It is being submitted for the course work Master's degree in Advanced Midwifery, Maternal and Child Health Nursing at the University of KwaZulu-Natal, Durban, South Africa. I have not submitted this work for any purpose. All sources of information that have been utilised or quoted have been acknowledged by a complete reference.

Signed \_\_\_\_\_ Date \_\_\_\_\_

## ABSTRACT

**Background:** South Africa is one of the sub-Saharan African countries with high rates of HIV/AIDS infection and Kwazulu-Natal province has a particularly high rate of HIV prevalence. Mother-To-Child Transmission (MTCT) of HIV, which can occur during pregnancy, labour, or breastfeeding, is one of the causes of the high rate of HIV and AIDS among children in this region. One of the best strategies to reduce the rate of infection among children is the Prevention of Mother-To-Child Transmission (PMTCT) during pregnancy, labour, and the postnatal period by giving antiretroviral drugs to pregnant women who are HIV-positive. The reasons for an increasing MTCT of HIV might include lack of knowledge of mothers of the risk of MTCT, benefits of preventive interventions, such as prophylactic ARV drugs and infant feeding options.

Studies conducted in Sub-Saharan African countries showed that there was a low level of knowledge in mothers about MTCT and PMTCT services. Proper implementation of these services however, requires adequate knowledge and appropriate attitudes and practices of pregnant women toward PMTCT. As there was no published study covering KwaZulu-Natal province to demonstrate the relationship between these factors and PMTCT, it was considered necessary to conduct this study to identify the current level of knowledge of pregnant women and the effective factors impacting on their participation in the PMTCT program.

**Objective:** The objective of this study was to assess the level of knowledge, attitude, and practice of pregnant women toward the PMTCT program and associated factors in a selected antenatal clinic in South Africa.

**Methods:** This was an institution-based, cross-sectional study conducted among pregnant women attending an antenatal care clinic in eThekwin district, South Africa during August 2015. A simple random sampling technique was used to select 345 antenatal care attendees. Data were collected through use of a structured pre-tested questionnaire. Information was then entered into Statistical Package for the Social Sciences (SPSS), Version 22, and were analysed. Finally, data were explored through graphic displays, analysed, interpreted, and summarized.

**Results:** In this research, 345 voluntary pregnant women were studied. The mean age was 26.3 years and the majority (66.3%) had secondary education or above. Of the respondents, 52.7% were single, 38.7% had a regular boyfriend, 8.0% were married and 0.6% were separated. In addition, 29.2% were employed and 70.8% did not have any occupation. This study found that 58.5% had poor, 26.9% had moderate and 14.6% had good basic HIV/AIDS knowledge. On the other hand, 20.4% had poor, 67.6% had moderate and 12.0% had good knowledge on MTCT of HIV and its prevention and they obtained information from health care workers (89.4%) followed by television and radio (22.4%). It was found that age, level of education and occupation had a significant effect on the level of knowledge of respondents. Despite their moderate knowledge concerning PMTCT, 97.6% had a good attitude towards the PMTCT program and 83.1% would support it. Furthermore, it was found that 98.5% did the HIV test and of those who shared the test result, 42.8% were HIV-positive and 52% were HIV-negative. Of respondents, 93.3% discussed having an HIV test with their male partner and 71.0% of partners wanted a couple testing, 15.7% wanted woman to be tested alone and 3.3% did not want the woman to be tested. This study also revealed that 51.9% had antenatal clinic (ANC) visits in their previous pregnancy, but 29.7% did not. It was found that the knowledge level of participants significantly correlated with their ANC visits. In addition, 30.6% did not receive PMTCT counselling upon arrival at the antenatal clinic, but 69.4% received it and 89.8% of them were convinced to continue using PMTCT services.

**Conclusion:** The study showed that the knowledge of pregnant women about PMTCT was moderate, but there were some gaps found in their basic knowledge about HIV/AIDS. Moreover, their knowledge was significantly dependant on their age and education level. On the other hand, the majority had a good attitude and practice towards the PMTCT program. However, it is recommended that the PMTCT counselling should be extended to improve the knowledge of HIV/AIDS and PMTCT strategies in pregnant women through community mobilization.

## **DEDICATION**

This dissertation is dedicated to my dearest husband, Mehdi, whose love and unlimited patience gave me unceasing strength, motivation, and encouragement during the challenging moments of my life. He always stood behind me all the time, no matter what happened. Without his support, I would never have been able to accomplish this work.

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## LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
AIDSline	AIDS Information On-Line
ANC	Antenatal Care
ARRT	AIDS Risk Reduction Model
ART	Antiretroviral therapy
ARV	Antiretroviral
AZT	Zidovudine
cART	Combination ARV therapy
CD4	T-lymphocyte cell bearing CD4 receptor
DOH	Department of Health
EFV	Efavirenz
FDC	Fixed-dose combination
HAART	Highly Active Antiretroviral Therapy
HBM	Health Belief Model
HIV	Human Immune-deficiency Virus
KAP	Knowledge Attitudes and Practice
KZN	KwaZulu-Natal
LTF	Loss to follow-up
MEDLINE	Medical Literature Analysis and Retrieval System Online
MTCT	Mother-To-Child Transmission
MDG	Millennium Development Goal
NDOH	National Department of Health
NGO	Non-Governmental Organization
NVP	Nevirapine
PMMH	Prince Mshiyeni Memorial Hospital
PMTCT	Prevention of Mother-To-Child Transmission
SA	South Africa
Sd NVP	Single-dose nevirapine
SPSS	Statistical Package for the Social Sciences
STI	Sexually transmitted infections
TDF	Tenofovir Disoproxil Fumarate
UN	United Nations

UNAIDS	United Nations Program on HIV/AIDS
UNGASS	UN General Assembly Special Session
WHO	World Health Organization

# CHAPTER 1: INTRODUCTION

## 1.1 Introduction and background

The world today is facing serious challenges regarding the HIV/AIDS pandemic. The Human Immune-deficiency Virus (HIV) is a retrovirus that is the cause of acquired immunodeficiency syndrome (AIDS). AIDS is the cause of death of the most number of people all over the world. According to the report of the UNAIDS/AIDS (2013), the rate of people who have been infected with HIV worldwide was around 75 million at the end of 2012 and within this population, 36 million have died of HIV (UNAIDS, 2013).

Sub-Saharan Africa is one of the regions with the highest rates of HIV and AIDS. The statistics of the UNAIDS/AIDS (2013) show that the percentage of people with HIV infection in Sub-Saharan Africa is nearly 70% of the global total. This high percentage of infection remains a public health challenge for the world (UNAIDS, 2013).

Kwazulu-Natal province, in South Africa has the highest rate of HIV prevalence according to mid-year population estimates report by Statistics South Africa (Lehohla, 2011). Mother-To-Child Transmission (MTCT) of HIV is one of the causes of high rates of HIV and AIDS among the people in this region. More than 90% of children living with HIV are infected during pregnancy; however, the HIV transmission can occur during pregnancy, labour, or breastfeeding (Ngidi, 2011). The risk of HIV transmission from mother to child is estimated at 5-10% during pregnancy; 10-20% during delivery, and 10-20% in the postpartum period (Chirwa, 2011).

World leaders from 189 nations adopted the Millennium Development Goals (MDG) framework in September 2000, during the United Nations Millennium Summit to improve the lives of millions of people around the world. The framework consists of 8 goals, three goals (goals 4,5 and 6) are concerned with fighting HIV and AIDS and reducing the high rates of maternal and infant mortality attributed to HIV infection (UN, 2010).

According to the Millennium Development Goal 4, countries should plan to reduce child mortality by two-thirds before 2015 which means that they have to control the HIV infection among children as well well (Horwood, Haskins, Vermaak, Phakathi, Subbaye and Doherty, 2010).

One of the best strategies to reduce the rate of infection among children is the Prevention of Mother-to-Child Transmission (PMTCT) during pregnancy, labour, and the postnatal period by giving antiretroviral drugs to pregnant women who are HIV positive (NDOH, 2010). Regardless of several years of implementation of PMTCT program, they are failing to reach the majority of HIV positive women because of poor implementation. So the implementation of PMTCT program should be done efficiently and people should be encouraged to participate in this program (Doherty, Chopra, Nsibande and Mngoma, 2009).

Factors can affect peoples' collaboration such as, socio-demographic and cultural factors, level of knowledge and attitude (Juliet, 2006; Abajobir; and Zeleke, 2013; Atwiine, Rukundo, Mutibwa, Sebikali, Tumusiime, Turyamureeba and Birungi, 2012; Tatagan;, Mouhari-Toure;, Saka;, Akakpo;, Kombate;, Tchama;, Singo;, Mpélé; and Pitche, 2011; Boateng, Kwapong and Agyei-Baffour, 2013).

### ***1.1.1 The situation of HIV/AIDS in sub-Saharan Africa and South Africa***

UNAIDS estimated in 2013 that out of 35.0 million people living with HIV/AIDS, 24.7 million are living in sub-Saharan Africa, about 71% of the global total (UN, 2014).

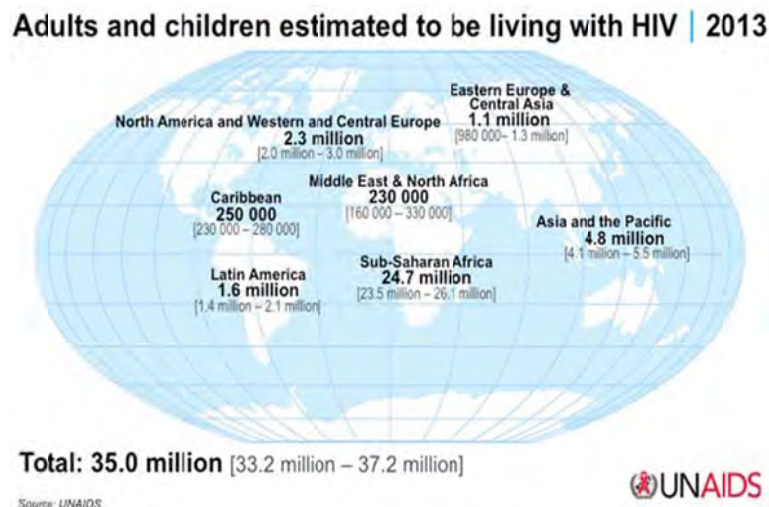


Figure 1.1: Number of adults and children living with HIV in the world (UNAIDS, 2013).



In sub-Saharan Africa, women comprise 58% of the total number of people living with HIV. There are also 2.9 million children (aged 0–14), living with HIV in sub-Saharan Africa. Unfortunately, within sub-Saharan Africa, 67% of men and 57% of women living with HIV are not receiving antiretroviral therapy (UN, 2014).

According to the Gap report (UNAIDS, 2014), Figure 1.2 shows that ten countries (Uganda, Zimbabwe, Ethiopia, Malawi, Zambia, South Africa, Kenya, Mozambique, the United Republic of Tanzania, and Nigeria) account for 81% of all people living with HIV in the region. The important point is that half of those live only in two countries: South Africa and Nigeria (UN, 2014).

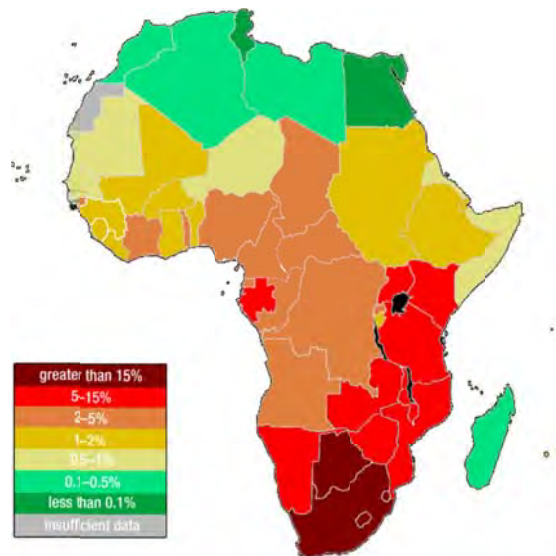


Figure 1.2: HIV/AIDS prevalence world map in 2009 according to UNAIDS data.

South Africa faces a major social and developmental challenge presented by the HIV/AIDS pandemic. Figure 1.2 illustrates the situation of HIV/AIDS prevalence in South Africa according to UNAIDS 2009 data. This figure confirms that South Africa has the highest incidence of HIV in the world. In 2012, an estimated 6.1 million people were living with HIV, and 240,000 South Africans died from AIDS-related illnesses (UNAIDS, 2013).

South Africa has nine provinces of which Kwazulu-Natal province has the highest rate of HIV prevalence according to a mid-year population estimates report (Lehohla, 2011).

Figure 1.3 shows that KwaZulu-Natal and Mpumalanga have the highest HIV prevalence. The survey took account of sex, age, race, and locality type (HSRC, 2014). South Africa has the highest number of people on HIV treatment, nearly 2.6 million, and is committed to nearly doubling that number in the next few years (UN, 2014).

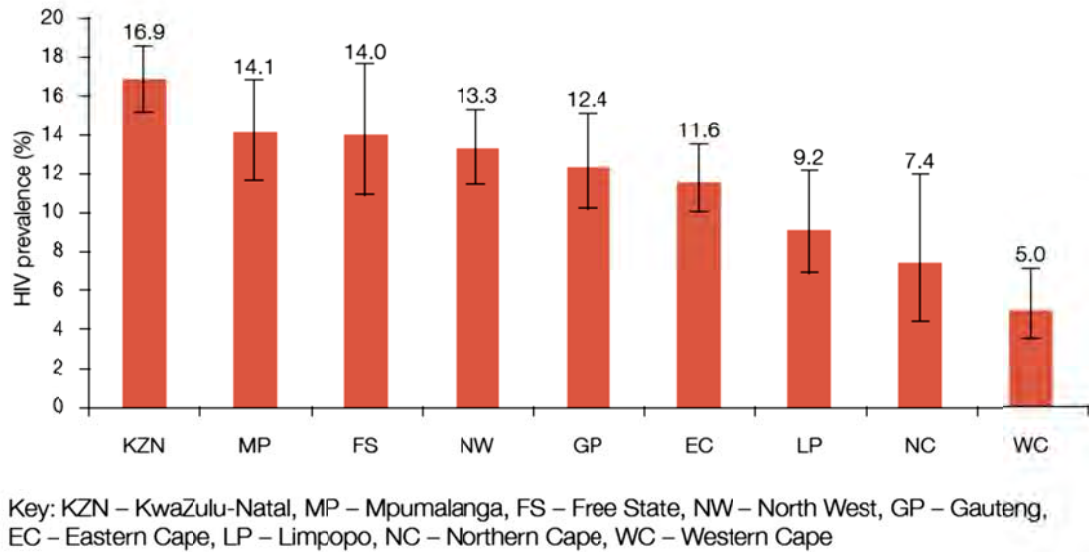


Figure 1.3: Overall HIV prevalence by province, South Africa 2012 (HSRC, 2014).

### ***1.1.2 Mother-To-Child Transmission (MTCT) Of HIV***

Women are more likely than men to get infected with HIV biologically, through unprotected heterosexual intercourse. Despite the physiology of women, gender inequalities and harmful gender norms continue to contribute to HIV-related vulnerability. According to *UNAIDS Global report* (2013), women who have experienced intimate partner violence are 50% more likely to be living with HIV.

The vulnerability of women to HIV remains particularly high in sub-Saharan Africa where 76% of all HIV-positive women live. In 2011, an estimated 92% of pregnant women living with HIV resided in this region. With the increasing evidence of HIV infection among women of reproductive age, there is a high incidence of perinatal transmission. Mother-to-child transmission (MTCT) of HIV is one of the causes of high rates of HIV and AIDS among the people in this region (Mmanga, 2013).

The Mother-To-Child Transmission (MTCT) of HIV refers to the transmission of HIV from an HIV-positive woman to her child during pregnancy, labour, delivery or breastfeeding. MTCT is by far the most common way that children get infected with HIV. In 2012 according to the *UNAIDS Global report* (2013), 14% of all new infections worldwide was related to MTCT. The rate of HIV transmission from an HIV-positive mother to her child if she is not receiving any antiretroviral medicines ranges from between 30% to 45% depending on the duration of breastfeeding (UNAIDS, 2013).

### ***1.1.3 The Prevention of Mother-To-Child Transmission (PMTCT)***

By the early 2000s, PMTCT pilot programs were in place in numerous countries as the global health community, non-governmental organisations (NGOs) and governments internationally began to implement services. PMTCT programs provide HIV-positive women with recommendations and services including antiretroviral therapy (ART), modifications in infant feeding practices (for example: exclusive breastfeeding or exclusive replacement feeding), and counselling (Baek and Rutenberg, 2010).

The use of antiretroviral therapy represents the first major breakthrough in the PMTCT and to date, ART is the most important strategy to prevent MTCT of HIV. Antiretroviral therapy consists of the combination of at least three antiretroviral (ARV) drugs to maximally suppress the HIV virus and to stop the progression of the HIV disease. Antiretroviral drugs are referred to as ARVs. Combination ARV therapy (cART) is referred to as highly active ART(HAART) (WHO, 2013).

PMTCT has had a major impact on the survival of mothers and children. A successful national PMTCT program can dramatically reduce infant, child, and maternal mortality, and improve mother and child health. The program has four important pillars:

1. Preventing HIV among women of reproductive age;
2. Providing appropriate counselling, support, and contraceptives to women living with HIV to meet their unmet needs for family planning;

3. Ensuring HIV testing and counselling, and access to ARVs for pregnant women living with HIV to prevent infection being passed on to their babies during pregnancy, delivery, and breastfeeding; and
4. Providing HIV care, treatment and support for women and children with HIV and their families (WHO, 2013).

According to PMTCT guidelines (WHO 2013, Option B+), all pregnant and breastfeeding women living with HIV should initiate lifelong ART (triple-combination ARVs) regardless of their CD4 cell count or WHO clinical stage. Moreover, ART should be maintained after delivery and completion of breastfeeding for life.

All infants born to HIV-positive mothers should receive a course of medication linked to the ARV drug regimen that the mother is taking and the infants feeding method. Countries are now following, adopting and implementing these recommendations within their own epidemiological settings (WHO, 2013).

## **1.2 Problem statement**

In 2012, AIDS-related causes resulted in the death of 210,000 children under 15 years of age out of a total of 1.6 million deaths due to AIDS (UNAIDS, 2013). Despite the improvements in PMTCT services over the years, MTCT of HIV infection is high especially in sub-Saharan Africa. Almost all of these infections occur in sub-Saharan Africa, and more than 90% are the result of mother-to-child transmission (MTCT) during pregnancy, labour/delivery, or through breastfeeding (Mujumali, 2011).

The transmission risk is about 30-40% for a child born to a mother with HIV infection in an African setting without interventions for PMTCT. In South Africa, the estimated risk of vertical transmission from HIV-infected mothers to their infants stands between 19% and 36%, depending on whether or not the child is breastfed (Ajewole, 2009).

The reasons for an increasing MTCT of HIV can include lack of knowledge of mothers of the risk of MTCT, benefits of preventive interventions, such as prophylactic ARV drugs and

infant feeding options (Abajobir; and Zeleke, 2013). Several studies have been conducted in sub-Saharan African countries on awareness and knowledge about HIV and PMTCT among pregnant women. The findings showed that there was a low level of knowledge amongst mothers about MTCT (Juliet, 2006; Abajobir; and Zeleke, 2013; Atwiine et al., 2012; Tatagan; et al., 2011; Boateng et al., 2013; Mujumali, 2011). Providing more information to promote a better understanding of the nature of PMTCT is a highly effective intervention and has an enormous potential to improve both maternal and child health.

Whilst Kwazulu-Natal province has the highest HIV prevalence rate there has been no published study to demonstrate the relationship between level of knowledge and attitude of pregnant women toward PMTCT. Consequently it is necessary to conduct this research project to identify the current level of knowledge of pregnant women and the effect this has on the PMTCT program.

### **1.3 Aim of the study**

The aim of this study is to assess the level of knowledge, attitude, and practice of pregnant women with regard to the PMTCT program in a selected antenatal clinic in eThekweni district, South Africa.

### **1.4 Research objectives**

- To describe the knowledge of pregnant women with respect to the PMTCT program at a selected antenatal clinic in Durban;
- To explore the attitude of pregnant women toward PMTCT;
- To identify the practice of pregnant women with regard to PMTCT; and
- To describe the socio-demographic factors, beliefs, and reproductive history that can affect the knowledge, attitude, and practice of pregnant women with regard to PMTCT.

## **1.5 Research questions**

- What knowledge do pregnant women have with respect to PMTCT in the eThekweni district?
- What is the attitude of pregnant women toward PMTCT?
- What is the practice of pregnant women with regard to PMTCT?
- What are the factors that can affect the knowledge and practice of pregnant women with regard to PMTCT?

## **1.6 Significance of the study**

In 2013, the United Nations AIDS Program (UNAIDS) revealed that of 3.2 million children under 15 years living with HIV, 240,000 were newly infected; mostly in sub-Saharan Africa (UNAIDS).

The Millennium Development Goal 4 is the reduction of child mortality by two-thirds, before 2015. Child and infant mortality rates have increased in 12 countries, including South Africa, mostly because of the burden of paediatric HIV disease which caused more than half of child deaths (Horwood et al., 2010). It is during pregnancy, birth, or breastfeeding that most of these children are infected by their mothers (Adedimeji, Abboud, Merdekios and Shiferaw, 2012).

To manage the HIV infection among children, the Prevention of Mother-to-Child Transmission (PMTCT) program is a priority in the world. This program provides services to avoid HIV infection of infants during pregnancy and labour such as, counselling, short-course preventive ARV regimens which prevent mother-to-child transmission and helping mothers to choose the best method for safe infant feeding during the 6 months after delivery. As a result, having more knowledge and a good attitude toward the PMTCT program is the first step to improve both maternal and child health.

This topic has been chosen due to the importance of PMTCT for reducing infant mortality rate. The results of this study can contribute to improve the quality of the PMTCT program that is

running in South Africa. The outcomes of this study will hopefully be beneficial to following groups:

- 1) **The pregnant women as the clients:** this study can increase the level of knowledge of pregnant women regarding PMTCT. It may also persuade pregnant women to know exactly what PMTCT is and can motivate pregnant women to follow the program because of improved knowledge.
- 2) **The health care providers as a profession:** the study will provide information about the knowledge and attitude of women toward PMTCT. This information can be very useful for health workers because if they know the level of knowledge of clients and the potential gaps, they can improve relationships between themselves and the clients.
- 3) **Policy makers:** the findings of the research can provide some useful information, which may assist in the design of new or improved policies for the utilization of PMTCT services for pregnant women.
- 4) **Research:** the findings of this study will assist researchers in their research and persuade them to conduct new research in respect of PMTCT and other related health issues.

## 1.7 Operational definitions

**Attitude:** A settled way of thinking or feeling about someone or something, typically one that reflects in a person's behaviour. Attitude can be formed from a person's past and present (Online Webster Dictionary).

**Antenatal care clinic:** The clinic that offers antenatal services to women while they are pregnant.

**HIV and AIDS:** The human immunodeficiency virus (HIV) is a retrovirus that infects the body's cells, and destroys or damages their function. The virus weakens the immune system, and makes the body more vulnerable to other infections. Acquired immunodeficiency syndrome (AIDS) is the most advanced stage of HIV-associated disease. HIV is acquired in

different ways including through unprotected sexual intercourse, through transfusion of contaminated blood, through sharing of contaminated needles, and through mother-to-child transmission (WHO, 2013).

**HIV-positive:** Refers to people who have taken an HIV test with a positive result and have been made aware of the test result (NDOH, 2010).

