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Parental Influence on HIV Vertical Transmission in Kenya

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Abstract

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Abstract

Mother-to-infant vertical transmission of HIV usually occurs during pregnancy, labor, delivery or breastfeeding. It is the third leading cause of transmission of HIV after sexual intercourse and blood transfusions. In 2008, 12 million women aged 15 years and above were anticipated to be living with HIV in countries within Sub-Saharan Africa. In this study, the association between parental HIV knowledge, attitudes and risk reduction practices, and HIV vertical transmission in Kenya were explored. The health belief model was used to help understand and interpret the findings. For this quantitative study, data were collected via surveys from 212 participants in 3 HIV clinics in Kenya. Data were analyzed using descriptive and inferential statistics. Around 45% of respondents lacked knowledge on key aspects of Prevention of Mother to Child Transmission (PMTCT) of HIV particularly on expressing and heat treating milk from HIV positive mothers to make it safe for their babies. About 65% of Participants had awareness towards Mother to Child Transmission (MTCT) of HIV. Logistic regression showed no association between socioeconomic factors and parental knowledge on MTCT of HIV. Logistic modeling found that there was association between attitude and MTCT, revealing that attitude increased the likelihood to influence MTCT. Being married was associated with reduced risk of MTCT of HIV. The overall results indicated gaps in knowledge and information packaging. The potential positive social change implication of this study is that factors related to HIV vertical transmission identified in this study might be utilized to develop and implement HIV prevention strategies to reduce HIV vertical transmission and decrease associated morbidity and mortality among this vulnerable population.

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Dedication

I would like to dedicate this work to my parents, wife, children, and friends, and to all the women in the world who continue struggling with HIV/AIDS, and the doctors working hard to save HIV-positive mothers from transmitting HIV to their newborns.

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My acknowledgements go to my dissertation committee members, particularly Dr. Loretta Cain (chair), Dr. Richard Jimenez (committee member), Dr. Patrick A. Tschida (URR), Dr Lydia Lunning (Form and Style), Dr Nancy Rea (Program Director), Dr Arfe Ozcan (CAO), faculty members, family members, and friends who have helped me reach this far in my academic journey. My gratitude as well to all those who assisted me in one way or another.

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Chapter1: Introduction to the Study

Introduction

A vertically transmitted infection is an infection passed directly from the mother to the fetus during pregnancy, labor, birth, and suckling through breast milk (World Health Organization [World Health Organization], 2010). The infection can be caused by one of the following pathogens: bacteria, virus, and in a few instances, parasites (Coutsoudis, Kwaan, & Thomson, 2010). Poor nutrition by the mother increases the risk and chances of prenatal infection (Goldenberg, 2003). The virus causing acquired immune deficiency syndrome (AIDS) is known as the human immune deficiency virus (HIV) and is normally passed from mother to offspring during pregnancy, labor, birth, and through breast milk (Coutsoudis et al., 2010). Vertical transmission is the third foremost cause of transmission of HIV/AIDS, after having sex with an infected person and blood transfusions (Markowitz, 2007). In 2008, 12million women aged 15years and above were estimated to be living with HIV in countries within Sub-Saharan Africa (United Nations, 2012). About 330,000 new infections among children below 15 years of age occurred worldwide in 2011, of which more than 90% were found in Sub-Sahara Africa (United Nations, 2012;WHO, 2010). About 40% of childhood HIV infections are through vertical transmission (Kaizad, Parikshit,& Mamatha, 2010). Studies have shown that when HIV-positive mothers are not initiated on treatment during pregnancy, the HIV transmission rate from mother to child is about 20% and 35% during breastfeeding (Coutsoudis et al., 2010). In the year 2008, mother-to-child transmission (MTCT) was reported to account for about 90% of cases of HIV in children (Thorne & Newell,

2007).It has been hypothesized that with proper management, vertical transmission of HIV can be reduced to approximately 1% (Coutsoudis et al., 2010). If antiretroviral (ARV) medicine is administered to the newborn and the mother, it significantly reduces transmission risk for the people who continue to feed their children with breast milk (White, Mirjahangir, Horvath, Anglemyer, & Read, 2014). Prevention measures in place include the following: taking ARV drugs when expectant, a voluntary operation to safely remove the baby from the womb, not feeding the child with breast milk, and giving the newborn ARV medications (Crans, 2010; Thorne & Newell, 2007). However, many of the above measures are not present or affordable to people in poor nations. The objective of this study was to assess parental influence on HIV vertical transmission in Kenya. I evaluated parental knowledge, perception, attitude, and practice towards HIV vertical transmission to further understanding of factors associated with vertical transmission of HIV (Drake, Wagner, Richardson, & John-Stewart, 2014)

Background

HIV and its associated condition, AIDS, are responsible for a high rate of morbidity and mortality in Africa, hence public health concern. HIV most frequently leads to AIDS when the immune system of the infected person deteriorates, leading to the development of opportunistic infections. Even though the continent has a low population (15.2%) globally, Sub-Saharan Africa alone reported about 69% of those living with HIV in the world and a mortality rate of 70% of all global deaths in 2011Kenya National Bureau of Statistics (KNBS). KNBS reported that 10% of HIV infection was a result of vertical transmissions. Prevention of HIV vertical transmission services in Kenya is

under-utilized, as reported by researchers. There has been delayed enrollment and few pregnant women visiting antenatal clinics for care (USAID, 2010; Wanyu, Diom, Mitchell, Tih, & Meyer, 2007). In Kenya, HIV prevalence is very high, especially among residents of the Luo Nyanza region of Kenya, where this study took place. Partners' attitude and practice in prevention of HIV vertical transmission has direct impact on HIV prevalence. For a zero HIV vertical transmission to be achieved, all the partners must be involved, hence I investigated knowledge, attitude, and practices of the biological parents to better understand the factors associated with HIV vertical transmissions.

Problem Statement

Prevalence of vertical transmission is the leading cause of infant HIV prevalence in the world (WHO/UNAIDS/UNICEF, 2011). HIV vertical transmissions in untreated populations in the United States and Western Europe have been estimated at 15% to 20% (WHO, 2010). Rates as high as 40%, have been reported in developing countries such as those in Eastern and Central Africa, including Kenya (Kaizad et al., 2010). According to Hardon, Vernooij, and Kyaddondo (2012), there has been a significant increase in the use of services geared towards reduction of HIV mother-to-offspring transmission in Sub-Saharan Africa over past the decade, although it has not reached the accepted universal standard of developed countries. These services in Kenya do not involve both parents (mother and father) where applicable (when both parents are present), hence resulting in lack of adherence to the services by the female parents, because of the lack of support from their husbands or men partners (in case one is not married) and stigmatization among the community members, especially in rural Kenya. These have led to not using

these services by almost half of all HIV-positive pregnant women, putting them at greater risk of passing HIV to their children during and after delivery(WHO, 2011).Every year about 1,500,000 women who are HIV positive become pregnant (WHO, UNAIDS,& UNICEF, 2011), and where the ARV drugs, nevirapine, are not available, there is likelihood that 15% to 45% of their babies will contract the virus causing AIDS (WHO, 2010). Aizire, Fowler, and Coovadia (2013) reported that approximately 390,000 newborn HIV infections were recorded in the year 2010 worldwide, and Sub-Saharan Africa has the highest prevalence, bearing the greatest problem as a result. The Kenyan Ministry of Health MOH-Kenya (2012) reported that MTCT of HIV is very alarming with approximately 37,000 to 40,000 children born with the virus every year. Therefore, I explored parental roles, knowledge, attitude, and practice regarding the vertical transmission of HIV in Kenya to better understand the factors associated with HIV vertical transmission.

Purpose

The purpose of this study was to examine the parental features influencing MTCTs of HIV in Kenya by investigation parents' involvement in prevention of HIV transmissions to children. I used quantitative techniques to determine how HIV-positive mothers' knowledge, attitude, and practice influence HIV prevention from mother to child in Kenya.

Research Questions

Research Question 1 (RQ1): What is the association between parental knowledge and HIV vertical transmission in Kenya?

Null: Hypothesis 1 ($H_0$1): There is no association between parental knowledge of HIV and HIV vertical transmission.

Alternative Hypothesis 1 ($H_1$1): There is an association between parental knowledge of HIV and HIV vertical transmission.

Research Question 2 (RQ2): What is the association of between parental attitude and HIV vertical transmission in Kenya?

Null Hypothesis 2 ($H_0$2): There is no association between parental attitude and HIV vertical transmission.

Alternative Hypothesis 2 ($H_1$2): There is an association between parental attitude and HIV vertical transmission.

Research Question 3 (RQ3): What is the association between parental sexual risk reduction practices and HIV vertical transmission in Kenya?

Null Hypothesis 3 ($H_0$3): There is no association between parental practices and HIV vertical transmission in Kenya.

Alternative Hypothesis 3 ($H_1$3): There is an association between parental practices and HIV vertical transmission in Kenya.

Theoretical Model

Becker's (1974) health belief model guided the study. This model can assist the participants in behavior change, reducing the risks that enhance HIV transmitted vertically. In this study, this model was best because it follows the principles of : alleged susceptibility, supposed severity, professed benefits, and applicability to the subject (Essex,Feldman, Manchester, & Maposhere, 2002). The model has several alternatives

such as disease projection and supposed benefit of disease management. Concepts of intermediating features were later included to relate various types of perceptions with predicted healthiness patterns. The weakness of the model can be individual awareness that a disease is an individual problem, or the opinion is correct (UNAIDS, 2005).

The patients, for instance, will perceive that any forms of treatment given to them will eventually result to prevention and curing the illness/disease in question. The health belief model aims to provoke the clients' views on the acceptance of vertical transmission of HIV prevention services; the model additionally provided the knowledge concerning the anticipated benefit of being involved in prevention services. The major process of this model was the communication between the healthcare provider and the patients because anticipated benefit is different from one individual to the next, whether good or bad. The insight resulting from the contact between knowledge, attitude, and practice; partner participation; and the challenges of HIV vertical transmission prevention services were assessed accordingly. Chapter 2 includes a detailed discussion of the model and how I used it to understand my data (Figure 1).

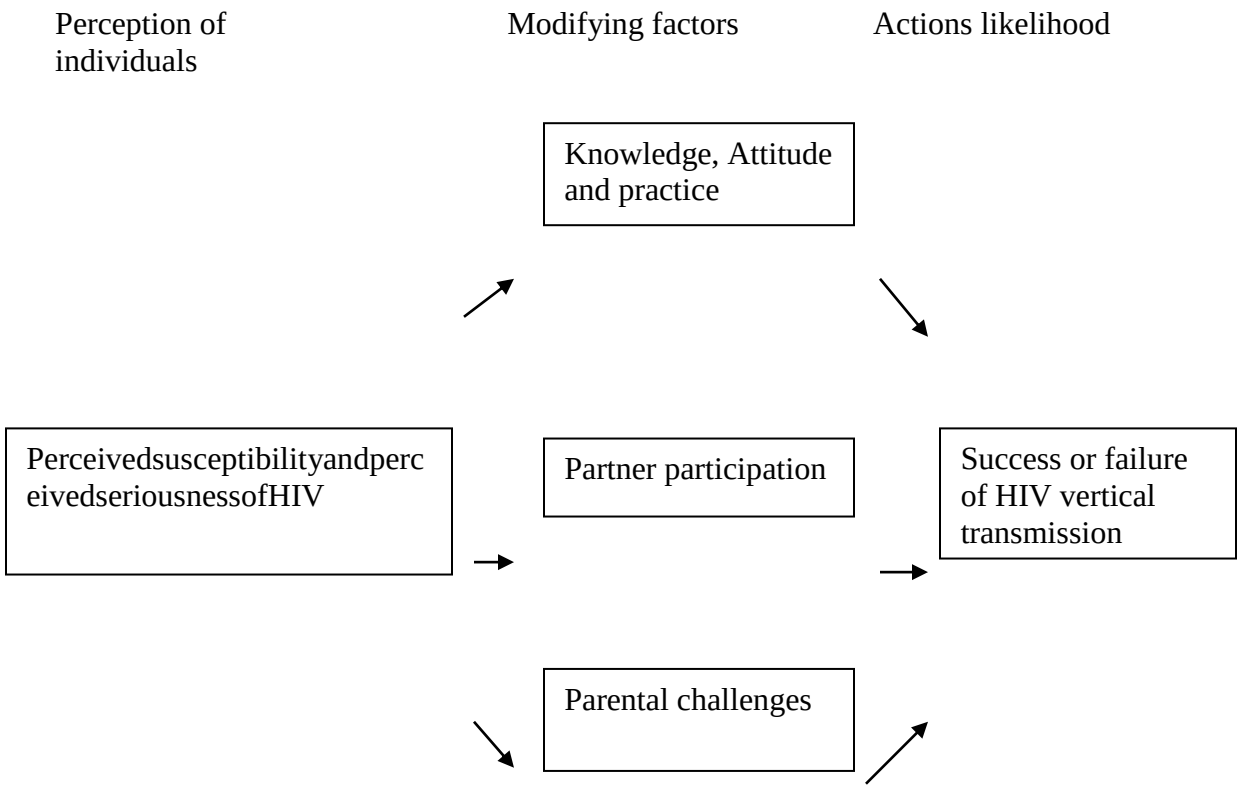

Figure1. The modified health belief model

Nature of the Study

Quantitative methods of data collection were employed in this study. Structured and semi structured questionnaires were used to collect data and analyzed accordingly in terms of objectives and research questions. Quantitative aspects formed the basis of understanding the challenges faced by the parents and other stakeholders in the study area in Kenya in implementing HIV vertical transmission prevention service. Parental involvement in prevention of HIV vertical transmission in Kenya is very important because it brings understanding and adherence to HIV treatment and medicine. Established barriers in prevention of HIV vertical transmission are humiliation and shame

due to disclosure of HIV state to partners, kinfolk, or the public and denial by the husband or partner (Kebaabetswe, 2007; Nyasulu & Nyasulu, 2011). HIV is treated by taking ARV medicine by victims of HIV and AIDS (Zhou et al., 2010). Attitude and practice of HIV-positive partners on prevention of their child from contracting HIV from the mother covers the perception and what they do to prevent transmission from occurring. This involves knowledge generally the issue of vertical HIV transmission and its related factors (WHO, 2012).

Definitions

Acquired immunodeficiency syndrome caused by HIV (AIDS): Health defining conditions when HIV has taken toll on immune system of an individual hence prone to making the immune system very weak hence being prone to opportunistic infections.

Antiretroviral therapy: Drug regimen used for treatment of people living with the AIDS virus (HIV).

HIV voluntary counseling and testing: Government programs begun during the advent of HIV/AIDS and that require an individual to volunteer themselves for HIV counseling and testing (Homsy et al., 2006).

Human immune deficiency virus (HIV):A retrovirus that is associated with the condition referred to as AIDS (Barral et al., 2014).

Intimate partner violence: Domestic violence (physical and emotional), mostly against women, especially when the woman is HIV positive and pregnant at the same time (Osinde, Kaye, & Kakaire, 2011).

Mother-to-child transmission (MTCT):Vertical transmission of HIV. It is the passage of HIV from a positive mother to her offspring either during birth, pregnancy, or through breast milk (WHO, 2012).

Parental HIV attitudes: The attitude of parents in relation to HIV and its associated health problems (Drake et al., 2014).

Parental HIV knowledge: Level to which HIV infected or uninfected parents understand matters related to HIV prevention, control, and management (Barral et al., 2014).

Parental practices: What the parents practice in relation to HIV prevention, control, and management (Drake et al., 2014).

Vertical transmission: Passing of disease causing pathogens from mother to her offspring during pregnancy, labor, and during birth. It is sometimes referred to as mother-to-child HIV transmission (WHO, 2012).

Assumptions

Assumptions made for this study were as follows:

- The assigned data clerks collected valid data using a reliable instrument. It was assumed that efforts to ensure the validity of my data collection tool resulted in valid and reliable data.
- Sampling techniques were free from any error.
- Participants responded honestly and to the best of their knowledge and ability.
- Parents willing to participate in the study saw the significance.

- The questionnaires were worded so that the participants could accurately answer the questions asked.
- The results of the study would lead to positive social change.

Scope and Delimitations

The study's participants included pregnant mothers and those with infant children who were attending prenatal and antenatal care in Luo Nyanza in Kenya. All the participants were confirmed HIV-positive mothers. I excluded HIV-negative mothers and those in this study. Behavior change has been a key HIV prevention strategy, exemplified by condom programs, and the overall societal means of sexually transmitted diseases management strategies. Also, use of sensitive and specific HIV screening tests (WHO 2002a) and administering nevirapine to newly born children and their mothers before delivery has shown to greatly reduce transmission of HIV from mothers to children (MTCT) by up to 47% (Guay et al., 1999).

The study was limited to the Luo Nyanza in Kenya and involved the use of primary data from the participants to examine the roles, knowledge, attitudes, and practices of HIV-positive parents on transmission from mother to child.

Limitations

This study had some limiting factors. Mothers were expected to give their detailed report of HIV exposure; hence data may not reflect the true records in the clinic books. Another possible limitation was that the study was done in an HIV high prevalent region (convenience sample) and the results of the study may be limited to similar populations of mothers regarding vertical transmission of HIV. External validity was limited and

therefore results should be interpreted with caution. Bias is another possible limitation in this study. For instance, non response bias had to be considered as some participants could not return the questionnaires even though they agreed to take part in the study. Therefore, I e-mailed the participants who did not return their questionnaires reminder letters when deemed appropriate.

Significance of the Study

This research study provided information on parental roles, knowledge, attitudes, and practices regarding the HIV transmitted vertically in Kenya. The results of this study may be able to assist the government of Kenya and other stakeholders to formulate interventions that go past interventions targeting pregnancy periods, labor period, and breastfeeding time only. The social change implication is that factors and barriers identified in this study can be used to implement programs in resource limited countries in the effort to reduce HIV vertical transmission rate to 0and decrease associated morbidity and mortality (Ministry of Health and Child Welfare, 2003).

Summary

HIV vertical transmission is among the forms of HIV transmission documented so far. For it to be prevented, it requires a lot of evidenced and behavioral practices, especially in resource-limited countries, such as Kenya (Baek & Rutenberg, 2010). Despite the large amount of research on HIV vertical transmission that has been done globally; it is still a major public health issues in Kenya with 10% of transmission of HIV through mothers to children so far (Kenya National Bureau of Statistics, 2011). Becker's (1974) health belief model was used to guide this study. Chapter 2 contains cited studies

with discussion of the theme of this research study and the most appropriate research method to answer the research questions

Chapter2: Literature Review

Introduction

This chapter includes a review of the published literature pertaining to current research on vertical HIV transmission and the knowledge gap. The chapter also includes restatement of the problem, a discussion of the theoretical model for the study, and an explanation of the literature search strategy.

