

**FACTORS ASSOCIATED WITH NEW HIV INFECTIONS AMONG INFANTS BORN TO
MOTHERS ON PREVENTION OF MOTHER TO CHILD TRANSMISSION PROGRAMME
AT KISII TEACHING AND REFERRAL HOSPITAL, KENYA**

BY

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THESIS REPORT

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DECLARATION

I declare that this thesis is the result of my original work and that it has not been submitted either wholly or in part to this or any other university for the award of any degree

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SUPERVISOR’S APPROVAL

This is to certify that this thesis entitled ‘Factors associated with new HIV infections among infants born of HIV positive mothers on Prevention of Mother to Child Transmission Program at Kisii Teaching and Referral Hospital’ has been submitted in partial fulfillment for the award of the degree of Master of Science in Community Health Nursing of the University of Nairobi with our approval as internal supervisors.

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DEDICATION

I passionately dedicate this work to all HIV positive mothers with infants despite of their compromised state still take the decision to care for these innocent infants who become HIV negative.

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The completion of this work was made possible by the assistance and goodwill of many people.

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ACRONYMS AND ABBREVIATIONS

3TC	- Lamivudine
A.I.D.S.	- Acquired Immunodeficiency Disease Syndrome
ANC	- Antenatal Clinic
ART	- Antiretroviral Therapy
ARV	- Anti retroviral drug
AZT	- Zidovudine
C.D.C.	- Centre for Disease Control
CD ₄	- Cluster of Differentiation 4
E.I.D.	- Early infant diagnosis
E.R.C.	- Ethical Review Committee
HAART	- Highly Active Anti-retroviral Therapy
H.A.M.	- Health Action Model
H.B.M	- Health Belief Model
H.I.V.	- Human Immunodeficiency Virus
K.A.I.S.	- Kenya Aids Indicator Survey
K.D.H.S.	- Kenya Demographic and Health Survey
K.N.H.	- Kenyatta National Hospital
KTRH	- Kisii Teaching and Referral Hospital
M.C.H.	- Maternal Child Health
M.T.C.T	- Mother to Child Transmission
NASCOP	- National Aids and STDs Control Program
PCR	- Polymerase Chain Reaction
P.M.T.C.T.	- Prevention of Mother to Child Transmission
Sd NVP	- single dose Nevirapine

UNAIDS - Joint United Nations Program on HIV/AIDS

UoN - University of Nairobi

W.H.O. - World Health Organization

OPERATIONAL DEFINITIONS

ARV prophylaxis: short term use of ARV drugs in the mother and infant to reduce mother to child transmission.

CD₄ count: helps to express how strong the immune of a HIV person is and guides in treatment and predicts how the disease progresses.

Early infant diagnosis: This is the first test to an infant born of HIV positive mother, to ascertain that the infant is either exposed or infected. This test is done at six weeks of life until 18 months.

Exclusive breast feeding: Feeding only on breast milk for 6 months without introducing any feeds.

Exclusive formula feeding: giving the infant only commercial infant formula milk for the first six months of life

Infant: a newborn child born until 18 months of life

Health care worker: health care provider working at the MCH clinic is within the healthcare profession and this will include the nurses, clinical officers, nutritionist and counselors.

HIV exposed infant: Infant born to a known HIV positive mother having a negative HIV DNA PCR.

HIV infected infant: An HIV exposed infant having a positive HIV DNA PCR

HIV positive mother: These are mothers who are found to be positive during antenatal period and during delivery

Mixed breast feeding: giving infants breast milk and other fluids and solids before 6 months of age

Mortality: measure of a number of deaths in a population

Mother: biological woman who bore the infant

Mother to child transmission: the process of transfer of the HIV virus from the mother to the infant during pregnancy, delivery or breastfeeding

Prevention of mother to child transmission: the overall programs and actions put in place to protect an infant from acquiring HIV virus from the mother.

Replacement feeding: feeding an infant who is not receiving any breast milk and has a diet that provides all nutrients which is suitable for the first six months of life.

Women of reproductive age: women aged 15- 49years of age

ABSTRACT

Background : The goal of prevention of mother to child transmission (PMTCT) is to minimize new HIV infection with PMTCT interventions the chance of infection has been reduce to as low as 2%. Gusii region is number five among counties that contribute 65% of new HIV infections in Kenya.

Objective: To determine the factors associated with new HIV infections among infants born of HIV positive mothers on PMTCT follow up at Kisii Teaching and Referral Hospital.

Methods: This was a cross sectional study conducted at Kisii Teaching and Referral hospital among HIV positive mothers with infants on PMTCT follow up and health care workers over a period of 1 month. Mixed method design was used to collect data from both mothers with infants below 18 months and HIV tested on PMTCT follow up and health care workers at the MCH clinic. A structured questionnaire was used for HIV mothers with infants and in depth interview guide for health care workers to collect information on perception of PMTCT uptake. A sample size of 96 out of 128 mothers with infants were conveniently selected and sampling frame was used to select 10 health care workers who had worked for more than 5 months in the Maternal and Child Health clinic. The data collected was cleaned, entered and analyzed using the Statistical Package of Social Sciences (SPSS) version 20. Descriptive and inferential statistical methods were used to summarize data and determine association between study variables. Quantitative results were presented in descriptive statistical format using frequency tables, bar charts and pie charts. Qualitative data obtained was coded through content analysis according to themes.

Results: A total of 96 mothers with infants and 10 health care workers were included in the analysis. A total of 13(13.5%) infants were infected with HIV. Hospital delivery, infant prophylaxis at birth, follows up medication of the infant and infant feeding methods (p-value=0.001) were significantly and independently associated. Level of knowledge on PMTCT was adequate and the health care workers were source of information. Lack of resources, staffing, counseling, low education, poverty, stigma and discrimination were constraint by health workers.

Conclusion: New HIV infection was associated with mixed feeding. Use of anti-retroviral therapy was found to eliminate HIV infections. Hospital delivery, breastfeeding for 6 months and use on antiretroviral treatment at birth and follow up treatment to infants were found to reduce the transmission of HIV infections with support from government and donors improved the delivery of PMTCT services in the facility.

Recommendations: Counseling on Infant feeding and use of anti-retroviral treatment with support from partners should be strengthened in the PMTCT program to ensure reduction of new HIV infections in the setting.

CHAPTER ONE: BACKGROUND

1.1. Background Information

It is estimated that 35.3 million people worldwide live with HIV and AIDS with more than two-thirds living in Sub Saharan Africa (NASCO, 2013). Three quarters of 2.3 million new infections in 2012 occurred in Sub Saharan Africa countries. Despite the scale up on the Prevention of mother to child transmission (PMTCT) programs, in 2012, over 210,000 new HIV infections still occurred among infants in Sub Saharan Africa (CDC, 2014). Globally, Acquired Immunodeficiency Syndrome (AIDS) accounts for three percent of deaths in children below five years of age and six percent in Sub Saharan Africa, where it is the major killer of young children (Ngwede et al., 2013).

Kenya has adopted the WHO on the four pronged approach for the prevention of mother to child transmission of HIV. This approach includes: primary prevention of women of childbearing age, preventing unintended pregnancies among women living with HIV, preventing HIV transmission from women living with HIV to their infants and providing appropriate treatment, care and support to mothers living with HIV and their children and families (Mahy, et al. 2013; NASCO, 2013; UNAIDS, 2013; UNICEF, 2013).Thus, to eliminate the new HIV infections to infants, the four components or pillars will be employed and the third component strengthen on use of antiretroviral prophylaxis to reduce the transmission rate from mother to child.

According to the global report on HIV and AIDS epidemic, 2013 indicates that most of the new HIV infections among infants were reported mostly from Sub Saharan region and the countries in the region were categorized as priority countries in the virtual elimination of new HIV infections by 2015. The global report on HIV epidemic (2013) indicates that 210,000 newly infected children were reported in 2012 which showed 37% drop from 2009 indicates that with effective intervention the rate can still be reduced, though there are still infections which are reported through breast feeding period. In Kenya, the prevalence rate was 13,000 which also signified a reduction of 44% from the year 2009. Among women living with HIV only 58% were receiving anti-retroviral prophylaxis and the mother to child transmission (MTCT) rate was at 15% (UNAIDS, 2013).

Adoption of PMTCT program in Kenya started in the year 2000 which worked well through piloting in several clinics and since its inception there has been a substantial scale up with more health facilities providing the services with the government implementing the WHO 2006 PMTCT guidelines (Dutta et al., 2013; Mbori-Ngacha and Shaffer, 2010). According to a recent report Kenya Aids Indicator Survey (KAIS) in Kenya, the HIV prevalence is at 5.6 % among adults aged 15- 64 years, in terms of gender, women were at 6.9 % and men at 4.4 % infected with HIV. This states that the HIV infection is mostly in women of reproductive age and therefore, the likelihood of passing the infection to the child is high. In terms of residence, HIV prevalence was high at 6.5% in urban and rural was at 5.1%, and geographically, it was highest in Nyanza region and Kisii county being part of it at 15.1% (NASCOP, 2013).

The risk of transmission of mother to child transmission rate ranges between 15-45 % and with effective intervention, the rate can be reduced to as low as 5 % (Kinuthia et al., 2011; UNAIDS, 2013). Trials have demonstrated that provision of ARV to breastfeeding mothers or their infants can reduce total mother to child transmission to 1% -5% at six months (Ciaranello et al. 2012). Arising from this background, there is need to eliminate new HIV infections among infants.

This study established the status of new HIV infections among infants born of HIV positive mothers on PMTCT program at Kisii Teaching and Referral hospital, a referral government hospital covering South Nyanza, South rift and entire Gusii region.

1.2. Problem Statement

Infants born of HIV positive mothers can turn HIV negative if prevention of mother to child transmission (PMTCT) is followed effectively. The transmission rate with absence of intervention is 15% - 45 % whereas with intervention this has reduced to as low as 2% (UNAIDS, 2013). Based on statistics, PMTCT has been implemented through the four pillars (Cherutich et al., 2008; NASCOP, 2013; Tindyebwa et al., 2011; UNAIDS, 2013; WHO, 2014).

The Kenyan PMTCT guidelines (2012), estimates 37,000 to 42,000 infants are infected with HIV annually due to mother-to-child transmission. This occurs in utero, during labour and delivery and through breastfeeding. During pregnancy, about 5 to 8 percent of HIV exposed babies become infected through transmission across the placenta. Labour and delivery poses the greatest risk for

transmission with 10 to 20 percent of exposed infants becoming infected at this time (NASCOP, 2012). According to Kenya AIDS Indicator Survey, 2012, despite 90 % of HIV positive pregnant women receiving PMTCT interventions only 83 % of infants came for the interventions and 16 % were reported by their mothers to be HIV positive (NASCOP,2013).

Despite all the interventions in place for PMTCT, there are still a significant number of infants who turn out HIV-infected. This is attributed to the findings that, quality of PMTCT programs are sub-optimal with significant drop offs between first contacts and completion of service package (Tindyebwa et al., 2011). This has also been evidenced by low maternal educational level and poor knowledge on transmission of HIV and issues on stigma and discrimination (Audureau et al., 2013).

1.3. Justification of the Study

Studies have showed that with effective intervention with PMTCT interventions in treatment and provision of antenatal prophylaxis is able to reduce the transmission rate during pregnancy and delivery, in addition to giving birth with a skilled attendant and stop breast feeding can reduce the risk of transmission to 1% -2%. This is a good basis for scaling up the PMTCT services for prevention of new HIV infections among infants and sealing the gaps at Kisii County. Standard Newspaper, 10th December, 2013 reported that Kisii county is among the six counties in Kenya that contribute to more than half of new HIV infections with an HIV prevalence rate of 8.9 % against a nationwide prevalence rate of 5.6 % (Miruka, 2013). The challenge was to scale up the PMTCT program. In Kisii county PMTCT statistics showed that 1,180 women were diagnosed to be HIV positive with a positivity rate of 4%, of those who were HIV positive only 943 were on ARV prophylaxis and during maternity a HIV positivity rate of 3% with 183 mothers were positive in the year 2013. This study was done at Kisii Teaching and Referral Hospital located at Kitutu Chache constituency. The hospital is a referral government district hospital in the region and serves a population of 3 million people. The hospital provides both inpatient and outpatient services and HIV comprehensive services which include HIV testing and counseling services, family planning, anti-retroviral prophylaxis, life-long anti-retroviral treatment and support care and follow up seropositive patients.

1.4. Hypothesis

1.4.1. Null Hypothesis

There are no factors associated with new HIV infections among infants born of HIV positive mothers on PMTCT follow up at Kisii Teaching and Referral Hospital

1.4.2. Alternative Hypothesis

There are factors associated with new HIV infections among infants born of HIV positive mothers on PMTCT follow up at Kisii Teaching and Referral Hospital

1.5. Research Objectives

1.5. 1. Broad Objective

To determine factors associated with new HIV infections among infants born of HIV positive mothers on PMTCT follow up at Kisii Teaching and Referral hospital.

1.5.2. Specific Objectives

The objectives of the study will be to;

- i) Determine the prevalence of new HIV infections among infants whose mothers are on PMTCT follow up at Kisii Teaching and Referral Hospital
- ii) Establish factors contributing to new HIV infections among infants whose mothers are on PMTCT follow up at Kisii Teaching and Referral Hospital
- iii) Establish the level of knowledge of the mothers on PMTCT at Kisii Teaching and Referral Hospital
- iv) Establish the perception of health care workers on PMTCT at Kisii Teaching and Referral Hospital

1.6. Research Questions

- i) What is the status of new HIV infections on infants whose mothers are on PMTCT follow up at Kisii Teaching and Referral Hospital?
- ii) What are the factors contributing to new HIV infections among infants whose mothers are on PMTCT follow up at Kisii Teaching and Referral Hospital?
- iii) What is the level of knowledge of the mothers on PMTCT?
- v) What is the perception of health care providers on PMTCT at Kisii Teaching and Referral Hospital?

1.7. Significance of the Study

The study was a basis for scaling up PMTCT program to eliminate new HIV infections among infants on the policy makers and add knowledge to existing findings on transmission of new HIV infections towards universal millennium development goals on goal 4, 5, and 6. It was hoped that the study findings will be utilized by Kisii Teaching and Referral Hospital in tackling the gap that has been identified in the study. This will promote evidence based practice in helping mothers on PMTCT program to eliminate new infections in infants and guide in planning health program to mothers on PMTCT program.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

HIV and AIDS epidemic is a major problem in many countries globally and continues to have devastating effects in Sub Saharan Africa which has an overwhelming majority of HIV infected people at more than 90% of all the HIV cases in the world. Though policies and education have been put in place to virtually eliminate new HIV infections among infants no change has been experienced (UNAIDS, 2013). The launch of the global plan in 2011 aim to virtually eliminate new HIV infection among children by 2015 and accelerate efforts towards HIV children and their mothers across Millennium Development Goals (MGDs) 4 (reduce child mortality), 5 (improve maternal health) and 6 (combat HIV, tuberculosis and Malaria) and this will involve the four pronged approach (UNAIDS, 2013; UNICEF, 2013).

Initially, introduction of PMTCT programs in developing countries were stand-alone programs, and with the gradual integration into maternal and child health care and reproductive health services, has proven to be an effective strategy to reach HIV infected mothers with their infants and reducing stigma and discrimination experienced by HIV people (Dutta et al., 2013; Tudor Car et al., 2013; UNAIDS, 2013). The uptake of PMTCT program is influenced by the type on intervention especially in testing for HIV sero status. Implemented by WHO, the interventions for HIV testing in the developing countries are : ‘opt –out’ method in routine testing , rapid testing with results on the same day and use of virological tests on infants below 18 months which is done as earlier at 6 weeks to identify HIV infection in children. The aim of WHO is to increase number of women and children knowing their status and access to HIV treatment (Tudor Car et al., 2013; WHO, 2012).

Kenya, adopted its first programme in PMTCT in 2000 with a series of pilot basis and it took effect from 2002 and more than 5000 (over 60%) now offer PMTCT services (Dutta et al, 2013). As a result, 80 % of HIV pregnant mothers who are positive receive some form of antiretroviral prophylaxis, 63 % exposed infants receive antiretroviral prophylaxis, and out of exposed infants 35% receive a PCR HIV test 6 weeks after birth (Dutta, 2013; NASCOP, 2011; NASCOP,2012).

In line with the global prevention of mother to child transmission elimination, Kenya recommends the four prongs or strategies approach. This involves primary prevention among

women of reproductive age, family planning for all HIV positive women who want to delay their next birth, ARV prophylaxis during pregnancy, delivery and breastfeeding, and care and treatment. Towards global elimination of new infections among infants, the strategies put in place were on prong three, to reach to over 90 % of HIV positive women with more efficient of antiretroviral prophylaxis to reduce mother to child transmission to below 2 %. The implementation of PMTCT program has worked through a scale up system with support from multiple stakeholders in health system strengthening and investing, political commitment and advocacy, community system strengthening and resource mobilization (Dutta et al, 2013; NASCOP, 2011).

2.2 Factors Contributing to New Infections in Infants

At each step of PMTCT program, loss to follow up contributes significantly to new infection among infants. This starts from the first contact through counseling, HIV testing, collecting results, receiving anti-retroviral or prophylaxis, safe delivery practices, infant feeding recommendations up to postnatal follow up (Cherutich et al., 2008; Tudor Car et al., 2013). Any loss of the clients at any of these stages reduces effectiveness of PMTCT significantly.

It was found by Ngwede et al.,(2013) that there are two major factors that contribute to HIV infection in children and these were breastfeeding and ARV prophylaxis, the children at risk of HIV infection, their mothers had a low CD₄ count that was less than 200 μ l, the study continues to argue that the maternal immune response produce different infection rates in infants and this may mount immune responses that protects infants from infections. The infants , who breast fed for more than 6 months 65 % of them turned out to be HIV positive (Ngwede et al., 2013).