**Knowledge:** Facts, awareness and information, which are achieved by experience or education. Knowledge is also a theoretical or practical understanding of a subject (Online Webster Dictionary).

**Practice:** The actual application or use of an idea, belief, or method as opposed to theories about such application or use (Online Webster Dictionary).

**Pregnancy:** The period from conception to birth. Pregnancy is usually about 40 weeks, starting from the first day of the woman's last menstrual period, and is divided into three trimesters, each lasting three months (Mosby, 2008).

**Prevention of mother-to-child transmission of HIV:** Includes all interventions aimed at reducing or eliminating the risk of HIV transmission from a mother to her child at different stages of pregnancy, delivery and postnatal, and during breastfeeding. These involve the primary prevention of HIV among women of child-bearing age; prevention of unintended pregnancies among HIV-infected women; prevention of the transmission of HIV from the infected pregnant woman to her baby, in-utero and during breast-feeding; and the provision of care and support to HIV-infected women, their infants and their family, as recommended by the WHO (Ajewole, 2009).

## **1.8 Conceptual framework**

This research is guided by the *Health Belief Model* (HBM) (Glanz, Rimer and Viswanath, 2008) and the *AIDS Risk Reduction Model* (ARRM) (Catania, Kegeles and Coates, 1990). “The health belief model was developed in 1950 and holds that health behaviour is a function of an individual’s socio-demographic characteristics, knowledge and attitudes” (Glanz et al.,



2008). According to this model, a person who holds certain beliefs can change his/her behaviour. This means that promoting action to change a particular behaviour includes changing individuals' personal beliefs (Juliet, 2006).

The main assumption of HBM is that certain beliefs about a given condition have an impact on the likelihood of engaging in preventive health behaviour. This model declares that "the individual will take preventive health action when they feel susceptible to a certain condition and they feel that contracting the disease has serious consequences compared to the perceived benefits accruing from the same behaviour" (Juliet, 2006; Glanz et al., 2008).

The ARRM was developed by Catania *et al.* (1990) specifically for AIDS prevention. "The model uses constructs from the health belief model to describe the process individuals go through while changing their behaviour regarding HIV risk. The model identifies three stages involved in reducing risk for HIV transmission. In the first stage, knowledge about HIV transmission and perceived susceptibility to HIV/AIDS influences how women perceive AIDS. The commitment to change is shaped by perceptions to self-efficacy and social norms. In the last stage of taking action, help-seeking behaviour and social factors affect the pregnant women's decision-making process" (Catania et al., 1990; Juliet, 2006).

## **1.9 Dissertation structure**

This study consists of five chapters. Chapter 1 included an overview and background to situation of HIV and AIDS in the world especially in sub-Saharan Africa and South Africa. In addition, the problem statement and objectives of the study were mentioned in this chapter. Chapter 2 covers the literature review of papers about the prevention of mother-to-child transmission of HIV and AIDS and knowledge, attitude of pregnant women related to PMTCT.

Chapter 3 describes the methodology of study, which talks about the research paradigm and design, research setting, sampling strategy, data collection and so on. In chapter 4, the results of the study are shown with figures and tables. Finally, chapter 5 contains the discussion of the main findings, and recommendations for improving the PMTCT program.

## **1.10 Conclusion**

This chapter highlighted the current situation of the PMTCT program and the key areas that needed to be focused on. In addition, the aims and objectives of the study were discussed. It was shown that to conduct of this study would be beneficial due to the lack of any previous survey concerning the level of knowledge and attitude of pregnant women toward PMTCT in South Africa but in particular in KwaZulu-Natal.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Introduction**

According to the United Nations AIDS Program (UNAIDS, 2013), 3.2 million children living with HIV were under 15 years of which 240,000 were newly infected; mostly in sub-Saharan Africa. Mother-to-child transmission (MTCT) of HIV was the most common way that young children contract the virus and this happens when HIV is passed from a mother to her unborn baby during pregnancy, birth or breastfeeding.

To avoid this kind of HIV transmission, some actions are undertaken to enable the HIV-infected children to live longer that include regular HIV testing, treatment, monitoring and care; but a fundamental solution should be found to decrease the rate of HIV-infection among children, especially newly born babies. That is why the Prevention of Mother-To-Child-Transmission (PMTCT) program is of such great importance.

In this chapter, the affecting factors regarding to the problem statement are reviewed and explained. The literature was sourced from databases such as MEDLINE (Medical Literature Analysis and Retrieval System Online), AIDSline (AIDS Information On-Line), EBSCOhost, Google scholar, and a number of textbooks.

This literature review concentrates on five key areas regarding PMTCT. These include:

- ❖ Global interventions to reduce MTCT;
- ❖ PMTCT in South Africa;
- ❖ Knowledge, attitude, and practice toward PMTCT;
- ❖ Other factors affecting PMTCT; and
- ❖ Conclusion

### **2.2 Global interventions to reduce MTCT**

According to the World Health Organization (WHO), there were approximately 35 [33.2–37.2] million people worldwide living with HIV/AIDS in 2013. More than half (51%) were women and there were 3.2 million children worldwide most of children whom were infected

by their mothers who were HIV positive during pregnancy delivery and breastfeeding. So the PMTCT program should be implemented as a global priority because without treatment, about one third of children living with HIV will die before their first birthday and half will be dead before their second birthday (WHO, 2013).

Among global HIV prevention activities, prevention of mother-to-child transmission (PMTCT) of HIV has been the highest priority since 1998. The Millennium Development Goals (MDGs) adopted by the UN General Assembly in 2000 committed the international community to reduce child mortality, enhance maternal health, and combat HIV/AIDS, malaria and other diseases by 2015. At the UN General Assembly Special Session (UNGASS) in 2001, governments further committed themselves to decrease the number of HIV-infected infants by 50% by 2010. For this purpose, 80% of pregnant women should have had access to antenatal care and should have received PMTCT services.

To prevent the mother-to-child transmission of HIV, the World Health Organization (WHO) promotes an extensive approach, which includes the following four components:

- ❖ Primary prevention of HIV infection among women of childbearing age;
- ❖ Prevention of unplanned pregnancies among women living with HIV;
- ❖ Prevention of HIV transmission from a woman living with HIV to her infant;
- ❖ Provision of appropriate treatment, care and support to mothers living with HIV and their children and families (WHO, 2010).

According to the revision of the PMTCT program, WHO (2010) recommends: “All HIV-positive pregnant and breastfeeding women receive lifelong triple ARVs (antiretroviral) from the point of diagnosis. The infant would then receive 4-6 weeks of ART (antiretroviral therapy) (NVP, Nevirapine or AZT, Zidovudine) regardless of the feeding method”. Antiretroviral therapy reduces the HIV viral load in the blood, semen, vaginal fluid and rectal fluid to very low levels, which decreases an individual's risk of HIV transmission (Stevens and Lyall, 2014). Several studies confirmed the positive effect of using ART on PMTCT (Ahmed, Kim and Abrams, 2013;

Kim, Ahmed, Preidis, Abrams, Hosseinipour, Giordano, Chiao, Paul, Bhalakia, Nanthuru and Kazembe, 2013; The Kesho Bora Study, 2011; Imade, Uwakwe, Omoregie and Eghafona, 2010).

To assess the effect of PMTCT on prevalence of postnatal HIV infection, Imade et al. (2010) conducted a quantitative study in Nigeria. The authors showed that the mothers who took antiretrovirals before and during pregnancy (participated in the PMTCT program) gave birth to infants with a lower prevalence of HIV compared with those who did not participate in the PMTCT program. They also concluded that the redelivery duration of HAART use by mothers significantly affected the prevalence of HIV infection among the infants. Mothers who had used HAART for 10–12 months before delivery had zero prevalence of HIV infection among their infants (Imade et al., 2010).

Another comprehensive study was conducted at five study sites in South Africa, Burkina Faso and Kenya. The study was about the positive effect of triple antiretroviral therapy compared with the single dose drug on pregnant women with 28–36 weeks' gestation and WHO stages 1, 2, or 3 HIV-1 infection. The authors found that maternal triple ARV prophylaxis reduced the risk of MTCT of HIV by 43% at 12 months compared with a standard Zidovudine and single-dose Nevirapine regimen. In addition they mentioned that early initiation of ART was important to achieve undetectable viral load well before delivery (The Kesho Bora Study, 2011).

Kim *et al.* (2013) conducted a study in Malawi and found that low rates of MTCT of HIV are possible in resource-constrained settings under routine programmatic conditions. In addition, no transmissions were observed among pregnant women on ART for more than 14 weeks prior to delivery.

According to the 2009 WHO report, 45% of the estimated HIV-infected pregnant women in low- and middle-income countries received at least some antiretroviral (ARV) drugs to prevent HIV transmission to their child, from 10% in 2004 to 45% in 2008 (Figure 2.1). That was a significant achievements for the PMTCT program (WHO, 2010).

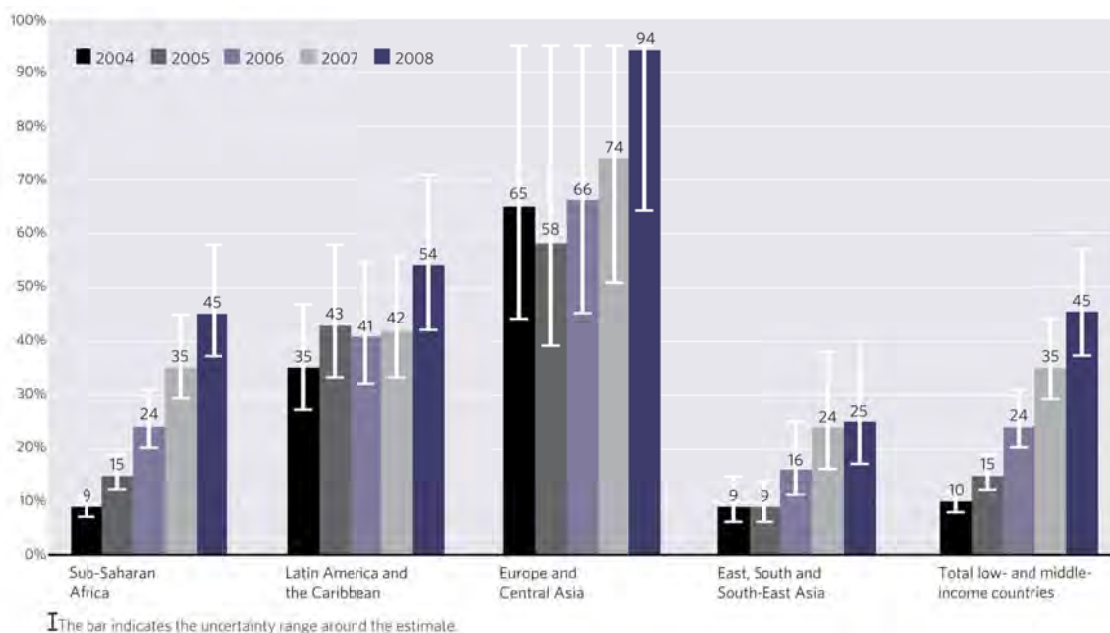


Figure 2.1: Percentage of pregnant women with HIV receiving antiretroviral treatment for preventing mother-to-child transmission of HIV in low- and middle-income countries by region, 2004–2008.

More than 900,000 pregnant women living with HIV globally received antiretroviral treatment by end of December 2012 and the coverage of antiretroviral programs for PMTCT increased from 57% (51–64%) in 2011 to 62% (57–70%) in 2012 (UNAIDS, 2013). One important reason for the improving coverage was that HIV testing among pregnant women was increasing with the expansion of provider-initiated testing and counselling in antenatal clinics, labour and delivery centres, and other health-care settings (WHO, 2010).

The global target for reduction in the number of new infections among children is 90% by 2015; but the program expansion should be sped up. Low- and middle-income countries are now achieving the lower rates of HIV transmission among children; however high-income countries have attained the lower rates already by providing high coverage of services for pregnant women living with HIV, to prevent MTCT of HIV (UNAIDS, 2015).

While access to antiretroviral medicines to prevent MTCT of HIV has increased, progress has been slower on other aspects of the Global Plan. There are some studies, which focused on the gaps on implementation of the PMTCT program in the world (Hardon, Oosterhoff, Imelda, Anh and Hidayana, 2009; Msellati, 2009; Stevens and Lyall, 2014).

Hardon et al. (2009) conducted a study in 2009 about the slow progress of PMTCT program implementation in Vietnam and Indonesia. This qualitative study explored local dynamics of care, data collected by mixing the observations, focus group discussions, and interviews. The authors found the coverage of PMTCT is extremely low in antenatal services in both countries. The women often found out that they were HIV positive only when their husbands were severely ill. In addition, women have a hard time accessing ARVs either to prevent their children from becoming infected or for their own treatment. In both countries, only a few hospitals provide ARV drugs. In Vietnam, the PMTCT program provided protection against HIV for health workers, since they could refuse to admit women living with HIV. In Indonesia, financial incentives were offered to community cadres who encouraged clients to participate in the PMTCT program.

Msellati (2009) conducted a study in Western Africa. He found that regardless of technical means and apparent political will, the percentage of pregnant women involved in the PMTCT program was not increasing as fast as public health authorities would expect. Therefore, the author reviewed the literature that has been collected over 15 years of implementation of PMTCT in West Africa. He found that for improving the PMTCT program, there was a strong need for mass information campaigns aimed at couples and communities to promote voluntary testing, especially for pregnant women and their partners. Peer Counselling by pregnant women and testing for HIV status on the same day, were clearly the ways to improve access to PMTCT. In addition, healthcare providers must use a friendly approach because HIV positive women were experiencing great psychological distress.

According to the *Gap report UNAIDS (2014)*, all pregnant women living with HIV have been eligible for treatment since 2013. Despite the solid progress made in providing services for prevention of vertical transmission, 30% of pregnant women living with HIV in 2013 still did not receive effective antiretroviral medicines for prevention of HIV transmission to their infants.

Stevens and Lyall (2014) studied how the PMTCT program works globally and they compared the countries. They found that MTCT was preventable whether the client used an individualised or programmatic approach. Sustainability, practicality and the ability to follow up on patients were significant influencing factors. To have the lower rates of transmission, they concluded that countries had to make sure of the availability of HIV testing during pregnancy followed by appropriate interventions where necessary.

## **2.3 Situation of PMTCT in South Africa (History of PMTCT)**

South Africa is one of the sub-Saharan African countries with high rates of HIV/AIDS infection. (Lehohla, 2011). The HIV prevalence rate is almost 30% among South African women within the 25–30 age-range. According to Statistics South Africa 2010, it is estimated that 40,000 children are born with HIV every year that contribute significantly to the overall rate of infant mortality in South Africa (Nestler, 2011).

Mother-to-child transmission (MTCT) of HIV is one of the causes of the high rate of HIV and AIDS among the people in this region. MTCT is the source of HIV infection for over 90% of infected infants and young children. Without any interventions, between 20% and 45% of infants may become infected with HIV by their mothers (Frizelle, Solomon and Rau, 2009).

To reduce the child mortality and transmission rate, countries have made commitments based on the United Millennium Development Goals. Amongst others, one of the goals is that of reducing MTCT by 2015. PMTCT is a scientifically and politically accepted procedure to decrease the impact of HIV, mainly on the children. About 108 countries across the world, including South Africa, targets are set for the PMTCT to reduce the proportion of infants infected with HIV by 50% in 2010 (UNAIDS, 2013; Ngidi, 2011).

In South Africa, the PMTCT program suffered a political setback until the Constitutional Court ruled in 2002 in favour of an ARV roll out against the government's position at that time. Government cited economic reasons and concerns about side effects of ARV. In 2001, the national HIV/AIDS Directorate set up 18 sites where a PMTCT program could be piloted, there were two sites in each province in which the PMTCT program was implemented (Ajewole, 2009).

The impotent steps were giving Nevirapine to the babies of HIV positive women between 24 and 72 hours after birth, and counselling HIV positive mothers about safe feeding practices and ensuring that those who choose not to breast feed were given milk formula (McCoy, Besse, Visser and Doherty, 2002).

After analysing the pilot, the Department of Health found some problems at many sites such as poor health facilities, staff shortages, low motivation and hope amongst staff, and denial



and stigma within communities. In addition, the total number of pregnant women who had access to testing, counselling, and Nevirapine was about 12% to 15%. They found that some of these difficulties were because of problems in the health care system in general and unequal supplying of infrastructure between provinces and sites. Since then, the commitment of the government following the results of the pilot studies has resulted in improvements in the national PMTCT program. They found the PMTCT services need the highest involvement at provincial government level (McCoy et al., 2002).

In 2004, the Medicines Control Council recommended a dual therapy regimen (Zidovudine and Nevirapine) rather than single dose Nevirapine for the PMTCT program. There was also substantial pressure from health care workers, scientists and activists to update the original regimen; because there were serious concerns about Nevirapine-based drug resistance, and the dual regimen had also been shown to be more effective in preventing HIV transmission. This recommendation was revised by the South African Department of Health on 2nd February 2008 and new guidelines were published. Accordingly, the guideline included dual therapy from 28 weeks for all HIV-infected pregnant women with a CD4 count less than 200 cells/mm<sup>3</sup>, and for the infant (Crankshaw, 2011).

According to the *South African PMTCT Policy and Guidelines 2008*, the following four elements of PMTCT are required.

- ❖ Primary prevention of HIV infection among women of childbearing age;
- ❖ Prevention of unplanned pregnancies among women living with HIV;
- ❖ Prevention of HIV transmission from a woman living with HIV to her infant; and
- ❖ Provision of appropriate treatment, care and support to mothers living with HIV and their children and families (WHO, 2010; NDOH, 2010).

The PMTCT processes are summarised in Table 2.1.

Table 2.1: Summary of PMTCT Processes and goals of interventions (NDOH, 2010).

<b>Antenatal Care →</b>	<b>Labour &amp; Delivery →</b>	<b>Postnatal Care</b>
<p style="text-align: center;">↓</p> <ul style="list-style-type: none"> <li>-Improve the quality of the mother's health and prevent mortality.</li> <li>-Identify women who are HIV-positive.</li> <li>-Ensure HIV-positive women enter the PMTCT program.</li> <li>-Prevent mother-to-child transmission.</li> <li>-Provide AZT from 14 weeks of pregnancy or lifelong ART as soon as possible, depending on a mother's clinical indications.</li> </ul>	<p style="text-align: center;">↓</p> <ul style="list-style-type: none"> <li>-Identify HIV-positive women.</li> <li>-Provide adequate PMTCT coverage.</li> <li>-Continuity of care of prophylactic and treatment antiretroviral regimens.</li> <li>-Reduce maternal Nevirapine resistance.</li> <li>-Initiate neonates born to HIV-positive mothers with antiretroviral prophylaxis immediately at birth.</li> </ul>	<p style="text-align: center;">↓</p> <ul style="list-style-type: none"> <li>-Provide follow-up post-partum care including a postnatal visit within 3 days.</li> <li>-Improve the quality of the mother's health and reduce mortality by including family.</li> <li>-Planning counselling and cervical cancer screening where applicable.</li> <li>-Provide post-exposure prophylaxis for infants.</li> <li>-Reduce postnatal HIV transmission through breastfeeding.</li> <li>-Identify all HIV-exposed infants.</li> <li>-Reduce mortality in HIV-exposed infants.</li> <li>-Identify all HIV-positive infants and start ART early.</li> </ul>

In December 2009, the President Jacob Zuma declared new key interventions to enhance antiretroviral treatment access to special groups for the purpose of reduction in the maternal and child mortality rate, and improvement in life expectancy. The special groups consisted of all HIV-positive infants and pregnant women, and people with TB and HIV co-infection, with CD4 counts less than or equal to 350 cells/mm<sup>3</sup> (DOH, 2014).

In 2012, the Department of Health of South Africa applied the changes in some parts of the PMTCT clinical guideline; because women were still highly affected by HIV prevalence and the mortality due to HIV and AIDS was still high. As a result, it was a commitment to scale up coverage and to improve quality of PMTCT to reduce MTCT to less than 5% by 2015. As of April 1st, 2013, changes to the ART treatment regimens were implemented across the country. The fixed-dose combination pill (FDC) was introduced, made up of the regular three drugs used in the first-line regimen (TDF, FTC/3TC and EFV) to improve adherence and retention. According to the new changes, if the HIV test result was positive and confirmed positive with a second rapid test kit, ART with the FDC should be initiated on the same day regardless of CD4 cell count or gestational age, without waiting for blood results. All pregnant women, regardless of CD4 cell count, would be initiated on a fixed-dose-combination of FTC+TDF+EFV (one tablet) on the same day that they were diagnosed HIV positive (DOH, 2013).

Finally, on July 2014, the national guidelines were revised and the threshold for initiation of ART rose to CD4 count  $\leq 500/\mu\text{l}$  and the PMTCT program adopted the B+ approach, which entitled every pregnant and breastfeeding woman to lifelong ART regardless of CD4 count or clinical staging. This was effected in January 2015 (DOH, 2014).

All the efforts and revisions made regarding the PMTCT guideline has led to good achievements and the result is that more than 2.6 million people had been initiated on ART by mid-2014. UNAIDS global report 2013 mentioned that the coverage of antiretroviral prevention services for pregnant women living with HIV in South Africa is more than 80%. In addition, mid-year population estimates 2014 (The Kesho Bora Study Group, 2011) revealed that life expectancy of women living with HIV in the KwaZulu-Natal province was 8.7 years higher than in 2001. Efforts therefore have been made to increase access to interventions that can significantly reduce mother-to-child transmission, including combination antiretroviral prophylactics, treatment regimens and strengthened infant-feeding

counselling (UNAIDS, 2015). As a result, it is important to assess the impact of PMTCT interventions on reducing new pediatric HIV infections through mother to-child transmission. In this regard, some studies have been done to investigate the effectiveness of PMTCT and the barriers against its practice, especially in African countries; which are reviewed next.

In 2010, a study was conducted on accessibility of PMTCT and ART services for pregnant women in South Africa and on the implications of universal antiretroviral treatment. The study was a cross-sectional evaluation of PMTCT and highly active antiretroviral therapy (HAART) services and birth outcomes in Umlazi in South Africa, which had about a 40% HIV antenatal prevalence. The postnatal assessment included a maternity chart audit conducted during a four month period between February and May in the post-delivery wards of Prince Mshiyeni Memorial Hospital during 2010 (Hussain;, Moodley;, Naidoo; and Esterhuizen, 2011). The authors found that under the previous South African policy in 2010 for the management of HIV pregnant women with a CD4 count of 200 cells/mm<sup>3</sup>, one-third of participants in their study did not receive their CD4 results during the course of pregnancy in a large urban community; so they missed the chance of receiving the HAART. It showed that, based on the current South African guidelines, more than 70% of HIV-positive pregnant women would need HAART in their community; however, it is assumed that access to CD4 results have been improved.

Govender and Coovadia (2014) performed a critical review, evaluating the implementation of the national PMTCT program in South Africa. The authors reviewed the implementation of PMTCT in developed and developing countries especially South Africa. They mentioned that the “effective programs for prevention of new HIV infections in children had increased in developing countries, but the percentage of pregnant women who received ARV regimens was still suboptimal and PMTCT program revealed too many gaps still to be covered”.

The authors believed that the family planning program and ANC had important roles to play in the progress of the PMTCT program; improving access to family planning services could further reduce the number of HIV infections by preventing unintended pregnancies. They mentioned that antenatal care had a pivotal role to play as the entry point for women to access antiretroviral therapy, receive counselling regarding safe breastfeeding, and access to family planning services to prevent unintended pregnancies in the future. They concluded that

further progress would require health systems to strengthen antenatal services, integrate HIV counselling and testing, and provide ARVs.