The prevalence of vertical transmission is the leading cause of infant HIV prevalence in the world (WHO, 2011). HIV vertical transmissions in untreated populations in the United States and Western Europe has been estimated at 15% to 20% (WHO, 2010). Rates as high as 40% have been reported in developing countries such as those in Eastern and Central Africa including Kenya (Kaizad et al., 2010). According to Hardon et al. (2012), there has been a significant increase in the utilization of services geared toward reducing vertically transmitted HIV in Sub-Saharan Africa over the past decade, although it has not reached the accepted universal standard of developed countries. These services in Kenya do not involve both parents (mother and father) where applicable (when both parents are present), hence resulting in a lack of adherence to the services by the female parents, because they are not given moral support by their husbands or partners and may experience stigmatization in the community, especially in rural Kenya. These issues have led to non-utilization of these services by almost half of all HIV-positive pregnant women, hence they are at greater risk of passing the virus to their children(WHO, 2011).The Kenyan Ministry of Health (2012) reported that MTCT

of HIV is very alarming, with approximately 37,000 to 40,000 children born with the virus every year.

Reports of United Nations programs on HIV/AIDS in the last 10years have shown that there is a greater burden of transmission of HIV from the mothers to children, particularly in Africa and other countries with limited resources. Sub-Saharan Africa bears a great burden of HIV transmission to children by their mothers in terms of prevalence: UNAIDS recorded 150,000 pediatric infections worldwide in 2015; 110,000 new cases occurred in 21 countries in Sub-Saharan Africa (WHO, 2016). These menaces have been observed even among mothers taking HIV drugs. John, Nduati, Mbori-Ngacha, et al. (2001), in a study in developed countries of United Kingdom and Ireland, showed that the trend is different from that observed in resource limited countries especially in Sub-Saharan Africa. Mothers and children, especially the infants' characteristics, have also been implicated with high risk of HIV transmissions (Fowler, Kourtis, Aizire, et al., 2012; John et al., 2001). Other researchers studied more than 20,000 HIV-positive mothers worldwide and followed up for several years(Drake et al., 2014). The authors observed that the HIV transmission rate was about 2.9 events per100 person's years during birth or after birth of the infants. The risks of MTCT of HIV among the study cohorts was 23% (Drake et al., 2014).

The prevention of mother-to-child transmission (PMTCT) is a very essential service in the control and prevention of HIV from the woman to her child (Ministry of Health and Child Welfare, 2006; WHO, 2006). Objectives of PMTCT can be realized using the following policies: National AIDS Control Program, infant feeding program,

reproductive health policy, and other government programs that have been passed as policies relating to human rights (Ministry of Health and Child Welfare, 2006). The SAFAIDS/UNAIDS (2003) reported most people living in Sub-Saharan Africa have high probability of being victims of HIV infection. This is affirmed by the National AIDS Control Program (2000) that has documented that there is a high chance of HIV risk among Kenyans due to their risky behaviors. It was further hypothesized that about 92%of HIV infection in the nation were because of men and women having sexual contact (Latif &Emmanuel, 2002). In this respect, unprotected heterosexual contact can lead to pregnancy, hence adding to the burden of prevention of children from acquiring HIV from their mothers. The aim of this research was to assess the parental factors influencing vertical transmission of HIV in Kenya through investigation of parents' involvement in prevention of HIV transmission to the child from the mother. The study was quantitative, and I determined through quantitative methods the HIV-positive mothers' knowledge, attitude, and practice on prevention of children from acquiring HIV from their mothers in Kenya so as to get a good understanding on the factors related to vertically transmitted HIV.

Literature Search Strategy

I used Google Scholar to search literature material related to PMTCT. For example, I searched by article title or DOI in Google Scholar after linking Google Scholar to the Walden University Library and other sources. I used key search terms such as *vertically transmitted HIV virus* or *MTCT*. I was able to obtain substantial relevant literature relating to my study topic. I searched multiple databases using Thoreau Multi-

Database Search. Thoreau is a tool that searches across many library databases. Thoreau does not search every database, but it does search enough of the Walden University resources and is a useful tool for quick, simple searches. I also made use of the multidisciplinary databases. The Academic Search Complete, a multidisciplinary database that contains peer-reviewed journals, conference papers, and other resource types, was helpful in my literature review search process. ProQuest Central enabled me to access a very large selection of scholarly and peer-reviewed publications appropriate for my entire program of study, as well as materials such as dissertations and others. I also used Science Direct, which contains many peer-reviewed journals in health sciences that cannot be found in other Walden databases. Dissertation databases I searched contained full text of dissertations and theses written by Walden students.

Theoretical Foundation

I used Becker's (1974) health belief model to guide my study. This model can assist in understanding the data collected during the study and the findings. The selected model was ideal for the following reasons: alleged susceptibility, supposed severity, professed benefits, and applicability to the subject (Essex et al., 2002). The model has several alternatives such as disease projection and supposed benefit of disease management. I added concepts of connecting features to connect different types of insights with expected patterns of health. The weakness of the model can be individual perception that a disease is an individual problem or the opinion is correct (UNAIDS, 2005).

According to the model used in this study, given diagnostic and therapeutic treatment, the patients get well, hence stopping the spread of the disease in the community. I used the health belief model to trigger the patients' anticipation of the use of PMTCT services in the community; using this model I can further provide the idea about the anticipated advantages of being involved in the program. I assessed perceptions resulting from the patients and healthcare provider interacting and between knowledge, attitude, and practice; partner participation; and the challenges of the PMTCT program accordingly.

Interventions that used the health belief model framework typically have tried to increases knowledge through education and counseling as the "remedy for action" for mothers (Creek et al., 2009; Igumbor, Pengpid, & Obi, 2006). For example, a study from 2009 showed that constructs of (a) perceived benefits and (a) cues to action could motivate mothers to undergo HIV testing during pregnancy a care referred to as antenatal care, which is the first step of PMTCT (Besser, 2010; Msellati,2009; UNICEF, 2012; USAID &Ministry of Health–Zambia, 2009).

Theoretical and applied literature should move beyond the individual and interpersonal levels to explain why women experience social barriers to PMTCT (Msellati, 2009).There is a pressing need to consider the sexual division of labor, the sexual division of power, and the structure of cathexis (e.g., social norms) in HIV-endemic countries (UNICEF, 2012). In addition, there is a lack of investigation into the imbalances in control power women experience in the family. The impact on PMTCT of gendered power imbalances that may be exhibited in the form of physical, emotional, or

sexual violence in women's intimate relationships has not been appropriately investigated(WHO, 2012).For PMTCT programs to be effective, mothers and their children are required to receive and adhere to several interventions; such as HIV testing, involvement with antenatal services, utilization of HIV drugs, good and safe child bringing, proper feeding, and HIV testing of the children among other post- and prenatal services of health care (Padian et al., 2011).

The relationship between health belief model constructs would help to explain some socio demographic factors that not only influence health perceptions but also influence the lack of knowledge in relation to HIV/AIDS epidemics in rural areas of Sub-Saharan nations. Community involvement can be achieved through effective health communication between the researcher and members of the communities of interest. Moreover, effective health communication will assist in efforts to sustain any preventive initiatives as well as empowers the communities towards the social change.

Literature Review Related to the Key Variables

Global HIV Prevalence and Incidence

In 1997, the world HIV incidence was the highest at 3.3 million people who were infected; the interval for uncertainty was 3.1 to 3.4 million, which approximates to 95% (WHO, 2000). The period of HIV incidence decline was from 1997 to 2005, which brought the incident rate to a constant of 2.6 million in each year. These approximate to a range of 2.5 to 2.8 million per year (WHO, 2006). Over the years, the number of people living with HIV/AIDS has been increasing steadily, and its pick was 38.8 million in the in the year 2015 (37.6 to 40.4 million). In the same duration, the death rate due to

HIV/AIDS has been reducing steadily, from as high as 1.8 million people dying (UI 1.7 to 1.9 million, approximating to 95%) in the year 2005, to as low as 1.2 million deaths (95% UI 1.1 to 1.3 million) currently. The levels, severity, and trends of HIV are different from one country to the other as well as from one region to the next. Globally the trends of HIV have been heterogeneous in that some countries have experienced an increase in the mortalities; some have seen a decline, while for others still the trend has been uniform over the years.

The condition caused by HIV is called AIDS, which has become a public health concern the world over. In the year 2015, there were about 36.7 million people globally living with HIV according to reports of UNAIDS. In the world over, there are about 2.1 million new infections of HIV. Of all the people living with HIV globally, about 1.8 million are children who are younger than15 years of age UNAIDS, AIDS (2016). Of all the children living with HIV, about 150,000 live in Sub-Saharan Africa and they got the virus from their biological mothers. The means of infection of these children were either through breast milk, delivery, or during pregnancy UNAIDS, AIDS (2016). It is a fact that globally only about 60.0% of the world population are aware of their HIV status and the remaining 40.0% (more than 14 million) should be encouraged to be tested and the service should be availed to them. In June 2015, about 15.8 million people were on ARV treatment globally and the number has increased over the past 1year to 15.0 million in June 2016. In the year 2000, those people who were about to access HIV treatment were less than 1million while in 2010 they were about 7.5 million people globally. According to UNAIDS, all people living with HIV/AIDS should be able to access treatment by the

year 2020, which is the global target. The global targets stipulate the people put on ARV should increase from less than 1million in the year 2000 to 18.2 million in June 2016 and finally to above 30.0 million in June 2020 according to reports of UNAIDS, AIDS (2016).

Much effort has been employed globally by technocrats to address the HIV pandemic in the world over, especially in the past 10years. The only way to reduce HIV incidence is through prevention, and many countries have been employing this strategy that has seen the reduction of new infections globally. HIV treatment has increased in the past 10years, especially in resource limited countries National AIDS Control Program (2000)

PMTCT of HIV has also progressed well in the world over hence salvation of the children and mothers live in the long run. About 77.0% of women who were pregnant as of June 2015 were able to access HIV treatment, and therefore they were not able to transmit the virus to their children. The trend of MTCT of HIV has reduced by 50% from the year 2010 to present.

HIV in Africa

Many people living with HIV/AIDS are from middle and low-income nations (WHO, 2012). In Sub-Saharan Africa, there are approximately 25.6 million individuals living with HIV, making it the most region affected globally in the year 2015(WHO, 2016). They were about 66% new infections in this region alone in 2015. Since the beginning of HIV pandemic, there have been about 35 million people who have died plus 1.1 million people who died in the year 2015. Most people in resource limited countries

including Africa cannot access HIV prevention services even up to today. According to UNAIDS (2014), the world efforts and scientific advancement has not had a great impact on HIV incidence, prevalence, treatment, care, prevention, and cure. This statement particularly refers to Sub-Saharan Africa, Kenya included. When people living with HIV.AIDS adhere to effective treatments with ARV, they can prevent and control the spread of the virus, live healthy lives, and stop transmission. HIV affects livelihoods of individuals, communities, household economics of nations, and developments across the world. Poor countries are the greatest victims of HIV, yet they also face other social economic challenges including insecurity, food shortages, and infectious diseases among others. There have been achievements and future hope despite of the above challenges (Osinde et al., 2011).

HIV in Kenya

In recent years, Kenya has been severely impacted by the HIV epidemic, but the prevalence rate has been declining due to significant ARV use, change of behaviors and better access to information on HIV (UNAIDS 2005).The prevalence of HIV especially among the adult population in Kenya has been declining from 10.0% in 1990s up to 6.1% approximately in 2005 (UNAIDS, 2005).

According to Drake et al.(2014) apart from a shorter life expectancy of women living with HIV, they are also at higher risk of being infected and re-infected. Currently in Kenya, the prevalence of HIV is about 4.0% in male adults and 8.0% in female adults according to HIV 7th edition reports (Drake et al.,2014).People who abuse drugs through injections and prostitutes in Kenya are at a greater risk for HIV infection (UNAIDS,

2005).The current prevalence rate is at 27% for drug for prostitute and 53.0% for inject able drug users. The prevalence of HIV among men having sex with men (MSM) in Kenya is at 18.2% (Drake et al., 2014).Truck drivers, prisoners, uniformed police forces, and discordant couples are also at risk of HIV infection in Kenya (Drake et al., 2014).

Currently the Kenya government is the process of restructuring many features of governance. This context offers clear opportunities, but also many constraints for controlling HIV/AIDS. Building capacity for the management of HIV/AIDS epidemic in the country includes involvement of all partners, the states, nongovernmental organizations among others. For any program to succeed, trained staff and all stakeholders should and must participate. Community health workers, counselors, subordinate staff and field out-reach are an asset in management of HIV/AIDS in a country (Osinde et al., 2011).

Challenges and Barriers to Prevention

The health authorities and the nations of the world set a 2015 deadline for reducing HIV infections by 50% and reducing death rates (Turan & Nyblade, 2013). According to Turan and Nyblade (2013), even though MTCT of HIV services has been expanded globally, there remains a problem due to underutilization of these services. The main challenge in poor countries is stigma. Stigmatizations of women make them to shy away from utilizing PMTCT services at their disposal (Drake et al., 2014). It has been reported that stigma impacts negatively especially in PMTCT services adherence and uptake (Drake et al.,2014). These factors are cumulative and in the long run have meaningfully affected the rate of HIV infant infections. Apart from availing health care

services to pregnant mothers, they should be effective and accessible as well as including strategies of reducing stigma. These stigma reduction components should be included in neonatal, maternal, child health service all to be implemented in PMTCT services.

Despite availability of Medicare in Sub-Saharan Africa more than 1,000 newly born children are infected with HIV daily according to reports of Department of Health and Behavioral Sciences, University of Colorado Denver (2012). Newborn HIV infections also referred to as pediatric HIV accounts for the greatest number of newborn deaths in the region, the largest globally (Drake et al.,2014). Preventing HIV transmission of newborns form their HIV infected mothers could reduce the risk of infant infection at birth, pregnancy and through breast milk. Currently free treatment for HIV is available in most urban settings in Africa (Drake et al.,2014). Though, about 50.0% of all pregnant HIV-positive mothers are either not accessing the services or do not adhere to medication plans (Drake et al., 2014). Africa should go beyond personal level and put into consideration societal and structural barriers which prevent mothers from using the PMTCT available services if they want to meet the set global Millennium Development Goals (Drake et al., 2014).

Globally, about 1.0% of pregnant mothers are HIV positive (Drake et al., 2014). The majority (95.0%) are found in Sub-Saharan Africa, hence the highest burden according to Kuhn, Aldrovandi, Sinkala et al., (2008). Without proper HIV treatment of pregnant mothers, about 25.0-50.0% of these women will pass the virus to their unborn children during pregnancy, at birth or through breast milk.) Besser, 2010). More than 2million children were living positively with HIV/AIDS in 2007, Sub-Saharan Africa

bearing the greatest burden (Besser, 2010). About 400,000 children get infected with HIV by their mothers annually, approximately 15.0% of the world HIV new infections (Ministry of Health Zambia, and National 2008). The prevalence of HIV infection among newborns in Sub-Saharan Africa is very high, with daily infections being 1,000 in the region (Sirengo et al., 2014).

Pediatric HIV is a large contributor to the excessive infant and child mortality rates in Sub-Saharan Africa (Drake et al., 2014).The life expectancy of HIV-positive infants is extremely short. One third of HIV-positive infants is estimated to die before their first birthday and over one half will die by their second birthday (Varga & Brookes, 2008). Annually, there are approximately 260,000 pediatric deaths due to AIDS-related illnesses (Besser, 2010). AIDS remains one of the leading causes of death among children under the age of 5years in Sub-Saharan Africa (Besser, 2010).

MTCT(i.e., vertical transmission) of HIV is almost completely preventable through a set of interventions referred to as PMTCT(Drake et al., 2014).PMTCT begins during antenatal care when the woman is tested for HIV and receives the result that she is HIV positive. The recommendation in Sub-Saharan Africa is for the woman to then take medication throughout pregnancy, during labor, and the postnatal period while exclusively breastfeeding. The infant must also undergo periodic HIV testing and take medication to prevent transmission of the virus while he/she is breastfed.

PMTCT can reduce the risk of vertical transmission of HIV to less than 1%(Drake et al., 2014).MTCT has almost been eradicated in the United States and Europe but continues to be a largely uncontrolled problem in African countries (Drake et al.,2014).

In 2001, the United Nations General Assembly committed to reduce MTCT by 20% by 2005 and by an additional 50% by 2010. The clear majority of countries in Sub-Saharan Africa, however, have not been able to meet these goals (WHO, 2010). Improving access and utilization to PMTCT in this region is an essential component of addressing the global HIV/AIDS pandemic and to achieving MDGs 4, 5, and 6.

PMTCT utilization in Sub-Saharan Africa has significantly increased over the past decade but is still far from universal. In 2003, only 3% of HIV-positive pregnant women in this region utilized PMTCT (Osinde et al., 2011).This percentage dramatically increased to 33% in 2007 and 53% in 2010 (WHO, 2010). Unfortunately, this still leaves about half of all HIV-positive pregnant women not utilizing PMTCT, putting them at high risk for transmitting the virus to their infants. The global health community's efforts to eliminate MTCT has been primarily focused on scaling up biomedical services with little examination of the social barriers that may be preventing women from utilizing and adhering to PMTCT. "Despite technical means and political will, the percentage of pregnant women involved in PMTCT interventions is not increasing as fast as public health authorities, health professionals, and scientists would expect" (WHO, 2010).

There is a current lack of analysis regarding the social structures in place hindering HIV-positive mothers' PMTCT behavior (Osinde et al., 2011).In order to eliminate MTCT of HIV, the context in which HIV-positive mothers make decisions regarding adherence to PMTCT needs to be better understood and addressed. The health belief model has been used extensively in PMTCT literature as a conceptual framework for women's health-seeking behavior and to inform interventions (Glanz, Rimer, &

Viswanath, 2008). The health belief model construct of perceived susceptibility has been used to explain mothers' acceptance of HIV testing, receiving the result, and believing that her infant is susceptible to contracting HIV through vertical transmission (Igumbor et al., 2006). Perceived benefits are related to mothers' knowledge and belief that PMTCT interventions are beneficial and effective in preventing MTCT, which is not a universal belief across Sub-Saharan Africa.

Perceived barriers are the most widely addressed Health Belief construct in the literature and the most influential piece for PMTCT utilization. Perceived barriers are defined as a cost-benefit analysis that the individual will make, influencing her decisions (Glanz et al., 2008). Does the mother believe that the benefit of adhering to PMTCT outweighs the costs/barriers? Established barriers in the literature for PMTCT adherence include fear of knowing one's own HIV status; stigma and discrimination of HIV status being disclosed to partner, family, or the community; opposition of the male intimate partner" (Glanz et al., 2008).Perceived self-efficacy indicates the woman's level of confidence that she can complete the steps necessary for PMTCT adherence. A PMTCT intervention in South Africa used this construct as one of its main outcome measures. The authors found that HIV-positive pregnant women who participated in the Mothers2Mothers intervention were "significantly more likely to feel that they could do things to help themselves" and to "feel less overwhelmed by problems" (Glanz et al., 2008)., Besser, M. (2010). However, this report did not indicate if the mother's beliefs were translated into health seeking behavior regarding PMTCT or adherence to medication.

Interventions that use the health belief model framework typically attempt to increase knowledge through education and counseling as the "cue to action" for mothers (Igumbor et al., 2006). For example, a study from 2009 concluded that using the constructs of (1) perceived benefits and (2) cues to action may increase HIV testing during antenatal care, which is the first step of PMTCT (Varga & Brookes, 2008). The author states that a "major information campaign focused on the advantages for pregnant women and their future children of knowing HIV status" is recommended. However, in many Sub-Saharan African countries, widespread PMTCT campaigns are already in place, yet there is still poor utilization. For example, in Zambia, over 89% of women in 2007 knew that HIV can be transmitted by breastfeeding (Varga & Brookes, 2008); however, only approximately 21% in 2009 took ARVs while breastfeeding.