2.2.1. Socio Demographic Factors

The socio demographic data gives us the identity of the individual, especially in terms of maternal age, education in term of literacy and understanding of taking ART prophylaxis. A study done by Cook et al, (2013) showed that all health centres offered PMTCT services as routine prenatal care and early infant diagnosis was at 25 %. Maternal income and knowing their HIV status played a great role. A review by Gourlay et al., (2013), maternal age on young women aged 20-25 years were less likely to receive or adhere to ARV prophylaxis and receive NVP for their infants, low

maternal education level was also associated by not taking ARV prophylaxis, and poor knowledge on transmission of MTCT was a reason to drop out of PMTCT and use of ARV (Gourlay et al., 2013). Augmented by a study done in Kenya, showed that, those who did not deliver at a health facility were less educated had less than secondary education, and were of lower socio-economic status this was evidenced by transport and cost to access services (Kinuthia et al., 2011). Late admission to the labor ward sometimes prevented staff from testing women for HIV, receiving the result before delivery and providing them with ARV prophylaxis (Tudor Car et al., 2013). Another study in Uganda on barriers to pregnancy HIV testing, distant facilities showed onsite HIV testing and distance ANC facilities led to missed opportunities to poorer women (Larrson et al., 2012).

2.2.2. Anti-Retroviral Prophylaxis

The new guidelines adopted by WHO in 2010 in scaling up emphasized on treating the HIV positive pregnant mother with lifelong antiretroviral therapy (ART) whereby two equivalent options were recommended, the first option was highly effective prophylaxis to HIV positive pregnant women who do not need ART for their own health. The other option is in the current setting is the short term use of ARV prophylaxis to both the mother and the infant which is recommended during breastfeeding and is judged to be safest infant feeding option. The use of ARV prophylaxis known as Option A is whereby treatment with Zidovudine at 14 weeks of gestation during pregnancy and single dose Nevirapine (sd NVP) at delivery or as soon as possible. The exposed infant after delivery is started on Nevirapine syrup daily throughout breastfeeding and until one week after exposure and when breast feeding is stopped. The second option which is the most effective is known as Option B, whereby the mother is started on triple ARV prophylaxis from 14 weeks or as soon as possible thereafter and continues the maternal triple drug prophylaxis until one week after exposure to breast milk has ended (Ciaranello et al, 2012; WHO 2012). In Kenya, all pregnant women who are HIV positive are initiated at 14 weeks of pregnancy or as soon as possible on antiretroviral prophylaxis on Zidovudine (AZT) 300 mg twice daily till labor. In labour and delivery, sd Nevirapine, Zidovudine (AZT) and Lamivudine (3TC). After delivery, AZT and 3TC is given daily for seven days. The infant who breastfeeds is put on NVP daily until one week or after the end of breastfeeding and if the infant is not breastfeeding, it is put on NVP daily till four to six weeks (Dutta, et al, 2013; NASCOP, 2012) when the infant comes for an early infant diagnosis to confirm if the infant is exposed or infected.

Ngwede et al., (2013) indicates that ARV prophylaxis is a major factor in elimination of new infections among infants. A review study by Gourlay et al., (2013) showed that fear and belief surrounding ARV prophylaxis is that it could cause harm to the unborn. Therefore those who thought that HIV was a punishment due to bad behavior were associated by failure to take ARVs. Poor knowledge on PMTCT showed that some mothers failed to take ARV. Supported by a review study, showed that health care providers were reluctant to give ARV prophylaxis to women in antenatal care as they believed women would not take the medication provided due to complexity of monitoring tools deter women from following them up (Tudor Car et al., 2013). On the other hand a study in Kenya showed that those who delivered at home were not provided with ARV prophylaxis for both the mother and the infant (Kinuthia et al, 2011).

2.2.3. Obstetric and Pregnancy History Factors

Following sudden onset of labor was a challenge to access hospital at night, late admission in labor ward and not taking ARVs prophylaxis. Others were security issue especially at night, failure to secure a vehicle or lack of means to access the facility, and being alone at home were cited as reasons for pregnancy history factors (Kinuthia et al., 2011; Gourlay et al., 2013; Tudor Car et al, 2013). Ill health or poor health following delivery at home prevented mothers not taking their infants for ARV prophylaxis and maternal adherence to PMTCT intervention influenced to prophylaxis by the newborn and linkage to HIV care and treatment (Tudor car et al., 2013).

2.2.4. Stigma, Disclosure of HIV Status and Community Support

While support was a facilitating factor in adhering to PMTCT program the major barriers in uptake of PMTCT were stigma regarding HIV status and fear of disclosure to partners or family members (particularly grandmothers or mothers-in-law). Self-stigmatization of women led to not disclosing their status and refusal to take ARV prophylaxis. In addition, lack of partner or family support was frequently mentioned. This led to preference to breast feeding though formula feeds were provided. (Gourlay et al., 2013).

A challenge with distance was associated with social stigma whereby mothers who are positive would go to a different health facility for HIV treatment avoiding those near their residence (Cook et al., 2013).

2.2.5. Structural or Organizational Barriers

Integration of maternal and child health and PMTCT services has shown higher uptake of HIV testing through provider initiating testing and counseling. This has led to early diagnosis of HIV infants. WHO report showed that in 2011, HIV testing of infants within two months of life was at 35 % (29-41%) born of mother living with HIV infection. In attributing the health care infrastructure limitations such as infrastructure limitations such as inefficient laboratory flow, inconsistent commodity supply for essential laboratory services or drugs and poor counseling knowledge (WHO, 2013).

A study by Cherutich et al, (2008), on barriers in early identification of early infant diagnosis in among 58 health facilities providing paediatric HIV services in Kenya showed that most health care providers were not familiar with HIV paediatric guidelines, clinicians rarely requested for HIV testing, there were only 4 lab services out of 58 health facilities with DNA PCR, in some facilities children brought by their parents for testing, were referred to other clinics for diagnostic testing at a cost. Shortage of personnel in performing the test in the laboratory was evidenced though the DNA PCR tests were available. (Cherutich et al., 2008) The study clearly shows that there is also need to train health care providers, to be supervised and provided with supplies in identifying the exposed and HIV infected children.

Gourlay et al. (2013) study review on barriers on uptake of PMTCT intervention, indicated shortage of trained health care providers attributing to high patient volume. Also, there were issues on shortage of ARVs and poor integration of services, referral links or tracking systems contributed to low uptake of ARVs and financial which led to stock outs of HIV test kits, ARV prophylaxis, CD₄ testing materials and ART (Gourlay et al., 2013; Tudor Car et al., 2013).

2.2.6. Quality of Care

Low quality of care was evidenced through staff client interaction and this was seen through poor counseling and negative staff attitude was frequently cited in limiting the opportunity to ART for example women were scolded for home deliveries when returning with their babies for NVP administration or staff shortages which contributed to long waiting time and poor recording in measurement of PMTCT program (Gourlay et al., 2013).

2.2.7. Infant Feeding Options

Although replacement feeding is recommended to reduce the risk of HIV transmission, hygiene is highly recommended to reduce morbidity and mortality. The feeding options are exclusive breast feeding with ARVs and exclusive replacement and counseled on the options and the challenges to help them make an informed choice. Those who choose to breast feed should be encouraged and supported to be exclusive until 6 months and thereafter support by complementary until 12 months. The risk to mix feed before 6 months, the risk of HIV infections is known to be eleven times high. Exclusive replacement feeding is done for six months and complementary feeds from 6 months. In some maternal conditions whereby the mother is dead and the breasts are inflamed, the infants are recommended exclusive replacement feeding (NAS COP, 2012).

A study done in Kitale on infant feeding practices showed that were mainly influenced by the male partner's involvement and the socio economic status of the mother, whereby half of the respondents did not breast feed at all and exclusive breast feeding rarely reached six months. Men involvement showed sense of encouragement on PMTCT interventions. Mothers who disclosed their status were not likely to breast feed as compared to those who did not breast feed (Bii et al., 2008). Another study showed that though most of the mothers did exclusive breast feeding those who disclosed their status to their partners fed their infants as recommended according to the guidelines of feeding options (Kinuthia et al., 2011). This was evidenced in a study on PMTCT cohort chose not to breast feed but the mothers who were on non-PMTCT cohort (that is those who were found to be positive after delivery) were found to breast feed (Sadoh et al., 2008).

2.3. Prevalence of New HIV Infections

According to global plan progress report by UNAIDS (2013), on 21 priority countries, showed that there were 210,000 newly infected infants in Sub Saharan Africa in 2012, this represented a drop of 37% from 2009. In Kenya 13,000 new HIV infections among children were reported in 2012, showing a decrease of 44 % from 2009. This represented that more than half (58%) of the HIV positive mothers received their ARV prophylaxis and 80 % of the infants were not on treatment despite being breast fed. The HIV transmission rate of MTCT report reduced to 15 % from 26 % in 2009. The women in the reproductive age (15-49 years) with HIV infection also decreased from 56,000 to 46,000, this showed that fewer children were exposed to HIV infection. Only 26% have unmet need for family planning, this meant that with improved access to family

planning services could further reduce the number of new infections among children and improve maternal health. Twenty percent (20 %) pregnancy related deaths were attributed to HIV infection (UNAIDS, 2013). This showed a moderate decline of new HIV infections and the more effort is needed on the available PMTCT programs.

2.4. Knowledge of Mothers on PMTCT

Empowering the women protects their own health and makes informed decisions about their health and that of their children (NASCO, 2012). A study by Ndubuka et al., (2013), on ‘Knowledge, attitude and practice regarding infant feeding on HIV positive mothers’ revealed that counseling on infant feeding was associated with PMTCT practices related to breastfeeding and 30 % of the mothers reported that they were not counseled and out of those who were counseled 80 % opted for exclusive formula milk (Ndubuka et al., 2013).Not consistency with another study done in Kenyatta National hospital, vertical transmission showed that (99%) of the PMTCT mothers reported that they were counseled on the program (Musalia et al, 2010).

2.5. Perception of Health Care Workers on PMTCT Program

A study in Ethiopia on the health care providers reported on lack of job performance, inadequate pay and lack of training since there was increased workload (Asefa and Mitike, 2014). A qualitative study on healthcare providers’ perceptions regarding experiences and factors that contribute to adherent and non-adherent behaviors to HIV treatment among women living with HIV infection in Puerto Rico examined that women were constrained with the burden of the illness like fear to disclosure, treatment effects to the unborn child; women were young with low education and financial problems for transportation. To improve on adherence the strategies were health education, team work, support groups, networking, ongoing assessment, and provider patient interaction (Rivero-Méndez et al., 2010).

2.6. PMTCT Guidelines on HIV Exposed Infants in Kenya

According to the Kenya national PMTCT guidelines, related to WHO and UNAID, recommend the HIV exposed children should be followed up in the health facility within two weeks of delivery and monthly follow up visits up to 24 months old and linked to immunization and growth monitoring return dates. All should be started on co-trimoxazole prophylaxis at 6 weeks of age. The rationale is to protect against common bacterial infections like, Malaria, toxoplasmosis and Pneumocystis Jirovecii which is a significant cause of morbidity and mortality among infants in

Africa. The early infant diagnosis of the infants should be known as soon as possible. The diagnosis in infants and young children before 18 months of age is performed by a routine dry blood spot (DBS) for DNA PCR for all infants who are exposed at 6 weeks or first contact, sick infants in outpatient setting and in the paediatric wards. If the infant is exposed at 6 weeks, an antibody testing is done at 9 months, the period the babies lose their maternal antibodies and this is repeated later at 18 months. If the baby breast feeds and the antibody testing turns negative at nine months a repeat antibody test is done at 2 months after stopping to breast feed. If the antibody turns positive is likely to be diagnostic but may still be passively carry maternal antibodies and this will be repeated at 18 months for confirmation with a DNA PCR (NASCOP, 2012; WHO, 2014; UNAIDS, 2013). If the mother does not breast feed in the first 2 months and the HIV test is negative the co-trimoxazole is stopped and a confirmation is done at 18 months. If it turns positive at 6 weeks, breast feeding is done to a minimum of one year, triple anti-retroviral therapy and co-trimoxazole is started regardless of the WHO staging and CD₄ count (NASCOP, 2012; UNICEF, 2013).

2.7. Theoretical Framework: Health Action Model

Health Action Model (HAM) model (Tones et al., 2001) has been utilized in a number of health promotion programs. The model was developed by Tones in 1970s to provide a theoretical base for emerging specialists in professional practice of health education and it was later modified with its emphasis with public health policy and related macro influences. The model builds on health belief model by incorporating self-esteem as a factor on how receptive people are to health messages or a key motivation for changing behavior. The relationship between Health Action Model (HAM) to Health Belief Model (HBM), the belief as an element is termed as cognitive domain instead of affective domain (Tones and Tilford, 2001, pp. 90-91). The Health Action Model (HAM) is based on the idea that people with high self-esteem and positive self-concept are likely to feel confident about themselves as a result will have the ability to carry through and resolve to change their behaviours and those with low self-esteem are likely to believe that they have limited control over their health and will less likely respond to a health promotion message no matter how they are convinced. The individual self is influenced by four interacting system : beliefs, motivation, normative factors and identity, additionally it emphasizes on the need of facilitating factors like environmental factors which are physical, socioeconomic, personal skills

in terms of regulatory and knowledge to support the translation of behavioral intention into a health action (Tones and Tilford, 2001, pp. 89).

This research study was guided by Health Action Model, based on the 5 constructs which influenced the likelihood of HIV positive mothers who have been tested and given the results to adhere to anti-retroviral prophylaxis and follow up in PMTCT interventions. The health outcomes was either relapse of the PMTCT program and have a HIV positive infant or follow the routine and have a HIV exposed infant. The construct of self are interrelated in the belief, normative and motivation to bring the personality of behavior intention.

A modified Health Action Model was adopted to assess the new infections among HIV positive mothers on PMTCT program follow up based on the objectives of the study.

2.8. Operational Conceptual Framework

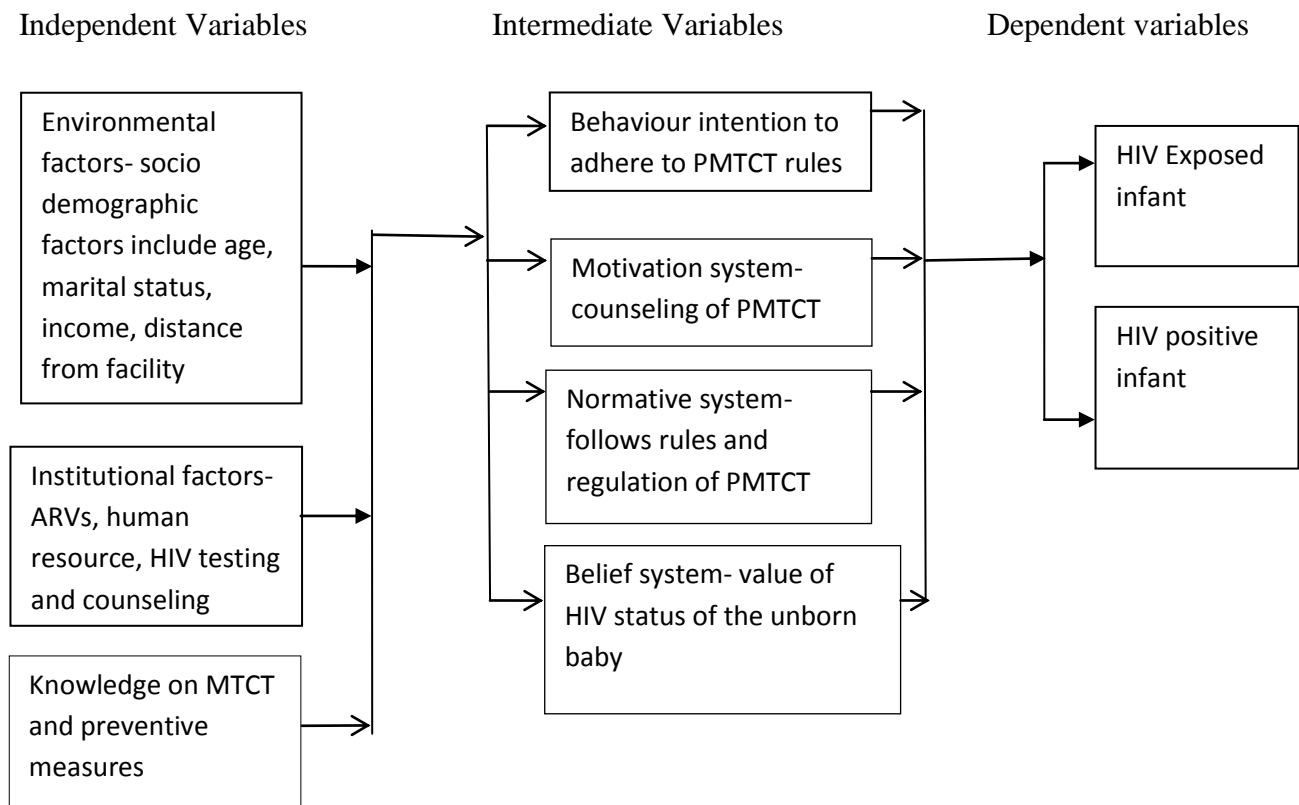


Figure 2.1 : Conceptual Framework modified from the Health Action Model by Green and Tones, 2010.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

This chapter covers the research design and methodology including sampling, study population, consenting procedures, data collection, data analysis, quality control measures and ethical consideration.

3.2. Study Area Description

The study was conducted from 17th July to 6th August 2014 at MCH PMTCT clinic in Kisii Teaching and Referral Hospital. The hospital is located at Kitutu Chache South district in Kisii County. It has a 430 bed capacity hospital which serves as a regional referral health facility for South Nyanza, South Rift and the entire Gusii region. It also serves as a teaching hospital for several institutions notably the Kisii University, Kenya Medical Training College, AMREF college to mention a few. It has a staff establishment of more than 500 workers and more than 13 specialist doctors with a catchment population of 3 million people. The hospital is located in south western Kenya, 309 kilometres from the capital city of Nairobi.

