EFFECTIVENESS OF NURSE-LED HEALTH EDUCATION INTERVENTION ON ADHERENCE TO PREVENTION OF MOTHER TO CHILD TRANSMISSION SERVICES AMONG HIV-POSITIVE WOMEN OF REPRODUCTIVE AGE IN MOMBASA COUNTY

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Effectiveness of Nurse-Led Health Education Intervention on Adherence to Prevention of Mother to Child Transmission Services among HIV-Positive Women of Reproductive Age in Mombasa County

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University

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DEDICATION

This work is dedicated to my wife, children, siblings and Mombasa County Government

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ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ARV	Antiretroviral Therapy
APGAR SCORE	Measure of the Physical State of Newborn Infant
AZT	Azidothymidine
CD4	Cluster Differentiation 4
DNA	Deoxyribonucleic Acid
FBC	Full Blood Count
MNCH	Maternal Neonatal Child Health
HB	Hemoglobin
HIV	Human Immunodeficiency Virus
KDHS	Kenya Demographic Health Survey
PEPFAR	President Emergency Plan for Aids Relief
MTC	Maternal Child Health
NVP	Nevirapine
PCR	Polymerase Chain Reaction
PMTCT	Prevent From Mother to Child Transmission
SDG	Sustainable Development Goals
SPSS	Statistical Package For Social Sciences
TBA	Traditional Birth Attendants
UK	United Kingdom
UNSAID	United States Agency for International Development
USA	United States of America
WHO	World Health Organization

DEFINITIONS OF OPERATIONAL TERMS

Adherence to PMTCT Refers to the extent to which HIV-positive women of reproductive age consistently follow prescribed PMTCT services, including attending antenatal care, taking antiretroviral therapy (ART) as recommended, and attending follow-up appointments to prevent mother-to-child transmission of HIV.

Nurse-Led Health Education A structured educational intervention delivered by nurses that involves counseling and teaching HIV-positive women on the importance of adhering to PMTCT services. This includes providing information about HIV, ART, the importance of antenatal care, and how to overcome social and psychological barriers such as stigma and disclosure.

Self-Stigma The internalization of negative attitudes, beliefs, and perceptions about oneself due to HIV-positive status, leading to feelings of shame, guilt, and fear of social rejection, which can hinder adherence to PMTCT services.

HIV-Positive Women of Reproductive Age Women aged between 15 and 49 years who have been diagnosed as HIV-positive and are capable of becoming pregnant or are already pregnant, living in Mombasa County.

Disclosure of HIV Status The voluntary act of informing a sexual partner about one's HIV-positive status. In this study, it refers to self-reported sharing of HIV status by HIV-positive women with their sexual partners, as influenced by nurse-led health education.

Social Demographic Factors Refers to the socio-economic and demographic characteristics of HIV-positive women, such as age, education

level, marital status, employment status, income level, and cultural background, which may influence their adherence to PMTCT services.

PMTCT (Prevention of Mother-to-Child Transmission) A set of interventions aimed at preventing the transmission of HIV from an HIV-positive mother to her child during pregnancy, labor, delivery, and breastfeeding. These interventions include antiretroviral therapy (ART), safe childbirth practices, and proper infant feeding counseling.

Self-Reporting Disclosure Refers to the act of HIV-positive women voluntarily disclosing their HIV status to their sexual partners, as reported by the women themselves during the study.

Effectiveness The degree to which the nurse-led health education intervention improves adherence to PMTCT services, reduces self-stigma, and enhances HIV status disclosure among HIV-positive women in Mombasa County.

ABSTRACT

Over 90% of the 180,000 new pediatric HIV infections worldwide in 2017 were due to mother-to-child transmission (MTCT). PMTCT program options, including A, B, and B+, have been designed to prevent this transmission. In option B+, all pregnant and nursing women receive lifetime antiretroviral medication. Increasing uptake and retention of HIV-positive mothers in PMTCT services remains crucial in low- and middle-income countries (LMICs). This study evaluated the effectiveness of a nurse-led health education intervention in improving PMTCT adherence among HIV-positive women in Mombasa County, Kenya. The study, a quasi-experimental design, involved an intervention group (112 women) and a control group (100 women). Data on socio-demographic characteristics, PMTCT adherence, self-stigma, and HIV status disclosure to sexual partners were collected through entry and exit questionnaires. Data were analyzed using SPSS version 26.0, with chi-square used to assess associations and the difference-in-difference (DiD) approach to evaluate the intervention's effectiveness. At baseline, no significant differences in demographics between the groups were observed. The multivariate analysis showed that women with higher education had significantly increased odds of adhering to PMTCT, with secondary education (AOR=1.81, p=0.031), college (AOR=2.01, p=0.022), and university education (AOR=2.24, p=0.050) compared to primary education. Additionally, socioeconomic factors such as income and occupation played a crucial role, as women earning more than 60,000 KSh (AOR=4.23, p<0.001) and those in business or employment had lower adherence odds compared to housewives (AOR=0.22, p=0.004). PMTCT adherence improved significantly in the intervention group (χ^2=5.912, p=0.015). At baseline, self-stigma and disclosure rates were similar between the groups. Self-stigma was significantly reduced in the intervention group at the end-line (χ^2=151.096, p<0.0001). HIV status disclosure to sexual partners also increased significantly in the intervention group (χ^2=47.618, p<0.001). At baseline, no significant difference in PMTCT adherence was observed between the intervention and control groups (p=0.267). After DiD analysis the intervention showed a net impact on PMTCT adherence (36.9%, p<0.0001), self-stigma reduction (35.5%, p<0.0001), and HIV status disclosure (23.1%, p<0.0001). In conclusion, nurse-led health education proved effective in improving PMTCT adherence, reducing self-stigma, and increasing HIV status disclosure. Integrating nurse-led interventions into PMTCT programs is recommended to enhance uptake and reduce mother-to-child transmission in LMICs. These results contribute to the body of knowledge by providing empirical evidence on the benefits of nurse-led interventions in PMTCT services, particularly in LMICs. Additionally, these findings can inform policies aimed at maximizing the role of nurses in providing health education in PMTCT services.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

According to the WHO report, 37.9 million were living with HIV, with approximately 1.7 HIV newly infected persons globally as of 2018 (WHO, 2018). An estimated 0.8% of adults aged 15–49 years worldwide are living with HIV, as different countries and regions continue to face the effects of the pandemic in different ways. According to WHO, Africa is the most affected region with HIV, with more than 25.7 million individuals living with HIV as of 2018 (UNAIDS, 2019b). Nearly two-thirds of the global cases of HIV infection are reported in Africa, where approximately 1.1 million new cases of HIV infection were reported in the African region by the end of 2018 (WHO, 2018). Low- and middle-income countries carry the majority of people living with HIV. In 2020, approximately 20.6 million people were living with HIV, of which 55% came from Eastern and Southern Africa (HIV.GOV, 2020).

As of 2018, an estimated 19 million women aged 15 and above were living with HIV(UNAIDS, 2019a), and about five hundred children were newly infected with HIV globally each day, mainly as a result of mother-to-child transmission (UNAIDS, 2019a).In Kenya, approximately 910,00 women aged 15 years and above were living with HIV in 2018(UNAIDS, 2019a); data revealed that 12% of HIV-exposed children were infected with HIV as a result of mother-to-child transmission of HIV (UNAIDS, 2019b).

Sub-Saharan Africa accounts for about 60% of the world's disease burden despite having only 10% of the world's population (Omondi et al., 2015) and according to (Avert, 2016), a global Plan was hatched to lower the number of new HIV infections through mother-to-child transmission by 90% by 2015. In 2015, six leading countries, namely Botswana, Mozambique, Namibia, South Africa, Swaziland, and Uganda, were identified to have met the global Plan target of lowering mother-to-child transmission by 90% (UNAIDS, 2016)**.** Outside of the priority countries, in mid-2015, Cuba became the first country to eliminate the mother-to-child transmission of HIV

(WHO, 2016). In 2016, Belarus and Armenia acquired the same accomplishment, while Thailand became the first country in the Asia and Pacific region to eliminate MTCT (WHO 2016).

Eliminating Mother to child transmission MTCT does not mean 100% but a reduction of transmission to below 5%, which is considered safe (WHO 2015). Mother-to-child transmission (MTCT) is when an HIV-positive woman passes the virus to her baby. This can happen through pregnancy, labor, delivery, or breastfeeding. According to (WHO 2017& AIDS Center 2010) if treatment is not administered during this time, then transmission rates range from 15– 45 % of babies born to HIV-positive women will become infected with HIV during pregnancy and delivery, and an additional 5–20% will become infected through breastfeeding. The socio-demographic and socio-economic status of pregnant mothers has a significant bearing on PMTCT globally; for instance, an expectant mother in a developed world like Britain can have access to a doctor and will be able to plan for delivery with the help of an obstetrician, pediatrician, and midwife and can arrange for cesarean section due to the virial load whereas in developing countries this is not the case (UNAIDS, 2022a)

Kenya is among the countries supported by the WHO and The President's Emergency Plan for AIDS Relief (PEFAR) to implement a new strategy on PMTCT known as B+, which seeks to put all HIV-positive women on ARVS for life. This strategy aimed to eliminate PMTCT by 2015. The elimination plan was a four-sided plan that sought to 1) reduce HIV incidence among HIV women by 50%. 2) to meet unmet family planning needs among women. 3) Reaching over 90% of women with effective ARV therapy to reduce transmission rate to below 5%. 4) 90% reduction in maternal deaths and a 90% reduction in infant deaths attributed to infants and children below 5 years(Muyunda et al., 2019). However, 160,000 children became infected with HIV in 2016, most of which were from mother-to-child transmission during pregnancy or breastfeeding (UNSAIDS 2017). Kenya has the third-largest HIV endemicity in the world (alongside Mozambique and Uganda) regarding the number of people living with HIV, which was 1.6 million in 2016 (National AIDS Control Council, 2021). Approximately 36,000 people died from AIDS-related illnesses in the same year, although this figure steadily declined from 51,000 in 2010 (UNAIDS, 2019.).

The first case of HIV in Kenya was detected in 1984and by the mid-1990s, it was one of the significant causes of mortality in the country, putting enormous demands on the healthcare system and the economy. HIV prevalence peaked at 10.5% in 1996 and had fallen to 5.9% by 2015 (UNAIDS, 2015). This is mainly due to the rapid scaling up of HIV treatment and care (WHO 2010). Although HIV prevalence among the general population has fallen in Kenya, women continue to be disproportionately affected by the epidemic. In the Kenya Population-based HIV Impact Assessment (KENPHIA,2020), a prevalence of 6.6% of women lived with HIV compared with a prevalence of 3.1% of men. Young women (aged 15-24) account for up to 21% of all new HIV infections, with a prevalence that is four to six times higher than that of males of the same age. This prevalence is found across all groups and geographic areas, from young female sex workers and young women who inject drugs to young women in discordant couples and young women in and out of school. Women and girls in Kenya, like many other parts of Sub-Saharan Africa, face discrimination in education, employment, and healthcare. As a result, men often dominate sexual relationships, with women not always able to practice safer sex even when they know the risks(Kharsany & Karim, 2016).

Young Kenyan women also have a lower level of HIV knowledge than their male peers. The Kenyan Demographic Health Survey (KDHS 2022) found out that slightly over half of young people in Kenya are aware of HIV prevention methods, with 54% of women and 55% of men being knowledgeable. Awareness is lowest among individuals aged 15–17, where only 44% of both women and men have knowledge of prevention, and among those who have never had sexual experience, with 47% of women and 48% of men being informed.

1.2 Statement of the Problem

Globally, HIV/AIDS remains a significant public health challenge, affecting approximately 38 million people by the end of 2022 (UNAIDS, 2022). Despite global efforts to control the epidemic, the burden of HIV is disproportionately borne by women, particularly in sub-Saharan Africa, where 61% of people living with HIV are women (UNAIDS, 2023). Mother-to-child transmission (MTCT) of HIV continues to

be a major cause of new pediatric infections, with around 160,000 children newly infected in 2022, largely due to gaps in adherence to Prevention of Mother-To-Child Transmission (PMTCT) interventions (WHO, 2022; UNAIDS, 2022). Without proper intervention, the risk of MTCT during pregnancy, childbirth, or breastfeeding can range from 15% to 45%. However, this risk can be reduced to less than 5% with antiretroviral therapy (ART) and other PMTCT measures (Muyunda et al., 2019).

Regionally, sub-Saharan Africa remains the epicenter of the HIV epidemic, where 90% of all pregnant women living with HIV globally reside and in this region, approximately 100,000 children are infected annually due to gaps in PMTCT adherence (UNAIDS, 2023). Kenya is one of the 22 countries accounting for the majority of these infections, contributing 4% of all new infant HIV infections globally and 7% of all child deaths caused by HIV (UNAIDS, 2022b). Annually, an estimated 13,000 new pediatric HIV infections occur in Kenya, with MTCT rates standing at 9.7%, resulting in approximately 8,000 new infections among children each year (NASCOP, 2022).

In Mombasa County, the situation is particularly concerning, with an MTCT rate of 11%, which is higher than the national average. This elevated rate is driven by several factors, including socio-cultural barriers, limited access to healthcare, and stigma, all of which hinder adherence to PMTCT services (NACC, 2022; NASCOP, 2022). Socio-demographic and socio-economic characteristics, as well as knowledge, attitudes, and practices related to PMTCT, play a critical role in determining health outcomes for both mothers and their infants.

Although various interventions—such as counseling, cognitive-behavioral therapy (CBT), and support groups, have been implemented to increase adherence to PMTCT, there remains a significant gap in tailored, context-specific approaches (Tegegne & Zeru, 2022). Notably, there is limited evidence on the effectiveness of nurse-led health education interventions in improving PMTCT adherence among HIV-positive women in Mombasa County (Kinuthia et al., 2018). The lack of targeted, nurse-led education has contributed to the long-term ineffectiveness of PMTCT programs, exacerbating the high rates of MTCT in the region.

Therefore, this study seeks to address the existing gaps by evaluating the effectiveness of a structured nurse-led health education intervention in improving PMTCT adherence among HIV-positive women attending antenatal clinics in selected health facilities in Mombasa County, Kenya. By targeting the root causes of non-adherence, this research aims to provide evidence for more effective PMTCT interventions that could ultimately reduce the incidence of HIV transmission from mother to child.

1.3 Justification of the Study

The high HIV prevalence in Mombasa County (5.6%), which surpasses the national average (County Government of Mombasa, 2022), coupled with a PMTCT coverage of 85%, necessitates this study due to persistent suboptimal adherence to PMTCT services, resulting in an elevated mother-to-child transmission (MTCT) rate of 11% (NASCOPE, 2022). This gap in adherence indicates a critical area that needs targeted interventions to reduce pediatric HIV infections. Nurses play a vital role in PMTCT services by providing personalized health education to pregnant women during antenatal care (ANC) visits (WHO, 2022). Nurse-led health education has proven to enhance health outcomes by addressing both clinical and social factors through tailored, patient-centered care (WHO, 2022). This study aims to address the research gap by assessing the effectiveness of a nurse-led health education intervention in improving adherence to PMTCT services. Choosing a quasi-experimental design allows for real-world evaluation of this intervention while controlling for external variables, ensuring more reliable findings. Ultimately, improved adherence will significantly reduce HIV transmission to infants, contributing to the elimination of pediatric HIV by 2027 (Ministry of Health Kenya, 2023). The study will benefit multiple stakeholders, including infants, mothers, healthcare workers, and policymakers, providing evidence to inform future maternal and child health policies and practices..

1.4 Objectives

1.4.1 Broad Objective

To determine the effectiveness of nurse-led PMTCT health education on PMTCT practice among HIV-positive women of reproductive age and the health.

1.4.2 Specific Objectives

i. To determine the social demographic factors influencing adherence to PMTCT among HIV-positive women of reproductive age in Mombasa County.
ii. To determine the effect of nurse-led PMTCT health education on adherence to PMTCT among HIV-positive women of reproductive age in Mombasa County
iii. To determine the effect of nurse-led PMTCT health education on the reduction of self-stigma among HIV-positive women of reproductive age in Mombasa County
iv. To determine the effect of nurse-led PMTCT health education among HIV-positive women of reproductive age on self-reporting disclosure of HIV status to sexual partners in Mombasa County.

1.5 Research Questions

i. What are the social demographic factors influencing adherence to PMTCT among HIV-positive women of reproductive age in Mombasa County?
ii. What is the effect of nurse-led PMTCT health education on adherence to PMTCT among HIV-positive women of reproductive age in Mombasa County?
iii. What is the effect of nurse-led PMTCT health education on the reduction of self-stigma among HIV-positive women of reproductive age in Mombasa County?
iv. What is the effect of nurse-led PMTCT health education among HIV-positive women of reproductive age on self-reporting disclosure of HIV status to sexual partners in Mombasa County

1.6 Theoretical Framework

This study employs three major theories: the Health Belief Model (HBM), Social Cognitive Theory (SCT), and Psychosocial Theory. These theories provide a solid foundation for investigating the factors that influence PMTCT adherence and the impact of nurse-led health education interventions

1.6.1 Psychosocial Theory

Psychosocial Theory theorizes that psychological and social factors significantly influence individuals' health behaviors and experiences . In the context of this study, the psychosocial factors influencing adherence to PMTCT services and the effects of nurse-led health education interventions can be analyzed through the lens of self-stigma and disclosure of HIV status. Key elements of Psychosocial Theory relevant to this study include:

Self-Stigma: HIV-positive women often experience stigma related to their diagnosis, which can hinder their willingness to engage with PMTCT services. Nurse-led health education can address self-stigma by fostering a supportive environment and enhancing participants' understanding of their rights and health needs.

Social Support: Access to social support from healthcare providers, peers, and family can facilitate adherence to PMTCT services. Health education can strengthen social networks, encouraging women to disclose their HIV status to partners and seek necessary care.

This theoretical framework provides a comprehensive understanding of how nurse-led health education interventions can influence adherence to PMTCT services by addressing individual beliefs, enhancing self-efficacy, and mitigating the impact of self-stigma.

1.6.2 Health Belief Model (HBM)

The Health Belief Model (HBM) theorizes that individuals' health behaviors are influenced by their perceptions of susceptibility to health issues, the severity of those

issues, the benefits of taking preventive action, and the barriers to taking that action (Rosenstock, 1974). In the context of this study, the HBM can help explain the adherence of HIV-positive women of reproductive age to PMTCT services based on their beliefs about the risks of mother-to-child transmission and the effectiveness of PMTCT interventions. Key constructs of the HBM relevant to this study include

Perceived Susceptibility: Women who believe they are at high risk of transmitting HIV to their infants may be more likely to adhere to PMTCT services.

Perceived Benefits: Understanding the benefits of adhering to PMTCT services—such as reducing transmission risk and improving maternal health—can motivate adherence.

Perceived Barriers: Identifying and addressing barriers, such as stigma and lack of information, is crucial for improving adherence rates. The HBM allowed the study to explore how nurse-led health education modify these perceptions, potentially enhancing adherence among participants.

1.6.3 Social Cognitive Theory (SCT)

Social Cognitive Theory (SCT), developed by Albert Bandura, emphasizes the interplay of personal, behavioral, and environmental factors in shaping health behaviors (Bandura, 1986). SCT is particularly relevant in understanding how nurse-led health education can influence adherence to PMTCT services among HIV-positive women. Key components of SCT include:

Self-efficacy which is an individuals' belief in their ability to perform behaviors necessary for adherence to PMTCT services. Health education interventions can enhance self-efficacy by providing knowledge and skills to manage their health.

Observational Learning: Through modeling and witnessing the experiences of others, women may adopt positive health behaviors. Nurse-led interventions can facilitate peer support groups, enabling women to learn from one another’s experiences.

Reciprocal Determinism: This concept highlights the bidirectional influence between individuals and their environment. Health education can create supportive environments that reinforce adherence to PMTCT services. By utilizing SCT, this study examined how nurse-led health education impacts self-efficacy and environmental factors, ultimately leading to improved adherence to PMTCT services.

1.6 Conceptual Framework

The conceptual framework has two variables which include the independent variable and the dependent variable. In this present study, the conceptual framework includes intervening variables. The independent variable is the nurse-led health education on PMTCT. In contrast, the dependent variables include Adherence to PMTCT, Self-stigma, and Self-reporting disclosure to sexual partners on HIV status. The intervening variables include social demographic characteristics of mothers, i.e., age, marital status, education level, occupation, and income level, which influence adherence to PMTCT, self-stigma, and self-reporting disclosure to sexual partners, consequently reducing the prevalence of HIV-positive newborn babies to HIV-positive mothers. The strategy focuses on increasing adherence to PMTCT and improving PMTCT services utilization, e.g., exclusive breastfeeding, adherence to ART, early infant and mother diagnosis, reducing stigmatization, creating PMTCT awareness, and increasing knowledge of mothers on the importance of PMTCT adherence, and finally, improving the HIV status of newborn babies to HIV cheerful mother.