The information motivation behavior model was developed specifically to address HIV prevention efforts. The model applies psychosocial concepts and methodologies to create behavior change. The model focuses on increasing individuals' inclination and "ability to practice risk-reduction acts" (Varga & Brookes, 2008). The model affirms that HIV prevention information, motivation, and behavioral skills are the "fundamental determinants of HIV preventative behavior" (Igumbor et al., 2006). Most of the Information Motivation Behavior-specific interventions have focused on increasing safe sex and adult HIV testing. However, the constructs are also applicable to PMTCT and have been implied in several studies.

Constructs from this model are the basis for PMTCT counseling interventions during antenatal care that are widespread throughout Sub-Saharan Africa (Varga &

Brookes, 2008). Many interventions have attempted to provide mothers with information and increase motivation regarding PMTCT through counseling during antenatal care visits. The lack of quality counseling has been cited as a reason for poor utilization and adherence. A study in Nyanza, Kenya found that "inadequate counseling services delivered to (pregnant women) were found to affect (PMTCT) service utilization" (Glanz et al., 2008).

The theory of planned behavior is explicitly mentioned in the literature on PMTCT and constructs from integrated behavioral model can be inferred. These models focus on individual motivating factors as the main determinants of health behavior. The major assumption in these frameworks is that intention is the best predictor of behavior (Glanz et al., 2008). Constructs of attitude, perceived norms, and personal agency are appropriate to an understanding of PMTCT utilization and have been referenced in many research articles. Several studies in Sub-Saharan Africa have used qualitative methods to explore HIV-positive mothers' attitudes (i.e., feelings about the behavior and behavioral beliefs) and perceived norm (i.e., other's expectations, other's behavior) regarding PMTCT (Igumbor et al., 2006). Frequently, these constructs have been used to analyze pregnant women's acceptance of HIV testing during antenatal care. Authors have found that intention to get tested has been limited, due to fear of knowing their status; cost of services and confidentiality]; fear of stigma and discrimination.

Igumbor et al. (2006) explicitly use constructs from theory of planned behavior to analyze a clinic-based health education intervention in South Africa. Their measures include "salient beliefs" and "behavioral intentions" to use PMTCT services. Behavioral

elements that the authors discuss are attitudes, normative beliefs, subjective norms, perceived control, outcome evaluation, motivation, and perceived power. Findings include that women consistently reported low-control beliefs and a weak association between PMTCT salient beliefs and behavioral intention. The authors, unfortunately, did not measure actual behavioral outcomes.

Several authors have used empowerment theory or have advocated women's empowerment based on their findings. Igumbor et al. (2006) recommend expanding and enhancing interventions that empower women, to improve behavioral intention to use PMTCT. Besser (2008) also concludes that underutilization is related to women's disempowerment. Mothers2Mothers is a PMTCT intervention that began in South Africa and has spread throughout numerous other Sub-Saharan African countries. One of its goals is to "empower mothers living with HIV/AIDS, enabling them to fight stigma in their communities and to live positive and productive lives". Women's empowerment appears to be an underemphasized, yet crucial, component of increasing PMTCT in Sub-Saharan Africa.

Barriers to PMTCT

There are four main concerns that have come out showing progress in treatment continuation or "flow," usually used literary to portray a personal route from when one had not been confirmed to be HIV positive, during enrolment to PMTCT, management and care to the measured improvement in physical and psychological health (Ciaranello et al., 2011; Coutsoudis et al., 2010; Msellati, 2009; Mugavero, Norton, & Saag, 2011). The disease management flow can be directed specifically to preventing HIV from being

transmitted to the child by the mother by defining every step to confirm to WHO pragmatic guiding principles. The following are identified barriers to PMTCT of HIV.

Risk perception

Currently almost everybody knows about HIV and there is need for everyone to perceive him/herself as being at risk of infection. HIV is highly associated by some with promiscuity and illegitimate sex therefore creating a sense of wrong security for other people (Wringe et al., 2008). A female in single marriage normally considers herself safe from infection that is at low risk and most often than not do not present themselves early enough to the PMCTC clinics for proper management (Wringe et al., 2008).

Self-motivation Pregnant women may be concerned with their health wellbeing, yet they do sometimes lack motivation to seek treatment because of stigmatization and discrimination from the society (Mepham, Bland, & Newell, 2011). Sometimes scheduling a visit, the health care facilities may be complicated due to logistics issues because they must explain their absence in the home to their husbands and relatives. There is also fear of unknown especially the fear of receiving a positive HIV test result during pregnancy (Mepham et al., 2011).

Health status Individual health wellbeing is also a challenge especially poor physical and physiological health together with dejection because of depression. These factors have been reported to reduce ARV uptake and adherence (Shin et al., 2008; Starace et al., 2002). Poor health has been reported to contribute to non adherence to appointments (Muyingo et al., 2008).

Individual family wellbeing

Financial problems can make women rely on their spouse or family members in deciding when or not to begin attending clinics offering services geared towards prevention of HIV transmission to the child from the mother (O'Gorman, Nyirenda, & Theobald, 2010). Females mostly rely on their male partners for decision making regarding PMTCT and sometimes fail to collect their results, due to disapproval by their partners (Bajunirwe & Muzoora, 2005; Tchendjou et al., 2011). Domestic violence has been reported to be a challenge to PMTCT enrolment of women. It is also referred to as intimate partner violence (Maman, Moodley, & Groves, 2011) and researchers in the world have reported that HIV-positive women have high chances of being violated by their spouses than those who are HIV negative (Were et al., 2011). When male partners support their HIV-positive wife's and volunteer to be tested and attend antenatal clinics, the women will always accept to take ARV drugs for PMTCT, are likely to give birth in a health facility and be go to hospital for follow up and management (Nassali et al., 2009).

Confession of HIV status

Willingness to disclose their status to partners by HIV-positive women is directly associated with health care service use, those unwilling to tell their status to their husbands will find it difficult to store and take drugs at home (Wouters, van-Loon, van-Rensburg, & Meulemans, 2009). Partner confession will make it possible and simple for mothers to follow proper feeding methods as advised by health care workers (Bii, Otieno-Nyunya, Siika, & Rotich, 2008).

Societal support

Social support has been reported to impact positively on drug adherences and following the program guideline whoever, the weight from the community, family members and mother's in-laws mother does not encourage mothers suffering from HIV from deviating from the normal cultural infant feeding and weaning patterns (Cames et al., 2006; Falnes et al., 2011).

Road infrastructure

Distance from health facility and cost will affect collection of results, attendance to PMTCT clinic and other associated health searching behaviors (Posse, Meheus, van Asten, van der Ven, & Baltussen, 2008). HIV discrimination and stigma: Several studies have reported a direct association between stigma and not taking all the prescribed drugs (Dlamini et al., 2009; Mertenet al., 2010). Poor services and compromised quality, harsh health care staff, waiting time which is tiring, and the fear of the unknown have been reported to be among the challenges facing PMTCT (Mshana et al., 2006; Nam et al.,2008; Selin, Mills, & Nachega, 2007).

Traditional health and religious beliefs

Some communities dwell in traditional African beliefs that HIV infection is a mysterious disease brought about by witchcraft. Based on this notion some pregnant women who are HIV infected may disregard programs such as the PMTCT and instead prefer to seek traditional medicine men to address their HIV related health issues which ends up in mismanagement and dangers of MTCT of HIV (Wanyama et al., 2007). Teachings on traditions concerning child birth, pregnancy and infant feeding conflict with

modern health care professionals hence affecting PMTCT negatively (Doherty, Chopra, Nkonki, Jackson, & Greiner, 2006; Nor et al., 2009).

Traditional gender role

Traditionally women are regarded inferior to men hence fewer resources are allocated to them for their healthcare. Male and female have difference gender roles and male roles hinder them from being directly involved in pregnancy and child care among other roles perceived to be for female in the society (Byamugisha, Tumwine, Semiyaga, & Tylleskär, 2010). Government policies: economic and political stability of a nation affects it policies, welfare, insurance and so on hence have direct impact on the healthcare and health wellbeing of a nation (Blas et al., 2008; Cavagnero, Daelmans, Gupta, Scherpbier, & Shankar, 2008).

It should be noted that, peer pressure or stigma about condom use inhibits actual use despite comparable efficacy rates between male and female condoms and high acceptability levels (Beksinska, Rees & Wilkinson 2001) limited access to female condoms and substantially higher costs have limited uptake and use of female condoms and, thus, an opportunity to reduce the prevalence of HIV infection among women through a women-initiated method.

Summary and Conclusions

Implementation of a wide range of evidence-based interventions is essential to preventing the transmission of HIV from a mother to her child. These interventions

include the use of ARV medication, avoidance of breastfeeding, and elective caesarean section (WHO, 2010). However, unavailability of the evidence-based interventions has continued to be a challenge in the prevention of MTCT and accessibility to PMTCT services as remained as low as 30% for most women in the world in the year 2006 (WHO, 2010). Some of the hindering factors in the elimination of MTCT of HIV is failure to integrate PMTCT services with routine neonatal and maternal health care (WHO, 2010). In resource poor countries like Kenya, where the health system is weak, the problem of MTCT of HIV may be approached differently with emphasis in prenatal care, HIV testing, HIV treatment, counseling and education, exclusive breastfeeding, and formula feeding (WHO, 2010). There is a gap in the literature on the role of biological parents in prevention of HIV transmission from mother to newborns in Kenya, the association between parental knowledge, attitude and practice and the PMTCT of HIV program in Kenya and the challenges faced by PMTCT programs in Kenya. Other researchers have also found a gap in the interrelationships and predictor value between HIV counseling, HIV treatments, knowledge of HIV transmission from mother to and breastfeeding behaviors.

Chapter 3 will include a discussion of the research design and the rationale for the design, a description of the population for the study, sampling and sampling procedure, and the recruitment procedure for research participants, the data analysis plan, and the ethical procedure including how I will maintain data confidentiality.

Chapter3: Research Method

Introduction

My study was based in Kenya in a region with high prevalence of HIV. The samples were drawn from clinics dealing with services preventing HIV transmission from mothers to their children. The purpose of the research was to determine the association between HIV attitude, knowledge, and practice of HIV-positive mothers; involvement at PMTCT; and the challenges facing PMTCT activities in Kenya. The independent variables for my study were parental HIV knowledge, parental HIV attitude, and parental sexual risk reduction practices, and the dependent variable was HIV vertical transmission.ARV treatment was a covariate. The goal of the study was to determine the relationship between HIV-positive mothers' HIV knowledge, attitudes, and practices and HIV infection from mother to child in Kenya.

In recent years, researchers of medicine especially regarding child and maternal health had achieved much, but the spread of HIV has been reversing the achievement (Department of State, Office of Electronic Information 2009). Scholars around the world in the past 30 years have reached an advanced stage by providing treatment to HIV/AIDS, hence changing it from a deadly disease to a chronic condition (Department of State, Office of Electronic Information 2009). A very important achievement is the current ARV treatment and PMTCT. The U.S. Department of State, Office of Electronic Information, 2009 postulated approximately 6.5 million individuals in economically poor nations would be able to receive ARVs by the end of 2010, increasing its availability by 16times since 2003. Programs for prevention of HIV transmission to children from their

HIV infected mothers adopted in many regions and nations of the world have become a means of delivering proper health care to mothers and their babies in many poor countries like Kenya. Such programs in Kenya will bring the country closer to achieving the United Nations Millennium Development Goals (MDGs) for HIV prevention. now referred to as sustainable development goals (SDGs; WHO, 2010). This chapter includes a description of the study design and methods that enabled the testing of hypotheses and answering the key research questions. Included in the chapter is a discussion of the study rationale, sampling methods, study population, the overall processes of recruiting study participants, as well as methods of data collection and tools. The software used in analyzing data, plan of collecting data, and data management will be described in this chapter. Ethical considerations including confidentiality for research subjects will be described as well.

Research Design and Rationale

The current research employed a cross sectional design to describe the events in real time situations, hence it was descriptive. In my quantitative correlation study, I worked towards determining the relationship between independent variables: parental HIV knowledge, parental HIV attitudes, parental sexual risk reduction practices, parental challenges, and the dependent variable: HIV vertical transmission, the covariate being ARV treatment.

Research Questions of the Study

This was a cross sectional design to describe events in real time or in a signal point. The research questions and the hypotheses were as follows:

RQ1: What is the association between parental HIV knowledge and HIV vertical transmission in Kenya?

$H_0$1: There is no association between parental HIV knowledge and HIV vertical transmission.

$H_1$1: There is an association between parental HIV knowledge and HIV Vertical transmission

RQ2: What is the association between parental HIV attitude and HIV vertical transmission in Kenya?

$H_0$2: There is no association between parental HIV attitude towards HIV and HIV vertical transmission.

$H_1$2: There is an association between parental attitude towards HIV and HIV vertical transmission

RQ3: What is the association between parental sexual risk reduction practices and HIV vertical transmission in Kenya?

$H_0$3: There is no association between parental sexual risk reduction practices and HIV vertical transmission in Kenya

$H_1$3: There is an association between parental sexual risk reduction practices and HIV vertical transmission in Kenya

The descriptive study designs originate from past research models that are positive in nature; that is based on the idea that practical and feasible trends and the current concept is the base for any perceived reality (Babbie, 2010). Such studies are significant in research where variables are derived hypothetically and, on some questions,

based on the research study (Creswell, 2009). In the process of the study, I utilized a descriptive design and carried out statistical data analysis to find answers to the research questions using prospective data. Inferential statistics were also applied, where frequencies, percent, and 95% interval of confidence were presented. Analysis included calculating standard deviations and mean scores of responses from questionnaires. Analysis of numerical data, which were quantifiable, was done using SPSS. HIV knowledge, attitude, and practice of the clients in relation to preventing children from acquiring HIV from their mothers as per the respondents' answers were correlated using a correlation coefficient. Bivariate analysis of both the dependent and independent variables was by chi square test. Logistic regression was used for multivariate analysis for modeling.

Methodology

Target Population

This study targeted women with HIV who were enrolled in PMTCT of HIV clinics in the study areas of Kenya, particularly antenatal and prenatal care sites. Written questionnaires were administered, and the collected data analyzed to determine the association or the variables.

Sampling Frame and Exclusion Criteria

HIV-positive mothers enrolled in clinics offering PMTCT services in the three study sites in Kenya consenting to participate in the study were included.HIV negative mothers were excluded from participating in the study.

Sampling and Sampling Procedures

Sample size determination The sample size for this study was determined using an equation described by Fischer, Laing, and Townsend (1998). The method is free from personal bias or prejudice, a method to ascertain demonstrable qualities of a phenomenon, capable of being verified. It is a method in which the researcher is guided by the rules of logical reasoning. It is also a method in which the investigation proceeds in an orderly manner and it also implies internal consistency. The significance level was at 95% (1.96, two tails). The prevalence of HIV transmitted through mother to child in Kenya stands at 10% (Kenya National Bureau of Statistics, 2011).

Formula: $n = \frac{(Z_{1-\alpha})^2 \text{ x } (P \text{ x } Q)}{d^2}$

Where:

n = required sample size

$Z_{1-\alpha} = Z_{0.95} = 1.96$ (level of significance two tail) according to the normal distribution table

P = Prevalence of MTCT according to KDHS (2011) = 10%

$Q = (1 - P)$

d = Required absolute precision = 0.05%

When the values are inserted, then we get the following outcome,

$n = \frac{(Z_{1-\alpha})^2 \text{ x } (P \text{ x } (1-P)}{d^2} n = \frac{1.96^2 \text{ x } 0.10(1 - 0.10)}{0.05^2} = 138.3$

The minimum study sample size was 138 participants. However, the sample size was extrapolated to 222 to include two other PMTCT sites on advice by my committee.

Sampling method

Purposive sampling methods were used to select PMTCT clinics in high prevalence areas of Kenya. Three county referral hospitals within the former Nyanza province of Kenya were the sampling sites. I contacted the administration of the PMCT clinics for permission to interview the collect data from their patients during their usual visits. The women usually booked their own appointments for their visits to the clinics. The interval from one subject to the next was derived based on first come, first served method on willingness criteria. To eliminate the bias of choosing subjects with similar

periodicity in timing the clinic visits (those who preferred specific times of the day), data collection days were varied as to the times within the day to include morning, afternoon, and evening sessions for 5days per week until the appropriate sample size of was achieved. This process ensured adequate elimination of bias.

Data Collection

Data collection plan and tools

The draft of my data collection tool/survey tool was approved by three HIV experts who achieved consensus validity on the questions and how they were asked, including the order of asking the questions. The experts have extensively researched on matters relating to PMTCT. Two of the experts were involved in the development of the PMTCT programs in Kenya from piloting to rolling out the programs in the entire republic of Kenya. They are health professionals who teach and supervise students in universities in Kenya. I conducted a pilot study once I obtained IRB approval. The pilot study included five participants similar those in my main study, but not the same individuals. The data collected from the pilot study was not included with the data collected and analyzed in my main study. I did not need to make any changes on the content or data collection process based on the pilot study experiences. I worked with my research assistants to code the data and conducted the inter coder reliability test where the inter rater reliability was good, therefore there was no need for adjusting the data collection tool.

Data collection tools

A structured questionnaire was used to collect data. The time frame for data collection was 4weeks. English was the official language used in the questionnaire (Appendix A). However, the questionnaire was also translated to Kiswahili the national language by language experts at the local institutions of higher learning (Appendix B). To ensure appropriateness of the translation, back translation was done to ensure the meaning of words were the same in the two questionnaires.

Primary data collection procedure

Primary data were collected using the questionnaire, which was administered after being pretested (Appendices A and B). It included socio demographic data. To ensure it was clear to women who participated in the study that participation was not required in order for them to receive services from the clinic; the women were contacted after they had completed their clinic appointment. Prior to the interviews, the women were assured by the clinic staff that their participation in the study was voluntary and not required in order to receive services from the clinic. As the researcher, I approached the women and directed them to the interview venue, different from the exam room. Arrangement was made with the administrators for a secure private place within the premises for interviews.

I personally collected the data by administering the questionnaire to the sampled women respondents. Each interview was carried out in private between the woman respondent and me without recording the respondent's contacts. A written informed consent was given to each participant prior to the interview. The subjects were informed of the study, its purpose, the anticipated risks/harm and inconveniences, the benefits, the

confidentiality issues, and the remunerations. A questionnaire was administered to the respondents. On the basis of the questionnaire, I asked the respondents questions verbally either in English or Kiswahili, depending on the literacy level of the respondent.

Participation, recruitment, and data collection

I collected information from selected PMCT clinics in Kenya as the principle investigator. Data collection period was 4weeks starting the week immediately after the approval of IRB. I administered written questionnaires to sampled participants during the data collection process. This was done after the respondents had completed their usual visits. It was done in privacy with the consent of the respondents to encourage and enable them respond without fear. Eventually the data were availed after achieving the targeted participant sample size.