KTRH offers to HIV-positive mothers' access to a package of services that promotes safe delivery and ensures safe postnatal care and support for both the baby and the mother, and this includes voluntary HIV counseling and testing to pregnant women and antiretroviral therapy regimen to prevent mother to child transmission. Other services include Early Infant Diagnosis for infants below 18 months of age, Dried Blood Spot (DBS) done at 6 weeks, Family Planning services, Caesarean Section, General Maternity, and Provider Initiated Testing and Counseling for HIV and AIDS. The PMTCT services in the hospital are partnered with CARE Kenya and NASCOP organizations in delivering the services.

The MCH clinic has different units within the same locality namely the Child welfare clinic, postnatal follow up clinic, emergency room and admission room for sick children under 5, Provider Initiated Testing and Counseling (PITC) and Voluntary Counseling and Testing (VCT) rooms, ANC clinic, nutrition room, and three consultation rooms. On a monthly basis, approximately 200 postnatal HIV positive mothers with their infants are seen and followed up. The mothers put on PMTCT program are initially tested during pregnancy accompanied with their partners and a repeat of HIV testing is done during labour and a follow up is done at six weeks after delivery with their infants. Dried Blood Spot (DBS) are done for the infants whose mothers

were found positive either during pregnancy or during labour. Then the results are sent to Kisumu for PCR-DNA analysis. The results take approximately 2 weeks to 2 months before the results are received back to the MCH clinic for interventions. In the PMTCT clinic, the HIV positive mothers and their infants are followed up until 18 months and discharged to patient support care for further management. The MCH clinic is manned by a registered nursing officer in charge with 10 nurses, 2 counselors, 2 nutritionist and 3 registered clinical officers.

3.3. Research Approach

Triangulation strategy was used to enhance trustworthiness of elicited data. A quantitative approach was used to study the factors associated with new HIV infections on mothers in PMTCT program. According to Burns and Grove (2006), quantitative methodology involves reductionism, logical deductive reasoning, a certain degree of control by the researcher, the use of a structured data collection instrument, statistical analysis and generalization. In this study, reductionism involved breaking the PMTCT programme down into components which were then studied. Logical, deductive reasoning involved generating conclusions from a sample of women and generalizing them to a larger population of women. There was researcher control over the choice of the research problem, research methodology and variables to be studied. Data collection and analysis involved the use of a structured data collection instrument and statistical analysis.

Qualitative design was also used to better understand the direction of the factors associated with new HIV infections from the health care workers perspective. In-depth qualitative interview method was used to gain an understanding of the support needed by health workers caring for mothers and babies in the PMTCT programme

3.4. Study Design

The research design was an overall plan to obtain answers to the questions in the study. This was a descriptive cross sectional qualitative and quantitative study to determine factors associated among infants of mothers in the PMTCT program at Kisii Teaching and Referral hospital. The study was undertaken over a period of four weeks. The cross sectional study was used to estimate the status of new HIV infection among women with infants on PMTCT follows up and also guided in the exposure to risk factors. Therefore it was able to provide a snapshot of the categorical variables, the factors associated with it, knowledge of the mothers on PMTCT and HIV at the same time.

3.5. Study Population

The study population included HIV positive mothers on PMTCT programme with infants below 18 months old and tested for HIV and all health care workers on the basis of working for 5 months and above at the MCH clinic and willing to participate. All the study participants who consented were recruited during the study period.

A total of 96 out of 128 HIV positive mothers on PMTCT programme whose infants below 18 months old were recruited consecutively until the desired sample size was attained. The mothers with infants were recruited during their postnatal checkups returning for antiretroviral drugs and immunization of their infants. While 10 out of 15 health care workers were willing to participate during the study.

3.5.1. Inclusion Criteria

During the study period, the study participants were HIV positive mothers registered in PMTCT program with infants below 18 months and had been tested for HIV status. The mothers with infants were coming for their PMTCT follow up, postnatal clinic and immunization services for their infants.

The health care workers included the nurses and counselors, clinical officers and nutritionists who had worked for more than 5 months at the MCH clinic. Only those who consented participated in the study.

3.5.2. Exclusion Criteria

Exclusion was done to mothers with infants not on PMTCT register coming for their postnatal checkups and immunization, mothers on PMTCT program with infants below 18 months of age and had not been tested or awaiting their HIV results, mothers on PMTCT with infants above 18 months old and had been tested for HIV status. Mothers with infants had not consented. All health care workers working at the MCH clinic for more than 5 months and were not willing to participate.

3.6. Sample Size Determination

Fischer's et al (1998) formula was used to determine the sample size for the study as follows:

$$n = \frac{Z^2 p(1-P)}{d^2}$$

Where:

n was the desired sample size (if the study population is greater than 10,000)

Z is the normal standard deviation at the desired confidence level taken to be 1.96 which corresponds to 95% confidence level.

P is the proportion in the target population estimated to have characteristics being measured

1-q is the proportion in the target population estimated not to have the characteristics being measured

d = Standard Error at 95% confidence limit (0.05).

Since p was not known, it was estimated to be 50% (Mugenda & Mugenda, 2003)

Therefore

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2}$$

n = 384 HIV mothers with infants below 18 months

If the target population is less than 10,000, Fischer's et al (1998) the following alternative formula is applied.

$$nf = \frac{n}{1 + (n/N)}$$

Where:

nf = desired sample size (when the population is less than 10,000)

n = sample size of population more than 10,000 (calculated as 384)

N = was the estimated population within the study period which was approximately 128

Therefore the desired sample size was

$$nf = \frac{384}{1 + (384/128)}$$

=96 HIV positive mothers with infants below 18 months old and 10 health care workers were recruited on the basis of working for more than 5 months and willingness to participate.

3.7. Sampling Procedure

The mothers with their infants on PMTCT follow up was done conveniently until the required sample size was attained. This was suitable for the study because the required sample size was

attained within the time frame of the study. The mothers with infants participation was on voluntary basis upon presenting at the MCH Clinic. HIV status of the infants relied on PMTCT records from HIV Exposed Infant file at PMTCT clinic.

Qualitative study done on healthcare workers explored perception regarding PMTCT program in the hospital. Purposive sampling was done on 6 nursing officers, 2 registered clinical officer, 2 nutritionists for those willing to participate in the study. Purposive sampling allowed recruitment of participants who were able to articulate their experience and provide adequate information on the research study. The actual sample size of 15 for the health care workers was determined based on the basis of working in the MCH clinic for more than 5 months through a duty list with years worked in the MCH clinic and this formed a sampling frame. The counselors, who were part of the study, could not meet the inclusion criteria of working more than 5 months at the MCH clinic. A total of 10 health care workers agreed to be interviewed; this included 6 nurses, 3 clinical officers and 3 nutritionists. The health care workers formed the sampling frame and individual health care worker formed a sampling unit. The purpose of the sampling frame was to exclude the nurses, clinical officers, counselors and nutritionists working for less than 5 months, and exclude also students, nurses on internship, a health care worker on annual leave or orientation.

3.8. Research Assistants Selection and Training

Two research assistants were recruited from Kisii Teaching and Referral hospital. These were fourth year diploma qualified nurses upgrading to Bachelor of Science in Nursing (BScN) rotating for their practical rotation at the MCH clinic. The research assistants were trained for 2 days on the purpose of the study, ethical issues in the study, use of study instruments for completeness to ensure accurate data was obtained. The research assistants familiarized themselves with the study instruments during pre-testing of the research instruments at Oresi health centre, level 3 health facility linked to KTRH for referrals which was approximately 500 metres away. The pre-test was done to assess the validity and the reliability of the study instruments.

3.9. Consenting Procedure

Informed consent was obtained before administration of questionnaires from the study participants. The mothers consented as informants and decision makers for their infants. Explanation for the purpose of the study and voluntarism of participation was emphasized and

study participants were allowed to ask questions and clarifications were made during the study. The study participants were left with the information sheet which indicated their rights as participants and a signed consent was left with the researcher as a statement of agreement between the researcher and the respondent in the study. Interviews were done face to face with the study participants maintaining privacy at the clinic in a convenient room during the study period.

3.10. Data Collection Procedures

A physical visit was made to the study area, for the purpose of data collection. The data collection was one on one interviewer administered questionnaire by the research assistants and the researcher. The research assistants were purposely used to avoid information bias by the researcher. The interviews were done privately and convenient place within the MCH clinic especially on the private and comfortable room or on the waiting bay. Each interview lasted for 10-25 minutes and the participants were thanked for their participation.

Quantitative data was collected from the mothers with their infants who met the inclusion criteria with a pre tested interviewer administered questionnaire. This was done in Kiswahili language. Information on the prevalence on infant HIV status was obtained on PMTCT HIV Exposed Infant records on status of the infant. The participants were approached after their appointments with the health care worker and those who consented to volunteer were recruited.

The qualitative data on health care workers provided a broader perspective to facilitate interpretation of the quantitative data. The participants were interviewed face to face through in-depth interview guide. Privacy was maintained in convenient rooms within the MCH clinic at a time convenient to them. The interview was done in the afternoon hours when most of the patients had been seen.

3.11. Data Quality Control Measures

The data study tools were pre tested at Oresi health Centre with 10 mothers with infants below 18 months meeting the inclusion criteria before its use in the research study.

Two research assistants were recruited and trained to avoid information bias from the researcher when interviewing the study participants during the study period. The research assistants who had background information on research methods were recruited for this purpose.

The quantitative data instruments used for data collection were handed over to the researcher at the end of each day for storage and data entry. Anonymity of the study participants and status of the infants was done through coding of both the quantitative and qualitative tools.

Data validation was done to correct data entry problems such as missed, double entered data values or data entered in the wrong variables.

3.12. Data Analysis and Presentation

Quantitative data was entered and analyzed using Statistical Package for Social Sciences (SPSS) Version 20. Descriptive statistics was used to summarize data on respondent characteristics and presentation was done in narrative and pictorial format using bar graphs for direct comparison of data, pie charts and frequency tables for references purposes.

Frequencies and percentages were computed and presented in frequency tables, pie charts to emphasize on general findings and bar graphs on categorical variables such as gender, level of education, marital status, access to the health facility and occupation status and HIV status of the infant. Pearson Chi square (χ^2) was used to address potential differences between the status of the infants in terms of the informants' characteristics that is the socio demographic characteristics, factors associated in contributing to new HIV infection which included the ANC clinics, infant feeding options, rate of disclosure, to which the disclosure was made and place of delivery. The dependent variable, the status of the infant either HIV positive or HIV negative was used. The p-value was set at 0.05 (p-value < 0.05). Open ended questions were categorized and tabled into themes.

Qualitative data analysis was done by familiarization with the scripts then identified into themes and sub themes across entries for each question and charting of the data and interpretation of the results and from observation during visits. The respondents were coded from respondent 1 to respondent 10 to maintain the anonymity. The qualitative data was presented in descriptive form and illustrative quotations were selected.

3.13. Ethical considerations

Approval to carry out the study

Permission to carry out the study was obtained from the Ethics Research Committee at Kenyatta National Hospital/University of Nairobi (Ref: KNH-ERC-P215/04/2014). Permission to proceed

on was also sought from KTRH research office and a verbal consent was obtained from the nursing officer in charge of MCH clinic.

Informed consent

Informed consent was obtained from the study participants in both quantitative and qualitative study who met the inclusion criteria and consent form signed before interviews commenced.

Confidentiality

The study participants were interviewed in a convenient place within the clinic and all the information obtained was treated with confidentiality and coding was used to protect the respondents' identity.

The data collected was kept in a locked cabinet by the researcher during the entire study period. The electronic data was secured with a password known to the researcher. After the study, the research tools will be destroyed after five years of keeping under lock and key.

Risks involved

There was no risk involved during the study.

Benefits from the study

The respondents (HIV positive mothers), not sure of their infant status, were told and counseled on the importance of PMTCT and if they had any other issues they were referred appropriately.

Once the results were analyzed the results will be communicated to the hospital to contribute in improving the quality of care on the HIV exposed infants at Kisii Teaching and Referral Hospital at PMTCT clinic.

3.14. Study Limitations

The study was facility-based using mothers with infants below 18 months old presenting PMTCT follow up clinic from 6 weeks. Only those who met the inclusion criteria and consented to participate were recruited during the study period this could be either a possible under estimation or over estimation on infant HIV infection prevalence rate.

Only those who were willing to participate were included. This could have introduced selection bias since it is difficult to know whether or not the responses given are representative of the whole eligible population. This means that the extent to which the results can be generalized is limited.

Mothers with infants who participated who felt stigmatized in the study, the mother mentor were used to get consent from eligible respondents.

Data collected was based on interviews and relied on the memory of informant (mothers). This showed recall bias on reason for admission and disclosure issues.

3.15. Dissemination of Research Findings

Reports on the research findings was compiled, written and presented to the management of Kisii Teaching and Referral Hospital. The results will be published in relevant journals to add knowledge on the goal of elimination of new HIV infections among infants born of HIV positive mothers on PMTCT program.

CHAPTER FOUR : RESULTS

4.1. Introduction

This chapter presents analysis and discusses the research findings from the study instruments (Appendix II and III) of this study.

A total of 96 mothers on PMTCT program with infants below 18 months of age from the PMTCT follow up clinic at Kisii Teaching and referral hospital MCH clinic were recruited during the study period and 10 health care workers who were willing to participate. The sampled population of the mothers gave a response rate of 100% and this was because the mothers were positive of the health being of their infants in the PMTCT program whereas the health care workers gave a response rate of 66.7% of the expected 15 health workers(sample size) because some were not willing to participate in the study.

The main objective of the study was to determine the factors associated with new HIV infections among infants born of HIV positive mothers despite being enrolled on PMCT program in the facility. The data highlight only the predominant percentages in accordance with the objectives. The presentations of data are under sub themes focusing on factors associated with status of new infection on infants born of HIV positive mothers and the perception of the health care workers.

4.2. Socio Demographic Characteristics of Respondents

The highest proportion of mothers (40.6%) was in age group 28-32 years. The mean and median maternal age was 29.69 and 30 years. The study revealed that most (68.8%) of the respondents were married relationships living with their partners at 69.8% followed by singles at 15.6%. More than half (54.2%) attained secondary school education, followed by primary with 32.3%. On their monthly income status, most (35.43%) were earning between Kshs. 3001-5000 with more than half (54.2%) being self-employed. On being asked how they access the facility, half (50%) of the respondents stated on the use of public service vehicle.

Table 4.1 : Socio demographic characteristics of the Respondents

Background information	Frequency (n=96)	Percentage (%)
<i>Age in years(mothers)</i>		
18-22	10	10.4
23-27	28	29.2
28-32	39	40.6

33-37	13	13.5
38-42	5	5.2
43-47	1	1.0
<i>Marital status</i>		
Single	15	15.6
Widow	13	13.5
Married	66	68.8
Divorced/separated	1	1.0
cohabiting	1	1.0
<i>Level of education</i>		
None	1	1.0
Primary	31	32.3
Secondary	52	54.2
Tertiary	12	12.5
<i>Occupation</i>		
Housewife	24	25.0
Self employed	43	44.8
Formal employment	14	14.6
Informal/casual employment	12	12.5
Farming	1	1.0
None	2	2.1
<i>Income per month</i>		
500-3000	22	22.9
3001-5500	34	35.4
5501-8000	12	12.5
8001-10500	6	6.2
10501-13000	4	4.2
13001-15500	5	5.2
15501-18000	0	0.0
18001-21500	2	2.1
>21500	7	7.3
No Income	4	4.2

<i>Transport to facility</i>		
Walking	20	20.8
Bodaboda/bicycle	25	26.0
Public service vehicle	48	50.0
Private	3	3.1
<i>Who do you live with</i>		
your partner	67	69.8
family/relatives	24	25.0
friend	3	3.1
none	2	2.1

4.2.1. Relationship between Socio Demographic Characteristics and HIV Status of Infants

From the relationship between the respondents and the HIV infection shows that according to the age of the respondents' majority (43.8%) were (29-33 years) though most were HIV exposed, married with their partners as housewives. However, the relationship was not statistically significant in the entire socio demographic characteristic with status of the infant p value <0.05).