## **2.4 Knowledge, attitude, and practice (KAP) toward PMTCT**

The HIV/AIDS epidemic is driven by a complex set of factors in South Africa, which include social, cultural, historical, political, economic and gendered factors. A lack of awareness and knowledge about HIV/AIDS and MTCT in the general population is an on-going concern. Research done in the Eastern Cape in South Africa indicated that knowledge levels about PMTCT are low not only among women and mothers, but also among mothers-in-law and male partners/husbands (Frizelle et al., 2009). In African countries, few studies have been conducted to investigate the effect of knowledge, attitude, and practice (KAP) toward PMTCT.

One of the most related studies to the research topic was conducted in Uganda at 2006 and it was about knowledge and attitude of pregnant women in respect of using PMTCT services (Juliet, 2006). It was found that 63% of the mothers had no knowledge about the PMTCT services offered in the selected hospital. This study illustrated that 76% of participants mentioned that taking the PMTCT services was beneficial for HIV-positive mothers, but 24% stated that it was useless because there is no cure for AIDS.

The author found that fear of stigma as well as some incorrect beliefs were the barriers to taking the HIV test; for example, “if one gets to know that she/he is HIV-positive, one dies very quickly” (Juliet, 2006). This study concluded that “utilization of the PMTCT services were affected by the low levels of HIV testing. Also, insufficient knowledge of PMTCT coupled with the negative attitude towards HIV testing, fear and stigma towards HIV and AIDS contributed to the low utilization of PMTCT services” (Juliet, 2006).

Petrie, Schmidt, Schwarz, Koornhof and Marais (2007) conducted a study in Tygerberg, South Africa and determined the knowledge, attitudes and practices of women regarding the PMTCT program at a community health centre. It was found that 88.9% of participants scored 80% or more with regard to general HIV knowledge. Although 78% were formula feeding, primarily owing to their HIV status and convenience while working, 24% would not be able to sustain this feeding method after the initial 6 months’ free supply provided by the

provincial health services. The majority could not define the terms exclusive breastfeeding (89%), mixed feeding (81%) or cup feeding (94%) correctly. Attitudes were found to be positive with regard to both breastfeeding and formula feeding, but HIV status influenced it significantly. The authors concluded that the certain aspects of the PMTCT program appeared to had been effective at the community health centre. The women were knowledgeable about HIV transmission and MTCT, but they were uninformed about certain essential aspects, i.e. prevention, cure and infant feeding.

There have been some studies conducted in Nigeria related to the level of awareness of women concerning PMTCT of HIV and AIDS. The first study was done in 2009 by Adeleke, Mukhtar-Yola and Gwarzo (2009) about evaluation of awareness of mother-to-child transmission of HIV and the methods of prevention of MTCT. In this descriptive study, the authors found that the level of awareness of HIV/AIDS among mothers was very high; 91% of mothers were aware of mother-to-child transmission of HIV. On the contrary, the level of knowledge and perceptions of MTCT of HIV was inadequate; because more than half of the women did not know any methods of preventing mother-to-child transmission of HIV. Finally, they concluded that there was a need to scale up education about MTCT of HIV in their health facilities. Other studies were conducted in Nigeria by Umeobika, Ezebialu, Ezenyeaku and Ikeako (2013) and Apagu, Tagurum and Hassan (2014) and these studies had similar findings. Both groups found that the awareness and knowledge of HIV/AIDS was high, but the knowledge and perceptions of PMTCT, was comparatively low.

Another study was performed in Togo during 2010 and was about knowledge, attitudes and practices concerning PMTCT of HIV among pregnant women (Tatagan; et al., 2011). The study illustrated that the women thought that the ways HIV was transmitted were through sexual relations, objects soiled with blood, and transmission from mother to child. However, more than 77% of participants agreed that unprotected sexual relations increased the risk of HIV transmission to the child and more than 60% stated that they agree with the use of condoms during pregnancy or breastfeeding. In addition, nearly 70% of participants believed that contamination during pregnancy increased the risk of HIV transmission to the child, and the risk of HIV transmission to the child was lower for exclusive breastfeeding compared with mixed breastfeeding. These results showed that in Togo, pregnant women had good knowledge about HIV/AIDS. In addition, their attitudes towards PMTCT were generally positive but some behaviour such as using a condom still required improvement.

Similarly, Chirwa (2011) studied the knowledge, attitude, and practice of pregnant women toward PMTCT in Malawi to identify the factors causing the poor uptake of PMTCT activities in Mzimba District. The results illustrated that acceptors of PMTCT were more knowledgeable about PMTCT than non-acceptors; so educating women would be an important intervention for health-related issues including PMTCT. Moreover, it was found that HIV-positive pregnant women were less likely to disclose the test results to their partners compared with HIV-negative pregnant women, mostly because of fear of stigma and reprisals.

Another study was performed by (Mujumali, 2011) in Tanzania to assess the knowledge and attitude regarding PMTCT of HIV among pregnant women attending a reproductive and child health clinic at Temeke District Hospital, Dar-Es-Salaam, Tanzania. The finding of that study was that the level of basic knowledge of HIV/AIDS was moderate to good in pregnant women, almost half of the pregnant women attained only moderate knowledge on PMTCT, even after counselling. The author concluded that since there were still knowledge gaps of different but important aspects of PMTCT, there was a need for adequate counselling, including more sessions during pregnancy and more public campaigns to encourage early ANC attendances.

Merdekios; and Adedimeji (2011) investigated the effectiveness of PMTCT interventions on HIV in Southern Ethiopia. The authors studied the assessment of PMTCT services by examining the knowledge of pregnant women about reducing vertical transmission. According to their study, of the 113 respondents, 92.0% had knowledge about MTCT, and 90.3% were familiar with the availability of the PMTCT service in the health department. The findings showed that of 74 HIV-positive women in the PMTCT program, only three had had a skilled birth assistant at delivery. In addition, there was an undesirable rate of negligence of PMTCT by women; because of socioeconomic status, culture, and fear of stigma and discrimination.

In 2013, Boateng et al. (2013) conducted a descriptive cross-sectional study about knowledge and perception of ARVs and PMTCT and adherence to ART among HIV positive women in Ghana. They believed that there was a gap in clients' knowledge, attitudes and understanding of antiretroviral therapy and PMTCT, which influenced their decision to continue using ART (Boateng et al., 2013). In their study, the participants were 229 HIV-positive women at

reproductive age that had been on ART for at least six months. The results illustrated that more than 90% of the HIV positive women did not have enough knowledge about ART and PMTCT; so they were more likely to neglect ART.

Surprisingly, Boateng et al. (2013) found that the educational background of the women living with HIV did not have an important effect on their knowledge of ART and PMTCT, which was contrary to the findings of other researchers. In addition, they concluded that knowledge and perception of mothers about ART and PMTCT could affect their adherence to ART. Moreover, educational interventions for both the illiterate and literate women in society were essential to develop positive behaviours and to improve adherence to ART.

In a similar study, Abajobir and Zeleke (2013) performed another study in South Ethiopia to show the relationship between the knowledge and attitude of pregnant women and PMTCT of HIV/AIDS. The results showed that more than 82.3% of mothers knew about PMTCT of HIV and 97.4% had a good attitude towards it. Only about half of the respondents knew that antiretroviral drugs given for HIV positive pregnant mothers could lower the risk of transmission; however, rural mothers were less knowledgeable than urban mothers. In addition, it was found that about 96% of mothers were tested for HIV and the rest did not test mainly due to fear of stigma, discrimination and lack of confidentiality. Finally, they concluded that women's empowerment, improving antenatal care services, and male involvement were significant predictors of knowledge, attitude and uptake of PMTCT services and should be promoted through community mobilization.

In another study in South Africa, Useh, Keikepe, Montshiwagae, Mothoagae and Senna (2013) assessed the level of knowledge and attitude of pregnant women towards MTCT of HIV and AIDS in a local clinic in Mafikeng. The results indicated that 45% of pregnant women knew that HIV/AIDS was a sexually transmitted disease, 44% said it was a virus, 7% had no knowledge about HIV/AIDS and 2.3% were undecided. Of respondents 38.3% had positive attitude towards MTCT of HIV/AIDS. They also agreed that HIV could be transmitted from an infected mother to her unborn child. Consequently, the authors concluded that the level of awareness of HIV/AIDS among pregnant women in this local clinic was high, knowledge about MTCT was found to be inadequate.



The most recent study was done in Kenya by Kei, Ndwiga, Okong'o and Njoroge (2015) and the authors did an institution-based cross-sectional study among pregnant mothers attending an antenatal care clinic. They showed that the knowledge about PMTCT was related to age. They found that respondents who had little or no knowledge of the services were mostly below 25 years and those with low education levels. In addition, challenges that affect the PMTCT program such as stigma were still surrounding HIV and AIDS as a disease, which had led to 64% of the mothers not willing to know their status. This study showed that the utilization of the PMTCT services was influenced by the low levels of HIV testing. The inadequate knowledge on PMTCT as well as the negative attitude towards HIV testing, fear and stigma towards HIV and AIDS were the main reasons for low utilization of PMTCT services in that region.

In a newest study, Lucksom, Upadhya, Kharka, Dubey, Choudhary and Yadav (2015) conducted a cross-sectional KAP study on HIV/AIDS among antenatal women attending central referral hospital of North East India. They found that the majority of women had the knowledge that HIV was related to STI and television was the best method of increasing the knowledge. Of participants, 68% were aware about MTCT of HIV during antenatal period; but only 2.66% knew that HIV can be transmitted to child through breast milk. They concluded that women had high levels of knowledge, positive attitude, and preventive practices regarding HIV; however, this population lacked knowledge about MTCT and its prevention.

## **2.5 Other factors affecting PMTCT**

The previous studies reveal that there are other factors affecting the performance of the PMTCT program. One study was conducted on the socio-demographic factors associated with loss to follow-up (LTF) of HIV-infected women enrolled during 2002-2008 in India (Panditrao, Darak, Kulkarni, Kulkarni and Parchure, 2011). It showed that the presence of previous healthy children, partner's HIV status, family's economic status, woman's education level, and woman's referral status were statistically related to being LTF before delivery. In addition, some additional factors were found to be associated with being LTF after delivery such as, place of residence, stage of pregnancy at the time of registration, mode of delivery, birth weight of baby, infant-feeding option, and medication regimen given to the baby.

Consequently, the authors highlighted the need for innovative and effective counselling techniques for less educated women, better strategies to increase uptake of partner's HIV testing, economic empowerment of women, and early registration of women in the program for restraining LTF in PMTCT program.

In another attempt to investigate the factors affecting the PMTCT, Laher (2012) tried to explore the reasons for PMTCT failures in Soweto, South Africa. They found that a variety of individual, social, and structural factors should be considered to optimize PMTCT service delivery:

- Failure of per-guideline prescription of ARV strategies for infants and/or mothers.
- Treatment refusal by mothers.
- Preterm delivery.
- Delayed ANC attendance because of facility-related obstacles and maternal awareness of HIV testing.
- Fear of stigma.
- Maternal difficulty with administering infant AZT.
- Confusion of the mothers about how to feed the infant (Laher, 2012).

A similar study was done to find out barriers to effectiveness of interventions to PMTCT of HIV in Ethiopia by Adedimeji et al. (2012). They described unique contextual factors contributing to low utilization of PMTCT services in Arba-Minch, Ethiopia. Despite the availability of services to PMTCT of HIV, socio-cultural, health system, and operational factors restrict many pregnant women from accessing services or returning for follow-up, which increases the risk of vertical transmission of HIV to new-borns. According to their study, most of the people had knowledge about PMTCT and its benefits; although cultural, socioeconomic, and health system factors, including stigma and desire to prevent knowledge of their status, restrain access to and utilisation of services. In addition, health system factors, lack of appropriate follow-up mechanisms, inadequate access to ARV drugs and poorly equipped health workers were the other reasons of low utilization of services.

## **2.6 Conclusion**

Despite several years of implementation of the PMTCT program, some studies have shown that there are failures in the implementation of this program in different Sub-Saharan African countries. Studies have revealed that low levels of knowledge in women about MTCT and PMTCT have critical negative effects on the success of the PMTCT program (Atwiine et al., 2012).

A lack of awareness and knowledge about HIV/AIDS and MTCT in the general population is an on-going concern. As a result, it is essential to increase the awareness in women about MTCT and PMTCT to succeed in the reduction of mother-to-child transmission. In this regard, health workers and mass media are of great importance to increase the knowledge in women concerning MTCT and PMTCT (Atwiine et al., 2012).

According to the reviewed articles, there are some similarities between those studies and the topic of this research project. The studies with the greatest similarity were done in Ethiopia (Adedimeji et al., 2012; Abajobir; and Zeleke, 2013) and Ghana (Boateng et al., 2013). However, there was no similar published study in South Africa to demonstrate the relationship between level of knowledge and attitude of pregnant women and practice (KAP) of the PMTCT program.

## **CHAPTER 3: METHODOLOGY**

### **3.1 Introduction**

According to CRESWELL (2009), methodology is an approach to enquiry providing specific directions for procedures in a research design. It helps to focus the inquiry on the research design, in trying to find answers. The purpose of this chapter is to describe the methods used in the collection of data. This chapter includes the research paradigm and design, study setting, population and sampling strategy, data collection instrument and the validity and reliability of instrument, the procedure of data analysis, data management and ethical considerations.

### **3.2 Research paradigm and Design**

A positivist paradigm was adopted in this research. Positivists believe that phenomena have causes and are not unplanned or random events. A positivist paradigm refers to the traditional paradigm underling the scientific approach, which assumes that there are general patterns of cause which can be measured, usually by quantitative research (Ndabarora, 2009).

In this study, a quantitative methodological approach was used. According to Burns and Grove (2005, p415) “a quantitative research method is used to describe variables and examine relationships among variables”. The advantage of a quantitative approach is that it allows the researcher to compare the results with additional variables such as age, level of education, place of residence, etc. to discover if there is a tendency of correlation. Moreover, the results of study can be expressed in a specific management terminology (Ramona, 2011).

A non-experimental retrospective descriptive exploratory design informs the study to find out the knowledge and attitude of pregnant women about PMTCT in a selected area. A descriptive study describes the variables around the phenomenon of interest. The researcher does not have any intention to manipulate the variables or to determine any relationship between the variables around the phenomenon of interest. As the objective of study is to describe the knowledge and attitude and practice of pregnant women with respect to the PMTCT program, a quantitative method and descriptive design is very appropriate for doing this study to describe the variables and to examine the relationships between them.

### **3.3 Research setting**

This study was conducted in the antenatal clinic of a selected hospital in eThekweni district, South Africa. This hospital is a regional hospital in Umlazi in the eThekweni district. Umlazi is a township on the east coast of KwaZulu-Natal and located south-west of Durban. The district covers an area of 47.46 km<sup>2</sup> and is the second largest township in South Africa. In 2011, the population of this area was 404,811. As mentioned before, Kwazulu-Natal Province has the highest rate of HIV positive people in south Africa (HSRC, 2014).

The selected hospital is one of the largest hospitals in KwaZulu-Natal province and is a government-funded hospital. This hospital has 1200 beds and serves the surrounding area and some parts of the Eastern Cape. It is one of the sites for PMTCT which provides a free public service to pregnant women. In addition, it is a teaching hospital of the Nelson Mandela Medical School of the University of KwaZulu-Natal, and has a Nursing College for Advanced Midwives (Ngidi, 2011).

### **3.4 Study population**

The study population refers to the aggregate or totality of those conforming to a set of specifications (Polit and Beck, 2012). The target population for the study was the pregnant women who attended the antenatal clinic of the selected hospital for routine visits; while severely ill pregnant mothers, who refused to sign the informed consent form, and mothers under 18 years of age were excluded.

According to available statistics of the antenatal clinic of the hospital, the average number of pregnant women who attend the antenatal clinic is 3300 per month.

### **3.5 Sample and sampling strategy**

Polit and Beck (2012, p339) defined the sampling strategy as “the process of selecting a portion of the population to represent the entire population so that inferences about the population can be made”.

Selection of the sample was according to the simple random sampling technique among the pregnant women who attend the antenatal clinic. According to Polit and Beck (2012), a simple random sampling allows everyone the opportunity to be selected, which creates a representative sample. They explained that to do simple random sampling, it is required to define a ‘sampling’ frame.

The ‘sampling frame’ was the list of pregnant mothers who attended the antenatal clinic on the days of data collection, which usually consists of about 150 mothers per day. Thereafter, the required number of samples was selected randomly among the volunteer participants who were over 18 years. The samples were not limited to a specific group, race, or religion and were selected randomly among the volunteer participants using fish bowling. This procedure was repeated for several days until all required samples were studied.

A sample size calculator of Raosoft (2014) was used to calculate the sample size of this study.

$$x = Z(c/100)^2 r(100-r)$$

$$n = \frac{N x}{((N-1)E^2 + x)}$$

$$E = \text{Sqrt} \left[ \frac{(N-n)x}{n(N-1)} \right]$$

where  $N$  is the population size,  $r$  is the fraction of responses that you are interested in,  $Z(c/100)$  is the critical value for the confidence level  $c$ , and  $E$  is margin of error. In this study, the margin of error was selected as 5% (standard value 0.05) and the confidence level was 95%. The standard choices are 90% or 95% in quantitative studies.

By using the Raosoft formula, the sample size was 345 pregnant women.

### 3.6 Inclusion criteria

The pregnant women attending the antenatal clinics, who were over 18 years and who signed the consent form, were included in the sample.

### **3.7 Exclusion criteria**

Excluded were the pregnant women who refused to participate after explaining the purpose of the study. In addition, those who were too sick to participate in the study; and those who were under 18 years. The age of the participants was 18 or above; because parental consent was required if the participants were under 18 years and most of the participants came to hospital alone.

### **3.8 Data collection instrument (sources of data)**

A pre-tested, structured questionnaire was adopted by reviewing previously completed studies about knowledge and attitude of women toward PMTCT. After explanation of the study and objectives, the structured questionnaires were given to the volunteer pregnant women who attended the antenatal clinic. The questionnaire was presented in two languages: English and isiZulu, as the majority of people in this area speak isiZulu.

The questionnaire consisted of 36 closed-ended questions, and had four sections:

- ❖ The first sections include the client's socio-demographic information such as age, marital status, level of education, occupation, and household income. In addition, this section contained some questions about the client's reproductive history including parity and the number of living children.
- ❖ The second section included information about the client's HIV/AIDS knowledge and specific questions about mother-to-child transmission of HIV such as modes of transmission, risk factors, the timing of transmission, risk factors that increase transmission during pregnancy, labour and delivery, the methods of feeding the baby by a HIV-positive mother, and preventive measures.
- ❖ The third section consisted of information about the attitude of pregnant women toward PMTCT such as the importance of being tested for HIV for every pregnant woman, the client's attitude toward women who are HIV-positive and who get pregnant again.

- ❖ The last section of questionnaire includes questions that are related to the practice of actions that contribute towards the PMTCT; for example: have they ever been tested for HIV; if they can share the results and what the results were; and discussion about having an HIV test with their partner.

### 3.9 Validity and reliability

According to Polit and Beck (2012), validity is the degree to which an instrument measures what it is supposed to measure. Validity in this study will be determined through cross validation, namely content validity and face validity.

The content of the questionnaire was based on the conceptual framework that guided this study (HBM and ARRT), and what pregnant women are supposed to know. In addition, the questionnaire considered the study objectives and research questions. The content validity of the instrument is summarized in the following table.

Table 3.1: Objectives of this study

Objectives	How it will be met
To describe the knowledge of pregnant women with respect to the PMTCT program at a selected antenatal clinic in Durban.	Section B of the questionnaire covers the questions about the knowledge of participants about PMTCT services.
To explore the attitude of pregnant women toward the PMTCT.	Section C contains the questions that illustrate the attitude of pregnant women toward PMTCT.
To identify the practice of pregnant women with regard to PMTCT.	Section D determines the utilisation of PMTCT services amongst mothers.
To describe the socio-demographic factors, beliefs, and reproductive history that can affect the knowledge, attitude, and practice of pregnant women with regard to PMTCT.	Section A and B are the source of data for extracting the factors associated with knowledge, attitude, and practice of mothers with regard to PMTCT services.



Thereafter, the pilot study was conducted and the questionnaire was pre-tested by the researcher for further validation prior to its administration. The questionnaire had been prepared by reviewing previously completed studies on the topic of interest (Juliet, 2006; Chirwa, 2011; Mujumali, 2011). The pre-test was done by distributing the information sheet, informed consent, and questionnaire among 10 volunteer pregnant women in the antenatal clinic. Then the appropriateness of the language, average duration of administration, and clarity of the questions as well as the identification of scientific flaws was assessed. For example if some participants had not answered one or more questions, it meant that the question(s) should be revised for more clarity; so the changes required were made to improve clarity and flow.

According to Polit and Beck (2012), an instrument's reliability is the consistency with which it measures the target attribute. Reliability also concerns the questionnaire's accuracy to reflect the true scores. Gerrish and Lacey (2013) defined the reliability as "a measure of the consistency and accuracy of data collection".

In this study, reliability was measured using Cronbach's Alpha coefficient, which was a method to evaluate the internal consistency of the instrument (Polit and Beck, 2012). The higher values reflect a higher internal consistency.

The Statistical Package for the Social Sciences (SPSS) software version 22 was used to measure the reliability of the questionnaire. The Cronbach's Alpha coefficient was equal to 0.752. Polit and Beck (2012) pointed out that 0.7 is an acceptable reliability coefficient; so the questionnaire prepared in this study was reliable.

### **3.10 Data collection procedure**

Data collection was conducted in August 2015. The first step was to obtain the authorization of different authorities, which were:

- ✓ Ethical approval and clearance by Humanities and Social Science Research Ethics Committee (HSSREC) of University of KwaZulu-Natal.
- ✓ Ethical approval from Department of Health, Province of KwaZulu-Natal.

- ✓ Permission of the Ethics committee of the hospital and research directorate and gatekeeper approval by the Nurse Manager who was in charge of the antenatal clinic in the hospital.

After gathering all of the permission letters, an appointment was made to introduce the researcher to the clinic staff and to explain the study purpose, objectives and procedures to the clinic Nurse. The researcher worked closely with the Nurse Manager to identify potential participants. Convenient days for distributing the questionnaire were planned and coordinated with the clinic staff to avoid disturbing their routine work and patient flow.

A bilingual participants' information sheet (Appendix 1-A and 1-B), which explained the nature and purpose of the study, and an Informed Consent form (Appendix 2-A and 2-B) were prepared in English and isiZulu languages. They were distributed between all participants who were 18 years or older and who volunteered to participate in the study. They read the information sheet and signed the informed consent form prior to completion of the questionnaire. Thereafter, a bilingual structured questionnaire (Appendix 3-A and 3-B), was given to volunteers who signed the informed consent form and were selected by the simple random sampling method. As explained before, a simple random sampling allows everyone the opportunity to be selected. Polit and Beck (2012) explained that to do the simple random sampling, it is required to define a 'sampling frame'. The 'sampling frame' was the list of voluntary pregnant mothers who attended the antenatal clinic on the days of data collection. The samples were selected randomly among the volunteer participants.

For example, there were 50 volunteers, so 50 numbers were put in the selection bowl and 10 numbers were going to be chosen. The pregnant women were chosen randomly by blindly picking one of 50 pieces of paper. After the selection, the number was removed from the selection bowl, i.e. fish bowling. This procedure was repeated until the required number of samples was achieved.