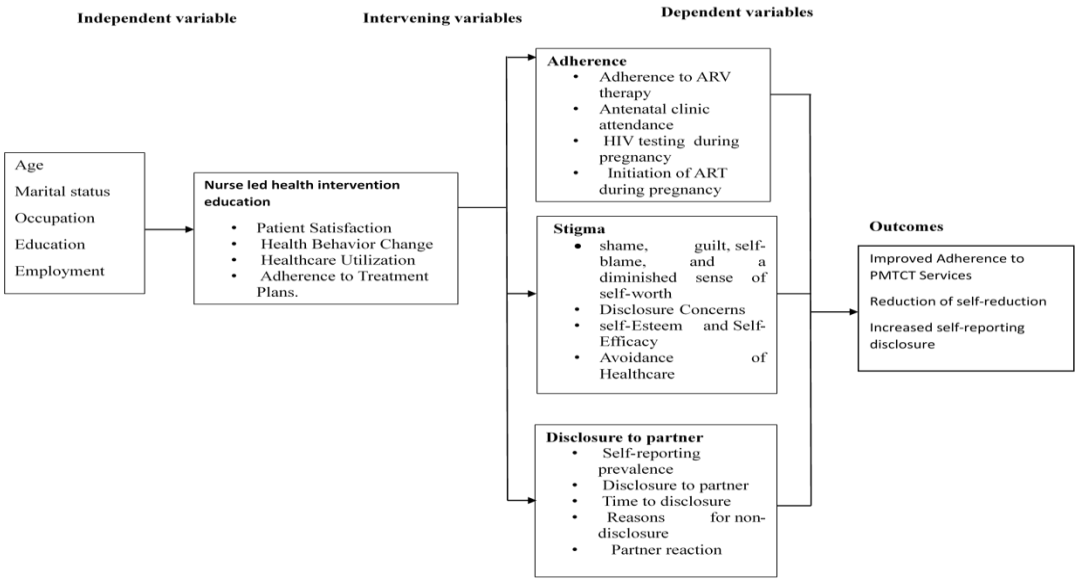


Figure 1.1: Conceptual Framework

1.8 Outline of the Study

This study report is divided into five sections, with the introduction coming first and the conclusion coming last. The first section provides a general overview of the global HIV situation among women, including disease mortality and morbidity in Kenya at the global, regional, and local levels. The section also emphasizes the problem statement of the study. The significance of the research is discussed, as well as the study's broad and specific objectives. The second section examines the empirical literature on human immunodeficiency virus, social demographic factors influencing adherence to PMTCT among HIV-positive women, PMTCT health education on self-reporting disclosure of HIV status to a sexual partner, adherence to PMCT, and self-stigma among women living with HIV and PMTC utilization. The third section describes the methods and materials of the study, and the fourth section gives the results and their short description. Finally, the final section discusses the study results, concludes the findings, and makes recommendations based on the findings.

1.9 Assumptions of the Study

The current study is based on the following assumptions:

i. Participants' Comprehension and Willingness to Engage: It is assumed that the HIV-positive women in both the intervention and control groups fully understood the nurse-led health education provided and were willing to participate in the study. This assumption is critical for any educational intervention where participants' cognitive ability and willingness to engage with the content are key to the intervention's success (Campbell & Cornwell, 2008).

ii. Homogeneity of the Study Groups: It is assumed that the intervention and control groups are homogenous in terms of socio-demographic factors such as age, education, income, and occupation, allowing for comparability between groups. Randomization or careful matching often helps mitigate group differences in intervention studies (Shadish et al., 2002).

iii. Reliability of Self-Reported Data: The study assumes that the participants' self-reports regarding PMTCT adherence, self-stigma, and HIV status disclosure to their partners are accurate and truthful. Self-reporting can sometimes be affected by social desirability bias, but it remains a widely used method in health interventions (Paulhus & Vazire, 2007).

iv. Consistency in Implementation of Intervention: It is assumed that the nurse-led health education intervention was delivered consistently across all participants in the intervention group, ensuring that all participants received the same level of education and support. Inconsistent intervention delivery could affect the study's internal validity (Borrelli, 2011).

v. No Major External Influences: The study assumes that no external factors (such as other health interventions or changes in health policies) significantly influenced the PMTCT adherence behaviors of the participants during the study period. This assumption is critical to attributing observed changes directly to the intervention (Schoonen, 2006).

Availability of PMTCT Services: It is assumed that PMTCT services were consistently available and accessible to all participants throughout the study. Without consistent access, adherence outcomes could be skewed (UNAIDS, 2021).

1.10 Research Limitations

i) We relied on respondent self-reporting to measure adherence to PMTCT, stigma, and HIV status disclosure to sexual partners; these outcomes are thus subjected to reporting bias.

ii) Potential for Non-Equivalent Groups: this is because random sampling was not used to select the intervention and control groups.

iii) Potential for Low Internal Validity because beginning research with non-equivalent groups presents a threat to internal validity

iv) The study is not a trend or follow-up type of research and thus does not consider dropouts from the study, which may lead to bias.

CHAPTER TWO

LITERATURE REVIEW

2.1 Human Immunodeficiency Virus

Human immunodeficiency virus (HIV) is a virus that attacks the body's immune system. Acquired immunodeficiency syndrome (AIDS) occurs at the most advanced stage of infection(WHO2024). HIV is in the family Retroviridae, the genus Lentivirus which contains the human immunodeficiency virus . HIV type 1 is the cause of the global epidemic that affects most nations, including Kenya, whereas HIV type 2 is primarily prevalent in West Africa (NASCOP, 2005). HIV type 1 (HIV-1) and HIV type 2 (HIV-2) are two distinct types of the human immunodeficiency virus. HIV-1 is the more prevalent form globally and is known for its rapid progression and higher transmission rates. In contrast, HIV-2 is less pathogenic, develops more slowly, both types can lead to AIDS if not treated (Eeb med 2022). Four point nine million new HIV infections were reported worldwide in 2004. With an anticipated 100,000 new HIV infections in 2013, Swaziland has the highest HIV infection rate in the world, while Kenya is in fourth place. 2016 (UNICEF). More than 2.5 million persons with HIV and AIDS reside in Kenya (KENPHIA, 2018).

According to data from sentinel sites where pregnant mothers are frequently examined, Mombasa County had a prevalence of 7.8% in 2009 (NASCOP, 2010). After HIV infection, CD4-T cells are progressively destroyed. The primary factor contributing to their decline is active viral replication. The rate of CD4 T-cell decline is controlled by viral load, which in turn influences the degree of immunosuppression and the onset of HIV-related opportunistic diseases. The World Health Organization (WHO) classifies HIV patients into four clinical stages based on their symptoms and CD4 counts. In WHO Stage 1, patients typically have CD4 counts greater than 400 and show no symptoms of AIDS. In Stage 2, CD4 levels decrease to around 300, and patients may develop conditions such as skin diseases and experience fatigue. By Stage 3, CD4 counts drop to 200, and patients often experience weight loss and may develop conditions like oral thrush and pulmonary tuberculosis (World Health Organization, 2007).

In WHO stage 4, the patient exhibits Kaposi's sarcoma, Pneumocystis carinii pneumonia, persistent herpes, and other opportunistic infections and CD4 levels gradually drop below 200. These stages could take up to 13 years if left unchecked (NASCOP, 2010). The following first-line ART regimens are advised by the WHO (2015) Guidelines for expectant women: The following first-line ART regimens are recommended by the WHO (2015) Guidelines for pregnant women: Zidovudine (AZT)+ Lamivudine (3TC)+ Nevirapine (NVP) or Zidovudine (AZT)+ Lamivudine (3TC)+ Efavirenz (EFV), or Tedinofor (TDF) + (3TC) or (Emtricitabine (FTC)+ Nevirapine (NVP) (EFV). If the newborn is breastfeeding, Nevirapine is administered once daily from birth for six weeks. Nevirapine or zidovudine are administered once a day or twice daily to infants on replacement feeding starting at birth and continuing for 4 to 6 weeks. Option B+, which entails lifetime antiretroviral treatment without skipping a dose both during pregnancy and after the baby is delivered for mothers who are HIV positive, is advised by WHO (2015) to prevent HIV transmission to the unborn child (WHO, 2015). The mother should take Nevirapine as soon as labor begins, and the newborn should receive Nevirapine syrup no later than 72 hours after birth. When she initially interacts with the healthcare provider at the antenatal clinic, she should receive a single dosage of nevirapine (MoH, 2012).

2.2 Social Demographic Factors Influencing Adherence to PMTCT among HIV-Positive Women

The socio-demographic and socio-economic status of pregnant mothers has a significant bearing on PMTCT globally

Kenya is among the countries supported by the WHO and PEFAR to implement a new strategy on PMTCT known as B+, which seeks to put all HIV-positive women on ARVS for life. This strategy aimed to eliminate PMTCT by 2015. The elimination plan was a four-sided plan which sought to; 1) Reduce HIV incidence among HIV women by 50%. 2) Meet unmet family planning needs among women. 3) Reaching over 90% of women with effective ARV therapy to reduce transmission rate to below 5%. 4) 90% reduction in maternal deaths and a 90% reduction in infant deaths attributed to infants and children below 5 years. (Dutta *et al.*, 2013). However, 160,000

children became infected with HIV in 2016, most of which were from mother-to-child during pregnancy or breastfeeding.

The World Health Organization is deeply committed to the prevention of mother-to-child transmission (PMTCT) of HIV. This commitment includes primary prevention of HIV infection among women of childbearing age, preventing unintended pregnancies among women living with HIV, and scaling up access to effective PMTCT services (United Nation, 2020). These services aim to prevent HIV transmission from mothers to their infants while providing appropriate treatment, care, and support for mothers living with HIV, their children, and their families (World Health Organization, 2010). However, with all this effort by WHO, there are barriers to effectiveness practice of PMTCT among women. People with HIV time and again face severe economic barriers to health care in scenarios where direct medical costs are so high (consultations, drugs, diagnostics, and hospitalization), and also costs related to transport, accommodation, food, substitute care, and loss of income (Yacobson et al., 2016a).

Age is a barrier to PMTCT adherence in African countries. A study in southern Ethiopia found that women under 25 were 88% less likely to adhere to PMTCT compared to those over 30, likely because older women have greater responsibility and accountability for their families(Humphrey et al., 2021). The study also indicated that women without formal education were also 88% less likely to adhere to PMTCT than those with college and above education (Abdisa & Tenaw, 2021). This is because women who are more educated have good knowledge of the importance of PMTCT therefore, likely to practice the measures. In Uganda, a cross-sectional qualitative study carried out to investigate factors influencing uptake and adherence to ART by pregnant women living with HIV/AIDS, the thematic analysis result indicated that the primary motivator for uptake and adherence was the desire by Women Living With HIV AIDS (WLWHA) to have HIV-free babies. The study further stated transportation and cost of PMTCT services are also significant barriers to PMTCT uptake and adherence among WLWHA (Fadila Jumare, 2019). Young Kenyan women also have a lower level of HIV knowledge than their male peers. The 2022 Kenyan Demographic Health Survey (KDHS) found that only 54% of young women could correctly identify

ways of preventing sexual transmission of HIV and rejecting misconceptions about HIV transmission, compared to 64% of young men (Avert 2016).

According to a study done in Kenya (Sirengo *et al.*, 2014), 44.5% of HIV-positive women reported having at least 1 live birth in the 5 years preceding the survey. Despite the effort to implement PMTCT among HIV-positive mothers, social-demographic factors are essential predictors of PMTCT uptake and adherence.

2.3 PMTCT Health Education on Self-Reporting Disclosure of HIV Status to the Sexual Partner

HIV/AIDS continues to be a significant public health challenge; therefore, more efforts are needed to ensure successful treatment and prevention interventions (Ngonzi, 2019). Since the introduction of antiretroviral drugs, the risk of HIV transmission from mother to child during pregnancy, delivery, and breastfeeding in places with inadequate resources has been significantly reduced (Kiweewa et al., 2015). Many women are worried that their HIV status won't be kept secret if they are proven to be positive (WHO, 2010). Every society experiences stigma and prejudice connected to HIV, which can result in social exclusion and even the breakup of families. A woman with HIV is less likely to take antiviral medications and use unorthodox newborn feeding techniques if she hasn't told her partner about her HIV status . For the first several months of life, a newborn needs to have breast milk to get all the nutrients they need. It is affordable, widely accessible, at the right temperature, and improves the mother-child relationship (WHO, 2006). Sadly, breastfeeding increases the risk of HIV transmission from mother to kid (Obonyo, 2016).

In sub-Saharan Africa (SSA), the proportion of women who disclose their HIV status to their sex or male partners varies greatly. Previous studies have shown that about 17% to 86% of HIV-infected persons share their HIV- status with their sex partners (Kiweewa et al., 2015). Women tested during their antenatal care were reportedly unlikely to disclose their HIV status to their sex partners compared to non-pregnant women (16.7 % versus 32 %)(Kiweewa et al., 2015). Several studies have revealed that HIV status disclosure is associated with high chances of adherence to antiretroviral therapy(ART) (Bulterys et al., 2021). A systematic review revealed that fear of status

disclosure and stigma were the most frequently mentioned barriers to the utilization of PMTCT intervention programs. (Bulterys et al., 2021) Studies have revealed that people living with HIV fear being noticed when taking medication or attending PMTCT services (Madiba & Putsoane, 2020; Sariah et al., 2019) Non-disclosure during pregnancy has detrimental consequences that are associated with increased risk of HIV acquisition among infants, increased ART non-adherence in both mothers and infant and lastly increased maternal loss to follow up from ART care services (Bulterys et al., 2021; Onoya et al., 2017). Retrospective case-control indicated that HIV-positive mothers who had uninfected infants were 14 times more likely to have disclosed their HIV status to their sexual partners than mothers with HIV-infected infants (Nyandat & Rensburg, 2019).HIV status disclosure heightens the risk of partner stigma, abuse, and other challenges such as financial withdrawal (Ngonzi, 2019).HIV status disclosure influences uptake and retention at all points along the PMTCT cascade (Abuogi et al., 2021). Some women are negatively affected by disclosing their status however, the majority of women who disclose to their sex partner report increased social support and have a relatively higher prevalence of ARV use for PMTCT and increased prevalence of HIV-free survival of their infants (Abuogi et al., 2021; Kiweewa et al., 2015). Non-disclosure is associated with non-adherence (Abuogi et al., 2021) increased incidents of home delivery is associated with an increased mother to child transmission of HIV (Abuogi et al., 2021; Kiweewa et al., 2015; McGrath, 2019).

2.4 Adherence to PMCT Treatment

Globally, over 90% of 180,00 new infant HIV infections in 2017 were due to mother-to-child transmission (UNAIDS, 2019a) To avoid this transmission, several options of PMTCT programs, such as option A, option B, and the latest option B plus(B+), were adopted and implemented(Abdisa & Tenaw, 2021). Option B+ is the newest option, which focuses on providing all pregnant and breastfeeding women with lifelong antiretroviral therapy(ART) without taking into consideration cluster differentiation 4(CD4) count and clinical stage of HIV(Abdisa & Tenaw, 2021; Chersich et al., 2018).

Several studies conducted in Africa have indicated different adherence levels; the recorded adherence levels are still low (Abdisa & Tenaw, 2021). A prospective observational cohort study conducted in Fort Portal, Western Uganda, indicated that about 51% of the recruited women were considered to be adherent until twelve and 18 months postpartum , adherence for the respective follow-up interval decreased to 19% and 20.5% in that order (Decker et al., 2017).In Zambia, a longitudinal cohort study indicated ARV adherence among pregnant women was 82.5% (Okawa et al., 2015). Another study in Ethiopia recorded the overall adherence to option B+ among HIV-positive women was 88.2% (Abdisa & Tenaw, 2021). Kenya also recorded 89% adherence to option B+ (Ayuo et al., 2013). The PMTCT project mandates that all pregnant women in all public health institutions undergo free prenatal and maternity services and HIV testing (MoH, 2011). The free maternity services encourage mothers to have their babies delivered by a trained medical professional. The PMTCT initiative (Prevention of mother-to-child transmission of HIV) involves postpartum healthcare services, optimal newborn feeding, and infant HIV testing at four to six weeks and eighteen months (Chi et al., 2020). This also entails treating opportunistic infections appropriately and adhering to any dietary restrictions. Giving each HIV-positive woman a Nevirapine pill in advance to be kept at home and taken at the start of labor is one technique to achieve high coverage (Stringer et al., 2004).

One of the significant issues given priority in the Kenya National AIDS Strategic Plan (2020-2024) is the elimination of MTCT of HIV (National Aids Control Council, 2015). Prevention of mother-to-child transmission practices provide intervention measures to prevent transmission of HIV from an HIV-positive mother to her infant; this usually happens during pregnancy, labor, delivery, and breastfeeding (Yacobson et al., 2016b). Without the implementation of PMTCT interventions, approximately more than 45 percent of infants born to HIV-positive mothers are likely to become infected with HIV during gestation, delivery, or even breastfeeding (World Health Organization, 2010; Yacobson et al., 2016b) With appropriate interventions the risk of mother to child transmission(MTCT) will be minimized to below 2 percent in the non-breastfeeding general population (Yacobson et al., 2016b) Strict adherence to PMTCT intervention measures has helped many countries to cut down incidences of MTCT of HIV (Ulalo, 2016) The possibility of giving birth to a child free from HIV is the almost

vital motivating thing for adhering to PMTCT intervention practices. However, many barriers impede adherence to PMTCT intervention (Yacobson et al., 2016b). Across sectional study conducted in Ethiopia has recorded that women with knowledge about PMTCT are 5.2 times more likely to have good adherence [AOR=5.2, 95% CI: 1.6–6.28] to PMTCT as compared to those without PMTCT know-how (Fedlu et al., 2020). Adherence to option B+ is crucial because it helps to reduce the MTCT rate of HIV and prevent the progression of HIV to AIDS among HIV-positive mothers; it also leads to viral suppression and consequently decreases drug resistance. Adherence to option B+ among pregnant women and lactating mothers is still a significant public health issue in low- and high-income countries. Therefore, the best outcome will be realized if 95% adherence to drugs is achieved for option B+(Abdisa & Tenaw, 2021).

2.5 Self-Stigma among Women Living with HIV and PMTC Utilization

Stigma related to HIV infection remains a concern in Sub-Saharan Africa (SSA) and influences depression among HIV-positive mothers (Psaros et al., 2020). A literature review found that stigma is a barrier to PMTCT adherence and many models have suggested a significant association between stigma related to HIV and the rate of infant HIV infection (Psaros et al., 2020; Turan & Nyblade, 2013).

HIV infection-related stigma remains an unescapable issue in most African populations, predominantly among pregnant women (Jolle et al., 2022). The introduction of antiretroviral therapy (ART), adherence, and retention in care among these women have all been found to be adversely affected by stigma related to HIV (Aung et al., 2022).

Several women living with HIV Aids (WLHIV) fear being stigmatized, which may lead to withdrawal from getting treatment in HIV clinics.and also, the long waiting times at HIV clinics may increase HIV-associated visibility for women and create feelings of being judged (Peltzer et al., 2018). A study conducted in Nigeria found that stigma and discrimination against mothers living with HIV at the community level affect the readiness of these women to access HIV-related services at health facilities (Id et al., 2020).

The present service provision structure lacks confidentiality, and stigma is a major impediment to the implementation of PMTCT programs. Creating integrated service points instead of designated areas for ANC and PMTCT services or ARV pickup could be a useful strategy to address this issue (Dirisu et al., 2020). The value of PMTCT service integration with other MNCH services in developing countries such as Kenya has been recommended to facilitate convenience, efficient resource utilization, reduce stigma, and improve uptake and retention in care (Paudel & Baral, 2015). Discrimination against women because of their HIV status can discourage them from seeking essential medical and psychological services necessary for their illness (Id et al., 2020). Additionally, HIV stigma in women is related to rejection from friends and family, people, feelings of uncertainty and loss, low self-esteem, fear, anxiety, depression, and even suicidal feelings (Nobre et al., 2018; Paudel & Baral, 2015). Most studies seek to find out factors affecting utilization and adherence to PMTCT. The PLHIV Stigma Index 2.0 report in Kenya confirms that HIV-related stigma and discrimination are reducing in Kenya.

Nevertheless, since the reduction is observed through a national summary, it is still important to note that certain aspects of stigma remain high and rising. The report indicates that Kenya aims to eliminate HIV-related stigma by 2030, National Empowerment Network of People living with HIV/AIDS in Kenya (NEPHAK, 2021). Thus, this quasi-experimental study has stepped out to assess the effectiveness of nurse-led health education in reducing self-stigma among pregnant and lactating mothers living with HIV.

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study Area

The study was conducted at selected health facilities that are Tudor Sub County Hospital, Likoni Sub County Hospital, Kisauni CDF health center, and Port Reiz Sub County Hospital in Mombasa County. The four sub-county hospitals are in the urban set-up of Mombasa County in Kenya. Mombasa County borders Kilifi County to the North and North-West, Kwale County to the South and South-West, and the Indian Ocean to the East. The County is divided into six sub-counties. These are Changamwe, Jomvu, Mvita, Likoni, Nyali and Kisauni.The four selected sub-county hospitals for the study are Changamwe, Likoni, Kisauni, and Mvita.

All these health facilities were neither implementing nurse-led health education on PMTCT nor had effectively achieved PMTCT.