Table 4. 2 : Association between Socio Demographic Characteristics and HIV Status of Infants

Socio demographic factors	HIV Status					
	Negative n (%)	Positive n (%)	Total n (%)	χ^2	df	p-value
Age of respondents						
18-22	8(9.6%)	2(15.4%)	10(10.4%)	2.697	5	0.747
23-28	26(31.3%)	2(15.4%)	28(29.2%)			
29-33	34(41.0%)	5(38.5%)	39(40.6%)			
34-38	10(12.1%)	3(23.1%)	13(13.5%)			
39-43	4(5.0%)	1(7.7%)	5(5.2%)			
44-47	1(1.2%)	0(0.0%)	1(1.0%)			
Marital status						
Single	11(13.3%)	4(30.8%)	15(15.6%)	3.044	4	0.551
Married	59(71.1%)	7(53.8%)	66(68.8%)			

Divorced/separated	1(1.2%)	0(0.0%)	1(1.0%)			
Widowed	11(13.3%)	2(15.4%)	13(13.5%)			
cohabiting	1(1.2%)	0(0.0%)	1(1.0%)			
Level of Education						
None	1(1.2%)	0(0.0%)	1(1.0%)	5.937	3	0.115
Primary	23(27.7%)	8(61.5%)	31(32.3%)			
Secondary	48(57.8%)	4(30.8%)	52(54.2%)			
Tertiary	11(13.3%)	1(7.7%)	12(12.5%)			
Occupation						
Housewife	18(21.7%)	6(46.2%)	24(25.0%)	4.411	5	0.492
Self employed	39(47.0%)	4(30.8%)	43(44.8%)			
Formal employment	13(15.7%)	1(7.7%)	14(14.6%)			
Informal/casual	10(12.0%)	2(15.4%)	12(12.5%)			
Farming	1(1.2%)	0(0.0%)	1(1.0%)			
None	2(2.4%)	0(0.0%)	2(2.1%)			
Income per month						
500-3000	17(20.5%)	5(38.5%)	22(22.9%)	4.465	8	0.813
3001-5500	30(36.1%)	4(30.8%)	34(35.4%)			
5501-8000	10(12.0%)	2(15.4%)	12(12.5%)			
8001-10500	6(7.2%)	0(0.0%)	6(6.2%)			
10501-13000	4(5.1%)	0(0.0%)	4(4.2%)			
13001-15500	4(5.1%)	1(7.7%)	5(5.2%)			
15501-18000	0(0.0%)	0(0.0%)	0(0.0%)			
18001-21500	2(2.4%)	0(0.0%)	2(2.1%)			
>21500	6(7.2%)	1(7.7%)	7(7.3%)			
No income	4(5.1%)	0(0.0%)	4(4.2%)			
Access to Facility						
Walking	18(21.7%)	2(15.4%)	20(20.8%)	1.619	3	0.655
Bodaboda/bicycle	20(24.1%)	5(38.5%)	25(26.0%)			
Public service vehicle	42(50.6%)	6(46.2%)	48(50.0%)			

Private	3(3.6%)	0(0.0%)	3(3.1%)			
Who do you live with						
Partner	60(72.3%)	7(53.8%)	67(69.8%)	2.955	3	0.399
family relative	19(22.9%)	5(38.5%)	24(25.0%)			
Friend	2(2.4%)	1(7.7%)	3(3.1%)			
None	2(2.4%)	0(0.0%)	2(2.1%)			

4.3. Prevalence of HIV Infections among Infants

A total of 96 HIV positive mothers of reproductive age (18-45 years) with infants aged 3-18 months participated in the study. Out of the sampled population, 13.5 % (95% CI=10.1 to 16.9%) of the infants below 18 months were found to be HIV positive despite their mothers being on the PMTCT program shown in figure 4.1. Most (64.6%) were female and 35.4% were male. However the relationship did not show any statistically significant between gender and the status of the infant ($\chi^2 = 0.758$, df = 1, p-value = 0.384).

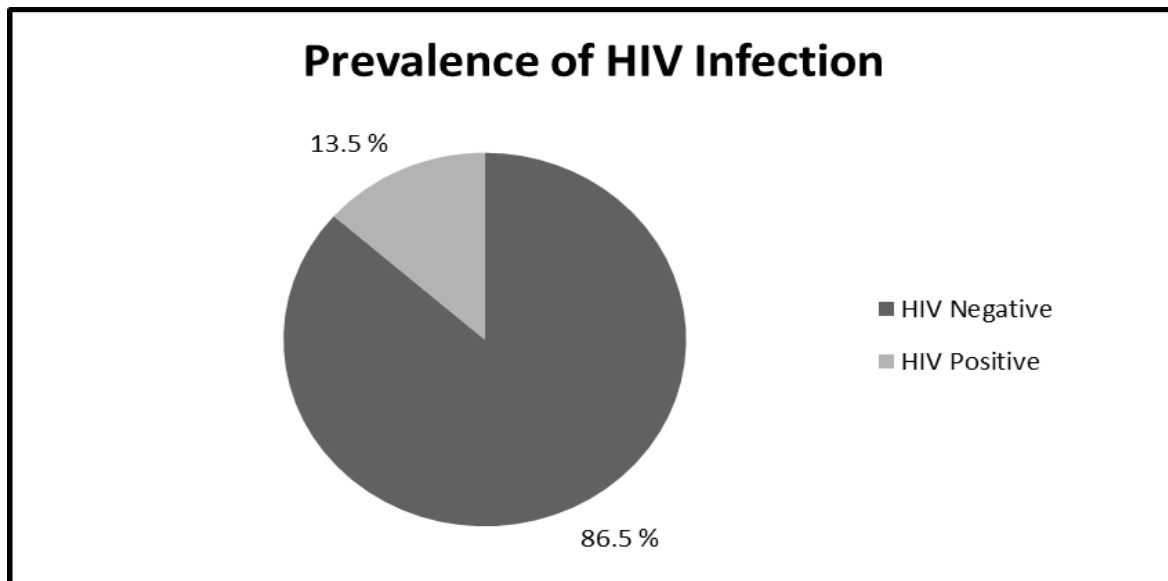


Figure 4.1: Prevalence of HIV infection

4.3.1. HIV Positivity Rate among Infants

All the respondents indicated that their infants had been tested for HIV status and this was confirmed by looking at their PMTCT records known as HIV Exposed Infant (HEI) records. Out of those infants who were tested and found out to be infected by their mothers, majority (8.3%) became HIV positive after a repeat test was done giving a difference of 4.1 %. This indicates that HIV infection doubled during breast feeding of infants. While those who were tested 3 times

turned negative could be attributed to effectiveness of the PMTCT program in follow up of mothers with infants until completion of the program. This result indicated that the rate of HIV infection increased with breast feeding the infants. As shown in figure 4.2.

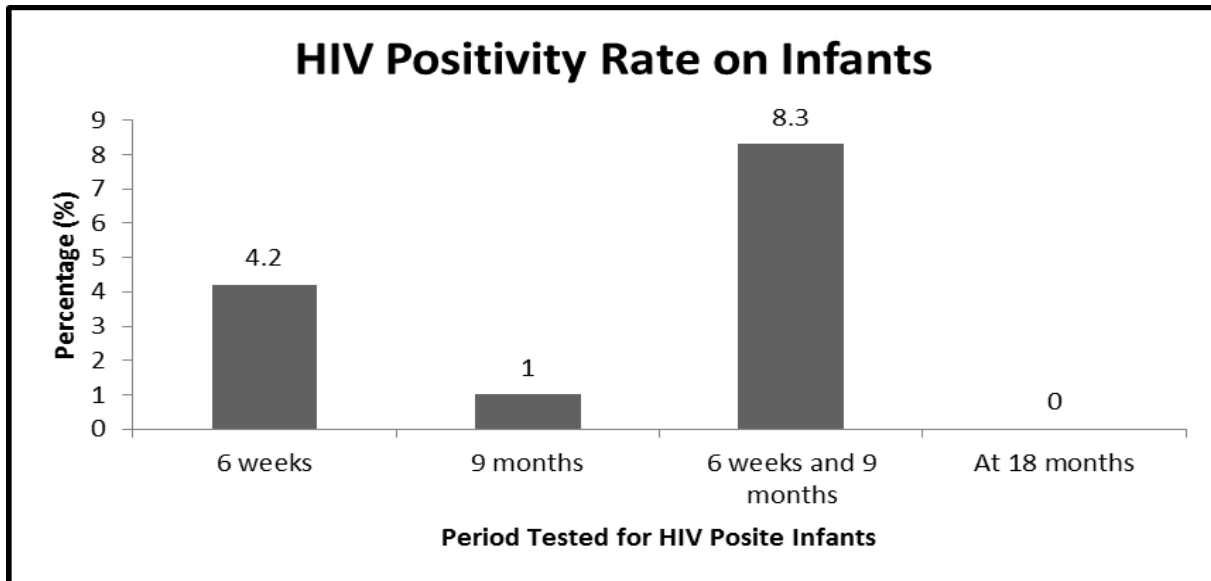


Figure 4.2: HIV Positivity Rate among Infants

4.4. Factors Associated with HIV Infections among Infants

4.4.1. Respondent’s HIV Testing

More than half (54.2%) of the respondents knew their HIV status with the current infant during their antenatal visits while pregnant, while voluntary counseling and testing (24 %) and during delivery at 24 % and 19.8 % respectively. Others specified as home visit by a health worker and during admission in the ward. From the results it shows that most HIV testing and counseling is effective in the hospital.

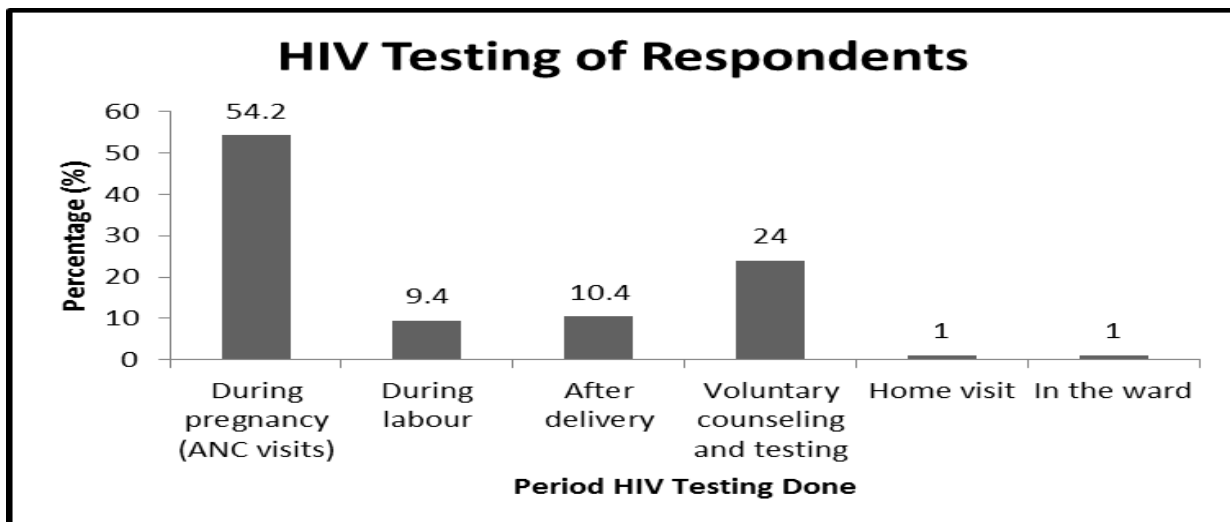


Figure 4. 3: HIV Testing of Respondent

4.4.2. Antenatal Visits with Current Infant

The respondents were asked on when they started their ANC clinics. Almost half (47.9%) indicated that they started their antenatal visits in the first (0-3 months), followed by (37.5%) at 4-6 months while least were those who did not attend any clinic at (5.2%).

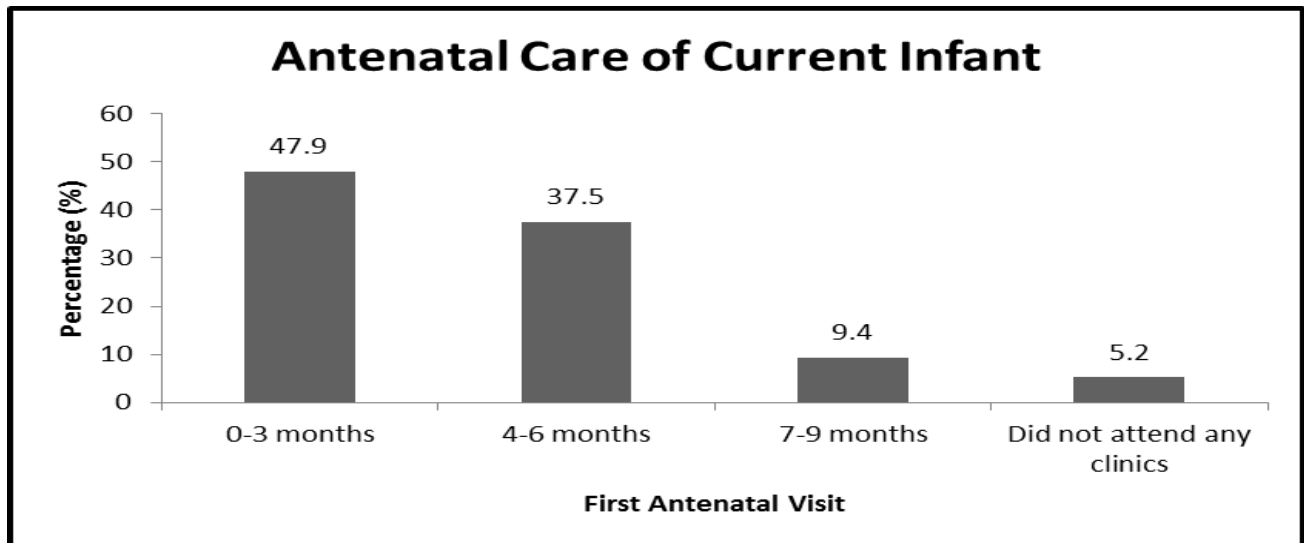


Figure 4.4 : Antenatal Visit with Current Infant

4.4.3. Missed Clinic Appointments for Infants

Sixteen (16.7%) indicated they missed clinical appointments. For those who missed stated the reasons as indicated in the table 4.3 below. Majority (31.2%) indicated they had travelled, followed by 18.7 % who said that they were preoccupied with their work. Whereas others indicated that they forgot, not feeling well representing 12.5%. The least indicated baby was sick and lacked transport to the facility.

Table 4. 3 : Reasons for Missed Appointments

Reasons for Missed Appointments	Frequency(n=16)	Percentage (%)
Travelled	5	31.2
Preoccupied with work	3	18.7
Forgot	2	12.5
I was unwell	2	12.5
Baby was sick	1	6.3
Lack of transport	1	6.3
None response	2	12.5

4.4.4. Maternal PMTCT Intervention

On being asked on the type of treatment used for PMTCT intervention, most (45.8%) of the respondents specified on use of Cotrimoxazole and multivitamin for their PMTCT intervention, while already on ART (41.7%). Others were on single dose Nevirapine (sd NVP) at 4.2 %, sd NVP+AZT (5.2%) and sd NVP+3TC+AZT (3.1%).

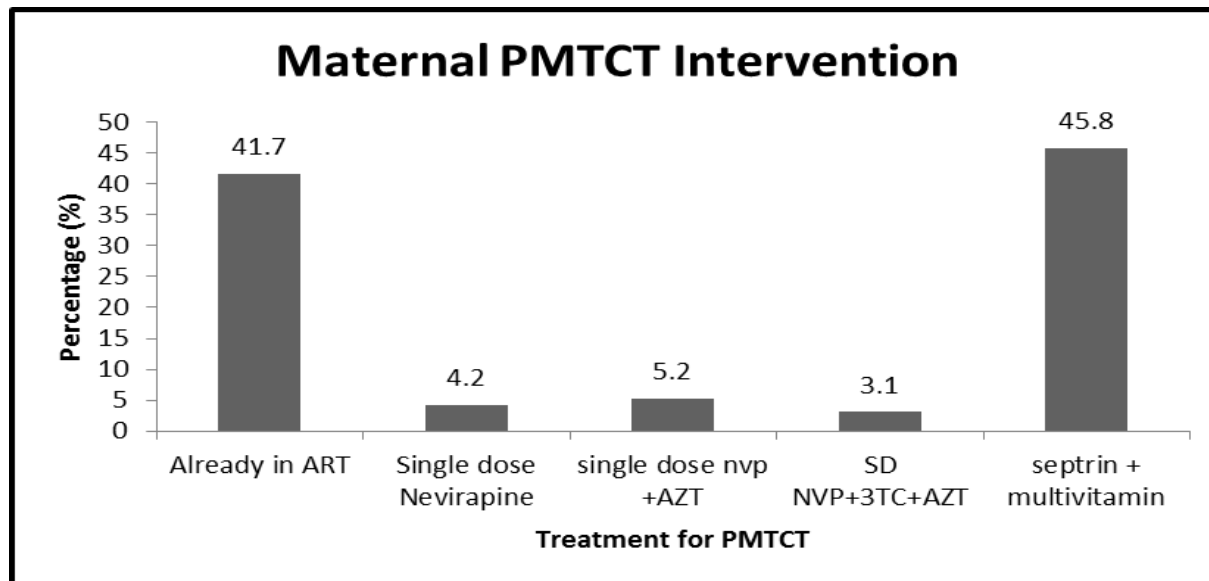


Figure 4.5: Maternal PMTCT Intervention

4.4.5. Anti-retroviral Prophylaxis at Birth

Majority (86.5%) of the respondents indicated that they received Infant ARV prophylaxis at birth whereas others said otherwise. This is illustrated in table 4.4 below.

Table 4.4 : Infant ARV Prophylaxis at Birth

Infant ARV prophylaxis at birth	Frequency	Percentage (%)
Received infant prophylaxis	83	86.5
Did not receive infant prophylaxis	13	13.5
Total	96	100

4.4.6. Follow up Treatment for Infants

Majority (92.7%) indicated sd NVP given to their infants, followed by 3TC+AZT+Kaletra at 4.2% while others specified on Cotrimoxazole and multivitamin at 3.1%.

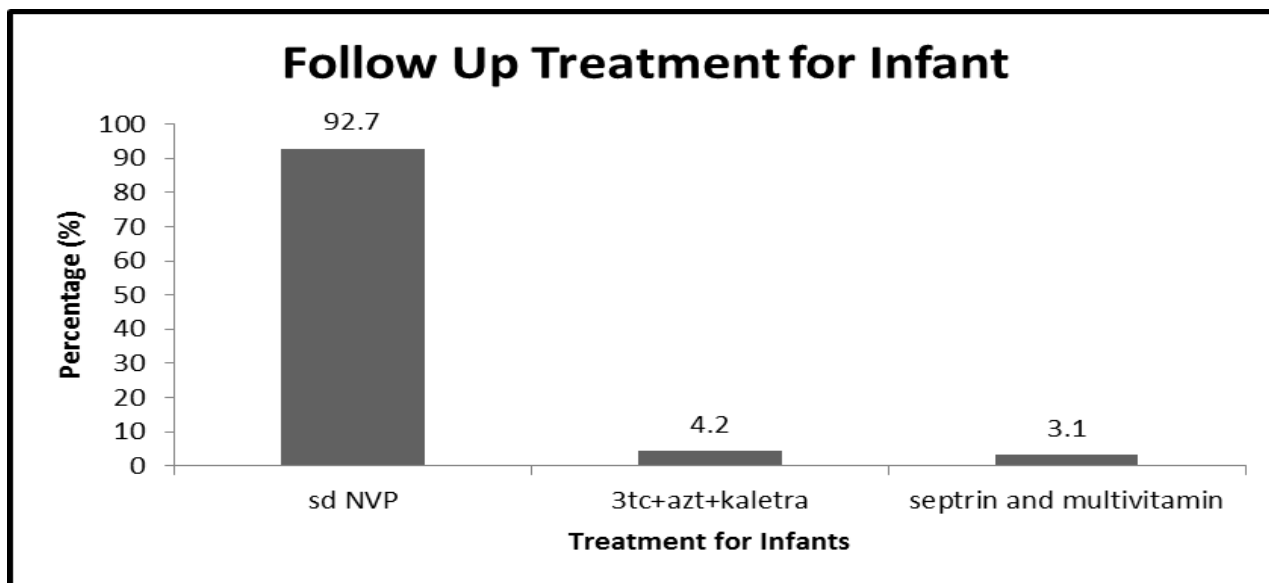


Figure 4.6: Follow Up Treatment for Infant

4.4.7. Adherence to Treatment

Table 4.5 indicates that 88.5% of mothers on PMTCT adhered to the treatment and 93.8% of infants also adhered to treatment as reported by the respondents.