Follow-up plan Data collection was carried as far as possible to ensure no follow-up was necessary. For the sake of the respondent's privacy, no identifiable contact was taken during recruitment. The exit plan involved exit questions regarding the experience of the process and thanking the participants for availing themselves. There was no provision for follow up procedures.

Coding

Microsoft Access database was utilized for double entry of data after coding. The data entry interface was designed to check for referential integrity, missing values, and acceptability constraints. The codebook had variable names, variable labels, value labels, and a list of any changes made to the dataset such as creating new variables or fixing raw

variables. It was very helpful and served the purpose of preventing mistakes during data analysis (Appendix C).

Data Analysis

Data cleaning

Before analysis, data cleaning was carried out. The process of data cleaning ensured accordingly. Data cleaning was done in preparation for conducting inferential statistics. I looked for outliers in my variables. By outliers I am referring to scores in variables that were extreme in value, either greatly higher or lower than all the other scores for that variable. Outliers are any values which have standardized scores more than the absolute value of 3.29, which is either positive or negative 3.29 for that variable, that is, a score more than three standard deviations from the mean. Outliers if unchecked can lead to both Type 1 and Type 2 error, thereby making any solution unreliable.

I created standardized scores, z-scores for all my variables to help me search for outliers. This was done under the descriptive tabs in SPSS. After creating my standardized scores, frequencies were run on new standardized scores. Any variables with values more than the absolute value of 3.29 were believed to be having outliers. Where outliers were identified variables were transformed. I multiplied the identified variable by its logarithm, square root or inverse.

Statistical analysis

Descriptive statistics

Data on description of the study population characteristics were completed using Statistical Package for Social Studies and Involved use of frequency tables, measures of central tendency and dispersion. Findings of the analysis are reported in Chapter 4.

Inferential statistics

Frequencies, percent, and confidence interval at 95% are presented in the current study. Analysis was conducted by calculating standard deviations and mean scores of responses from questionnaires. Statistical package for social scientist was utilized in analyzing numerical/Quantitative data. Association between variable was analyzed using correlation coefficient. Then bivariate analysis of both the dependent and independent variables was by chi square test. Multivariate analysis for modeling was done by logistic regression and the findings presented in tables in Chapter 4.

Threats to Validity

I ensured that my findings were valid by ensuring internal and external validity threats are checked. The internal validity which is the degree to which the results are attributable to the independent variable and not some other rival explanation as well as the external validity which is the extent to which the results of a study can be generalized were checked by HIV experts. The HIV experts evaluated the validity and feasibility of the indicators based on the available documentation. Access to data was considered together with validity and reliability for each indicator. The burden of data collection was also considered alongside the utility value of the indicators. The choice of experts was narrowed to those with medical specialties particularly in the health science, with renowned work in HIV work relating to the prevention of HIV transmission from mother

to child. Indicators were scored based on different measures of validity and access to data specified for the indicator. The consensus process helped in having a certain degree of agreement/disagreement regarding the evaluation of the indicators. Indicators that reached a specified level of agreement were chosen and indicators with a clear degree of disagreement were excluded.

The questionnaire was pretested in a pilot study to ensure that the research conclusions are correct. Because I did a convenience sampling and not true random sampling, external validity was limited, and findings may not be applicable to other populations in other locations. Therefore, the reader should interpret findings with caution.

Ethical Procedures

Authorization

Authorization to carry out the research for the pilot and main study was obtained from the Walden University Institutional Review Board. The Walden IRB number for this study is 11-27-17-0280195. Permission for collecting data/information from human subjects was sought from the National Ethical Review Committee and the relevant selected PMTCT clinics. They were able to give approval to the consent document. The PMTCT administration was notified and informed consent explained to the participants before commencement of data collection (IRB NO 11-27-17-0280195). All other necessary approvals were availed were scanned and attached to the final document.

Informed Consent

A written informed consent form was given to each participant prior to taking the survey. The subjects were informed of; the title of the study, the purpose, and the anticipated risks harm and inconveniences, the benefits, the confidentiality issues and the remunerations. Participants had the freedom to withdraw from the study without penalty. There no case of a participant refusing to take part. However, there was a provision that in case one withdrew from the study; his/her data was not be included in the final analysis.

Summary

Vertical transmission of HIV is a major problem in the developing world, Kenya, my country included. This was a quantitative correlation study with a minimum of 138 participants whom I recruited from three PMTCT clinics in three different towns in Kenya. I employed quantitative correlation design to assess the association between HIV knowledge, attitude and practice among HIV-positive women in selected PMTCT clinics in Kenya. Data analysis will include descriptive and inferential statistical procedures.

Data was collected by me together with two research assistants. The data collection tool was translated from English by language experts at the local institutions of higher learning to Kiswahili the national language. To ensure appropriateness of the translation back translation was completed to ensure the meaning of words were the same in the two questionnaires (Appendices A and B).I submitted my proposal for the study to the Walden IRB for permission to collect and analyze data.

Issues relating to external and internal validities are described and explained. Descriptive statistics data was generated using Statistical Package for Social Studies and included frequency tables, measures of central tendency and dispersion. Inferential Statistics was presented in percentages and their 95% confidence intervals. Analysis was conducted by calculating standard deviations and mean scores of responses from questionnaires. Quantitative data were analyzed by use of SPSS (Appendices C and D). Finally, the ethical procedures have been described including the maintenance of data confidentiality and the handling with dignity of human research subjects. Chapter 4 includes a report of my study findings presented in narrative form and with appropriate tables, charts, and graphs.

Chapter4: Results

Introduction

The purpose of this quantitative study was to test the existing relationships between sociological aspects, knowledge, and perceived attitudes regarding HIV transmission from mother to child. The focus of the research as well put into consideration the actual occurrences of HIV transmission from mother to child.

RQ1: What is the association between parental knowledge and HIV vertical transmission in Kenya?

- $H_0$1: There is no association between parental knowledge of HIV and HIV vertical transmission
- $H_1$1: There is an association between parental knowledge of HIV and the respective HIV vertical transmission issues

RQ2: What is the association existing between parental attitude and HIV vertical transmission in Kenya?

- $H_0$2: There is no association between parental attitude and HIV vertical transmission.
- $H_1$2: There is an association between parental attitude and HIV vertical transmission

RQ3: What is the association between parental sexual Risk Reduction Practices and HIV vertical transmission in Kenya?

- $H_0$3: There is no association between parental risk reduction practices and HIV vertical transmission in Kenya

- $H_1$3: There is an association between parental risk reduction practices and HIV vertical transmission in various regions

The chapter is organized into the following subsections: data collection techniques, results, including the participants' social and demographic information, the parental knowledge on vertical transmission of HIV, the parental attitudes on vertical transmission of HIV and the association between socioeconomic factors, knowledge, and attitude on the on vertical transmission of HIV, and a summary of findings.

Participant's Socio demographic Information

Characteristics of the Study Population

A total of 212 women respondents were interviewed using the semi structured interview questionnaire, whereby 36 were from Gendia Hospital, 141 from Homabay Referral Hospital, both in Homa Bay County, while 43 originated from Kisumu Referral Hospital in Kisumu County. The sample size was increased from the proposed 138 to 212 to allow for adequate subsample sizes for each of the referral center and analyses for different categorical groupings of interests. Table 1 displays the respondents' demographic statistics.

Table 1

Frequencies and Percentages for the Demographic Variables of Marital Status, Occupation, and Education

Category	*N*	%
Marital status		
Married	160	75.5
Single	38	17.9
Divorced	6	2.8
Cohabiting	2	.9
Widowed	6	2.8
Occupation/Employment status		
Unemployed	106	50.0
Employment (Government/private)	34	16.0
Employed (Self)	71	33.5
Highest level of education		
No formal education	3	1.4
Primary school	85	40.1
Secondary School	91	42.9
Diploma/Bachelor's Degree	30	14.2

The respondents' ages ranged between 17 years old and 50 years old. The mean comparison of ages between the PMCT facilities computed using the SPSS one-way ANOVA procedure was not significant (*p*-value =0.132; Table 2). Levene's statistic, which was 7.244, brings forth the test of homogeneity of variances between the two counties and was therefore significant to the research purpose (*p*-value =0.008).The Levene's test implies higher variation of ages among the respondents from Kisumu

County in comparison to those from Homa Bay (Schaffer& Schaffer, 2015).Based on heterogeneity of the variance, further robust tests with respect to the equality of means were carried out using both Welch and Brown-Forsythe. The robust tests Welch and Brown-Forsythe statistics yielded 2.754 and 3.344 values respectively, with *p*-values of 0.072 and 0.040.

Table 2

Characteristics of the Study Population by PMCT Facility (N =212)

Characteristics	Gendia	Homabay	Kisumu	*p*-value
Number of respondents	36	141	35	
Age of respondents	29.2±1.8	28.2±0.9	31.3±2.6	.020
Marital status				
Married	61%	77%	83%	0.071
Single/Divorced/widowed/cohabiting	39%	23%	17%	
Age of respondent's husbands	37.4±2.7	35.3±19	37.2±3.0	0.407
Occupation/Employment status				
Unemployed	56%	49%	49%	0.946
Employment (Government/private)	17%	16%	17%	
Employed (Self)	28%	35%	34%	
Highest level of education				
No formal education	0%	1%	3%	0.117
Primary school	23%	42%	54%	
Secondary School	63%	42%	29%	
Diploma/Bachelor's Degree	14%	14%	14%	
Average household income				
Less than Ksh2,000	0%	3%	14%	0.000
2,000 - 3,999	22%	16%	37%	
4,000 - 5,999	39%	8%	9%	
6,000 – 14,999	11%	2%	9%	
More than 15,000	0%	6%	6%	
Prefer not to answer or don't know	28%	66%	26%	

(table continues)

Characteristics	Gendia	Homabay	Kisumu	*p*-value
Number of children	2.8±0.5	2.7±0.2	3.1±0.6	0.340
Religion				
Muslim	22%	3%	0%	0.00
Christian	78%	97%	97%	
Prefer not to answer	0%	0%	3%	

Note. Data presented are column percentages or mean values for the three PMCT facilities sampled, Gendia, Homabay and Kisumu; p-value for the overall difference in characteristics by PMCT facility based on analysis of variance or chi-square test, as appropriate.

Among the 212 respondents, more than 160 of them were married. The remaining 24.5% respondents were single, divorced, widowed, or cohabiting. Comparing the PMCT facilities, there were no statistically significant differences in proportions, the married being 61%, 77%, and 83% respectively in Gendia, Homabay, and Kisumu respectively (*p*-value = 0.071).

There were no differences in mean ages of the respondents' husbands across the PMCTs as shown in Table 2, with means of 37.4, 35.3, and 37.2 for Gendia, Homabay, and Kisumu respectively (*p*-value = 0.407).

The majorities (93%) of the respondents were Christians and the remaining 7% were Muslims. Other religion groups were not represented.

Half of the respondents were unemployed and at least a third of them were self-employed irrespective of the country of origin. Those who were employed either in the

government or in the private sector accounted for between 16% and 17% in all the facilities and the remaining were self-employed. Pearson chi square tests for homogeneity with value 0.740and a better 4 degrees of freedom indicated no difference between the facilities (p=0.946).

Most respondents had either attained primary level or secondary level education, such that 40.7% had a primary school certificate while 43.5% were graduates from various high schools. Otherwise, at least 10% of the respondents had attained the postsecondary diploma level. Only three of the total respondents had no formal education. Comparing the PMCT facilities, even though the results were not significantly different, Gendia had a majority 63% in secondary school, Homabay had equally 42% in primary and secondary schools, and Kisumu had majority 54% in primary school (p-value=0.117).

What was quite clear about the responses on household income was that monthly household wages ranged from a minimum of US$4 to the maximum of US$350, and thus, the mean amount of monthly payments received by the chosen population was an estimated value of US$77.A majority of respondents declined to state their average monthly household income, whereby 83 respondents declared unawareness and 27 preferred not to answer the question on income. Most of the respondents who declined visited Homabay Referral Clinic. In Homa Bay County, 51 out of 66 respondents who stated their incomes earned between US$25 and US$60 monthly whereas in Kisumu, which had a lesser sample size, 30 out of 33 respondents portrayed similar cash/salary

earnings. A high statistically significant difference in earning arose more because of the large number of Homabay respondents who declined to respond (*p*-value=0.000).

Due to the skewed nature of the average household income data with a huge range, the income values were categorized into subinterval categories (Table 3).These grouped data were then analyzed to facilitate the provision of acceptable/concise differences between the categories/groups of respondents. Through categorical differentiation of the data, I gained the capability of revealing visual statistical patterns, which revealed existing relations associated to household incomes. The grouping variables were clinic, marital status, religion, occupation/employment status, and the respondents' level of education. However, not much was revealed, hence it was a necessity for me to integrate further analytic approaches involving the mean differences for each category as shown in the next sections.

Table 3

Average Household Income Counts by Various Groupings

Group Subgroup	<USD20	20-39	40-59	60-79	80-99	100-119	120–149	<USD150	Don't know	Prefer not to answer	Total
County HomaBay	1	28	23	4	3	0	0	8	78	24	169
Kisumu	8	15	5	0	0	2	1	2	7	3	43
Clinic Gendia Hospital	0	8	14	3	1	0	0	0	3	7	36
Homa Bay Hospital	4	22	11	1	2	0	0	8	75	18	141
Kisumu Hospital	5	13	3	0	0	2	1	2	7	2	35
Marital status Married	8	30	21	4	3	2	1	7	66	18	160
Single	0	8	4	0	0	0	0	2	16	8	38
Divorced	1	1	3	0	0	0	0	0	1	0	6
Cohabiting	0	2	0	0	0	0	0	0	0	0	2
Widowed	0	2	0	0	0	0	0	1	2	1	6
Religion Muslim	0	4	6	1	1	0	0	0	0	0	12
Christian	9	39	21	3	2	2	1	10	83	27	197
Prefer not to answer	0	0	1	0	0	0	0	0	0	0	1

(table continues)

Group / Subgroup	<USD20	20-39	40-59	60-79	80-99	100-119	120–149	<USD150	Don't know	Prefer not to answer	Total
Occupation/Employment status											
Employment (Government)	0	3	3	1	1	1	1	7	1	3	21
Employment (Private)	0	2	1	2	0	0	0	0	6	2	13
Employed (Self)	6	14	8	1	1	0	0	2	29	10	71
Unemployed	3	24	16	0	1	1	0	1	48	12	106
Highest level of education											
No formal education	0	0	0	0	0	0	0	0	2	1	3
Primary school	6	24	6	0	2	1	0	0	37	9	85
Secondary School	3	17	18	2	1	1	0	1	38	10	91
Diploma	0	1	4	2	0	0	0	6	4	4	21
Bachelor's Degree	0	0	0	0	0	0	1	3	2	3	9
Total	9	42	28	4	3	2	1	10	83	27	209

Occupation/Employment Status by Average Income

The numbers of the respondents, from the different occupation/employment categories, were quite different. There was a significant difference in the average household incomes mean as indicated by the one-way ANOVA statistical procedure (Table 3). However, the "Levene's test" procedure concerning heterogeneity were significant (p=0.000) as well as the robust tests of treatment mean differences (p=0.000).

Precisely, the government employees had the largest mean average household income, which was considerably larger compared to the means generated from the other categories. This perspective was subject to the contributions brought about by the seven government employee respondents' earning more than US$150. Out of the 212 respondents, 207 respondents indicated that they had children, therein; they represented a majority of 97.6%.The mean number of children per household was 2.8, 2.7, and 3.1 for Gendia, Homabay, and Kisumu PMCTs respectively; thus, an indication after use of the ANOVA test that the values were of no significance (*p*-value=0.340; Table 4).

Table 4

Descriptive Average Monthly Household Income by Employment Status and Type (N = 100)

					95% Confidence Interval			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
Employment (Government)	17	20882.35	19546.842	4740.806	10832.29	30932.41	3000	60000
Employment (Private)	5	4400.00	1816.590	812.404	2144.41	6655.59	2000	6000
Employed (Self)	32	6434.38	13404.467	2369.597	1601.55	11267.20	400	70000
Unemployed	46	3997.83	4226.135	623.110	2742.82	5252.83	400	30000
Total	100	7668.00	12788.291	1278.829	5130.53	10205.47	400	70000

Knowledge of Vertical Transmission of HIV

HIV awareness

All the 212 respondents admitted that they were aware of HIV as expected, especially considering the various global initiatives/governmental programs that have

been implemented to assure diverse spread of information or knowledge concerning the virus.

Knowledge scores on mother-to-baby transmission. The respondents were administered a *true/false* questionnaire to test their knowledge of MTCT. Going through each question, the question most well understood by respondents was that HIV can be transmitted through unprotected vaginal sex with an infected partner (97.6%;Table 5). From the responses recorded by the participants, 68.9% agreed that expressing milk and then heat treating it ensures the safety of the lactating baby.

Table 5

Knowledge Percentages Scores per Question on Mother-to-Baby Transmission (N = 212)

Determine whether the following statements are True or False by selecting one option	Answer	Percentage number of respondents' responses			
		True	False	Don't know	Prefer not to answer
HIV can be transmitted through unprotected vaginal sex with an infected partner	T	97.6	1.4	.5	.5
I can become infected with HIV by cutting myself with a contaminated sharp instrument	T	92.0	4.7	2.4	.9
A baby can become infected with HIV during childbirth from an HIV infected mother	T	97.2	1.9	.9	.0
A baby can become infected with HIV by taking breast milk from an infected	T	93.4	6.1	.5	.0
HIV can be transmitted from an infected mother to her baby	T	97.2	1.9	.5	.5
Transmission of HIV from infected mother to her baby is preventable	T	96.2	1.9	1.4	.5
Taking anti-retroviral drugs can protect a baby from getting HIV infection from his/her infected mother	T	93.4	2.8	3.8	.0
Giving taking anti-retroviral drugs can protect a baby from getting HIV infection from his /her infected mother	T	90.6	4.2	5.2	.0
Avoiding breastfeeding can prevent transmission of HIV from infected mother to her baby	T	84.9	6.6	8.5	.0
Babies born by elective caesarean section(C/S) are likely to get HIV from their infected mother	T	81.6	5.2	13.2	.0
When the mother is protected from HIV her baby is also protected from HIV	T	95.3	2.8	.9	.9
A baby may get HIV from her/his infected mother during pregnancy	F	83.5	10.8	5.7	.0
A baby may get HIV from his/ her infected mother during labor	F	85.4	7.5	7.1	.0

(table continues)

Determine whether the following statements are True or False by selecting one option	Answer	Percentage number of respondents' responses			
		True	False	Don't know	Prefer not to answer
A baby may get HIV from his/ her infected mother during delivery	T	97.6	1.9	.5	.0
A baby may get HIV from his/ her infected mother during breastfeed	T	96.7	1.9	1.4	.0
Expressing milk and then heat treating it makes safe for your baby	F	68.9	14.2	16.5	.5
Attending antenatal clinic is important for the health of my baby including preventing the baby from getting HIV	T	94.3	3.8	1.9	.0
Having protected sex with their partners (condom use) reduces the risk of MTCT of HIV during pregnancy	F	85.8	6.1	8.0	.0
HIV-positive parents can get and raise a baby who is free of HIV	T	94.8	3.3	1.9	.0
Sore and / or cracked nipples increase the risk of transmitting HIV from an infected mother to her baby	T	93.9	2.8	3.3	.0

Further analysis of the variables concerning knowledge/information about the deadly virus, required the recording of the interview responses into two categories, correct and not correct responses. These percentages and mean scores for correct and incorrect responses were then calculated(Figure 2).The 95% confidence interval for the mean scored on the knowledge ranged between, 75.75% to 77.78%. Most of the respondents accounted for a mean interval of 70% and 85%.