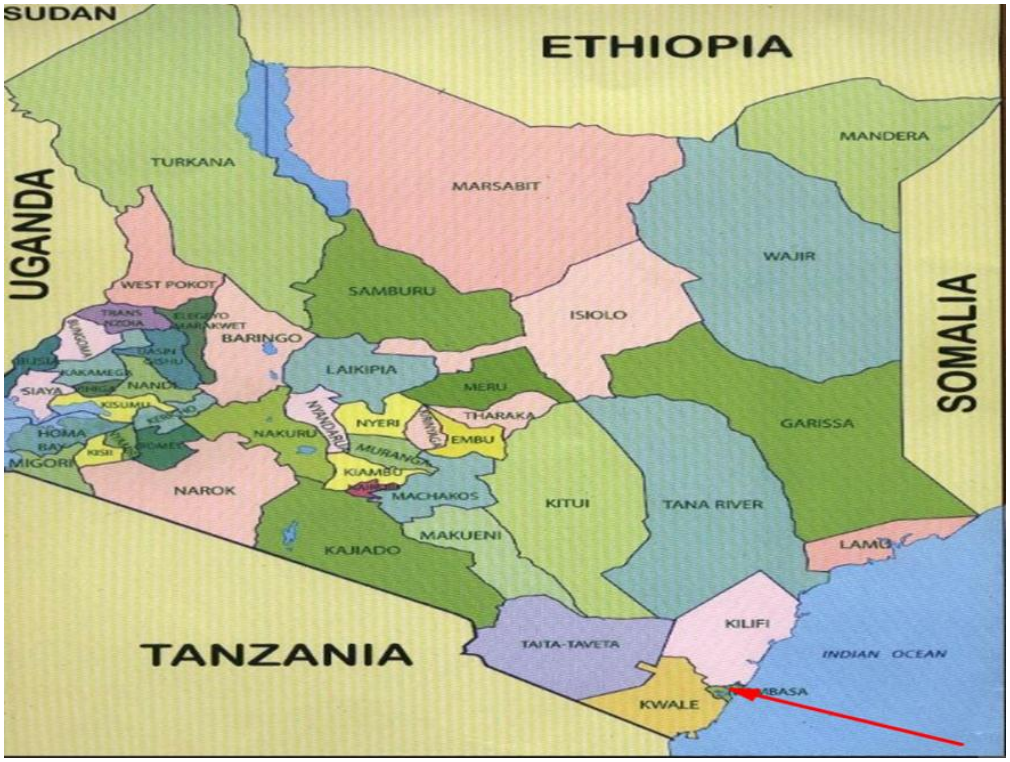
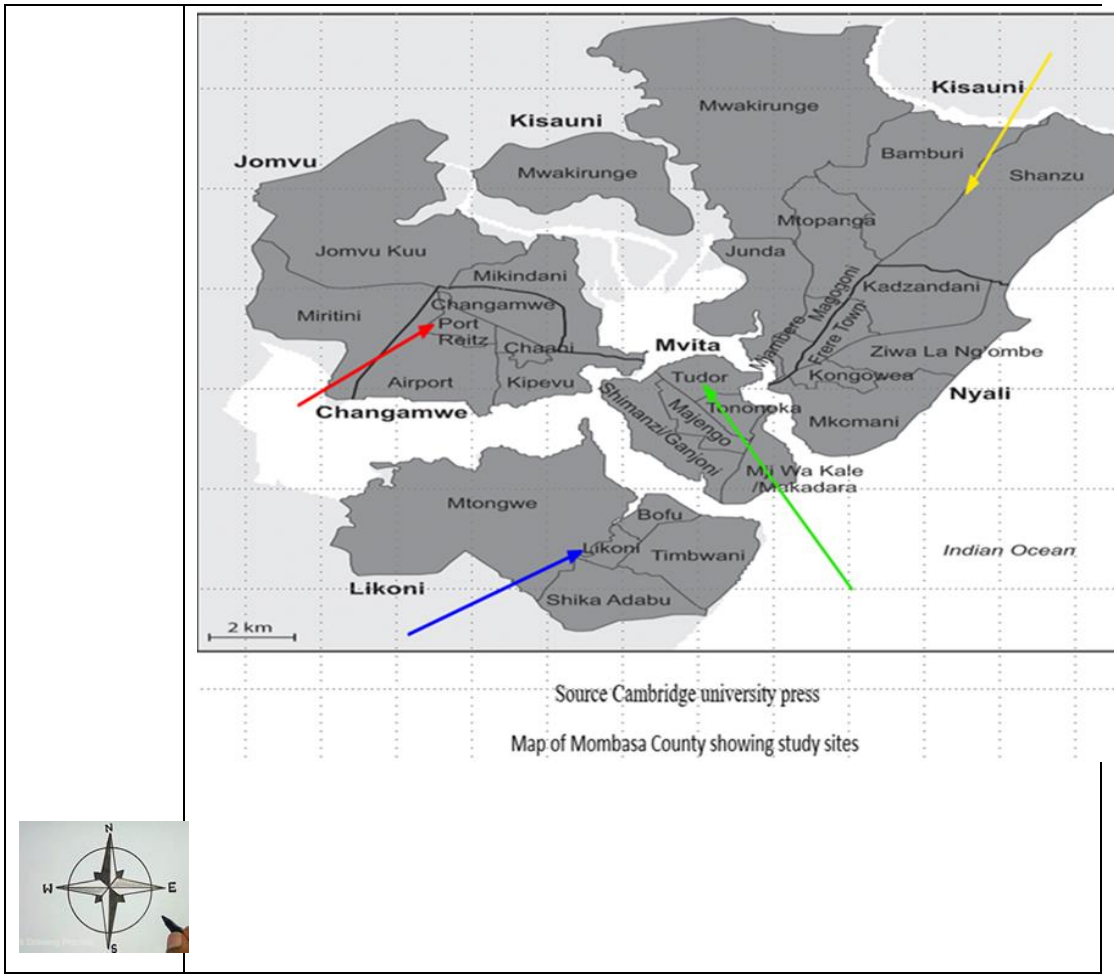


Figure 3.1: Map of Kenya

Source , https://maps-kenya-ke.com/map-of-kenya-counties



Source Cambridge university press

Map of Mombasa County showing study sites

Figure 3.2: Map of Mombasa County Showing the Study Sites

3.2 Target Population

The study targeted all pregnant women living with HIV attending ante-natal PMTCT clinics in Kenya

3.3 Study Population

The study population included pregnant women living with HIV and who attended ante-natal PMTCT clinics of Tudor Sub County Hospital, Likoni Sub County Hospital, Kisauni CDF health centre, and Port Reiz Sub County Hospital in Mombasa County. Mothers in Likoni and Tudor hospitals served as the intervention group because of the size, while the group in both Kisauni and Port Reiz hospitals served as the control

group. The intervention sites received nurse-led health education on PMTCT, while the control sites received no instruction on PMTCT.

The four hospitals were stratified based on their geographical location. This ensured two hospitals that were close together were stratified to the same group. Between the intervention and control sites, there was a big buffer of water mass separation of not less than three kilometers, ensuring the participants could not freely mix

3.4 Study Design

This study adopted a 2- group, quasi-experimental research design to evaluate the effectiveness of nurse-led PMTCT health education on PMTCT practice among mothers living with HIV attending PMTCT clinics in selected health facilities in Mombasa County. The total number of mothers living with HIV attending PMTCT clinics in the intervention and control sites were 163 and 151, respectively

3.5 Sample Size Determination

The study aimed at comparing the primary outcomes in the study site at baseline and end line. Therefore, the sample size formula for differences in two proportions of the target population was convenient. Sample size formula according to Fleiss method was used (Wang, 2007), thus;

$n = (Z_{\alpha/2}+Z_{\beta})^2 * (p_1 (1-p_1) +p_2 (1-p_2)) / (p_1-p_2)^2$,

Where:n = Sample size in each group (assumes equal-sized groups)

$Z_{\alpha/2}$ = the desired level of statistical significance (typically 1.96 for a 5% level of significance)

Z_{β} = the desired power (typically 0.84 for 80% power).

P1-p2 = effect size, i.e. reduction in self-stigma due to nurse-led health education, set at 20%.

$n = (1.96+0.84)^2*(0.55(1-0.55) +0.45(1-0.45))/ (0.2)^2$

n = 97.02 (Approximately=97 participants per arm) plus 10% for non-response (10)

n=107 per arm (Intervention and Control sites), the sum of 214

Actual data was collected on 101 and 112 respondents in control and intervention sites, respectively

3.6 Inclusion Criteria

All pregnant mothers living with HIV aged between 15-49 years attending prevention of mother-to-child transmission ante-natal clinics (PMTCT-ANC) in the four selected health facilities, and those who consented to participate were included in the study.

3.7 Exclusion Criteria

All pregnant mothers living with HIV attending the PMTCT-ANC who did not consent to be enrolled in the study were excluded. Those who were severely ill during the study were also excluded from the study becauose Including severely ill participants might worsen their health condition or expose them to unnecessary risks that could impact their fragile health, and Severe illness can complicate the study's outcomes, as their condition may influence their response to the intervention being studied, leading to skewed or unreliable data.

Those <18 years of age were also excluded from the study if they were not accompanied by a parent or guardian who could give informed consent.

3.8 Sampling Procedure

3.8.1 Probability Sampling

The 4 hospitals were purposively selected given that all these health facilities were neither implementing nurse-led health education on PMTCT nor had effectively achieved PMTCT among mothers attending PMTCT ante-natal clinics. The four hospitals were stratified into two groups based on their geographical location, and then the two groups were randomly sampled to the control and intervention sites.

The number of HIV-positive mothers selected per health facility was sampled using a probability technique proportional to the average number of mothers attending each facility for antenatal PMTCT clinic. The mothers were then systematically sampled. Women presenting for antenatal care at participating healthcare facilities at the health centers were counseled. They offered HIV antibody testing by a PMTCT nurse, per the standard of care provided at that site. Women were provided introductory information about the study if either they were discovered to be HIV infected and agreed to receive their test results or they already knew their HIV status from previous HIV testing. They enrolled as early as their first antenatal visit after their HIV infection was confirmed. Every alternate mother was sampled until the sample size was attained.

Probability Sampling Procedure

Since the number of participants in each facility varies, a proportional sampling approach was used to maintain a balanced representation. The goal is to achieve the desired 107 participants in each arm while ensuring a fair representation from each facility. Port Reiz and Kisauni were selected as the control facilities after stratification with 70 and 81 HIV-positive women of reproductive age, respectively. The proportions of each facility was calculated to make up the control group of 107 participants.

$$\text{Port Reiz's proportion} = \frac{70}{70+81} = \frac{70}{151} = 0.464$$

$$\text{Kisauni's proportion} = \frac{81}{70+81} = \frac{81}{151} = 0.536$$

Using the proportions the number of participants to be sampled from each facility in the control arm was determined.

$$\text{Port Reiz} = 107*0.464 = 50 \text{ participants}$$

$$\text{Kisauni} = 107*0.536 = 57 \text{ participants}$$

Likoni and Tudor were the interventional facilities stratum with 90 and 73 HIV-positive women of reproductive age, respectively.

The proportions of each facility to make up the intervention group of 107 participants was calculated

$$\text{Likoni's proportion } \frac{90}{90+73} = \frac{90}{163} = 0.552$$

$$\text{Tudor's proportion } \frac{73}{73+90} = \frac{73}{163} = 0.448$$

Using the proportions the number of participants to be sampled from each facility in the intervention arm was determined. Likoni=107*0.552=59 participants

Tudor= 107*0.448=48.

Therefore for the facilities sample sizes for the control arm were 50 participants from Port Reiz and 57 participants from Kisauni, while for the intervention arm there were 59 participants from Likoni and 48 participants from Tudor.

3.9 Study Variables

The dependent variables were 1) the Proportion of HIV-positive mothers adhering to PMTCT services, 2) the proportion of HIV-positive mothers with self-stigma, and 3) the proportion of HIV-positive mothers with reported self-reporting HIV status disclosure to sexual partners. In contrast, the independent variable is the nurse-led PMTCT health education. At the same time, socio-demographic characteristics of HIV-positive mothers (gender, age, education level, socio-cultural practices, and awareness) perceived factors in the effectiveness of nurse-led education on PMTCT service utilization among HIV-positive pregnant were the intervening variables.

3.10 Pre-Testing

Pilot testing is the first study (Almalki, 2016). For two (2) weeks, Muvita Sub County Hospital in Mombasa County conducted a pilot test. The pilot study aimed to evaluate the logic and clarity of the instruments. The questions were subjected to piloting to ensure they were pertinent, understandable, and made sense. Although they didn't participate in the study, the participants in the pilot test were picked because they

resembled the intended participants, according to (Raji et al., 2020). The participants were invited to offer feedback and ideas, which were utilized to refine the items, such as changing the questionnaire's wording. The principal investigator made corrections to the questionnaire to meet the research objectives and answer the study's research questions before actual data collection was conducted.

3.11 Nurse-Led Educational Intervention Module

The nurse-led health education training module covered adherence to medication, adherence to prescribed diet, the importance of prenatal and postnatal PMTCT clinics and strategies for self-stigma reduction and self-disclosure to partner. Initially, the chief investigator, a registered nurse with a clear understanding of PMTCT modules, trained four nurses in the PMTCT antenatal clinics in each hospital at the intervention site for one week. The selection criteria of nurses to be taught were registered nurses employed by the government and working in the PMTCT antenatal clinic in the health facility. In this study, the nurses provided health education to the HIV-positive women attending the antenatal clinic based on the training module sparingly without interfering with routine preventive and health promotion services in the medical facility.

Subsequently, the training was cascaded to pregnant women, their husbands, or birth companions if they accompanied the mothers to the antenatal clinic. The trained nurses conducted at least five teaching sessions per week for six months; the chief investigator supervised the training sessions, often moderated the sessions, and offered consultancy services where possible. The training time was agreed upon with the pregnant women and their families at their convenience, between 8 and 9 am daily before routine antenatal care services delivery. First, the nurses on duty introduced themselves, introduced the intervention module core topics, and educated them on adherence to medication use and its importance and also ways to ensure proper adherence to medication, including the use of reminders, the Importance of status disclosure to sexual partners, and lastly, they were taught on the self-stigma reduction methods and the Importance of self-stigma reduction. Adult learning methods such as storytelling, role plays, discussions, lectures, and demonstrations using graphic take-action cards

(TAC) were used. The control group continued with their routine PMTCT antennal health care services.

The intervention was implemented for six months, and the implementation procedure was as follows

i) Educational Sessions: Nurses conducted one-on-one or group educational sessions with the participants. These sessions covered topics related to HIV, PMTCT, antiretroviral therapy (ART), safe infant feeding practices, the importance of clinic visits, and adherence to prescribed treatment regimens.
ii) Counseling: Individual counseling was provided to address specific concerns and questions of the participants. This included discussions on the psychosocial aspects of living with HIV, stigma, disclosure, and family planning.
iii) Adherence Support: Participants received guidance on adherence to medication and clinic appointments. Practical strategies for managing side effects and potential challenges related to ART adherence were discussed.
iv) Peer Support: The intervention incorporated a peer support component, allowing participants to connect with and receive support from other HIV-positive women who have successfully navigated PMTCT services.
v) Information Materials: Educational materials, such as brochures, pamphlets, or booklets, were provided to reinforce key messages and serve as references for participants.

3.12 Self-Stigma Reduction Intervention

Psychoeducation intervention has been identified in previous studies as the timeliest intervention that can be used to reduce self-stigma (Mittal et al., 2012). Psychoeducation or cognitive restructuring mixed with psychoeducation is the most popular form of intervention technique for self-stigma reduction. Some researchers just looked at the impact of printed materials, like brochures (Alvidrez et al., 2010); others looked at training sessions conducted by trainers or therapists (Vogel et al., 2013). Most of the time, these psychoeducational therapies took place in a group setting. Our present study had one to 10 instructional sessions every week. The educational interventions used a wide range of topics and methods, for instance, the

trainer emphasized the effects and repercussions of stigma and invited participants to discuss behavioral alternatives and shared their personal stories. The purpose of the intervention was to provide participants with the knowledge necessary to analyze their illness experiences, reduce self-stigmatizing attitudes, cultivate hope, and pursue meaningful life goals. We used a more medically focused approach, educating participants on health issues, drug side effects, stigma, relapse prevention, crisis management, communication and stress management skills, self-help, and community resource use. Charts and handouts were also employed as visual aids to support the didactic elements. The patients were taught acceptance and commitment therapy, a modern behavioral analytic theory of language and cognition that encourages participants to watch their ideas with awareness and feel their emotions fully.

Additionally, participants learned how to deal with others' stigmatizing attitudes and behaviors by using concepts like "acceptance," "dispersion," and "touch." In addition to learning about symptoms, stress, coping mechanisms, self-help, and the effects of stigma, participants were encouraged to relate their experiences with the disease. Self-acceptance principles and CBT techniques contested specific stigma-related ideas. Additionally, participants received psychoeducation on stigma and the facts and beliefs surrounding mental illness. This indirectly attacked self-stigma by raising self-esteem.

The conceptual underpinnings of our strategy include social psychology theories of stigma reduction, such as contact.(Brown et al., 2003; Pettigrew & Tropp, 2006). They have both an informational and a contact component. By addressing misconceptions about the illness and dispelling them with knowledge of its transmission mechanisms and available treatments, educational components try to allay infection worries (UNAID, 2005). Interventions that only provide information about HIV, however, are generally ineffective in reducing stigma because HIV-related stigma is not solely fueled by ignorance about the disease (Han et al., 2018).

Components of contact encourage direct or indirect contact with HIV-positive individuals, which fosters empathy for those who suffer from the stigmatized condition by encouraging others to consider the viewpoint of the stigmatized individual (Derose

et al., 2014). Direct contact might involve speaking with or hearing from HIV-positive individuals. Indirect contact can take the form of role-plays and conversations about possible contact scenarios, media testimonials heard instead of face-to-face endorsements, or imagined, "simulated" contact when people are urged to picture a pleasant connection with a stigmatized person (WHO, 2007). Communication between people of equal status is most effective when institutionally promoted (Pettigrew & Tropp, 2006).

Stigma was addressed at the personal level in our individual-based intervention. By using well-established social networks, we hoped to influence individual views, first among pregnant women who visited PMTCT prenatal clinics and subsequently more widely in the community. The HIV-related attitudes that we sought to address included: comfort in interacting with HIV-positive people (Yigit et al., 2020), hypothetical feelings of shame or rejection for having HIV (Hutchinson & Dhairyawan, 2018); or blaming people who have HIV (Nabunya & Namuwonge, 2022); and stigma .Our justification was that lowering these various forms of HIV-related stigma in tandem with routine clinic counseling would increase each person's capacity to participate in HIV prevention activities and make the clinic a more welcoming space for people living with HIV, enabling them to access the social networks and support systems offered by many collaborators. The personnel at the PMTCT prenatal clinic received refresher training.

3.13 Intervention Validation

The intervention was validated through a rigorous process to ensure its effectiveness and appropriateness for the target population. One standard method used to validate interventions in healthcare research was through pilot testing or feasibility studies. In this case, the nurse-led health education intervention underwent pilot testing to assess its feasibility, acceptability, and initial effectiveness in a small sample of participants. Feedback from participants and healthcare providers involved in delivering the intervention was collected to identify any necessary modifications or improvements to the intervention protocol. Additionally, the intervention's effectiveness was validated through pre- and post-intervention assessments, comparing adherence to PMTCT

services and relevant health outcomes before and after the implementation of the intervention. Validating the intervention in this manner helped ensure its effectiveness and relevance to the study population, enhancing the credibility and reliability of the study findings.

3.14 Data Collection Techniques

A structured questionnaire per the research objectives was used to conduct hospital survey. The questionnaires were administered to all respondents by the principal investigator with the help of research assistants. The questionnaire captured data on the PMTCT approach activities, socio-demographic characteristics of HIV mothers, age, level of education, awareness of PMTCT and socio-cultural practices, as well as measures taken by nurses to determine the effectiveness of PMTCT services regarding adherence to ART, information related to self-stigma reduction, improved HIV status disclosure to sexual partners on HIV status outcomes of newborn babies to HIV positive mothers.

3.15 Data Management and Analysis Plan

Collected data were entered into excel spreadsheets and cleaned then the data was exported to SPSS version 22.0 (IBM Corporation, New York, USA) for coding and analysis. Continuous data were tested for normality using the Kolmogovor-Smirnor Test; if the data distribution conformed to normality, it was analyzed and presented as standard deviation (SD). If data did not conform to normality, median and mode were reported. Frequencies and relative frequencies for all categorical variables were recorded and cross-tabulated. Nominal categorical data were analyzed using the chi-square to examine the difference between control and intervention groups. To test for the mean difference in the proportion of mothers adhering to PMTCT, reported self-stigma, and those who said disclosing their HIV status to their sexual partner between the intervention and control groups, a chi-square statistic was computed. The mean difference was deemed statistically significant at a 95% confidence interval (95% CI) with the p-value $p \leq 0.05$. Chi-square statistics were used to determine social demographic factors influencing adherence to PMTCT among HIV-positive women.

3.16 Data Quality and Biases Control

To ensure the data quality, research assistants were first trained on the type of data we expected of them. We conducted pilot data collection to ensure the data collection tool met our expectations and was accurate and appropriate. After data were checked for completeness, duplication, and other statistical anomalies, missing information or information in a different type or format than required for the study was identified. When conducting investigations, most researchers place a low priority on missing data. On the other hand, missing data is critical in data analysis because it can lead to statistical power loss and make.