Table 4.5 : Adherence to Treatment

Respondents	Treatment	Frequency(n=96)	Percentage (%)
Mothers	Adherence	85	88.5
	Non-adherence	11	11.5
Infants	Adherence	90	93.8
	Non-adherence	6	6.2
Total		96	100

4.4.7.1. Reasons for Missed Treatment

Of the respondents who indicated that they missed their treatment either for themselves or their infants stated that they travelled out of town and drugs were not available. Other reasons indicated by the respondents were work related, forgotten, had personal issues due to low self-esteem this led to non-adherence to treatment. Poverty issues also were indicated by lack of money.

Table 4.6 : Reasons for Missing Treatment for Mothers and Infants

Reasons for missing Treatment	Frequency	Percentage (%)
Mother	<i>n=11</i>	
Drug out of stock	1	9.1
Travelled out of town	3	27.2
Forgot	1	9.1
Lack of money	1	9.1
Travelled due to job	1	9.1
Personal issues	2	18.2
Non response	2	18.2
Infants	<i>n=6</i>	
Drugs out of stock	2	33.33
Travelled out of town	2	33.33
Non response	2	33.33

4.4.8. Place of Delivery

Majority (88.5%) of the respondents reported they delivered in the health facility while 9.4 % at home and the least (2.1%) on way to hospital. Out of those who delivered at the health facility, majority (76%) indicated they did not have caesarean section.

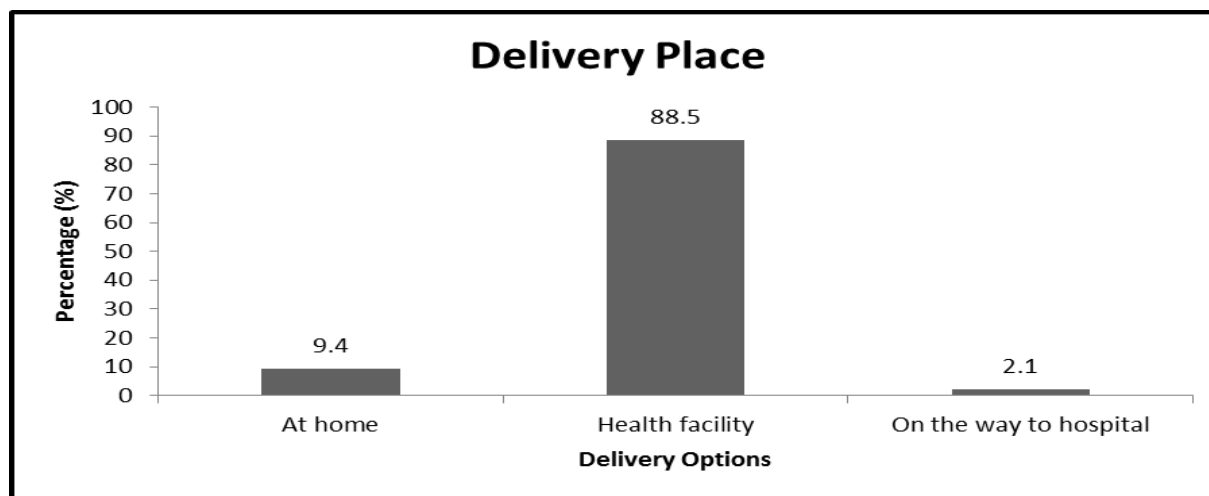


Figure 4.7 : Place of Delivery

4.4.9. Admission of Infant

Upon asked on whether the infants have been admitted before, 22.9% reported so. The majority (27.4%) of the respondents stated that their infants were admitted of diarrhea and vomiting, anemia with malaria followed and Malaria at 13.6 %. Others were anemia, convulsions, pneumonia and tuberculosis.

Table 4.7 : Reasons for Infant Admission

Reasons for admission	Frequency (n=22)	Percentage (%)
Anemia	2	9.1
Anemia with Malaria	3	13.6
Convulsions due to fever	2	9.1
Diarrhea and vomiting	6	27.4
Difficulty in breathing	2	9.1
Malaria	3	13.6
Pneumonia	2	9.1
Tuberculosis	1	4.5
Non response	1	4.5
Total	22	100

4.4.10. Feeding Options

From figure 4.8 below, majority (76%) opted for exclusive breastfeeding for 6 months. These was followed by mixed feeding at 14.6 %.The least were exclusive formula milk and replacement feeding at 4.2 % and 5.2 % respectively.

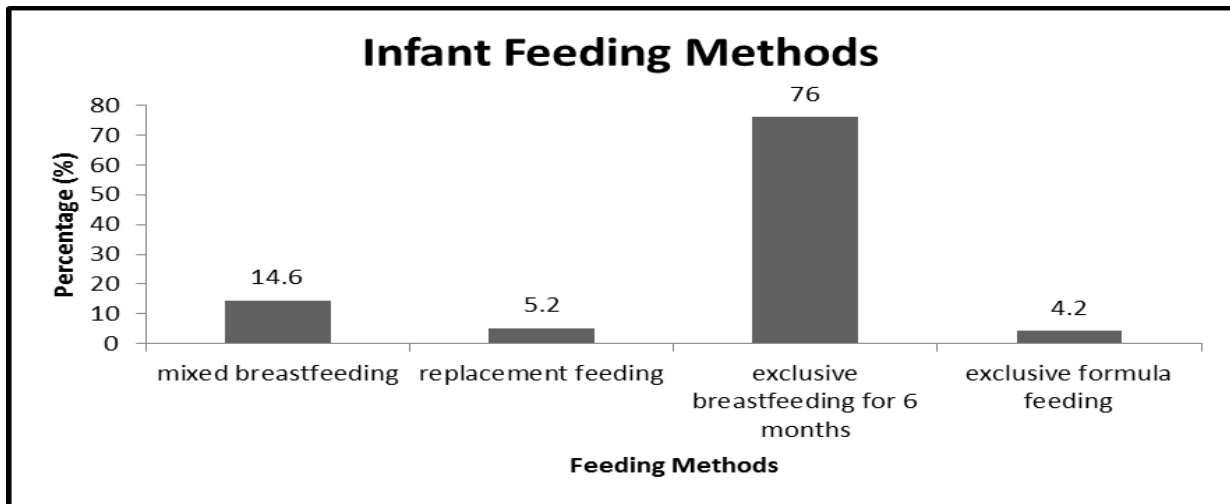


Figure 4.8: Infant Feeding Methods

4.4.11. Choices of Infant Feeding Methods

The respondents' perceived choice of feeding was mainly affordability at 75%.They further indicated affordable alone at 63.5%, affordable with stigma issues at 4.2% and affordable and effectiveness at 7.3%. Others indicated effectiveness at 15.6% and stigma issues at 9.4%.

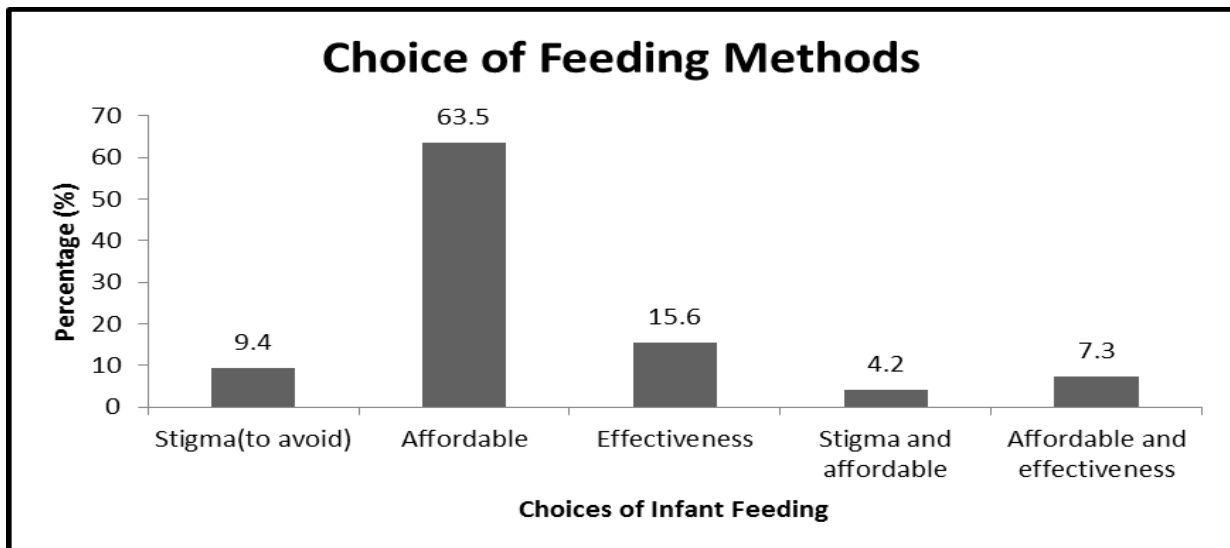


Figure 4. 9 : Choices of Feeding Options

4.4.12. Rate of Disclosure

Majority (68.8%) of the respondents were able to disclose their HIV status. A total of 31.2% respondents did not disclose their HIV status. Out of the respondents who did not disclose their HIV status, the perception of stigma issues was rated highest at 12.5%, followed by fear at 10.4%, those who did not indicate any reason was rated 5.2% and the least (3.1%) indicated those who lived alone.

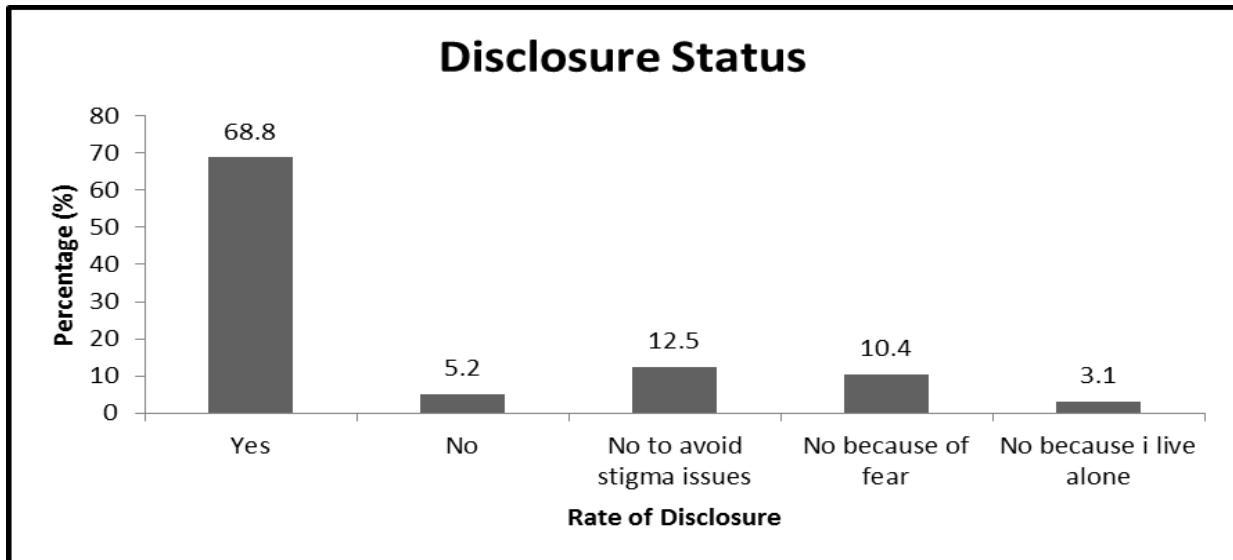


Figure 4.10 : Rate of HIV Disclosure

4.4.13. Disclosure Status

Majority (60.4%) who disclosed indicated their partners, followed by friend and relative at 7.3% and family members was least rated at 1%.

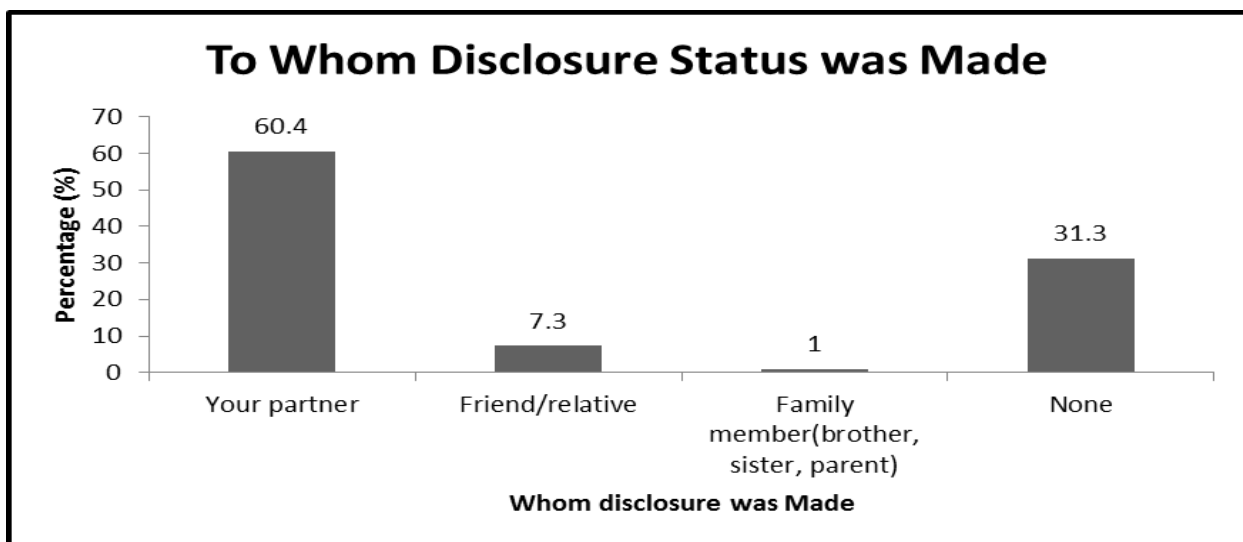


Figure 4.11: Disclosure Status Made to Whom

4.5. Relationship between the Common Contributing Factors and HIV Status

From the table 4.8, all contributing factors were cross tabulated and Pearson chi square used with the HIV status of the Infant. Those that were found to be statistically significantly (p-value = 0.001) were place of delivery ($\chi^2 = 29.289$, df=2, p-value= 0.001), infant prophylaxis at birth 25.586, df=1, p-value=0.001), follow up medication of the infant ($\chi^2= 20.496$, df=2, p-value=0.001)and infant feeding methods ($\chi^2 = 48.149$, df=3, p-value=0.001). The infant feeding options was a risk factor in MTCT of HIV whereas place of delivery, ARV prophylaxis and follow up medication were found to be protective in MTCT of HIV.

Table 4.8 : Bivariate Analysis of Factors Associated to HIV Status of Infants

Contributing Factors	HIV status		Total n(%)	χ^2	df	p value
	Negative n(%)	Positive n(%)				
Starting of antenatal visits						
0-3 months	43(51.8%)	3(23.1%)	46(47.9%)	4.477	3	0.214
4-6 months	28(33.7%)	8(61.5%)	36(37.5%)			
7-9 months	8(9.6%)	1(7.7%)	9(9.4%)			
Didn't attend clinics	4(4.8%)	1(7.7%)	5(5.2%)			
HIV Testing with Current Infant						
During pregnancy (ANC visits)	48(57.8%)	4(30.8%)	52(54.2%)	10.711	5	0.057
During labour	8(9.6%)	1(7.7%)	9(9.4%)			
After delivery	7(8.4%)	3(23.1%)	10(10.4%)			
Voluntary counseling and testing	19(22.9%)	4(30.8%)	23(24.0%)			
Home visit	1(1.2%)	0(0.0%)	1(1.00%)			
In the ward	0(0.0%)	1(7.7%)	1(1.0%)			
Maternal PMTCT Intervention						
Already in ART	37(44.6%)	3(23.1%)	40(41.7%)	6.142	4	0.189
Single dose Nevirapine	4(4.8%)	0(0%)	4(4.2%)			
Single dose Nevirapine +AZT	3(3.6%)	2(15.6%)	5(5.2%)			
SD NVP+3TC+AZT	3(3.6%)	0(0%)	3(3.1%)			
Septtrin + Multivitamin	36(43.4%)	8(61.5%)	44(45.8%)			
Place of delivery						
At home	4(4.8%)	5(38.5%)	9(9.4%)	29.389	2	0.001
Health facility	79(95.2%)	6(46.2%)	85(88.5%)			

On the way to hospital	0(0%)	2(12.5%)	2(2.1%)			
ARV Prophylaxis at Birth						
Received ARV Prophylaxis	78(94.0%)	5(38.5%)	83(86.5%)	29.586	1	0.0001
Did not receive ARV prophylaxis	5(6.0%)	8(61.5%)	13(13.5%)			
Follow up medication of Infant						
Sd NVP	80(96.4%)	9(69.2%)	89(92.7%)	20.496	2	0.0001
3TC+AZT+Kaletra	3(3.6%)	1(7.7%)	4(4.2%)			
Septrin and Multivitamin	0(0.0%)	3(23.1%)	3(3.1%)			
Admission of Infant						
Admitted	18(21.7%)	4(30.8%)	22(22.9%)	0.525	1	0.469
Not admitted	65(78.3%)	9(69.2%)	74(77.1%)			
Infant Feeding Methods						
Mixed feeding	4(4.8%)	10(76.9%)	14(14.6%)	48.149	3	0.0001
Replacement feeding	4(4.8%)	1(7.7%)	5(5.2%)			
Breastfeeding for 6 months	71(85.5%)	2(15.4%)	73(76.0%)			
Exclusive formula feeding	4(4.8%)	0(0.0%)	4(4.2%)			
Disclosure of HIV status						
Yes	60(72.3%)	6(46.2%)	66(68.8%)	4.712	4	0.318
No	4(4.8%)	1(7.7%)	5(5.2%)			
No because of stigma issues	10(12.0%)	2(15.4%)	12(12.5%)			
No because of fear	7(8.4%)	3(23.1%)	10(10.4%)			
No because I live alone	2(2.4%)	1(7.7%)	3(3.1%)			
To Whom Disclosure Status was made						
Partner	52(62.7%)	6(46.2%)	58(60.4%)	4.216	3	0.239
Friend/Relative	7(8.4%)	0(0.0%)	7(7.3%)			
Family member(parent, brother, sister)	1(1.2%)	0(0.0%)	1(1.0%)			
None	23(27.7%)	7(53.8%)	30(31.3%)			

4.6. Knowledge of Mothers on Prevention of Mother to Child Transmission

4.6.1. Knowledge on Ways of HIV Transmission

The respondents were asked about the different ways that HIV can be transmitted by providing with the options listed on the structured interview questionnaire. Of the respondents, most (36.4 %) could list unprotected sexual intercourse followed by mother to child transmission at 29.2% then blood transfusion at 21.9% and least was use of infected sharp instruments at 12.5%. The findings reveal that there is knowledge in the transmission of the HIV. This is illustrated in figure 4.12.

