UTILIZATION OF PMTCT SERVICES BY MOTHERS ATTENDING PMTCT SERVICES IN NGOMA DISTRICT

Delphine MUKANDAYISABA

COLLEGE OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

Master of Nursing Sciences

2017
UTILIZATION OF PMTCT SERVICES BY MOTHERS ATTENDING PMTCT SERVICES IN NGOMA DISTRICT

By

Delphine MUKANDAYISABA

Student Registration Number

216339103

A dissertation submitted in partial fulfilment of the requirements for the degree of

MASTER OF NURSING SCIENCES

In the College of Medicine and health sciences

Supervisor: Dr.TUMUSIIME K.David

July, 2017
Declaration

I, Delphine MUKANDAYISABA, do hereby declare that this dissertation submitted for the degree of Master of Science in Nursing/ Pediatric Track in University of Rwanda/ College of Medicine and Health Sciences is my original work and has not previously been submitted elsewhere. Also, I do declare that a complete list of references is provided indicating all the sources of information quoted or cited.

Student Name: Delphine MUKANDAYISABA
Number: 216339103

Date and signature
Dedication

To my lovely husband NIYOYITA Jean Claude and my daughter IRAKOZE Eduine who laid a foundation for my academic career and success in my life.
To my loved family

I dedicate this work.
Acknowledgements

I do acknowledge with sincere gratitude, the support and guidance from my supervisors, Dr. TUMUSIIME K. David. I also appreciate BIKORIMANA Jean de Dieu who always guided me in analysis. My appreciation also goes to my colleagues who always supported me in needs and to all who actively participated in this study.

I am indebted to my dear husband for his support through this study.

Thank you so much.
Abstract

BACKGROUND: In the absence of preventive measures HIV infected mother may pass the HIV infection to her baby during pregnancy, labor, and through breastfeeding. However PMTCT program will be crucial element to eliminate HIV transmission to the child.

AIM OF THE STUDY: is to assess utilization of PMTCT services in postnatal mothers infected with HIV, facilitating and hindering factors toward PMTCT utilization.

METHODS: A descriptive cross-sectional study with quantitative approach was used to assess HIV positive mother’s utilization of PMTCT in NGOMA District specifically in Kibungo hospital catchment area. A simple random sampling was used to select 5 health centers then purposive sampling was used to recruit 157 participants in the study. Data was collected through valid and reliable adapted questionnaire used in Nigeria by Ibrahim et al. (2016) with permission. Data analysis was done using descriptive and inferential statistics of Pearson Chi-square test.

RESULTS: The study revealed that 51% of the participants visited ANC from one to three months of pregnancy, 41, 4% had four visits, all mothers were tested during pregnancy, 93.6% disclosed their HIV status, 70.1% attended ANC with partner, all received ART, 96.2% take them as directed, 96.2% delivered at health facility, all children received NVP after birth, 96.2% were given cotrimoxazole at six weeks, 90.4% gave medication to children as directed, 82.2% practiced effective exclusive breastfeeding for the first 6months of life. Counseling before and after HIV testing, male partner involvement in the ANC/PMTCT, quality of services was raised by the most participants as facilitating factors. Hindering factors were HIV related stigma and discrimination, distance to health facility, cost of transportation and illiteracy. Pearson Chi-square test shown association between utilization of PMTCT services and marital status P<0.0001, disclosure of HIV status P<0.0001, involvement of male partner in ANC/PMTCT P<0.0001, and quality of services at ANC/PMTCT health facility P=0.048.

CONCLUSION: PMTCT practice in this study was found to be moderate to high and effort should be made in male involvement in PMTCT, disclosure of HIV status and support of young or unmarried mothers or those without partners.

Key words: PMTCT services, utilization, health centers, elimination of HIV transmission.
Contents
Declaration .................................................................................................................. i
Dedication .................................................................................................................. ii
Acknowledgements ................................................................................................... iii
Abstract .................................................................................................................... iv
List of tables ............................................................................................................ viii
List of figures and Graphs ....................................................................................... ix
List of acronyms and abbreviations ....................................................................... x
List of appendices .................................................................................................. xi
CHAPTER 1. INTRODUCTION ................................................................................. 1
1.1 Introduction ........................................................................................................ 1
1.2 Background ......................................................................................................... 1
1.3 Problem statement ............................................................................................. 5
1.4 The aim of the study .......................................................................................... 6
1.5 Objectives of the study ....................................................................................... 6
1.5.1 Main objective ............................................................................................... 6
1.5.2 Specific objectives ......................................................................................... 6
1.5.3 Research Questions ....................................................................................... 6
1.6 Significance of the study .................................................................................... 7
1.7 Conceptual and operational definition ............................................................. 7
1.8 Subdivisions of the Study .................................................................................. 8
CHAPTER 2. LITERATURE REVIEW .................................................................. 9
2.1 Introduction ......................................................................................................... 9
2.2 Theoretical literature ......................................................................................... 9
2.3 Empirical literature ........................................................................................... 12
2.3.1 Assess the utilization of the prevention of mother to child transmission (PMTCT) services by mothers living with HIV. ................................................................. 12
2.3.2 To identify the factors facilitating PMTCT service utilization by mothers with HIV infection. .................................................................................................................. 13
2.3.3 To find out the factors hindering postnatal mothers for attending PMTCT services. ................................................................................................................................. 14
2.3.4 To identify association between utilization of PMTCT services and facilitating factors. ................................................................................................................................. 16
2.4 Critical review and research gap identification .......................................................... 16
2.5 Study Conceptual Framework .................................................................................... 16

CHAPTER 3: METHODOLOGY ........................................................................................... 22
3.1 Introduction .................................................................................................................. 22
3.2 Research design ......................................................................................................... 22
3.3 Research approach ..................................................................................................... 22
3.4 Research setting ......................................................................................................... 22
3.5 Target Population ...................................................................................................... 22
3.6 Sampling ..................................................................................................................... 23
  3.6.1 Study population .................................................................................................... 23
  3.6.2 Sampling Strategy .................................................................................................. 24
3.7 Data Collection .......................................................................................................... 25
  3.7.1 Data Collection instruments ................................................................................. 25
  3.7.2 Data collection procedure ..................................................................................... 28
3.8 Data Analysis ............................................................................................................. 28
3.9 Ethical Considerations ............................................................................................... 28
3.10 Data management....................................................................................................... 28
3.11 Data Dissemination .................................................................................................. 29
3.12 Limitations ................................................................................................................ 29

CHAPTER FOUR: RESULTS PRESENTATION ................................................................... 30
4.1 Introduction .................................................................................................................. 30
4.2 Social Demographic characteristics of participants (N=157) ...................................... 30
4.3 Utilization of PMTCT services by participants (N=157) ........................................... 33
4.4 Facilitating factors and barriers to attending PMTCT services (N=157) .................... 40
4.5 Associations between utilization of PMTCT services and facilitating factors .......... 45

CHAPTER FIVE: DISCUSSION, RECOMMENDATION AND CONCLUSION ................. 49
5.1 Introduction ................................................................................................................ 49
5.2 Social demographic characteristics .......................................................................... 49
5.3 Utilization of PMTCT services ................................................................................... 50
5.4 Factors facilitating PMTCT service utilization by mothers with HIV infection .......... 53
5.5 Hindering postnatal mothers for attending PMTCT services ................................... 53
5.6 Association between PMTCT practice and facilitating factors ........................................ 53
5.7 Conclusion ...................................................................................................................... 54
5.8 Recommendations ......................................................................................................... 54
REFERENCE LISTS ........................................................................................................... 56
Appendices .......................................................................................................................... A
List of tables

Table 4.1 Social Demographic characteristics of participants (N=157)

Table 4.2 Number of children by participants (N=157)

Table 4.3 Utilization of PMTCT services by participants (N=157)

Table 4.4 Utilization of PMTCT service by participants (N=157) continued

Table 4.5 Utilization of PMTCT service by participants (N=157) continued

Table 4.6 Facilitating factors to attending PMTCT services (N=157)

Table 4.7 Barriers factors to attending PMTCT services (N=157)

Table 4.8 Associations between utilization of PMTCT services and demographic characteristics (N=157)

Table 4.9 Associations between utilization of PMTCT services and facilitating factors.
List of figures and Graphs

Figure 2.1 A theoretical framework to assess mother’s utilization of prevention of mother to child transmission services in Ngoma District.

Figure 3.1 Schematic graph that indicating the number of mothers selected in 5 health centers

Figure 4.1 Age of the current children in Months identified by participants (N=157)

Figure 4.2 Mothers take ARV during pregnancy and mothers take medications as directed and reason of not taking medication as directed by a health care provider(N=157)

Figure 4.3 Score of practice by participants (N=157)
List of acronyms and abbreviations

AIDS: Acquired Immunodeficiency Syndrome
ANC: Antenatal care
ARV: Anti-retroviral drug
CD4: Cluster of differentiation 4
EDPRS 2: Economic Development and Poverty Reduction Strategy 2
EMTCT: Elimination of Mother-to-child Transmission
HAART: Highly Active Antiretroviral Therapy
HIV: Human Immunodeficiency Virus
MCH: Maternal and Child health services
MOH: Ministry of health
NVP: Nevirapine
PCR: polymerase chain reaction
PMTCT: prevention of mother-to-child HIV transmission
RAIHIS: Rwanda AIDS Indicator and HIV Incidence Survey
RDHS: Rwanda Demographic Health Survey
UNAIDS: Joint United Nations Program on HIV/AIDS
WHO: World Health Organization
List of appendices

Appendix 1: Distribution of persons mothers HIV positive disclosed their HIV status results
Appendix 2: Consent form and questionnaire in English
Appendix 3: Consent form and questionnaire in Kinyarwanda
Appendix 4: Ethical clearance from IRB
Appendix 5: Recommendations letter from school
Appendix 6: Recommendation letter from Kibungo hospital
Appendix 7: Permission to use questionnaire
CHAPTER 1. INTRODUCTION

1.1 Introduction

This chapter provides global overview of HIV/AIDS followed in Sub-Saharan Africa and in Rwanda. It shows the details of the prevalence of children infected with HIV, new cases of infections of HIV, the origin of HIV infection among children, ways to prevent HIV transmission from infected mothers to their children, gaps concerning the act of using PMTCT services and the targets in PMTCT program.

Mother to Child Transmission (MTCT) is when an HIV infected women passes the HIV to her baby, without any intervention ,children born to the mothers infected with HIV, approximately 15 to 30% of them during pregnancy and delivery may became infected with HIV and 5 to 20% will be contaminated with HIV during breastfeeding (Kevin, Mutugi & Wanzala, 2014, p. 2).

Passage of HIV infection from an infected mothers to children can be stopped by using a group of activities called Prevention of Mother to Child Transmission (PMTCT) (Hampanda, 2013, p. 1).

PMTCT program in Rwanda has different activities which include: Extend the amount of pregnant women who seek PMTCT services by providing ARV prophylaxis to those who are in need, to provide a sufficient follow up to the mothers with HIV infection and their children in post natal period, follow up of discordant couples, and to increase the number of mothers who use family planning methods (Rwanda Biomedical Center, 2014, p. 30).

1.2 Background

Globally HIV continue to be a major health public issue, approximately 36.7 million people were infected with HIV, among them 1.8 million were children at the end of 2015 worldwide, while 25.5 million of these people live in sub Saharan Africa. In the same year of 2015 around 2.1 million were new HIV infection including 150,000 of children infected from their mothers. Furthermore 46% of adults and 49% of children have access on ART (Wingate, 2015, p. 1).
Majority of children get HIV infection from their infected mothers while those mothers are pregnant, on labor, and when they breastfeed them, however the amount of new HIV infections among children less than 15 years of age was diminished by 58% between 2002 and 2013 globally (Wingate, 2013, p. 1). The rate of HIV infectivity among children should be decreased to 2% with effective interventions but in some developing countries where the problem of HIV is still high those interventions are not reachable or not exist and those children infected with HIV need assistance to stay health (Tadesse et al., 2015, p. 1).

Elimination of new cases of HIV infection in infants and children is the one of the United Nations commitments where its goal seeks to reduce 90% of new infection in children and diminish MTCT to less than 5% by using approach designed by WHO which are: Firstly keep women in childbearing age free from HIV infection, prevent conception for mothers already infected with HIV and do not need to give birth in the future and stop the HIV infection to spread from mothers to their children by providing adequate treatment and support to the mothers and children contaminated with HIV infection including their families (Govender & Coovadia, 2014, p. 3).

According to the effort used to eliminate HIV transmission from infected mothers to the children the new number of HIV infections among children has been decreased from 290,000[250,000-350,000] in 2010 to 150,000[110,000to190,000] in 2015 (UNAIDS, 2016, p. 4).

During 2015, in eastern and southern Africa a number of HIV transmissions of 18% has decreased to 6%, in middle east and north has had little reduction of HIV transmission where 1/3 of infected women transmitted HIV to their children while Asia, Pacific and western and central Africa transmission rate were above 10; This showed how the use of ART during pregnancy has a positive impact in reduction of HIV transmission among children around the world (UNAIDS, 2016, p. 80).

Reduction of the number of new HIV infections among children lower than 40,000 by 2018 and less than 20,000 by 2020 is the targets of PMTCT program by ensuring that all pregnant women infected with HIV, 95% of them receive HIV treatment by 2018, also to lessen the
rate of transmission of HIV from mothers to children to 5% or less among breastfeeding women, and to 2% or less among non-breastfeeding women is an another Global target (WHO, 2015, p. 3).

Though many countries in Sub-Saharan Africa established different strategies to eliminate new HIV infection among children from their infected mothers, they are not yet achieved this goal, so that the enhancement on access and utilization of PMTCT are very important to eradicate HIV/AIDS transmission among children in this region (Hampanda, 2013, p. 2).

UNAIDS, 2016 report revealed that due to great improvement in using ART prophylaxis during pregnancy and breastfeeding, HIV transmission rate has been decreased around the world, approximately 1.3 million of infection in 2010 to 2015 have been prevented among children.