To distribute the questionnaire and collecting the data, two trained research assistants, who were university colleagues with knowledge about PMTCT, assisted the researcher just for collecting the data from the isiZulu-speaking participants; under the supervision of the researcher. For the English-speaking participants, the researcher collected the data by herself.

The questionnaire was completed by the participants manually. As the questionnaire was closed-ended and only had multiple-choice answers, there was no need to translate the results back to English. The results could be used by comparing the English and isiZulu language questionnaires.

### **3.11 Data analysis**

Data were analysed in consultation with a qualified statistician by a computer program called Statistical Package for the Social Sciences (SPSS), Version 22. Each response was given a code to be captured in the computer. Then, univariate and bivariate analyses were done; univariate analysis for frequency computations and bivariate analysis in computing associations between variables.

The Chi-square test was used to measure the strength of associations between variables. In addition, a p-value of  $<0.05$  was considered statistically significant. More details can be found in the next chapter.

Thereafter, data were checked and explored through graphic displays, using Microsoft Excel, and finally, they were analysed, interpreted, and summarized.

### **3.12 Data management**

Data were collected by the researcher and two research assistants using a coded questionnaire to ensure the confidentiality. After data analysis, all the questionnaires were stored in a secure and locked filing cabinet in the research supervisor's office in the School of Nursing and Public Health at the University of KwaZulu-Natal. The questionnaires will be held for 5 years after completion of the study, and only the researcher and research supervisor will have access to the data.

### **3.13 Ethical considerations**

Ethical approval was sought from the Humanities and Social Science Research Ethics

Committee of University of KwaZulu-Natal. In addition, an approval letter for conducting the study in PPMH was obtained from the Department of Health KwaZulu-Natal Province. The researcher also applied to obtain the gatekeeper approval by the Nurse Manager who was in charge of the antenatal clinic in PPMH, where the research was conducted. Letters of permission from these institutions were attached in the Appendices section.

According to Emanuel, Wendler, Killen and Grady (2004) and Brink, Van der Walt and Van Rensburg (2005), the research study started once it was approved by ethical committee and permission provided for a selected research setting, and the researcher adhered to all ethical considerations regarding the study namely:

- The participants were informed in detail about the study and they were left to decide on whether to participate or not. This ensured self-determination and autonomy; so in this study the participation was completely voluntary;
- Informed consent was received from the participants based on the information sheet given to them, which was attached to the questionnaire. The informed consent was bilingual (isiZulu and English) and was managed by the trained research assistants;
- Questionnaires were anonymous and information gathered was kept confidential. During the data collection process, the researcher informed the participants not to write their names on the questionnaires. Coding was used to eliminate names and other personal identification of respondents throughout the study process to ensure anonymity;
- All prospective participants were informed of the purpose of the study by providing the participant's information sheet to them;
- The principle of beneficence dictates that the wellbeing of the respondents should be maintained. According to South African (DOH, 2004) Ethics Guidelines, the pregnant women were considered as a vulnerable population; so the researcher ensured that there was no potential risk and no physical or psychological harm to the study subjects and they were not exploited in any way; and

- After completion of the questionnaire, respondents were given a chance to ask questions and those with poor knowledge were given the necessary information about MTCT and prevention of HIV and AIDS infection.

### **3.14 Dissemination of findings**

The findings of this study will be published through the University of KwaZulu-Natal library, in consultation with the supervisor. In addition, two copies of the report will be submitted to KwaZulu-Natal Department of Health and the Medical manager of the hospital who is in charge of research.

### **3.15 Conclusion**

This chapter covered the methodology used to conduct the study, the instrument used to collect the data, and the ethical aspects regarding protection of the participants for the study, data collection procedure, data management, storage and disposal were described.

In the next chapter, all the results found by conducting this study will be declared.

## **CHAPTER 4: RESULTS AND DATA ANALYSIS**

### **4.1 Introduction**

This chapter focuses on the results of the study and presentation of data taken from the questionnaires completed by 345 pregnant women attending the antenatal clinic at a selected hospital in Durban. The data were analysed using the Statistical Package for Social Sciences (SPSS) Version 22 for Windows and the results are displayed in tables and graphs using frequency and percentages.

The Chi-square ( $\chi^2$ ) is the most widely used statistical test in nursing research, used to compare sets of data, in the form of frequencies. The performance of these statistical tests is to discover the relationship between the level of knowledge and attitude and practice of pregnant women toward PMTCT with the demographic data. For statistical tests, a p-value of  $<0.05$  was considered to be statistically significant with 95% confidence interval [95% CI]. In addition, the missing values have been excluded for each question and ignored during calculation, as explained in section 3.11.

The results of this study are presented in five sections: socio-demographic characteristics of pregnant women, reproductive history of clients, their knowledge about HIV/AIDS and PMTCT, their attitude toward PMTCT, and intended practices with regard to MTCT/PMTCT.

### **4.2 Socio-demographic characteristics of respondents**

A total of seven demographic variables were used in the study, namely: age, marital status, level of education, ethnicity, religion, occupational status and, income. These variables have been selected to discover their relationships with the level of knowledge and attitude of pregnant women toward PMTCT. The frequency and percentage of these variables are shown in next sections and summarized in Table 4.1. It is notable that the difference between 345 and the 'total' value in Table 4.1 is the number of 'missing values'.

Table 4.1: Summary of socio-demographic characteristics of respondents

<b>Variables</b>		<b>Frequency</b>	<b>Percentage</b>
<b>Age</b>	18-25	177	51.6%
	26-35	133	38.8%
	>36	33	9.6%
	<b>Total</b>	<b>343</b>	<b>100%</b>
<b>Marital Status</b>	Single	177	52.7%
	Married	27	8.0%
	Separated	2	0.6%
	Have a regular boyfriend	130	38.7%
	<b>Total</b>	<b>336</b>	<b>100%</b>
<b>Education Level</b>	Less than primary	19	5.8%
	Primary	91	27.9%
	Secondary and above	216	66.3%
	<b>Total</b>	<b>326</b>	<b>100%</b>
<b>Ethnicity</b>	African	335	98%
	Indian	2	0.6%
	White	2	0.6%
Other Ethnicity	Khalathi	2	0.6%
	Asian	1	0.3%
	<b>Total</b>	<b>342</b>	<b>100%</b>
<b>Religion</b>	Catholic	156	46.6%
	Protestant	5	1.5%
	Muslim	3	0.9%
	Other	112	33.4%
	Don't like to answer	59	17.6%
	<b>Total</b>	<b>335</b>	<b>100%</b>
Other Religion	Apostolic	5	4.5%
	Christian	38	33.9%
	Izayoni	2	1.8%
	Nazareth (Shembe)	15	13.4%
	Wesleyan	3	2.7%
	Zion	34	30.4%
	Unspecified	15	13.4%
	<b>Total</b>	<b>112</b>	<b>100%</b>

Variables		Frequency	Percentage
Employment Status	Employed	83	25.0%
	Businesswoman	12	3.6%
	Farmer	2	0.6%
	Housewife	44	13.3%
	Unemployed	191	57.5%
	<b>Total</b>	<b>332</b>	<b>100%</b>
Income	None, less than R2,500	167	50.2%
	R2,501 to R5,000	54	16.2%
	R5,001 to R10,000	9	2.7%
	R10,001 to R20,000	3	0.9%
	Don't know	100	30.0%
	<b>Total</b>	<b>333</b>	<b>100%</b>

#### 4.2.1 Age distribution

The age of the pregnant women who participated in this study was between 18 to 45 years. The mean age of respondents was 26.3 years (Median = 25, Std. Dev. = 6.56). The age distribution of respondents is shown in Figure 4.1. Accordingly, 51.6% (n=177) of these women were in the age group of 18 to 25years, 38.8% (n=133) were 26 to 35 years, and 9.6% (n=33) were 36 years or more. This finding indicates that more than half of respondents were young.

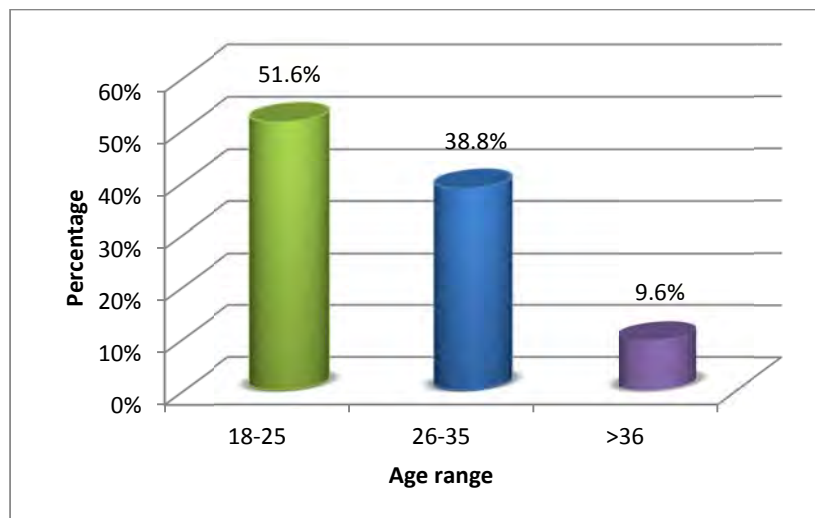


Figure 4.1: The age distribution of respondents.



#### 4.2.2 Marital status

Marital status was categorized into single, married, separated and, have a regular boyfriend. Table 4.1 showed that of the total 336 women (9 missing values), 52.7% (n=177) were single, 0.6% (n=2) separated, 38.7% (n=130) had a regular boyfriend, and only 8.0% (n=27) were married. This finding revealed that the rate of marriage is very low and more than 91% (n=307) of pregnant women were not married.

To assess the relationship between age and marital status, Chi-square test was used. It showed that there was a significant relationship between these variables ( $\chi^2=52.7$ , df = 6, p = 0.000). These results suggest that marital status is related to the respondent's age. According to Table 4.2, more than 70% of respondents within the age range of 18-25 were single, nearly 28% had a boyfriend, and only 1.7% of them were married. For oldest respondents more than 36% were single, nearly 51% had a boyfriend, and less than 20% were married.

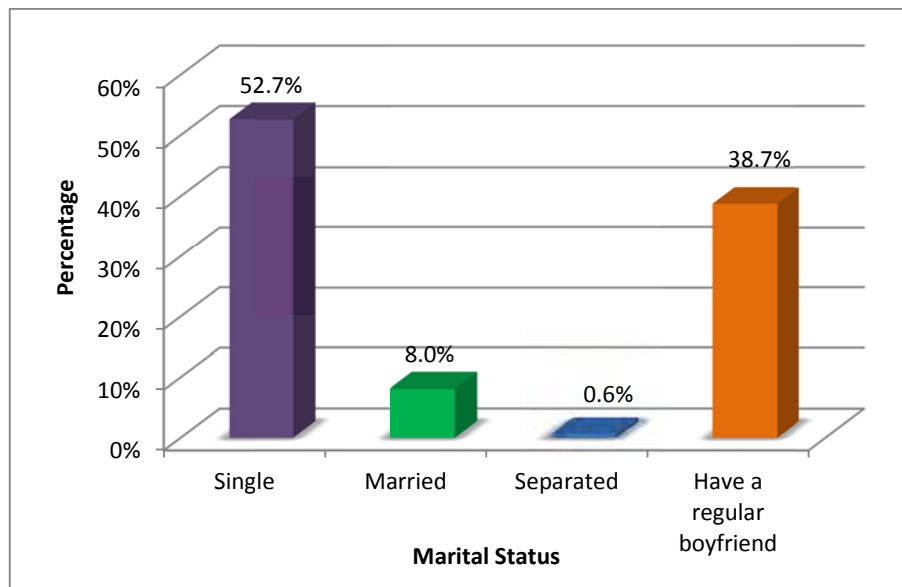


Figure 4.2: Marital status of respondents

Table 4.2: The relationship between age and marital status.

			Marital Status				Total	p=0.000
			Single	Married	Separated	Have a regular boyfriend		
Age	18-25	Frequency	122	3	1	48	174	
		Percentage	70.1%	1.7%	0.6%	27.6%	100.0%	
	26-35	Frequency	41	20	1	65	127	
		Percentage	32.3%	15.7%	0.8%	51.2%	100.0%	
	>36	Frequency	12	4	0	17	33	
		Percentage	36.4%	12.1%	0.0%	51.5%	100.0%	

#### 4.2.3 Level of education

The level of education of respondents was 5.8% (n=19) less than primary (no formal education or primary not completed), 27.9% (n=91) primary (primary completed or secondary not completed), and 66.3% (n=216) secondary or above (secondary completed or tertiary).

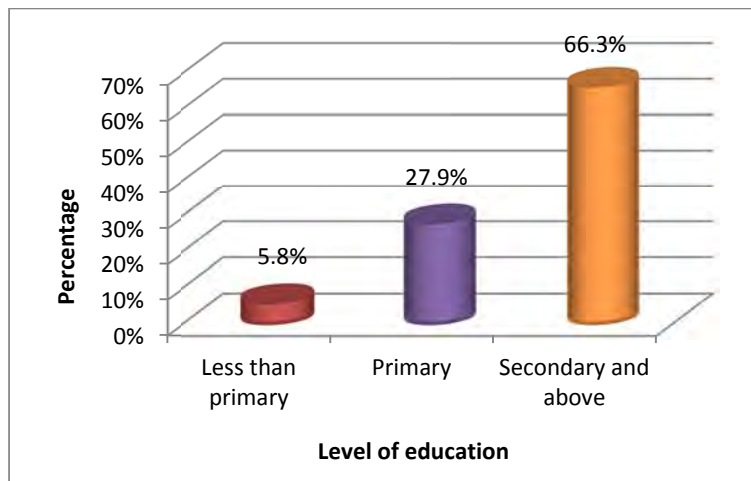


Figure 4.3: Level of education of respondents

#### ***4.2.4 Ethnicity of respondents***

Ethnicity was categorized into four major groups, namely African, Indian, white, and other. According to Table 4.1, 98% (n=335) of respondents were African, 0.6% (n=2) Indian, 0.6% (n=2) White and, 0.9% (n=3) other ethnicities.

#### ***4.2.5 Religion of respondents***

The religious affiliations of respondents were: 46.6% Catholic (n=156), 1.5% Protestant (n=5), 0.9% Muslim (n=3), and 33.4% other religion (n=112). Of respondents, 17.6% (n=59) didn't like to answer this question.

Most of the non-Catholic respondents had indicated that their religion was Christian; so other religions consisted of Christian (n=38), Apostolic (n=5), Izayoni (n=2), Nazareth/Shembe (n=15), Zion (n=34), and Wesleyan (n=3). There were 15 respondents who categorized their religion as 'other', but they did not mention their religion.

#### ***4.2.6 Employment Status***

Out of 345 respondents of this study, 25% (n=83) were employed, 3.6% (n=12) were businesswomen, 0.6% (n=2) were farmers, 13.3% (n=44) were housewives, and 57.5% (n=191) were unemployed. This result can be summarized as 29.2% (n=97) employed and 70.8% (n=235) unemployed.

#### ***4.2.7 Level of household income***

The level of household monthly income was categorized into five options, which consists of none or less than R2500, between R2501 and R5000, between R5001 to R10000, between R10001 to 20000, and don't know. According to Table 4.1, more than half (50.2 %) of respondents had the lowest income. Moreover, 30% (n=100) of respondents did not know their household income.

## 4.3 Reproductive characteristics

### 4.3.1 Number of pregnancies

Of 339 pregnant women (6 missing values), the current pregnancy was the first pregnancy for 37.5% (n=127), second pregnancy for 31.3% (n=106), third pregnancy for 18.3% (n=62), and more than the third pregnancy for 13% (n=44) of respondents. The mean was about two pregnancies (2.07).

### 4.3.2 Number of children and place of last delivery

According to Figure 4.4, more than one third of respondents (39.2%, n=134) had no children, 28.9% (n=99) had one child, 17.8% (n=61) had two children, 10.8% (n=37) had three children, 1.8% (n=6) had four children, and 1.5% (n=5) had more than four children. The mean was approximately one baby (1.11).

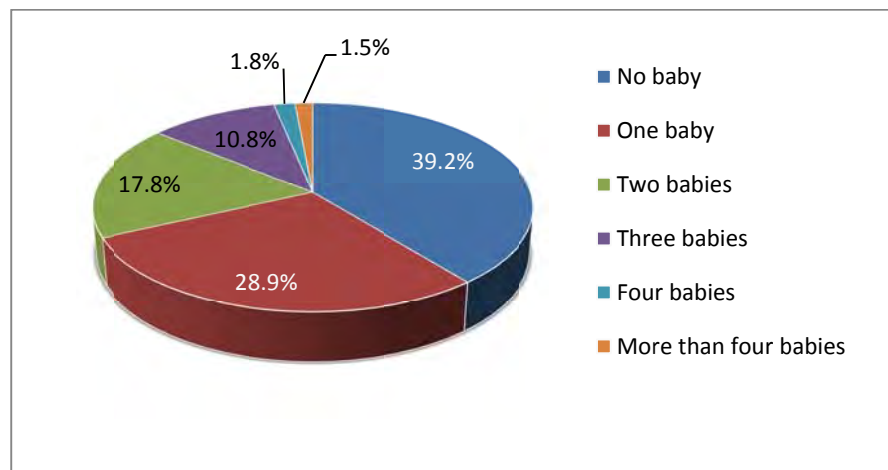


Figure 4.4: Number of children of respondents

Out of 212 respondents who had previous deliveries, 83.5% (n=177) were delivered in a hospital, 6.6% (n=14) in a health centre, 1.4% (n=3) at a private clinic, and 8.5% (n=18) at their home.

### 4.3.3 Duration of current pregnancy

Of 337 respondents, 0.6% (n=2) were less than one month pregnant, 3% (n=10) were 1-3 months pregnant, 24.9% (n=84) were 3-6 month pregnant, 67.7 % (n=228) were more than six months pregnant, and 3.9% (n=13) didn't know how long they were pregnant. The results are shown in Figure 4.5.

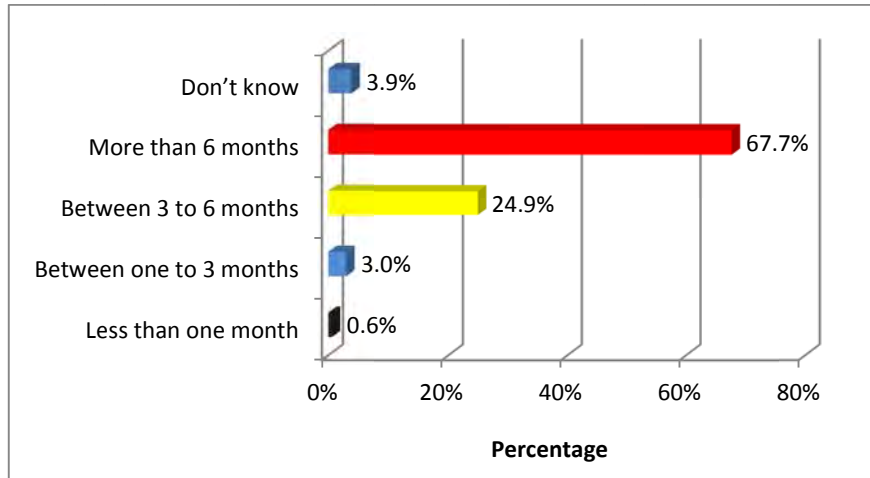


Figure 4.5: Duration of current pregnancy of respondents.

### 4.3.4 Number of antenatal care (ANC) visits for current pregnancy

According to Table 4.3, 60.2% (n=194) of respondents had four or above ANC visits, 14.6% (n=47) three visits, 13.7% (n=44) two visits, and 11.5% (n=37) had only one ANC visit.

Table 4.3: Summary of reproductive health history of respondents.

Variables		Frequency	Percentage
No .of pregnancies	First pregnancy	127	37.5%
	Second pregnancy	106	31.3%
	Third pregnancy	62	18.3%
	More than third pregnancy	44	13.0%
	<b>Total</b>	<b>339</b>	<b>100%</b>

Variables		Frequency	Percentage
No. of Children	No baby	134	39.2%
	One baby	99	28.9%
	Two babies	61	17.8%
	Three babies	37	10.8%
	Four babies	6	1.8%
	More than four babies	5	1.5%
	<b>Total</b>	<b>342</b>	<b>100%</b>
Location of delivery	Home	18	5.4%
	Hospital	177	53.5%
	Health Centre	14	4.2%
	Private Clinic	3	0.9%
	Had no previous pregnancy	119	36.0%
	<b>Total</b>	<b>331</b>	<b>100%</b>
Duration of pregnancy	Less than one month	2	0.6%
	Between one to 3 months	10	3.0%
	Between 3 to 6 months	84	24.9%
	More than 6 months	228	67.7%
	Don't know	13	3.9%
	<b>Total</b>	<b>337</b>	<b>100%</b>
No. of ANC visits	One	37	11.5
	Two	44	13.7
	Three	47	14.6
	Four and above	194	60.2
	<b>Total</b>	<b>322</b>	<b>100%</b>

#### 4.4 Knowledge regarding PMTCT of HIV/AIDS

The knowledge of respondents about HIV and PMTCT was evaluated by six multiple-choice questions. Each correct response scored 'one' and a wrong response scored 'zero'. As a result, the total score was eight for the basic knowledge about HIV/AIDS and 9 for knowledge about PMTCT which resulted in 17 points for the overall knowledge of respondents.

#### **4.4.1 Basic knowledge about HIV/AIDS**

The basic knowledge on HIV transmission was assessed on unsafe blood transfusion, sharing ‘sharps’ with an infected person, MTCT and unprotected sexual intercourse. Preventive measures for HIV transmission was assessed on abstinence, having/being a faithful sexual partner and condom use. Thereafter, the responses were summed up and a total score was obtained for each respondent.

According to Table 4.4, of 339 respondents who answered the questions, 83.8% (n=285) were aware that the HIV virus could be transmitted during unprotected sexual intercourse. Other transmission methods especially MTCT was selected by about one-third of respondents. The most frequently mentioned prevention strategy for HIV/AIDS was condom use, which was answered by 68.1% (n=231) of respondents. Moreover, 45.7% (n=155) believed that having a faithful sexual partner was the second most mentioned method for prevention of HIV/AIDS transmission. Of 339 respondents, 6.5% (n=22) did not know about the HIV/AIDS transmission methods, so it can be concluded that 93.5% of respondents knew about HIV/AIDS transmission methods. Of 22 respondents who did not know about the HIV/AIDS transmission methods, nine women were HIV-positive, four were HIV-negative, one did not know her HIV test result, and eight did not share or mention their HIV status.

Table 4.4: Knowledge of respondents about HIV/AIDS

Question	Frequency	Percentage
<b>How is the HIV transmitted?</b>		
Unsafe blood transfusion	85	25.0%
Sharing ‘sharps’ with an infected person	84	24.7%
Mother to child transmission	107	31.5%
Unprotected sexual intercourse	285	83.8%
Don’t know	22	6.5%
<b>How HIV transmission can be prevented?</b>		
Abstinence	91	26.8%
Having a faithful sexual partner	155	45.7%
Condom use	231	68.1%
Don’t know	20	5.9%

As illustrated in Figure 4.6, 53.8% (n=183) mentioned just one method that HIV could be transmitted, 19.7% (n=67) mentioned two methods, 8.2% (n=28) knew about three methods and 11.8% (n=40) referred to all four methods of HIV transmission. As mentioned before, 6.5% (n=22) did not know about any HIV transmission methods.