Double blinding was employed to mitigate potential biases. By ensuring both the participants and the healthcare providers involved in the delivery of the intervention were unaware of the treatment assignment, the risk of bias influencing study outcomes was minimized. In this context, implementing double blinding involved concealing information about which participants were receiving the nurse-led health education intervention and which were in the control group. Additionally, healthcare providers administering the intervention and assessing adherence to PMTCT services were blinded to treatment allocation to prevent subjective judgments or expectations from affecting their interactions with participants or their evaluation of outcomes. This rigorous blinding procedure helped uphold the integrity of the study, enhancing the reliability and validity of findings regarding the intervention's impact on adherence to PMTCT services among HIV-positive women in Mombasa County.

3.17 Data Security and Confidentiality

Data extracted from hospital records did not carry any identifiers, such as no reference was made to the patient names, serial numbers or address/ immediate neighborhoods. Hard copy forms were stored in lockable secure cabinets. Upon entry, all data were password protected; hence, only authorized persons had access rights.

3.18 Data Sharing/Dissemination

Parties involved in the study were taken through a feedback forum with all the other stakeholders. They have received the report for future consideration on the relevant areas of study. All the study findings are yet to be publicly available through the publication of the work in a peer-reviewed open-access journal.

3.19 Reliability and Validity

Emphasis was made on reliability and validity to reduce the possibility of obtaining unreliable responses to study questions. Once more, how measurements are done and conducted affects the research results (O'Sullivan-Donnell, 2014).

3.19.1 Reliability

The consistency of study findings using the same method across time is referred to as reliability (Beckman, 2016). This concerns the degree to which a specific measuring process yields comparable results after several iterations (Alice, 2012). (Alice, 2012) defines instrument dependability as the level of consistency that an instrument exhibits or the correctness of test results devoid of choice errors. To determine dependability, a single measurement equipment was used to test a group of individuals once. The instrument's reliability was assessed by determining how well the items that reflect the same concept produce comparable answers. The internal consistency of the data was evaluated using Cronbach's Alpha(Virginia, 2015). A score of at least 0.7 was required for admission (Gatotoh, 2017)

3.19.2 Validity

Validity, the extent to which a test measures what it claims to (Arts, 2014), was enhanced in this study through multiple strategies. Construct validity was ensured by piloting the questionnaire on a similar sample, with expert evaluation confirming the tools captured the intended variables. The inclusion of a control group allowed for accurate comparisons, attributing changes in adherence to the nurse-led intervention while minimizing external influences. Efforts to randomly assign participants improved baseline comparability, reducing selection bias. Standardized tools and

blinding of assessors ensured consistency, further strengthening the internal validity of the study.

3.20 Ethical Consideration

The area of philosophy known as ethics is concerned with the moral principles that shape behavior (Alice, 2012). The researcher will be an integral person who will not conduct research for self-gain or for the study to harm other people's lives; the researcher will not use the collected data to victimize or stigmatize people/a person. As a result, a researcher should note that the researcher will not claim another person's work as their own without acknowledging the author or giving false research methodology and results.

The study was approved by the accredited Institutional Ethics Review Committee of Baraton University with approval number (**REC: UEAB/08/02/2019**); a research permit was also sought from the National Commission for Science, Technology & Innovation (**NACOSTI/P/19/52977/30423**). Mombasa County Government (Department of Health Services) authority (**REF: MSA/CH/ADM.82/VOL.1/77)** for the study before execution. Feedback was provided throughout the research process, and official permission was sought from the selected health facilities. All participants who participated provided oral informed consent before the interviews and the hospital survey. The respondents were informed about the aim of the study, their choice to participate, and the confidentiality of the information they were to provide before the execution of the study. The expected aids or threats to the participants were clearly explained and all the participants were given an opportunity to express whether they clearly understood the study's objectives and what was expected of them as respondents. The participant was informed that they could voluntarily participate in the and they could leave or drop out of the study at will, and no consequences or harm were according to that; it was also explained to them that there was no direct material or monetary benefit by participating in the study survey. The originality of the work was maintained through proper citation and cross-referencing of all scientific sources of the information at the end of the report. We used the APA referencing style throughout the report.

3.21 Bias Minimization Methods

Several strategies were employed to minimize bias and enhance the validity of the study findings on the effectiveness of nurse-led health education interventions.

First, a control group was included alongside the intervention group to allow for comparison of outcomes, facilitating the assessment of changes in adherence to PMTCT services attributable specifically to the intervention and reducing the influence of external factors. Although randomization can be challenging in quasi-experimental designs, efforts were made to randomly assign participants to intervention and control groups where possible. This process ensured that both groups were comparable at baseline, thereby minimizing selection bias and confounding variables.

To further reduce bias, the study employed blinded assessors who were unaware of the participants' group assignments when evaluating outcomes. This practice minimized assessment bias by preventing evaluators' expectations or knowledge of group assignments from influencing their measurements of adherence and other outcome variables.

Additionally, the study utilized validated and standardized data collection tools to assess adherence to PMTCT services, self-stigma, and self-disclosure of HIV status. These instruments ensured consistency and accuracy in data collection, thereby minimizing measurement bias. Nurses delivering the health education intervention underwent comprehensive training to provide consistent, evidence-based information, which helped reduce variations in intervention delivery that could introduce bias.

Regular monitoring and evaluation of the intervention process were conducted to ensure adherence to the study protocol. This oversight identified any deviations that could introduce bias and allowed for timely corrective actions. Furthermore, the study assessed various outcomes, including adherence rates, self-stigma levels, and self-disclosure rates, using multiple measures to triangulate data. This approach provided a more robust understanding of the intervention's effectiveness and mitigated the impact of any single biased outcome measure

CHAPTER FOUR

RESULTS

4.1 Socio-Demographic Characteristics of Study Participants

The study recruited 214 participants for the baseline and end-line surveys, with the control arm having 101 participants and 112 participants in the intervention arm. According to the survey, most participants at baseline and end-line in the control and intervention sites were between the ages of 26-35 and 36-45. After conducting chi-square statistics at both baseline and end-line surveys. The sampled participants in the intervention and control sites were comparably similar, with no significant difference in age, marital status, level of education, occupation, and level of income with $p>0.05$ (**Table 4.1**).

Table4.1: Socio-Demographic of HIV-Positive Women Respondents in the Control and Intervention Group at both Baseline and End-Line Survey

Variables	Total n(%)	Baseline			Total n(%)	End-line		
		Control n (%)	Intervention n (%)	P-value		Control n (%)	Intervention n (%)	p-value
Age group								
18-25	31(14.6)	19(18.8)	12(10.7)	0.221	44(20.7)	15(14.9)	30(26.5)	
26-35	87(40.8)	41(40.6)	46(41.1)		86(40.4)	41(40.6)	45(39.8)	0.119
36-45	61(28.6)	29(28.7)	32(28.6)		67(31.5)	36(35.6)	31(27.4)	
46-49	34(16.0)	12(11.9)	22(19.6)		16(7.5)	9(8.9)	7(6.2)	
Marital status								
Single	58(27.2)	30(29.7)	28(25.0)		57(26.8)	27(27.0)	30(26.5)	
Married	81(38.0)	39(38.6)	42(37.5)	0.793	98(46.0)	44(44.0)	54(47.8)	0.533
Divorced	45(21.1)	20(19.8)	25(22.3)		35(16.4)	15(15.0)	20(17.7)	
Widowed	29(13.6)	12(11.9)	17(15.20		23(10.8)	14(14.0)	9(8.0)	
Education level	90(42.3)	47(46.5)	43(38.4)		95(44.8)	45(45.0)	50(44.6)	
Primary	70(32.9)	31(30.7)	39(34.8)	0.672	74(34.9)	38(38.0)	36(32.1)	
High school	31(14.6)	14(13.9)	17(15.2)		25(11.8)	10(10.0)	15(13.4)	0.675
College	22(10.3)	9(8.9)	13(11.6)		18(8.5)	7(7.0)	11(9.8)	
University								
Occupation								
Housewife	80(37.6)	38(37.6)	42(37.5)		79(37.1)	38(38.0)	41(36.3)	
Peasant farmer	79(37.1)	40(39.6)	39(34.8)	0.734	71(33.3)	34(34.0)	37(32.7)	0.944
Employed	30(14.1)	14(13.9)	16(14.3)		31(14.6)	13(13.0)	18(15.9)	
Businesswoman	24(11.3)	9(8.9)	15(13.4)		32(15.0)	15(15.0)	17915.0)	
income (Ksh)								

<3,000	76(35.8)	33(33.0)	43(38.4)		87(40.8)	41(41.0)	46(40,7)	
3,000-25,000	66(31.1)	29(29.0)	37(33.0)	0.544	75(35.2)	36(36.0)	39(34.5)	
26,000-45,000	42(19.8)	23(23.0)	19(17.0)		18(8.5)	8(8.0)	10(8.8)	0.064
46,000-60,000	28(13.2)	15(15.0)	13(11.6)		27(12.7)	9(9.0)	18(15.9)	
>60,00					6(2.8)	6(6.0)	0(0.0)	

4.2 Univariate Analysis of Demographic Factors Influencing Adherence to PMTCT

In this univariate analysis, the relationship between demographic characteristics and adherence to PMTCT among HIV-positive women in Mombasa County was explored using logistic regression. Age was not significantly associated with adherence, as women aged 26-35 years (OR=0.53, p=0.290), 36-45 years (OR=0.94, p=0.864), and 45-49 years (OR=0.21, p=0.125) showed no significant differences compared to those aged 15-25. Marital status also demonstrated no significant association, with married (OR=0.46, p=0.163), divorced (OR=0.42, p=0.094), and widowed (OR=0.28, p=0.211) women having non-significant odds of adherence compared to single women. However, education level was a strong determinant of adherence. Women with secondary education (OR=1.79, p=0.030), college education (OR=1.99, p=0.021), and university education (OR=2.13, p=0.002) had significantly higher odds of adhering to PMTCT compared to those with primary education. Occupation also influenced adherence, as peasant farmers (OR=0.52, p=0.075), employed women (OR=0.25, p=0.006), and businesswomen (OR=0.42, p=0.030) were less likely to adhere compared to housewives. Income level exhibited a significant association with adherence, as women earning 26,000-45,000 KSh (OR=2.10, p=0.010), 46,000-60,000 KSh (OR=3.65, p=0.024), and above 60,000 KSh (OR=4.81, p<0.001) had higher odds of adherence compared to those earning less than 3,000 KSh. These findings suggest that socio-economic factors, particularly education and income, play a crucial role in influencing adherence to PMTCT, while age and marital status do not appear to have a significant impact. Further multivariate analysis will adjust for potential confounders to provide deeper insights into these associations Table 4.2

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Table4.2: Univariate Analysis of Demographic Factors Influencing Adherence to PMTCT

Demographic characteristics	OR	(95%CI)	*P*-value
Age (years)			
15-25	1.00(Ref)	-	-
26-35	0.53	0.34-1.79	0.290
36-45	0.94	0.49-1.87	0.864
45-49	0.21	0.09-0.57	0.125
Marital status			
Single	1.00(Ref)	0.15-1.37	0.163
Married	0.46	0.15-1.18	0.094
Divorced	0.42	0.11-0.75	0.211
Widowed	0.28		
Level of education			
Primary	1.00(Ref)	-	-
Secondary	1.79	1.04-3.05	0.030
College	1.99	1.10-3.72	0.021
University	2.130	1.00-5.71	0.002
Occupation			
Housewife	1.00(Ref)	-	-
Peasant farmer	0.52	0.15-1.10	0.075
Employed	0.25	0.09-0.66	0.006
Businesswoman	0.42	0.10-0.75	0.030
Level of income			
<3,000	1.00(Ref)	-	-
3,000-25,000	0.70	0.31-1.49	0.350
26,000-45,000	2.10	1.20-4.11	0.010
46,000-60,000	3.65	1.41-10.20	0.024
>60,000	4.81	2.00-11.51	<0.001

OR; Odds Ratio, 95%CI; 95% confidence interval, Ref; reference

4.3 Multivariate Analysis of Demographic Factors Influencing Adherence to PMTCT

The multivariate analysis of demographic factors influencing adherence to PMTCT presents notable findings. Age appears to have no significant impact on adherence, with women aged 26-35 years (AOR=1.02, *p*=0.76) and 36-45 years (AOR=1.30, *p*=0.50) showing similar adherence odds compared to the reference group aged 15-25 years. Marital status was also not statistically significant, though married (AOR=0.39, *p*=0.123), divorced (AOR=0.50, *p*=0.089), and widowed (AOR=0.35, *p*=0.210) women showed lower adherence odds than single women. Educational attainment

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significantly influenced adherence. Women with secondary education (AOR=1.81, p=0.031), college education (AOR=2.01, *p*=0.022), and university education (AOR=2.24, *p*=0.050) demonstrated higher adherence compared to those with only primary education. This suggests that higher educational levels enhance PMTCT adherence, likely due to increased health literacy and understanding of the benefits of PMTCT interventions. In terms of occupation, employed women (AOR=0.22, *p*=0.004) and businesswomen (AOR=0.43, *p*=0.020) had significantly lower adherence odds compared to housewives. This may indicate that job-related responsibilities or competing priorities could interfere with adherence to treatment protocols. Income level showed a strong positive association with adherence. Women earning between 26,000-45,000 KSh (AOR=3.49, *p*=0.021) and those earning more than 60,000 KSh (AOR=4.23, *p*<0.001) exhibited significantly higher adherence odds compared to those earning less than 3,000 KSh. This suggests that higher socioeconomic status facilitates better access to healthcare resources, reducing barriers to adherence. Overall, the findings highlight the significant role of education, income, and occupation in influencing PMTCT adherence, while age and marital status showed no significant impact when adjusted for other factors. These results underscore the importance of addressing socioeconomic inequalities and promoting educational interventions to improve adherence outcomes.

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Table4.3: Multivariate Analysis of Demographic Factors Influencing Adherence to PMTCT

Demographic characteristics	AOR	(95%CI)	*P*-value
Age (years)			
15-25	1 .00(Ref)	-	-
26-35	1.02	0.91-4.70	0.76
36-45	1.30	0.60-2.80	0.50
45-49	0.95	0.10-1.70	0.89
Marital status			
Single	1.00(Ref)	-	-
Married	0.39	0.12-1.54	0.123
Divorced	0.50	0.18-1.76	0.089
Widowed	0.35	0.15-0.89	0.210
Level of education			
Primary	1.00(ref)	-	-
Secondary	1.81	1.05-3.06	0.031
College	2.01	1.10-3.71	0.022
University	2.24	1.00-5.70	0.050
Occupation			
Housewife	1.00(Ref)	-	-
Peasant farmer	0.52	0.715-1.87	0.549
Employed	0.22	0.09-0.66	0.004
Businesswoman	0.43	0.13-0.84	0.020
Level of income			
<3,000	1.00(Ref)	-	-
3,000-25,000	0.87	0.21-1.79	0.342
26,000-45,000	2.10	1.10-4.38	0.011
46,000-60,000	3.49	1.42-10.21	0.021
>60,000	4.23	1.97-11.51	<0.001

AOR; adjusted odds ratio, 95%CI; 95% confidence interval, Ref; reference

4.4 PMTCT Adherence Levels among HIV Mothers in the Control and Intervention Sites at Baseline and End-Line of the Survey

At baseline, 44(43.6%) out of 101 HIV-positive women in control had low adherence to PMTCT, while 57.0(56.4%) had high adherence to PMTCT. For the intervention group, out of 112 HIV-positive women, 48(42.9%) had low adherence to PMTCT, and 64(57.1%) had high adherence to PMTCT. Chi-square statistics indicated no significant difference (χ^2=1.232, df=1, p=0.267) in adherence to PMTCT for HIV-positive women in the control group compared to the intervention group at the baseline survey. Out of 101 HIV-positive women in the control group at the end-line,

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50(49.5%) had low adherence to PMTCT, while 51(50.5%) had high adherence to PMTCT. On the other hand, out of 112 HIV-positive women, 11(9.7%) had low adherence to PMTCT, while 101(90.3%) had high adherence to PMTCT at the intervention site. Chi-square statistics indicated that there were significantly (χ^2=5.912, df=1, p=0.015) more HIV-positive women adhering to PMTCT in the intervention group compared to the control group at the end-line survey (**Table 4.2**).

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Table4.4: PMTCT Adherence Levels among HIV Mothers in the Control and Intervention Sites at Baseline and End-Line of the Survey

	Baseline survey					End-line survey				
Group	**High adherence**	**LowAdherence**	**χ^2**	**df**	**p-value**	**High adherence**	**Low adherence**	**χ^2**	**df**	**p-value**
	n (%)	n (%)				n (%)	n (%)			
Control	57(56.4)	44(43.6)	1.232	1	0.267	51(50.5)	50(49.5)	5.912	1	0.015
intervention	64(57.1)	48(42.9)				101(90.3)	11(9.7)			

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There is no statistically significant difference in the proportion of HIV-positive women adhering to PMTCT between the control and intervention groups at the baseline survey (χ^2=1.232, df=1, p=0.267)

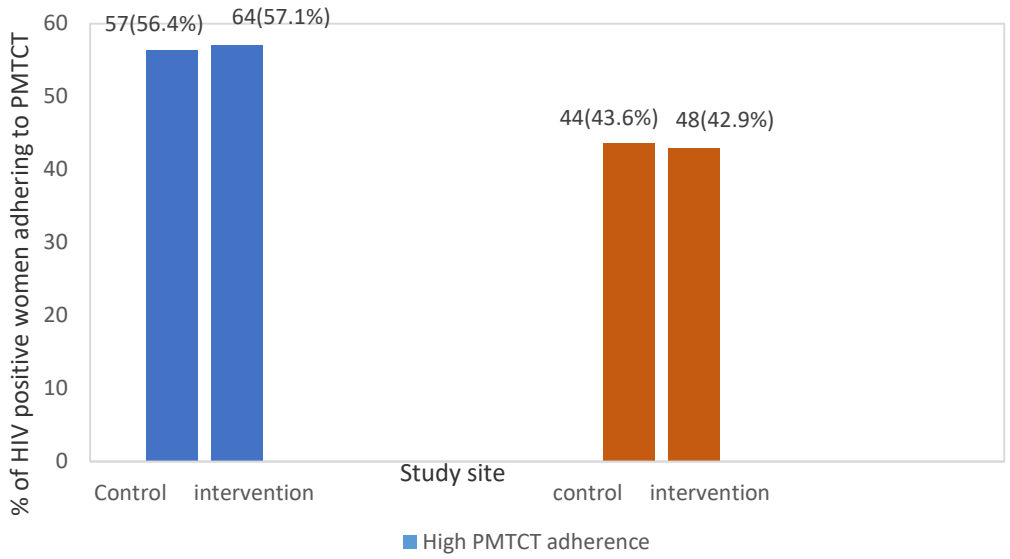

Figure 4.1: Level of Adherence to PMTCT among HIV-Positive Women at the Study Sites in the Baseline Survey

However, after the intervention, there were significantly (χ^2=5.912, df=1, p=0.015) more HIV-positive women adhering to PMTCT among the intervention group compared to the control group at the end-line survey **(Figure 4.2)**.