In the process of eliminating HIV transmission to children, some gaps are still occurring such as; the number of new HIV infections cases about 5.2 million of women between 15 to 49 years old did not reduce over the past five years, family planning need was not achieved in many countries including Rwanda, greater than 300,000 of women did not receive ART to prevent HIV transmission and a high number of pregnant and breastfeeding women who discontinue to take prophylaxis which increase the rate of transmission of HIV among children (UNAIDS, 2016, p. 78).

In Rwanda more than 20,000 of children less than 15 age are infected with HIV and most of them, 90% got HIV infection from their mothers and if there is no actions taken, the rate of contamination should be more than 30% (UNICEF, 2011, p. 1).

Rwanda established the goal of limiting HIV transmission from infected mothers to their children at 18 months to 2% by 2015 and also is among 13 countries in East and Southern Africa to develop the goal of (e-MTCT) elimination of Mother to Child Transmission (UNFPA, 2012, p. 1).
Rwanda developed a plan of reducing new cases of HIV among children from 1,000 to 200 by June 2018 and this can only be accomplished throughout elimination of Mother to Child Transmission (EMTCT) as it is the optimal goal of national by making better the health of mother, newborn and child through HIV condition (MOH, 2013, p. 40).

The vertical transmission of HIV can be prevented when the mothers take ART during pregnancy, delivery, safe practices are performed during delivery and the newborn after birth should take prophylaxis, then after delivery make sure that the mothers breastfeed the babies exclusively (USAID, 2015, p. 2). Particularly, maintenance of pregnant women and mothers after delivery in the PMTCT program will be crucial element to achieve the national EMTCT goal, as women and infants who continue to use PMTCT services, are more likely to have good health and mothers don’t transmit HIV infection to their children (Woelk et al., 2016).

CDC, 2014 showed that 97% of health facilities in Rwanda provide PMTCT services and 98% of pregnant women agree to be tested for HIV and from estimation of experts around 6,300 of children in Rwanda should became infected with HIV every year if PMTCT activities were not existing (UNICEF, 2011, p. 2). A report from UNAIDS showed that in Rwanda 2015 below 95% of pregnant women infected with HIV receive effective treatment to prevent transmission of HIV to children and 86% of children between 0 to 14 years old infected with HIV receive effective ART (UNAIDS, 2016, p. 236,244).

Though Rwanda is seeking to achieve the global HIV goal of ‘No new pediatric HIV infections, some challenges are still emerging and prevent its target to be achieved; those include low utilization of family planning by mothers infected with HIV and long distance to reach health facilities with PMTCT services (Rwanda Biomedical Center, 2014, p. 10).

Rwanda Demographic and health survey 2014 to 2015 revealed that women aged between 15 to 49 are aware of HIV/ AIDS where 67% of them have comprehensive knowledge about its transmission and prevention and this knowledge is higher in urban than in rural and it has a significant association with the level of education, regarding MTCT the survey revealed that Rwandan women have high knowledge at 94% and 95% know that pregnant women can take medication to reduce the risk of transmission (UNAIDS, 2016, p. 189).
As Rwanda Demographic and health survey (RDHS) has indicated that mothers have high knowledge about Mother to Child Transmission (MTCT) of 94%, however the RDHS report did not show the level of PMTCT services utilization by those mothers living with HIV and their children who have the risk of being infected with HIV from their infected mothers. The most information given by RDHS report concerned with pregnant women, thus study is needed to evaluate how mothers in postnatal and their children utilize PMTCT services. This information might be important to provide appropriate suggestion regarding how to improve access and utilization by preventing HIV transmission from infected mothers to their children.

1.3 Problem statement

In Rwanda HIV prevalence among people aged between 15 to 49 remain stable at 3% and generally women possess 4% however women between age of 40 to 44 is 8 % and those between 45 to 49 decrease to 6% while men is 2% and only less than 1% of children aged between 0 to 14 live with HIV (UNAIDS, 2016, p. 228). In 2015 HIV prevalence of adult people living with HIV in Ngoma District was 2.6% with estimation number of 5,304 people and 4,262 were on ART (PEPFAR, 2016, p. 18). As a great percentage of HIV exists in the women in their reproductive age, this shows that children are at risk to be infected from their infected mothers if measures are not taken.

Rwanda is aiming at reducing new HIV infections in children from 1000 to 200 by June 2018 and this can only be achieved through EMTCT (MOH, 2013, p. 40).

The overall goal of the national EMTCT initiative is to eliminate new pediatric HIV infections and protect maternal, newborn and child health even though HIV condition. Program data shows that the mother to child transmission rate at 18 months is 1.83% (CDC, 2015, p. 2). In addition, the researcher during supervision of students in clinical practice noticed that in the study area new cases of HIV transmission among children are still occurring, even though different strategies have been established to eliminate HIV transmission from infected mothers to children.

Demographic and health survey (RDHS) report showed women’s knowledge about HIV/AIDS and MTCT in general but it did not reveal utilization of PMTCT services of mothers
living with HIV infection in the postnatal period, there is also a limited information on mothers uptake of PMTCT services in the study area and as the new HIV cases among children are still occurring, this study was carried out to assess the utilization of PMTCT services in the study area.

1.4 **The aim of the study**

To conduct an assessment of utilization of “Prevention of mother to child transmission” services by mothers living with HIV in Ngoma District.

1.5 **Objectives of the study**

1.5.1 **Main objective**

To conduct an assessment of utilization of prevention of mother to child transmission services by mothers living with HIV in Ngoma District.

1.5.2 **Specific objectives**

1. To assess utilization of prevention of mother to child transmission of HIV /AIDS among mothers with HIV.
2. To identify the factors facilitating PMTCT service utilization by mothers living with HIV.
3. To identify the factors hindering PMTCT service utilization by mothers living with HIV.
4. To determine the association between utilization of PMTCT services and facilitating factors.

1.5.3 **Research Questions**

1. What is the utilization of prevention of mother to child transmission of HIV /AIDS among mothers with HIV?
2. What are the factors facilitating PMTCT service utilization by mothers living with HIV?
3. What are the factors hindering PMTCT service utilization by mothers living with HIV?
4. What is the association between utilization of PMTCT services and facilitating factors?

1.6 Significance of the study

Postnatal period is the one of the life period for the newborns to contract HIV from their infected mothers, as the literature shows that 50% of HIV transmission can occur during labor/delivery or occur early in postnatal period through breastfeeding, thus it very essential to evaluate utilization of PMTCT services by mothers living with HIV including facilitating and hindering factors to utilize PMTCT services.

The study findings would help to encourage the national PMTCT to take appropriate interventions to improve PMTCT access and utilization by mothers living with HIV in postnatal period; the findings should be also the basic study for other researches; in addition the results of this study would help healthcare institutions in the study area to recognize mother’s utilization of PMTCT services, facilitating and hindering factors hence assisting infected mothers to utilize effectively PMTCT services in the Postnatal period which will lead to the achievement of the PMTCT program goal in the study area as well as in the countrywide.

1.7 Conceptual and operational definition

Assessment: is defined as the act of compiling data to describe or to understand better an issue (Huit, Hummel & Kaeck, 2001). In this study assessment refer to the process of collecting data concerning with the objectives of the study and make judgment on it.

Utilization: is defined as the capability of people to use the health services (WHO, 2010, p. 2). In this study utilization refers to how people seek and use health services and continuity of care as needed.

Antiretroviral drug: it is defined as the medicine used to treat HIV infection (WHO, 2015, p. 7).
Antiretroviral therapy (ART): taking together three or more ARV drugs while treating HIV infection (Kuhn, Aldrovandi, 2012).

Elimination: consist of reducing the transmission of disease to such low levels (WHO, 2015, p. 3). The term elimination in the study refers to the prevention of new HIV infection among children.

Postnatal transmission: Is transmission of HIV from infected mothers to their children and this mostly occurring between 4 to 6 months after birth when the child is breastfeed (Kuhn, 2012, p. 3).

Vertical transmission: also known as mother to child transmission is when an infected mother with HIV transmits the virus to her child, this can happen while the mother is pregnant, during delivery and when she breastfeeds her baby (Kuhn, 2012, p. 4).

PMTCT (prevention of mother to child transmission): refer to the actions taken to avoid transmission of HIV from an HIV positive mother to her child during pregnancy, labor, delivery and breastfeeding (USAID, 2015, p. 1). PMTCT in this study means different care provided to the mothers living with HIV in antenatal and in postnatal period with their children who are at risk of being contaminated to prevent that transmission from mothers to children.

Exclusive breastfeeding: Is when infant receive breast milk only without taking any other liquids or solids, even water, only is allowed to take prescribed medication such as oral solution (Kuhn, 2012). In this study an infant receive only breast milk during the first six months of life, then after should be given a complementary food.

1.8 Subdivisions of the Study

This study will be composed of five chapters: Introduction, Literature review, methodology, Presentation of the results and discussions lastly, conclusion and recommendations.
CHAPTER 2. LITERATURE REVIEW

2.1. Introduction

This section of chapter two will discuss about theoretical literature where it will demonstrate different theories regarding PMTCT, empirical literature, critical review and research gaps identification then the conceptual framework.

2.2. Theoretical literature

Infection of HIV among Children below the age of 15 years old from their infected mothers continue to be a big problem in health (Asefa, Beyene & A., 2013, p. 1).

Mother to child transmission is when Mother living with HIV passes the virus to her child, although without treatment, around 25 to 45% of babies born to HIV positive women may be contaminated with HIV during pregnancy and 50% will become infected during labor or during early breastfeeding (Patricia Flynn, Elaine Abrams, 2016, p. 4). This vertical transmission of HIV can be eliminated, as long as expectant mothers have access to PMTCT program (Wingate, 2013, p. 2).

Though national goal is no new pediatric HIV infections (MOH, 2013, p. 33) to achieve this goal some studies suggest to increase the use of PMTCT services, continuation in care, adherence to medication while the mother is pregnant as well as during breastfeeding and perform safe breastfeeding (Ciarnanello, 2013, p. 1).

Rwanda launched PMTCT program nationally in 2001 using single dose Niverapine (Sd-NVP) regimen which has been revised depending on WHO recommendations and adopted option B in 2010 up 2012 (Binagwaho et al., 2013).

Rwanda adopted the guideline of WHO option B+ in April, 2012 which provide ART to all the HIV pregnant and breastfeeding women without considering their CD4 or clinical stage of WHO and women remain on the treatment after delivery and completion of breastfeeding (PEPFAR, 2016).

Option B+ provide to all pregnant and breastfeeding women living with HIV lifelong ART which are Tenofovir Disoproxil Fumarate (TDF), plus Lamividine (3TC) or Emtricitabine (FTC), plus Efavirenz (EFV) (WHO, 2017b).
Antenatal care is crucial for HIV positive women in reducing HIV transmission to children, in that period CD4 count is measured, clinical and laboratory tests are done, mothers receive ARV and counseling about breastfeeding is provided (Joseph, Ojwang & Onesmus, 2014, p. 83).

All HIV positive pregnant women and mothers living with HIV and their exposed infants are requested to use effective PMTCT program, where they receive ART and other group of activities which stop HIV transmission to their children (WHO, 2017a, p. 1).

In PMTCT program some activities should be taken to avoid mother to child transmission of HIV such as; early screening of HIV during the first visit of pregnant women in ANC, measuring CD4 cell and evaluation of clinical stage HIV/AIDS, use of combination therapy during pregnancy, labor/delivery and breastfeeding period, safe childbirth practices, provide prophylaxis to children born to infected mothers, ensure that follow up is done at six week for mothers and children, and provide counseling to the mothers in ANC ,delivery, and in postnatal period about different topics such as exclusive breastfeeding , taking drugs, adherence to antiretroviral drugs and use of family planning, moreover screening of HIV for children and growth monitoring and routine immunization should be provided to children (Rwanda Biomedical Center, 2012).

HIV medicine prevent HIV transmission from infected mothers to their children by inhibiting HIV multiplication in the body and with less amount of virus in the body reduce the risk for children from acquiring HIV during pregnancy and childbirth as well as women’s health protection. Moreover during pregnancy HIV medicine crossed to the placenta to the fetus, protect the unborn baby from acquiring HIV infection from the mother’s blood and fluids in the vaginal canal and the medication the baby take after birth reduce the risk of HIV infection to enter in the baby’s body (CDC, 2017b).

For the period of antenatal and postnatal visits, the health care providers should make sure that, adequate services in PMTCT are provided; mothers counseled on child feeding options by using demonstrations and after the birth, mothers need assistance to initiation of breastfeeding (Ogolla & Okech, 2014, p. 7).

CDC recommend that all pregnant women or those who need to become pregnant to be tested for HIV prior pregnancy or early when they are pregnant in order to receive ARV for
preventing HIV transmission to children, also it recommend health care provider to retest again the mothers in the third trimester and request mothers to take medication as directed and visit the health facility regularly (CDC, 2017a, p. 2).

WHO recommends minimum four ANC contacts for pregnant HIV positive women with a health care provider (WHO, 2016b). After birth it is mandatory to give a single dose of Nevirapine to the child born to HIV mother directly after or not later than seventy-two hours after delivery and it is taken every day for 6 weeks then cotrimoxazole is provided to children at 6weeks to take daily up to 18months (Peter, 2012).

Regarding breastfeeding, WHO recommend that mothers infected with HIV should breast their children up to 12 months or continue up to 24 months like other general population but while adhere to ART, and practice exclusive breastfeeding for the six months of life then provide supplementary food to the children and continue breastfeeding and in health settings mothers should be advised how to breastfeed their children (WHO, 2016a, p. 3).

**Follow up schedule of HIV exposed infant**

Close monitoring biologically and clinically for children born to the mother living with HIV is very essential in order to detect and offer early treatment to those needing ARVs before 18 months and during the first six weeks of life those children receive Nevirapine (NVP) syrup, and the mother bring the child for the first appointment after six weeks for : vaccination, Polymerase Chain Reaction (PCR), cotrimoxazole, growth monitoring and monitoring continue every month depending on the vaccination schedule then after the vaccination period ,monitoring will continue every month until 18 months ,and it is significant to harmonize follow up appointments of the child with those of the mother to avoid multiple visits (MOH, 2011, p. 63).