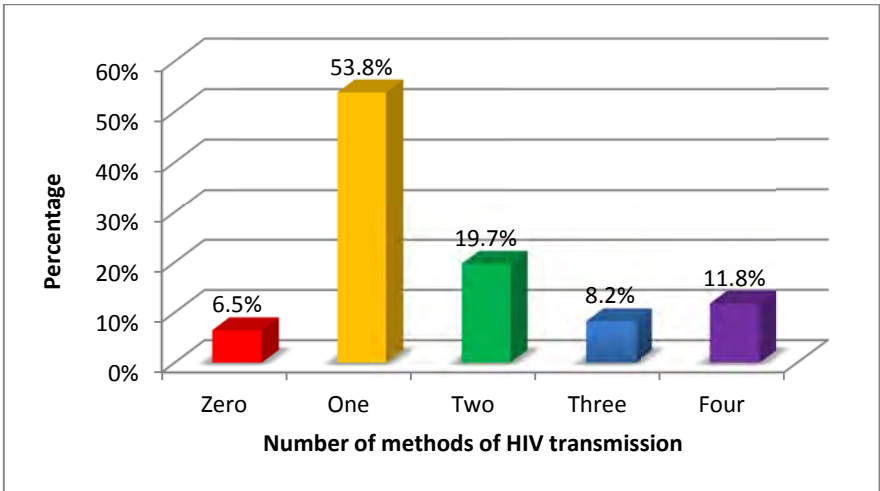


Figure 4.6: Percentage of respondents versus number of methods of HIV transmission (N=340).

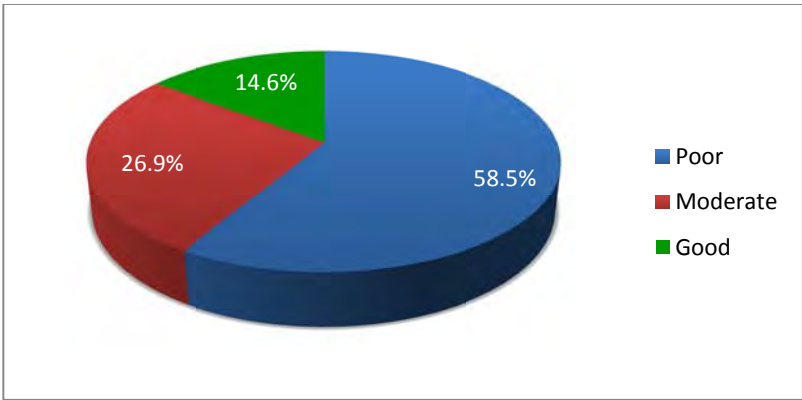


Figure 4.7: Level of knowledge of respondents about HIV/AIDS transmission and prevention methods

As mentioned before, the total score for basic knowledge about HIV/AIDS was 8 points. As a result, the total score was put in a scale of poor, moderate and good basic knowledge on HIV/AIDS represented by 0-2, 3-5 and 6-8 points, respectively. Based on this scale, 58.5% (n=200) of respondent had poor knowledge, 26.9% (n=92) had moderate knowledge, and just 14.6% (n=50) had good knowledge about HIV/AIDS and prevention methods (Figure 4.7).



Moreover, the mean score of respondents' knowledge regarding HIV/AIDS were 3.02 (Std. Dev. = 1.78), which fitted into the moderate level; however, it was close to the lowest possible score of the moderate level (3 points). According to the percentage of respondents in each level, it can also be concluded that the majority of participants have a poor level of knowledge regarding HIV/AIDS.

#### 4.4.2 Knowledge about PMTCT

The knowledge of respondents regarding to PMTCT was assessed using four questions and the same scoring method was used. The total of 9 points was divided into three ranges: 0-2, 3-5, 6-9, and considered as poor, moderate and good level of knowledge, respectively.

According to Table 4.5, 75.2% (n=258) of respondents knew that HIV could be transmitted from a mother to her baby. Only 7.9% (n=27) of respondents believed that HIV could not be transmitted from a mother to her baby, and 2.3% (n=8) did not know the correct answer. It is notable that 14.6% (n=50) were not sure about the transmission of HIV from a mother to her baby.

Concerning the actions that can be taken for prevention of MTCT of HIV, 7.4% (n=25) did not know about it and 3.8% (n=13) mentioned that nothing could be done. Consequently, 88.8% (n=315) mentioned one or more actions, which is quite a high percentage. As illustrated in Figure 4.8, 67.9% (n=231) mentioned only one action and 0.9% (n=3) referred to all four actions.

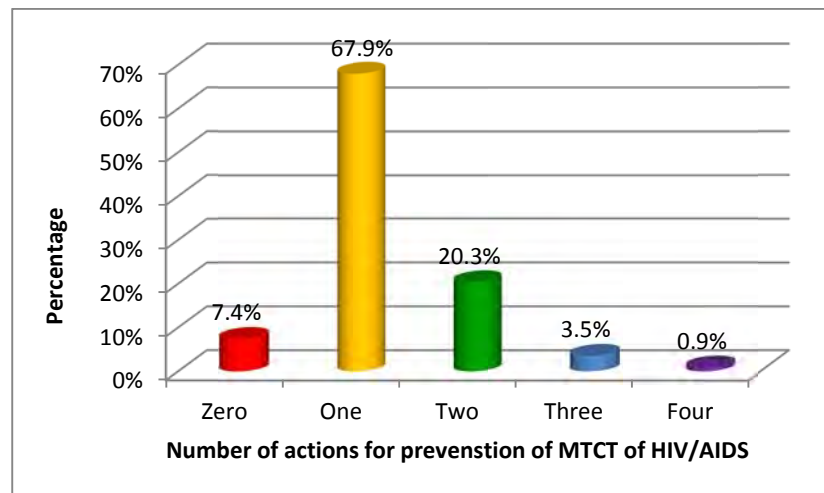


Figure 4.8: Percentage of respondents versus number of methods of HIV transmission (N=340).

Table 4.5: Knowledge about PMTCT of HIV/AIDS

Question	Frequency	Percentage
<b>Can HIV be transmitted from a mother to her baby?</b>		
Yes	258	75.2%
No	27	7.9%
Don't know	8	2.3%
Not sure	50	14.6%
<b>If yes, how can this happen?</b>		
During pregnancy/in the womb	147	49.2%
During delivery	100	33.4%
During breastfeeding	118	39.5%
Don't know	17	5.7%
<b>What actions can be taken for prevention of MTCT of HIV?</b>		
Take drugs before delivery/during labour	256	75.3%
Give baby drugs (antiretroviral)	82	24.1%
Have Caesarean section at delivery	26	7.6%
By not breastfeeding	40	11.8%
Nothing	13	3.8%
Don't know	25	7.4%
<b>What should an HIV+ mother feed her baby in first three months?</b>		
Other liquids only or with formula	37	11.5%
Formula only, Breast milk only	197	61.2%
Breast milk with formula or other liquids	27	8.4%
Don't know	61	18.9%

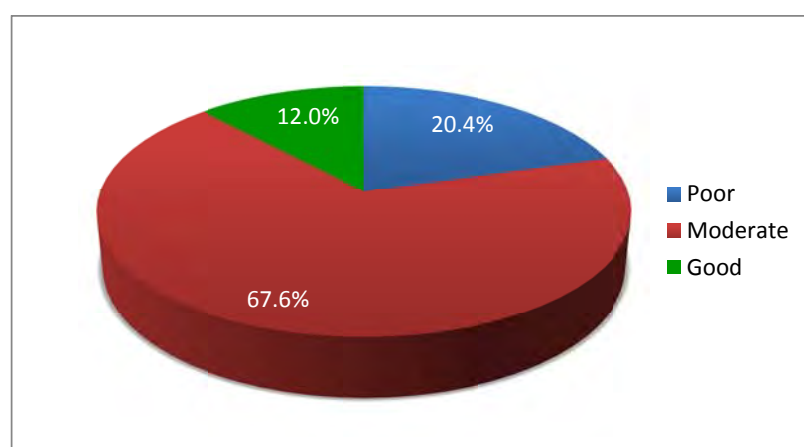


Figure 4.9: Level of knowledge of respondents about PMTCT of HIV/AIDS

According to Figure 4.9, the level of knowledge of pregnant mothers about PMTCT was scored which was 20.4% (n=70) poor, 67.6% (n=232) moderate, and 12% (n=41) good level of knowledge. The mean score was 3.61 which fitted into the moderate level (Std. Dev. = 1.58), but it was fairly far from the mean of maximum possible score (4.5 points).

#### ***4.4.3 Overall knowledge about HIV/AIDS and PMTCT***

To summarize, the overall knowledge of respondents regarding HIV/AIDS, the total score of 17 points were calculated over the above-mentioned questions and scaled as poor for 0-5 points, moderate for 6-11 points, and good for 12-17 points. The mean score was 6.62 that fitted into the moderate level (Std. Dev. = 2.98). According to Figure 4.10, 41.7% (n=143) had poor level, 48.1% (n=165) had moderate level, and 10.2% (n=35) had good level of knowledge regarding HIV/AIDS and PMTCT. It is notable that nobody got the complete score (17 points); only one respondent got 16 points, two obtained 15 points, and three got 14 points.

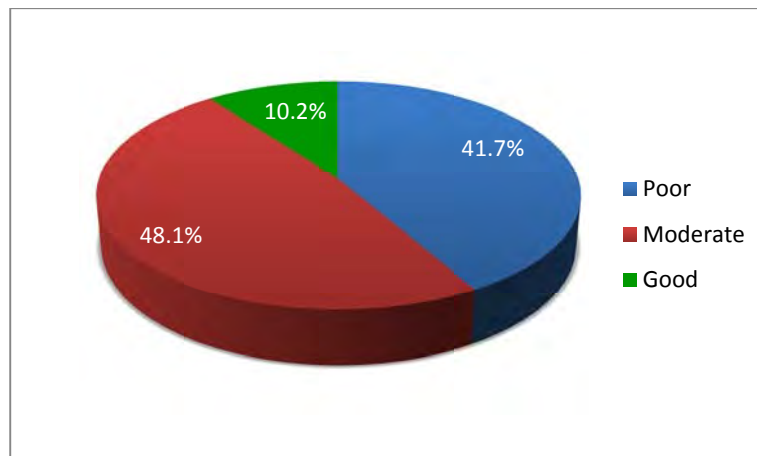


Figure 4.10: Overall level of knowledge of respondents about HIV and PMTCT

Respondents were further asked to identify the sources from which they learnt about PMTCT. Health care providers (i.e. nurses, doctors) were the most frequently mentioned source of information. Of the 245 respondents who answered this question, 89.4% (n=219) mentioned health care providers told them about PMTCT, followed by TV/Radio (15.5%, n=55). The result is shown in Figure 4.11.

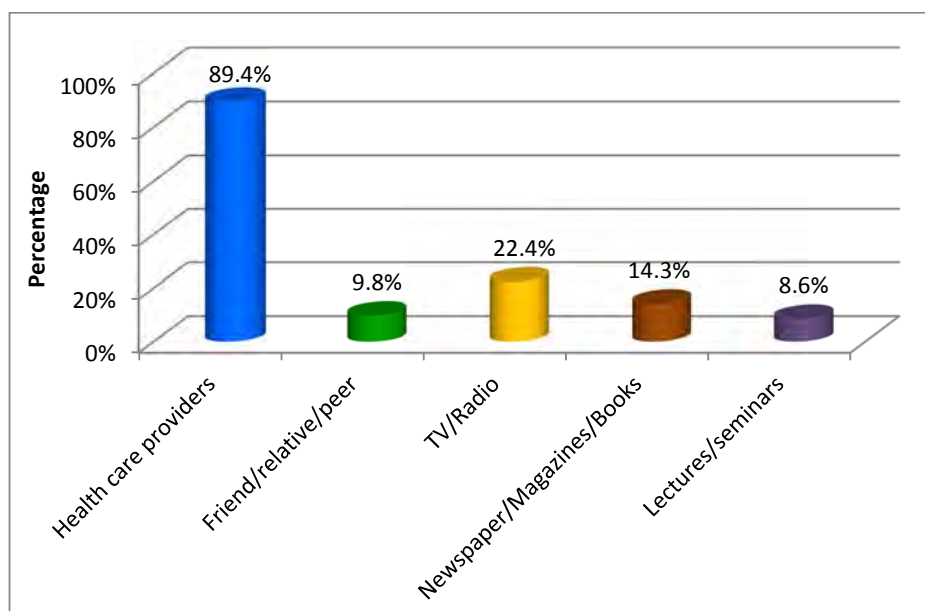


Figure 4.11: Respondents' source of information regarding PMTCT

#### 4.5 Attitude regarding PMTCT of HIV/AIDS

The attitude a person has on something may affect the interest of that person in utilizing it. In addition, the attitude people have towards a program may either frustrate the program or promote the program, so in this study the attitude of pregnant women towards PMTCT services was looked at.

Respondents were asked nine questions, which had a total score of 45 points. These were indicated on a Likert scale and respondents were provided with statements indicating the extent to which they agree with those statements (strongly agree 5, agree 4, no opinion 3, disagree 2 and strongly disagree 1). It is notable that the first three statements about breastfeeding (breastfeeding due to stigma, fear of disclosure and lack of education) had a reversed scoring system (strongly agree 1, agree 2, no opinion 3, disagree 4 and strongly disagree 5). If one agrees that some women choose to breastfeed despite their HIV status, due to stigma, fear of disclosure or lack of education, it reflects a negative attitude toward PMTCT. The fourth statement is about breastfeeding due to poverty. If an HIV-positive pregnant mother lives in a developed country, breastfeeding is a negative attitude toward the PMTCT program; because she can afford formula and she should not breastfeed her baby since breastfeeding is one of the main routes of MTCT of HIV to the baby. On the other hand,

in developing countries such as South Africa, breastfeeding a baby is a good attitude toward the PMTCT program regardless of the HIV status of mother; because an HIV-positive mother may not afford the formula and not breastfeeding results in the malnutrition of her baby (Frizelle et al., 2009).

Table 4.6 shows the frequency and percentage of each response. The majority of respondents agreed or strongly agreed with PMTCT strategies, except with this statement: “If one is infected with HIV then she should not get pregnant again”. Of 330 respondents who answered this question, 60% (n=198) disagreed or strongly disagreed that an HIV-positive woman should not get pregnant. Moreover, 24.8% (n=82) had no opinion and only 15.2% (n=50) agreed or strongly agreed with the mentioned statement.

Table 4.6: Attitude of respondents toward PMTCT of HIV/AIDS

Statement		Strongly agree	Agree	No opinion	Disagree	Strongly disagree
It is important that every pregnant woman gets tested for HIV.	Frequency	276	42	7	5	5
	percentage	82.4%	12.5%	2.1%	1.5%	1.5%
If one is infected with HIV then she should not get pregnant again.	Frequency	18	32	82	111	87
	percentage	5.5%	9.7%	24.8%	33.6%	26.4%
Using condoms during pregnancy and breastfeeding reduces the risk of transmission from mother to child.	Frequency	209	68	29	20	8
	percentage	62.6%	20.4%	8.7%	6.0%	2.4%
Some women choose to breastfeed despite their HIV status, due to stigma.	Frequency	79	84	109	32	26
	percentage	23.9%	25.5%	33.0%	9.7%	7.9%
Some women choose to breastfeed despite their HIV status, due to fear of disclosure.	Frequency	89	87	72	63	17
	percentage	27.1%	26.5%	22.0%	19.2%	5.2%
Some women choose to breastfeed despite their HIV status, due to lack of education.	Frequency	93	92	46	65	34
	percentage	28.2%	27.9%	13.9%	19.7%	10.3%
Some women choose to breastfeed despite their HIV status, due to poverty.	Frequency	104	100	74	29	27
	percentage	31.1%	29.9%	22.2%	8.7%	8.1%
My family will support my choice of feeding the baby.	Frequency	186	89	22	21	10
	percentage	56.7%	27.1%	6.7%	6.4%	3.0%
I will support the strategies for PMTCT.	Frequency	190	81	43	9	3
	percentage	58.3%	24.8%	13.2%	2.8%	0.9%

As shown in Table 4.6, the last statement asked respondents the extent to which they supported the PMTCT strategies. Of respondents, 83.1% (n=271) agreed or strongly agreed with this statement, 3.7% (n=12) disagreed or strongly disagreed with it and 13.2% (n=43) had no opinion. It is clear that the majority of respondents supported the PMTCT strategies.

To evaluate the overall attitude of respondents, their responses were summed up and a total score was obtained for each respondent. The mean of the maximum possible score was 22.5; so those who scored above 22.5 had a good attitude whereas those who scored below 22.5 had a poor attitude towards PMTCT strategies. As illustrated in Figure 4.12, the majority of respondents (97.6%, n= 328) had a good attitude toward PMTCT strategies (mean score = 30.82 points, standard deviation = 3.75 points).

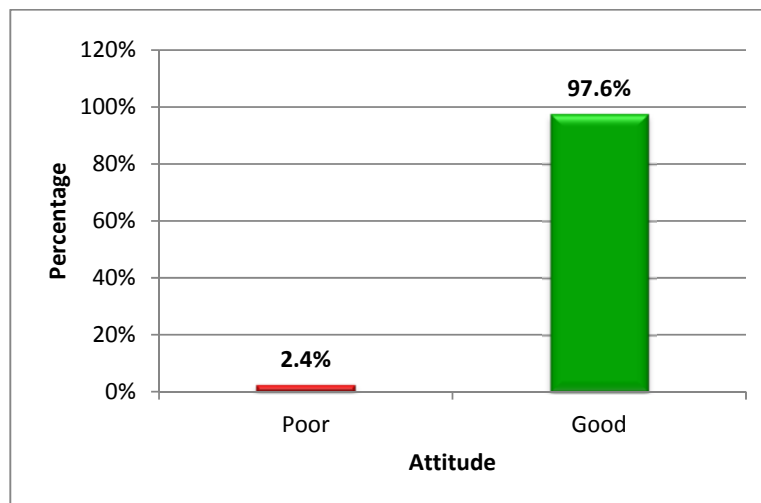


Figure 4.12: Overall attitude of respondents toward PMTCT

#### 4.6 Practice regarding PMTCT of HIV/AIDS

To assess the practice of respondents toward PMTCT, they were asked several questions to find out whether or not they had been tested for HIV, they had discussed having an HIV test with their partner, they had had PMTCT counselling upon their arrival at the hospital, and they had been convinced to use PMTCT services. The Frequency and percentage of respondents' responses are available in Table 4.7.

According to Table 4.7, of 345 respondents who completed the questionnaires, 328 respondents answered the question about being tested for HIV of which 98.5% (n=323) had had an HIV test, 0.9 (n=3) had not had the test and 0.6% (n=2) did not answer the question. Of 328 respondents who had had the test, 6 of them didn't answer the next question about their willingness to share the HIV test result (missing value) and 51 respondents did not want to share the results. Of 271 respondents who shared their HIV test result, 42.8% (n=116) were HIV-positive, 52% (n=141) were HIV-negative, and 5.2% (n=14) didn't know the result. This finding indicated the high rate of HIV prevalence among pregnant women who participated in this research; even after several ANC visits.

In a separate multiple-choice question, the respondents were asked about the reasons for not having the HIV test. Although all the 311 respondents who answered this question did the HIV test, 35.5% (n=110) mentioned that fear of the possible breach of confidentiality was the main reason, 20.9% (n=65) referred to stigma and discrimination as the second reason, and 14.5% (n=45) believed that knowing their HIV status had no advantage (Table 4.7). The graphical representation of this result is shown in Figure 4.13.

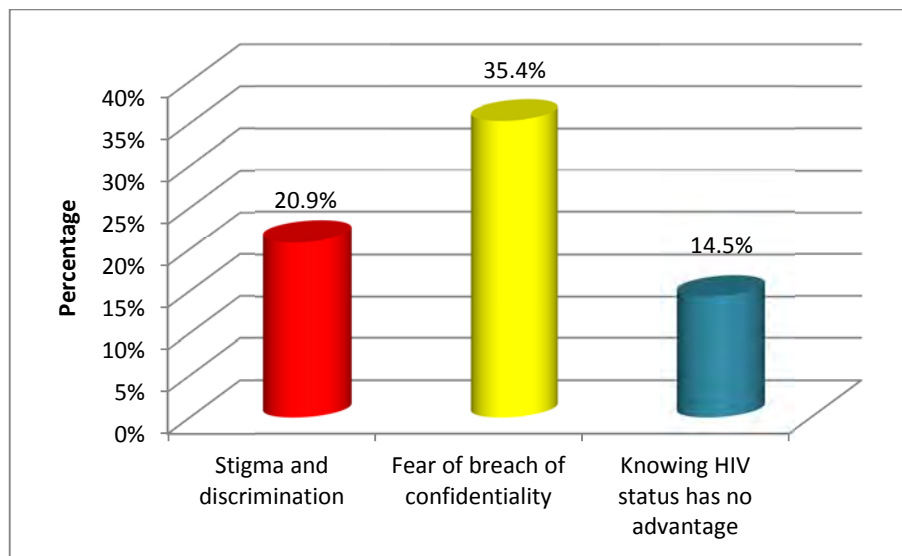


Figure 4.13: The reasons for not having an HIV test.

Table 4.7: Practice of respondents toward PMTCT.

Question	Frequency	Percentage
<b>Have you ever been tested for HIV?</b>		
Yes	323	98.5%
No	3	0.9%
Don't like to answer	2	0.6%
<b>Total</b>	<b>328</b>	<b>100%</b>
<b>If you have received the results, can you share your results with me?</b>		
Yes	<u>271</u>	84.2%
No	51	15.8%
<b>Total</b>	<b>322</b>	<b>100%</b>
<b>If you can share the results to me, what were the results?</b>		
Living with HIV/AIDS (HIV+)	116	42.8%
Living without HIV/AIDS (HIV-)	141	52.0%
Don't know	14	5.2%
<b>Total</b>	<b>271</b>	<b>100%</b>
<b>What was the reason for not having a HIV test?</b>		
Stigma and discrimination	65	20.9%
Fear of people not maintaining confidentiality	110	35.4%
Knowing HIV status has no advantage	45	14.5%
<b>I did the test</b>	<b>311</b>	<b>100%</b>
<b>Have you ever discussed having an HIV test with your partner?</b>		
Yes	307	93.3%
No	22	6.7%
<b>Total</b>	<b>329</b>	<b>100%</b>
<b>If yes, what was your partner's response to having an HIV test?</b>		
Wants couple testing	213	71.0%
Wants woman to be tested alone	47	15.7%
Doesn't want woman to be tested	10	3.3%
I don't want to answer	30	10%
<b>Total</b>	<b>300</b>	<b>100%</b>
<b>Did you have Antenatal care visits during your last pregnancy?</b>		
Yes	164	51.9%
No	94	29.7%
I can't remember	58	18.4%
<b>Total</b>	<b>316</b>	<b>100%</b>
<b>Upon your arrival here at the Hospital, did the staff offer you PMTCT counselling?</b>		
Yes	<u>225</u>	69.4%
No	99	30.6%
<b>Total</b>	<b>324</b>	<b>100%</b>
<b>If yes, have you been convinced to use PMTCT services?</b>		
Yes	202	89.8%
No	23	10.2%
<b>Total</b>	<b>225</b>	<b>100%</b>



In the final part of the questionnaire, three questions asked respondents about the antenatal care (ANC) visit during their last pregnancy, having a PMTCT counselling upon arrival at the hospital, and whether they had been convinced to use PMTCT services or not. Regarding Table 4.7, 51.9% (n=164) of respondents had an ANC visit during their last pregnancy, 29.7% (n=94) didn't have any ANC visit and 18.4% (n=58) didn't remember whether they had a visit or not. Thereafter, they responded that 69.4% (n=225) received a PMTCT counselling upon their first arrival at the hospital of which 89.8% (n=202) were convinced to use PMTCT services and only 10.2% (n=23) had not been convinced.