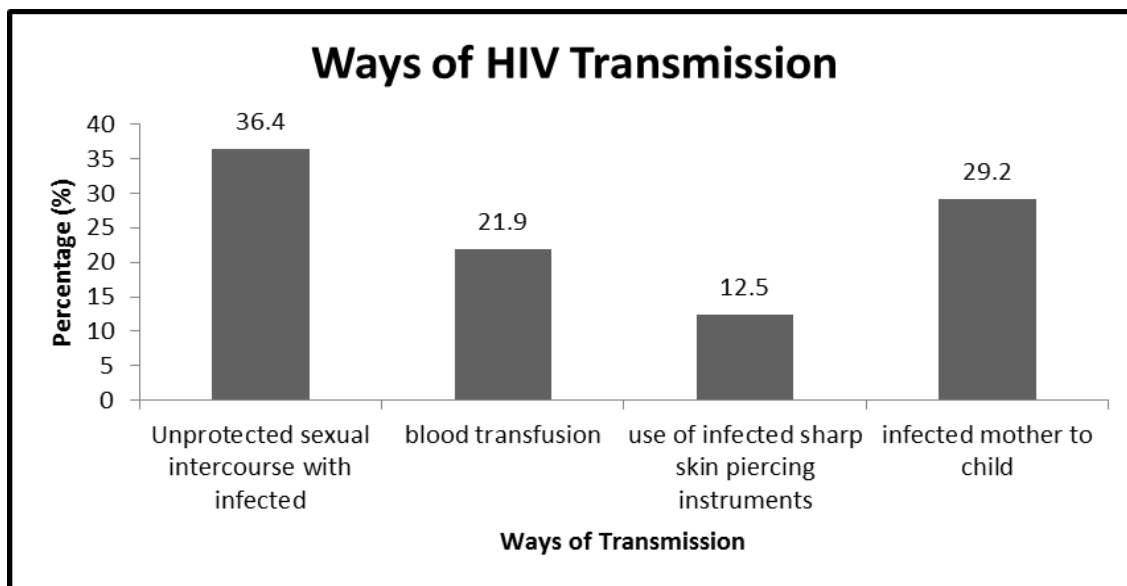


Figure 4.12 : Knowledge on HIV Transmission

4.6.2. Source of Information on Vertical Transmission

The respondents were asked specifically if they had heard about mother-to-child transmission. All (100%) indicated they have heard on MTCT of HIV even though none mentioned it alone when they were asked on ways HIV is transmitted (see section 4.6.1). This could indicate that more emphasis is laid on sexual intercourse as a mode of transmission compared to mother to child transmission which has serious implications for mother-to-child transmission of HIV among pregnant women.

Of the respondents, when asked where they first heard about mother to child transmission of HIV. Most (69.8%) of the respondents indicated that their first source were health care workers

followed by radio stations at 16.7 %, newspapers and magazines at 7.3 % and television at 3.2 %. While others indicated billboards, family& friends, and school were least rated at 1%. As shown in figure 4.13

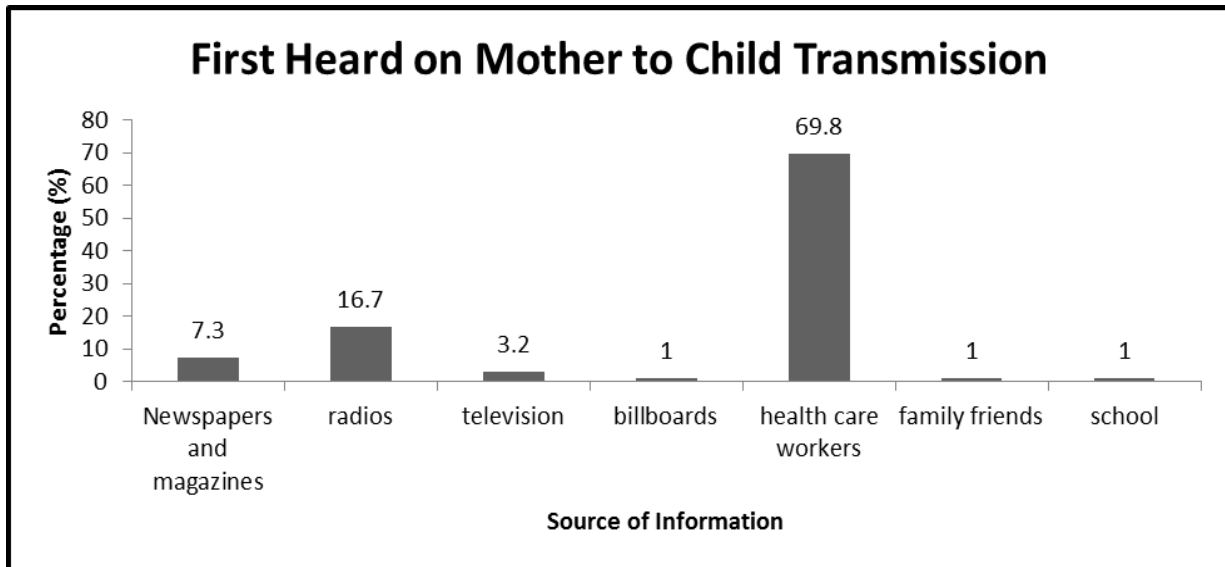


Figure 4.13 : Knowledge on Source of Vertical Transmission

4.6.3. Knowledge on Modes of Vertical Transmission

The respondents were asked on modes of vertical transmission. Most (33.3%) of the respondents stated during breast feeding followed by delivery (28%) then pregnancy (18%). Others who specified 2 modes of transmission indicated delivery and breastfeeding at 13.5 % and delivery and pregnancy at 7.2 %.

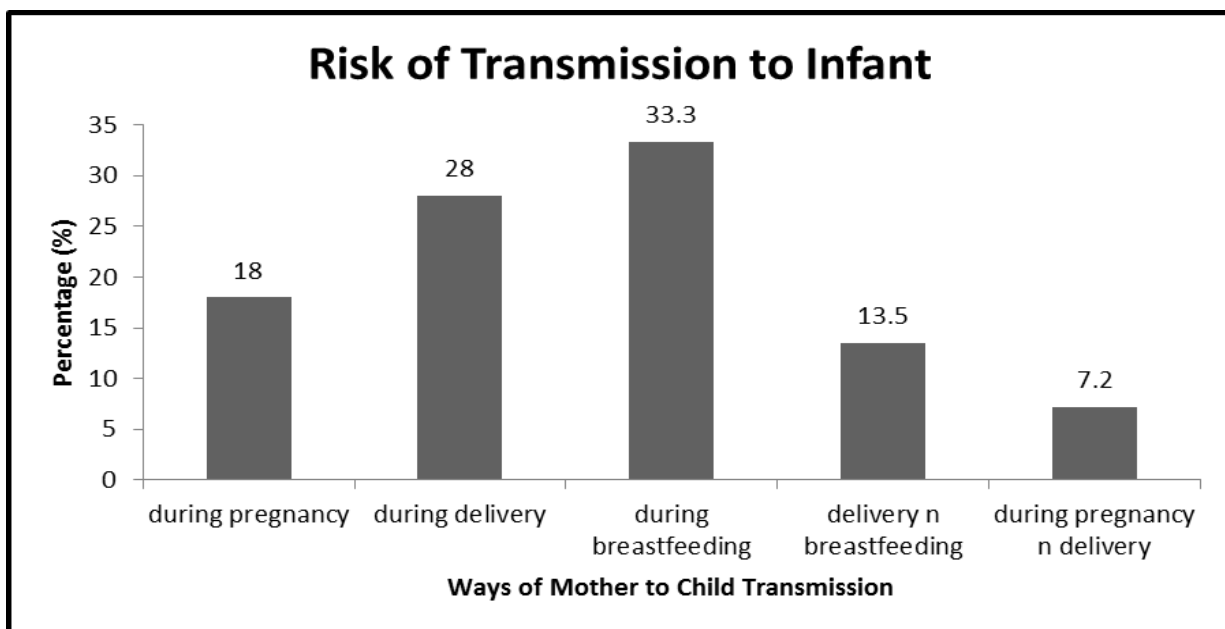


Figure 4.14 : Knowledge on Modes of Vertical Transmission

4.6.4. Knowledge on Prevention Measures during Pregnancy

Upon being asked on their level of awareness on preventive measures during pregnancy, perception to reduce mother to child transmission during pregnancy, most(64.6%) indicated use of medication and this was followed by better nutrition and use of condom at 16.7% and 15.6% respectively. The least was abstinence at 2.1%. Those who stated that they did not know was at 1%.

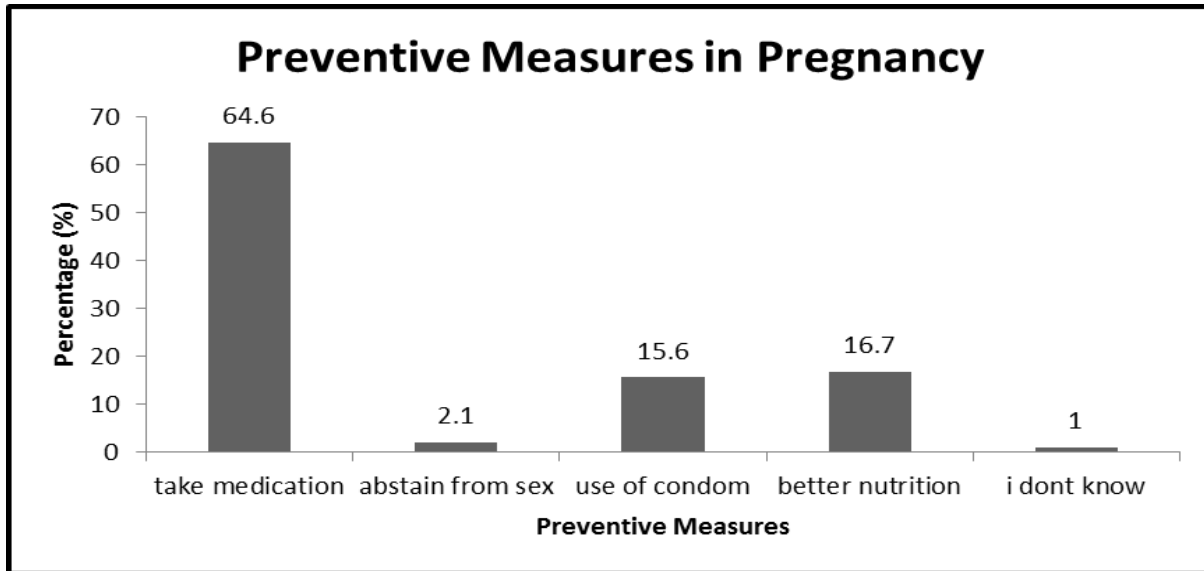


Figure 4.15 : Knowledge on Preventive Measures during Pregnancy

4.6.5. Knowledge on Preventive Measures during Delivery

The mothers when asked on their level of knowledge on preventive measures during delivery. Most (46.9%) indicated use of medicine especially ARV and this was followed by sought management during labour by use of skilled health care provider at 33.3 %. While 11.5 % indicated that they were not aware on how to prevent risk of transmission. Of the respondents, the least (8.3 %) indicated use of caesarian delivery. This is shown in figure 4.16.

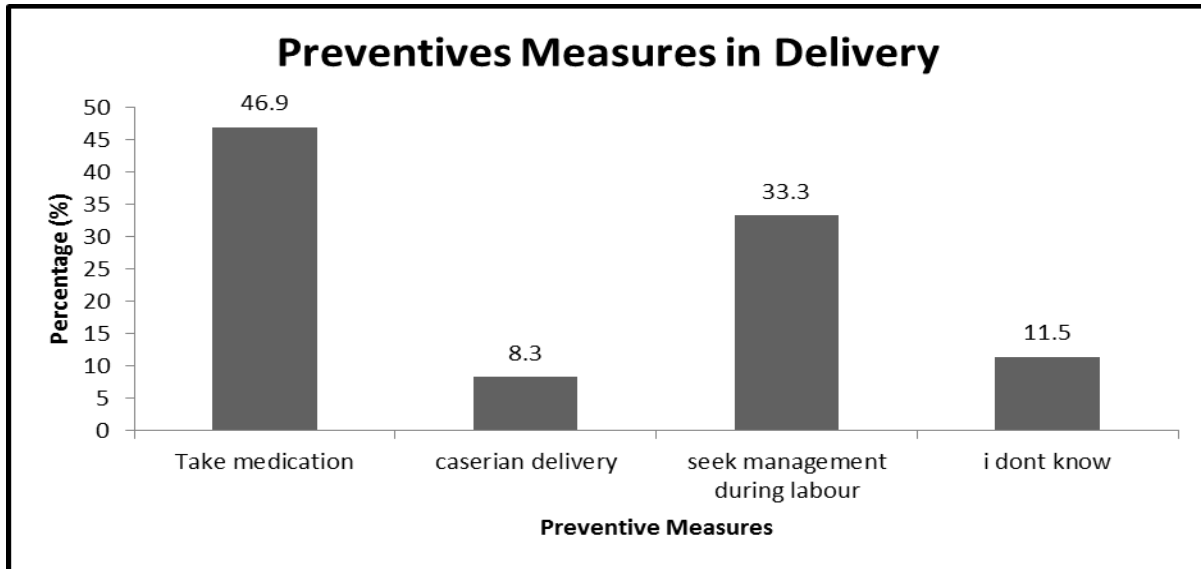


Figure 4.16: Preventive Measures during Delivery

4.6.6. Knowledge on Prevention Measures during Breastfeeding

The respondents were probed and options given on ways of reducing the risk of transmission during breastfeeding. Majority (47.9 %) stated use of breast milk for 6 months only, followed by early treatment at 27.1 %, then all that was stated at 11.5 % and early weaning at 7.3 %. The least rated were being tested and nutrition for both the mother and the baby at 4.2 % and 2.0 % respectively. As shown in figure 4.17 below.

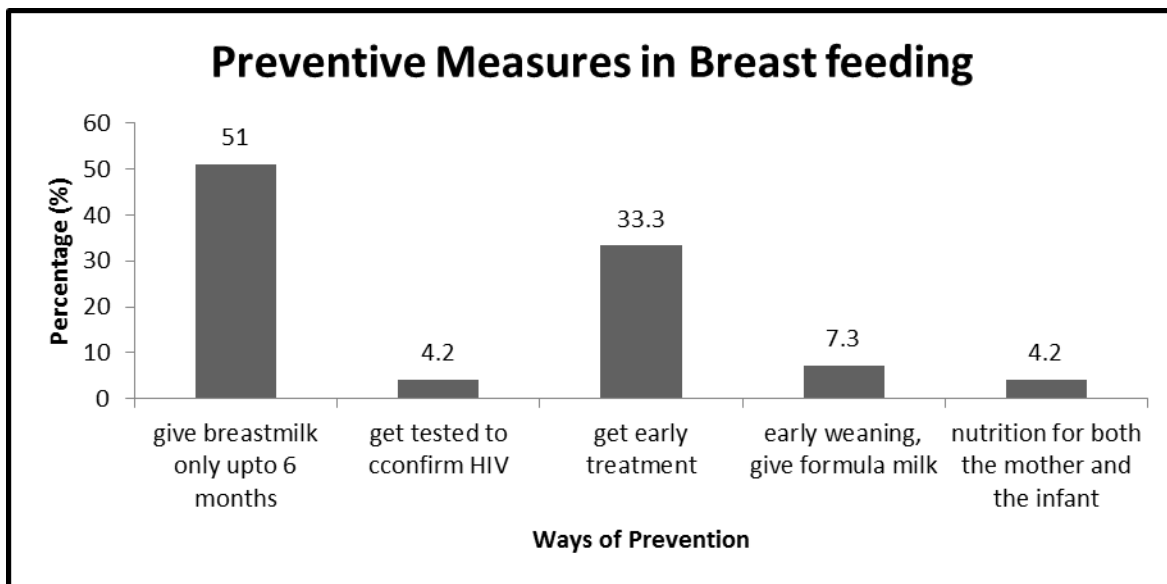


Figure 4.17 : Knowledge on Prevention Measures during Breastfeeding

4.7. In depth Interviews for Health Care Workers

4.7.1. Introduction

A total of 10 health care workers involving nurses, registered clinical officers and nutritionists were interviewed on PMTCT program in the facility. All the respondents regarded the PMTCT programme as essential in the community as a whole since its inception and all indicated that they have been trained on PMTCT.