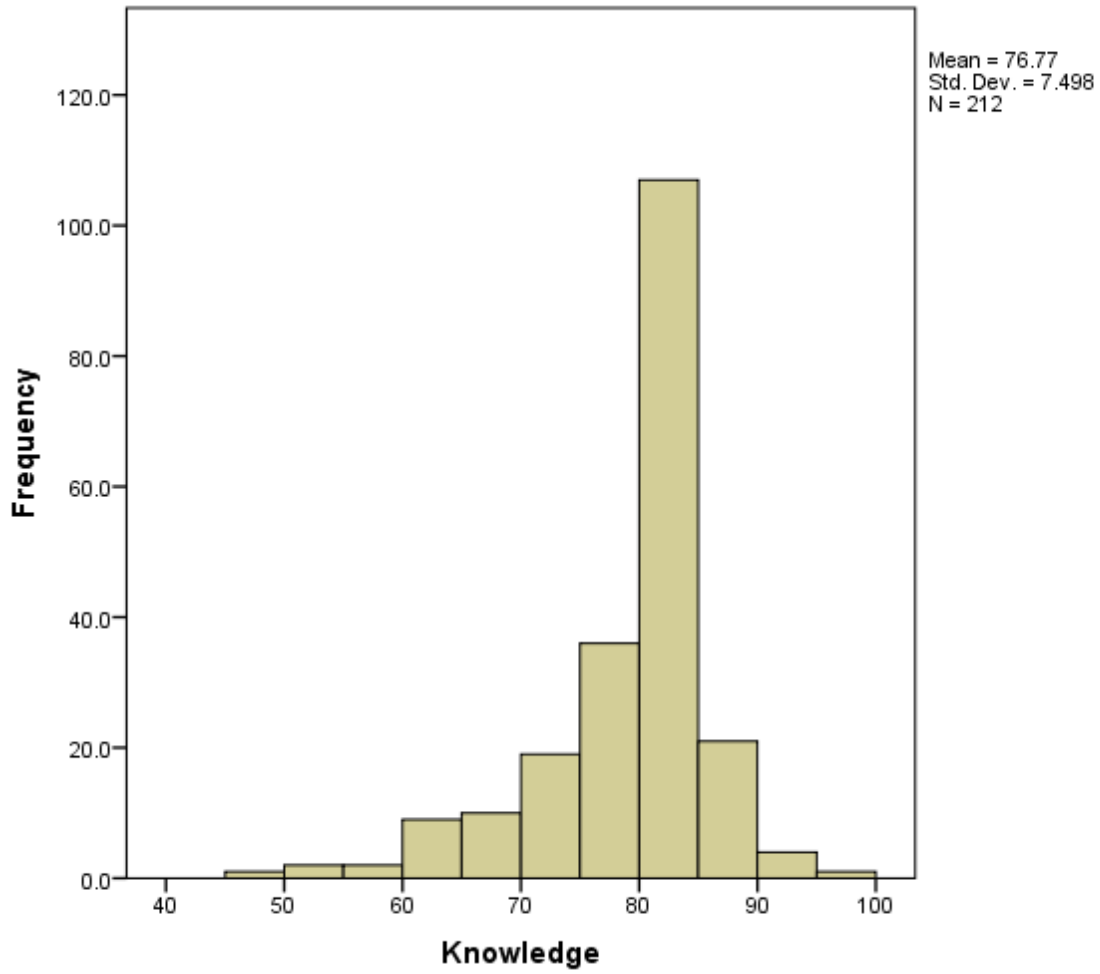

Figure 2. Percentage distributions of correct answers to mother-to-baby HIV transmission knowledge.

To determine if there was any association between the levels of knowledge on MTCT of HIV, a regression analysis was undertaken in respect to the County, Clinic, Age category, Marital status, Occupation/Employment status, Highest level of education and further, the Average household income as the predictor variables. Tables 6 and 7 facilitate the provision of an implicit Pearson correlation coefficients that emerge between the variables and thus, enabling the extrapolation of useful linear regression analysis. From the table of significance levels, those values below 0.05 are significant at

the 5% level. In this case, if the respective knowledge levels were insignificant and otherwise, unrelated to the stipulated predictor variables, the integration of "regression analysis" from a backward approach facilitates the revelation of important predictor variance (Aizire et al., 2013).

Table 6

Distribution of Knowledge Percentages Scores per Individual on Mother-to-Baby Transmission

Percentage individual scores	Frequency	Percent	Valid Percent	Cumulative Percent
40-45	1	.5	.5	.5
45-50	2	.9	.9	1.4
50-55	2	.9	.9	2.4
55-60	9	4.2	4.2	6.6
60-65	10	4.7	4.7	11.3
65-70	19	9.0	9.0	20.3
70-75	36	17.0	17.0	37.3
75-80	107	50.5	50.5	87.7
80-85	21	9.9	9.9	97.6
85-90	4	1.9	1.9	99.5
90-95	1	.5	.5	100.0
Total	212	100.0	100.0	

Table 7

Pearson Correlations Significance (1-Tailed)

Variables	Knowledge	County	Clinic	Age category	Marital status	Occupation/ Employment status	Highest level of education	Average household income
Knowledge	.	.160	.263	.389	.475	.231	.443	.194
County	.160	.	.000	.130	.144	.449	.136	.000
Clinic	.263	.000	.	.083	.013	.354	.055	.354
Age category	.389	.130	.083	.	.000	.000	.088	.000
Marital status	.475	.144	.013	.000	.	.137	.089	.389
Occupation/ Employment status	.231	.449	.354	.000	.137	.	.000	.008
Highest level of education	.443	.136	.055	.088	.089	.000	.	.173
Average household income	.194	.000	.354	.000	.389	.008	.173	.

Parental Attitudes on Vertical Transmission of HIV

The respondents were asked several questions on their attitude towards MTCT. The questions were represented through a five-level Likert scale. Respondents were asked to answer whether they (1) *strongly agree,* (2) *agree,* (3) *neither agree nor disagree,* (4) *disagree,* or, (5) *strongly disagree*; on issues relating to vertical transmission of the viral infection as well as the personal attributes of the mothers about the possibility of preventing their infants/newborns from contracting HIV. The Table 8

shows the percentages of response on each question and the true attitude marked using the conation *T*.

Descriptive Analysis

Table 8

Percentages of Responses on HIV Attitude Questions

Attitudes to Respond	Do you agree?				
	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
It's important that each and every pregnant woman gets tested for HIV	95.8%T	3.3%	0.9%	0.0%	0.0%
To prevent transmission of HIV from mother to her child, pregnant women should be counseled about HIV	90.6% T	8.5%	0.9%	0.0%	0.0%
Not breastfeeding your newborn / baby when you are infected with HIV protects the baby from getting HIV	54.7% T	29.2%	10.8%	4.7%	0.5%
An HIV -infected mother can pass the virus to her baby through breast milk	79.2% T	15.1%	3.3%	2.4%	0.0%
A HIV- Infected mother can pass the virus to her baby during pregnancy	69.8%	15.1%	8.5%	6.1%	0.5%T

(table continues)

Attitudes to Respond	Do you agree?				
	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
A HIV- Infected mother can pass the virus to her baby during delivery	85.4% T	10.4%	4.2%	0.0%	0.0%
Taking ARV drugs / medicines as told by the doctor protects the baby from getting infected with HIV	83.0% T	9.9%	5.2%	1.9%	0.0%
Expressing milk and then heat treating makes the milk safe for your baby	46.2%	9.4%	30.2%	13.2%	0.9% T
Attending antenatal clinic is important for the health of my baby including preventing the baby from getting HIV	92.9% T	3.8%	2.8%	0.5%	0.0%
Having protected sex with their partners (condom use) reduced the risk of MTCT of HIV during pregnancy	77.8% T	7.5%	10.8%	3.8%	0.0%

(table continues)

Attitudes to Respond	Do you agree?				
	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
It is possible HIV-positive parents to have a baby who is free of HIV	92.5% T	5.2%	2.4%	0.0%	0.0%
Breast care to avoid sore and / or cracked nipple will prevent the infected mother from transmitting HIV to her baby	84.4% T	11.3%	3.3%	0.5%	0.5%
Delivery at a health facility and caesarian section option reduces the risk of infected mother transmitting HIV to her baby	79.2% T	6.1%	12.7%	1.9%	0.0%

Several chi square tests were carried out to analyze the various socioeconomic factors and knowledge, which influence MTCT. The chi square test determines the association existing with respect to the possibility of lactating mothers infected with HIV/AIDS breastfeeding their newborn / baby without infecting them with the viral disease. The test variables/results specifically indicate that protecting the baby from getting HIV and in consideration of demographic variables reveals no statistical significance. Similarly, the chi square test to determine association between knowledge on HIV and infections passed from mothers to the baby through breast milk and demographic variables reveals statistically insignificant correlations.

A chi square test to determine association between knowledge on whether HIV-infected mothers can pass the virus to the baby during pregnancy and demographic variables revealed significance at county, clinic, and age categories (Table 9).

Table 9

Chi Square Test for County, Clinic and Age Category by "An HIV-Infected Mother Can Pass the Virus to Her Baby During Pregnancy"

		A HIV- infected mother can pass the virus to her baby during pregnancy							
		Neutral or disagrees		Agree		Total			
		N	%	*N*	%	*N*	%	Chi square	*p*
County	Homabay	30	18%	139	82%	169	100%	4.590	0.032
	Kisumu	2	5%	41	95%	43	100%		
Clinic	Gender Hospital	2	6%	34	94%	36	100%	9.941	0.007
	HBRH	29	21%	112	79%	141	100%		
	KBSH	1	3%	34	97%	35	100%		
Age category	Less than 20	2	22%	7	78%	9	100%	13.146	0.022
	20 - 24 years	12	29%	29	71%	41	100%		
	25 - 30 years	12	17%	57	83%	69	100%		
	31 - 35 years	5	8%	54	92%	59	100%		
	36 - 40 years	1	5%	20	95%	21	100%		
	More than 40 years	0	0%	13	100%	13	100%		

A chi square test to determine association between knowledge on Taking ARV drugs / medicines as presented through the prescriptions provided by medical

practitioners protects the baby from HIV infections and further, the effects brought about by demographic variables reveal significance only at educational level (Table 10).

Table 10

Chi Square Test for Education BY Taking ARV Drugs / Medicines as Told by the Doctor Protects the Baby from Getting Infected with HIV

	Taking ARV drugs / medicines as told by the doctor protects the baby from getting infected with HIV							
	Neutral or disagrees		Agree		Total		Chi-square	*p*
Highest level of education	*N*	%	*N*	%	*N*	%	24.119	0.000
No formal education	0	0	3	100	3	100		
Primary school	1	1	84	99	85	100		
Secondary School	8	9	83	91	91	100		
Diploma	2	10	19	90	21	100		
Bachelor's Degree	4	44	5	56	9	100		

A chi square test to determine association between knowledge on Expressing milk and then heat treating makes the milk safe for your baby and demographic variables reveal significance only at clinic and educational level. Noticeably, Besser (2010) entertains the notion that the treatment of breast milk using intense heating might always provide protective mechanisms against the virus (Table 11).

Table 11

Chi Square Test for Clinic and Highest Level of Education BY Expressing Milk and Then Heat Treating Makes the Milk Safe for Your Baby

		Expressing milk and then heat treating makes the milk safe for your baby							
		Neutral or disagrees		Agree		Total			
		N	%	*N*	%	*N*	%	Chi-square	*p*
Clinic	Gendia	7	19%	29	81%	36	100%	10.960	0.004
	HBRH	69	49%	72	51%	141	100%		
	KBSH	18	51%	17	49%	35	100%		
Highest level of education	No formal education	0	0%	3	100%	3	100%	15.814	0.003
	Primary	32	38%	53	62%	85	100%		
	Secondary	48	53%	43	47%	91	100%		
	Diploma	6	29%	15	71%	21	100%		
	Bachelor's Degree	8	89%	1	11%	9	100%		

The chi square test seeks to determine the association between knowledge on having protected sex with respective partners (using condom) to reduce the risk of MTCT of HIV during pregnancy. The integration of other subjective demographic variables reveals crucial significance of the variables except marital status (Table 12).

Table 12

Chi Square Test for Having Protected Sex with Their Partners (Condom Use) Reduced the Risk of MTCT of HIV During Pregnancy

		Having protected sex with their partners (condom use) reduced the risk of MTCT of HIV during pregnancy								
		Neutral or disagrees		Agree		Total				
		N	%	*N*	%	*N*	%	Chi-square	df	*p*-value
Clinic	Gender Hospital	1	3%	35	97%	36	100	15.041	2	0.001
	HBRH	30	21%	111	79%	141	100			
	KBSH	0	0%	35	100%	35	100			
Marital status	Married	27	17%	133	83%	160	100	2.651	1	0.104
	Single/Divorced/ widowed/cohabiting	4	8%	48	92%	52	100			
Age category	Less than 20	4	44%	5	56%	9	100	10.605	4	0.031
	20 - 24 years	6	15%	35	85%	41	100			
	25 - 29 years	12	17%	57	83%	69	100			
	30 - 34 years	8	14%	51	86%	59	100			
	More than 35 years	1	3%	33	97%	34	100			
Occupation/Employment status	Unemployed	15	14%	91	86%	106	100	.283	2	.868
	Employment (Government/private)	6	18%	28	82%	34	100			
	Employed (Self)	10	14%	61	86%	71	100			
Highest level of education	No formal education	0	0%	3	100%	3	100	8.750	3	0.033
	Primary school	9	11%	76	89%	85	100			
	Secondary School	20	22%	71	78%	91	100			
	Diploma /Bachelor's Degree	1	3%	29	97%	30	100			

The chi square test seeks to determine the association between knowledge delivery at any health facility in respect to the optional caesarian conception model (Table 13). Making a deductive inference to the issues, it is explicit that the aspect reduces the risk of infected mother-child transmissions of the virus. The consideration of other demographic variables essentially reveals its significance at clinics/mothers/society.

Table 13

Chi Square Test for County by Delivery at a Health Facility and Caesarean Section Option Reduces the Risk of Infected Mother Transmitting HIV to Her Baby

	Delivery at a health facility and caesarean section option reduces the risk of infected mother transmitting HIV to her baby								
	Neutral or disagrees		Agree		Total				
Clinic	*N*	%	*N*	%	*N*	%	Chi-square	df	*p*-value
Gender Hospital	1	3	35	97	36	100	7.386	2	0.025
HBRH	27	19	114	81	141	100			
KBSH	3	9	32	91	35	100			

Global Attitude for PMCTC

An indicator variable for the general attitude towards PMCTC was computed by averaging the variable scores on attitude. The original variables were scored according to 1. Strongly Agree, 2. Agree, 3. Neither agree nor disagree, 4. Disagree, or, 5. Strongly disagree. The resultant attitude indicator variable therefore varied between 1 and 5 for each respondent, with lowest scores implying strongly agreed and highest scores implying disagreement.

Further regression analysis was carried on the global attitude indicator against Clinic, Age of your last birthday, Marital status, Occupation/Employment status, Average household income, Number of children, Knowledge and Highest level of education. Backward method was used. From the analysis there was a statistically significant Pearson Correlation between Attitude and Age of your last birthday, Number of children and parental Knowledge (Table 14).

Table 14

Pearson Correlations Among Selected Variables

		Attitude	Age of your last birthday	Marital status	Number of children	Knowledge	Highest level of education
Pearson Correlation	Attitude	1.000	-.180	.026	-.172	-.397	.059
	Age of your last birthday	-.180	1.000	-.299	.407	.016	.084
	Marital status	.026	-.299	1.000	-.326	-.009	.081
	Occupation/Employment status	-.049	.220	-.070	.074	-.011	-.011
	Average household income	.031	-.238	.004	-.220	.043	.095
	If yes, how many children?	-.172	.407	-.326	1.000	.069	-.221
	Knowledge	-.397	.016	-.009	.069	1.000	.006
	Clinic	-.061	.094	-.121	.074	.061	-.152
	Highest level of education	.059	.084	.081	-.221	.006	1.000
Sig. (1-tailed)	Attitude	.	.005	.354	.007	.000	.202
	Age of your last birthday	.005	.	.000	.000	.408	.117
	Marital status	.354	.000	.	.000	.447	.124
	Number of children	.007	.000	.000	.	.165	.001
	Knowledge	.000	.408	.447	.165	.	.468
	Highest level of education	.202	.117	.124	.001	.468	.

The three variables Age of your last birthday, Number of children and parental Knowledge were retained in the regression analysis (Table 15).Both the age and knowledge had negative coefficients of -0.006 and -0.012 which were significant with *p*-values of 0.049 and 0.00 respectively .Small values of attitude scores denote positive attitude. Therefore, positivity increases with age and knowledge.

Table 15

Regression Coefficients Results

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Coefficient	B	Std. Error	Beta	T	Sig.	Lower Bound	Upper Bound
(Constant)	2.860	.173		16.515	.000	2.518	3.201
Age of your last birthday	-.006	.003	-.138	-1.980	.049	-.011	.000
Number of children	-.015	.012	-.089	-1.280	.202	-.039	.008
Knowledge	-.012	.002	-.389	-6.112	.000	-.017	-.008

Parental Practices

Baby feeds. Given that for mothers with HIV, it is not appropriate to breast feed babies; the respondents were asked whether they had ever breastfed their babies. A majority, 208 out of 212 of the mothers claimed to have breastfed their babies. In this case, only four mothers do not breastfeed due to their understanding of the spread mechanisms associated to HIV. Specifically, the four respondents use cow milk, infant formula constituents, amongst other feeds.

Intake of ARV medications

The respondents were asked the frequency upon which they normally take ARV medications. About 94.3 take ARV all the time as advocated through various medical programs and 2.8% are quite cautious and thus, often take ARVs' irrespective of the age of their babies. However, 2.9% of the respondents take ARV medications either time to time or not at all. A chi square test to determine association between intake of ARV medications and demographic variables reveals its significance for county, clinic and marital status/development in limiting and thus, assuring prosperity regardless of the infection rates attributable to the viral infection (Table 16).

Table 16

There is an Association Between Parental Risk Reduction Practices and HIV Vertical Transmission in Various Regions

		Do you take ARV medications as directed by the doctor								
		Not all the times		All the time		Total				
		N	%	*N*	%	*N*	%	Chi-square	df	*p*-value
County	Homabay	5	3	164	97	169	100	11.390	1	0.001
	Kisumu	7	16	36	84	43	100			
	Total	12	6	200	94	212	100			
Clinic	Gendia Hospital	4	11	32	89	36	100	21.953	2	0.000
	HBRH	1	1	140	99	141	100			
	KBSH	7	20	28	80	35	100			
	Total	12	6	200	94	212	100			
Marital status	Married	6	4	154	96	160	100	9.235	4	0.055
	Single	6	16	32	84	38	100			
	Divorced	0	0	6	100	6	100			
	Cohabiting	0	0	2	100	2	100			
	Widowed	0	0	6	100	6	100			
	Total	12	6	200	94	212	100			

Giving babies heat treated expressed milk

Half of the respondents admitted having given their babies heat treated expressed milk which is not appropriate (Nachega et al., 2006; Table 17).