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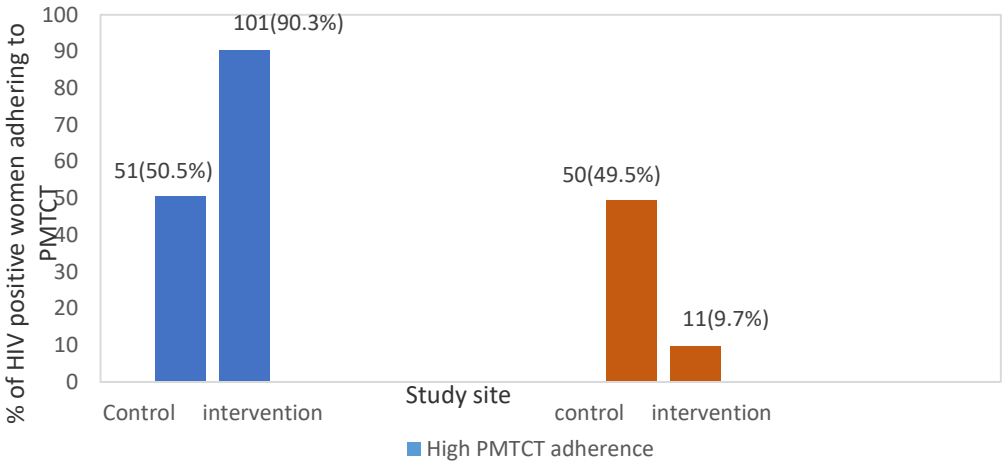

Figure 4.2: Level of Adherence to PMTCT among HIV-Positive Women at the Study Sites in the Baseline Survey

4.5 Self-Stigma Levels among HIV Mothers in the Control and Intervention Sites at Baseline and End-Line of the Survey

At baseline, 37 (36.6%) out of 101 HIV-positive women in control had low self-stigma while 64 (63.4%) had high self-stigma. For the intervention group, out of 112 HIV-positive women, 43 (38.4%) had low self-stigma, and 69(61.6%) had self-stigma. Chi-square statistics indicated no significant difference (χ^2=0.033, df=1, p=0.856) in self-stigma for HIV-positive women in the control group compared to the intervention group at the baseline survey. Out of 101 HIV-positive women in the control group at the end-line, 6 (5.9%) had self-stigma while 95 (94.1%) had high self-stigma. On the other hand, out of 101 HIV-positive women, 101(90.2%) had low self-stigma, while 11 (9.8%) had high self-stigma at the intervention site. Chi-square statistics indicated that there were significantly (χ^2=151.096, df=1, p<0.001) more HIV-positive women with low self-stigma in the intervention group compared to the control group at the end-line survey (**Table 4.5**)

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Table4.5: Self-Stigma Levels among HIV Mothers in the Control and Intervention Sites at Baseline and End-Line of the Survey

	Baseline survey					End-line survey				
Group	High Stigma n (%)	Low Stigma n (%)	χ^2	df	p-value	High Stigma n (%)	Low Stigma n (%)	χ^2	df	*p*-value
Control	64(63.4)	37(36.6)	0.033	1	0.856	95(94.1)	6(5.9)	151.096	1	<0.001
intervention	69(61.6)	43(38.4)				11(9.8)	101(90.2)			

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4.6 Self-Stigma Levels among HIV Mothers in the Control and Intervention Sites at Baseline and End-Line of the Survey

There is no statistically significant difference in the proportion of HIV-positive women with self-stigma between the control and intervention groups at the baseline survey (χ^2=0.033, df=1, *p*=0.856)

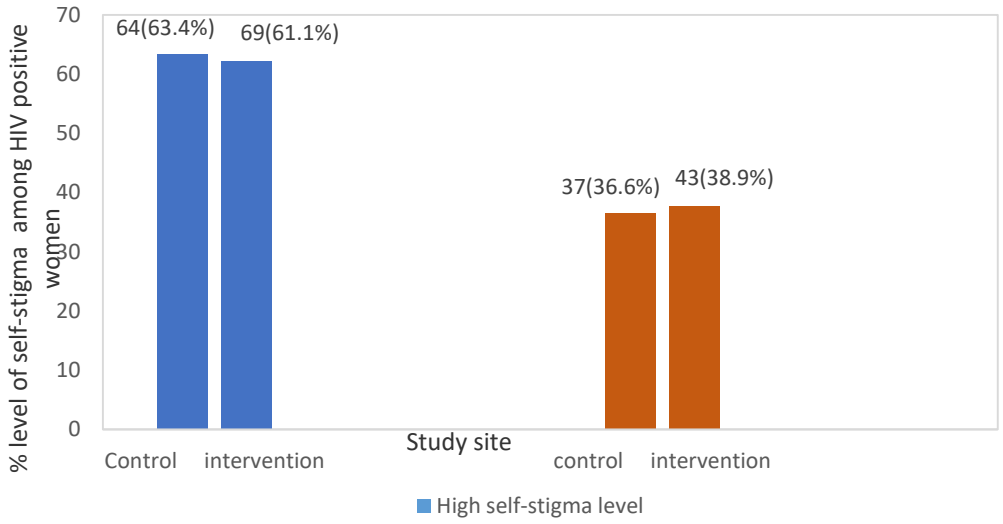

Figure 4.3: Proportion of HIV-Positive Women with Self-Stigma at Baseline Survey

However, after the intervention, **Figure 4.4** shows that there were significantly (χ^2=5.912, df=1, *p*=0.015) less HIV positive women having self-stigma among the intervention group compared to the control group in the end-line survey.

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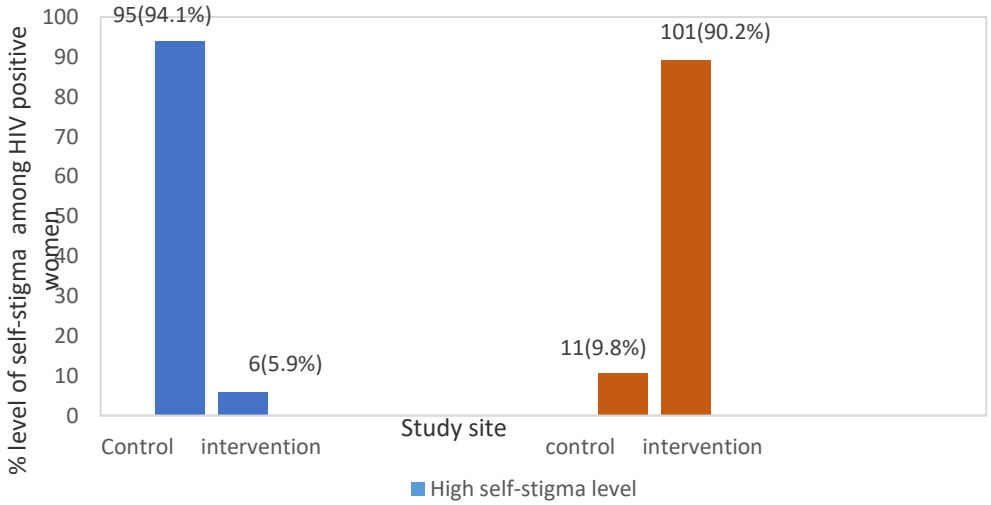

Figure 4.4: Proportion of HIV-Positive Women with Self-Stigma at End-Line Survey

4.6 Self-Disclosure to Sexual Partner Levels among HIV Mothers in the Control and Intervention Sites at Baseline and End-Line of the Survey

At baseline, 62(61.4%) out of 101 HIV-positive women in control did not disclose their HIV status to their sexual partners, while 39 (38.6%) disclosed their HIV status to their sexual partners. For the intervention group, out of 112 HIV-positive women, 62 (55.4%) did not disclose their HIV status to their sexual partners 50(44.6%) disclosed their HIV status to their sexual partners. Chi-square statistics indicated no significant difference (χ^2=0.553, df=1, p=0.457) in self-disclosure of HIV status to sexual partners among HIV-positive women in the control group compared to the intervention group in the baseline survey. Out of 101 HIV-positive women in the control group at the end-line, 64 (63.4%) did not disclose their HIV status to their sexual partners, while 37 (36.6%) disclosed their HIV status to their sexual partners. On the other hand, out of 101 HIV-positive women, 20(17.9%) did not disclose their HIV status to their sexual partners, while 92 (82.1%) had their HIV status disclosed to their sexual partners at the intervention site. Chi-square statistics indicated that there were significantly (χ^2=47.618, df=1, p<0.001) more HIV-positive women who

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disclosed their HIV status to their sexual partner in the intervention group compared to the control group at the end-line survey (**Table 4.6**).

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Table4.6: Self-Disclosure to Sexual Partner Levels among HIV Mothers in the Control and Intervention Sites at Baseline and End-Line of the Survey

	Baseline survey					End-line survey				
Group	**Self-disclosure n (%)**	**No self-disclosure n (%)**	**χ^2**	**df**	**p-value**	**Self-disclosure n (%)**	**No self-disclosure n (%)**	**χ^2**	**df**	**p-value**
Control	39(38.6)	62(61.4)	0.553	1	0.457	37(36.6)	64(63.4)	47.618	1	<0.001
intervention	50(44.6)	62(55.4)				92(82.1)	20(17.9)			

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Self-Disclosure to Sexual Partner Levels among HIV Mothers in the Control and Intervention Sites at Baseline and End-Line of the Survey

There is no statistically significant difference in the proportion of HIV-positive women who disclosed their HIV status to their sexual partner between the control and intervention groups at the baseline survey (χ^2=0.553, df=1, p=0.457).

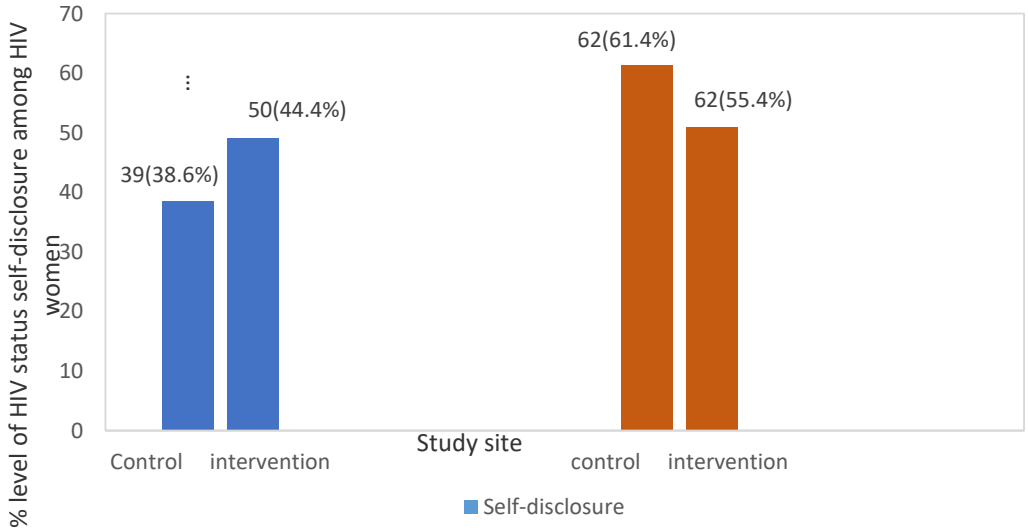

Figure 4.5: Level of HIV Status Self-Disclosure among HIV-Positive Women at Baseline

Figure 4.6 shows that there were significantly (χ^2=47.618, df=1, p<0.0001) more HIV-positive women who self-disclosed their HIV status to their sexual partners among the intervention group compared to the control group in the end-line survey

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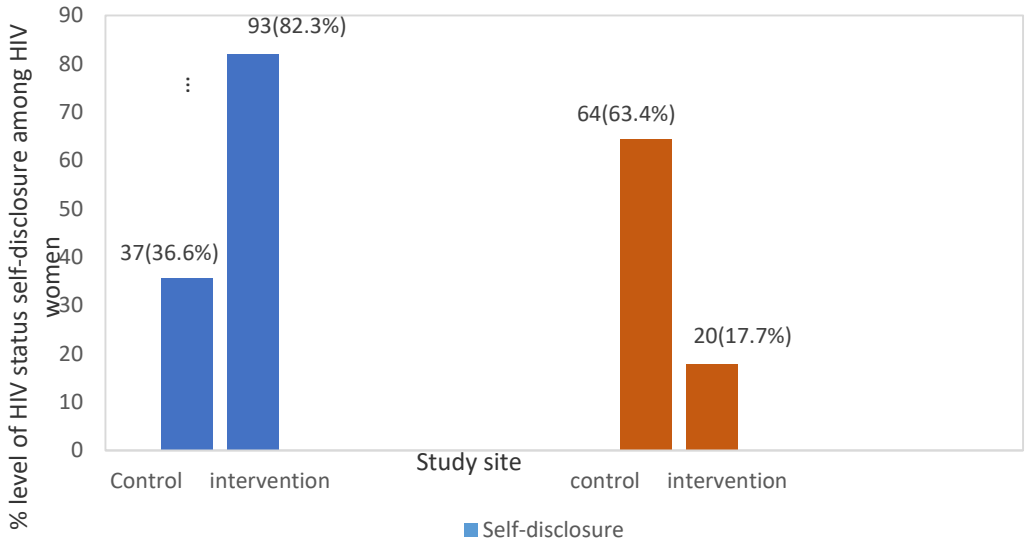

Figure 4.6: Level of HIV Status Self-Disclosure among HIV-Positive Women at Baseline

4.7 Difference in Difference (DID) Analysis to Assess the Effect of Nurse-Led Health Education Intervention on the Selected Outcomes

Table 4.7 presents the effect of nurse-led health education intervention on adherence to PMTCT using Difference-in-Difference (DID) analysis. The study did not employ propensity score matching analysis approaches since the two groups had similar characteristics at baseline. DID analysis showed significant differences (p<0.0001) in the level of adherence to PMTCT across all the two phases. The baseline survey revealed that the PMTCT adherence levels among HIV-positive women both in the control and intervention were as low as 44.8% and 46.9%. However, a slight improvement was noted at the end-line in the intervention of 65.5%. The intervention improved adherence to PMTCT among HIV-positive women with a net intervention effect of 36.9% and p<0.0001. The intervention also significantly reduced self-stigma with a net reduction intervention effect of 35.5%, p<0.0001. Similarly, self-disclosure of HIV status to a sexual partner significantly improved after the intervention at the end-line survey with a net intervention effect of 23.1% with p<0.0001. Overall, the

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nurse-led health education intervention improved adherence to PMTCT, reduced self-stigma, and increased self-disclosure of HIV status to sexual partners among HIV-positive women of the selected health facilities in Mombasa County

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Table4.7: DID Result on the Effect of Nurse-Led Health Education Intervention on Selected Outcomes

Outcomes percentage score	Baseline survey			End line survey			Contribution
	C(%)	I (%)	Diff(I-C)	C (%)	I(%)	Diff(I-C)	DID
Adherence to PMCTC	44.8	46.9	2.1	26.5	65.5	39	36.9***
Self-stigma	40.8	39.7	-1.1	67.7	31.2	-36.5	-35.4***
Disclosure to a sexual partner	37.2	41.3	4.1	40.7	67.9	27.2	23.1***

***$p < 0.0001$; C, control group; I, intervention group; DID, the difference in differences

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CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

A Quasi-experimental study design was used in this research to evaluate the effects of nurse-led health education intervention among women living with HIV. The study focused on the effects of nurse-led health education on adherence to PMTCT, level of self-stigma, and self-disclosure of HIV status to sexual partners at baseline and end-line surveys both in the control and intervention sites. In addition, the study also focused on the social demographic factors influencing adherence to PMTCT among HIV-positive women in Judah-sub-county in control and the intervention site.

5.1.1 Social Demographic Factors Influencing Adherence to PMTCT among HIV-Positive Women of Reproductive Age in Judah Sub-County at Baseline

The socio-demographic and socio-economic status of pregnant mothers has a significant bearing on PMTCT globally; for instance, an expectant mother in a developed world like Britain can have access to a doctor and will be able to plan as education level, income, and occupation—significantly impact adherence to PMTCT services (Nkenfou et al., 2023). The study reveals that women with higher education, income levels demonstrated and those employed had increased odds of adhering to PMTCT, indicating that as social status increased the odds of adherence among women increased. By implementing nurse-led health education interventions, the study underscores the importance of addressing these disparities and fostering social justice in healthcare access. This approach not only enhances adherence rates among marginalized populations but also contributes to broader efforts to reduce health inequities, ensuring that all women have equitable opportunities to receive essential PMTCT services. Social help is the support provided by individuals, groups, or communities to enhance the well-being and quality of life of those affected by specific challenges, in this case, HIV-positive women of reproductive age were give informational support (Drageset, 2021). Social help is emerging as a critical issue of adherence to health behaviors in useful resource-confined settings and among

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individuals living with HIV (Ware et al., 2009, Bangsberg & Deeks, 2010) advise that individuals in proper resource-restrained settings want to rely on their social supports to triumph over structural boundaries to adherence. The study implies that, HIV-related stigma may also jeopardize one's capability to leverage social aid because people can be reluctant to disclose their HIV popularity to their social network for fear of rejection, discrimination, or violence. Loss of disclosure might also affect adherence to fitness care behaviors, including attending medical institution appointments and taking ARVs (Nabunya et al., 2020).

Our current study result indicated that women who had attained university and college levels significantly adhered to PMTCT more than their secondary and primary education counterparts. Similarly, a study conducted in Nigeria revealed that increasing the level of education of both mothers and their male counterparts increases adherence to PMTCT(Fadila Jumare, 2019). Another cross-sectional study in Ethiopia indicated that women without formal education were less likely to adhere to option B+ (plus) in preventing mother-to-child transmission of HIV than those with formal education (Abdisa & Tenaw, 2021). A multilevel analysis in Ethiopia also showed that ladies who had completed number one, secondary, and better schooling ranges had increased odds (OR; 1.65, 1.52, and about 3.00) times more likely to utilize PMTCT services than those who had been illiterates(Gebremedhin et al., 2021). This implies that a higher level of education is crucial in the adherence to PMTCT among women across different settings. This is because women who are more educated know the importance of PMTCT and are, therefore, likely to practice the measures.

The association between health and education has been repeatedly tested because of the capacity of the latter to establish different levels of social stratification (Ross et al., 2019). Population groups defined by a low educational level show a more significant disadvantage in terms of health. However, there are differences between countries according to their specificities regarding health behaviors and public policies (Cambois et al., 2016). Individuals with the lowest educational degree were consistently found to file the more serious fitness (Regidor et al., 2006). Indeed, education has been proven to influence an individual's health at exclusive life-direction degrees (from maturity to superior age), in addition to mediating the long-

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time period have an impact on early-existence situations on fitness(Arpino et al., 2018).

Age is one of the barriers to PMTCT adherence in African countries; for instance, a study conducted in southern Ethiopia indicated that women below 25 years were 88% less likely to adhere to PMTCT as compared to those above 30 years; this may be explained by the fact that responsibility and accountability increase with an increase in age, thus older women adhere to PMTCT to take care of their children and family(Abdisa & Tenaw, 2021). In our present study, there was no statistically significant difference in age between the control and intervention at baseline and end-line survey and PMTCT adherence. This implies that age was not found to influence the adherence level to PMTCT among HIV-positive women in the present study. There is no clear explanation for this; thus, further studies must validate these findings.

Despite the effort to implement PMTCT among HIV-positive mothers, social-demographic factors are significant predictors of PMTCT uptake and adherence (Arpino et al., 2018; Fadila Jumare, 2019; Iwelunmor et al., 2014; Kiweewa et al., 2015). Decreased socio-economic status (SES), whether or not measured through training, poverty, or other signs, predicts worse health (Glymour et al., 2014). In our current studies, women with high social status, those employed, and those whose income was above Ksh 26,000 per month had high adherence to PMTCT. Similarly, a multilevel analysis of determinants of PMTCT utilization analysis conducted in Ethiopia revealed that women in poorer, middle, more prosperous, and richest wealth statuses were (1.62, 1.82, 2.44, and 4.45) times more likely to adhere to PMTCT service than those in the poorest wealth status (Gebremedhin et al., 2021).

5.1.2 The Effects of Nurse-Led PMTCT Health Education on Adherence to PMTCT

Community health education examines a community's overall health, identifying health issues and trends within a population and working with stakeholders to resolve these concerns. Public health educators work to ensure that all community members have equal access to wellness resources and healthcare services and provide educational resources and programming. Health equity and social justice are

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synonymous regarding caring access and delivery in communities. How an individual's identity characteristics and social positions are woven into a fabric of discrimination are classified as social determinants of health (Gagnon, 2022).

Several studies conducted in Africa have indicated different adherence levels, the recorded adherence levels are below 90%, which is still low (Abdisa & Tenaw, 2021). Across sectional study conducted in Ethiopia has registered that women with knowledge about PMTCT are 5.2 times more likely to have good adherence [AOR=5.2, 95% CI: 1.6–6.28] to PMTCT as compared to those without PMTCT know-how (Fedlu et al., 2020). In our present study, there was no significant difference in the proportion of women in the control and intervention site at baseline survey in the PMTCT adherence. However, in the end-line survey, there was a statistically significant difference in the proportion of women adhering to PMTCT in the intervention and control sites. There were significantly more women in the intervention site adhering to PMTCT than in the control site.

Similarly, a quasi-experimental study revealed that the participants had an adequate knowledge of the subject matter before intervention. The experimental group gained knowledge about HIV/AIDS and PMTCT, as evidenced by mean gains of 2.03 and 3.31, respectively (Oluwaseyi1 et al., 2020). There were significant differences in pre and post-intervention mean score knowledge of mothers living with HIV/AIDS and on PMTCT, with p <0.000 and p <0.000, respectively (Oluwaseyi1 et al., 2020). Similarly, in our present study, after DiD analysis result indicated the intervention improved adherence to PMTCT among HIV-positive women with a net intervention effect of 36.9% and p<.0001. Generally, a higher level of education is crucial in the adherence to PMTCT among women across different settings (Abdisa & Tenaw, 2021). This is because women who are more educated know the importance of PMTCT and are, therefore, likely to practice the measures. Educating women on the importance of PMTCT, regardless of their level of education, will increase their adherence to PMTCT (Geremew et al., 2023).

Findings from the study revealed that adherence to PMTCT among HIV-positive mothers was low before the intervention implementation. This suggests that more

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effort is needed to be put into health education during ANC visits, particularly among HIV-positive women so that the spread of this disease to newborns is minimized. More studies needed to be conducted aiming at PMTCT health education intervention among women of reproductive health living with HIV attending ANC clinics and their families.

5.1.3 Effects of Nurse-Led PMTCT Health Education on Reduction of Self-Stigma

Stigma related to HIV infection remains a concern in Sub-Saharan Africa (SSA) and influences depression among HIV-positive mothers(Psaros et al., 2020). A study conducted elsewhere indicated that health education during counseling reduces self-stigma among patients (Seidman et al., 2022). Another study after a Quasi-experimental study showed that Psychoeducation reduced self-stigma among patients with schizophrenia with an effect of $(F(1,19)=5.52; p<0.05)$ (Ivezić et al., 2017). A recent systematic review revealed that psycho-educational intervention is among the five interventions that reduce self-stigma among people living with HIV (Ma et al., 2019). However, the findings further revealed that psycho-educational intervention is the primary intervention that can reduce self-stigma successfully among HIV-positive individuals (Ma et al., 2019). Studies have shown that educational workshops on HIV, testing, and stigma successfully reduce self-stigma about HIV (Derose et al., 2014).