The breastfeeding must be done at least up 12 months or continue up to 24 months or longer for HIV mothers and mother have to adhere to ART, give only breast milk to the baby during the first six months of life (Tadesse et al., 2015, p. 12). Exclusive breastfeeding protect the HIV exposed infant as long as the baby and her mother are taking prophylaxis (Ogolla & Okech, 2014, p. 136). It is necessary to retest for HIV an infants
cease breastfeeding, because it can be a route of HIV transmission from mother to baby (Wingate, 2013, p. 4).

2.3 Empirical literature
2.3.1. Assess the utilization of the prevention of mother to child transmission (PMTCT) services by mothers living with HIV.

The Word Health Organization is committed to increase availability to effective PMTCT services, as it help to limit HIV spread from an infected women to her infant, by providing proper treatment and support for those infected, those who are at risk including their families as needed (Iwelunmor et al., 2014, p. 2).

The study conducted on factors enhancing utilization of and adherence to PMTCT in Kenya has revealed that 98% of mothers participated in the study delivered at health facility, 91% breastfeed exclusively their babies, 91% respected appointment given, 69.1% took medication regularly as prescribed, 18% did not reveal their HIV status to anyone else, and 53% of their partners did not participate in PMTCT (Karuta, Saba & Vanderbilt, 2014, p. 1).

The result of analysis of the study conducted in South Sudan at Juba Teaching Hospital on utilization of PMTCT services among 300 women by Joseph and others, shown that 246 (82%) received antenatal counseling on HIV, 201 (67%) have been tested for HIV, 15 were HIV positive and thirteen of them delivered in health facility, CD4 tests were not performed, three mothers were taking single dose of Niverapine, two mothers were on combination drugs, the remaining were not receiving ARV, after delivery ten children born to the mothers infected with HIV received Niverapine but PCR test have not been done, six mothers practiced exclusive breastfeeding for six months, four children were on formula, other five were on mixed feeding, it has been found that most of the mothers in antenatal period receive counseling, 70% are tested for HIV, CD4 tests, combination of ARV drugs, PCR tests and exclusive breastfeeding were not routinely practiced (Joseph, Ojwang & Onesmus, 2014, p. 81).
Another study conducted in Zimbabwe among 8800 women, revealed that 94% of them had more or equal to one antenatal care visit, 92% have recognized their HIV status while they were pregnant, 77% gave birth in a health facility, and 92% returned to the health facility within 6 to 8 week, the study also revealed that 1075 (12 %) of mothers live with HIV infection, 59% of them were on ART prophylaxis with their HIV exposed infants at 63% (Mccoy et al., 2015, p. 6).

Targets of PMTCT program in Nigeria is to ensure that the rate of 80% of during pregnancy have received counseling and HIV test, and have knowledge about safe breastfeeding and 80% of the children born to the mothers infected are enrolled to adequate ART by 2015 (Iwelunmor et al., 2014, p. 9).

The study done by (Woelk et al., 2016, p. 1) in 5 health centers of Rwanda, found that loss of follow up by mothers in PMTCT program occurred early, where loss of 33% of mothers occurred after 30 days of registration into the program and women registered in option B program only 66% of them received ART and 49% of infants were tested for HIV within the first two months of life in 2014.

Rwanda is one of the countries in Sub Saharan Africa achieved the coverage rates of ART where about 97% of health facilities provide PMTCT services and among women attend ANC 98% accept to be tested for HIV and transmission rate at 18 months reduced at 1.83% (CDC, 2015, p. 2).

2.3.2. To identify the factors facilitating PMTCT service utilization by mothers with HIV infection.

The study carried out in Sebeta town, central Ethiopia have revealed that old women utilize PMTCT services 54% less than young women, mothers whose partners tested for HIV status are more likely to utilize the PMTCT services than others whose their partners are not tested 8 times, mothers have the husbands not have any formal education were utilized more PMTCT services about 3.3 times than those whose their husband have any formal of education such as secondary school or above and the satisfaction of mother about the service influence its utilization (Merga, Woldemichael & Dube, 2016, p. 6).
Another study on factors enhancing utilization and adherence to prevention of mother to child transmission in an urban setting in Kenya shown that counseling, influence mothers to utilize PMTCT services by helping them to reveal their HIV status to anyone else, accept to be tested for HIV, to take ARVs, and also to apply exclusive breastfeeding, more over when mothers have a goal of having an HIV negative it can increase the utilization of PMTCT service (Karuta, Saba & Vanderbilt, 2014, p. 4).

2.3.3. To find out the factors hindering postnatal mothers for attending PMTCT services.

Considerable barriers persist that obstruct women to use PMTCT services effectively (World Health Organisation (WHO), 2013, p. 7). To increase access to PMTCT services those amount of barriers need to be eliminated (WHO, 2015, p. 4). Global goal of eliminating new HIV infection among children looks to be achievable whether existing resources are used efficiently and the barriers that hinder up take of PMTCT program are overcome and mothers during pregnancy, mothers and infants in post delivery are retained in PMTCT program (Woelk et al., 2016).

Awareness of HIV status is essential because it causes the pregnant women to have access to the appropriate treatment by caring themselves and care their unborn infants and the lack of knowledge about one’s HIV status is the one of hindering factor to use PMTCT services (WHO, 2015, p. 5).

Health systems issues such as staffing, inaccessibility of health services and community level factors particularly stigma, fear of closure and lack of support from the partner continue to be a challenges to PMTCT program for long time and those issues need to be eliminated in order to eliminate vertical transmission of HIV (Gourlay et al., 2013, p. 1).

WHO (2013), shown factors relating to health care setting that affect PMTCT uptake such as inadequate counseling at the time of diagnosis, long waiting times and cost of transport to health facility, irregular antenatal care attendance, lack of relationship with health workers, in
additional to that low level of knowledge about PMTCT services and low perception of need have been revealed.

The study conducted in Malawi and Nigeria revealed socio cultural factors such as stigma, discrimination, perception, religious beliefs, family disruption, gender inequality, unstable pre-marital sexual relationships, unskilled birth delivery by Traditional Birth Attendants and low utilization of hospital delivery services that hinder successful utilization of PMTCT in these two countries and socioeconomic factors including poverty, illiteracy, lack of awareness and poor accessibility to PMTCT program as barriers to PMTCT use, in addition to that limited male partner involvement and inefficiency of healthcare workers have been reported and it has been seen that women infected with HIV lost a follow up (Okoli & Lansdown, 2014, p. 2).

A study conducted in Northern Kenya revealed that the distance as a major factor, non timely, incorrect and partial provision of information on PMTCT by the health care provider, fear of side effects while taking medications and stigma, refusal to take drugs were reported by same respondents while other shown that late ANC visits by mothers or lack of attendance in ANC in expected time are the barriers of initiating PMTCT care (Ogolla & Okech, 2014, p. 136). Similar result have been found in the study carried out in Nairobi Kenya where the lack of partners support, stigma, discrimination were major barriers to attending PMTCT services, shortage of trained staff on PMTCT, fear of disclosure of HIV status, transportation problems (Deressa et al., 2014, p. 9; Muniu & Karama, 2015, p. 5).

Another study conducted in Nigeria revealed that that fear of stigmatization, PMTCT services not available, insufficient of staffs, lack of good relation between health care providers and clients, and lack of knowledge about the location of PMTCT services, lack of permission or encouragement from partners were reported as barrier to utilize PMTCT services (Hembah-hilekaan, Swende & Bito, 2012, p. 1). In the study done in Rwanda among five health centers revealed several barriers to use PMTCT program such as transportation cost, stigma and discrimination and fear of HIV status disclosure, all these factors impede someone to continue to use the services (Woelk et al., 2016, p. 1)


2.3.4 To identify association between utilization of PMTCT services and facilitating factors.

The study conducted in Malawi, revealed that awareness of the ART benefits to the health, disclosure of HIV status, good experiences with health workers were the most facilitating factors for women in PMTCT participation (Flax et al., 2017, p. 5).

Another study done in South Africa revealed that quality improvement was the factor contributing to the success of PMTCT program (Barker et al., 2015, p. 1).

Based on the study conducted in central Ethiopia, it has been found that PMTCT utilization were associated with age of participants, mothers ‘occupational status, husband’s educational status, having discussion with husband, partner tested and being not satisfied with the service (Merga, Woldemichael & Dube, 2016, p. 1).

2.4 Critical review and research gap identification

Based on these studies carried out in different countries, it shows that different countries in sub Saharan Africa are still in process of eliminating new HIV infection among children and that target is not yet achieved so that many studies are still needed to explore the utilization of PMTCT services by mothers living with HIV, specifically for those who are pregnant and those who have children.

Regarding Rwanda, the recent RDHS report did not show the mothers’ utilization of PMTCT services and current data are needed concerning how mothers living with HIV and their children utilize PMTCT services to prevent new cases of HIV among children in order to achieve national goal.

2.5 Study Conceptual Framework

The study will follow the Andersen’s Behavioral Model of Health Care Utilization initially developed in the late 1960 (Jahangir, Irazola & Rubinstein, 2012, p. 1).
In this study the framework aims to study the interaction between utilization of PMTCT services and Andersen’s behavior model which include predisposing, enabling, need factors and environmental factors.

This behavioral model proposed that an individual's access to and use of health services is considered to be a function of three characteristics which are: predisposing factors, enabling factors, and need factors and health systems’ characteristics. Considering the presence of these factors, a client must perceive illness as a need for the utilization of health services (Jahangir, Irazola & Rubinstein, 2012, p. 1).

As the study was aimed to assess the utilization of PMTCT services by post delivery mothers living with HIV with the facilitating and hindering factors toward PMTCT utilization and thus the study was guided with Andersen’s Behavioral Model of Health Care Utilization, same factors among enabling, predisposing, need factors and environmental factors were assessed to explore the relevant factors that determine the utilization of PMTCT services in the study area.

Enabling factors analyzed are: Counseling, HIV status disclosure, travel, waiting, stigma and discrimination in community. Predisposing factors considered are: age, religion, marital status, education, belief. Environmental factors considered are: Stigma and discrimination, quality of care and communication. Need factors analyzed was how mothers living with HIV perceived the benefit of PMTCT services and its utilization.

Different studies have been conducted and showed that those factors determined by Andersen Behavioral Model of health care utilization influence an individual to seek health services.

Enabling factors include items such as the means and know how to access health services, income, health insurance, a regular source of care, travel, extent and quality of social relationships, available health personnel and facilities, and waiting time (Babitsch, Gohl and von Lengerke, 2012, p. 3).

The result of an electronic search of several databases of texts published between 1995 and 2012 related to maternal and child health has shown that the lack of access to facilities because of long distances, absence of roads, or impassable roads, income and lack of money for transport costs were challenge for the utilization of postpartum services and PMTCT and moreover the continuum of care from prenatal care of mothers in health facilities was
associated with later postpartum and PMTCT services utilization (Belemsaga et al., 2015, p. 92).

Another study conducted in Rwanda in some selected health center, proved that transportation costs, stigma and discrimination and fear of HIV status disclosure, are the main causes which prevent a women to continue the care at health facility (Woelk et al., 2016).

**Need factors**

Are defined as those that require action to be taken such as chronic disease, symptoms, health status and disability days (Ayanda, 2014, p. 325).

These are in two categories, firstly it can be perceived need for health services which relate to how individuals understand and consider their health and secondly it can be evaluated need when a health professional after assessing an individual health find that it need medical care (Babitsch, Gohl & von Lengerke, 2012, p. 3).

A study conducted in Kenya, Nyanza region the majority of participants recognized that returning to the clinic after birth have a great impact on mother and infant wellness due to the care given such as screening HIV for their children and monitoring to prevent mother to child transmission, in additional counseling given to the mothers at the clinic and other health care services are benefit for their health and enable them to return to the clinic after birth (Odeny et al., 2014, p. 5)

**Predisposing factors** are elements that render the health services to be favorable, and useful such as: age, sex, religion, occupation, education, family size, culture, attitude, health education and beliefs which include: attitudes, values, and awareness of services by an individual and gender (Ayanda, 2014, p. 325).

Data from study done in southern Ethiopia say that mothers’ awareness on MTCT and knowledge on timing of HIV transmission from infected mother to child, influence their utilization of PMTCT services like HIV testing, infant feeding, antiretroviral use (Asefa, Beyene & A., 2013, p. 1).
The same study conducted in Nyanza region of Kenya, the most participants responded that lack of information of the importance of antenatal, delivery and postpartum care for young mothers, religious beliefs, and fear of HIV testing, fear of disclosure of HIV status are factors that may deter women to return to a clinic after birth and additionally mothers don’t return because are worry to leave other children at home, missing the work, take a long journey, and waiting a long time to be seen by the clinician at the clinic and other reported that when a health education is provided early in the pregnancy about importance of returning at the clinic for infant HIV testing and the impact failing to do so, these motivate mothers to return to the clinic (Odeny et al., 2014, p. 5).

The electronic search of several databases of texts published between 1995 and 2012 related to maternal and child health reported that the higher the educational level of mothers, the more they attended health centers for postpartum services and younger mothers tended to use maternal services more than older ones and being employed hinder the utilization of PMTCT services (Belemsaga et al., 2015, p. 9).

**Health services factors** are those need actions to be taken which improve the wellbeing of people like quality of care provided, interactions between health provider and client, capacity of bed, result, treatment, type of facility, commitment while providing care, and ambulatory care (Ayanda, 2014, p. 3).

The study conducted in sub Saharan Africa revealed that organizational problems in health facilities such as lack of integrated services, lack of resources such as equipment, ARVs, laboratory testing for CD4 count and PCR, poor provision of PMTCT and immunization services at the first time, lead to low utilization of postpartum services and mothers fail to bring their children at the health facility for being tested for PCR, furthermore the fear of being stigmatized by their families and the community or being abandoned by their husbands made some women hide their HIV status and therefore prevent the use of PMTCT (Belemsaga et al., 2015, p. 12).
Result of the study done in Rwanda revealed that health facility characteristics such as capacity of a facility, its location, staffing and the quality of care provided may influence retention in care (Odeny et al., 2014).