Table 17

Percentage Distribution of Participants Who Have Given Their Heat Treated Expressed Milk a Child

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	105	49.5	49.5	49.5
	No	107	50.5	50.5	100.0
	Total	212	100.0	100.0	

More than half of the respondents from Homabay County in comparison to Kisumu County give their children heat treated expressed milk which is contrary to the requirement. From the results, this statistic was highly significant as expressed by respondents from Gendia Hospital. There was a significant association between giving their children heat treated expressed milk and both Occupation/ Employment status and Highest level of education (Goethel, 1988; Table 17).

Table 18

Chi Square Test for Have You Ever Given Your Heat Treated Expressed Milk by Selected Variables

		Have you ever given your heat treated expressed milk								
		Yes		No		Total				
		N	%	*N*	%	*N*	%	Chi-square	df	*p*-value
County	Homabay	93	55	76	45	169	100	10.087	1	.001
	Kisumu	12	28	31	72	43	100			
	Total	105	50	107	50	212	100			
Clinic	Gendia Hospital	30	83	6	17	36	100	33.848	2	.000
	HBRH	70	50	71	50	141	100			
	KBSH	5	14	30	86	35	100			
	Total	105	50	107	50	212	100			
Marital status	Married	75	47	85	53	160	100	1.837	1	.175
	Single/Divorced/ widowed/cohabiting	30	58	22	42	52	100			
	Total	105	50	107	50	212	100			
Age category	Less than 20	3	33	6	67	9	100	2.681	4	.612
	20 - 24 years	23	56	18	44	41	100			
	25 - 29 years	35	51	34	49	69	100			
	30 - 34 years	30	51	29	49	59	100			
	More than 35 years	14	41	20	59	34	100			
	Total	105	50	107	50	212	100			

(table continues)

		Have you ever given your heat treated expressed milk								
		Yes		No		Total				
		N	%	*N*	%	*N*	%	Chi-square	df	*p*-value
Occupation/ Employment status	Unemployed	54	51	52	49	106	100	8.302	2	.016
	Employment (Government /private)	23	68	11	32	34	100			
	Employed (Self)	27	38	44	62	71	100			
	Total	104	49	107	51	211	100			
Highest level of education	No formal education	1	33	2	67	3	100	9.704	3	.021
	Primary school	32	38	53	62	85	100			
	Secondary School	50	55	41	45	91	100			
	Diploma/Bachelor's Degree	20	67	10	33	30	100			
	Total	103	49	106	51	209	100			

Respondents tested for HIV. Only two out of the 212 respondents had not been tested for HIV.

Respondents' opinion on the interview process

The researcher primarily seeks to develop a confounded understanding about the significant impact that knowledge and information about HIV/AIDS infection or prevention mechanisms had on the respondents. In this case, the respondents were kindly asked to choose among the following options to express their opinions/experiences pertaining their participation in the program/interview process. From the results collected, it is notice-able that the process was pleasant and satisfactory to (Table 19):

- *Strongly Agree*

- *Agree*
- *Neither agree nor disagree*
- *Disagree*
- *Strongly disagree*

Table 19

Was the Interview Process Pleasant and Satisfactory?

		Was the interview process pleasant and satisfactory?					
		Strongly agree		Agree		Neither agree or disagree	
		N	%	*N*	%	*N*	%
County	Homabay	155	92	9	5	4	2
	Kisumu	32	78	9	22	0	0
Clinic	Gendia Hospital	28	78	4	11	4	11
	HBRH	133	96	5	4	0	0
	KBSH	26	74	9	26	0	0
Marital status	Married	144	91	13	8	2	1
	Single	29	81	5	14	2	6
	Divorced	6	100	0	0	0	0
	Cohabiting	2	100	0	0	0	0
	Widowed	6	100	0	0	0	0
Age category	Less than 20	8	89	0	0	1	11
	20 - 24 years	34	87	4	10	1	3
	25 - 30 years	61	90	5	7	2	3
	31 - 35 years	54	92	5	8	0	0
	36 - 40 years	19	90	2	10	0	0
	More than 40 years	11	85	2	15	0	0

(table continues)

		Was the interview process pleasant and satisfactory?					
		Strongly agree		Agree		Neither agree or disagree	
		N	%	*N*	%	*N*	%
Occupation/ Employment status	Employment (Government)	20	95	1	5	0	0
	Employment (Private)	12	92	1	8	0	0
	Employed (Self)	61	86	10	14	0	0
	Unemployed	93	90	6	6	4	4
Highest level of education	No formal education	1	33	2	67	0	0
	Primary school	77	91	6	7	2	2
	Secondary School	76	86	10	11	2	2
	Diploma	21	100	0	0	0	0
	Bachelor's Degree	9	100	0	0	0	0

Logistic Regression Models to Determine Factors Associated With MTCT

Logistic regression techniques were used to resolve inconsistencies associated with dichotomous dependent data and the assumptions of ordinary sum of squares regression methods. The dependent variables that were used for outcome prediction was HIV-positive child or children, yes or no. Each model incorporated different independent variables that were entered the logistic regression analysis. These were respondents' Marital-status, Knowledge, Attitude, Age, HH-income, Clinic, Educational status and Occupation. The categorical variables Marital status (0=married, 1=Single/Divorced/widowed/cohabiting), HHincome (1=Less than US$20, 2= US$20 toUS$39, 3=US$40 toUS$60, 4=US$60 to 1US$50, 5=More than US$150 and 6= Prefer

not to answer or don't know) and Educational status (1=No formal education, 2=Primary school, 3=Secondary School, 4=Diploma, 5=bachelor's Degree).

Modeling HIV-Positive Child on the Socioeconomic Variables

The first logistic regression model was used to answer the question whether there was any existing association between parental socioeconomic factors and HIV vertical transmission in Kenya. The null hypothesis tested was H0: There is no association between parental socioeconomic factors of HIV and HIV vertical transmission against H1: There is an association between parental socioeconomic factors and HIV vertical transmission. The predictor variables incorporated into the logistic regression were Age, Marital status, Occupation, HHincome and Educational status using the step-down method.

From the dataset with 212 respondents in the analysis, case processing summary recorded 196 (92.5%) included in the analysis, 16 (7.5%) missing cases and no unselected case. The Block 0 output model includes only the intercept. Assuming no factor influenced Child HIV infections, from the SPSS classification table then 121/212 = 57.08% reported they did not have children dying of HIV and 75/212=35.38% had children infected or else, had died because of HIV/AIDS. The intercept-only model result showed in (odds) = -0.478.On the exponentiation of both sides of the model expression predicted odds [Exp (B)] = 0.620 with a Wald value of 10.592which was very significant (p=0.001). That is, the predicted odds of having a child dying of HIV are 0.620. Since 75 of the respondents had experienced untimely deaths of their children due to HIV and 121 not, the observed odds are 75/121 = 0.620.

In the Block 1 output, only Age was added as predictors in the final model. The Omnibus Tests of Model Coefficients gave a chi square of 13.027 on 1 df, very significant (p=0.000). Thus, adding Age to the model significantly increased the ability to predict the HIV mother to child infection proportions. Under Model Summary the -2 Log Likelihood statistic was 247.790. This statistic measured how poorly the model predicts the decisions, the smaller the statistic the better the model. The Cox & Snell R^2 was 0.064, implying that only 6.4% of the variation was explained by the model. The Nagelkerke R^2 was 0.087.The Hosmer and Lemeshow (H-L) Test was not statistically significant with a chi-square value of 6.446 with 8degrees of freedom (p-value =0.597). We therefore fail to reject the null hypothesis implying the model's estimates fit the data at an acceptable level. Well-fitting models show nonsignificance in the H-L goodness of the fit test. An outcome of nonsignificance indicates the model prediction does not differ significantly from the observed cases.

If above selected factors influenced Child HIV infections, from the SPSS classification table, out of the 121 observed cases with no child deaths on HIV, 109 were accurately classified resulting in 89.3% correct. Of the 75 cases with child deaths on mother to child HIV, 20 were accurately predicted resulting in 26.7% correct accuracy standards. Overall percent correctly predicted was 65.3%.

In the logistic regression model, the response variable was HIV-positive children and Variables entered the model were marital status, Knowledge, Attitude, Age and HHincome Ct.

The odd ratio for Age was1.096 (1.040, 1.155) with *p*=0.001 indicating that age sparingly influence MTCT(Table 20).

Table 20

Variables in the Equation for Socioeconomic Logistic Regression Model

							95% confidence interval for EXP(B)	
	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Age	.092	.027	11.856	1	.001	1.096	1.040	1.155
Constant	-3.178	.805	15.603	1	.000	.042		

a. Variable (s) enteredonstep1: Age.

Modeling HIV-Positive Child on the Knowledge and Socioeconomic Variables

The second logistic regression model was used to answer the question whether in addition to socioeconomic factors; there was association between parental knowledge and HIV vertical transmission in Kenya. The null hypothesis tested was H0: There is no association between parental knowledge of HIV and HIV vertical transmission against H1: There is an association between parental knowledge of HIV and HIV vertical transmission. The predictor variables in the logistic regression were knowledge, Age, Marital status C, Occupation, HHincome and Educational status using Step method. Addition of knowledge into the analysis did not change the result of analysis and the same model with age maintained.

Modeling HIV-Positive Child on the Attitude and Socioeconomic Variables

The third logistic regression model was used to answer the question whether in addition to socioeconomic factors; there was association between parental attitude and

HIV vertical transmission in Kenya. The null hypothesis tested was H0: There is no association between parental attitude of HIV and HIV vertical transmission against H1: There is an association between parental attitude of HIV and HIV vertical transmission. The predictor variables in the logistic regression were attitude, Age, Marital status C, Occupation, HHincome and Educational status using Step method.

From the dataset with 212 respondents in the analysis, case processing summary recorded 196 (92.5%) included in the analysis, 16 (7.5%) missing cases and no unselected case. The Block 0 output model includes only the intercept was like the Block 0 output of the two previous analyses with the intercept-only model result of in(odds) = -0.478.On exponentiation both sides of the model expression predicted odds [Exp (B)] = 0.620 with a Wald value of 10.592 which was very significant (p=0.001).

In the Block 1 output, only Age, income and attitude were added as predictors in the final model. The Omnibus Tests of Model Coefficients gave a chi square of 32.561 on 7 df for the model, very significant (p=0.000). Thus, adding Age, income and attitude to the model significantly increased the ability to predict the HIV mother to child infection proportions. Under Model Summary the -2 Log Likelihood statistics was 228.255, less than for the previous two models. This statistic measured how poorly the model predicts the decisions, the smaller the statistic the better the model. The Cox & Snell R^2 was 0.153implying that15.3% of the variation was explained by the model. The Nagelkerke R^2 was 0.208.The Hosmer and Lemeshow (H-L) Test was not statistically significant with a chi-square value of 6.149 with 8degrees of freedom (p-value =0.631). I therefore failed

to reject the null hypothesis implying the model's estimates fit the data at an acceptable level.

If above selected factors influenced Child's HIV, from the SPSS classification table, out of the 121 observed cases with no child dead on HIV, 108 were accurately classified resulting in 89.3% correct. Of the 75 cases with child dead on mother to child HIV, 31 were accurately predicted resulting in 41.3% correct. Overall percent correctly predicted was 70.9%.

In the logistic regression model, the response variable was HIV child and Variables entered the model were Age, HHincome Ct and Attitude.

Comparisons over household income showed no statistical significance as the level of income increases by groups as indicated in Table 21.The odd ratio for Age was 1.058(0.999, 1.120) with p=0.052 indicating that age sparingly influence MTCT. The odd ratio for Attitude was 0.073(0.012, 0.454) with p=0.005 indicating that attitude increased the likelihood to influence MTCT(Table 21).

Table 21

Variables in the Equation for Logistic Regression Model with Attitude

							95% confidence interval for EXP(B)	
	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Age	.056	.029	3.764	1	.052	1.058	.999	1.120
HHincomeCt			10.773	5	.056			
HHincomeCt(1)	.811	.803	1.021	1	.312	2.251	.467	10.859
HHincomeCt(2)	.073	.836	.008	1	.931	1.076	.209	5.542
HHincomeCt(3)	1.712	1.133	2.282	1	.131	5.542	.601	51.107
HHincomeCt(4)	1.638	1.051	2.432	1	.119	5.147	.657	40.355
HHincomeCt(5)	-.094	.764	.015	1	.902	.910	.204	4.068
Attitude	-2.624	.936	7.853	1	.005	.073	.012	.454
Constant	1.986	2.006	.980	1	.322	7.288		

Modeling HIV-Positive Child on the Knowledge, Attitude, and Socioeconomic Variables

The forth logistic regression model was used to answer the question whether in addition to socioeconomic factors; there was association between both parental attitude and knowledge on HIV vertical transmission in Kenya. The null hypothesis tested was H0: There is no association between parental attitude/knowledge of HIV and HIV vertical transmission against H1: There is an association between parental attitude/knowledge of HIV and HIV vertical transmission. The predictor variables in the logistic regression were attitude, Knowledge, Age, Marital status C, Occupation, HHincome and Educational status using Step method.

The independent variables that are used for outcome prediction was HIV child, a dichotomous indicating whether any of the respondent's child was HIV positive. Initially the independent variables entered the logistic regression analysis were respondents' Marital status C, Knowledge, Attitude, Age, HHincome, Clinic, Educational status and Occupation. On analysis the predictor variables were reduced, removing Clinic, Occupation and Age in steps 1, 2 and 3 respectively using Wald backward step method. The categorical variables marital status C (0 Married 1=Single/Divorced/widowed/cohabiting), HHincome (1=Less than US$20, 2= US$20 toUS$39, 3= US$40 toUS$59, 4= US$60 toUS$149, 5=More than US$150, and 6= Prefer not to answer or don't know) and Educational status(1=No formal education, 2=Primary school, 3=Secondary School, 4=Diploma, 5=Bachelor's Degree)were retained in the analysis together with the other continuous predictor variables Knowledge, Attitude and Age. However, due to large *p*-values on the 'variables in the equation' output table from the logistic regression, the Educational status variable was also omitted from the final regression analysis. Thus, only Marital status C, Knowledge, Attitude, Age and HHincome were retained in the final analysis.

From the dataset with 212 respondents in the analysis, case processing summary recorded 199 (93.9%) included in the analysis, 13 (6.1%) missing cases and no unselected case.

The results are given below:

There were 212 cases used in the analysis. The Block 0 in the output is for the model that includes only the intercept. Assuming no factor influenced Child HIV, from

the SPSS classification table then 123/212 = 58.02% reported they did not have children dying of HIV and 35.38% had children who died because of HIV. The intercept-only model result showed in (odds) = -0.481.On exponentiation both sides of the model expression predicted odds [Exp(B)] = 0.618 with a Wald value of 10.889 which was very significant (p=0.001). That is, the predicted odds of having a child dying of HIV are0.618. Since 76 of the respondents had HIV-positive dead children and 123 not, the observed odds are 76/123 = 0.618.

In the Block 1 output, Marital status C, Knowledge, Attitude, Age and HH income were added as predictors in the final model. The Omnibus Tests of Model Coefficients gives a chi square of 41.419 on 9 df, and significant beyond .001. Thus, adding the five variables to the model has significantly increased our ability to predict the HIV mother to child infection proportions.

Under Model Summary the -2 Log Likelihood statistic was 223.247. This statistic measured how poorly the model predicts the decisions, the smaller the statistic the better the model. The Cox & Snell R^2 was 0.188implying that18.8% of the variation was explained by the model. The Nagelkerke R^2 was 0.255.The Hosmer and Lemeshow (H-L) Test was not statistically significant with a chi square value of 12.968 with 8degrees of freedom (p-value =0.113). We therefore fail to reject the null hypothesis implying the model's estimates fit the data at an acceptable level. Well-fitting models show nonsignificance in the H-L goodness of fit test. An outcome of nonsignificance indicates the model prediction does not differ significantly from the observed cases.

If above selected factors influenced Child HIV, from the SPSS classification table, out of the 123 observed cases with no child dead on HIV, 109 were accurately classified resulting in 88.6% correct. Of the 76 cases with child dead on mother to child HIV, 39 were accurately predicted resulting in 51.3% correct. Overall percent correctly predicted was 74.4%.

In the logistic regression model, the response variable was HIV child and Variables entered the model were Marital status C, Knowledge, Attitude, Age and HHincomeCt. The odd ratio for mother being single (Single/Divorced/widowed/cohabiting) against married is 0.615 (0.274, 1.381) and not statistically significant (p=0.239).Comparisons over household income also showed no showed statistical significance for all the income groups as indicated in Table 22.However, knowledge and attitude with odd ratios of 0.931 (0.884, 0.980) and 0.025 (0.003,0.188) respectively were significant Wald test with p-values 0.006 and 0.000.Higher levels of knowledge and attitude based on the scores reduced likelihood of mother to child death due to HIV transmission. The respondent's age did not influence MTCT(Table 22).

Table 22

Variables in the Equation on Logistic Regression with Knowledge and Attitude

							95% confidence interval for EXP(B)	
	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Marital_statusC(1)	-.487	.413	1.388	1	.239	.615	.274	1.381
Knowledge	-.072	.026	7.507	1	.006	.931	.884	.980
Attitude	-3.706	1.038	12.742	1	.000	.025	.003	.188
Age	.038	.031	1.540	1	.215	1.039	.978	1.104
HHincomeCt			8.740	5	.120			
HHincomeCt(1)	1.001	.831	1.450	1	.228	2.720	.534	13.865
HHincomeCt(2)	.444	.864	.264	1	.607	1.559	.287	8.477
HHincomeCt(3)	1.913	1.221	2.458	1	.117	6.777	.620	74.124
HHincomeCt(4)	1.830	1.091	2.812	1	.094	6.235	.734	52.941
HHincomeCt(5)	.178	.786	.051	1	.821	1.195	.256	5.573
Constant	9.708	3.421	8.052	1	.005	16454.673		

The logistic regression was repeated recording the household income by removing the sixth category of the respondents who preferred not to answer or don't know their income. The analysis of 100 cases only included 94 respondents' data. Out of these, 48 reported no deaths and 46 reported deaths.

Assuming no factor influenced Child HIV, the Block 0 in the output which is for the model that includes only the intercept. The intercept-only model result showed ln(odds) = -0.43 and on exponentiating both sides of the model expression predicted odds [Exp(B)] = 0.958 with a Wald value of 0.043 which was not significant (p=0.837). That

is, the predicted odd of having a child dying of HIV is 0.958. Since 48 of the respondents had HIV-positive dead children and 46 not, the observed odds are 46/48 = 0.958.

In the Block 1 output, marital status C, Knowledge, Attitude, Age and HH income were added as predictors in the final model. Omnibus Tests of Model Coefficients gives a chi square of 30.859 on 8 df, and significant beyond .000. Thus, adding the five variables to the model has significantly increased our ability to predict the HIV mother to child infection proportions.