According to Table 4.7, 30.6% (n=99) respondents mentioned that they did not have any PMTCT counselling upon their first arrival at the hospital. A bivariate analysis between PMTCT counselling and HIV status showed that of those who didn't received a PMTCT counselling, 41% were HIV-positive and 53% were HIV-negative (Table 4.8).

Table 4.8: Cross-tabulations between PMTCT counselling and HIV status.

			HIV status			Total
			HIV+	HIV-	Don't know	
Was PMTCT counselling offered?	Yes	N	80	94	8	182
		%	44.0%	51.6%	4.4%	100%
	No	N	34	44	5	83
		%	41.0%	53.0%	6.0%	100%
Total		N	114	138	13	265
		%	43.0%	52.1%	4.9%	100%

#### 4.7 Factors associated with knowledge, attitude and practice toward PMTCT

As explained in section 4.1, a Chi-square test was used to find the relationship between different variables and knowledge, attitude and practice of pregnant women with regard to PMTCT. To determine the significance of relationship, a p-value was used. If p-value was equal to or less than 0.05, the relationship was considered statistically significant. In the following sections, the different factors will be examined and discussed.

#### 4.7.1 Factors associated with knowledge about HIV/AIDS and PMTCT

According to previous sections, the association between socio-demographic characteristic, number of pregnancy and HIV status of respondents, and their level of knowledge about the PMTCT program was assessed. As other reproductive characteristics did not have any significant association with the level of knowledge, they are not discussed in the dissertation.

As shown in Table 4.9, the most statistically significant factor regarding the knowledge of respondents was their education level ( $p=0.001$ ). It was found that as the education level increased, the percentage of respondents with poor levels of knowledge decreased. The respondents, who had secondary education or above, had higher percentages of good knowledge and lower percentages of poor knowledge about PMTCT of HIV/AIDS.

The second factor was occupation ( $p=0.008$ ). Respondents who were employed tended to know more than unemployed respondents about the PMTCT program and HIV transmission/prevention methods. The age of respondents ( $p=0.012$ ) had a significant association with their level of knowledge; younger pregnant women knew less than older ones about HIV transmission/prevention methods and PMTCT program.

Regarding to Table 4.9, marital status ( $p=0.312$ ), number of pregnancies ( $p=0.071$ ) and HIV status ( $p=0.311$ ) of respondents did not have significant association with their level of knowledge. Although the p-value for marital status was greater than 0.05, respondents with no previous pregnancy knew less than others who had previous pregnancies.

Table 4.9: Factors associated with Knowledge about HIV/AIDS and PMTCT

Variables			Level of Knowledge about PMTCT			Total	P
			Poor	Moderate	Good		
Age	18-25	N	83	84	10	177	0.012
		%	46.9%	47.5%	5.6%	100.0%	
	26-35	N	43	69	20	132	
		%	32.6%	52.3%	15.2%	100.0%	
	>36	N	15	12	5	32	
		%	46.9%	37.5%	15.6%	100.0%	

Variables			Level of Knowledge about PMTCT			Total	P
			Poor	Moderate	Good		
<b>Marital status</b>	Single	N	75	89	13	177	0.312
		%	42.4%	50.3%	7.3%	100.0%	
	Married	N	10	10	6	26	
		%	38.5%	38.5%	23.1%	100.0%	
	Separated	N	1	1	0	2	0.312
		%	50.0%	50.0%	0.0%	100.0%	
	Have a regular boyfriend	N	53	61	16	130	0.312
		%	40.8%	46.9%	12.3%	100.0%	
<b>Education Level</b>	Less than primary	N	13	4	1	18	0.001
		%	72.2%	22.2%	5.6%	100.0%	
	Primary	N	43	46	2	91	
		%	47.3%	50.5%	2.2%	100.0%	0.001
	Secondary and above	N	79	105	32	216	
		%	36.6%	48.6%	14.8%	100.0%	
<b>Occupation</b>	Employed	N	38	40	18	96	0.008
		%	39.6%	41.7%	18.8%	100.0%	
	Unemployed	N	99	118	17	234	0.008
		%	42.3%	50.4%	7.3%	100.0%	
<b>Number of Pregnancy</b>	First Pregnancy	N	62	59	6	127	0.071
		%	48.8%	46.5%	4.7%	100.0%	
	Second Pregnancy	N	40	48	17	105	
		%	38.1%	45.7%	16.2%	100.0%	
	Third Pregnancy	N	21	32	8	61	0.071
		%	34.4%	52.5%	13.1%	100.0%	
	More than three Pregnancies	N	16	24	4	44	0.071
		%	36.4%	54.5%	9.1%	100.0%	
<b>HIV status</b>	HIV+	N	42	61	13	116	0.311
		%	36.2%	52.6%	11.2%	100.0%	
	HIV-	N	56	70	14	140	
		%	40.0%	50.0%	10.0%	100.0%	0.311
	Don't know	N	9	5	0	14	
		%	64.3%	35.7%	0.0%	100.0%	

#### 4.7.2 Factors associated with attitude toward PMTCT of HIV/AIDS

To assess the relationship between different factors (as listed in Table 4.9) and attitude of respondents towards the PMTCT program, the Chi-square test was performed. Chi-square

test did not show any significant association between different factors and attitude of respondents toward PMTCT strategies because according to section 4.5, more than 97% of respondents had good attitudes toward PMTCT of HIV/AIDS. As a result, the aforementioned factors did not have any influence on the attitude of respondents regarding PMTCT program.

#### ***4.7.3 Factors associated with practice of PMTCT of HIV/AIDS***

After performing the Chi-square test, it was found that there was no significant association among them; because 98.5% of respondents had had the HIV test and 93.3% had discussed having an HIV test with their partner. In addition, 89.8% were convinced to use PMTCT services after counselling at the hospital. This indicated the good practice of pregnant women with regard to the PMTCT program, so none of the factors affected their practice.

A bivariate analysis between HIV status and factors for not having the HIV test (Figure 4.13) revealed that there was a significant association between HIV status and fear of stigma and discrimination ( $p=0.013$ ). However, there was no significant association with the other two factors (Table 4.10).

Table 4.10: Association between HIV status and reasons for not being tested.

			Stigma and discrimination		Total	
			No	Yes		
HIV status	HIV-	N	126	24	150	p=0.013
		%	84.0%	16.0%	100.0%	
	HIV+	N	79	32	111	
		%	71.2%	28.8%	100.0%	
			Fear of breach of confidentiality		Total	
			No	Yes		
HIV status	HIV-	N	99	51	150	p=0.279
		%	66.0%	34.0%	100.0%	
	HIV+	N	66	45	111	
		%	59.5%	40.5%	100.0%	

			Knowing HIV status has no advantage		Total	
			No	Yes		
HIV status	HIV-	N	127	23	150	p=0.289
		%	84.7%	15.3%	100.0%	
	HIV+	N	99	12	111	
		%	89.2%	10.8%	100.0%	

Furthermore, it was found that level of knowledge of respondents about HIV/AIDS and PMTCT had a significant association ( $p=0.031$ ) with the antenatal care visits during their last pregnancy (Table 4.11).

Table 4.11: Association between level of knowledge and ANC during last pregnancy

			ANC visit in last pregnancy			Total	
			Yes	No	I can't remember		
Knowledge Level of HIV/AIDS and PMTCT	Poor	N	55	47	29	131	p=0.031
		%	42.0%	35.9%	22.1%	100.0%	
	Moderate	N	85	38	26	149	
		%	57.0%	25.5%	17.4%	100.0%	
	Good	N	23	8	3	34	
		%	67.6%	23.5%	8.8%	100.0%	

## 4.8 Conclusion

This chapter discussed the data analysis and findings. Data were presented in tables and figures and the relationship between variables was explored using the contingency tables. It was found that 41.7% of respondents had poor levels of knowledge about PMTCT or HIV/AIDS while 48.1% had moderate and 10.2% ( $n=35$ ) had good levels of knowledge. The data analysis showed that regarding basic knowledge of respondents about HIV transmission/prevention methods, 58.5% had poor knowledge, 26.9% had moderate and 14.6% had good knowledge about HIV/AIDS and prevention methods.

Furthermore, it was found that the majority of respondents (97.6%) had a good attitude toward PMTCT strategies and 83.1% supported it. In addition, they had a good practice of PMTCT; because 98.5% of respondents did the HIV test, 93.3% discussed having an HIV test with their partner, and 89.8% were convinced to use PMTCT services after counselling at the hospital.

Finally, the bivariate analyses showed that education level ( $p=0.001$ ), occupation ( $p=0.008$ ), and age of respondents ( $p=0.012$ ) had statistically significant associations with their knowledge about PMTCT of HIV/AIDS. Moreover, it was found that none of the factors influenced the attitude and practice of respondents with regard to the PMTCT program as they had a good attitude and practice regarding PMTCT or HIV/AIDS.

In the next chapter, each finding will be discussed and concluding remarks as well as recommendations will be provided.

## **CHAPTER 5: DISCUSSION AND RECOMMENDATION**

### **5.1 Introduction**

In this chapter, the findings of this study are discussed and the results are compared with the findings of other researchers. Thereafter, the recommendations are made to improve the PMTCT program. Ultimately, the dissertation will be finalised with the limitations of the study and the conclusion.

Altogether 345 pregnant women completed the questionnaires. The respondents were aged between 18 and 45, with the majority between 18 and 35. The largest group of participants were single followed by participants who had a boyfriend with the remainder married or separated. Few people had less than primary level of education, while the largest proportion had a secondary level of education or above. The majority of respondents were Christian Africans with different denominations of Christianity. Furthermore, more than two-thirds of respondents were unemployed and more than half of the participants earned no money or less than R2500 monthly.

Regarding the reproductive characteristics of respondents, more than one-third had no previous pregnancy. Nearly one-third had a previous pregnancy and had one child. In addition, the majority of respondents who had previous deliveries were delivered in a hospital. The duration of the current pregnancy was six months or more for two-thirds of respondents and more than half of respondents had four or more ANC visits during their current pregnancy.

### **5.2 Discussion**

The discussion section is divided into three sections in which the results of this study are compared with the findings of literature reviewed.

### ***5.2.1 Knowledge regarding PMTCT of HIV/AIDS and associated factors***

#### **5.2.1.1 Basic knowledge about HIV/AIDS**

This study found that 93.5% of respondents were aware of HIV/AIDS transmission methods and only 6.5% did not know about it. This level of awareness is high and compares favourably with similar studies conducted in Togo (Tatagan; et al., 2011) and Nigeria (Nestler, 2011; Stevens and Lyall, 2014) where the majority of pregnant women had a good level of awareness about HIV/AIDS. In a recent study conducted in a district in Nigeria (Petrie et al., 2007), it was found that the majority of respondents (married women at reproductive age) had low levels of knowledge regarding HIV/AIDS.

According to the results of this study, 83.8% of respondents were aware of unprotected sexual intercourse as the main HIV transmission method. In addition, 31.5% knew that HIV could be transmitted from mother to her baby, 25.0% referred to HIV transmission through unsafe blood transfusion and 24.7% to sharing ‘sharps’ with an infected person. This finding indicates that despite the high level of awareness of pregnant women regarding HIV/AIDS transmission, the majority of them only identified the unprotected sexual intercourse as the main HIV transmission route and had less knowledge about other transmission methods. Furthermore, it was found that 53.8% of respondents were aware of only one method of HIV transmission and only 11.8% knew all four methods. This finding revealed that the overall knowledge of participants about HIV/AIDS transmission methods was not high enough.

Concerning the HIV/AIDS prevention methods, 94.1% of respondents reported at least one method of prevention of HIV/AIDS and only 20 respondents (5.9%) did not know about it. Furthermore, 68.1% referred to condom use, 45.7% to having/being a faithful sexual partner and 26.8% to abstinence.

To judge the overall knowledge of participants about transmission and prevention methods of HIV/AIDS, each correct answer was scored. Similar techniques were used by Mujumali (2011) in Tanzania and the level of knowledge of the majority of participants was interpreted as moderate. According to the results of this study, 58.5% of respondents had poor levels of knowledge about HIV/AIDS transmission and prevention methods. This finding is in line with the HIV prevalence among pregnant women in the studied hospital. In this study, of 271 respondents who shared their HIV status, 42.8% were HIV-positive.



### 5.2.1.2 Knowledge about PMTCT

Regarding mother-to-child transmission (MTCT) of HIV/AIDS, 75.2% of respondents knew that HIV could be transmitted from a mother to her baby, which is fairly high. They mentioned that transmission could occur during pregnancy/in the womb (49.2%), during delivery (33.4%) and during breastfeeding (39.5%). Of transmission methods, 74.6% referred to one method, 11.7% to two methods, and 8% to all three methods. According to previous studies, Chirwa (2011) reported that in Malawi, about 86% of respondents were aware of MTCT. In a study in 2013 in Nigeria, 73.4% of respondents knew that MTCT could occur (Umeobika et al., 2013). Other studies conducted by Merdekios and Adedimeji (2011), and Abajobir and Zeleke (2013) in South Ethiopia showed that 92.0% and 90.1% of pregnant women knew about MTCT.

Of methods for prevention of MTCT of HIV to an unborn baby, Table 4.5 showed that the responses were 75.3% for taking drugs before/during delivery, 24.1% for giving drugs to baby, 11.8% for not breastfeeding and 7.6% for having Caesarean section at delivery. According to Chirwa (2011), more than one-third of MTCT of HIV occurs during breastfeeding; so pregnant women should have more knowledge about it. However, WHO recommends that breastfeeding should not be stopped before six months because of poverty in the African continent to avoid malnutrition of infants (Frizelle et al., 2009).

Regarding what an HIV-positive mother should feed her baby in first three months, 61.2% of respondents referred correctly to formula only or breast milk only. This finding indicates that 38.8% of respondents did not know the correct method of feeding their babies in the first three months.

In comparison with other studies, Nestler (2011) found that in Nigeria, less than half of the participants knew about methods of preventing mother-to-child transmission of HIV. Another study conducted later in Nigeria (Stevens and Lyall, 2014) revealed that 73.4% were aware of PMTCT methods. Abajobir; and Zeleke (2013) found that in South Ethiopia, 82.3% of pregnant women knew about PMTCT methods. Furthermore, a study conducted by Hardon et al. (2009) in Kenya showed that only 48.2% of the respondents had knowledge on PMTCT. In 2009, research in the Eastern Cape in South Africa (Frizelle et al., 2009) indicated that knowledge levels about PMTCT were low among women and mothers. In this study, it was shown that 88.8% of respondents knew about PMTCT methods, which shows a good improvement in South Africa.

As shown in section 4.4.3, 89.4% of respondents reported that their knowledge about PMTCT was acquired from health care providers. This shows the benefits of PMTCT counselling upon arrival of pregnant women at the hospital. The respondents then mentioned TV/radio and newspaper/magazines as the second and third sources of information about PMTCT, respectively. National research in South Africa in 2005 revealed that exposure to radio is the highest, followed by television, newspaper and magazines (Frizelle et al., 2009), which is in line with the finding of this study. As a result, mass media is an important vehicle through which important PMTCT information can be channelled.

#### 5.2.1.3 Factors associated with knowledge about HIV/AIDS and PMTCT

The bivariate analysis between socio-demographic and reproductive characteristics of respondents and their overall level of knowledge regarding HIV/AIDS and PMTCT showed that age ( $p=0.012$ ), education level ( $p=0.001$ ) and occupation ( $p=0.008$ ) of respondents had significant association with their level of knowledge. These associations are in line with findings of Juliet (2006); Petrie et al. (2007); Abajobir; and Zeleke (2013); Mujumali (2011); Merdekios; and Adedimeji (2011) and (Hardon et al., 2009). Accordingly, more educated respondents as well as employed women had more knowledge about HIV/AIDS and PMTCT. Moreover, younger women (18-25 years) had less knowledge compared with the older respondents. In this study, it was found that among older women, those older than 36 years had less knowledge compared with those aged between 26-35 years. Similar findings were observed in the above-mentioned studies.

In this study, it was found that other factors including marital status, religion, ethnicity, number of pregnancies and HIV status did not have significant association with the level of knowledge of respondents, similar to some studies (Chirwa, 2011; Abajobir; and Zeleke, 2013). However, some studies found that there were significant associations between level of knowledge and marital status (Mujumali, 2011), number of pregnancies (Abajobir; and Zeleke, 2013) and the number of ANC visits (Petrie et al., 2007).

In this section, the first objective of this study (i.e. to describe the knowledge of pregnant women with regard to the PMTCT program) and the first part of fourth objective (i.e. to describe the factors that can affect the knowledge of pregnant women toward PMTCT) were

covered. Regarding this section, younger pregnant women, those who have less education and unemployed clients need more training and counselling to promote their level of knowledge of HIV/AIDS and PMTCT.

### ***5.2.2 Attitude regarding PMTCT of HIV/AIDS and associated factors***

#### **5.2.2.1 Attitude regarding the PMTCT program**

Understanding the attitude of the pregnant women towards PMTCT services was one of the objectives of this study. The majority of pregnant women (97.6%) who participated in this study showed a good overall attitude towards PMTCT interventions. This finding correlates favourably with similar studies conducted by Abajobir; and Zeleke (2013) in South Ethiopia (97.4%), Mujumali (2011) in Tanzania (90.6%). Other studies in Uganda (Juliet, 2006) and Kenya (Hardon et al., 2009) showed that nearly one-quarter of respondents had poor attitudes towards the PMTCT program and reported that PMTCT services were a waste of time because AIDS had no cure. Similar results was found by Tatagan; et al. (2011) in Togo.

In respect of the importance of an HIV test for every pregnant woman, 94.9% of respondents agreed or strongly agreed with being tested. Mujumali (2011) and Hardon et al. (2009) found that a few pregnant women did not see the importance of being tested for HIV due to fear of stigma.

Of respondents, 60% disagreed or strongly disagreed that an HIV-positive mother should not get pregnant again and only 15.2% agreed or strongly agreed with this PMTCT strategy. Similarly, the majority of respondents in Nigeria (94.9%) (Stevens and Lyall, 2014) but the minority in Kenya (29%) (Hardon et al., 2009) had the same opinion. Hardon et al. (2009) reported that some women were aware the baby could be born free of HIV because of utilizing the PMTCT services if the woman attends antenatal care regularly and delivers from the hospital. In addition, other respondents looked at it from a cultural perspective that it is the tradition for every woman to produce children irrespective of the HIV status. Furthermore, this study found that the majority of respondents were single or had a regular boyfriend. According to (PlusNews, 2004), “for some women, a new partner might insist on having a baby, with the woman too afraid to disclose her status; but pressure from the community, and fear of stigma and discrimination were other reasons to have a baby”.

On the reasons for breastfeeding despite the mother's HIV status, less than 60% of respondents agreed or strongly agreed that the mother breastfeeds due to stigma, fear of disclosure or lack of education. Similar findings reported by Mujumali (2011) in Tanzania where more than 80% of respondents mentioned these reasons for a mother who chooses to breastfeed. This finding indicates that in South Africa, cultural beliefs are less likely to be a barrier to PMTCT services and consequently, people had a good attitude towards the PMTCT program. Other studies confirmed that fear of family and community stigma negatively affecting decisions around testing, treatment and infant feeding (Krokan and Christiansen, 2010; Laher, 2012).

This study found that 83.8% of respondents reported that their family would support their choice of feeding the baby. On the contrary, Mujumali (2011) reported that in Tanzania, 48.7% of participants thought that their family would support them and 51.3% disagreed with their family support. According to (Frizelle et al., 2009), women were more likely to adhere to PMTCT strategies when they had their male partners'/husbands' support. As a result, the high rate of support of pregnant women by their families is another reason for increased uptake of PMTCT services in South Africa.

Finally, 83.1% of pregnant women mentioned that they would support PMTCT strategies which was lower than the reported support rate of respondents (100%) in Tanzania (Mujumali, 2011). However, only 3.7% (n=12) of respondents disagreed or strongly disagreed with PMTCT interventions and 13.2% had no opinion about it. A bivariate analysis between age of respondents and their support of PMTCT strategies revealed that 10 opposed participants were 18-25 years old and the other two were 28 and 29 years. Regarding association between age and knowledge about PMTCT, younger respondents had relatively lower knowledge and consequently, they are more likely to disagree with PMTCT strategies.

#### 5.2.2.2 Factors associated with attitude towards PMTCT

Since more than 97% of respondents had good attitudes toward PMTCT interventions, the socio-demographic and reproductive factors as well as their HIV status did not have any significant influence on their attitude regarding the PMTCT program. This finding was in line with results reported by Abajobir; and Zeleke (2013).

In this section, the second objective of this study (i.e. to explore the attitude of pregnant women toward PMTCT) and the second part of the fourth objective (i.e. to describe the factors that can affect the attitude of pregnant women toward PMTCT) were covered. As shown in this section, the majority of respondents had good attitudes towards the PMTCT program and only a few pregnant women had negative attitudes or did not support PMTCT strategies and these belonged to the younger group of participants. Consequently, educational programs and counselling should target younger mothers to encourage them to accept PMTCT interventions.

### ***5.2.3 Practice regarding PMTCT of HIV/AIDS and associated factors***

#### **5.2.3.1 Practice regarding PMTCT program**

Findings from this study showed that 98.5% of respondents had been tested for HIV and only three respondents had not been tested. Two respondents did not want to answer the question. Of the three untested respondents, two had the first ANC visit and consequently, they would probably be tested after PMTCT counselling. The last participant had four or more ANC visit and she did not have any previous pregnancies, but it was not clear why she had not been tested. Similar findings were reported by Abajobir; and Zeleke (2013) that a high percentage of respondents had been tested for HIV (90.6%) in South Ethiopia.

According to the *South African National consolidated guidelines for the prevention of mother-to-child transmission of HIV* (Luckson et al., 2015), all women attending antenatal care (both first-time attendees and women attending follow-up visits) should be given routine information about HIV testing and the PMTCT program, in a group session followed by an individual session. For each woman who refuses an HIV test ('opt-out'), a post-refusal counselling is offered to explore the reasons for this choice, to address any misunderstandings, and to encourage her to reconsider her decision not to test, but without applying undue pressure. These women are offered routine HIV testing at each subsequent clinic visit. As a result, this procedure might be the main reason why almost all respondents had an HIV test.

In contrast with the above finding, a study conducted by Chirwa (2011) in Malawi reported that only 60.4% of respondents received an HIV test. Similarly, Hardon et al. (2009) showed that in Kenya, only 36% of pregnant women did the test after a counselling session. The authors

reported that stigma associated with HIV/AIDS was the main reason of refusing to be tested, so the mothers are not willing to know their HIV status. In addition, Frizelle et al. (2009) mentioned that in many developing countries, women are often not in the position to make independent choices about their own health or that of their babies. As a result, if a male partner disagrees with his female partner's decision to test for HIV then she may be unlikely to test.

According to the results of this study, 84.2% of respondents who did the HIV test, reported their test result of which 42.8% were HIV-positive. This finding is confirmed by the *South African National HIV Prevalence, Incidence and Behaviour Survey* (HSRC, 2014) which reported that KwaZulu-Natal province had the highest rate of HIV prevalence in South Africa.