The purpose of the conceptual framework in this study is to identify the factors facilitating and those hinder the utilization of PMTCT services by exploring the correlation between utilization of prevention of mother to child transmission services by HIV positive mothers and facilitating factors. By exploring this relationship, I hope to identify potential areas for intervention to improve the utilization of PMTCT services in Ngoma District.
Figure 2.1 A theoretical framework to assess mother’s utilization of prevention of mother to child transmission services in Ngoma District.

**Predisposing Factors**
- Age, Religion, Marital status, Education, Family size, Health education, Knowledge towards the services

**Enabling factors**
- Counseling, Regular source of care, HIV status disclosure
- Travel, Waiting, Stigma and discrimination in community

**Need factors**
- Mother infected with HIV perceived benefit of PMTCT services

**Health behavior**
- Use of PMTCT services

**Environmental factors**
- Stigma and discrimination in health facilities
- Quality of care
- Communication

(Adapted from Anderson’s health-seeking behavior model (Andersen, 1995, p. 2)
CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter addressed the research methods used in the study and discussed about the following subtitles which include: the study area, study design, study population, study sample, sampling strategy, data collection methods and procedures used problems and limitations of the study, data analysis.

3.2 Research design

A descriptive cross-sectional design was used in this study. It is a descriptive study because the researcher observed, described, documented aspect of a situation (Tobergte & Curtis, 2013, p. 252). It is a cross-sectional because the study involved the data collection at one point of time (Polit & Beck, 2004, p. 182).

3.3 Research approach

A quantitative approach was used in this study.

3.4 Research setting

This study was conducted in Kibungo hospital catchment area. This Hospital is located in Eastern Province, Ngoma District, Kibungo Sector, Karenge Cell and is approximately 100 km from Kigali. It is a district hospital with a catchment area of 310,955 inhabitants and supervises 12 health centers. This study area was chosen because the researcher during supervision of student in that area noted that some health centers of Kibungo hospital catchment area, new cases of HIV among children were still occurring.

3.5 Target Population

A population is the entire aggregation of cases in which a researcher is interested (Tobergte & Curtis, 2013, p. 323). In this study the total target population was 300 consisted with postnatal HIV infected mothers attending health centers to seek health care including PMTCT service, those who were bring their children for immunization services in postnatal period and those who quit seeking the PMTCT services in Kibungo hospital catchment area.
3.6 Sampling

3.6.1 Study population
A sample is a subset of population elements (Tobergte & Curtis, 2013, p. 323). All mothers who met the inclusion criteria attending 5 selected health centers and agreed to join the study were given the consent form with a verbal explanation by their trusted witnesses for those who cannot read. The sample size was calculated using raosoft sample size calculation, with estimation of 300 HIV mothers post delivery from the record in all 12 health centers of Kibungo catchment area during the period of the study; the formula gave a sample size equals to 161 with a confidence level of 95% and margin of error of 5% (Raosoft, 2004).
A sample of 157 of mothers attending 5 selected health centers in PMTCT services, completed the questionnaire were enrolled into the study.

Sample Size
The formula used:

\[
n = \frac{z^2 p(1-p)}{e^2} \frac{1}{1+(\frac{z^2 p(1-p)}{e^2 N})}
\]

Where

- \( n \) stands for sample size,
- \( z \) stands for z-score,
- \( p \) stands for sample proportion or response distribution,
- \( e \) stands for the Margin of Error,
- \( N \) stands for the population.

Given:

- The confidence interval of 95% and the margin of Error of 5%,
- The sample proportion of 3%,
The population of 300 mothers living with HIV,

The z-score of 1.96.

The sample size is:

\[ n = \frac{(1.96)^2(0.3)(1-0.3)}{(0.05)^2} + \left( \frac{(3.8416)(0.3)(0.7)}{(0.0025)(0.05)} \right) \]

\[ n = \frac{322.6}{2.0} = 161 \]

The sample size was 161 mothers living with HIV

3. 6.2 Sampling Strategy

Sampling is the process of selecting a portion of the population to represent the entire population (Tobergte & Curtis, 2013, p. 323). Simple random sampling was used to select 5 health centers among 12 of Kibungo catchment area. Simple random sampling is a process of selecting element in the population and each element has equal chance of being selected (Polit & Beck, 2004, p. 312). To select those 5 health centers, all names of the health centers of Kibungo hospital were written on small papers thereafter Kibungo, Rukira, Zaza, Mutendeli, Remera health centers were selected from a sampling frame then the calculated sample size was distributed across the 5 health centers proportionally to the size of the mothers in PMTCT services. Then from selected health centers purposive sampling was used to recruit the participants in the study where the researcher selected the participants that have the required information with respect to the objectives of the study (Cherie et al., 2011, p. 411). In this study the researcher selected the mothers who met the inclusion criteria of being postnatal mothers living with HIV infection.
Inclusion criteria: The participants were postnatal HIV’ positive women, those attending health centers to seek PMTCT services and immunization services for their children and those who were not utilizing PMTCT services while they were supposed to do so and were willing to participate in the study. In addition the participants had to be among those who were under supervision of the PMTCT services in the study area.

Exclusion criteria: were the infected mothers with HIV who attended the Health centers but not under supervised in study area, HIV Mothers mentally ill, HIV positive Mothers who needed to withdraw their participation at the time of the study.

3.7 Data Collection

3.7.1 Data Collection instruments

An instrument refers to a device used in research that specifies and objectifies the data collecting process (Cherie et al., 2011, p. 409).

An instrument was composed by multiple choice and closed-ended questions in three sections which include demographic data relevant to the study, utilization of PMTCT service, facilitating and hindering factors to attending PMTCT services.
Demographic questionnaire

The questionnaire intended to obtain social-demographic data relevant to the study. It was composed by eight items concerning with age, marital status, number of children, level of education, occupation, religion, partner’s level of education, age of the recent child. These questions were labeled section A.

PMTCT practices questionnaire

PMTCT practices of postnatal mothers living with HIV questionnaire was composed with 21 items in section B. These items were using either yes or correct answer scored as 2 point and No or false answer scored as 1 point and total score was 42. Scoring for PMTCT practice was based on minimum score of 31 and maximum score of 42 of participants with the mean of 38.5 then the cutoff point have been established as follows:

Low PMTCT practice - <= 35 out of 42
Moderate PMTCT practice - 36 to 38.5 out of 42
High PMTCT practice - 38.5 to 42 out of 42

Factors facilitating and those hindering PMTCT service utilization by mothers with HIV infection questionnaire

This questionnaire is labeled with section C and it is composed by thirteen items aimed to assess the facilitating factors and hindering factors toward PMTCT utilization.

Relationship between utilization of PMTCT services and facilitating factors

Chi-square ($\chi^2$) test was used to explore the association between PMTCT practices among postnatal mothers living with HIV and facilitating factors at 0.05 significant levels.
Validity and Reliability

Validity is the degree to which an instrument measures what is supposed to measure (Tobergte & Curtis, 2013, p. 393). Reliability refers to the consistence, accuracy, stability with which an instrument measures an attribute (Tobergte & Curtis, 2013, p. 402).

In this study the valid and reliable questionnaire used in Nigeria by Ibrahim et al. (2016) was adapted with permission to assess HIV positive mothers’ utilization of PMTCT services in Kibungo hospital catchment area, also it was adapted to the various study used in literature review. The questionnaire adapted in this study was tested for reliability with a cronbach’s alpha of 0.82 which means that the questionnaire was reliable, as an instrument.

Several steps were used to ensure validity and reliability of the instrument. The instrument was constructed using concepts from literature and this gave them content validity. Each item was analyzed with assistance from the research supervisor and the nurses working in PMTCT services were consulted to adjust any ambiguous terms and to check if the questions are relevant to the topic, objectives and conceptual framework of the study. Then the instrument was translated from English into Kinyarwanda paying particular attention to consistency in meaning. All questionnaires used were in Kinyarwanda language.

Pilot testing

Is a small study conducted to test reliability and validity of an instrument it also used to demonstrate the ability of research to implement the study (Cherie et al., 2011, p. 411).

A pilot testing was conducted in the study area especially to the nearest Kibungo health center to assess the clarity of the questions, the time required to complete the questionnaire and to see how an instrument will respond to the research questions. The researcher selected 17 postnatal HIV mothers which represented 10% of the simple size and who met the inclusion criteria, then were given the consent form and questionnaire to complete in order to determine the clarity and consistency of the questions and those participated in pilot study were not included in the main study. The changes were made after the pilot testing and adjusted accordingly. The questionnaire was tested for reliability with a cronbach’s alpha of 0.76 which means that the questionnaire was reliable and acceptable to be used.
3.7.2 Data collection procedure

Data collection was conducted between March and May 2017 using Self administered questionnaire which was given to the participants, to assess utilization of PMTCT services, facilitating and hindering factors of postnatal HIV mothers toward PMTCT services. An instrument was written in English as well as in Kinyarwanda. Assisted by nurses, postnatal mothers with HIV were identified in selected health centers and referred to the researcher. The participants were given a questionnaire after obtaining consent form. Data collection was conducted by the researcher in private and comfortable room in the various selected health facilities to ensure accuracy and confidentiality. To respect the privacy, data were collected in the room reserved for mothers seeking PMTCT services which not stigmatize them, and during data collection they were comfortable because they were not overheard or seen by other clients except health care provider.

3.8 Data Analysis

The quantitative data from the field was coded and entered into a computer database designed and analyzed using SPSS Statistical Package for Social Sciences Software version 20.0 and MS-Excel applications. Descriptive statistics of frequency, percentages in tables, graphs were used to present data. Chi-Square test ($X^2$) and Fisher’s Exact test were used to test the relationship between utilization of PMTCT services and facilitating factors at 5% level of significance.

3.9 Ethical Considerations

Approval to conduct this study was obtained from Institutional Review Board (IRB) from the University of Rwanda, college of medicine and health sciences, school of Nursing and Midwifery and from Kibungo Hospital. Permission to perform the study was also obtained from the PMTCT department in selected facilities. The consent form were given to the participants where the participants were informed about their right to withdraw, reject or stop immediately at any time, if they have no willingness to remain in the study. No personal names were used in the questionnaire and they were coded.

3.10 Data management

Data collected were kept in computer with a password to ensure confidentiality. Only the researcher had the accessibility.
3.11 Data Dissemination

Data of the study will be submitted and presented to the department of general nursing, College of Medicine and Health Sciences, University of Rwanda also will be submitted to Kibungo Hospital and its catchment area, as well as to others interested and concerned organization.

3.12 Limitations

The study involved mothers who were able to access the health facility due to financial and time constraints.

3.13 Generalization

The results of this study should be generalized to the entire population in the study area.
CHAPTER FOUR: RESULTS PRESENTATION

4.1 Introduction

This chapter presents the findings of the study. It begins with the distribution of the participants by social demographic characteristics, utilization of PMTCT services, facilitating factors or barriers to attending PMTCT services, lastly the cross tabulation of the dependent and independent variables.

4.2 Social Demographic characteristics of participants (N=157)

The social demographic characteristics considered in this study were age, marital status, number of children, level of education, occupation, religion, partner’s level of education.
Table 4.1 Social Demographic characteristics of participants (N=157)

<table>
<thead>
<tr>
<th>Subject</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age of participants</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 15-20</td>
<td>15</td>
<td>9.6</td>
</tr>
<tr>
<td>Age 21-35</td>
<td>91</td>
<td>58.0</td>
</tr>
<tr>
<td>Age 36-50</td>
<td>51</td>
<td>32.5</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>104</td>
<td>66.2</td>
</tr>
<tr>
<td>Single</td>
<td>25</td>
<td>15.9</td>
</tr>
<tr>
<td>Divorced</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Separated</td>
<td>19</td>
<td>12.1</td>
</tr>
<tr>
<td>Widowed</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td><strong>Level of education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>98</td>
<td>62.4</td>
</tr>
<tr>
<td>Secondary</td>
<td>18</td>
<td>11.5</td>
</tr>
<tr>
<td>Certificate</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>No Schooling/education</td>
<td>40</td>
<td>25.5</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farming</td>
<td>135</td>
<td>86.0</td>
</tr>
<tr>
<td>Civil Service</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Trading</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Craft Work</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Unemployed</td>
<td>14</td>
<td>8.9</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian-Protestant</td>
<td>85</td>
<td>54.1</td>
</tr>
<tr>
<td>Christian-Catholic</td>
<td>57</td>
<td>36.3</td>
</tr>
<tr>
<td>Muslim</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Adventist</td>
<td>10</td>
<td>6.4</td>
</tr>
<tr>
<td><strong>Education level of partner</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>86</td>
<td>54.8</td>
</tr>
<tr>
<td>Secondary</td>
<td>15</td>
<td>9.6</td>
</tr>
<tr>
<td>University</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Certificate</td>
<td>10</td>
<td>6.4</td>
</tr>
<tr>
<td>No Schooling/education</td>
<td>17</td>
<td>10.8</td>
</tr>
<tr>
<td>Don't know</td>
<td>27</td>
<td>17.2</td>
</tr>
<tr>
<td><strong>Number of participants in each health center</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kibungo</td>
<td>56</td>
<td>35.6</td>
</tr>
<tr>
<td>Zaza</td>
<td>28</td>
<td>17.8</td>
</tr>
<tr>
<td>Mutendeli</td>
<td>25</td>
<td>15.9</td>
</tr>
<tr>
<td>Remera</td>
<td>25</td>
<td>15.9</td>
</tr>
<tr>
<td>Rukira</td>
<td>23</td>
<td>14.6</td>
</tr>
</tbody>
</table>
The above table 4.1 shows that more than half of the participants in the study were between 21-35 years 98(58%), and 56(33.1%) were between 36-50 years. The most of the participants 115 (68%) were married and had 2 children 49(29%) and others have 3 or 4 children about 32(18.9%) respectively. Most of the participants attended primary school 106(62, 7%) and no schooling 43 (25, 4%), about occupation most of them were farming 146(86, 4%). Just over half of participants were Christian –protestant 90(53, 3%), Christian- Catholic were 64(37.9%). Over half of the husband /partner of the participants attended primary school 94(55.6%) and 28(16.6%) didn’t know educational level of their husband.