In our present study, the proportion of women with self-stigma significantly decreased in the intervention site compared to the control site and end-line survey. After DiD analysis to determine the impact of nurse-led health education on PMTCT, the result indicated that the intervention successfully reduced self-stigma among HIV-positive women with a net reduction of 35.5%, $p<0.0001$. A study conducted elsewhere showed that empowerment and educational radio programs significantly reduced self-stigma among people living with HIV(Andersson et al., 2020). The validated current findings indicate that nurse-led health education is an excellent intervention to be adopted in reducing self-stigma and consequently improving PMTCT adherence among HIV-positive mothers. This intervention needs to be integrated with other validated interventions meant to reduce self-stigma among people living with HIV.

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5.1.4 PMTCT Health Education on Self-Reporting Disclosure of HIV Status to the Sexual Partner

For a variety of reasons, disclosure is a crucial public health objective. First, disclosure might encourage sexual partners to get tested, alter their behavior, and ultimately stop HIV from being transmitted (Tibebu et al., 2023). Additionally, disclosure may have many positive effects on the individual, such as more opportunities for social support, better access to necessary medical care, such as antiretroviral therapy, more chances to discuss and practice HIV risk reduction with partners, and more chances to make plans. However, in addition to these advantages, the possibility of losing financial support, blaming, abandonment, physical and mental abuse, discrimination, and strained family ties are some potential downsides to disclosing one's HIV status to sexual partners (Asfaw Erku et al., 2012.)

Several studies have revealed that HIV status disclosure is associated with high chances of adherence to antiretroviral therapy(ART)(Bulterys et al., 2021), attaining viral clampdown on ART, getting social support, safer sexual behavior, and improving child health outcomes(Abuogi et al., 2021; Kinuthia et al., 2018; Kiweewa et al., 2015; Ngonzi, 2019; Nordberg et al., 2020; Odiachi et al., 2018) A systematic review revealed that fear of status disclosure and stigma were the most frequently mentioned barriers for utilization of PMTCT intervention programs (Bulterys et al., 2021).

The WHO and HIV National control programs strongly emphasize the importance of telling one's sexual partner about one's HIV status. HIV disclosure has been associated with increased treatment adherence, successful clinical outcomes, and a reduction in partner-to-partner transmission of the virus (John & Chipwaza, 2022; Naigino et al., 2017)The public admission of one's HIV serostatus is necessary for HIV prevention and the reduction of HIV transmission within communities. Increased counseling, community/partner support, and educational strategies promote the self-disclosure of one's HIV status to sexual partners(John & Chipwaza, 2022).

According to prior research, HIV-positive people who received close follow-ups on their recommended education reported their status. Patients relieved of mental distress and stress could take their medications on time without worrying about others sharing

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a house (Anckermann et al., 2005). This suggests that the HIV case management intervention helped to create the environment for patients' compliance with cART and disclosure of their HIV status (Tegegne & Zeru, 2022). Similarly, our current study findings indicated a significantly higher proportion of women who disclosed their HIV status to their sexual partner in the nurse-led PMTCT health education intervention group than those in the non-intervention group. The DID analysis result indicated that self-disclosure of HIV status to a sexual partner significantly improved after the intervention with a net intervention effect of 23.1% with p<.0001. These findings imply that if health-based education should be continuously given to HIV-positive women attending antenatal clinics, the prevalence of non-disclosure of HIV status to sexual partners will be reduced.

5.2 Conclusions

Social Demographics and PMTCT Adherence:

i. **Level of education**: Both at baseline and the end-line high proportion of women with university and college education had a higher adherence level to PMTCT than their counterparts with a primary and secondary level of education
ii. **Level of income**: Both at baseline and the end-line high proportion of women with a high income had a higher adherence level to PMTCT than their counterparts with a low income of less than Ksh 26,000.
iii. **Occupation:** Both at baseline and the end-line high proportion of women who were employed and those doing business had a higher adherence level to PMTCT than their counterparts who were housewives and peasant formers.

This implies that increased socioeconomic status increases adherence to PMTCT.

Nurse-Led Health Education on PMTCT Outcomes

PMTCT nurse-led health education intervention sites recorded improved adherence to PMTCT likened to the control sites as defined below:

i. **Adherence to PMTCT**: Nurse-led health education increased the proportion

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of women living with HIV adhering to PMTCT from 75.0% % to 81.4%; consequently, the proportion of women with high adherence increased significantly by 9.5%.

ii. **Self-stigma**: Implementation of PMTCT nurse-led health education reduced the proportion of self-stigma in women living with HIV by 62.1% to 10.6%, thus reducing the proportion of self-stigma in women living with HIV significantly by 82.6%.

iii. **Self-disclosure of HIV status to sexual partner**: PMTCT nurse-led health education increased the proportion of women living with HIV who disclosure their HIV status to their sexual partners from 44.6% to 82.3%, therefore increasing the proportion of women living with HIV disclosing their HIV status to their sexual partner significantly by 40.9%.

5.3 Recommendations

i) Given that women with higher education and income levels demonstrated better adherence to PMTCT services, it is crucial to implement programs that improve access to education and economic empowerment for women. Policies should focus on expanding educational opportunities and financial support for women in lower socioeconomic groups to enhance adherence to PMTCT.

ii) Governments and health policymakers in LMICs should institutionalize nurse-led health education interventions as a standard component of PMTCT programs. This involves creating national guidelines and protocols that mandate nurse-led educational sessions focusing on PMTCT adherence, stigma reduction, and HIV status disclosure.

iii) National health systems should formally integrate nurse-led health education into PMTCT programs. This study demonstrated that nurse-led interventions significantly improve PMTCT adherence, reduce self-stigma, and increase HIV status disclosure. Government policies should support training and resource allocation for nurses to lead educational initiatives within PMTCT services, maximizing the impact on maternal and child health.

iv) Future research should focus on conducting comprehensive impact evaluations of nurse-led interventions in PMTCT settings. This includes longitudinal

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studies that assess long-term adherence to PMTCT, the sustainability of self-stigma reduction, and rates of HIV status disclosure over time.

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REFERENCE

Abdisa, S., & Tenaw, Z. (2021). Level of adherence to option B plus PMTCT and associated factors among HIV positive pregnant and lactating women in public health facilities of Hawassa city, Southern Ethiopia. *PLoS ONE*, *16*(8 August), 1–11. https://doi.org/10.1371/journal.pone.0255808

Abuogi, L., Hampanda, K., Odwar, T., Helova, A., Odeny, T., Onono, M., Bukusi, E., & Turan, J. (2021). *HHS Public Access*. *32*(7), 858–868. https://doi.org/10.1080/09540121.2019.1659915.HIV

Almalki, S. (2016). Integrating Quantitative and Qualitative Data in Mixed Methods Research—Challenges and Benefits. *Journal of Education and Learning*, *5*(3), 288. https://doi.org/10.5539/jel.v5n3p288

Alvidrez, J., Snowden, L., & Patel, S. (2010). The Relationship between Stigma and Other Treatment Concerns and Subsequent Treatment Engagement among Black Mental Health Clients. *Issues in Mental Health Nursing*, *31*, 257–264. https://doi.org/10.3109/01612840903342266

Anckermann, S., Dominguez, M., Soto, N., Kjaerulf, F., Berliner, P., & Mikkelsen, E. (2005). Psycho-social support to large numbers of traumatized people in post-conflict societies: An approach to community development in Guatemala. *Journal of Community & Applied Social Psychology*, *15*, 136–152. https://doi.org/10.1002/casp.811

Andersson, G. Z., Reinius, M., Eriksson, L. E., Svedhem, V., Esfahani, F. M., Deuba, K., Rao, D., Lyatuu, G. W., Giovenco, D., & Ekström, A. M. (2020). Stigma reduction interventions in people living with HIV to improve health-related quality of life. *The Lancet HIV*, *7*(2), e129–e140. https://doi.org/https://doi.org/10.1016/S2352-3018(19)30343-1

Arpino, B., Gumà, J., & Julià, A. (2018). Early-life conditions and health at older ages: The mediating role of educational attainment, family and employment trajectories. *PLoS ONE*, *13*(4), 1–17. https://doi.org/10.1371/journal.pone.0195320

1.

Asfaw Erku, T., Megabiaw, B., & Wubshet, M. (n.d.). *Predictors of HIV status disclosure to sexual partners among People living with HIV/AIDS in Ethiopia*. www.panafrican-med-journal.com

Ayuo, P., Musick, B., Liu, H., Braitstein, P., Nyandiko, W., Otieno-Nyunya, B., Gardner, A., & Wools-Kaloustian, K. (2013). Frequency and factors associated with adherence to and completion of combination antiretroviral therapy for prevention of mother to child transmission in western Kenya. *Journal of the International AIDS Society*, *16*. https://doi.org/10.7448/IAS.16.1.17994

Bangsberg, D. R., & Deeks, S. G. (2010). Spending more to save more: interventions to promote adherence. In *Annals of internal medicine* (Vol. 152, Issue 1, pp. 13–54). https://doi.org/10.7326/0003-4819-152-1-201001050-00012

Brown, L., Macintyre, K., & Trujillo, L. (2003). Interventions to reduce HIV/AIDS stigma: What have we learned? *AIDS Education and Prevention : Official Publication of the International Society for AIDS Education*, *15*, 49–69. https://doi.org/10.1521/aeap.15.1.49.23844

Bulterys, M. A., Sharma, M., Mugwanya, K., Mujugira, A., Nakyanzi, A., Twohey-jacobs, L., Ware, N. C., Heffron, R., & Celum, C. (2021). *Sectional study*. *86*(4), 389–395. https://doi.org/10.1097/QAI.0000000000002566.Correlates

Cambois, E., Solé-Auró, A., Brønnum-Hansen, H., Egidi, V., Jagger, C., Jeune, B., Nusselder, W. J., Van Oyen, H., White, C., & Robine, J.-M. (2016). Educational differentials in disability vary across and within welfare regimes: a comparison of 26 European countries in 2009. *Journal of Epidemiology \& Community Health*, *70*(4), 331–338. https://doi.org/10.1136/jech-2015-205978

Chersich, M. F., Newbatt, E., Ng'oma, K., & de Zoysa, I. (2018). UNICEF's contribution to the adoption and implementation of option B+ for preventing mother-to-child transmission of HIV: A policy analysis. *Globalization and Health*, *14*(1), 1–13. https://doi.org/10.1186/s12992-018-0369-2

1.

Decker, S., Rempis, E., Schnack, A., Braun, V., Rubaihayo, J., Busingye, P., Tumwesigye, N. M., Harms, G., & Theuring, S. (2017). Prevention of mother-to-child transmission of HIV: Postpartum adherence to Option B+ until 18 months in Western Uganda. *PLoS ONE*, *12*(6), 1–13. https://doi.org/10.1371/journal.pone.0179448

Derose, K. P., Bogart, L. M., Kanouse, D. E., Felton, A., Collins, D. O., Mata, M. A., Oden, C. W., Dominguez, B. X., Florez, K. R., Hawes-Dawson, J., & Williams, M. V. (2014). An intervention to reduce HIV-related stigma in partnership with African American and Latino churches. *AIDS Education and Prevention*, *26*(1), 28–42. https://doi.org/10.1521/aeap.2014.26.1.28

Fadila Jumare. (2019). *Factors Influencing Utilization and Adherence to Prevention of Mother to Child Transmission of HIV/AIDS Services in Rivers State, Nigeria*.

Fedlu, A., Alie, B., Mohammed, A. S., Adem, F., & Hassen, A. (2020). Adherence to antiretroviral treatment for prevention of mother-to-child transmission of hiv in eastern ethiopia: A cross-sectional study. *HIV/AIDS - Research and Palliative Care*, *12*, 725–733. https://doi.org/10.2147/HIV.S274012

Gagnon, D. (2022). *The Importance of Health Education*. https://www.snhu.edu/about-us/newsroom/health/importance-of-health-education

Gebremedhin, T., Alamneh, T. S., Hagos, A., Desalegn, B., & Worku, N. (2021). A multilevel analysis of determinants of PMTCT service utilisation among women during the antepartum, intrapartum and postpartum period in Ethiopia. *BMC Pregnancy and Childbirth*, *21*(1), 1–11. https://doi.org/10.1186/s12884-021-03896-1

Glymour, M. M., Avendano, M., & Kawachi, I. (2014). 17Socioeconomic Status and Health. In L. F. Berkman, I. Kawachi, & M. M. Glymour (Eds.), *Social Epidemiology* (p. 0). Oxford University Press. https://doi.org/10.1093/med/9780195377903.003.0002

Han, H. R., Kim, K., Murphy, J., Cudjoe, J., Wilson, P., Sharps, P., & Farley, J. E. (2018). Community health worker interventions to promote psychosocial outcomes among

1.

people living with HIV—A systematic review. *PLoS ONE*, *13*(4). https://doi.org/10.1371/journal.pone.0194928

Humanimmunovirus (HIV).GOV. (2020). *The Global HIV/AIDS Epidemic*. Retrieved from https://www.hiv.gov/hiv-basics/overview/data-and-trends/global-statistics

Hutchinson, P., & Dhairyawan, R. (2018). Shame and HIV: Strategies for addressing the negative impact shame has on public health and diagnosis and treatment of HIV. *Bioethics*, *32*(1), 68–76. https://doi.org/10.1111/bioe.12378

Id, O. D., Eluwa, G., Adams, E., Torpey, K., Shittu, O., & Adebajo, S. (2020). *Stakeholder perceptions about barriers to Antenatal care (ANC) and Prevention of mother-to-child transmission (PMTCT) uptake in Kano state, Nigeria*. 1–14. https://doi.org/10.1371/journal.pone.0232028

Ivezić, S. Š., Sesar, M. A., & Mužinić, L. (2017). Effects of a Group Psychoeducation Program on Self-Stigma, Empowerment and Perceived Discrimination of Persons with Schizophrenia. *Psychiatria Danubina*, *29*(1), 66–73.

Iwelunmor, J., Ezeanolue, E. E., Airhihenbuwa, C. O., Obiefune, M. C., Ezeanolue, C. O., & Ogedegbe, G. G. (2014). Socio-cultural factors influencing the prevention of mother-to-child transmission of HIV in Nigeria: A synthesis of the literature. *BMC Public Health*, *14*(1), 1–13. https://doi.org/10.1186/1471-2458-14-771

John, M. E., & Chipwaza, B. (2022). HIV status disclosure among adults attending care and treatment clinic in Kilombero district, South-Eastern Tanzania. *International Journal of Africa Nursing Sciences*, *17*. https://doi.org/10.1016/j.ijans.2022.100434

Kenya Population-based HIV Impact Assessment (KENPHIA) 2018 PREL REP fin_alt2_USAID.indd 1. (n.d.). Retrieved from http://www.nascop.or.ke/Kenya national HIV

Kharsany, A. B. M., & Karim, Q. A. (2016). HIV Infection and AIDS in Sub-Saharan Africa: Current Status, Challenges and Opportunities. *The Open AIDS Journal*, *10*(1), 34–48. https://doi.org/10.2174/1874613601610010034

1.

KENPHIA,2020, Kenya national HIV survey shows progress towards

Kinuthia, J., Singa, B., Mcgrath, C. J., Odeny, B., Langat, A., Katana, A., Ng, L., Pintye, J., & John-stewart, G. (2018). *Prevalence and correlates of non-disclosure of maternal HIV status to male partners : a national survey in Kenya*. 1–10.

Kiweewa, F. M., Bakaki, P. M., Mcconnell, M. S., Musisi, M., Namirembe, C., Nakayiwa, F., Kusasira, F., Nakintu, D., Mubiru, M. C., Musoke, P., & Fowler, M. G. (2015). A cross-sectional study of the magnitude, barriers, and outcomes of HIV status disclosure among women participating in a perinatal HIV transmission study, "the Nevirapine Repeat Pregnancy study ." *BMC Public Health*, 1–7. https://doi.org/ 10.1186/ s12889-015-2345-6

Madiba, S., & Putsoane, M. (2020). Testing Positive and Disclosing in Pregnancy: A Phenomenological Study of the Experiences of Adolescents and Young Women in Maseru, Lesotho. *AIDS Research and Treatment*, *2020*. https://doi.org/10.1155/ 2020/6126210

Ma, P. H. X., Chan, Z. C. Y., & Loke, A. Y. (2019). Self-Stigma Reduction Interventions for People Living with HIV/AIDS and Their Families: A Systematic Review. *AIDS and Behavior*, *23*(3), 707–741. https://doi.org/10.1007/s10461-018-2304-1

McGrath, C. J. (2019). Postpartum depression and prevention of mother-to-child transmission of HIV in Kenya Tyson. *Physiology & Behavior*, *176*(3), 139–148. https://doi.org/10.1097/JNC.0000000000000088.Postpartum

Mittal, D., Sullivan, G., Chekuri, L., Allee, E., & Corrigan, P. W. (2012). Empirical Studies of Self-Stigma Reduction Strategies: A Critical Review of the Literature. *Psychiatric Services (Washington, D.C.)*, *63*(10), 974–981. https://doi.org/10.1176/ appi.ps.201100459

Muyunda, B., Musonda, P., Mee, P., Todd, J., & Michelo, C. (2019). Effectiveness of Lifelong ART (Option B+) in the Prevention of Mother-to-Child Transmission of HIV Programme in Zambia: Observations Based on Routinely Collected Health Data. *Frontiers in Public Health*, *7*, 401. https://doi.org/10.3389/fpubh.2019.00401

1.

Nabunya, P., & Namuwonge, F. (2022). HIV-Related Shame, Stigma and the Mental Health Functioning of Adolescents Living with HIV: Findings from a Pilot Study in Uganda. *Child Psychiatry and Human Development*. https://doi.org/10.1007/s10578-022-01374-z

Naigino, R., Makumbi, F., Mukose, A., Buregyeya, E., Arinaitwe, J., Musinguzi, J., & Wanyenze, R. K. (2017). HIV status disclosure and associated outcomes among pregnant women enrolled in antiretroviral therapy in Uganda: A mixed methods study. *Reproductive Health*, *14*(1). https://doi.org/10.1186/s12978-017-0367-5

National Aids Control Council. (2015). Kenya Aids Strategic Framework. *Ministry of Health, Kenya*.

National Empowerment Network of People Living with HIV/AIDS in Kenya (NEPHAK). (2021). *Kenya Country Assessment Report*. 1–88.

Ngonzi, J. (2019). *Frequency of HIV status disclosure, associated factors and outcomes among HIV positive pregnant women at Mbarara Regional Referral Hospital, southwestern Uganda*. *8688*, 1–10. https://doi.org/10.11604/pamj.2019.32.200.12541

Nobre, N., Pereira, M., Roine, R. P., Sutinen, J., & Sintonen, H. (2018). HIV-Related Self-Stigma and Health-Related Quality of Life of People Living With HIV in Finland. *The Journal of the Association of Nurses in AIDS Care : JANAC*, *29*(2), 254–265. https://doi.org/10.1016/j.jana.2017.08.006

Nordberg, B., Gabriel, E. E., Were, E., Kaguiri, E., Ekström, A. M., Kågesten, A., & Rautiainen, S. (2020). *Social concerns related to HIV status disclosure and participation in the prevention of mother-to-child transmission of HIV care among pregnant women in Kenya*. 1–9.

Nyandat, J., & Rensburg, G. V. Van. (2019). Are Male Partners the Missing Link to Eliminating Mother-To-Child Transmission of HIV in Sub-Saharan Africa? Evidence from a Retrospective Case-Control Study. *Journal of the Association of Nurses in AIDS Care*.

1.

Odiachi, A., Erekaha, S., Cornelius, L. J., Isah, C., Ramadhani, H. O., Rapoport, L., & Samagudu, N. A. (2018). *HIV status disclosure to male partners among rural Nigerian women along the prevention of mother-to-child transmission of HIV cascade : a mixed methods study*. 1–12.

Okawa, S., Chirwa, M., Ishikawa, N., Kapyata, H., Msiska, C. Y., Syakantu, G., Miyano, S., Komada, K., Jimba, M., & Yasuoka, J. (2015). Longitudinal adherence to antiretroviral drugs for preventing mother-to-child transmission of HIV in Zambia. *BMC Pregnancy and Childbirth*, *15*(1), 1–10. https://doi.org/10.1186/s12884-015-0697-7

Oluwaseyi1, O. T., Sowumi1, C. O., Owopetu1, C. A., & Ogunmuyiwa2, and O. E. (2020). Effect Of A Nurse-Led Intervention On Knowledge Of Pmtct Among Mothers Living With Hiv Attending Tertiary Hospitals In Ondo-State. *African Journal of Health, Nursing and Midwifery*, *3*(5), 1–11.

Omondi, M. P., Ombaka, J. H., Mwau, M., & Ouma, C. (2015). *Social and Demographic Characteristics of HIV-Positive Mother- Infant Pair and Their Association with Mother-To-Child Transmission of HIV in Vihiga , Kakamega , Bungoma and Busia Counties , Kenya : Chart Review*. *3*(9), 141–151.

Onoya, D., Sineke, T., Brennan, A. T., Long, L., & Fox, M. P. (2017). Timing of pregnancy, postpartum risk of virologic failure and loss to follow-up among HIV-positive women. *Aids*, *31*(11), 1593–1602. https://doi.org/10.1097/QAD.0000000000001517

Paudel, V., & Baral, K. P. (2015). Women living with HIV/AIDS (WLHA), battling stigma, discrimination and denial and the role of support groups as a coping strategy: A review of literature. *Reproductive Health*, *12*(1), 1–9. https://doi.org/10.1186/s12978-015-0032-9

Peltzer, K., Babayigit, S., Rodriguez, V. J., Jean, J., & Sifunda, S. (2018). *E ff ect of a multicomponent behavioural PMTCT cluster randomised controlled trial on HIV stigma reduction among perinatal HIV positive women in Mpumalanga province , South Africa*. *15*(1), 80–88.