Under Model Summary the -2 Log Likelihood statistics was 99.680. This statistic measured how poorly the model predicts the decisions, the smaller the statistic the better the model. The Cox & Snell R^2 was 0.278implying that27.8% of the variation was explained by the model, increase from the previous model.

The Nagelkerke R^2 was 0.370.The Hosmer and Lemeshow (H-L) Test was not statistically significant with a chi square value of 11.072 with 8degrees of freedom (*p*-value =0.198). We therefore fail to reject the null hypothesis implying the model's estimates fit the data at an acceptable level.

If above selected factors influenced Child-HIV, from the SPSS classification table, out of the 48 observed cases with no child dead on HIV, 40 were accurately classified resulting in 83.3% correct. Of the 46 cases with child dead on mother to child HIV, 16 were accurately predicted resulting in 65.2% correct. Overall percent correctly predicted was 74.5%.

In the logistic regression model, the response variable was HIV Child and Variables entered the model were Marital_status C, Knowledge, Attitude, Age and

HHincomeCt. The odd ratio for mother being single (Single/Divorced/widowed/cohabiting) against married is 0.250(0.070, 0.899) and this time statistically significant (p=0.034).Therefore, being married reduced the risk of MTCT of HIV.

Comparisons over household income also showed gradual statistical significance as the level of income increases by groups as indicated in Table 23 (Blystad & Moland, 2009). The highest income earners with odd ratio more than 12 times were likely to infect their child. The knowledge and attitude with odd ratios of 0.919(0.848,0.996) and 0.004(0.000, 0.113) respectively were significant Wald test with p-values 0.040 and 0.001.Higher levels of knowledge and attitude based on the scores reduced likelihood of mother to child death due to HIV transmission. The respondent's age did not influence MTCT(Table 23).

Table 23

Variables in the Equation with Reduced Sample Size

							95% confidence interval for EXP(B)	
	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Marital_statusC(1)	-1.386	.653	4.508	1	.034	.250	.070	.899
Knowledge	-.084	.041	4.230	1	.040	.919	.848	.996
Attitude	-5.462	1.673	10.652	1	.001	.004	.000	.113
Age	-.015	.043	.116	1	.733	.985	.905	1.073
HHincomeCt			6.254	4	.181			
HHincomeCt(1)	1.289	.865	2.224	1	.136	3.631	.667	19.773
HHincomeCt(2)	.624	.895	.486	1	.486	1.866	.323	10.783
HHincomeCt(3)	2.294	1.364	2.829	1	.093	9.914	.684	143.609
HHincomeCt(4)	2.445	1.237	3.908	1	.048	11.535	1.021	130.312
Constant	15.233	5.160	8.716	1	.003	4126718.934		

Summary

The deliberation of socioeconomic, employment, knowledge, and other bivariate relationships between variables was critical to enable the eventual realization of the proper descriptive and statistical assessment of the variables concerning the vertical nature of HIV transmissions between mothers and their newborns. This was supported by Stover, Fuchs, Halperin, Gibbons, and Gillespie (2003). These variables were inclusive of the age of the respondents, marital status, the respondents' religion, occupation/employment status, and husbands' age, highest level of education, the average monthly household income, and the number of children per household. Otherwise, the

respective coding of variables, computation of numerical measures, frequencies, cross-tabulations and chi square tests of associations guarantees the efficiency and accuracy of the data or information. Further analyses included the independent t-test and the SPSS one-way ANOVA procedure for mean differences of continuous variables such as ages between the two different groups as presented in Part A of the analysis.

Preliminary analysis of the data on the knowledge on vertical transmission of HIV from mother to child was carried out using descriptive statistics and chi square tests for association. Initially the variables on knowledge were scored and aggregated to gauge respondents' level of knowledge on various aspects relating to vertical transmission of HIV from mother to child. The individual scores and aggregated resulting scores were then regressed with various socioeconomic variables to determine the levels of knowledge about HIV prevention and transmission amongst the participants (Webb, 2008).

Descriptive statistics was carried out on the each of the variables in the data on parental attitudes with further concerns being on the vertical transmission of HIV. Subsequently the variables were amalgamated into a single variable that in essence brings about a concise and better description of parental attitude. Again, the individual scores and aggregated resulting scores on parental attitude were regressed with various socioeconomic variables to determine if any aspect associated towards HIV had close relations with parental attitude. Various hypotheses were tested relating parental practices and mothers' socioeconomic factors, parental knowledge and attitude on MTCT. Initially descriptive analyses were carried out on reported practices such as baby feeds, intake of

ARV medications, giving babies heat treated expressed milk and whether the respondents tested for HIV.

Further analyses using logistic regression modeling were carried out. The dependent variable in the logistic regression was on death or lack of it from MTCT. The hypotheses were tested initially using all the variables in the logistic regression using the Wald backward step method and subsequently reduced to obtain the final regression models.

In Chapter 5, the interpretation of the findings, limitations of the study, recommendation for future research, and implication of the research on social change is presented

Chapter5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative research study was to explore the relationships that exist between HIV transmission from mother to child and parental HIV knowledge, perception, attitude, and practices. Becker's (1974) health belief model was used to guide the study, as noted by Essex et al. (2002) due to its alleged susceptibility, supposed severity, professed benefits, and applicability to the subject. This necessitated the evaluation of parental influence on HIV vertical transmission in Kenya through use of implicit focus of the perspectives brought about through the knowledge, perception, attitude, and practices model. In this study, I examined the relationship between the independent variables: selected demographic elements, mothers' knowledge on PMTCT, and parental attitude on PMTCT practices.

Interpretation of the Findings

For this study, I focused on knowledge, attitude, and the socioeconomic attributes of the respondents in relation to MTCT. The objective was to determine the association between these attributes and MTCT. In this section the findings are discussed to address the research questions.

Respondent's Knowledge

All the 212 respondents admitted that they were aware of HIV. From the results, a majority of respondents have sufficient knowledge on the basics of PMCT considering the 95% confidence interval variations for mean score on the knowledge awareness was 75.75% to 77.78%. In this case, the majority scoring was between 70% and 85%.All the

respondents were aware of HIV given that the admission criteria for enrollment in the study detailed the eventual/compulsory participation in the various PMTCT clinics located in the study vicinity. On average, each question on the awareness and knowledge program brought forth implicit relations to aspects concerning HIV issues; that is, MTCT and prevention. Articulating to the respondents' feedbacks, there was positive responses, which accounted to at least 80% of the participants' views. However, a sizeable proportion of the respondents were not sure of the assumption that expressing milk and then using heat treatments would make it safe for their baby by preventing their exposure to the virus. The normative issue was quite prevalent among infected mothers during pregnancy and after pregnancy. Alternatively, the participants had minimal comprehension/understanding about whether babies born through elective caesarean section(C/S) would be likely to contact (or not) the virus from the infected mother. What is also clear is their lack of understanding about whether the baby could contract HIV during pregnancy (Buvé, Bishikwabo-Nsarhaza, & Mutangadura, 2002).

Multiple linear regression and logistic regression analyses showed that no socioeconomic factors contributed towards enhanced knowledge on any aspect regarding the awareness and knowledge associated with the transmission of HIV from mother to child. Specifically, the social and economic conditions of every nurturing and pregnant mother had minimal impacts on their desire to learn and thus necessitate the eventual prevention of their child's infection.

Respondent's Attitude

The majority of respondents had positive attitude towards majority of questions. However, about half of the respondents were not positive on three questions. These were whether breastfeeding their newborn / baby when infected with HIV diminishes baby protection from being infected with HIV. They were noncommittal whether expressing milk and then heat treating makes the milk safe for their baby. Thirdly, they were not sure whether a HIV-infected mother can pass the virus to her baby during pregnancy.

The addition of attitude in the logistic model determining association between attitude socioeconomic variables and MTCT revealed some interesting insight. Comparisons over household income showed no statistical significance as the level of income increased. The odd ratio for age was 1.058(0.999, 1.120) with p=0.052 indicating that older mothers were more likely to infect their children. The odd ratio for attitude was 0.073(0.012, 0.454) with p=0.005 indicating that attitude increased the likelihood to influence MTCT.

Combining Knowledge, Attitude, and Socioeconomic Attributes

The addition of knowledge and attitude into the logistic model showed that the respondent's household income, marital status and age did not influence MTCT. However, knowledge and attitude with odd ratios of 0.931 (0.884, 0.980) and 0.025 (0.003,0.188) respectively were significant Wald test with p-values 0.006 and 0.000.Higher levels of knowledge and attitude based on the scores reduced likelihood of mother to child death due to HIV transmission. This supports the study by Muyingo et al. (2008) that the generation of knowledge about PMTCT without positive attitude and

further the implementation of the necessary course of action is quite detrimental to limiting the spread of the virus to the child, mother, or other sexual partners

For PMTCT programs to be effective, mothers and their children are required to receive and adhere to several interventions; that include HIV testing, involvement in antenatal services, the utilization of HIV drugs, good and safe child up-bringing, proper feeding, and HIV testing of the children among other post- and prenatal services advocated through the numerous health care initiatives (Farquhar et al., 2004).Thus, in order to gauge the respondents' attitude on the basics on MTCT possibilities, the participants were asked a series of questions pertaining their attitudes towards various activities that are essentially relevant in PMTCT. In general, the mothers were mostly in agreement with most of the items/issues/measures brought forth regarding how and why it is important to prevent any unnecessary means that would result in the infection of their babies before and after birth. However, a sizeable proportion ranging between 15% and 45% disagreed on various items. In this sense, the leading items of disagreement in order are detailed as follows:

1. Expressing milk and then heat treating makes the milk safe for the baby (44.3%)
2. Not breastfeeding the new born / baby upon conception amongst infected mothers protects the baby from getting HIV (16.0%)
3. A HIV-infected mother can pass the virus to her baby during pregnancy (15.1%)

4. Having protected sex with their partners (using protective mechanisms such as condoms) reduces the risk of MTCT of HIV during pregnancy (14.6%)
5. Delivery at a health facility and caesarean section option reduces the risk of the infected mothers' possibility to transmit the HIV virus to her baby (14.6%)

Facilitating the development of sustainable HIV prevention measures, Perez, Aung, Doro, Engelsmann, and Dabis (2008) recommended that Sub-Saharan African health care initiatives ought to ensure pregnant women take medication throughout pregnancy, during labor, and the postnatal period, with exclusive breastfeeding only after HIV/AIDS tests. The infant must also undergo periodic HIV testing and take medication to prevent transmission of the virus while he/she is breastfed. On the basis of the respective mothers' attitude, 83.0% of the respondents strongly agreed that taking ARV drugs/medications as indicated by the doctor's prescriptions necessarily guaranteed adequate protection of the baby while 9.9% agreed sparingly. More than 90% strongly agreed that, for the prevention of HIV transmission possibilities from mother to child, it is a requirement that pregnant women ought to be counseled about HIV transmission and prevention measures (Maman et al., 2011).Bringing about the concerns of the participants, the perspective of breastfeeding was quite confusing for many mothers. In this case, most of the respondents perceived that expressing milk and feeding the baby after heat treatments would ensure the realization of their baby's safety. This compares with Zambia where even though over 89% of women in 2007 knew that HIV can be transmitted by breastfeeding, only approximated number of 21% took ARVs while breastfeeding (Varga& Brookes, 2008).

Overall the respondents were positive as indicated by the scores that averaged a positive overall characteristic in respect to the various attitude variables tested. According to the regression analysis that uses the global indicator score for attitude, the positive attitude increases significantly with age and knowledge (Anderson, 2014).

Two logistic models were of great essence when determining the risk factors for MTCT. The first and most crucial component puts to consideration the respondents' data while the second logistic model lays emphasis upon the declarations regarding the respective household incomes. Providing a suitable correspondence on the212 cases, the first analysis model portrays that 58.02% did not have children dying of HIV and at least 35.38% had children affected and thus, dying of HIV. Rates as high as 40% have been reported in developing countries like those in Eastern and Central Africa including Kenya (Desmond, Greener, & World Bank, 2003). As indicated through the research brought about by WHO (2010), it is quite clear that most of the pregnant women living with HIV infect their babies. In this sense, between 15% and45% of the babies will contract the virus causing AIDS where the ARV drugs, nevirapine, are not available.

The odd ratio for a mother being single (single/divorced/widowed/cohabiting) against married was 0.615 (0.274, 1.381) and not statistically significant (p=0.239).The comparisons of household incomes also showed irrelevant statistical significance for all the income variables integrated into the research study. However, knowledge and attitude represent odd ratios of 0.931 (0.884, 0.980) and 0.025 (0.003,0.188) respectively; therein the stipulated calculations were significant. The Wald test p-values in this sense were 0.006 and 0.000.Higher levels of knowledge and attitude based on the scores reduced

likelihood of mother to child death due to HIV transmission. Notably, the respondent's age did not influence MTCT.

Income was considerably an important aspect in this study, given that most people in resource limited countries including Africa are subject to minimal access to HIV prevention services even during this technology and development era (Stillwaggon, 2009).Furthermore, the majority of people positively living with HIV/AIDS are from middle and low-income nations (Adari, Moghadam, & Starnes, 2007).The second logistic regression analytic approach excludes the individuals who did not declare their household incomes. As such, the odd ratio for mother being single (single/divorced/widowed/cohabiting) against married was 0.250 (0.070, 0.899) and statistically significant to the research study (p=0.034).Therefore, being married as emphasized further through the research by Posse et al. (2008) reduces the risk of MTCT of HIV/AIDS. Comparisons over household income also showed gradual statistical significance as the level of income increased. The highest income earners with odd ratio more than 12 times were more likely to infect their children. The knowledge and attitude assessments indicated ratios of 0.919(0.848,0.996) and 0.004(0.000, 0.113) respectively, and the stipulated values were significant such that the Wald test value for p was 0.040 and 0.001.Higher levels of knowledge and attitude based on the scores reduced likelihood of mother to child deaths due to HIV transmission (Parker, 2001).The respondent's age did not influence MTCT.

Limitations of the Study

This study had several limitations, which were as follows:

Generalizability

In essence, the study's participants/respondents were inclusive of pregnant mothers while others were lactating their infant children with ages lesser than 6 months. Most of the participants were in attendance of the various prenatal and antenatal care services in clinics located in Nyanza, Kenya. Notably, the effective and smooth generation of the required data/information about the study essentially demanded the participants be confirmed HIV-positive mothers. Because all the 212 respondents admitted that they were aware of HIV as expected, given the selection criteria, it limits the study to only individuals attending PMCTC clinics and therefore cannot be generalized to all mothers including those who are yet to seek the testing for HIV ,Portraying the speculated limitation, the Global HIV Prevention Working Group (2003), after undertaking a global research, inferred that about 60.0% of the world population is aware of their HIV status. As such, it is conclusive that the research study is subject to limiting its view points and assessments only on persons with HIV awareness levels (UNAIDS, AIDS 2016). Therefore, the important comparison between PMCTC mothers and non-PMCTC was impossible and thus excluded from the research study.

Sample Size

The evident or else prevalent limitation relates to the availability of adequate sample size, considering the inclusivity associating to the criterion implemented. Particularly, the collections of the results or data utilized in the studies mainly focused upon mothers who were cautious enough to visit the PMCT centers and thus, were available for routine appointments. Mothers were expected to provide detailed reports

concerning their exposure to HIV, which further entailed socioeconomic background (such as income), and whether their children had died due to MTCT of the virus. A concerning aspect/limitation attributable to this criterion is mainly associated to the tainting of the respondents' reflections of the factual and true records due to stigma attached to HIV as well as their fear of exposure or misleading expectations. Providing clarity on the issue, the mothers with such concerning aspects might also influence others by voicing out their mistrust about the program and questions articulated through the interviews.

However, among the mothers who reported children's untimely deaths, the life expectancy of HIV-positive infants is extremely short (Desmond et al., 2003). According to the author, at least a third of HIV-positive infants are estimated to die before their first birthday and over one half will die by their second birthday.

Sampling Methods

Another possible limitation to the study is also characteristic of the fact that, the study was implemented in a high HIV prevalence region utilizing a convenience, nonrandom, sampling strategy and the results of the study are as such limited to similar populations of mothers in the region and not the vast Kenyan population.

Recommendations

Based on my study findings and interpretation as described in chapters 4 and 5, I recommend that enhanced counseling and follow-ups on feeding and taking of ARVs. These are of critical significance in limiting the spread of the viral infections between the baby and the respective mothers.

HIV couples need to be informed that delivery at a health facility and caesarian section options reduces the risk of infected mother transmitting HIV to her baby. Otherwise, it is necessary for government agencies through health care agencies to provide assistance where possible especially on issues relating to financial aid.

In order for PMTCT programs to impact facility-based HIV care, health information delivery strategy to the at-risk groups and the already enrolled PMTCT clients must change to have a more positive impact aimed at reducing the lack of knowledge and awareness with regard to HIV MTCT and prevention to zero levels. In appropriate information delivery strategies lead to minimal information assimilation or zero transfer of the necessary information to the clients. The dangers are that lack of properly tailored and delivered information leads to poor practices that derail already positive gains realized since the PMTCT inception. Initiation of HIV/AIDS care to the infected pregnant women and across board should be at the opportune and appropriate time to minimize the challenges faced by the HIV AIDS affected and infected populations (Davies, Pinto, & Bras, 2015).Some of the challenges include breast feeding by HIV-positive women as the findings of this study showed. There is still a more serious need to let HIV-positive mothers evenly receive knowledge on MTCT as this study sighted limitation in the most essential areas as the need to understand that expressing milk and then heat treating makes the milk safe for the baby; Not breastfeeding a newborn / baby by the HIV infected mother protects the baby from getting HIV; An HIV-Infected mother can pass the virus to her baby during pregnancy; Having protected sex with their partners (condom use) reduced the risk of MTCT of HIV during pregnancy and

Delivery at a health facility and caesarian section option reduces the risk of infected mother transmitting HIV to her baby. Health practitioners must develop methods that gauge the information appropriateness to the targeted audiences and the impact achievement.

Future research should seek to understand and formulate new relevant information delivery strategies with regard to PMTCT as the current assessment reveals gaps either in strategy, assimilation or content.

Implications

My research findings provide new knowledge towards the PMTCT programs in Kenya and across board in HIV care and management focused on prevention of MTCT of HIV/AIDS. Specifically, the identified gaps require quick attention and further research whose outcome should continue to support HIV care with regard to knowledge in PMTCT. The finding reveal that low levels of stigmatization have been achieved as all the women have been tested, visit antenatal care clinics, and are counseled. Majority understands the basics of PMCTC and that it is possible HIV-positive parents to have a baby who is free of HIV.

Conclusion

My study findings confirm previous research on HIV KABB among pregnant women in that participants had a high level of awareness and knowledge on various aspects relating to HIV MTCT and prevention. However, a sizeable proportion of the target population45% still lacked knowledge and awareness regarding some key aspects of PMTCT, including.