Table 4.2 Number of children by participants (N=157)

<table>
<thead>
<tr>
<th>Number of children</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32</td>
<td>20.4</td>
</tr>
<tr>
<td>2</td>
<td>45</td>
<td>28.7</td>
</tr>
<tr>
<td>3</td>
<td>29</td>
<td>18.5</td>
</tr>
<tr>
<td>4</td>
<td>29</td>
<td>18.5</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>7.6</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The table 4.2 shows the number of children by participants, 45(28.7%) had 2 children, 29(18.5%) had 3 and 4 respectively, 32(20.4%) had 1 child.
Figure 4.1 Age of the current children in Months identified by participants (N=157)

This figure 4.1 shows that the children’s months of the current children by participants 53(33.8%) were between of 2 to 6months, 52(33.1%), were between 13-18 months, 48 (30.6%) were between7-12 of months and the last were one month or below 4(2.5%).

4.3 Utilization of PMTCT services by participants (N=157)

This section presents PMTCT practices of mothers HIV positive during antenatal and postnatal period which include seeking ANC, HIV test and result, CD4 test, ART, partner attendance in ANC/PMTCT disclosure of HIV test result, take medication as directed, place of delivery, use of family planning, clinical appointments attendance, for children NVP at birth, PCR and result, cotrimoxazole at 6 weeks, duration of exclusive breastfeeding, ART while breastfeeding.
Table 4.3 Utilization of PMTCT services by participants (N=157)

<table>
<thead>
<tr>
<th>Subject</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers attended ANC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>157</td>
<td>100.0</td>
</tr>
<tr>
<td>Months at first ANC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Late antenatal care visit (from 4 to 9 months)</td>
<td>77</td>
<td>49.0</td>
</tr>
<tr>
<td>Early antenatal care visit (from 1 to 3 months)</td>
<td>80</td>
<td>51.0</td>
</tr>
<tr>
<td>Number of ANC Visits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>92</td>
<td>58.6</td>
</tr>
<tr>
<td>4 and Above</td>
<td>65</td>
<td>41.4</td>
</tr>
<tr>
<td>Prior pregnancy HIV test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>12.1</td>
</tr>
<tr>
<td>Yes</td>
<td>138</td>
<td>87.9</td>
</tr>
<tr>
<td>HIV test during pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>140</td>
<td>89.2</td>
</tr>
<tr>
<td>Yes</td>
<td>17</td>
<td>10.8</td>
</tr>
<tr>
<td>HIV result during pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV positive</td>
<td>157</td>
<td>100.0</td>
</tr>
<tr>
<td>Disclosure of HIV result</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>6.4</td>
</tr>
<tr>
<td>Yes</td>
<td>147</td>
<td>93.6</td>
</tr>
<tr>
<td>Awareness of HIV status of partner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>32</td>
<td>20.4</td>
</tr>
<tr>
<td>Yes</td>
<td>125</td>
<td>79.6</td>
</tr>
<tr>
<td>partner attended ANC/PMTCT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>47</td>
<td>29.9</td>
</tr>
<tr>
<td>Yes</td>
<td>110</td>
<td>70.1</td>
</tr>
<tr>
<td>CD4 test during pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>12.1</td>
</tr>
<tr>
<td>Yes</td>
<td>138</td>
<td>87.9</td>
</tr>
<tr>
<td>Result of CD4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>27</td>
<td>17.2</td>
</tr>
<tr>
<td>Yes</td>
<td>118</td>
<td>75.2</td>
</tr>
<tr>
<td>Missing System</td>
<td>12</td>
<td>7.6</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The table 4.3 Shows that all of the participants157 (100%) have attended ANC when they were pregnant, 80(51%) had the first ANC visit from one to three months of pregnancy,
77(49%) had the late ANC during the fourth to ninth months of their pregnancy. Just over the half of the participants 92(58.6%) had one to three ANC visits, 65(41.4%) had four visits and above. The most of participants 138(87.9%) were tested for HIV before pregnancy, and 140(89.2%) have been tested during pregnancy and all of them were HIV positive.

Regarding disclosure of HIV result 147(93.6%) have disclosed their results and the table showing the persons they disclosed the results is presented in the appendices and 10(6.4%) did not disclosed their results of HIV test. The large number of 125(79.6%) were aware of HIV status of their partner, 110(70.1%) attended ANC/PMTCT with their partner. Most of the participants 138(87.9%) have been tested for CD4 during pregnancy and 118(75.2%) received CD4 results.

Figure 4.2 Mothers take ARV during pregnancy and mothers take medications as directed and reason of not taking medication as directed by a health care provider(N=157)
This figure 4.2 shows that all of the participants 157(100%) took ARV during pregnancy, 151(96.2%) took ARV as directed by a health care provider and 6(3.8%) did not take medication as directed by a health care provider. Moreover it shows that among 6 participants who did not take medications as directed by a health care provider 4(2.5%) responded that the medications made them sick, 2(1.3%) they forgotten to take medications.

Table 4.4 Utilization of PMTCT service by participants (N=157) continued

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby tested for HIV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Yes</td>
<td>152</td>
<td>96.8</td>
</tr>
<tr>
<td>Baby HIV ‘results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Negative</td>
<td>121</td>
<td>77.1</td>
</tr>
<tr>
<td>Indeterminate</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Not yet available</td>
<td>24</td>
<td>15.3</td>
</tr>
<tr>
<td>Below six weeks</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>Mothers needed children in future</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>39</td>
<td>24.8</td>
</tr>
<tr>
<td>No</td>
<td>118</td>
<td>75.2</td>
</tr>
<tr>
<td>Mothers used family planning method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>103</td>
<td>65.6</td>
</tr>
<tr>
<td>No</td>
<td>29</td>
<td>18.5</td>
</tr>
<tr>
<td>Did not use family planning because needed children</td>
<td>25</td>
<td>15.9</td>
</tr>
<tr>
<td>Clinic appointments attendance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missed one or more appointment</td>
<td>45</td>
<td>28.7</td>
</tr>
<tr>
<td>Never missed an appointment</td>
<td>112</td>
<td>71.3</td>
</tr>
<tr>
<td>Place of delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Health Facility</td>
<td>151</td>
<td>96.2</td>
</tr>
<tr>
<td>Mode of delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Through caesarien</td>
<td>20</td>
<td>12.7</td>
</tr>
<tr>
<td>Naturally through the vagina</td>
<td>137</td>
<td>87.3</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The table 4.4 demonstrates that all most of the children 153(97.5%) were tested for HIV, 4(2.5%) were below the age of the first test. Among children tested for HIV 121(77.1%) were HIV negative, 24(15.3%) the results were not yet available, 6(3.8%) were HIV positive. The large number of the participants 118(75.2%) reported that they did not need children in the future, 39(24.8%) needed children in the future and 103(65.6%) were using family planning. Regarding clinical appointment 112(71.3%) never missed an appointment, 45(28.7%) missed one or more appointment and 151(96.2%) delivered at health facility, 6(3.8%) delivered at home, 137(87.3%) delivered naturally through the vagina and 20(12.7%) delivered through caesarian.
Table 4.5 Utilization of PMTCT service by participants (N=157) continued

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children given NVP or other ARV at birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>157</td>
<td>100.0</td>
</tr>
<tr>
<td>Children given Cotrimoxazole to take every day beginning at 6 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Yes</td>
<td>151</td>
<td>96.2</td>
</tr>
<tr>
<td>Children given the treatment as directed every day beginning at 6 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>15</td>
<td>9.6</td>
</tr>
<tr>
<td>Yes</td>
<td>142</td>
<td>90.4</td>
</tr>
<tr>
<td>Reason for not giving children the treatment as directed by the health facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I forgot</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>I ran out of the medicine too quickly</td>
<td>10</td>
<td>6.4</td>
</tr>
<tr>
<td>I gave medication as directed</td>
<td>142</td>
<td>90.4</td>
</tr>
<tr>
<td>Children breastfed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>157</td>
<td>100.0</td>
</tr>
<tr>
<td>Children still on breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>137</td>
<td>87.3</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td>12.7</td>
</tr>
<tr>
<td>Mothers exclusively breastfeed children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>157</td>
<td>100.0</td>
</tr>
<tr>
<td>Exclusive breastfeeding practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor exclusive breastfeeding</td>
<td>28</td>
<td>17.8</td>
</tr>
<tr>
<td>Effective excessive breastfeeding</td>
<td>129</td>
<td>82.2</td>
</tr>
<tr>
<td>Mothers instructed on how to feed their children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>64</td>
<td>40.8</td>
</tr>
<tr>
<td>Yes</td>
<td>93</td>
<td>59.2</td>
</tr>
<tr>
<td>Mothers were on ARV when they started breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>157</td>
<td>100.0</td>
</tr>
<tr>
<td>Mothers remain on ARV for the entire time of breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Yes</td>
<td>155</td>
<td>98.7</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The table 4.5 Indicates that all children were given NVP at birth, 151(96.2%) were given cotrimoxazole to take every day beginning at 6 weeks, 6(3.8%) did not receive cotrimoxazole at the beginning of 6 weeks. Most of children 142(90.4%) were given treatment as directed by health facility, 15(9.6%) were not given treatment as directed, 10(6.4%) of participants reported to run out of the medicine, 5(3.2%) said that they forgotten to give treatment their children.

Concerning breastfeeding all participants 157(100%) breastfed their children, 137(87.3%) were still breastfeeding the children and all mothers practiced exclusive breastfeeding but 129(82.2%) did effective exclusive breastfeeding for the first 6months, 28(17.8%) practiced poor exclusive breastfeeding before or after 6months.

Over half of the participants 93(59.2%) said that they have been instructed on how to breastfeed the children. All of the participants 157(100%) were on ARV when they started to breastfeed the children and 155(98.7%) remained on the treatments for the entire time of breastfeeding, then 2(1.3%) did not remain on the treatment for the entire time of breastfeeding.

Figure 4.3 Score of practice by participants (N=157)
PMTCT practice questionnaire comprised 21 items, with total score of 42 marks, the minimum score was 31, and the maximum score was 42. The study findings revealed that mean practice score was 38.5 which indicating that PMTCT practice by the participants is good.

The figure 4.3 shows the categories of practice, just over half 89 (56.7%) had high practice, 58 (36.9%) had moderate practice and 10 (6.4%) had low practice. The participants with high practice or not, the cutoff point have been established, the participants scored with 35 or less are considered as having low practice, 36 to 38.5 are having moderate practice and 38.5 and above are having high practice.

4.4 Facilitating factors and barriers to attending PMTCT services (N=157)

This section presents facilitating factors and barriers toward PMTCT utilization identified by participants.
Table 4.6 Facilitating factors to attending PMTCT services (N=157)

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you a member of any community support group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>52</td>
<td>33.1</td>
</tr>
<tr>
<td>No</td>
<td>105</td>
<td>66.9</td>
</tr>
<tr>
<td>Counseling before or after HIV testing is important</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>154</td>
<td>98.1</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>It is important for a male partner to be involved in the PMTCT program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>140</td>
<td>89.2</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>8</td>
<td>5.1</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Interaction between health workers and their clients affect the utilization of PMTCT services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agreed</td>
<td>63</td>
<td>40.1</td>
</tr>
<tr>
<td>Agreed</td>
<td>25</td>
<td>15.9</td>
</tr>
<tr>
<td>Undecided</td>
<td>3</td>
<td>1.9</td>
</tr>
<tr>
<td>Disagreed</td>
<td>47</td>
<td>29.9</td>
</tr>
<tr>
<td>Strongly disagreed</td>
<td>19</td>
<td>12.1</td>
</tr>
<tr>
<td>How would you rate the overall quality of services at the ANC/PMTCT you receive at the health center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Fair</td>
<td>28</td>
<td>17.8</td>
</tr>
<tr>
<td>Good</td>
<td>61</td>
<td>38.9</td>
</tr>
<tr>
<td>Very good</td>
<td>56</td>
<td>35.7</td>
</tr>
<tr>
<td>Excellent</td>
<td>7</td>
<td>4.5</td>
</tr>
<tr>
<td>How satisfied or unsatisfied are you with the waiting time at the ANC/PMTCT health center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfied</td>
<td>115</td>
<td>73.2</td>
</tr>
<tr>
<td>Moderately satisfied</td>
<td>36</td>
<td>22.9</td>
</tr>
<tr>
<td>Unsatisfied</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The table 4.6 shows that most of the participants 105 (66.9%) were not a member of any community support group only 52 (33.1%) were a member of any community, 154 (98.1%) strongly agreed that counseling before or after HIV testing is important, 140 (89.2%) strongly agreed that it is important of male partner to be involved in the PMTCT program. The table also illustrates that 63 (40.1%) strongly agreed that interaction between health workers and their clients affect the utilization of PMTCT services and 47 (29.9%) disagreed that, 61 (38.9%) reported that the quality of services at ANC/PMTCT at health center were good, 56 (35.7%) reported that were very good, 115 (73.2%) were satisfied with the waiting time at ANC/PMTCT at the health center, 36 (22.9%) were moderately satisfied and 6 (3.6%) were unsatisfied.
Table 4.7 Barriers factors to attending PMTCT services (N=157)