1.

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, *90*(5), 751–783. https://doi.org/10.1037/0022-3514.90.5.751

Psaros, C., Smit, J. A., Mosery, N., Bennett, K., Coleman, J. N., Bangsberg, D. R., & Safren, S. A. (2020). PMTCT Adherence in Pregnant South African Women: The Role of Depression, Social Support, Stigma, and Structural Barriers to Care. *Annals of Behavioral Medicine*, *54*(9), 626–636. https://doi.org/10.1093/abm/kaaa005

Raji, M. O., Daramola, D. S., & Oladele, J. I. (2020). Teachers' conceptions and choices of assessment tasks in a Nigerian postgraduate teacher training. *Asian Journal Of Assessment In Teaching And Learning*, *10*(2), 82–93. https://doi.org/10.37134/ajatel.vol10.2.9.2020

Regidor, E., Martínez, D., Astasio, P., Ortega, P., Calle, M. E., & Domínguez, V. (2006). Trends of socioeconomic inequalities and socioeconomic inequalities in self-perceived health in Spain. *Gaceta Sanitaria*, *20*(3), 178–182. https://doi.org/10.1016/s0213-9111(06)71484-4

Ross, K. M., Dunkel Schetter, C., McLemore, M. R., Chambers, B. D., Paynter, R. A., Baer, R., Feuer, S. K., Flowers, E., Karasek, D., Pantell, M., Prather, A. A., Ryckman, K., & Jelliffe-Pawlowski, L. (2019). Socioeconomic Status, Preeclampsia Risk and Gestational Length in Black and White Women. *Journal of Racial and Ethnic Health Disparities*, *6*(6), 1182–1191. https://doi.org/10.1007/s40615-019-00619-3

Sariah, A., Rugemalila, J., Protas, J., Aris, E., Siril, H., Tarimo, E., & Urassa, D. (2019). Why did i stop? and why did i restart? Perspectives of women lost to follow-up in option B+ HIV care in Dar es Salaam, Tanzania. *BMC Public Health*, *19*(1), 1–11. https://doi.org/10.1186/s12889-019-7518-2

Seidman, A. J., Wade, N. G., & Geller, J. (2022). The effects of group counseling and self-affirmation on stigma and group relationship development: A replication and extension. *Journal of Counseling Psychology*. https://doi.org/10.1037/cou0000614

1.

Sirengo, M., Muthoni, L., Kellogg, T. A., A. Kim, A., Katana, A., Mwanyumba, S., Kimanga, D. O., Maina, W. K., Muraguri, N., Elly, B., & Rutherford, G. W. (2014). Mother-to-child transmission of HIV in Kenya: Results from a nationally representative study. *Journal of Acquired Immune Deficiency Syndromes*, *66*(SUPPL. 1). https://doi.org/10.1097/QAI.0000000000000115

Slogrove, A. L., Powis, K. M., Johnson, L. F., Stover, J., & Mahy, M. (2020). Estimates of the global population of children who are HIV-exposed and uninfected, 2000–18: a modelling study. *The Lancet Global Health*, *8*(1), e67–e75. https://doi.org/10.1016/S2214-109X(19)30448-6

Tegegne, A. S., & Zeru, M. A. (2022). Evaluation of the interventions on HIV case management and its association with cART adherence and disclosure of the disease status among HIV-positive adults under treatment. *Scientific Reports*, *12*(1). https://doi.org/10.1038/s41598-022-17905-6

Turan, J. M., & Nyblade, L. (2013). HIV-related stigma as a barrier to achievement of global PMTCT and maternal health goals: a review of the evidence. *AIDS and Behavior*, *17*(7), 2528–2539. https://doi.org/10.1007/s10461-013-0446-8

Ulalo, A. R. (2016). *Assessement Of Knowledge Of And Adherence To The*. *April*.

Unaids. (n.d.). *Global AIDS Monitoring 2020 -- Indicators for monitoring the 2016 Political Declaration on Ending AIDS*.

UNAIDS. (2019a). Joint United Nations Programme on HIV/AIDS. *Encyclopedia of Global Health*. https://doi.org/10.4135/9781412963855.n665

UNAIDS. (2019b). *Start Free Stay Free AIDS Free-2019 report*. Http://Rstesa.Unaids.Org/. http://rstesa.unaids.org/publications/global-publications/2019/item/210-start-free-stay-free-aids-free-2019-report?tmpl=component&print=1

UNAIDS. (2022a). *Related: New Global Alliance Launched To End Aids In Children By 2030*.

1.

Unaids. (2022b). *Unaids Global Aids Update 2022*.

Vogel, D. L., Bitman, R. L., Hammer, J. H., & Wade, N. G. (2013). Is stigma internalized? The longitudinal impact of public stigma on self-stigma. *Journal of Counseling Psychology*, *60*(2), 311–316. https://doi.org/10.1037/a0031889

Ware, N. C., Idoko, J., Kaaya, S., Biraro, I. A., Wyatt, M. A., Agbaji, O., Chalamilla, G., & Bangsberg, D. R. (2009). Explaining adherence success in sub-Saharan Africa: an ethnographic study. *PLoS Medicine*, *6*(1), e11. https://doi.org/10.1371/ journal. pmed.1000011

WHO. (2018). *HIV/AIDS*. Regional Office for Africa. https://www.afro.who.int/health-topics/hivaids

WHO. (2019). *Maternal mortality*. https://www.who.int/news-room/fact-sheets/detail/maternal-mortality

WHO. (2022). *HIV*. https://www.who.int/news-room/fact-sheets/detail/hiv-aids

World Health Organization. (2010). PMTCT Strategic vision 2010-2015. *World Health Organization*, *February 2010*, 40.

Yacobson, I., Malkin, M., & Lebetkin, E. (2016a). *Increasing Access and Adherence to the PMTCT Cascade : Is There a Role for Economic Strengthening Interventions ? 2016*.

Yacobson, I., Malkin, M., & Lebetkin, E. (2016b). Increasing Access and Adherence to the PMTCT Cascade: Is There a Role for Economic Strengthening Interventions? *International Journal of Population Research*, *2016*, 1–8. https://doi.org/10.1155/2016/4039012

Yigit, I., Bayramoglu, Y., Weiser, S. D., Johnson, M. O., Mugavero, M. J., Turan, J. M., & Turan, B. (2020). Changes in Internalized Stigma and HIV Health Outcomes in Individuals New to HIV Care: The Mediating Roles of Depression and Treatment Self-Efficacy. *AIDS Patient Care and STDs*, *34*(11), 491–497. https://doi.org/10.1089 /apc.2020.0114

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APPENDICES

Appendix I: Questionnaires

Effectiveness of nurse led PMTCT health education intervention on adherence to PMTCT services among HIV positive women of reproductive age in Mombasa County, Kenya. This is a study being conducted by **MUHAMUD CHEMOWO CHEPTOEK,** who is a post graduate student at Jomo Kenyatta University of Agriculture and Technology pursuing PhD in Public Health. Questionnaire No…… Date of interview…….... Code……...Group……

Instructions: -place a tick (√) in the appropriate box

Section A: Socio demographic information

Q 1). How old are you?

i. 15 -25
ii. 26 – 35
iii. 36 – 45
iv. 46 - 55

Q 2). What is your marital status?

i. Single
ii. Married
iii. Divorced
iv. Widowed

Q 3). What is your educational level?

i. University
ii. College
iii. High School
iv. Primary School

Q 4). What is your occupation?

1.

i. House wife
ii. Peasant farmer
iii. Employed
iv. Business woman

Others specify……

Q5) How much do you earn/income per month?

i. Less than Ksh 3000
ii. Between Ksh 3000 - 25000
iii. Between Ksh 25000 - 45000
iv. Between Ksh 45000 - 60000
v. Above Ksh 60000

Q 6). What is the date of the last delivery?

i. Less than a month
ii. More than five months ago
iii. More than a year
iv. Two years

Q 7). Where did you give birth? Home Hospital Health center others……

Section B: PMTCT adherence assessment questions

Q1). Just to confirm, are you taking ART to manage your HIV? YES/No

Q2). Were you given antiretroviral medication to take when in labour during your Antenatal clinic visits? Yes /No

Q3). Did you take the prescribed Antiretroviral pills when you gave birth to the baby? Yes /No If No please explain ……

i. Forgot
ii. Fear of stigma
iii. They were not necessary
iv. Advised not to take by relatives

1.

v. Drugs not available

vi. Others specify……..

Q5). If Yes, after what duration?

i. Same day of giving birth

ii. Second day

iii. Third day

iv. Fourth day

v. Others specify …….

Q6). Did you give the baby the prescribed antiretroviral syrup? Yes /No

Q7). Was there a time that you ever missed taking the ARV pills:

i. Took half of the medication Yes /No

ii. Did not take medication at the correct time Yes/ No

iii. Did not complete the dose Yes/ No

iv. Missed taking the pill Yes /No

v. Others specify……..

Q8). Do you know the effects of not taking the antiretroviral medication? Yes or No

Q9). Can Option B+ (ARVs) administration to pregnant women result in elimination of new infections in pediatrics? Yes/No

Q10). Are you able to access the ARV's when required? Yes/ No If No Explain,

i. Lack of transport

ii. Clinic too far

iii. Lack of fare

iv. No mobile outreach center nearby

v. Others specify……

Q11). Is there a time that you went to the health facility to collect ARV's and missed? Yes /No Explain,

i. Shortage of staff

ii. Stock out

iii. Opening hours too short

1.

iv. Queue too long

Q12). Can you tell me any challenge you had with your medicine…….

Q13). Do you have any support or reminder which help you to take your medicine at the same time every day……..?

Q14). Since learning you are HIV-positive, have you had a blood test to find out your CD4 count?

Use local term if necessary.

i. Yes
ii. No

Q15). How long ago did you have your last blood test to find out your CD4 count?

Number of months ago……..

Number of years ago……..

Q16). Do you know your latest CD4 count?

i. Yes
ii. No

Section C: Reporting on self-stigma

Q1). Do you hide your HIV status

Yes

No

Q2). Do you sometimes feel bad about yourself because you are HIV positive?

Ye

No

Q3). In the past twelve months, have you ever found yourself avoiding or isolating yourself from friends or family because of your HIV status?

Yes

No

Q4). Sometimes do you feel guilty because you have HIV?

Yes

No

1.

Q5). Have you ever withdrawn from attending social gatherings because of being HIV positive

Yes

No

Q6). Since you received your HIV-positive result, have you seeked any financial assistance, food assistance, or emotional and social assistance from the government or any HIV or

AIDS support organization?

Yes

No

Q7). Do you ever feel like isolating yourself from family and friends because of your HIV status?

Yes

No

Q8. Do you think that knowing your HIV-positive has made you not to apply for any job(s)?

Yes

No

Q9). Have you ever withdrawn from seeking health care service for fear of your HIV status being revealed?

Yes

No

Section D: Self-reporting disclosure to sexual partner

Now if it is okay with you, I would like to ask you some questions about whether and how you have shared your HIV status with people around you.

Q1). would you say you generally keep your HIV status a secret from most people?

Yes

No

Q2) Have you shared your HIV test results with your sexual partner?

Yes

1.

No

Q3). Which of the following is the main reason(s) you choose to disclose your HIV status to your sexual partner? **(*For disclosures*)**

i. So that to get financial, psychological and emotional support
ii. I didn't want to put my partner at risk
iii. Encouragement from counsellors
iv. I wanted to be responsible and accountable since I have children we need to care for
v. Others (specify)……..

Q4). Who have you shared your HIV test results with? ***Mark all that apply***.

i. Spouse or partner
ii. Children
iii. Sibling
iv. Parent
v. Other relative
vi. Friend
vii. Other, please specify:

.....

Q5). When did you first share your HIV status with your sexual partner? (for those who shared)

i. On the same day after testing positive.
ii. Few days after testing
iii. After a month
iv. Others (specify)……

Q6). Were you stigmatized or discriminated after disclosure of your HIV status to your sexual partner?

Yes

No

Q7). Did your sexual partner verbally or physically abuse you after disclosing your HIV status?

Yes

No

1.

Q8). After giving you your HIV test results, did any health care provider help you share your status with your spouse or sexual partner?

Yes

No

Q9). ***For respondents who have not disclosed to anyone***. Why have you chosen not to share your HIV status with anyone? (*e.g Fear of losing relationship,feeling shame and guilty etc)*

This concludes this portion of our interview. I would like to thank you very much for helping us. I appreciate the time that you have taken to answer these questions. I realize that some of these questions may have been difficult to answer, but it is only by hearing from women living with HIV about their firsthand experiences that we can understand how to improve the lives of mothers who are living with HIV.

THANK

1.

Appendix II: Informed Consent to Participate in the Study

Effectiveness of nurse led PMTCT health education intervention on adherence to PMTCT services among HIV positive women of reproductive age in Mombasa County, Kenya.

This is a study being conducted by Cheptoek Muhamud Chemowo who is a post graduate

student at Jomo Kenyatta University of Agriculture and Technology pursuing PhD in Public Health. The purpose of the study is to determine factors associated with PMTC and health outcomes among infant – mother pairs in selected health facilities in Mombasa County. The study has been granted approval from Jomo Kenyatta University of Agriculture and Technology and by Ethics and Review Committee, University of eastern Africa. The information given will be kept anonymous, confidential and will not be used in anyway against you. You are encouraged to ask questions for clarification. The findings from this study may not help you now. However, it is hoped that the study findings will be utilized in preventing mother to child HIV transmission and better health outcomes among infant and mother pairs.

If you agree, a researcher will interview you for approximately 20 minutes. Your participation in this study is voluntary. If you have read the above passage or has been read to you and you understood it, kindly append your signature to show your willingness to take part in the study.

Signature---------- Date OR

LEFT THUMB PRINT---------- Date----------

Witness: Name---------- Signature----------Date----------

1.

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Appendix III: Ethical Approval

OFFICE OF THE DIRECTOR OF GRADUATE STUDIES
AND RESEARCH
UNIVERSITY OF EASTERN AFRICA, BARATON
P. O. Box 2500-30100, Eldoret, Kenya, East Africa

February 20, 2019

Muhamud Chemowo Cheptoek School of Public Health
Jomo Kenyata University of
Agriculture and Technology Dear
Muhamud,

Re: ETHICS CLEARANCE FOR THESIS PROPOSAL (REC: UEAB/08/02/2019)

Your PhD thesis proposal entitled "Factors Associated with Prevention of Mother to Child Transmission and Health Outcomes among Infant-Mother Pairs in selected Health Facilities in Mombasa County in Kenya" was discussed by the Research Ethics Committee (REC) of the University and your request for ethics clearance was granted approval.

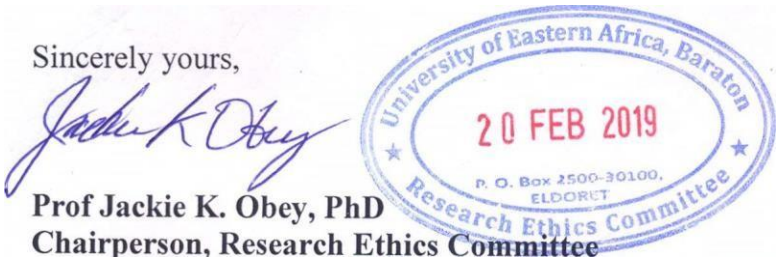
This approval is for one year effective February 20, 2019 until February 19, 2020. For any extension beyond this time period, you will need to apply to this committee one month prior to expiry date.

Note that you will need a research permit from the National Commission for Science, Technology, and Innovation (NACOSTI) and clearance from the study site before you start gathering your data.

1.

We wish you success in your research.

Sincerely yours,



Prof Jackie K. Obey, PhD
Chairperson, Research Ethics Committee

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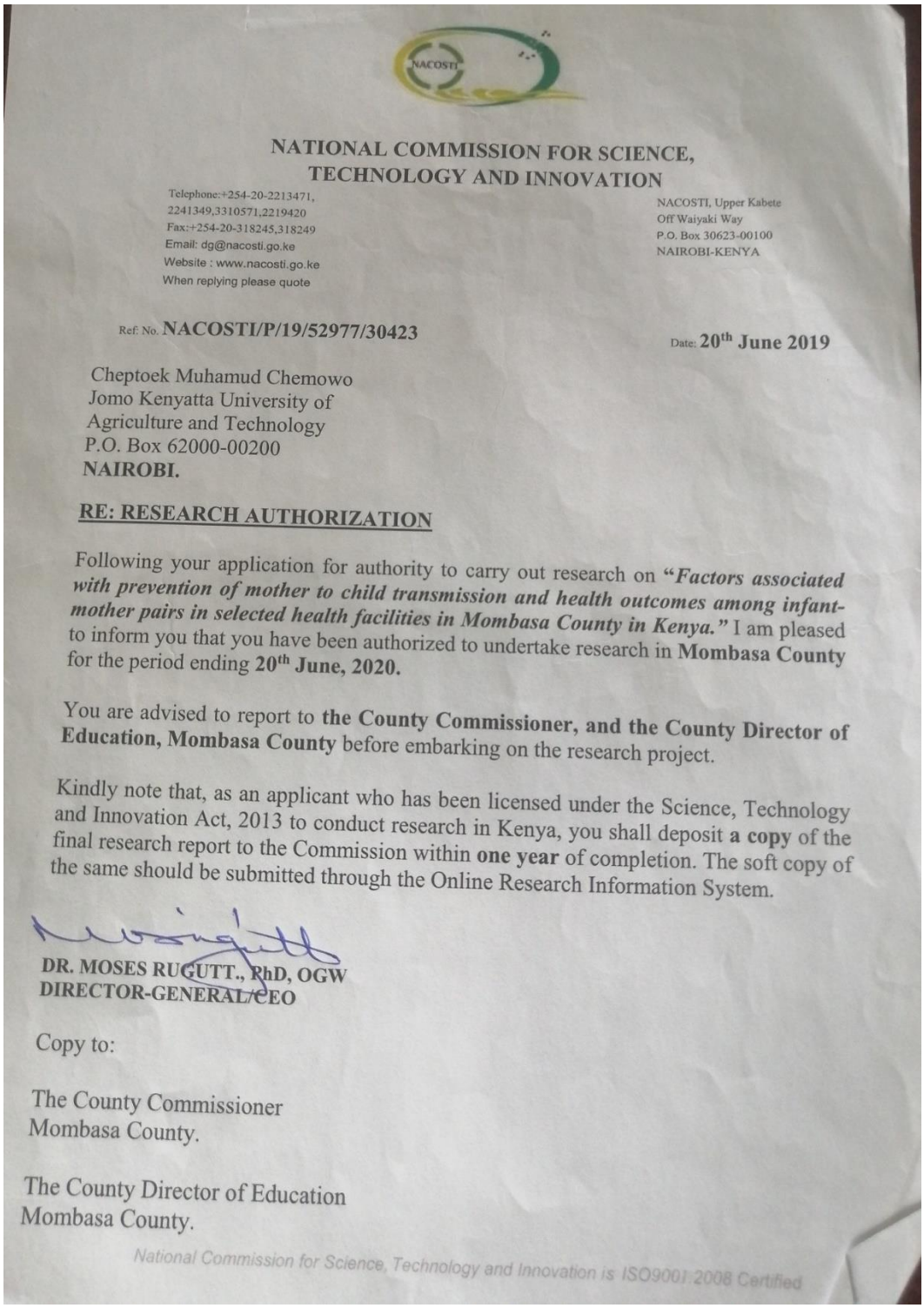
Appendix IV: NACOSTI License



NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
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Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/19/52977/30423**

Date: **20th June 2019**

Cheptoek Muhamud Chemowo
Jomo Kenyatta University of
Agriculture and Technology
P.O. Box 62000-00200
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Factors associated with prevention of mother to child transmission and health outcomes among infant-mother pairs in selected health facilities in Mombasa County in Kenya."*** I am pleased to inform you that you have been authorized to undertake research in **Mombasa County** for the period ending **20th June, 2020.**

You are advised to report to **the County Commissioner, and the County Director of Education, Mombasa County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

DR. MOSES RUGUTT., PhD, OGW
DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Mombasa County.