To assess the reasons that one might refuse to do an HIV test, this study found that fear of a breach of confidentiality (35.4%) followed by stigma and discrimination (20.9%) and of no benefit to know the HIV status (14.5%) were reported by the respondents. However, all respondents were being tested for HIV, which showed an excellent achievement regarding the PMTCT program. As a result, the respondents were convinced to be tested due to the PMTCT counselling, despite their fears and negative beliefs,

Similarly, (Abajobir; and Zeleke, 2013) found that respondents did not have the HIV test for fear of stigma, discrimination and fear of a possible breach of confidentiality. Other studies also confirmed that fear of stigma was the main barrier for not being tested (Tatagan, Mouhari-Toure, Saka, Akakpo, Kombate, Tchama, Singo, Mpélé and Pitche, 2011; Chirwa, 2011; Laher, 2012; Hardon et al., 2009). In addition, Frizelle et al. (2009) mentioned that in many sub-Saharan African countries, women might be reluctant to test because their partners might question their faithfulness and because they feared negative reactions from their partners (such as abandonment, rejection, divorce and or physical violence) or discrimination from the wider community.

Further to this study regarding the perception of male partners on HIV screening, it was found that 93.3% of respondents had discussed having an HIV test with their partner. Of those partners, 71.0% wanted to have couple testing, 15.7% wanted only the woman to be tested, 3.3% did not want either to be tested and the remainder (14.7%) did not want to respond. This finding indicates the good involvement of male partners in family planning and reproductive

healthcare. Similar findings were reported by Abajobir; and Zeleke (2013); however, the level of male partner involvement in South Ethiopia was lower than what was found in this study.

The findings of this study are contrary to the reports of Frizelle et al. (2009). They mentioned that the majority of South African men seemed not to involve themselves actively in reproductive healthcare and were not typically involved in consulting with their partners around family planning or antenatal issues. According to the findings of this study, it seems that the male perspective has improved regarding family-planning involvement since 2009; however, 15.7% of male partners wanted only the woman to be tested. According to Frizelle et al. (2009), if a male does not know his HIV status or about PMTCT, his female partner is less likely to adhere to the PMTCT strategies.

This study then showed that 51.9% of respondents had ANC follow-up during their last pregnancy, which was considerably lower than other studies conducted in this regard. Of respondents, 29.7% did not have an ANC visit during their last pregnancy and 18.4% could not remember it. The findings of this study are in contrast with what Petrie et al. (2007) and Abajobir; and Zeleke (2013) reported that more than 80% of respondents had ANC follow-ups during their last pregnancy. However, this finding indicates that the counselling before/after labour convinced these women to have ANC visits during their current pregnancy. In addition, it was found that levels of knowledge of respondents about HIV/AIDS and PMTCT influenced their ANC follow-up, which is discussed in next section.

Finally, this study showed that more than two-thirds of the respondents received PMTCT counselling upon their arrival at the hospital and 89.8% of them were convinced to use PMTCT services. This finding shows the important role of counselling for awareness of clients about the PMTCT program, which resulted in high percentages of acceptance of clients. Of those who did not received the PMTCT counselling, it was found that about 14% were attending their first ANC visit so they would be counselled after admission. The others had attended more than two ANC visits during their current pregnancy. Of these respondents, 41% were HIV-positive and 53% were HIV-negative and have missed counselling due to unknown reasons, which requires further study to find the reasons to cover this gap.

### 5.2.3.2 Factors associated with practice towards PMTCT

In this study, it was found that the uptake of HIV testing was almost perfect and more than 93% of respondents discussed having an HIV test with their partner. In addition, nearly 90% of respondents were convinced to use PMTCT services. These findings are a good indication of the good practices of pregnant women toward the PMTCT program and consequently, none of the socio-demographic and reproductive factors as well as level of knowledge of respondents affects the utilization of the above-mentioned services.

As discussed previously, fear of stigma and discrimination, fear of a possible breach of confidentiality and the negative attitudes about knowing their HIV status were reported by respondents as the barriers to having an HIV test; but surprisingly, almost all of the respondents had been tested for HIV. This positive behaviour indicated their level of awareness and their positive attitude towards the utilisation of PMTCT services.

It was found that only ANC visits could have influenced the level of knowledge of participants about HIV/AIDS and PMTCT. It was shown that this factor was significantly associated with attending ANC during the last the pregnancy of respondents ( $p=0.031$ ) which was in line with the findings of Petrie et al. (2007) and (Panditrao et al., 2011). Other researchers reported that the level of knowledge could affect the overall practice of pregnant women in their utilization of PMTCT services (Boateng et al., 2013; Panditrao et al., 2011; Abajobir; and Zeleke, 2013; Petrie et al., 2007; Chirwa, 2011; Merdekios; and Adedimeji, 2011).

In this section, the third objective of this study (i.e. to identify the practice of pregnant women with regard to PMTCT) and the last part of fourth objective (i.e. to describe the factors that can affect practice of pregnant women with regard to PMTCT) were covered. As shown in this section, the majority of respondents had good practices with regard to the PMTCT program.

According to Health Belief Model (HBM) and AIDS Risk Reduction Model (ARRM), health behaviour is a function of an individual's socio-demographic characteristics, knowledge and attitudes. This study showed that the majority of respondents had good level of knowledge of HIV/AIDS. According to the models, the good level of knowledge motivates people to take positive health actions because of the desire to avoid a negative health consequence.



As the second stage of AARM, the individuals make a commitment to change their behaviours and practices through a series of actions. The study revealed that majority of respondents knew that using condoms could prevent the transmission of HIV and taking drugs before delivery/during labour could prevent the mother-to-child transmission of HIV. As a result, they had already changed their behaviours to fight against HIV/AIDS transmission.

In stage three of ARRM, help-seeking behaviour and social factors affect the pregnant women's decision-making process. This stage may be influenced by self-help, informal and formal help. The respondents were actively provided with the information, solutions and ways to enact the solutions in order to change sexual behaviours as regards HIV/AIDS control through PMTCT counselling upon their arrival at the hospital. In addition, they identified the mass media as the second major source of information on HIV/AIDS. This is consistent with the findings of other studies (Frizelle et al., 2009; Lucksom et al., 2015; Mujumali, 2011).

### **5.3 Limitations**

The following were the main constraints to this study:

- The questions asked about knowledge were all closed-ended. It is important to differentiate between knowledge by recall, which implies active knowledge, and recognition of correct answers given to closed options, which implies passive knowledge. Thus, the level of adequate knowledge might be false.
- The study focuses on an area that is semi-urban, and factors affecting uptake of PMTCT services in a more urban setting could turn out to be different. There are many differences between urban and rural settings, e.g., people in urban settings may have easier access to information, and it may also be easier to attract human resources in these areas. Additionally, urban settings may have better infrastructure, which can contribute to better accessibility of health services. Therefore, the findings cannot be generalized beyond that of the region studied.
- It is also difficult to tell how honest the responses were. Respondents may have reported wrongly either intentionally or unintentionally. This may have introduced

subject bias in the results resulting in false results, particularly as they relate to attitude and practice.

## **5.4 Recommendations**

- Formal health education programs with regard to HIV/AIDS and PMTCT should be offered to improve knowledge and understanding of the subject to all clients and patients who visit the healthcare facilities, irrespective of gender, so that even males as partners should be able to acquire and act upon the information.
- Encourage the involvement of male partners in family-planning services and encourage them to support and participate in the PMTCT program.
- Strengthen mass media campaigns to improve the knowledge and positive attitude of people towards the PMTCT program.
- Encourage community leaders and spiritual leaders to communicate information about PMTCT, encourage support of PMTCT and eliminate the fear of stigma and discrimination.
- According to this study, there is gap in PMTCT counselling, which can be studied in future to find the possible flaws in its implementation. In addition, the PMTCT counselling should be monitored periodically to ensure the quality and coverage of counselling.

## **5.5 Conclusion**

Knowledge about PMTCT plays a critical role in people's decision-making processes, so comprehensive knowledge about HIV is crucial for effective implementation of the PMTCT program in pregnant populations of women. The objectives of this study were to assess the level of knowledge, the attitude, and practice of pregnant women with regard to the PMTCT program in South Africa and associated factors, which were covered completely in this research.

This study found that the respondents' knowledge of the PMTCT program was at a moderate level, but they had poor basic knowledge about the methods of HIV/AIDS transmission and prevention. As a result, this gap should be covered to promote the uptake of PMTCT services. It was found that the overall level of knowledge of respondents about HIV/AIDS and PMTCT was associated with their ANC visits in their last pregnancy. This study revealed that age, level of education and occupation were significantly associated with the level of knowledge of respondents. Consequently, younger, less educated or unemployed pregnant women knew less about HIV/AIDS and the PMTCT program; so they should be targeted for educational programs and more counselling.

Concerning the attitude of pregnant women toward PMTCT strategies, it was found that the majority of respondents (97.6%) had good attitudes and most of them (83.1%) would support PMTCT strategies. It was found that the respondents with poor attitudes were below 29 years old and as previously discussed, younger respondents had relatively less knowledge, which resulted in their poor attitudes. Respondents further reported that fear of stigma or disclosure might affect the feeding choice a pregnant mother makes for feeding her baby; but the majority (83.8%) had their family's support for their choice of feeding.

Regarding PMTCT practice, it was found that almost all respondents (98.5%) had undergone an HIV test and the majority (93.3%) discussed being tested for HIV with their partner. The majority of partners agreed to have couple testing, but a few (15.7%) still wanted the woman to be tested alone. Although the male involvement is relatively high, it is required to encourage them more to participate in family-planning services. Furthermore, this study revealed that more than two-thirds of pregnant women received PMTCT counselling and the majority (89.8%) were convinced to use PMTCT services. It was found that 30.6% of respondents did not receive a counselling, so the counselling coverage should be improved to increase the uptake rate of PMTCT services.

Ultimately, the findings of this study are in line with *UNAIDS global report 2013* and *Mid-year population estimates 2014* (The Kesho Bora Study Group, 2011). The *UNAIDS global report* mentions that the coverage of antiretroviral prevention services for pregnant women living with HIV is more than 80% in South Africa, which indicates the good coverage of PMTCT program and contribution of nurses as well as good practice of pregnant women.

Moreover, the 2014 mid-year population estimates reveals that life expectancy in the KwaZulu-Natal province of South Africa is 8.7 years higher than in 2001. However, this study shows that there are still some gaps in the level of knowledge of pregnant women as well as PMTCT counselling gaps, which should be covered in future.

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## APPENDICES

### Appendix 1-A: Participants' Information Sheet

Greetings,

My name is Samira Navazandeh Haghdoost; I am a student at the University of KwaZulu-Natal, pursuing a Master degree in Advanced Midwifery, Maternal and Child Health. One of the requirements for the degree is to conduct a research project.

You are being invited to consider participating in this research. The purpose of the research is to explore the knowledge, attitude, practice of the pregnant women about prevention of mother-to-child transmission (PMTCT) of HIV/AIDS. This study will help to understand the knowledge and viewpoint of women about PMTCT program with the purpose of providing recommendations for improved program performance and eliminating the barriers to PMTCT.

**The purpose** of this study is to help to improve PMTCT in Durban by increasing uptake of the program and ARV. The information collected will be used to help to develop programs for improving health care and services in the community, particularly for pregnant women. You were selected to participate in this project because you are pregnant and attend antenatal services at this health facility.

**Procedures:** Your participation is voluntary and you are free to withdraw from the study at any point without any consequences to you. There is no payment for your participation in the study and you will not be required to pay anything in order for you to participate. If you agree to participate, you will be asked some general questions about your background, such as your age, marital status, education level attained, and occupation. You will also be asked about specific questions on knowledge, attitudes and practices regarding PMTCT. I would appreciate your opinion about your attitudes and the different practices of pregnant women like yourself in KwaZulu-Natal and particularly in your district. The completion of the questionnaire will take about 10 to 15 minutes.

**Risks and discomforts:** Some of the questions asked relate to attitudes and practices. These questions do not have right or wrong answers and there are no risks in providing this information. You can refuse to answer any question or stop completing the form at any time. Should you decide to stop participating in the study, your care at the antenatal clinic will not be affected. You will be asked to reveal your HIV status, which may bring discomfort to you. You are free to disclose or refuse to disclose. Should you require counselling, as a consequence of your disclosure of your HIV status, this will be provided to you at the clinic. Please confide in the researcher should need this counselling.

**Benefits:** What we learn from the research will be used to improve the PMTCT services in KwaZulu-Natal. In the course of completing the questionnaire, you may learn new information about PMTCT and you can ask questions in respect of your responses to the questionnaire once you have completed the questionnaire.

**Confidentiality:** Your name will not be recorded on the questionnaire neither reported in any project document and all your answers will be kept strictly confidential. It will be only written on the consent form because, by accepting to participate, it is a requirement that you write your name and sign. There will be no link between your consent to participate in the study and your completed questionnaire.

This study has been ethically reviewed and approved by the UKZN Biomedical research Ethics Committee (approval number HSS/1516/014M).

In the event of any problems or concerns/questions you may contact the researcher at (provide contact details), research supervisor, or UKZN Biomedical Research Ethics Committee, contact details as follows:

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## **Appendix 1-B: Imininingwane ngomhlanganyeli**

Sanibonani,

Igama lami ngingu-Samira Navazandeh Haghdooost; ngingumfundi waseNyuvesi yaKwaZulu-Natal, ngenza i-Master degree Advanced Midwifery, Maternal and Child Health. Enye yezimfuneko ukuhlanganisa ucwaningo nezinga lemfundo engikuyo.

Uyacelwa ukuba ukucabange ukubamba iqhaza kulolucwaningo. Inhloso yocwaningo ukukwandisa ulwazi, isimo sengqondo, ukwenza abesifazane abakhulelwe nokuvinjelwa kokusulwe kwegciwani kusuka kumama kuya enganeni nge-(PMTCT) kwe-HIV/AIDS. Lolu cwaningo luzosiza ukuqonda ulwazi kanye nombono wabesifazane mayelana nohlelo lwe-PMTCT ngenhloso yokunikeza izincomo nokusebetshenziswa kwalo, uhlelo olungcono futhi luqeda izithiyo kwi-PMTCT.

**Inhloso** yalolu cwaningo ukuba kusize i-PMTCT eThekwini ngokwandisa kwalabo abatholako kuhlelo kanye nakuma-ARV. Ulwazi oluqoqwe luzosetshenziswa ukusiza nokuthuthukisa izinhlelo ezingcono ukunakekelwa kwezempilo kanye nezinsizakalo zomphakathi, ikakhulukazi kwabesifazane abakhulelwe. Ukhethiwe ukuba uhlanganyele kulo mkhankaso ngoba ukhulelwe futhi uya kwisikhungo sezempilo sase-Antenatal.

**Izinqubo:** Ukubamba kwakho iqhaza nokuzithandela futhi ukhululekile ukuba uhoxe ekungeneleni ucwaningo nganoma yisiphi isikhathi ngaphandle kuzophazamiseka kuwe. Ayikho inkokhelo ngokumbamba kwakho iqhaza ocwaningweni futhi ngeke kudingeke ukuba ukhokhe lutho ukuze ukwazi ukubamba iqhaza. Uma uvuma ukubamba iqhaza, uzocelwa ukubuzwa eminye imibuzo ejwayelekile njengemvelaphi yakho, mayelana neminyaka yakho yobudala, isimo sokushada, imfundo oyitholile, kanye nomsebenzi wakho. Uyothola futhi ukubuzwa imibuzo ethile mayelana nolwazi onalo, isimo sengqondo Kanye nokwenza ngokuphindelela mayelana ne-PMTCT. Ngingawujabulela umbono wakho mayelana nengqondo yakho kanye nekwenza ezehlukano kwabesifazane abakhulelwe njengawe KwaZulu-Natal ikakhulukazi esifundazweni sakho. Ukuqeda lembuzo kuzothatha imizuzu eyishumi kuya kweyishumi nanhlanu.

**Izingozi noku ngazizwa kahle:** Eminye yemibuzo ebuzwa ihlobana nesimo sengqondo Kanye nokwenza. Lemibuzo akudingeki izimpendulo ezilungile noma ezingalungile futhi ayikho ingozi ekunikezeni lolu lwazi. Ungakwazi ukunqabe ukuphendula noma yimuphi umbuzo noma ukumisa ukugcwalisa ifomu nganoma yisiphi isikhathi. Ungakwazi ukuthatha isinqumo sokuyeka ukubamba iqhaza kulocwaningweni, ukunakekelwa emtholampilo yabakhulelwe ngeke kuphazamiseke. Uzocelwa ukuba udalule isimo sakho se-HIV, okungase kukuphathe kabi. Ukhululekile ukudalula noma ukwenqaba ukudalula. Kungenzeka ukuba udinga ukwelulekwa, ngenxa ukudalulwa kwesimo sakho se-HIV, lokhu kuzonikezwa kuwe emtholampilo. Sicela ugcine isifuba kulocwaningo kufanele kungenzeka udinge ukwelulekwa.

**Izinzuzo:** Esikufundile kulolucwaningo kuzosetshenziswa ukuthuthukisa amasevisi e-PMTCT lana KwaZulu-Natal. Ngenkathi kuqedelwa lemibuzo, ungase ufunde ulwazi olusha mayelana PMTCT futhi ungakwazi ukubuza imibuzo maqondana nezimpendulo zakho uma usuqede yonke lemibuzo.

**Imfihlo:** Igama lakho ngeke liqoshwe kulemibuzo noma ngabe iluphi uphenyo olubhaliwe kanye nazo zonke izimpendulo zakho zizogcinwa ziyimfihlo. Kuzobe ilokhu kuphela okubhalwe efomini kwemvume yakho ngoba, ngokwamukela ukubamba iqhaza, kuba nesidingo sokuthi wena ubhala igama lakho futhi usayine. Ngeke kube khona ukuxhumana phakathi kwemvume yakho ukubamba iqhaza ocwaningweni kanye nokuqeda imibuzo okade ubuzwa yona.

Lolu cwaningo luye laba nobulungiswa nokubuyekezwe futhi kugunyazwe i-UKZN Biomedical cwaningo Ethics Committee (imvume number HSS/1516/014M).

Esimweni sanoma yizinkinga noma ukukhathazeka/imibuzo kuyacelwa ukuba uthintwe umcwaningi (nikeza imininingwane yakho yekuxhumana), umqondisi mcwaningo, noma UKZN Biomedical Research Ethics Committee, imininingwane yokuxhumana imi kanje :

**Igama lomcwaningi:** Samira Navazandeh Haghdoost  
**Imininingwane yokuxhumana:** School of Nursing and Public Health  
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## **Appendix 2-A: Informed Consent**

### **DECLARATION**

I, in signing this document, am giving my consent to participate in the study titled: “Assessment of knowledge, attitude, and practice of pregnant women in respect of prevention of mother-to-child transmission (PMTCT) of HIV/AIDS at a selected antenatal clinic in Durban, South Africa”.

I have read the participants’ information sheet and understood the contents, and the nature of the research project, and I consent to participate in the research project.

I declare that my participation in this study is entirely voluntary and I also understand that I can withdraw at any stage of the project if I do not feel comfortable to continue to participate in the study.

It was agreed that my identification will not be linked to my responses, and to complete the questionnaire does not require me to put my name.

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact the researchers or the HSSREC representative on the details provided.

---

Signature of participant

---

Date

---

Signature of witness  
(Where applicable)

---

Date

## Appendix 2-B: Ukuvuma unolwazi

### ISIFUNGO

Mina ngiyisayina kulombhalo, ngiyazinike ukubamba iqhaza nokuzibandakanye kulolucwaningo elubekiwe kanjena: "Uhlelo lokutho ulwazi, isimo sengqondo, futhi ukwenza nokuqhwasiswa abesifazane abakhulelwe maqondana nokuvinjelwa kokudlulise igciwane kusuka kumama kuya enganeni nge-(PMTCT) ne- HIV/AIDS kumtholampilo wase Antenatal okhethiwe eThekwini, eNingizimu ne-Afrikha".

Ngiyifundile imininingwane yomhlanganye futhi ngayi qonda nokuqukethwe, kanye nohlobo locwaningo, futhi ngiyawuvuma ukuzibandakanya naloluucwaningo.

Ngimemezela ukuthi ukubamba kwami iqhaza kulolu cwaningo ngokuphelele ngiyazithandela futhi ngiyaqonda ukuthi ngingakwazi ukuhoxa noma ngabe bekuyisiphi isigaba, uma sengngazizwa noma ngingakhululekile ukuba ngiqhubeke ukubamba iqhaza ocwaningweni.

Kuvunyelwene ukuthi isiqu sami ngeke sihlobane nezimpendulo zami, futhi ukuqeda imibuzo akuyidingi mina ngifake igama lami.

Uma nginombuzo noma ukukhathazeka mayelana namalungelo ami njengo mhlanganyeli cwaningo, noma ngikhathazeka ngento ethile ocwaningweni noma abacwaningi, mina ngizoxhumana nabacwaningi noma omele HSSREC kule mininingwane enikeziwe.

---

Isiginesha yomhlanganyeli

---

Usuku

---

Isiginesha kafakazi  
(Lapho idingeka khona)

---

Usuku



## Appendix 3-A: Questionnaire

Participant code: .....

Date of visit: .....

Questionnaire on Assessment of knowledge, attitude, and practice of the pregnant women about prevention of mother-to-child transmission (PMTCT) of HIV/AIDS at selected antenatal clinic in Durban, South Africa.

Please circle the appropriate answer(s).

### Section A-1: Socio-Demographic Data

1. What is your age?.....(in years).

2. Marital status:

- (1) Single                      (2) Married                      (3) Divorced  
(4) Separated                      (5) Have a regular boyfriend

3. What level of education did you attain?

- (1) No formal education                      (2) Primary not completed  
(3) Primary completed                      (4) Secondary not completed  
(5) Secondary completed                      (6) Tertiary education

4. What is your ethnicity/race?

- (1) African                      (2) Indian                      (3) White  
(4) Other (specify) .....

5. What is your religion?

- (1) Catholic                      (2) Christian                      (3) Zion  
(4) Muslim                      (5) Other (specify) .....  
(6) Don't like to answer

**6. What is your occupation?**

- (1) Employed                      (2) Businesswoman                      (3) Housewife  
(4) Farmer                      (5) Unemployed

**7. What is your total household income monthly?**

- (1) None (unemployed), less than R2,500  
(2) Between R2,501 to R5,000  
(3) Between R5,001 to R10,000  
(4) Between R10,001 to R20,000  
(5) More than R20,000  
(6) Don't know.

## **Section A-2: Reproductive History**

**8. How many times have you been pregnant?**

- (1) First pregnancy                      (2) Second pregnancy  
(3) Third pregnancy                      (4) More than third pregnancy

**9. How many babies have you before this pregnancy?**

- (1) No baby                      (2) One baby                      (3) Two babies  
(4) Three babies                      (5) Four babies                      (6) More than four babies

**10. If you had pregnancy before, where was your last baby delivered?**

- (1) Home                      (2) Hospital                      (3) Health Centre  
(4) Private Clinic                      (5) Had no previous pregnancy.

**11. How many months pregnant are you?**

- (1) Less than one month                      (2) Between one to 3 months  
(3) Between 3 to 6 months                      (4) More than 6 months                      (5) Don't know.