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV related stigma and discrimination affect a pregnant women’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>decision to enroll in the PMTCT program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agreed</td>
<td>63</td>
<td>40.1</td>
</tr>
<tr>
<td>Agreed</td>
<td>24</td>
<td>15.3</td>
</tr>
<tr>
<td>Undecided</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Disagreed</td>
<td>42</td>
<td>26.8</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>26</td>
<td>16.6</td>
</tr>
<tr>
<td>Distance to health facility providing PMTCT services is a barrier to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>accessing it</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agreed</td>
<td>44</td>
<td>28.0</td>
</tr>
<tr>
<td>Agreed</td>
<td>20</td>
<td>12.7</td>
</tr>
<tr>
<td>Undecided</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Disagreed</td>
<td>70</td>
<td>44.6</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>17</td>
<td>10.8</td>
</tr>
<tr>
<td>How would you rank your transportation cost to the hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very cheap</td>
<td>47</td>
<td>29.9</td>
</tr>
<tr>
<td>Somewhat cheap</td>
<td>27</td>
<td>17.2</td>
</tr>
<tr>
<td>About average</td>
<td>36</td>
<td>22.9</td>
</tr>
<tr>
<td>Somewhat expensive</td>
<td>34</td>
<td>21.7</td>
</tr>
<tr>
<td>Very Expensive</td>
<td>13</td>
<td>8.3</td>
</tr>
<tr>
<td>Low levels of trust in health workers were linked to non PMTCT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>compliance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agreed</td>
<td>36</td>
<td>22.9</td>
</tr>
<tr>
<td>Agreed</td>
<td>8</td>
<td>5.1</td>
</tr>
<tr>
<td>Undecided</td>
<td>92</td>
<td>58.6</td>
</tr>
<tr>
<td>Disagreed</td>
<td>21</td>
<td>13.4</td>
</tr>
</tbody>
</table>
Table 4.7 Continued

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religious belief can hinder the acceptance and utilization of PMTCT services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agreed</td>
<td>24</td>
<td>15.3</td>
</tr>
<tr>
<td>Agreed</td>
<td>6</td>
<td>3.8</td>
</tr>
<tr>
<td>Undecided</td>
<td>87</td>
<td>55.4</td>
</tr>
<tr>
<td>Disagreed</td>
<td>39</td>
<td>24.8</td>
</tr>
<tr>
<td>Strongly disagreed</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Illiteracy contributes in not understanding PMTCT related problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agreed</td>
<td>64</td>
<td>40.8</td>
</tr>
<tr>
<td>Agreed</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Undecided</td>
<td>63</td>
<td>40.1</td>
</tr>
<tr>
<td>Disagreed</td>
<td>26</td>
<td>16.6</td>
</tr>
<tr>
<td>Strongly Disagreed</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Total</td>
<td>156</td>
<td>99.4</td>
</tr>
<tr>
<td>Missing System</td>
<td>1</td>
<td>.6</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The table 4.7 shows that 63(40.1%) HIV related stigma and discrimination affect women’s decision to enroll in PMTCT program and 42(26.8 %) disagreed,70(44.6%) disagreed that distance to health facility providing PMTCT services is a barrier to accessing it and 44(28%) strongly agreed that distance to health facility is a barrier to accessing it and 47(29.9%) of the participants reported that transport cost to the health facility were very cheap,36(22.9%) were about average ,34(21.7%) the cost of transportation were somewhat expensive and 27(17.2%) the cost were somewhat cheap. Over half of the participants 92(58.6%) were undecided about low levels of trust in health workers were linked to no-PMTCT compliance and 36(22.9%) strongly agreed that low levels of trust in health workers were linked to non-PMTCT compliance. The most participants 87(55.4%) were undecided about the religious belief hindrance to the utilization of PMTCT services and 39(24.8%) disagreed that religious belief can hinder the acceptance and utilization of PMTCT services. The table shows that 64(40.8%) were undecided about illiteracy contribution in not understanding PMTCT related
problem and 63(40.1%) of the participants strongly agreed the illiteracy contribution in not understanding PMTCT related problem.

4.5 Associations between utilization of PMTCT services and facilitating factors

This section presents the results of association between PMTCT utilization and demographic characteristics of participants and facilitating factors using Chi-square test and Fisher’s Exact test.

Table 4.8 Associations between utilization of PMTCT services and demographic characteristics (N=157)

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>Low practice</th>
<th>Moderate practice</th>
<th>High practice</th>
<th>Chi-square</th>
<th>P-Value</th>
<th>Fisher’s P-Value Exact test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age of the participants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 15-20</td>
<td>2</td>
<td>5</td>
<td>8</td>
<td></td>
<td>.851</td>
<td></td>
</tr>
<tr>
<td>Age 21-35</td>
<td>5</td>
<td>34</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 36-50</td>
<td>3</td>
<td>19</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>1</td>
<td>35</td>
<td>68</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Single</td>
<td>6</td>
<td>8</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separated</td>
<td>3</td>
<td>10</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>0</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Level of education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>8</td>
<td>33</td>
<td>57</td>
<td></td>
<td>.719</td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>0</td>
<td>7</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certificate</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Schooling/education</td>
<td>2</td>
<td>18</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Religion of participants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian-Protestant</td>
<td>6</td>
<td>28</td>
<td>51</td>
<td></td>
<td>.485</td>
<td></td>
</tr>
<tr>
<td>Christian-Catholic</td>
<td>3</td>
<td>26</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muslim</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adventist</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To test the association between utilization of PMTCT services and demographic characteristics of the participants, the table 4.8 shows that some demographic data are not significantly associated with utilization of PMTCT services like age (Chi-square, \( P=0.851 \)), level of education (Fisher’s Exact test, \( P=0.719 \)), religion (Fisher’s Exact test, \( P=0.485 \)), and show that utilization of PMTCT is significantly associated with the marital status of the participants (Fisher’s Exact test, \( P<0.0001 \)).
Table 4.9 Associations between utilization of PMTCT services and facilitating factors.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>Low practice</th>
<th>Moderate practice</th>
<th>High practice</th>
<th>Chi-square</th>
<th>P-value</th>
<th>Fisher’s Exact test</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disclosure of HIV test result</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>6</td>
<td>0</td>
<td></td>
<td>&lt;0001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6</td>
<td>52</td>
<td>89</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mothers attended ANC/PMTCT with partner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>27</td>
<td>11</td>
<td></td>
<td>&lt;0001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>31</td>
<td>78</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of HIV counseling before and after HIV testing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>10</td>
<td>56</td>
<td>88</td>
<td></td>
<td>.307</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of transportation to the health facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very cheap</td>
<td>7</td>
<td>13</td>
<td>27</td>
<td></td>
<td>.071</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat cheap</td>
<td>1</td>
<td>9</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>About average</td>
<td>2</td>
<td>19</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat expensive</td>
<td>0</td>
<td>14</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Expensive</td>
<td>0</td>
<td>3</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate of the quality of services at the ANC/PMTCT health center</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td></td>
<td>.048*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td>1</td>
<td>12</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>6</td>
<td>26</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very good</td>
<td>2</td>
<td>13</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction or not with the waiting time at ANC/PMTCT health center</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfied</td>
<td>8</td>
<td>41</td>
<td>66</td>
<td></td>
<td>.954</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderately satisfied</td>
<td>2</td>
<td>15</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsatisfied</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The association between utilization of PMTCT and facilitating factors has been assessed. For the factors associated with utilization of PMTCT services the table 4.9 shows that disclosure of HIV test result (Fisher’s Exact test $P<0.0001$), attendance of ANC/PMTCT with partner (Chi-square, $P<0.0001$), quality of services at ANC/PMTCT health center (Fisher’s Exact test, $P=0.048$) are significantly associated with the utilization of PMTCT services.

The table also indicates that importance of HIV counseling before and after HIV testing (Fisher’ Exact test, $P=0.307$), cost of transportation to the health facility (Fisher’s Exact test, $P=0.071$), Satisfaction with the waiting time at ANC/PMTCT health center (Fisher’s Exact test, $P=0.954$) was not significantly associated with the utilization of PMTCT services.
CHAPTER FIVE: DISCUSSION, RECOMMENDATION AND CONCLUSION

5.1 Introduction

This chapter presents a summary and discussion of the study findings to the utilization of PMTCT services by mothers living with HIV, conclusion, and recommendation. Anderson’s health-seeking behavior model guided this study. The purpose of the study was to assess utilization of PMTCT services and facilitating, hindering factors and association between mothers utilization of PMTCT and facilitating factors by mothers attending PMTCT services, in Ngoma District, Rwanda.

5.2 Social demographic characteristics

Among social demographic characteristics, more than half of the participants 58% were between the age of 21-35 years, and 32.5% were between 36-50 years, 66.2% were married and 49.1% had one to two children while the others had three to seven children. Participants attended primary school were 62.4% and no schooling were 25.5%, farming were 86%, regarding religion Christian –protestant were 54.1%, Christian- Catholic were 36.3%. Over half of the husband/partner of the participants attended primary school. Marital status was significantly associated with utilization of PMTCT services and this is in line with the Anderson’s health-seeking behavior model in predisposing factors and can lead one to access health services. Similar result of association between marital status and utilization of PMTCT services was found in the study done in Nigeria and Tanzania (Prisca, Elizabeth & Modupe, 2014, p. 3; Gourlay et al., 2015, p. 1). However the study findings showed that age, educational level, occupational and religion of participants was not statistically significant with utilization of PMTCT services. Similar result of lack of association was found in the study conducted in South Ethiopia (Abajobir & Zeleke, 2013, p. 3). Contrary in the study conducted in central Ethiopia they found the association between the age, occupational status, partners education of the participants with utilization of PMTCT services (Merga, Woldemichael & Dube, 2016, p. 1). This difference is probably due to in this study most of the participants had the same level of education, occupation and religion impact may differ
depend on the country, while the difference about age probably was due to more participants were younger in their study aged between 15 to 20 years.

For this, being married had the highest association with utilizing PMTCT services. (Table 4.8) This implies that for mothers living with HIV and not married this may serve as a large barrier to utilization of PMTCT services because they may lack support to seek health services from their partner.

**5.3 Utilization of PMTCT services**

Rwanda has made significant progress in eliminating MTCT and in this study findings revealed that over half of the participants had high practice toward PMTCT utilization.

This study revealed that all of the participants attended ANC when they were pregnant, 51% had the first ANC visit from one to three months of pregnancy, 49% had the late ANC visit during the fourth to ninth months of their pregnancy. Just over the half of the participants 58, 6% had one to three ANC visits, 41, 4% had four visits and above while the WHO recommends pregnant HIV women to seek ANC early during pregnancy and have minimum four visits and all of the participants did not deliver at health facility. Contrary to the studies done shown that a large number of participants attended ANC during their latest pregnancy 98.4% and most of them attended 4 recommended ANC visits, then all of them delivered in health facility (Ogolla & Okech, 2014, p. 6; Awungafac et al., 2015). This difference may be due to community sensitization about PMTCT services in the study area. For mothers who didn’t seek ANC early during pregnancy while they were not aware of their HIV status may cause delay of initializing PMTC and those not delivered at health facility, their children may have the risk of contracting HIV during pregnancy and delivery. Based on the interventions required in antenatal period for a positive pregnant women and the recommendation of WHO some participants were below the requirement and this may impact the prevention of HIV transmission to children (WHO, 2016b).

All of the participants were HIV positive and have been tested for HIV during pregnancy as recommended by (CDC, 2017a, p. 2).
The study revealed that 93.6% have disclosed their HIV results to partner, family member and friends and 6.4% did not disclosed their results of HIV test. Similar result was found in the study done in Northern Kenya where most of the participants disclosed their HIV result to their husband, relatives and friends and that enabled them to adhere to treatment (Ogolla & Okech, 2014, p. 6). For mothers disclosed HIV status to partners or other relatives, they never experience fear while taking medications, and those relatives may remind them to respect instructions given by health facility and to go to the health facility.

The large number of participants were aware of HIV status of their partner, 70.1% attended ANC/PMTCT with their partner. Most of the participants 87.9% have been tested for CD4 during pregnancy and 75.2% received CD4 results. All of the participants took ARV during pregnancy, 96.2% took ARV as directed by a health care provider and 3.8% did not take medication as directed by a health care provider. All most of the children 97.5% were tested for HIV, 2.5% were below the age of WHO recommendation of the first test. Among children tested for HIV 77.1% were HIV negative, 15.3% their results were not yet available, 3.8% were HIV positive. The large number of the participants 75.2% reported that they did not need children in the future, 24.8% needed children in the future and 65.6% were using family planning. Regarding clinical appointment 71.3% never missed an appointment, 28.7% missed one or more appointment and 66.9% were not a member of any community support group, 92.6% delivered in health facility and 3.8% delivered at home, 87.3% delivered naturally through the vagina and 12.7% delivered through caesarian. Quite similar result has been found in the study done in Kenya where 98% delivered at health facility, 91% exclusivity breastfeed, 91% attended clinic appointment regularly, 69.1% take medication as prescribed in terms of dosage and schedules, 18% did not disclose their HIV status, 53% their partners were not involved in PMTCT and 95% did not participate in any support group (Karuta, Saba & Vanderbilt, 2014, p. 1).

This show that some participants did not respect WHO recommendation of PMTCT approach where mothers living with HIV should deliver in health facility, attend regularly, and use of family planning to prevent unintended pregnancy for those who don’t need children in future in order to prevent perinatal transmission of HIV (WHO, 2017a, p. 1).
Moreover it shows that among 6 participants who did not take medications as directed by a health care provider 2.5% responded that the medications made them sick, 1.3% they forgotten to take medications. Similar reason of forgetting to take medication as required by mothers has been cited in the study conducted in Nigeria (Ademola, 2016). For those who did not take medications as directly may increase the risk of contamination to their children.

The findings of the study indicated that all children were given NVP at birth, 96.2% were given cotrimoxazole to take every day beginning at 6 weeks, and 3.8% did not receive cotrimoxazole at the beginning of 6 weeks. Most of children 90.4% were given treatment as directed by health facility, 9.6% were not given treatment as directed, 6.4% of participants reported to run out of the medicine, 3.2% said that they forgotten to give treatment their children. These reasons of not giving medication to children as directed by health care provider, ran out the medicine, forget were identified by the participants among the reasons given in the study conducted Nigeria (Ademola, 2016, p. 61). As some children were not given cotrimoxazole at six weeks and others not were not given medication as directed this may affect the national goal of EMTC.