- Expressing milk and then heat treating makes the milk safe for the baby (44.3%)
- Not breastfeeding a newborn / baby by the HIV infected mother protects the baby from getting HIV (16.0%)
- A HIV- Infected mother can pass the virus to her baby during pregnancy (15.1%
- Having protected sex with their partners (condom use) reduced the risk of MTCTof HIV during pregnancy (14.6%)
- Delivery at a health facility and caesarean section option reduces the risk of infected mother transmitting HIV to her baby (14.6%)

There is a serious need for the PMTCT program implementers to dwell more on information delivery to those enrolled and to the communities at large to reduce the lack of knowledge and awareness with regard to HIV MTCT and prevention as informed by this study.

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Appendix A: English Questionnaire

PARENTAL INFLUENCE ON HIV VERTICAL TRANSMISSION IN KENYA QUESTIONNAIRE

Part A: Participant's socio demographic information

1.Age on your last birthday……years. 888. □ Don't. Know 999. □ Prefer not to Answer

2.Marital status: 1. □ Married 2. □ Single 3.□Divorced 4.□ Cohabiting 5. □Widowed 999. □ Prefer Not to Answer

3.If Married or Cohabitating and Not Widowed, age of your husband or partner on his last birthday. ……years. 888. □ Don't. Know 999. □ Prefer Not to Answer

4.Religion 1. □ Muslim 2. □Christian 3. □ Other (specify)……

999. □ Prefer Not to Answer

5.Occupation/Employment status: 1.□ Employed (Government) 2. □Employed (private) 3. □Employed (self) 4. □Unemployed 6. □Other (specify)……

999. □ Prefer Not to Answer

6. Highest level of education 1.□No formal Education 2. □Primary school 3. □ Secondary school 4 □ Diploma 5.□ Bachelor's degree 6 □ Master degree 7. □ Doctorate 999 □ Prefer Not to Answer

7. Average monthly household income KSh. _____ 888. □ Don't. Know

999. □ Prefer Not to Answer

8. Do you have children? 1. □Yes 2.□ No 999. □ Prefer Not to Answer

9. If yes, how many? …… 999. □ Prefer Not to Answer

Part B: Knowledge on vertical transmission of HIV

10. Have you ever heard about HIV/AIDS (Please check one)

1. □ Yes

2.□ No

999. □ Prefer Not to Answer

11. Determine whether the following statements are True or False by selecting one option for each:

HIV can be transmitted through unprotected vaginal sex with an infected partner.

1. □ *True*

2.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

I can become infected with HIV by cutting myself with a contaminated sharp instrument like scissors.

1. □ *True*

2.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

A baby can become infected with HIV during childbirth from an HIV infected mother.

1. True

2. False

A baby can become infected with HIV by taking breast milk from an infected mother

1. True

2. False

888. Don't. Know

999. Prefer Not to Answer

12. HIV can be transmitted from an infected mother to her baby

1. True

2. False

888. Don't. Know

999. Prefer Not to Answer

13. Transmission of HIV from an infected mother to her baby is preventable

1. True

2. False

888. Don't. Know

999. Prefer Not to Answer

14. Taking anti-retroviral drugs can protect a baby from getting HIV infection from

his/her infected mother

1. □ *True*

2.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

15. Giving antiretroviral drugs to the newborn can protect a baby from getting HIV infection from his/her infected mother

1. □ *True 2*

.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

16. Avoiding breastfeeding can prevent transmission of HIV from an infected mother to her baby

1.□ *True*

2.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

17. Babies born by elective caesarean section (C/S) are less likely to get HIV from their infected mother.

1. □ True

2.□ False

888. □ Don't. Know

999. □ Prefer Not to Answer

18. When the mother is protected from HIV her baby is also protected from HIV.

1. □ True

2.□ False

888. □ Don't. Know

999. □ Prefer Not to Answer

19. Determine whether the following statements about transmission of HIV from the infected mother to her baby are **True or False** by selecting one option for each:

A baby may get HIV from his/her infected mother during pregnancy.

1. □ True

2.□ False

888. □ Don't. Know

999. □ Prefer Not to Answer

A baby may get HIV from his/her infected mother during labour.

1. □ True

2.□ False

888. □ Don't. Know

999. □ Prefer Not to Answer

A baby may get HIV from his/her infected mother during child delivery.

1. □ *True*

2.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

A baby may get HIV from his/her infected mother if he/she is breastfed .

1. □ *True*

2.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

Expressing milk and then heat treating it makes the milk safe for your baby.

1. □ *True*

2.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

20. Attending antenatal clinic is important for the health of my baby including preventing the baby from getting HIV.

1. □ *True*

2.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

21. Having protected sex with their partners (condom use) reduced the risk of mother to child transmission of HIV during pregnancy

1. □ *True*

2.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

22. HIV positive parents can get and raise a baby who is free of HIV.

1. □ *True*

2.□ *False*

888. □ Don't. Know

999. □ Prefer Not to Answer

23. Sore and/or cracked nipples increase the risk of transmitting HIV from an infected mother to her baby

1. □ *True*

2.□ *False*

888.□ Don't. Know

999. □ Prefer Not to Answer

Part C: Parental attitudes' on vertical transmission of HIV

Instructions: In this section, ask the respondent to answer whether they;

1. Strongly Agree,

2. Agree,

3. Neither agree nor disagree,

4. Disagree, or,

5. Strongly disagree

With the following statements, enter the number corresponding to the response provided in the response column of the table.

o.	Statement	Response
24	It's important that each and every pregnant woman gets tested for HIV	
25	To prevent transmission of HIV from mother to her child, pregnant women should be counseled about HIV	
26	Not breastfeeding your newborn/baby when you are infected with HIV protects the baby from getting HIV	
27	A HIV-infected mother can pass the virus to her baby through breast milk	

28	A HIV-infected mother can pass the virus to her baby during pregnancy	
29	A HIV-infected mother can pass the virus to her baby during delivery	
30	Taking ARV drugs/medicines as told by the doctor protects the baby from getting infected with HIV	
31	Expressing milk and then heat treating makes the milk safe for your baby	
32	Attending antenatal clinic is important for the health of my baby including preventing the baby from getting HIV	
33	Having protected sex with their partners (condom use) reduced the risk of mother to child transmission of HIV during pregnancy	
34	It is possible HIV positive parents to have a baby who is free of HIV	
35	Breast care to avoid sore and/or cracked nipples will prevent the infected mother from transmitting HIV to her baby	
36	Delivery at a health facility and by Caesarean section option reduces the risk of the infected mother transmitting HIV to her baby	

Part D: Parental practices

37. Have you ever breastfed your baby?

1. □ *Yes*

2.□ *No*

999. □ *Prefer Not to Answer*

38. If No, then what have you been feeding your child on:

1. □*Cow milk*

2. □ *Infant formula*

3. □ *Other (Specify) ……..*

999. □ *Prefer Not to Answer*

39. Do you take ARV medications as directed by the doctor?

1. □ *All of the time*

2. □ *Most of the time*

3. □ *Some of the time*

4. □ *Hardly Ever*

5. □ *Not at all*

40. Have you ever given your baby heat treated expressed milk?

1.□ *Yes*

2.□ No

999. □ Prefer Not to Answer

41. Were you tested for HIV?

1.□ Yes

2.□ No

999. □ Prefer Not to Answer

42. Is your baby HIV positive?

1.□ Yes

2.□ No

888. □ Don't. Know

999. □ Prefer Not to Answer

Kindly chose among the options to express your opinion on what fits the statement below based on your experience on the whole process: The process was pleasant and satisfactory:

1. Strongly Agree,

2. Agree,

3. Neither agree nor disagree,

4. Disagree, or,

5. Strongly disagree

Thank you so much for taking your time to participate in this study

Appendix B:EnglishtoKiswahiliQuestionnaireTranslation

Sehemu ya Kwanza (A): Habari kumuhusu Mhojiwa (Kusomwa mbele ya mhojiwa)

Nambari ya fomu ya maswali.....

1.Umri wako wakati wa siku yako ya kuzaliwa iliyopita……. 888. □ Sijui 999. □ Sipendelei Kujibu

Uchumba: 1. □ Niko na mchumba 2. □ Sina Mchumba 3.□Tumeachana4.□ Tunaishi Pamoja 5. □Nimefiwa 888. □ Sijui 999. □ Sipendelei Kujibu

Kama uko na mchumba ama munaishi pamoja na haujafiwa, umri wa bwana wakati wa siku yake ya kuzaliwa iliyopita……. 888. □ Sijui 999. □ Sipendelei Kujibu

Dini 1. □ Muislamu 2. □Mkristo 3. Nyingine (Eleza)…… 999. □ Sipendelei Kujibu

Kazi: 1.□ Ajiriwa na serikali 2. □ Ajira isio yaserikali 3. □ 4. □ Ajira binafsi 5. □Sina ajiral/Mke wa nyumbani 6. Nyingine (Eleza)…… 999. □ Sipendelei Kujibu

Kisomo 1.□Sina kisomo 2. Msingi 3.□ Upili 4 □ Diploma 5.□ Shada Ya kwanza 6 □ Shada Ya uzamilifu 7. □ Shahada ya udaktari 999. □ Sipendelei Kujibu

Mapato kadiri kwa mwezi- Shiingi.…… 888. □ Sijui 999. □ Sipendelei Kujibu

Una watoto? 1. □Ndio 2.□ La 999. □ Sipendelei Kujibu

Kama ndio ni wangapi? …….. 999. □ Sipendelei Kujibu

Sehemu ya Pili (B): Kuelewa kuhusu kuambukiza ukimwi kupitia mama hadi mtoto

10.Umesikia kuhusu Virusi vya Ukimwi (Tafadhali jagua moja)

1. □Ndio 2.□ La 999. □ Sipendelei Kujibu

11.Amua kama habari zifuatazo ni za Ukweli au Siukweli kwa kuchagua mojayapo kwa

kila habari : Chagua kwa haya

Virusi vya Ukimwi vyaeza kuambukiza kupitia kitenda cha ngono na mwenye ana virusi.

□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

b.Naweza kuambukizwa virusi vya ukimwi kupitia kujikata na chombo cha kukata kilicho

chafuliwa na virusi vya ukimwi

□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

c.Mtoto aweza kuambukizwa ukimwi anapozaliwa na mama aliye na viruzi

□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

d. Mtoto aweza kuambukizwa ukimwi kwa kunyonyeshwa na mama aliye na vrusi

□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

12. Virusi vyaweza kuambukizwa kutoka kwa mama hadi kwa mtoto

□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

13. Kuambukiza virusi kutoka kwa mama aliye ambukizwa hadi motto kwaweza zuiwa

□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

14. Kumeza vidonge za kupunguza virusi vya ukimwi mwilini mwa aliye ambukizwa yaweza

kukinga mototo kuambukiwa ukimwi kupitia mama aliye na virusi hadi motto

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

15. Kupeya motto aliyezaliwa dawa za kuzuia virusi vya ukimwi yaweza kuzuia mtoto asipate virusi kutoka kwa mamake aliye ambukizwa

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

16. Kutonyonyesha kwawezazuia mamaaliye na virusi kumuambukiza mtoto wake

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

17. Watoto wazaliwapo kupitia upasuaji waweza kuepuka maambukizi ya virusi kutoka

kwa mama waliyo ambukizwa

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

18. Mama aliyejizuia kutoka virusi huwa amezuia mtoto pia asipate

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

19. Amua kama habari zifuatazo kuhusu mama aliye na virusi kumuambukiza motto ni za

Ukweli au Siukweli kwa kuchagua mojawapo kati ya Kweli ama Sikweli

a.Mtoto aweza ambukizwa virusi kutoka mama aliye ambukizwa wakati wa uja uzito

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

a.Mtoto aweza ambukizwa virusi kutoka mama aliyeambukizwa akijitayarisha kuzaa - labor

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

b.Mtoto aweza ambukizwa virusi kutoka mama aliye ambukizwa wakati wa kuzaa

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

c.Mtoto aweza ambukizwa virusi kutoka mama aliye ambukizwa akinyonyeshwa

1.□ Kweli 2.□ Sikweli

d.Kukamua maziwa ya mama na kuchemsha kwaweza kufanya mazia iliyo na virusi isiambukize mtoto wako

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

20. Kuhudhuria kliniki ya mama wajawazito nimuhimu kwa maisha ya motto wangu pamoja na kuzuia mtoto wngu asipate virusi

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

21. Kushirikiana ngono na mpenziwako kwa kutumia mpira kwa weza kuzuia uwezekano wa kuzuia maambukizi ya virusi kutoka kwa mama hadi mtoto wakati wa uja uzito

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

22. Wazazi walio na virusi wawza kuzaa na kukuza mtoto asiye na virusi

1.□ Kweli 2.□ Sikweli 888. □ Sijui 999. □ Sipendelei Kujibu

23. Titi za mama zilizofura au kupasukapasuka zaongeza uwezekano wa mama aliye na virusi kumuambukiza mtoto wake

1.□ Kweli 2.□ Sikweli 3.□ Sijui 4.□ Sipendelei kujibu

Sehemu ya Tatu (C): Kujihisi kuhusu kuambukiza ukimwi kupitia mama hadi mtoto

Maagizo: Katika sehemu hi uliza wahojiwa kujibu kama wana;

1. Kubaliana Kabisa,

2. Kubaliana,

3.Hawana jibu kati ya kubaliana na kutokubaliana,

4.Hawakubaliani, ama

5. HawaKubaliani Kabisa.

Kwa ujumbe ufwatao weka nambari inayoelekezana na jibu katika sehemu (kijisanduku) iliyotengewa jibu

Nambari Ujumbe Jibu

24 Ni muhimu mama waja wazito kupimwa kama wana virusi vya ukimwi

25 Kuzuia maambukizi ya virusi kutoka kwa mama hadi mtoto, yafaa mama waja wazito wazungumziwe kuhusu hili jambo

26 Kutonyonyesha mtoto wako ikiwa unavirusi kwaweza zuia motto asipate virusi

27 Mama aliye ambukizwa virusi aweza ambukiza motto kupitia maziwa ya matiti mama

28 Mama aliye na virusi aweza ambukiza motto akiwa mja mzito

29 Mama aliye na virusi aweza ambukiza motto wakati wa kuzaa

30 Kumeza vidonge za kupunguza virusi vya ukimwi mwilini mwa aliye ambukizwa kwa maagiza ya daktari yaweza kukinga mototo kuambukiwa ukimwi kupitia mama aliye na virusi hadi motto

31 Kujikamua na kuchemsha maziwa yako huyafanya yawe salama kwa motto wako

32 Kuhudhuria kliniki ya mama wajawazito nimuhimu kwa maisha ya motto wangu pamoja na kuzuia mtoto wngu asipate virusi

33 Kushirikiana ngono na mpenziwako kwa kutumia mpira kwa weza kuzuia uwezekano wa kuzuia maambukizi ya virusi kutoka kwa mama hadi mtoto wakati wa uja uzito

34 Wazazi walio na virusi wawza kuzaa na kukuza mtoto asiye na virusi

35 Kutunza titi za mama kutokana na kufura au kupasukapasuka yaweza kuzuia uwezekano wa mama aliye na virusi kumuambukiza mtoto wake

36 Kujifungua katika hospitali kupitia upasuaji waweza kupunguza uwezekano wa mama aliye na virusi kumuambukiza mtoto wake

Sehemu ya Nne (D): Matendo ya Wazazi

37. Umewahi kunyonyesha mtoto wako?

1. □ Ndio
2. □ La

999. □ Sijihisi Kujibu

38. Kama ni La, motto wako unamlisha nini:

1. □Maziwa ya Ng'ombe
2. □ Maziwa yaliyo pimwa kwa watoto
3. □ Nyingine (Eleza) …….

999. □ Sijihisi Kujibu

39. Wameza madawa yako kulingana na maagizo ya daktari?

1. □ Wakati wowote
2. □ Wingi wa wakati
3. □ Wakati mwingine
4. □ Sifanyi hivyo

5. □ La hasha

40. Umewahi kupatia mtoto wako maziwa ya kujikamuwa yaliyochemshwa

1. □ Ndio

2.□ La

999. □ Sijihisi Kujibu

41. Ulipimwa virusi vaya ukimwi?

1. □ Ndio

2.□ La.

999□ Sijihisi Kujibu

42. Mtoto wako alipimwa na kupatwa na virusi vya ukimwi?

1. □ Ndio

2.□ La.

999□ Sijihisi Kujibu

Tafadhali chagua mojawapo ya maneno yaliyo orodheshwa ichaguliwe kuwa ni sambamba nakuelekezana na kujihisi kwako kuhusu zoezi hili kama ilivyoandikwa hapo chini: Zoezi lilikuwa lakufurahisha na kuridhisha:

1. NaKubaliana Kabisa,

2. NaKubaliana,

3.Sina jibu kati ya Nakubaliana na Sikubaliani,

4.Sikubaliani, ama

5. SiKubaliani Kabisa.

Iwapo utahitajika kama kifuatiliyo msimamizi mkuu wa hili zoezi ata asiliana nawe kibinafsi

Ahsante kwa kupata fursa ya kushiriki katika zoezi hili

AppendixC:DataAnalysisMatrix

Table 23: Analysis Matrix for the study on Parental influence on HIV vertical transmission in Kenya

Study Objective	Concept	Data Source	Level of Measurement	Analysis Procedures
Association between knowledge and HIV vertical transmission	Association between knowledge and HIV Vertical transmission.	Respondents	Ordinal (IV), Nominal (DV)	Cross tabulations, Odds Ratios, Chi Square, P value
Association between parental practices and HIV vertical transmission	Number of parents who have transmitted HIV to their babies vertically	Respondents	Nominal(IV), Nominal (DV)	Cross tabulations, Odds Ratios, Chi Square, P value
Association between attitudes and HIV vertical transmission.	Association between knowledge and HIV Vertical transmission.	Respondents	Nominal(IV), Nominal (DV)	Cross tabulations, Odds Ratios, Chi Square, P value

AppendixD:DataAnalysisDammyTables

Table 24: Socio demographic characteristics of the participants

Characteristic	Frequency	%
Age (years)		
≤19		
20-35		
36-45		
>45		
Marital status		
Married		
Single		
Cohabiting		
Religion		
Christian		
Muslim		
Other		
Educational		
No formal education		
Primary		
Secondary		
Post-secondary		

Table 25: Association between knowledge and HIV vertical transmission

Knowledge item	Child Positive/Vertical Transmission		OR	95% CI		p-value
	Yes (N, %)	No (N, %)		Lower	Upper	
Item 1						
Yes/ True						
No/ False						
Item 2						
Yes/ True						
No/ False						
Item 3						
Yes/ True						
No/ False						
Overall knowledge level						
High (>75%)						
Low (≤ 75%)						

Table 26: Association between parental practices and HIV vertical transmission

Practice item	Child Positive/Vertical Transmission		OR	95% CI		p-value
	Yes (n, %)	No (n, %)		Lower	Upper	
Item 1						
Yes						
No						
Item 2						
Yes						
No						
Item 3						
Yes						
No						
Overall rating on practice						
Positive (>75%)						
Negative (≤75%)						

Table 27: Association between attitudes and HIV vertical transmission

Attitude item	Child Positive/Vertical Transmission		OR	95% CI		p-value
	Yes (n, %)	No (n, %)		Lower	Upper	
Item 1						
Yes						
No						
Item 2						
Yes						
No						
Item 3						
Yes						
No						
Overall attitude						
Positive (>75%)						
Negative (≤75%)						