**12. In the current pregnancy, how many times have you visited the Antenatal clinic?**

- (1) One                      (2) Two                      (3) Three  
(4) Four and above

## **Section B: Knowledge of HIV/AIDS and PMTCT**

**13.** How is the HIV transmitted? (more than one answer may be correct)

- (1) Unsafe blood transfusion
- (2) Sharing sharps with an infected person
- (3) Mother to child transmission
- (4) Unprotected sexual intercourse
- (5) Don't know

**14.** Can you mention ways of preventing someone from acquiring HIV? (more than one answer may be correct)

- (1) Abstinence
- (2) Having one faithful sexual partner.
- (3) Condom use
- (4) Don't know

**15.** Can HIV be transmitted from a mother to her baby?

- (1) Yes
- (2) No
- (3) Don't know (skip to 16)
- (4) Not sure

**16.** If yes, how can this happen?

- (1) During pregnancy/in the womb
- (2) During delivery
- (3) During breastfeeding
- (4) Don't know

**17.** What actions can be taken to prevent transmission of HIV to an unborn baby? (more than one answer may be correct)

- (1) Take drugs before delivery/during labour
- (2) Give baby drugs (antiretroviral)
- (3) Have Caesarean section at delivery
- (4) By not breastfeeding
- (5) Nothing
- (6) Don't know

**18.** What should an HIV+ mother feed her baby in first three months of life to reduce the risk of HIV transmission?

- (1) Other liquids only or with formula
- (2) Formula only, Breast milk only
- (3) Breast milk with formula or other liquids
- (4) Don't know

**19.** Have you ever heard of prevention of mother-to-child transmission (PMTCT)?

(1) Yes

(2) No (skip to 21)

**20.** If yes, where did you get information on PMTCT from? (more than one answer may be correct)

(1) Health care providers (Doctors/Nurses)

(2) Friend/relative/peer

(3) TV/Radio

(4) Newspaper/Magazines/Books

(5) Lectures/seminars

(6) Others e.g. sangoma/traditional healer

### **Section C: Attitude toward PMTCT**

Please indicate the extent of your agreement with the following statements? (Circle the number)

Statement	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
<b>21.</b> It is important that every pregnant woman gets tested for HIV.	5	4	3	2	1
<b>22.</b> If one is infected with HIV then she should not get pregnant again.	5	4	3	2	1
<b>23.</b> Using condoms during pregnancy and breastfeeding reduces the risk of transmission from mother to child.	5	4	3	2	1
<b>24.</b> Some women choose to breastfeed despite their HIV status, due to stigma.	5	4	3	2	1
<b>25.</b> Some women choose to breastfeed despite their HIV status, due to poverty.	5	4	3	2	1
<b>26.</b> Some women choose to breastfeed despite their HIV status, due to fear of disclosure.	5	4	3	2	1
<b>27.</b> Some women choose to breastfeed despite their HIV status, due to lack of education.	5	4	3	2	1

<b>28.</b> My family will support my choice of feeding the baby.	5	4	3	2	1
<b>29.</b> I will support the strategies for PMTCT.	5	4	3	2	1

#### **Section D: Practice toward PMTCT**

**30. A.** Have you ever been tested for HIV?

- (1) Yes (2) No (skip to 31)  
(3) Don't like to answer (skip to 31)

**30. B.** If you've received the results, can you share your results with me?

- (1) Yes (2) No (skip to 31)

**30. C.** If you can share the results to me, what were the results?

- (1) Living **with** HIV/AIDS (HIV+) (2) Living **without** HIV/AIDS (HIV-)  
(3) Don't know

**31.** What was the reason for not having a HIV test? (more than one answer may be correct )

- (1) Stigma and discrimination  
(2) Fear of people not maintaining my confidentiality  
(3) Knowing HIV-status has no advantage.  
(4) Other reasons.  
(5) I did the test.

**32.** Have you ever discussed having an HIV test with your partner?

- (1) Yes (2) No

**33.** If yes, what was your partner's response to having an HIV test?

- (1) Wants couple testing. (2) Wants woman to be tested alone.  
(3) Doesn't want woman to be tested. (4) I don't want to answer.

**34.** Did you have Antenatal care visits during your last pregnancy?

- (1) Yes (2) No  
(3) I cannot remember.

**35.** Upon your arrival here at the Hospital, did the staff offer you PMTCT counselling?

- (1) Yes (2) No

**36.** If yes, have you been convinced to use PMTCT services?

- (1) Yes (2) No

Thank you very much for participation in this research.

## Appendix 3-B: Imibuzo

Ikhodi lomhlanganyeli:.....

Usuku avakasha ngalo: .....

Lemibuzo kulohlolwa ulwazi , isimo sengqondo, kanye besifazane abakhulelwe nokuvinjelwa kokusulela igciwane kusuka kumama kuya enganeni (PMTCT ) kwe- HIV / AIDS ngesikhathi ekhulelwe wakhethiwe emtholampilo wase Antenatal eThekwini, eNingizimu ne-Afrikha.

Sicela ufakele isiyingilizi kwimpendulo efanele

Isigaba A-1: Data Socio - Ukubalwa kwohlobo lwabantu

1. Itnini iminyaka yakho?.....(iminyaka).

2. Isimo sasemshadweni:

- |                      |                                |                 |
|----------------------|--------------------------------|-----------------|
| (1) Ngisengedwa      | (2) Ngishadile                 | (3) Ngidivisile |
| (4) Ngisahlukanisile | (5) Ngisane ndoda ejwayelekile |                 |

3. Ingabe lingakanani izinga lemfundo ofinyelele kulo?

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| (1) Awunayo imfundo ejwayelekile   | (2) Amazinga aphasi awuwaqedanga      |
| (3) Amazinga aphansi ngawaqeda     | (4) Amazinga amaphakathi awuwaqedanga |
| (5) Amazinga amaphakathi ngawaqeda | (6) Azinga aphakeme                   |

4. Lunjani uhlanga lwakho?

- |                          |            |              |
|--------------------------|------------|--------------|
| (1) Afrikheni            | (2) Indiya | (3) Umhlophe |
| (4) Ezinye (zisho) ..... |            |              |

5. Yini inkolo yakho?

- |                 |                          |                            |
|-----------------|--------------------------|----------------------------|
| (1) Khatholikha | (2) Christian            | (3) Zion                   |
| (4) Muslim      | (5) Ezinye (zisho) ..... | (6) Angithandi ukuphendula |

**6.** Yini umsebenzi wakho?

- (1) Uqhashiwe                      (2) Umama owusomabhizinisi                      (3) Unkosikazi wasekhaya  
(4) Uwumlimi                      (5) Awuqhashiwe

**7.** Lingakanani inani lemali olithola njalo ngenyanga?

- (1) Lutho (anguqhashiwe), ingaphansi kuka R2,500  
(2) Iphakathi R2,501 no R5,000  
(3) Iphakathi R5,001 no R10,000  
(4) Iphakathi R10,001 no R20,000  
(5) Ingaphezulu kuka R20,000  
(6) Angazi.

**Isigaba A-2: Umlando wokuzala**

**8.** Sezingaki izikhathi ukhulelwa?

- (1) Ukhulelwa okokuqala                      (2) Ukhulelwa okwesibili  
(3) Ukhulelwa okwesithathu                      (4) Sekunga phezulu kwesithathu  
ukhulelwa

**9.** Zingaki izingani ngaphambi kwalokhu kukhulelwa?

- (1) Azikho izingane                      (2) Iyodwa ingane                      (3) Zimbili izingane  
(4) Zintathu izingane                      (5) Zine izingane                      (6) Zinga phezulu kwezine  
izingane

**10.** Uma wakhulelwa phambili wamtholela kuphi umntwana wakho?

- (1) Ekhaya                      (2) Esibhedlela                      (3) Isikhungo sezempilo  
(4) Iklinikhi yangasese                      (5) Angikaze ngikhulelwe phambilini

**11.** Unezinyanga ezingaki ukhulwe na?

- (1) Kungaphansi kwenyanga                      (2) Kuphakathi kwenyanga eyodwa kuya kwezintathu  
(3) Kuphakathi kwezinyanga ezintathu kuya kweyisithupha                      (4) Kungaphezulu  
kwezinyanga eziyisithupha                      (5) Angazi.



(1) Kanye                      (2) Kabili                      (3) Kathathu  
(4) Kane nanga phezulu

**13. Ithathelana kanjani i-HIV? (izimpendulo zingaba ngaphezulu kweyodwa)**

- (1) Ukumpontshelwa kwegazi elingaphephile
- (2) Ukwabelana ngokushesha nomuntu onegciwane
- (3) Ukusulelana kusekula kumama kuya enganeni.
- (4) Ukwenza ucansi olungavikelikile.
- (5) Angazi

(izimpendulo zingaba ngaphezulu kweyodwa)

- (1) Ungalenzi ucansi                      (2) Ukuba nesithandwa esisodwa esithembekile  
(3) Sebenzisa igazi lomkhenyana      (4) Angazi

(1) Yebo (2) Cha  
(3) Angazi (yeqa uye ku-16) (4) Angiqiniseki

(1) Ngenkathi usakhulelwe (amahlulu) (2) Ngenkathi uzala noma uteta  
(3) Ngenkathi umncelisa ibele (4) Angazi

(1) Ukuthatha umshanguza/amaphilisi ngaphambi kokubeletha  
umshanguza/amaphilisi (antiretroviral)

(2) Ukunikeza ingane

(3) Ukuba Caesarean ngenkathi ukubetha

(4) Ngokungancelise ibele

(5) Akunalutho

(6) Angazi

**18.** Yini okumele kwenziwe imama one-HIV ukufunze ingane enezinyanga ezintathu izelwa ukuze kwehla ukuthathelana ngeciwane le-HIV?

(1) Olunye uketshezi noma i-formula (2) Formula kuphela, ubisi lwebeli kuphela

(3) Ubisi lwebeli kanye ne-formula noma olunye uketshezi (4) Angazi

**19.** Wake wezwa ngokuvikeleka kukamama kuya enganeni ngokusulelana (PMTCT)?

(1) Yebo (2) Cha (yeqa uye 21)

**20.** Uma uthi yebo, uluthole kuphi ulwazi noma imininingwane nge-PMTCT? (izimpendulo zingaba ngaphezulu kweyodwa)

(1) Ezenhlalakahle (odokotela/namanesi) (2) Abangani/izihlobo  
(3) Umabona kude/umsakazo (4) Phephandaba/Magazini/izincwadi  
(5) Othisha/ izingqungquthela (6) Okunye e.g. isangoma/inyanga

### Isigaba C: Isimo sengqondo mayelana ne-PMTCT

Sicela ukhombise ubukhulu besivumelwano sakho nalezitatimende (Kokelezela inamba )

Isitatimende	Uvuma kakhulu	Uyavuma	Awu-phawuli	Awuvumi	Awuvumi kakhulu
<b>21.</b> Kubalulekile ukuthi wonke owesifazane okhulelwe afike ahlolwe i-HIV .	5	4	3	2	1
<b>22.</b> Uma umuntu etheleleke nge-HIV akufanele aphinde akhulelwe.	5	4	3	2	1
<b>23.</b> Sebenzisa amakhondomu ngenkathi ekhulelwe nangenkathi encelisa kunciphisa ubungozi bokudlulisela igciwane lisuka kumama kuya enganeni	5	4	3	2	1

<b>24.</b> Abanye besifazane bakhetha ukuncelisa yize besazi isimo sabo se-HIV, ngenxa yovalo.	5	4	3	2	1
<b>25.</b> Abanye besifazane bakhetha ukuncelisa yize besazi isimo sabo se-HIV, ngenxa yondlala.	5	4	3	2	1
<b>26.</b> Abanye besifazane bakhetha ukuncelisa yize besazi isimo sabo se-HIV, ngenxa yokwesaba ukusho ukuthi unegciwane	5	4	3	2	1
<b>27.</b> Abanye besifazane bakhetha ukuncelisa yize besazi isimo sabo se-HIV, ngenxa yokungalotholi ukufundiseka	5	4	3	2	1
<b>28.</b> Umndeni wami uzokweseka indlela engiyikhethile ukufunza ingane yami	5	4	3	2	1
<b>29.</b> Mina ngizozeseka izindlela ze-PMTCT.	5	4	3	2	1

#### **Isagaba D: Ukukwenza uphindelela mayelana ne-PMTCT**

**30. A.** Wake wahlolile isandulela ngculazi?

- (1) Yebo (2) Cha (yeqa uyeku 31)  
(3) Angathandi ukuphendula (yeqa uyeku 31)

**30. B.** Uma thola imiphumela yakho, ungangitshela mina?

- (1) Yebo (2) Cha (yeqa uyeku 31)

**30. C.** Uma ungitshela imiphumela yakho, ngabe iyiphi leyo miphumela?

- (1) HIV+ (2) HIV- (3) Angazi

**31.** Ingabe isiphi isizathu esenza ukuthi ungayi ukuyohlolwa i-HIV (izimpendulo zingaba ngaphezulu kweyodwa)

- (1) Inhlamba nokubandlululeka
- (2) Ukwesaba abantu ngeke yokungagcine imfihlo yami
- (3) Ukwazi ngesimo se-HIV akunasizo
- (4) Kunezinye izizathu
- (5) Ngekwenza ukuhlolwa.

**32.** Wake waxoxa nesithadwa sakho mayelana nokuyohlola i-HIV?

- (1) Yebo
- (2) Cha

**33.** Uma ithi yebo, yathini impendulo yesithadwa sakho mayelana nokuyohlola i-HIV?

- (1) Ufuna izithandani ziyohlolwa.
- (2) Ufuna owesifazane ayohlolwa yedwa.
- (3) Akafuni owesifazane ahlolwe.
- (4) Angathandi ukuphendula.

**34.** Ngabe waba vakashela abakwa-Antenatal ngenkathi ukhulelwe phambilini?

- (1) Yebo
- (2) Cha
- (3) Angisakhumbuli.

**35.** Ngenkathi ufika esibhedlela, ngabe abasebenzi bakutshela nge-PMTCT futhi walulwekwa?

- (1) Yebo
- (2) Cha

**36.** Uma uthi yebo, ngabe wakholwa ukusebenzisa izinhlelo ze-PMTCT?

- (1) Yebo
- (2) Cha

Ngiyabonga kakhulu ukubamba iqhaza kulolucwaningo

## **Appendix 4: Request letter for ethical clearance to Research Committee, University of KwaZulu-Natal**

The Research Committee  
University of KwaZulu-Natal  
October 2014

### **APPLICATION FOR APPROBATION OF A RESEARCH PROPOSAL**

I hereby apply for an ethical clearance for my research proposal entitled:

“Assessment of knowledge, attitude, and practice of pregnant women in respect of prevention of mother-to-child transmission (PMTCT) of HIV/AIDS at a selected antenatal clinic in Durban, South Africa.”.

I am an Iranian student, undertaking studies to obtain a Master’s in Nursing: Advanced midwifery, maternal and child health at the University of KwaZulu-Natal in the School of Nursing and public health. One of the requirements for the degree is to conduct a research project.

The aim of this study is to assess the level of knowledge, attitude, and practice of pregnant women toward PMTCT of HIV/AIDS due to its importance in South Africa. The PMMH hospital was purposively chosen to be the setting for this study. Data will be collected from pregnant women attend to antenatal clinic by questionnaire. This protocol will also be sought from the selected hospital.

The research protocol, the data collection tools, and the consent form for participants as well as the participants’ information sheet are enclosed herein. The informed consent for participants shows that participation is voluntary and how the rights and identity of the patients will be protected in the research process. The process will not interfere with daily work and flow of patients at the hospital.

Your consideration will be greatly appreciated.

Yours faithfully,

Samira Navazandeh Haghdoost

Cell: +27810486202

Email: [Haghdoost.s@gmail.com](mailto:Haghdoost.s@gmail.com)

Research Supervisor: Dr. J. Kerr (University of KwaZulu-Natal)

Tel: +27312601432

Email: [kerrj@ukzn.ac.za](mailto:kerrj@ukzn.ac.za)

## Appendix 5: HSSREC approval letter



11 June 2015

Mrs Samira Navazandeh Haghdooost (213567858)  
School of Nursing & Public Health  
Howard College Campus

Dear Mrs Haghdooost,

Protocol reference number: HSS/1516/014M

Project title: Assessment of Knowledge, Attitude, and Practice of pregnant women in respect of Prevention of Mother-To-Child Transmission (PMTCT) of HIV/AIDS at selected Antenatal Clinics in Durban, South Africa.

### Full Approval – Committee Reviewed Protocol

This letter serves to notify you that your application in connection with the above has now been granted full approval.

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach/Methods must be reviewed and approved through an amendment /modification prior to its implementation. Please quote the above reference number for all queries relating to this study. Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

Best wishes for the successful completion of your research protocol.

Yours faithfully

  
.....  
Dr Shenuka Singh (Chair)

 /px

cc Supervisor: Dr Jane Kerr  
cc Academic Leader Research: Professor M Mars  
cc School Administrator: Ms Caroline Dhanraj

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Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)






Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 3587/8350/4557 Facsimile: +27 (0) 31 260 4609 Email: [ximbap@ukzn.ac.za](mailto:ximbap@ukzn.ac.za) / [snymann@ukzn.ac.za](mailto:snymann@ukzn.ac.za) / [mohunp@ukzn.ac.za](mailto:mohunp@ukzn.ac.za)

Website: [www.ukzn.ac.za](http://www.ukzn.ac.za)



Founding Campuses:  Edgewood  Howard College  Medical School  Pietermaritzburg  Westville

## **Appendix 6: Request letter to conduct study and support at Prince Mshiyeni Memorial Hospital**

The Medical Manager  
Antenatal Clinic  
Prince Mshiyeni Memorial Hospital  
Private Bag X07,  
Mobeni, 4060,  
South Africa

University of KwaZulu-Natal  
Howard College Campus  
School of Nursing and Public Health  
Desmond Clarence Building, 5th Floor  
4041, DURBAN  
SOUTH AFRICA

24 April 2015

Dear Dr Aung ,

### **Application for approbation of a research proposal**

I hereby request the support to conduct a research project at Antenatal Clinic at Prince Mshiyeni Memorial Hospital.

I am an Iranian student, undertaking studies to obtain a Master of Nursing: Advanced midwifery, maternal and child health at the University of KwaZulu-Natal in the School of Nursing and public health. One of the requirements for the degree is to conduct a research project which is entitled:

**“Assessment of knowledge, attitude, and practice of pregnant women in respect of prevention of mother-to-child transmission (PMTCT) of HIV/AIDS at selected antenatal clinics in Durban, South Africa.”.**

The aim of this study is to assess the level of knowledge, attitude, and practice of pregnant women toward PMTCT of HIV/AIDS due to its importance in South Africa. The PMMH hospital was purposively chosen to be the setting for this study; because it is one of the largest hospitals in KwaZulu-Natal province and one of the sites for MTCT. Data will be collected from pregnant women attending the antenatal clinic using a self-completion questionnaire. This



protocol has been submitted to the Research Ethics Committee of the University of KwaZulu-Natal unit for approval.

The research protocol, the data collection tools and the consent form for participants are enclosed herein. The informed consent for participants shows that participation is voluntary and how the rights and identity of the patients will be protected in the research process. The process will not interfere with daily work and flow of patients at the hospital.

Your consideration will be greatly appreciated.

Yours faithfully

Samira Navazandeh Haghdoost

Cell: +27810486202

Email: [haghdoost.s@gmail.com](mailto:haghdoost.s@gmail.com)

Research Supervisor: Dr. J. Kerr (University of KwaZulu-Natal)

Tel: +27312601432.

Email: [kerrj@ukzn.ac.za](mailto:kerrj@ukzn.ac.za)

## Appendix 7: Support letter from Prince Mshiyeni Memorial Hospital to conduct the study



health

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

PRINCE MSHIYENI MEMORIAL HOSPITAL  
SENIOR MEDICAL MANAGER OFFICE  
DR. MYINT AUNG  
Private Bag X07; Mobeni 4060  
Mangosuthu Highway  
Tel.: 031-907 8317/ 8304  
Fax.: 031- 906 1044  
Email.: myint.aung@kznhealth.gov.za  
www.kznhealth.gov.za

Enquiry: Dr M AUNG  
Ref No: 08/RESH/2105  
Date: 11/05/2015

TO: Samira Navazandeh Haghdooost

**RE: LETTER OF SUPPORT TO CONDUCT RESEARCH AT PMMH**

Dear Madam;

I have pleasure to inform you that PMMH has considered your application to conduct research on **"Assessment of knowledge, attitude, and practice of pregnant women in respect of prevention of mother-to-child transmission (PMTCT) of HIV/AIDS at selected antenatal clinics in Durban, South Africa"** in our institution.

Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. This research will only commence once this office has received confirmation from the Provincial Health Research Committee in the KZN Department of Health.
3. Please ensure this office is informed before you commence your research.
4. The institution will not provide any resources for this research.
5. You will be expected to provide feedback on your findings to the institution.

Should the following requirements be fulfilled, a Permission/ Approval letter will follow.

- Full research protocol, including questionnaires and consent forms if applicable.
- Ethical approval from a recognized Ethic committee in South Africa

Thank you.

**Dr. M Aung**  
Senior Manager: Medical & Consultant in Family Medicine  
MBBS(Rgn), PGDip in HIV (Natal), DO(SA)  
M.Med.Fam.Med (Natal)

uMnyango Wezempilo . Departement van Gesondheid

*Fighting Disease, Fighting Poverty, Giving Hope*

## Appendix 8: Department of Health approval letter



health

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

Health Research & Knowledge Management sub-component  
10 – 103 Natalia Building, 330 Langalibalele Street  
Private Bag x9051  
Pietermaritzburg  
3200  
Tel.: 033 – 3953189  
Fax.: 033 – 394 3782  
Email.: [hrkm@kznhealth.gov.za](mailto:hrkm@kznhealth.gov.za)  
[www.kznhealth.gov.za](http://www.kznhealth.gov.za)

Reference : HRKM 176/15  
NHRD: KZ\_2015RP10\_100  
Enquiries : Mr X Xaba  
Tel : 033 – 395 2805

Dear Ms S. M. Hagdoost

### Subject: Approval of a Research Proposal

1. The research proposal titled 'Assessment of knowledge, attitude and practice of pregnant women in respect of prevention of mother-to-child transmission (PMTCT) of HIV/AIDS at selected antenatal clinics in Durban, South Africa' was reviewed by the KwaZulu-Natal Department of Health.

The proposal is hereby **approved** for research to be undertaken at Prince Mshiyeni Memorial Hospital.

2. You are requested to take note of the following:
  - a. Make the necessary arrangement with the identified facility before commencing with your research project.
  - b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.
3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to [hrkm@kznhealth.gov.za](mailto:hrkm@kznhealth.gov.za)

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

**Dr E Lutge**

Chairperson, Health Research Committee

Date: 21/07/15

uMnyango Wezempilo . Departement van Gesondheid

*Fighting Disease, Fighting Poverty, Giving Hope*

## Appendix 9: Turnitin report

ORIGINALITY REPORT			
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## Appendix 10: Letter from Editor



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To whom it may concern

### **EDITING OF RESEARCH DOCUMENT: SAMIRA NAVAZANDEH HAGHDOOST**

I have an MA in English from University of Natal (now UKZN) and have been performing editing services via my company for ten years. My company regularly edits the research dissertations, papers and theses of the School of Nursing, Environmental Studies and various other schools and disciplines at the University of KwaZulu-Natal as well as editing for publishing firms and private individuals on contract.

I hereby confirm that Dennis Schaffer from WordWeavers cc edited **Samira Navazandeh Haghdoost's** dissertation titled "Assessment of Knowledge, Attitude, and Practice of Pregnant Women in Respect of Prevention of Mother-To-Child Transmission (PMTCT) of HIV/AIDS at a Selected Antenatal Clinic in Durban, South Africa" and commented on the few anomalies he was unable to rectify in the MS Word Track Changes and review mode by insertion of comment balloons. Corrections were made in respect of grammar, punctuation, spelling, syntax, tense and language usage. Once the queries referred to above, in particular, in the reference section, have been attended to by Mrs Haghdoost, the document should be correct. We did not edit the Appendices and the Table of Contents, Figures and Abbreviations.

I trust that the document will prove acceptable in terms of editing criteria.

Yours faithfully

**Catherine P. Eberle (MA: University of Natal)**