The study revealed that all participants breastfed their children, 87.3% were still breastfeeding the children and a large number 82.2% did effective exclusive breastfeeding for the 6months, 17.8% practiced poor exclusive breastfeeding before or after 6months. Over half of the participants 59.2% have not been instructed on how to breastfeed the children. All of the participants were on ARV when they started to breastfeed the children and 98.7% remained on the treatments for the entire time of breastfeeding, and then 1.3% did not remain on the treatment for the entire time of breastfeeding. The study shows that for breastfeeding small numbers of participants were below the WHO recommendation and this may put the children in the risk of being contaminated through breastfeeding and impact the National goal of eliminating HIV transmission to children as it has been found that feeding children with breast milk for the first 6 months decreases the risks of HIV transmission from mother to child (Kak et al., 2010).
5.4 Factors facilitating PMTCT service utilization by mothers with HIV infection

As it has been shown in this study, the main facilitating factors toward utilization of PMTCT services identified by the most postnatal mothers were counseling before and after HIV testing, male partner involvement in the PMTCT program and quality of services received by participants at the ANC/PMTCT health center. Similar result of HIV counseling as facilitating factor toward PMTCT utilization has been found in the study done in Kenya (Joseph, Ojwang & Onesmus, 2014, p. 83; Karuta, Saba & Vanderbilt, 2014, p. 1)

5.5 Hindering postnatal mothers for attending PMTCT services

In this study the main barriers which affect utilization of PMTCT services indentified by the most participants were HIV related stigma and discrimination, distance to health facility and cost of transportation, illiteracy. The similar barriers affecting utilization of PMTCT services have been found in several studies (Adedimeji et al., 2012; Deressa et al., 2014; Muniu & Karama, 2015).

5.6 Association between PMTCT practice and facilitating factors

In this study association between utilization of PMTCT services and facilitating factors were determined using the Andersen’s Behavioral Model of Health Care Utilization highlighting some facilitating factors included in this study. Among environmental factors quality of care provided at ANC/PMTCT health center were associated with the utilization of PMTCT services in the study are, the similar result of quality of health services is associated with PMTCT services utilization in the study conducted in Central Ethiopia (Merga, Woldemichael & Dube, 2016, p. 1)

Finally, enabling factors were associated with utilization of PMTCT services. The most consistent findings were that HIV status disclosure and partner attendance in ANC/PMTCT with mothers were associated with utilization of PMTCT services while counseling, cost of transportation to health facility and waiting time at ANC/PMTCT health center were not associated. Similar result of association of PMTCT utilization with male involvement in ANC/PMTCT and HIV status disclosure was found in different studies done and found that
disclosure of HIV status help HIV mothers to oppose barriers related to PMTCT practice and decrease stigma and for those who did not disclosed their HIV result test struggled with many problems like taking daily ARV, lack of support from family member and friends (Ramirez-ferrero & Lusti-narasimhan, 2012, p. 104; Kashitala et al., 2015; Flax et al., 2017).

5.7 Conclusion

PMTCT practice in this study was found to be moderate to high. Independent predictors of utilization of PMTCT services in the study area were marital status, disclosure of HIV status, mothers attendance with their partner in ANC/PMTCT and good quality of services provided at health centers. For that reason quality of good services should be maintained in order to sustain high PMTCT practices and effort should be made in male involvement in PMTCT and disclosure of HIV status. Additional support for young or unmarried mothers or those without partners may be needed. Through couple counseling HIV disclosure should be encouraged. In order to mitigate some barriers of distance and very cheap cost of transportation further decentralization of PMTCT services in more remote areas may be needed. Further studies on factors associated with HIV infection among children born to the mothers living with HIV, and assessment of challenges in PMTCT services by health care providers should be conducted in order to optimize PMTCT services.

5.8 Recommendations

Public

- Decentralization of PMTCT services in more remote area
- Effort should be put in educating the masses about PMTCT

Education

- PMTCT program should be put in the curriculum which will help the nurses during provision of PMTCT activities

Health facilities

- All women should be encouraged to disclose HIV status to their relatives and should be helped to overcome different barriers.
Encouraging pregnant women to start antenatal care early

All mothers should receive adequate infant feeding counseling with exclusive breastfeeding.

**Research**

Research at national level involving more health facilities to evaluate PMTCT services should be done
REFERENCE LISTS


Virus: The Nigerian Perspective.’, *Annals of Medical and Health Sciences Research*. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3507117/?report=classic.


UNICEF (2011) *UNICEF welcomes Rwanda’s campaign to eliminate HIV transmission from mother to child*. Available at: https://www.unicef.org/media/media_58535.html.


Appendices

Appendix 1: Distribution of persons mothers HIV positive disclosed their HIV status result

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family member</td>
<td>28</td>
<td>17.8</td>
</tr>
<tr>
<td>Family member and friend</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Friend</td>
<td>9</td>
<td>5.7</td>
</tr>
<tr>
<td>None</td>
<td>11</td>
<td>7.0</td>
</tr>
<tr>
<td>Partner</td>
<td>58</td>
<td>36.9</td>
</tr>
<tr>
<td>Partner and family member</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Partner and family member</td>
<td>39</td>
<td>24.8</td>
</tr>
<tr>
<td>Partner and family member and parents</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Partner and friend</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Appendix 2

Information sheet

My name is MUKANDAYISABA Delphine; I am a student in Masters Program, Pediatric track at the University of Rwanda carrying out a study entitled “ASSESSMENT OF UTILIZATION OF PMTCT SERVICES BY MOTHERS ATTENDING PMTCT SERVICES IN NGOMA DISTRICT”. I am requesting you to participate in this study.

In fact this study might not benefit you immediately but the findings may help to improve the quality of care and future PMTCT program. There are no obvious physical risks foreseen or emotional risks anticipated. The information will be gathered from the participants by filling the questionnaire. The information will include demographical data, knowledge about PMTCT, utilization of PMTCT services, factors facilitating and those hindering utilization of PMTCT services so you are free to ask any questions.

Your participation in this study is voluntary, mean that you are free to withdraw from the study any time without any penalty. The service you receive at the health center and the relationship with the health care provider will not be affected in any way. All information will be confidential and your name will be anonymous. For any queries or questions, contact me through the University of Rwanda, College of Medicine and Health sciences the Chairperson of the CMHS IRB (0788 490 522) and of the Deputy Chairperson (0783 340 040), contact the supervisor of this research on 0788 749 398 or use my cell phone 0788463877.

Will you please sign to your willingness to participate?

Participant’s Statement:

The study described above has been explained to me to my full understanding and I voluntarily give consent to participate in this study.

Participant / Witness’s Signature……………………..Date…………………

Investigator’s Signature……………………………….Date…………………
Adapted English version questionnaire

**Topic:** Assessment of utilization of PMTCT services by mothers attending PMTCT services in NGOMA District

Questionnaire number------ -------

Name of health center---------

**INSTRUCTIONS**

- Read carefully before responding
- Respond all questions
- Answer truthfully by: circle or filling in the provided space the correct answer

**Section A. Social Demographic Data**

1. How old are you?
   - a. 15 – 20
   - b. 21 – 35
   - c. 36 – 50
   - d. 50- and above

2. What is your marital status?
   - a. Married
   - b. Single
   - c. Divorced
   - d. Separated
   - e. Widowed
   - f. Other

3. How many children do you have? _______________________________________

4. What is your level of formal education?
   - a. Primary
   - b. Secondary
   - c. University
d. certificate

e. No schooling/ education (0)

f. Others

5.

a. Farming

b. Civil service

c. Trading

d. Craft work

e. Unemployed

6. Which religion do you identify with?

a. Christian – Protestant

b. Christian – Catholic

c. Muslim

d. Adventist

d. Adventist

7. What is the highest level of education that your husband/ partner has completed?

a. Primary

b. Secondary

c. University

d. Certificate

e. No schooling/ education

f. Others

g. Don’t know

8. How old is your baby?........

SECTION B. Utilization of PMTCT service questionnaire

9. When you were pregnant with your baby, did you seek antenatal care?

a. Yes

b. No

10. How many months pregnant were you when you first received antenatal care?.........................
11. How many antenatal visits did you attend during your pregnancy with this baby?...........................

12. Prior to your pregnancy with your baby, were you ever tested for HIV?
   a. Yes
   b. No

13. During your pregnancy with this baby, were you tested for HIV?
   a. Yes
   b. No
   c. Don’t want to tell
   d. Don’t know

14. What was the result of your first HIV test when you were pregnant with your baby?
   a. HIV Positive
   b. HIV Negative
   c. Don’t want to tell
   d. Don’t know

15. Did you tell anyone the result of your HIV test?
   a. Yes
   b. No

16. If yes, Who did you tell?
   a. Partner/husband
   b. Children
   c. Other family member
   d. Pastor
   e. Friend(s)
   f. No one
   g. Other

17. If you have a partner, are you aware of his HIV status?
   a. Yes – positive
   b. Yes – negative
   c. No
   d. Does not apply
18. Has your partner ever attended ANC/PMTCT clinic with you?
   a. Yes
   b. No
   c. Does not apply
19. During this pregnancy, did you give a blood sample to have a CD4 test?
   a. Yes
   b. No
   c. Don’t know
20. Did you get the result of the CD4 test?
   a. Yes
   b. No
21. Were you given medications during pregnancy to prevent transmission of HIV to the baby?
   a. Yes
   b. No
   c. Don’t know
22. Did you take the treatment as directed by the health facility, in terms of the number of days and dosage when you were pregnant?
   a. Yes
   b. No
23. If (No) to the previous question. Why didn’t you take the treatment as directed by the health facility?
   a. It made me sick
   b. I forgot
   c. The treatment was finished
   d. Others ……………
24. The baby was tested for HIV.
   a. Yes
   b. No
   c. Don’t know
25. The baby’s HIV test result.
26. Do you still need children in future?
   a. Yes
   b. No

27. If (No) to the previous question, do you adhere to any family planning method?
   a. Yes
   b. No

28. Clinic appointments attendance
   a. Never missed an appointment
   b. Missed 1 or 2 appointments
   c. Missed more than 3 appointments

**Childbirth**

29. Where did you give birth to your baby?
   a. Your home
   b. Other home
   c. Hospital
   d. Health center
   e. Clinic
   f. Other ...................

30. Was your last child delivered naturally or through cesarean?
   a. Naturally through the vagina
   b. Through Caesarean

31. The baby was given NVP or other ARVs at birth.
   a. Yes
   b. No
   c. Don’t know

32. Was the baby given Cotrimoxazole to take every day beginning at 6 weeks even when s/he was not sick? (a small part of a pill taken daily)
   a. Yes
b. No
   c. Don’t know/ don’t remember

33. Did you give your baby the treatment as directed by the health facility, in terms of the number of days and dosage?
   c. Yes
   d. No

34. If (No) to the previous question. Why did you not give your baby the treatment as directed by the health facility?
   a. Baby would not take it
   b. It made the baby sick
   c. I forgot
   d. A household member told me not to
   e. I ran out of the medicine too quickly
   f. The treatment was too expensive
   g. Other ............

**Infant feeding practice**

35. Was your baby ever breastfed?
   a. Yes
   b. No
   c. Don’t know

36. Is your baby still breastfeeding?
   a. Yes
   b. No

37. Did you ever exclusively breastfeed your baby? (did you feed the baby only breast milk and nothing else for any period of time)
   a. Yes
   b. No

38. For how long was your baby exclusively breastfed? (in months).................

39. Did anyone at the health facility instruct you on how to feed your baby after you were discharged or when you came for post natal care?
   a. Yes
b. No, no one instructed me

c. No, I never went to a health facility with my baby

Now I will ask you about the HIV treatment for you, while you were breastfeeding.

40. Were you on HIV treatment when you started breastfeeding your baby?
   a. Yes
   b. No

41. Did you remain on HIV treatment for the **entire** time that you were breastfeeding your baby?
   a. Yes
   b. No
   c. Don’t remember

SECTION C. Facilitating factors or barriers to attending PMTCT services questionnaire

42. HIV-related stigma and discrimination affect a pregnant woman’s decision to enroll in PMTCT program.
   a. Strongly agreed
   b. Agreed
   c. Undecided
   d. Disagreed
   e. Strongly disagree

43. Are you a member of any community support group?
   a. Yes
   b. No

44. Counseling before or after HIV testing is important.
   a. Strongly agree
   b. somewhat agree
   c. Neither agree nor disagree
   d. Somewhat disagree
   e. Strongly disagree

45. It is important for a male partner to be involved in the PMTCT program.
46. Interactions between health workers and their clients affect the utilization of PMTCT services
   a. Strongly agreed
   b. Agreed
   c. Undecided
   d. Disagreed
   e. Strongly disagreed

47. Distance to health facility providing PMTCT services is a barrier to accessing it.
   a. Strongly agreed
   b. Agreed
   c. Undecided
   d. Disagreed
   e. Strongly disagreed

48. How would you rank your transportation cost to the hospital?
   a. Very cheap
   b. Somewhat cheap
   c. About average
   d. Somewhat expensive
   e. Very Expensive

49. Low levels of trust in health workers were linked to non-PMTCT compliance.
   a. Strongly agreed
   b. Agreed
   c. Undecided
   d. Disagreed
   e. Strongly disagreed

50. Religious belief should hinder the acceptance and utilization of PMTCT services.
a. Strongly agreed
b. Agreed
c. Undecided
d. Disagreed
e. Strongly disagreed

51. Lack of information about ART and HIV is a barrier to PMTCT.
a. Strongly agreed
b. Agreed
c. Undecided
d. Disagreed
e. Strongly disagreed

52. Illiteracy contributes in not understanding PMTCT related problems.
a. Strongly agreed
b. Agreed
c. Undecided
d. Disagreed
e. Strongly disagreed

53. How would you rate the overall quality of services at the ANC/MPTCT you receive at the health center?
a. Poor
b. Fair
c. Good
d. Very good
e. Excellent

54. How satisfied or unsatisfied are you with the waiting time at the ANC/PMTCT health center?
a. Satisfied
b. Moderately satisfied
c. Unsatisfied
Appendix 3

Umugereka wa: 1

Amakuru agendanye n’ubushakashatsi

Amazina yanjye nitwa MUKANDAYISABA Delphine; umunyeshuri muri Kaminuza y’Urwanda, agashami k’abana nkaba ndigukora ubushakashatsi kwikoreshwa rya gahunda yo kurinda kwanduza abana agakoko gatera sida ku ababyeyi babana nubwo bwandu mubigo nderabuzima.