4.7.2. Background Information of Health Care Workers

The respondents were between 30 years to 52 years of age. They have worked in the unit between 2 to 8 years. A total of 6 nurses, 2 registered clinical officers and 2 nutritionists were purposely sampled and interviewed to explore perception regarding PMTCT program in the hospital.

4.7.3. Demographic Factors That Influence Mothers on PMTCT Program

The perceptions of the respondents on demographic factors that influence mothers on PMTCT program included income status, level of education, stigma and discrimination and distance from the facility. These emerged as themes became a challenge on the issue of follow up and use of antiretroviral drugs. The low level of education was perceived in terms on adherence of antiretroviral treatment .The mothers could not adhere due to lifelong taking on the medication as stated by '*... tired of taking ARV medication for life*' (respondent 7) and this led to loss of follow up in the PMTCT clinic.

Stigma and discrimination was also elicited as a challenge when HIV women disclosing their HIV status to their partners was found to be difficult because most were either sent away by their husbands after disclosure' and this was perceived of lack of male involvement in the PMTCT activities as stated by *respondent 6 'Women have been left with their husbands because of disclosure issues'*

Financial status was viewed as a challenge in terms of clinic appointments; this was perceived by many mothers lacking transport to the facility because of where they stay. At times they came in a wrong date for their appointments due to availability of money. As stated by respondent 8 '*..our women are very poor even they do not come here for their clinic appointments or come when transport is available*' this was also compounded with distance from the facility that most of the women who stayed far away missed their clinic appointments.

4.7.4. Infants Born of HIV Positive Mothers Turn Negative

The general view of most of the respondents felt that the donor funding by CARE Kenya and NASCOP to PMTCT program has been beneficial to the community with continued support of antiretroviral therapy to women and their families and commodities like testing kits and reagents for DBS, transportation of DBS for analysis, training staff on the programme and having updates on the same and training of mother mentors in the PMTCT programme follow up of mothers in the PMTCT programme. This enabled the quality of care through staff patient interaction through counseling on importance of HIV testing and use of ARVs drugs in elimination of mother to child transmission. As stated by respondent 10 *“...this requires quality of care especially use of treatment, completion of PMTCT intervention and follow up of the client from testing and adhering to treatment as per the regime, also availability of drugs and resources like staffing and finances’.*

4.7.5. Institutional Factors Associated with New HIV Infections

Although all staff reported to be trained on the PMTCT program since their deployment in the MCH unit, most felt that challenges were in counseling skills of some of their members and this was elicited by rotating of staff between departments in the hospital. This led to staff re- training and that all cadres of staff needed more skills and training on ARV treatment in pregnancy particularly use of HAART. *‘staff rotating between departments is so high until the committed staff are taken away and this leads to training of newly deployed staff in the unit’* respondent 5 and this led to long waiting time of clients for their service. Also stated *‘more training is needed on ARV drugs due to most patients come with side effects of the treatment’* (respondent 2)

Shortage and inadequate supplies of commodities such as laboratory reagents, HIV testing kits in the facility were also perceived in the loss of follow up of the clients during their ANC clinics or during PMTCT clinics. The ARV drugs were perceived to be readily available due to donor support of the PMTCT program. *‘Mothers were sent to Oresi health centre when the supplies and kits were not available in the ANC’* (respondent 3).

4.7.6. Staff Support to Improve Delivery of PMTCT Services

The staff generally viewed the program was supported by donors like CARE Kenya and NASCOP Kenya. Most felt that without donor support the PMTCT program will not be sustained on staff training, sensitization of the program, availability of testing kits for early infant diagnosis and HIV status of the mothers during ANC visits. To improve MTCT services, most staff

perceived optimal staffing levels due to high volume of clients, training newly deployed staff and emphasized on partnering with donors for consistency of supplies and materials. *‘Co-ordinate with partners to ensure reagents are always available for testing and DBS machine to be available in the hospital’* (respondent 1).

CHAPTER FIVE: DISCUSSION

5.1. Introduction

This chapter presents a discussion of the study findings. It will focus on prevalence of new HIV infection, factors associated with the new HIV infections, knowledge of mothers with infants and perception of health care workers on PMTCT program in the hospital.

Prevention of mother to child transmission is a challenge among infants born of HIV positive mothers despite being on PMTCT program. According to this study, among HIV exposed infants on follow up at the PMTCT clinic at Kisii teaching and referral hospital it was found there was still new HIV infections among infants born of HIV positive mothers.

5.2. Characteristics of Study Participants

The study participants were HIV positive mothers on PMTCT program, infants below 18 months born of HIV positive mothers and tested for HIV and Health care workers working at the MCH clinic for more than 5 months and this included nurses, registered clinical officers, nutritionist and counselors. In this study, a total of 96 HIV positive mothers with infants below 18 months and HIV tested and 10 health care workers were interviewed.

The mothers in this study were informants and decision makers for the infants, both the mothers and infants were following up in the PMTCT clinic until 18 months of age. The age distribution with the mothers was between 18-45 years with a mode of 30 years this is in tandem with the reproductive age group between 15-49 years of age. Most of the mothers were in a relationship and has a net secondary school attendance rate at 21.9% lower to Kenya National Bureau of Statistics (2013) which was at 23% in the whole of Kisii County. Most of the respondents, stated that they were in a relationship either as self-employed or housewives with most having a low income of less than 2 dollars a day. This indicated that most were of low income status showing poverty levels. This was further supported by the health care workers indicating loss to follow up of their clients due to lack of transport since the respondents indicated that they mostly came by public vehicle to the facility.

The health care workers indicated that they had worked for a minimum of 2 years to a maximum of 8 years in the MCH clinic. This might be attributed with the capacity building on PMTCT program though there was a challenge of staff shortage due to high turn up of PMTCT clients in the facility.

5.3. Prevalence of New Infection among Infants

Prevention of mother to child transmission to less than 5% in breastfeeding mothers and to less than 2 % in none breastfeeding mothers is a global target to eliminate new infections among children born of HIV positive mothers. The current global plan is targeting 90 % reduction of new infections by 2015 although nationally is 50% reduction by 2015, 75% by 2020 and 100% elimination by 2030. Kisii being a high incidence county ranked at number five out of nine in Kenya. Kisii County contributes 5.9% of the national new HIV infections at an incidence rate of 0.76 percent according to the Kenya HIV estimate technical report for 2013 as compared to nationally incidence rate at 0.39% (NASCO, 2014). From this study, it was found that the prevalence of infants born of HIV positive mothers was 13.5% compared to national current prevalence of mother to child transmission at 14% (NASCO, 2014). Furthermore a cohort PMTCT health record done in the hospital from 0-9 months indicated that 6/81 turned out to be positive at 7.4%. Comparable to study done by NASCO (2012) on Kenya Aids Indicator Survey, on the 90% of the mothers or infants who utilized PMTCT intervention 16% were HIV positive at six weeks (NASCO, 2012). In the study, the new HIV infections among infants were found after delivery and most were found infected by 9 months as compared at 6 weeks. Whilst those who indicated they have been tested thrice were all found to be negative. These findings shows that the HIV infections may be due to maternal antibodies of the mother as stated by Schleiter (2009) in health law of testing infants that HIV transmission in infants is approximately 9% at day 3 of life and rises to approximately 18% later in life. The testing of infants early in life show that they are exposed to maternal antibodies until they produce their own antibodies at around 18 months of age (Schleiter, 2009).

Findings in the study indicates that the risk of transmission doubled by 9 months from 6 weeks this can be attributed by breast feeding or mixed feeding methods. This also indicate that most of the infants who came for Early Infant Diagnosis still came for PCR test indicating that there is utilization and awareness of EID in the hospital setting. Those who were negative could be attributed to be delivered by health care professional and use of ARV prophylaxis at birth and follow up treatment of the infant. This is consistent with other studies and reviews on the PMTCT program (Tudor Car et al., 2013, Gourlay et al., 2013, Ndubuka et al., 2013).

5.4. Factors Associated with HIV Infection among Infants

Generally from the study, the factors that were associated with reduction of new HIV infections had an association which were statistically significant ($p < 0.001$). These were place of delivery, infant prophylaxis at birth, and follow up medication of the infant.

The findings in this setting indicated that those who delivered at the hospital reduced the risk of HIV infection among infants born of HIV positive mothers although caesarian mode of delivery did not achieve statistical significance because of the small sample size. This study is consistent with the findings done by Ngwede et al., (2013) that those who delivered in hospital reduced MTCT of HIV. In cross tabulation with level of education and delivery place it was statistically significant that those with high education chose health facility delivery. This was consistent with study findings in Kitale by Kinuthia et al., (2011) that those who did not deliver in a health facility were less educated.

Anti-retroviral treatment in Kisii Teaching and Referral hospital is partnered with NASCOP and CARE Kenya who support PMTCT program in training staff, providing drugs and testing kits for free on PMTCT program. This has enabled the delivery of the PMTCT services in the facility. Use of antiretroviral drugs from other studies and systematic reviews has shown to reduce the risk of mother to child transmission by lowering plasma viral load in pregnant women or when given as post-exposure prophylaxis in the newborns (Siegfried et al., 2011, Ngwede et al, 2013, WHO, 2013, CDC, 2014). It was evident from the study that use of ARV prophylaxis at birth, single dose Nevirapine and follow up treatment to infants reduced the risk of transmission.

A systemic study review done by Gourlay et al., (2013) and Kinuthia et al., (2011) indicated that some participants who missed treatment gave the reasons which were consistent with findings in this study where a proportion of mothers and infants indicated that they missed treatment due to travelling out of town, drugs being out of stock, forgotten and work related issues. Missed treatment attributed to travelling out of town and lack of transport was attributed to socio economic status of the study participants in accessing the facility due to poverty issues. This was augmented by the healthcare workers perception on their PMTCT clients that distance to the facility were some of the issues in loss to follow up of client and therefore poor quality of care to clients.

Infant feeding is a major influence in the child survival in the context of HIV. Findings indicated that those who were HIV infected were mostly due to mixed feeding and this was significance

($\chi^2=48.149$, $p<0.001$) whilst breastfeeding for 6 months was protective were similar to Ngwede et al., (2013). The use of exclusive formula milk was also found to be very effective with the PMTCT goal to zero elimination of new infections by 2015.

The rate of disclosure was high in a relationship especially partners, this findings were similar to a study done at the same hospital on disclosure of sero status to sexual partners by Ngigi et al., (2011). However, an important aspect in the findings of this study indicated the highest proportion of those who did not disclose was due to stigma issues this is further supported by health care workers in their interviews. This was found to be inconsistent with findings (Ngigi et al., (2011).

5.5. Level of Knowledge on Prevention of Mother to Child Transmission

Findings indicate that all the mothers were knowledgeable on HIV transmission and aware of mother to child transmission , this is attributed to intensive counseling of the mothers during HIV testing through provider initiated testing and counseling services by health care workers. Such high level of awareness have been reported by a study done in Kenya on vertical transmission showed that (99%) of the PMTCT mothers reported that they were counseled on the program (Musalia et al, 2010). Similar findings were found in a study done in Nigeria by Adeleke et al., (2009).

In the study, health care workers were the main source of information this can be attributed to testing of the mothers and the infants, antenatal visits and hospital delivery by a skilled health care professional. Other source of information were the radio, television, others billboards, family members and schools. Furthermore, this has been augmented by staff been updated on PMTCT program.

Findings in this study indicated that the breast feeding was risk found to be risky in mode of transmission. Although most of the participants indicated to be using this method of feeding this could be attributed to the low socio economic status of the mothers because of affordability. This finding is also consistent with WHO (2012) which states that exclusive breast milk is the only affordable means of feeding infants in very low resource setting. The level of knowledge in this study could be due to information the participants obtained from the health care workers during their antenatal visits and also sensitization done by health workers during their health talks.

Findings on preventive measures were found not to be well understood by few participants especially during delivery and pregnancy. The findings reveal a knowledge gap on preventive measures on delivery and pregnancy this could be why some of the respondents were not utilizing the PMTCT services. The finding is consistent to a study done in Nigeria by Adeleke et al., (2009).

5.6. Perception of Health Care Workers on PMTCT Program

Findings in the qualitative data showed that the PMTCT program is funded and staff is well equipped through training. They have a positive attitude that the program is very useful in the community since it has decreased the new HIV infections on their clients. Although the challenges perceived were low level of knowledge on mothers, financial status, distance from facility, shortage of staff as evidenced by poor counseling skills and rotation of staff between departments, inconsistency of supplies and commodities. This study is consistent with the findings by Nuwagaba-Biribonwoha et al., (2007), (Gourlay et al., et al., 2013; Tudor Car et al., 2013).

CHAPTER SIX : CONCLUSION AND RECOMMENDATION

6.1. Introduction

This chapter gives summary of the study findings in line with the study objectives of the research topic. The global plan on HIV epidemic and the Kenyan government are aiming in virtual elimination of new HIV infections from MTCT through the PMTCT program. The study has confirmed that there is still new HIV infections especially in low resource limited setting and the main reason for these new HIV infections is through mixed feeding. In general the PMTCT service utilization was found to effective, high level of early infant diagnosis and a high level of awareness of MTCT/PMTCT in the part of the women.

On the part of the health care workers there perceived lack of competence in counseling and lack of resources as a result missed opportunities to PMTCT mothers.

6.2. Conclusion

This study shows that there are factors which are significantly associated with new HIV infections among infant born of mothers on PMTCT program at Kisii Teaching and Referral Hospital. Mixed feeding was found to be the risk factor in the transmission of HIV infections.

On the other hand, factors that were significantly associated with reduction of HIV infections from mother to child transmission were use of antiretroviral treatment in children and this included use of Nevirapine at birth, anti-retroviral treatment of the infant and hospital delivery. Support from donors was found to be beneficial on the PMTCT program in training staff and availability of resources.

An observation made in the study there was virtual elimination of HIV infections on all the respondents who used exclusive formula feeding and use of highly anti-retroviral therapy though this being a low resource setting. Additionally there were gaps in our knowledge concerning preventive measures of MTCT of HIV especially in during pregnancy and delivery.

The findings of this study provide valuable information for improving the quality of programs to prevent mother to child transmission of HIV in the study setting and other areas.

6.3. Recommendation

Based on the findings, following recommendations were made

- Health care workers as the main source of information should be exposed for regular training programme by the hospital to update their skills and knowledge on PMTCT update provide quality care to their clients/ patients.
- Being a low resource setting, health care workers must encourage exclusive breast feeding period for 6 months and stop breast feeding if acceptable, feasible, affordable, sustainable and safe since early cessation of breastfeeding leads to transmission of new HIV infection in infants
- HIV exposed mothers should be invited during peer support group to encourage mothers fellow mothers to embrace exclusive breast milk for 6 months since is found to be protective
- Self –stigmatization and discrimination is a challenge on disclosure issues, choice of infant feeding methods and adherence to treatment therefore health care workers should sensitize couple counseling the HIV positive mothers, on infant feeding methods and treatment adherence.
- Health care workers at the maternal and child health to empower mothers on use of exclusive formula feeding and provide anti-retroviral therapy to all infants in the virtual elimination of the new HIV infections.

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Appendix Ia : Information Sheet for mothers

Title of the study

FACTORS ASSOCIATED WITH NEW HIV INFECTIONS AMONG INFANTS BORN TO HIV POSITIVE MOTHERS AT KISII TEACHING AND REFERRAL HOSPITAL, KENYA

Introduction

My name is Mercy Nyanchama Aberu. I am pursuing a Master of Science degree in Community Health Nursing, School of Nursing Sciences at The University of Nairobi. I am the researcher in this study that aims to determine factors associated with new HIV infections among infants below 18 months of age born to mothers on PMTCT program at Kisii Teaching and Referral Hospital. Your infant has been selected to take part in this study. Since the infant is too young to decide on his/her own, I request to interview you and ask you questions about your baby and his HIV status. Your participation is voluntary and the information you give will be treated with confidence. The interview will take about 15-25 minutes of your time.

The detailed information about the purpose, procedure, confidentiality, risks, benefits and the right to participate in this proposed study are described below. You can ask any questions you have at any time.

Purpose of the study

The purpose of this study is to establish the factors associated with new HIV infection among infants below 18 months of age tested for HIV and born of HIV positive mothers on PMTCT follow up. It is expected to address the factors contributing to new HIV infection among infants despite mothers being followed up on PMTCT programme and their level of knowledge on PMTCT.

Study procedures

If you and your infant accept to join the study, you will be asked questions regarding your background information; factors contributing to new infections this will include PMTCT interventions, ARV prophylaxis feeding options, disclosure issues, delivery place and mode of delivery place, your level of knowledge on PMTCT and HIV status of the infant. Socio-economic

information will include income per month, occupation, feeding options, disclosure of HIV status and PMTCT intervention. In regard to your infant, you will give information on the age, gender, delivery place and mode of delivery, HIV status, feeding options, use of ARV prophylaxis and any admissions.

Benefits

You and your infants recruited for this study will assist us to assess the factors associated with new HIV infection among infants born of HIV positive mothers on PMTCT program. The findings will be a basis for scaling up PMTCT program at Kisii Teaching and Referral Hospital.

Risks

I do not anticipate any risks or discomforts to you and your infant during this study apart from your precious time. You will be requested to avail yourself for an interview at a time and place that you are most comfortable. You may become worried or anxious about discussing matters of your infant's HIV status and such related questions. Your infant's HIV status will be verified but be assured that every effort will be made to protect your privacy and confidentiality while you are participating in the study.