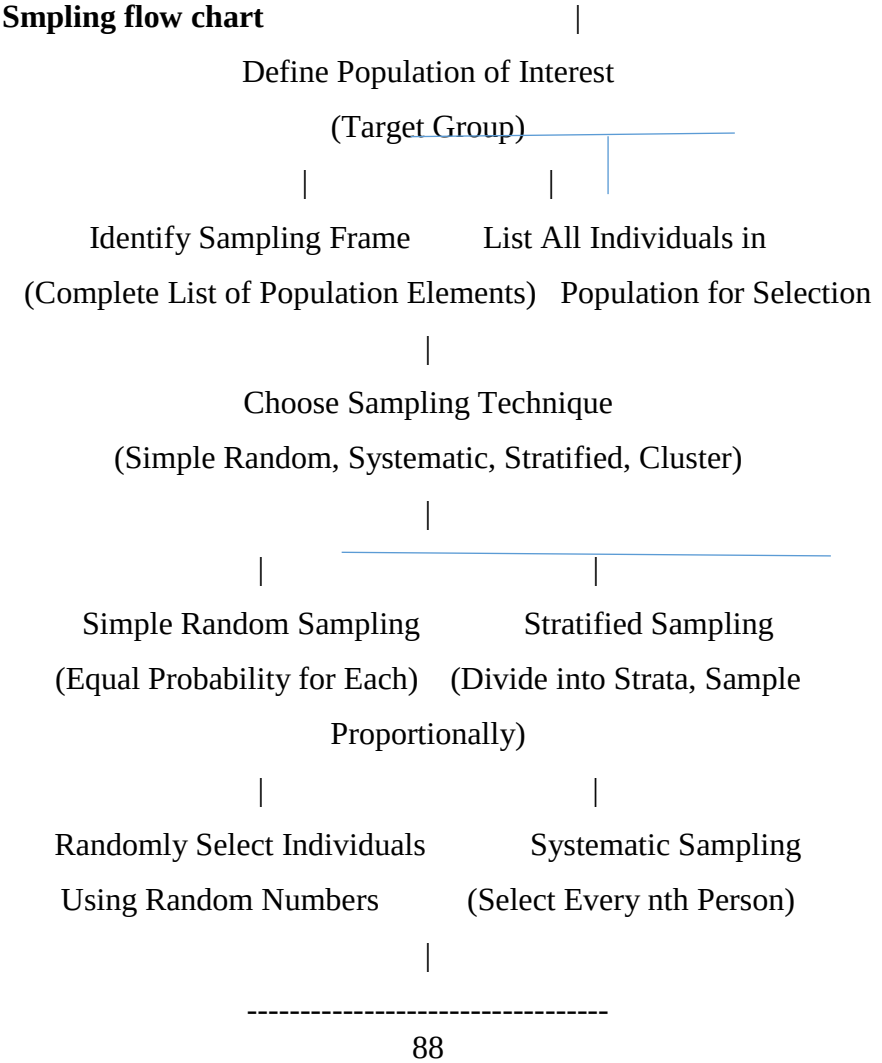
The County Director of Education
Mombasa County.

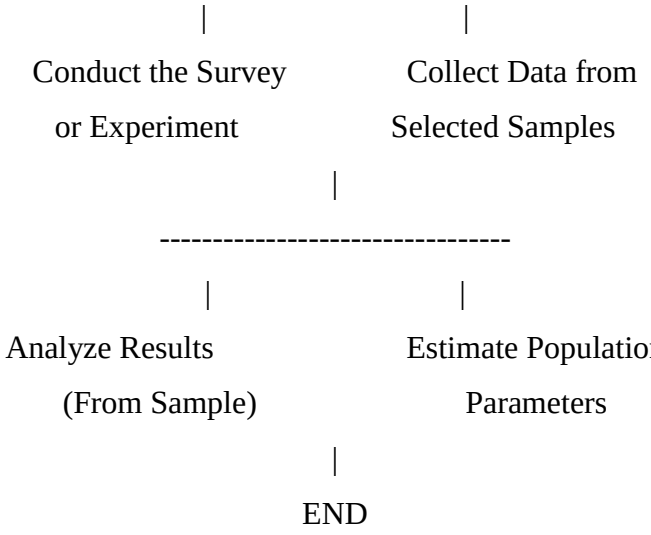
National Commission for Science, Technology and Innovation is ISO9001:2008 Certified

Appendix V: Budget

ITEM	UNITS	COST PER UNIT	TOTAL
Transportation for Researcher, Assistant	5	10000	50,000
Focused group discussion	3	50,500	150000
In-depth interviews	3	50,500	150000
Transport and proposal development	**7**	50000	350,000
Hiring of discussion venues	6	50,000	300,000
Stationary			150,000
Research assistants	4	87,500	350,000
Printing & Binding			100,000
Contingency			10,500
TOTAL			**1,600,000**

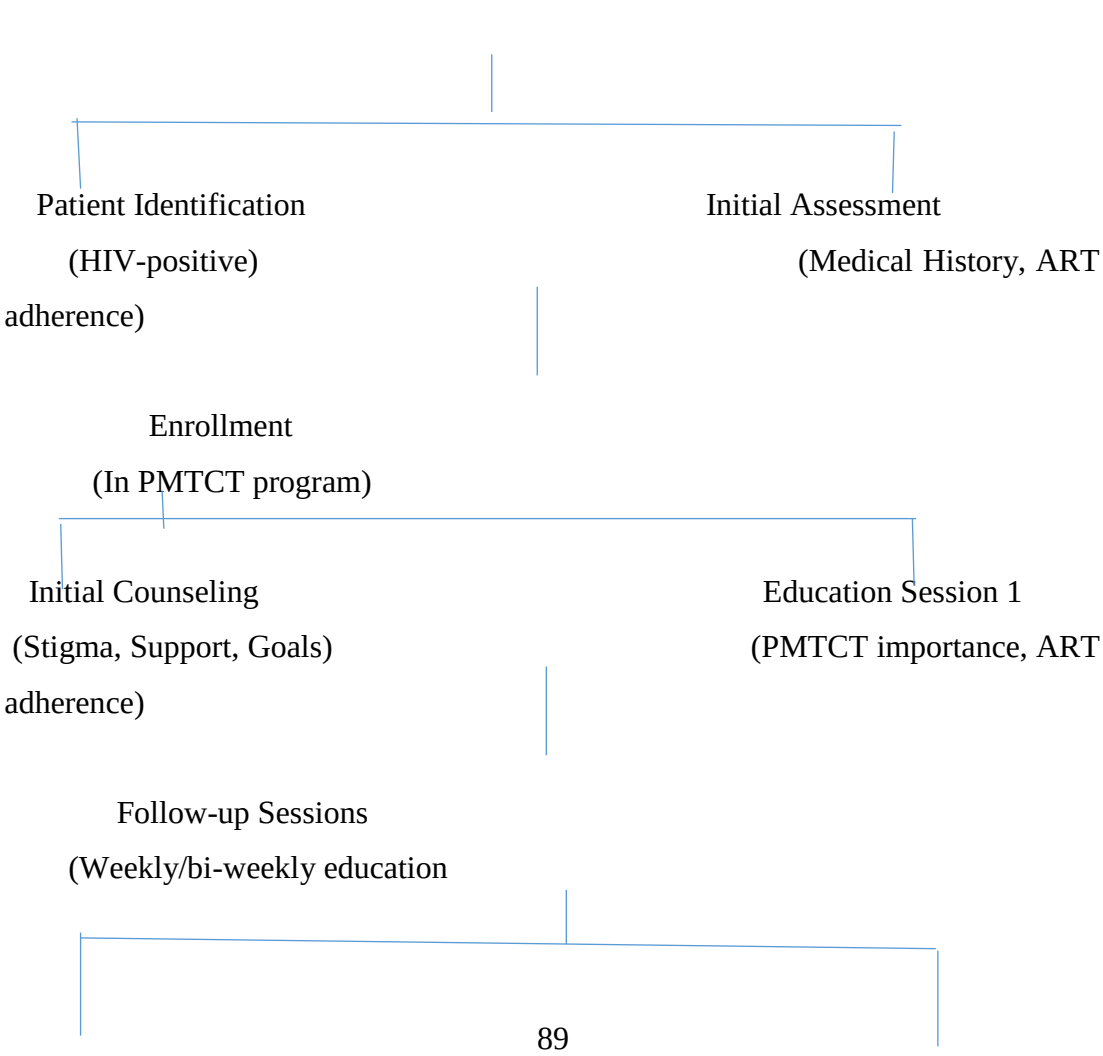
ANEX 1 Smpling flow chart

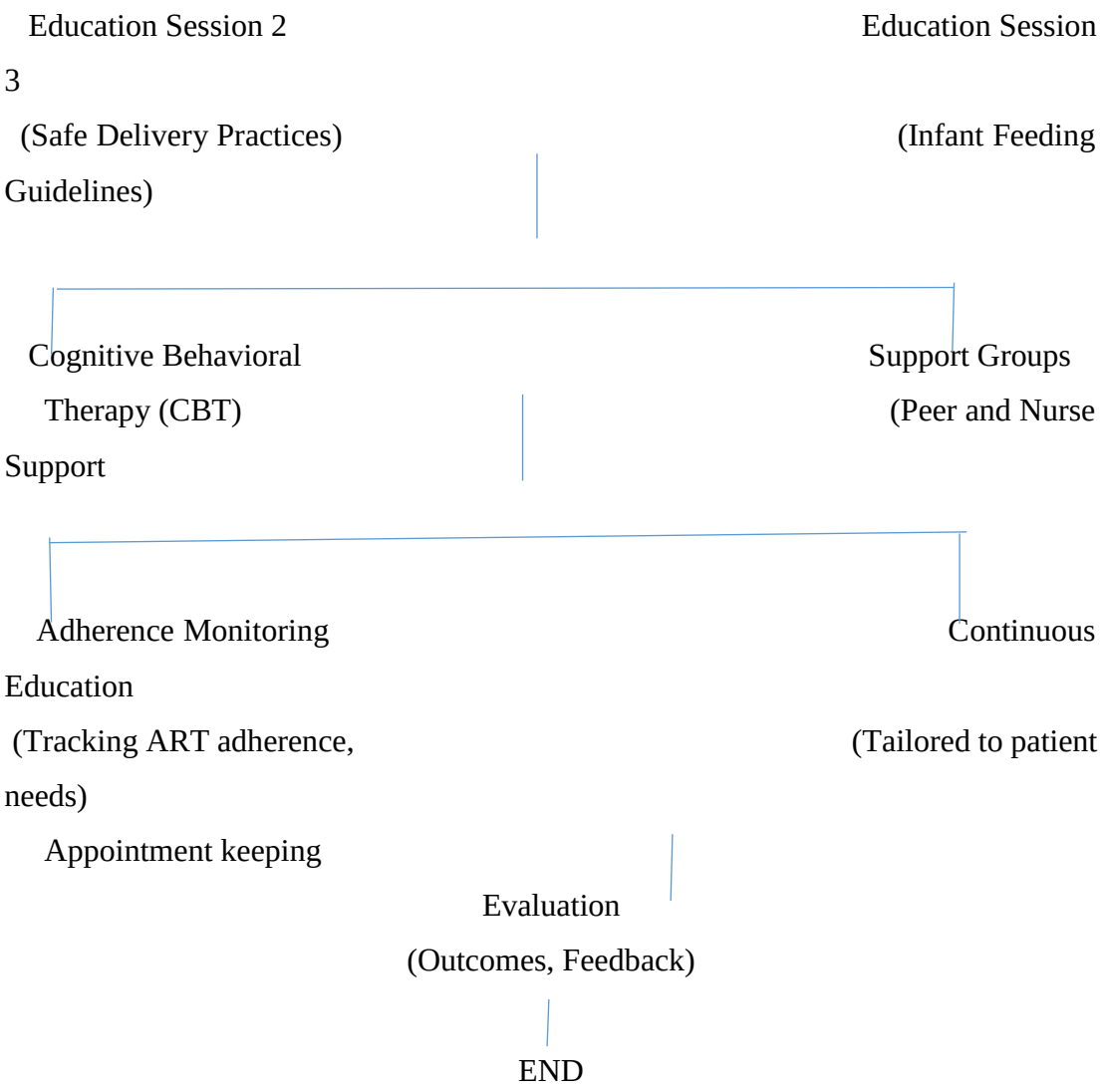




ANEX 2.

Nurse led intervention flow chart




Education Session 2
(Safe Delivery Practices)
Education Session 3
(Infant Feeding Guidelines)
Cognitive Behavioral Therapy (CBT)
Support Groups (Peer and Nurse Support
Adherence Monitoring
(Tracking ART adherence, Appointment keeping
Continuous Education
(Tailored to patient needs)
Evaluation
(Outcomes, Feedback)
END

ANEX 3.

SELF-STIGMA REDUCTION INTERVENTION FLOW CHART

Initial Assessment

↓

Education and Awareness

↓

CBT Sessions (Cognitive-Behavioral Therapy Techniques))

↓

Peer Support Groups

↓

Skills Building Workshops

↓

Empowerment Activities

↓

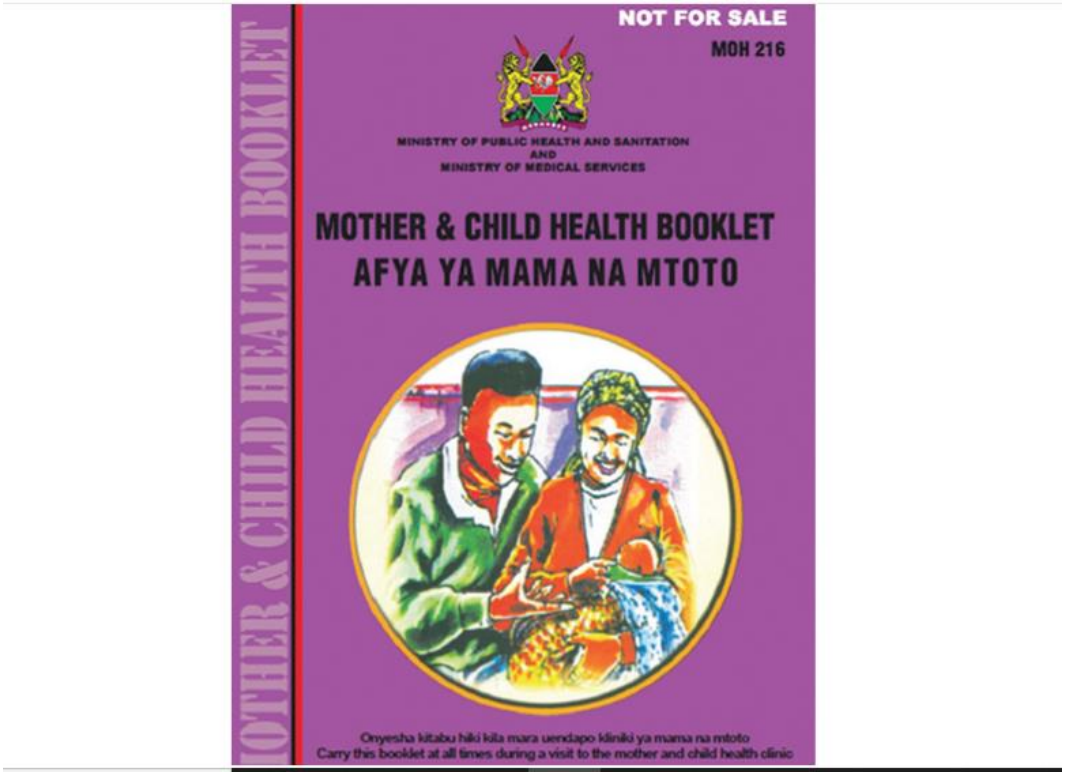
Follow-Up and Reinforcement

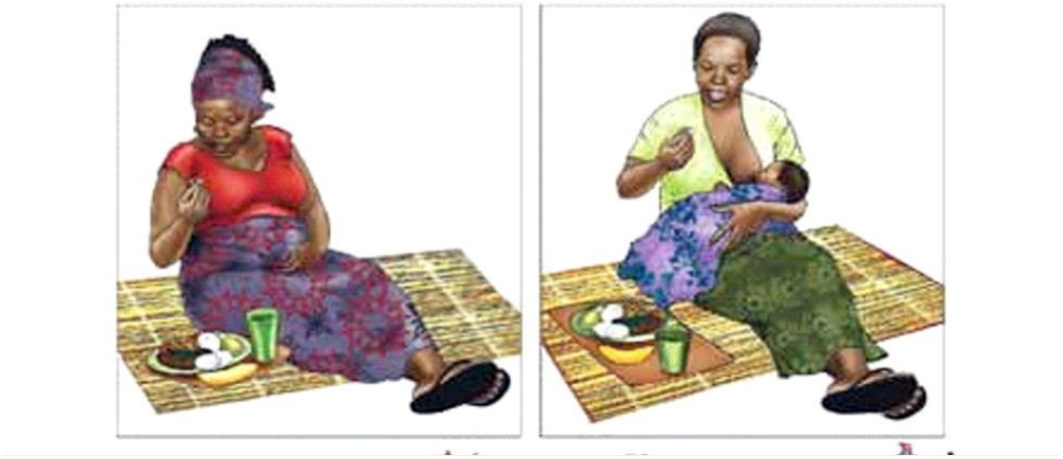
↓

Post-Intervention Assessment

ANEX 3. Mother and Child Health Booklet

NATIONAL AIDS & STI CONTROL PROGRAMME





ANEX 4 Maternal nutrition in the cntex of HIV

NATIONAL AIDS & STI CONTROL PROGRAMME

ANEX 5. The following should guide infant feeding for the first 6 months 1. All mothers who are HIV negative or are of unknown HIV status should be encouraged and supported to exclusively breastfeed for the first 6 months and continue breastfeeding with appropriate complementary feeding introduced thereafter

NATIONAL AIDS & STI CONTROL PROGRAMME

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ANEX 6 . Curriculum for Teaching Mothers on Prevention of Mother-to-Child Transmission (PMTCT

MODULE	LEARNING OBJECTIVES	KEY TOPICS	Teaching method
Module 1: **Introduction to HIV and PMTCT**	1. Understand the basics of HIV and how it is transmitted. 2. Explain the concept of PMTCT and its importance.	1.Overview of HIV/AIDS 2.Routes of HIV transmission, including mother-to-child transmission (MTCT) 3.Introduction to PMTCT and its role in reducing transmission rates 4.Importance of HIV testing for pregnant women and their partners	1.Interactive lecture 2.Discussion on personal experiences 3. Q&A session
	Key Topics	**Teaching Methods:**	**Teaching Methods**
Module 2: **Antiretroviral Therapy (ART) During Pregnancy**	**1**. Understand the role of ART in PMTCT. **2**. Learn the importance of adherence to ART during pregnancy.	**1**.Overview of ART: How it works and why it's essential for HIV-positive mothers **2.**Timing and benefits of starting ART during pregnancy **3**.Importance of medication adherence and managing side effects **4**.ART's role in reducing viral load and preventing MTCT	**1**.Presentation on ART benefits and adherence **2.**Testimonies from mothers on ART **3**.Role-play on how to handle medication side effects
	Key Topics	**Teaching Methods:**	**Teaching Methods**
Module 3: **Safe Delivery Practices**	**1**. Understand how the choice of delivery method impacts MTCT. **2**.Learn safe delivery options for HIV-positive mothers	**1**.Delivery options: Vaginal delivery vs. Cesarean section (C-section) **2**.Factors influencing the choice of delivery method **3.**Importance of medical supervision during delivery **4**.Hospital-based delivery and infection control measures	**1**.Demonstration of safe delivery practices **2**.Case study discussions on different delivery scenarios
Module 4: **Infant Prophylaxis and Testing**	1. Understand the use of antiretroviral prophylaxis for the infant. 2. Learn the importance of HIV testing for infants.	1. Use of ART for the newborn (prophylaxis) 2. Schedule for infant HIV testing (early infant diagnosis) 3. How to handle an HIV-positive result in infants 4. Importance of follow-up care for	• Role-playing on how to administer infant medication • Video demonstration of infant HIV testing procedures

		infants born to HIV-positive mothers	
Module 5: Breastfeeding and Infant Feeding Practices	• Understand safe breastfeeding practices for HIV-positive mothers. • Learn about alternative feeding options, such as formula.	1. Exclusive breastfeeding vs. formula feeding: Recommendations for HIV-positive mothers 2. ART during breastfeeding and its role in reducing HIV transmission 3. Managing breastfeeding challenges (e.g., cracked nipples, mastitis) 4. When to stop breastfeeding: Guidelines for HIV-positive mothers	• Group discussion on feeding experiences • Video on proper breastfeeding techniques • Demonstration of formula preparation
Module 6: Maternal Health and Self-Care	1. Understand the importance of maintaining maternal health for successful PMTCT. 2.Learn how to manage stress, nutrition, and mental health during and after pregnancy	1. Importance of regular medical check-ups and viral load monitoring 2. Nutrition for HIV-positive mothers: Balanced diet and supplements 3. Stress management and mental health care 4. Postnatal care for the mother	• Nutrition counseling session • Guided group relaxation exercises • One-on-one consultations on maternal health
Module 7: Partner and Family Involvement	1. Understand the role of family and partner support in PMTCT. 2.Learn strategies for disclosing HIV status and involving partners in care	1. Benefits of partner testing and involvement in PMTCT 2. Strategies for disclosing HIV status to partners and family 3. How to build a support network: Partner, family, and community 4. Handling stigma and discrimination	• Role-playing on disclosing HIV status • Group discussions on family support • Counseling on partner involvement

Module 8: Preventing Future HIV Infections	1. Understand how to prevent future pregnancies with HIV transmission risk. 2. Learn about family planning and contraception options for HIV-positive women.	1. Safe conception methods for HIV-positive couples 2. Family planning options: Condoms, contraceptive pills, IUDs, etc. 3. Counseling on reproductive choices for HIV-positive mothers 4. Preventing HIV reinfection or transmission to partners	• Demonstration of contraceptive methods • One-on-one reproductive counseling sessions
	Final Assessment:		
Evaluation and Graduation	1.Knowledge test covering key PMTCT concepts 2.Practical demonstration of skills learned (e.g., administering infant prophylaxis, preparing formula) 3.Feedback session from participants	• Encouragement to become peer educators or community advocates for PMTCT	

Resources and Support • Printed handouts on PMTCT • Access to ART clinics and maternal health services • Referral to support groups for HIV-positive mothers