Ubu bushakashatsi nta gihembo buri bungenere, ahubwo buzafasha mukongera serivisi nziza itangwa irebana na gahunda yo kurinda kwanduza abana agakoko gatera sida, kandi ku wemera gufatanya muri ubu bushakashatsi ntangaruka mbi bizamutera. Amakuru atangwa uwemeye gufatanya mu bushakashatsi asubiza urutonde rw’ibibazo rukubiyemo; amakuru ku irangamimerere, ku ikoreshe rya gahunda yo kurinda kwanduza umwana agakoko gatera sida, ibyorohereza ndetse n’ibibangamira ikoreshe ryo’iygo gahunda kandi ufite uburenganzira bwo kubaza ikibazo waba ufite.

Gufatanya mu bushakashatsi ni ubushake kandi ufite uburenganzira bwo guhagarika ubu bushakashatsi igihe cyose ushatse ntazindi nkurikizi zibayeho. Serivisi muhabwa kukigo nderabuzima ndetse n’imibanire hagati yabayibaha ntabwo izahungabana nagato. Amakuru yose azabikwa mu ibanga kandi nta zina rizajyaho. Uramutse ugize ikibazo kubizanye n’ubu bushakashatsi wahamagara ni mero zikurikira: Uhagararuye bushakashatsi muri Kaminuza y’Urwanda (0788 490 522) umwungirije (0783 340 040) cyangwa ukurikirana ubu bushakashatsi (0788 749 398) cyangwa uri gukora bushakashatsi (0788463877)

Nimwemera ko dufatanya muri ubu bushakashatsi, murasinya ku rupapuro ahabugenewe.

Kwemera gufatanya mu bushakashatsi

Numvise neza igikorwa cy’ubushakashatsi nasobanuriwe, nka ba nemeye kubushake gufatanya muri ubu bushakashatsi
Umukono w’umubyeyi / umuhagarariye
..............................................itariki..................................

Umukono wuri gukora
ubushakashatsi...............................itariki.................................
UMUGEREKA: 2

IBIBAZO MU RURIMI RW’IKINYARWANDA

UBUSHAKASHATSI KU ABABYEYI BAGANA GAHUNDA YO KURINDA KO
UMUBYEYI UBANA N’UBWANDU BW’AGAKOKO GATERA SIDA YANDUZA
UMWANA

AMABWIRIZA

- Soma neza mbere yo gusubiza
- Subiza ibibazo byose
- Subizanya ukuri :ushyira akaziga cyangwa wuzuza ahabugenewe

IGICE CYA: A   UMWIRONDORO

1. Ufite imyaka ingahe?
   a. 15-20
   b. 21-35
   c. 36-50
   d. 50-kuzamura
2. Nirihe ranga mimerere yawe?
   a. Ndubatse
   b. Ingaragu
   c. Natandukanye byemewe n’amategeko
   d. Natandukanye bitemewe n’amategeko
   e. Umupfakazi
   f. Ibindi…………
3. Ufite abana banghae?………
4. Amashuri wize’?
   a. Amashuri abanza
   b. Amashuri yisumbuye
   c. Amashuri ya kaminuza
   d. Imyuga
e. Ntamashuri
5. Akazi ukora
   a. Ubuhinzi
   b. Akazi ka leta
   c. Ubucuruzi
   d. Imyuga
   e. Umushomeri
6. Idini yawe
   a. Umukirisito- umuporoso
   b. Umukiristo- Gatorika
   c. Umuyisiramu
   d. Umudivantisiti
7. Amashuri umugabo wawe yize
   a. Abanza
   b. Ayisumbuye
   c. Kaminuza
   d. Imyuga
   e. Ntamashuri
   f. Andi
   g. Ntabwo mbizi
8. Umwana uherutse kubyara afite imyaka ingahe?......................

IGICE CYA: B GUKORESHA SERIVISI YO KURINDA KO UMUBYEYI
YANDUZA UMWANA AGAKOKO GATERA SIDA

9. Igihe wari utwite uy’umwana wisuzumishije inda mbere yo kubyara?
   a. Yego
   b. Oya
10. Wisuzumishije inda ifite amezi angahe?.........................
11. Wisuzumishije inshuro zingahe?...........................
12. Mbere yuko utwita uy’umwana wari warisuzumishije agakoko ka virusi itera Sida?
13. Igihe wari utwite uy’umwana bagupimye agakoko ka virusi itera Sida?
   a. Yego
   b. Oya
   c. Ntabwo mbizi

14. Wabonye ibisubizo by’ibipimo by’agakoko gatera Sida igihe wari utwite?
   a. Yego
   b. Oya

15. Ni ibihe bisubizo by’ibipimo by’agakoko ka virusi itera Sida igihe wari utwite?
   a. Mfite agakoko gatera Sida
   b. Nta gakoko gatera Sida mfite
   c. Ntago nshaka kubivuga
   d. Ntabwo mbizi

16. Hari uwo wabwiye ibisubizo byawe kubijyanye n’agakoko gatera Sida?
   a. Yego
   b. Oya

17. Ni inde wabwiye ibyo bisubizo?
   a. Umugabo wanjye
   b. Umwana / abana
   c. Umuvandimwe
   d. Pastori
   e. Inshuti
   f. Ntawe nabibwiye
   g. Abandi………………

18. Niba ufite umugabo uzi uko ahagaze kubijyanye n’agakoko gatera Sida?
   a. Yego-afite ubwanda bw’agakoko gatera Sida
   b. Yego-agakoko gatera Sida ntako afite
   c. Ntago mbizi
   d. Nta mugabo mfite
19. Hari ubwo wigeze ujyana n’umugabo wawe kwipimisha igihe wari utwite cg muri gahunda irinda ko umubyeyi ufite ubwandu yanduza umwana?
   a. Yego
   b. Oya
   c. Nta mugabo mfite

20. Igihe wari utwite wipimishije abasirikare b’umubiri?
   a. Yego
   b. Oya
   c. Ntabwo mbizi

21. Wabonye ibisubizo by’abasirikare b’umubiri bagupimye?
   a. Yego
   b. Oya

22. Igihe wari utwite wigeze uhabwa imiti ibuzako umubyeyi ufite ubwandu bw’agakoko gatera Sida yanduza umwana?
   a. Yego
   b. Oya
   c. Ntabwo mbizi

23. Umwana bamupimye ubwandu bw’agakoko gatera Sida?
   a. Yego
   b. Oya
   c. Ntabwo mbizi

24. Igisubizo cy’ibipimo by’umwana
   a. Afite ubwandu
   b. Nta bwandu afite
   c. Ibisubizo ntibyasobanutse

25. Ukeneye kongera kubyara mu minsi irimbere?
   a. Yego
   b. Oya

26. Niba ari oya ku kibazo kibanziriza iki,
   Ukoresha uburyo bwo kuringaniza urubyaro?
   a. Yego
b. Oya

27. Ibijyanye no kubahiriza gahunda yo kwa muganga.
   a. Nta na rimwe nasibye gahunda nahawe
   b. Nasibye rimwe cyangwa kabiri
   c. Nasibye birenze gatatu

   **Ibijyanye n’umwana**

28. Ni hehe wabyariye?
   a. Mu rugo iwanjye
   b. Mu rugo rw’abandi
   c. Kubitaro
   d. Kubitaro
   e. Ahandi

29. Umwana uherutse kubyara wamubyaye gute?
   a. Narabazwe
   b. Namubyaye batambaze

30. Umwana yigeze ahabwa umuti (niverapine) cyangwa undi muti wo kurinda kwandura
    ubwandu bw’agakoko gatera Sida akivuka?
   a. Yego
   b. Oya
   c. Ntabwo mbizi

31. Umwana yigeze ahabwa umuti (cotilimogizazole) agitangira icyumweru cya
    gatandatu avutse nubwo Atari arwaye?
   a. Yego
   b. Oya
   c. Ntabwo mbizi / ntabwo mbyibuka

32. Wahaye umuti umwana nkuko wabibwiwe na muganga kubijyanye n’iminsi cyangwa
    ingano?
   a. Yego
   b. Oya
33. Niba ari oya kubanziriza iki. Ni ukubera iki utamuhaye umuti nkuko wabibwiwe na muganga?
   a. Umwana ntiyari buwufate
   b. Utuma umwana arwarara
   c. Naribagiwe
   d. Uwo tubana yarambujije
   e. Umuti wari washize
   f. Umuti wari uhenze
   g. Ibindi............................

34. Wigeze wonsa umwana?
   a. Yego
   b. Oya
   c. Ntabwo mbizi

35. Umwana aracyonka?
   a. Yego
   b. Oya

36. Wigeze uha umwana ibere utamuvangye ikintu nakimwe mugihe runaka?
   a. Yego
   b. Oya

37. Umwana wamuhaye ibere ryonyine mugihe kingana gute?......................

38. Hari umuntu ku kigo nderabuzima wakwigishije uburyo bwo konsa umwana mbere yuko bagusezerera cyangwa ugarutse nyuma yo kubyara?
   a. Yego
   b. Oya
   c. Oya,ntabwo nigeze njya ku kigo nderabuzima

39. Wafataga imiti igihe warutangiye konsa umwana?
   a. Yego
   b. Oya

40. Wakomeje gufata imiti igihe cyose wonsa umwana?

Ubu ngiye kukubaza ibijyanye n’imiti mu gihe cyo konsa

39. Wafataga imiti igihe warutangiye konsa umwana?
   a. Yego
   b. Oya

40. Wakomeje gufata imiti igihe cyose wonsa umwana?
a. Yego
b. Oya
c. Ntabwo mbyibuka

**IGICE CYA: C IBYOROHEREZA NDETSE N’IMBOGAMIZI UMUBYEYI AHURA NAZO MUGUKORESHA GAHUNDA YO KWIRINDA KWANDUZA UMWANA UBWANDU BW’AGAKOKO GATERA SIDA**

41. Akato n’ihezwa bisingiye ku bwandu bw’agakoko gatera Sida bibangamira umubyeyi utwite gufata icyemezo cyo gukoresha serivisi zo kurinda kwanduza umwana agakoko gatera Sida.
   a. Ndabyemera cyane
   b. Ndabyemera
   c. Ndifashe
   d. Ndabihakana
   e. Ndabihakana cyane

42. Hari ishyirahamwe ubamo?
   a. Yego
   b. Oya

43. Ubujyanama mbere na nyuma yo gupima ubwandu bw’agakoko gatera Sida ni ingenzi
   a. Ndabyemera cyane
   b. Ndabyemera buhoro
   c. Ndifashe
   d. Ndabihakana buhoro
   e. Ndabihakana cyane

44. Ni ngombwa ko umugabo ajyana n’umugore muri gahunda yo kurinda ko umubyeyi ufite ubwandu bw’agakoko gatera Sida yakwanduza umwana?
   a. Ndabyemeye cyane
   b. Ndabyemeye gahoro
   c. Ndifashe
d. Ndabihakanye buhoro

e. Ndabihakanye cyane

45. Imikoranire hagati y’abaganga n’abarwayi ifite ingaruka mugukoresha gahunda yo kurinda ko umubyeyi ufite ubwandu yanduza umwana.
   a. Ndemeye cyane
   b. Ndemeye
   c. Ndifashe
   d. Ndabihakanye
   e. Ndabihakanye cyane

46. Intera iri hagati y’ikigo nderabuzima gitanga gahunda yo kurinda ko ababyeyi bafite ubwandu bw’agakoko gatera Sida ibangamira ikoreshwa ryayo.
   a. Ndabyemeye cyane
   b. Ndabyemeye
   c. Ndifashe
   d. Ndabihakanye
   e. Ndabihakanye cyane

47. Ha agaciro urugendo ukora ujya ku kigo nderabuzima
   a. Birahendutse cyane
   b. Birahendutse buhoro
   c. Biri murugero
   d. Birahenze cyane
   e. Birahenze buhoro

48. Ikizere gike ku baganga gituma gahunda yo gukurinda ko umubyeyi ubana nubwandu bw’agakoko gatera Sida atanduza umwana idakoreshwa
   a. ndabyemera cyane
   b. Ndifashe
   c. Ndabihakanye
   d. Ndabihakanye cyane

49. Imyizerere y’idini ituma hataho kwemera gukoresha gahunda yo gukurinda ko umubyeyi ubana nubwandu bw’agakoko gatera Sida atabwanda umwana.
   a. Ndabyemera cyane
b. Ndifashe
c. Ndabihakanye
d. Ndabihakanye cyane

50. Kubura amakuru ajyanye n’imiti igabanya ubukana bw’agakoko gatera Sida na y’agakoko gatera Sida bibangamira ikoreshwa rya gahunda yo gukurinda ko umubyeyi ubana nubwandu bw’agakoko gatera Sida yanduza umwana
   a. Ndabyemera cyane
   b. Ndifashe
   c. Ndabihakanye
   d. Ndabihakanye cyane

51. Kutiga bitera kutumva neza gahunda yo gukurinda ko umubyeyi ubana nubwandu bw’agakoko gatera Sida ku bwanduza umwana
   a. Ndabyemera cyane
   b. Ndifashe
   c. Ndabihakanye
   d. Ndabihakanye cyane

52. Ubona gute ubufasha uhabwa kwa muganga ,aho ababyeyi batwite bipimishiriza naho batangira ubufasha bwo kurinda ko umubyeyi ubana n’ubwandu bw’agakoko gatera Sida yanduza umwana?
   a. Ntago bukwiriye
   b. Buraringaniye
   c. Ni byiza
   d. Ni byiza cyane
   e. Ni byiza bikabije

53. Uranyurwa cyangwa ntunyurwa kubijyanye no gutegereza aho ababyeyi batwite bipimishiriza naho batangira ubufasha bwo kurinda ko umubyeyi ubana n’ubwandu bw’agakoko gatera Sida ya nduza umwana?

MURAKOZE CYANE KUBW’UY’UMWANYA.