Compensation

If you agree to participate, there will be no payment to you and your child for this study.

Confidentiality and privacy

Information obtained about you and your infant for this study will be kept confidential and will be used only for the purposes of the study. The interviews will take place in private. No name(s) will be used in the questionnaire; instead a unique code for each informant will be used. The information will only be accessible to the researchers of this study.

Participation in this research study is voluntary

You and your child are free to decline to participate in this research study at any point without penalty.

Contact person

The researcher, Mercy Nyanchama Abere, 0711902795, email address mercyabere@gmail.com

The Supervisor, Professor Grace Omoni, 0727466460, email address omonigrace@hotmail.com

Your rights as a study participant

This research has been approved and reviewed by the KNH/UON Ethics Review Committee. This committee has reviewed this study in order to help protect participants. If you have any questions about your right as a study participant you may contact to :

The Chairperson, KNH/UoN-ERC, Professor, A. N. Guantai, Tel: 726300-9, Email address, uonknh-erc@uonbi.ac.ke.

Appendix Ib : Consent of agreement

I read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction. I consent voluntarily to participate as a subject in this study and understand that my infant and I have the right to withdraw from the study at any time without penalty.

As a mother I am hereby giving permission for my infant (initials) _____ to participate in this research.

Mother's name (initials): _____ Mother's signature: _____ Date: _____

Witness' name: _____ Witness' signature: _____ Date: _____

Interviewer's name: _____ Interviewer's signature: _____ Date: _____

Researcher's name: _____ Researcher's signature: _____ Date: _____

Appendix Ic : Consent Explanation in Kiswahili Version

MAMBO AMBAYO YANAHUSISHWA NA VIRUSI VYA UKIMWI KUTOKA KWA MAMA KWENDA KWA MTOTO MCHANGA KATIKA HOSPITALI YA RUFAA NA MAFUNZO YA KISII, KENYA

Utangulizi

Hujambo, jina langu ni Mercy Nyanchama Abere. Mimi ni mwanafunzi wa uuguzi katika kiwango cha ‘Masters’ katika chuo kikuu cha Nairobi. Utafiti ambayo ninafanya inalenga mambo ambayo inahusishwa na kwa virusi vya ukimwi kwa watoto wachanga kutoka kwa kina mama o katika hospitali ya rufaa na mafunzo ya Kisii. Mtoto wako mchanga amechaguliwa katika utafiti huu na kwa vile ningependa kwa hisani yako kama mama mzazi kwa vile yeye hawezi kuamua peke yake. Ningependa kuulizia wewe unipe ruhusa ya kuangalia hali ya virusi vya ukimwi kwa mtoto wako mchanga. Utafiti huu utachukua muda wa masaa ishirini peke yake.

Maelezo kamili juu ya madhumuni, kielekezo, usiri, hiari ya kuwa mtafiti yote yataelezwa kwa wazi. Una uhuru wa kuuliza swali lolote kwa wakati wowote.

Madhumuni ya utafiti huu

Madhumuni ya idhini hii ni kukupa taarifa zinazohusiana na utafiti huu ambayo itakayokuwezesha kufanya maamuzi kuhusu ushiriki. Uko huru kuuliza maswali yatakayo fananua masuala ambayo tutakayo jadili ili kukupa ridhaa idhini yako.

Lengo

Utafiti huu unatokana na uambukizaji wa Virusi Vya Ukimwi kutoka kwa mama kwenda kwa mtoto. Lengo nikujua sababu ambazo bado kuna virusi vya Ukimwi kwa watoto wachanga ilihali hali hii inaweza kuepukika kwa kutumia madawa ya kurefusha maisha (ARVs) katika mpango wa uzuiaji wa virusi vya ukimwi kutoka kwa mama kwenda kwa mtoto.

Ushiriki

Kushiriki katika utafiti huu utahusisha kujibu maswali ambayo utaulizwa na mtafiti ambaye atakuwa anajaza maswali katika dodoso.

Faida

Matokeo ya utafiti huu utasaidia katika mipango ya Uzuiaji wa ukimwi kutoka mama kwenda kwa watoto. Itakuwa mwongozo katika serikali na hospitali ya rufaa na mafunzo ya Kisii

Madhara

Hakuna hatari yo yote itajiri nafsi yako au ya mwanao katika ushiriki katika utafiti huu. Na wala hautakatazwa huduma.

Usiri

Ningependa kukuhakikishia usiri utakuwa wa maanani. Hakuna yeyote atakaye tambuliwa katika utafiti huu, utaulizwa maswali ukiwa peke ako katika chumba ambacho utakuwa ni wewe pekee. Matokeo ambayo yatapatikana katika utafiti huu yatawekwa kwa siri na mtafiti na hakuna yeyote atafikia ila mtafiti mwenyewe.

Ushiriki kwa hiari

Ushiriki utakuwa ni wa hiari na hakuna hatari wala taratibu vamizi kushiriki. Na kutoshiriki pia ni a hiari na hakuna adhabu yoyote katika kutoshiriki.

Je umekubali kuwa mhusika?

Ndio La

Kwa ufafanuzi wo wote tafadhali uko huru kuwasiliana na nambari ya simu ya mtafiti, Mercy Nyanchama Abere, Chuo Kikuu cha Nairobi, Shule ya Uguzi, nambari ya simu ni 0711902795, anwani ya barua pepe ni mercyabere@gmail.com.

Msimamizi mkuu ni Prof. Grace Omoni, nambari 0727466460, anwani ya barua pepe omonigrace@hotmail.com

au

Katibu wa kamati ya kutoa kibali, cha kufanya utafiti cha UON/KNH, Professor, A. N. Guantai, nambari ya simu: 726300-9, au anwani ya barua pepe uonknh-erc@uonbi.ac.ke.

Appendix Id : Kibali cha Mshiriki

Mimi nakubali kushiriki

Sahihi ya mshiriki Tarehe

Sahihi ya mtafiti Tarehe

Appendix Ie : Informed Consent for Health Care Providers

Title of the study

FACTORS ASSOCIATED WITH NEW HIV INFECTIONS AMONG INFANTS BORN TO HIV POSITIVE MOTHERS AT KISII TEACHING AND REFERRAL HOSPITAL, KENYA

Introduction

My name is Mercy Nyanchama Aberu. I am pursuing a Master of Science degree in Community Health Nursing, School of Nursing Sciences at The University of Nairobi. I am the researcher in this study that aims to determine the factors associated with new HIV infections among infants below 18 months of age born to mothers on PMTCT program at Kisii Teaching and Referral Hospital. I request to interview you about your views on PMTCT program in the facility. Your participation is voluntary and the information you give will be treated with confidentiality. The interview will take about 15-25 minutes of your time.

The detailed information about the purpose, procedure, confidentiality, risks, benefits and the right to participate in this proposed study are described below. You can ask any questions you have at any time.

Objective of the study

The purpose of this study is to determine factors associated with new HIV infections among infants below 18 months of age born of HIV positive mothers on PMTCT follow up and your views as health care workers on PMTCT at Kisii Teaching and Referral Hospital.

Study procedures

If you accept to join the study, you will be asked questions regarding your views on PMTCT programme.

Benefits

Your participation in the study will assist us to assess the factors associated with new HIV infections among infants born of HIV positive mothers on PMTCT program. The findings will be a basis for scaling up PMTCT program at Kisii Teaching and Referral Hospital.

Risks

I do not anticipate any risks or discomforts to you during this study apart from your precious time. You will be requested to avail yourself for an interview at a time and place that you are most comfortable. You may become worried or anxious about discussing matters of pertaining PMTCT programme. Be assured that every effort will be made to protect your privacy and confidentiality while you are participating in the study.

Compensation

If you agree to participate, there will be no payment for this study.

Confidentiality and privacy

Information obtained about you in the study will be kept confidential and will be used only for the purposes of the study. The interviews will take place in private. No name(s) will be used in the questionnaire; instead a unique code for each informant will be used. The information will only be accessible to the researchers of this study.

Participation in this research study is voluntary

You are free to decline to participate in this research study at any point without penalty.

Contact person

The researcher, Mercy Nyanchama Abere, 0711902795, email address mercyabere@gmail.com

The Supervisor, Professor Grace Omoni, 0727466460, email address omonigrace@hotmail.com

Your rights as a study participant

This research has been approved and reviewed by the KNH/UON Ethics Review Committee. This committee has reviewed this study in order to help protect participants. If you have any questions about your right as a study participant you may contact to :

The Chairperson, KNH/UoN-ERC, Professor, A. N. Guantai, Tel: 726300-9, Email address, uonknh-erc@uonbi.ac.ke.

Appendix II : Questionnaire For Mothers with Infants

FACTORS ASSOCIATED WITH NEW HIV INFECTIONS AMONG INFANTS BORN OF HIV POSITIVE MOTHERS AT KISII TEACHING AND REFERRAL HOSPITAL, KENYA

Questionnaire no..... Serial No: Date of interview:

Introduction

The purpose of this study is get information about you and your infant to assess the status of new HIV infection despite being in PMTCT programme. Please answer all of the questions. The status of your infant will be assessed using the mother booklet or health registers. The information is confidential and will be used for data analysis purposes.

SECTION I: Background Information

1. How old are you in years?
2. Marital status
 - Single Widow Married
 - Divorced/separate cohabiting Others' specify.....
3. Level of education
 - None Primary Secondary
 - Tertiary Other (s) specify.....
4. Occupation
 - House wife Self-employed Formal employment
 - Informal/casual employment Others' specify
5. How much is your estimated income per monthKenya shillings
6. How do you come to this facility ?
 - Walking Boda boda / Bicycle
 - Public Service Vehicle Private
7. Who do you live with
 - Your partner Family/ relatives Your partner Friend
 - None

SECTION II: Factors Contributing to New Infections

8. When did you start your antenatal visits with your current infant ?
 0- 3 months 4-6 months 7-9 months Did not attend any clinics

9. When did you learn of your current HIV status ?
 During pregnancy (ANC visits) During labour After delivery
 Voluntary counseling and testing Other(s) specify.....

10. What maternal PMTCT intervention are you using ?
 Already on ART Single dose Nevirapine
 Single dose Nevirapine + AZT Single dose + AZT
 Single dose +3TC + AZT Cotrimoxazole +Multivitamin

11. Have you ever missed treatment ?
 Yes No

i)If yes to the above, how many times ?

ii) What are the reasons for missing the treatment ?

.....

12. Where was your delivery with the infant ?
 At home At health facility On the way to hospital

i)If at the health facility, which mode of delivery ?

Caesarean section No Caesarian section

13. Did your infant receive ARV prophylaxis at birth ? Yes No

14. On follow up, what treatment did your infant use ?
 None Single dose Nevirapine Single dose Nevirapine + AZT
 Single dose Nevirapine + AZT Other (s) specify

15. Has your infant ever missed treatment ?

Yes No

i) If yes to the above, how many times ?

ii) What are the reasons for missing of the treatment ?

.....

16. Has your infant ever been admitted before ? Yes No

i) What was/were the reason for admission

.....

29. When can HIV be transmitted from the mother to her infant ?

- During pregnancy During delivery During breast feeding
 During pregnancy and Delivery During Delivery and breastfeeding

30. In your opinion,

i) What can a positive HIV mother do to reduce the risk of transmission of HIV to her child during pregnancy

- Take medication (specify) Abstain from sex Use of condom use/safer sex
 Better nutrition I don't know

ii) What can a positive HIV mother do to reduce the risk of HIV transmission to her baby during delivery?

- Take medication, specify Caesarean section at delivery
 Seek management during labour with skilled worker I don't know

31. What can a breastfeeding mother do to reduce risk of baby becoming infected with HIV during breastfeeding

- Give breast milk only up to 6 months Get tested if HIV to confirm
 Get early treatment Early weaning, give formula milk
 Both nutrition for mother and infant

Thank you for your participation

Appendix III : In-depth Interview Guide for Health Care Workers

FACTORS ASSOCIATED WITH NEW HIV INFECTIONS AMONG INFANTS BORN ON HIV POSITIVE MOTHERS AT KISII TEACHING AND REFERRAL HOSPITAL, KENYA

Introduction

I want to thank you for taking the time to meet with me today. My name is Mercy Nyanchama Abere and I would like to talk to you on the status of new HIV infections among infants born of HIV positive mothers on prevention of mother to child transmission (PMTCT) follow up. I am assessing the PMTCT program interventions to identify gaps in scaling up the interventions. The interview will take 15-25 minutes. I will be taking notes during the session and be sure to speak up so that I don't miss your comments. All responses will be kept confidential under lock and key and ensure that any information given in the report does not identify you as the respondent. Remember you don't have to talk about anything you don't want to and you may end the interview at any time.

Are there any questions about what I have just explained?

Are you willing to participate in this interview?

Health care worker initialsSignature..... Date

Researcher nameSignature..... Date

Interview Questions

I would like to collect information about you. What year were you born?

Please tell me your occupation and how long you worked in PMTCT program.

1. What are demographic factors influencing mothers' perception on PMTCT program

2. Why do you think some infants born to HIV positive mothers test negative?

Probe: *completing PMTCT intervention, use of ARV prophylaxis, use of triple therapy of anti-retroviral Therapy.*

3. What institutional factors do you think contribute to new HIV status on infants born on HIV positive mother on PMTCT program? What are some of the clinical factors that affect client adherence to PMTCT program?

4. Do you feel you are adequately trained on the PMTCT program? Why?

5. What sort of support would the hospital staff require to improve the delivery of PMTCT services?

Conclusion

Is there anything more you would like to add ?

This is the end of the interview thank you very much for your time.

Appendix IV : Approval Documents



UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
(254-020) 2726300 Ext 44355

KNH/UON-ERC
Email: uonknh_erc@uonbi.ac.ke
Website: www.uonbi.ac.ke



KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/241

Link: www.uonbi.ac.ke/activities/KNHUoN

9th July 2014

Mercy Nyanchama Abere
School of Nursing Sciences
College of Health Sciences
University of Nairobi

Dear Mercy

RESEARCH PROPOSAL: PREVENTION OF MOTHER TO CHILD TRANSMISSION: A FOCUS ON NEW HIV INFECTIONS AMONG PATIENTS BORN TO HIV POSITIVE MOTHERS AT KISII LEVEL 5 HOSPITAL (P215/04/2014)

This is to inform you that the KNH/UoN-Ethics & Research Committee (KNH/UoN-ERC) has reviewed and approved your above proposal. The approval periods are 9th July 2014 to 8th July 2015.

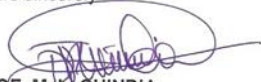
This approval is subject to compliance with the following requirements:

- a) Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- b) All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
- c) Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
- d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
- e) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
- f) Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
- g) Submission of an *executive summary* report within 90 days upon completion of the study
This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website www.uonbi.ac.ke/activities/KNHUoN.

Protect to Discover

Yours sincerely



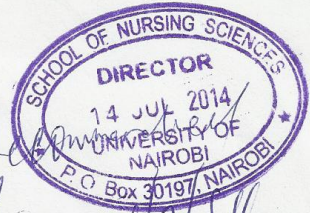
PROF. M.L. CHINDIA
SECRETARY, KNH/UON-ERC

- c.c. The Principal, College of Health Sciences, UoN
 The Deputy Director CS, KNH
 The Chairperson, KNH/UoN-ERC
 The Assistant Director, Health Information, KNH
 The Director, School of Nursing Sciences, UoN
 Supervisors: Prof. Grace Omoni, Mrs. Theresa M.A.Odero

Protect to Discover

Mn D Nyanchama

Mercy Nyanchama Aberé
P.O. Box 521,
ELDORET.
Email address: mercyabere@gmail.com.
Mobile No.: 0711902795
11th July, 2014.



Through the Director,
School of Nursing Sciences,

Supervisor of Research
[Signature]
14/7/14

To the Medical Superintendent,
Kisii Teaching and Referral hospital,
P.O. Box 92,
Kisii.

NOTED
Research office
to review & advise
[Signature]
17/7/2014

Dear Sir/Madam,

RE: APPLICATION TO CONDUCT ACADEMIC STUDY AT KISII TEACHING AND REFERRAL HOSPITAL

I am a student at the University of Nairobi taking Master of Science in Nursing – Community Health Nursing. I would like to study on ‘Prevention of Mother to Child Transmission: A Focus on New HIV Infections Among Infants Born of HIV Positive Mothers at Kisii Level 5 Hospital’.

The findings of the study will be a basis for scaling up PMTCT program to eliminate new HIV infections among infants for policy makers and the study will also be used by the Kisii level 5 hospital in planning health programs to mothers infected with HIV on PMTCT program.

Attached herein is my research proposal and approved copy of from KNH/UON Ethics Research Committee.

Your kind consideration in this matter will be highly appreciated. *17-7-14*

Thank you,

Yours faithfully,

Can proceed with data collection upon payment of 20000

Mercy Nyanchama Aberé (H56/79885/2012)

[Signature]
D Nyanchama

REPUBLIC OF KENYA



MINISTRY OF HEALTH
KISII TEACHING AND REFERRAL HOSPITAL

Telegrams:
Telephone:
E mail: kisiihospital@gmail.com
Ref: KL5/DRE/14/25/Vol.1
Date: 21th july 2014

DEPARTMENT OF RESEARCH
KISII LEVEL 5 HOSPITAL
P.O. BOX 92-40200
KISII


Mercy Nyanchama Abere

RE: Data Collection at KTRH

This is to inform you that the department of research at Kisii Level 5 Hospital has reviewed your proposal titled: **PMTCT: A focus on new HiV infections among infants born to HiV positive mothers attending MCH at KTRH.**The following are our comments:

You are authorized to proceed with data collection upon payment of **Two Thousand kshs(2,000/=)**.

Please ensure a copy of final Study report is sent to us for retention, information and use


Dr. Jeremiah Okatch
Department of Research

MEDICAL SUPERINTENDENT
KISII LEVEL 5 HOSPITAL
P.O. Box 92, KISII.

CC: 1. Medical Superintendent-Kisii Level 5;