ASSESSING THE PRE-EXPOSURE PROPHYLAXIS ADHERENCE AMONG HIV SERO-DISCORDANT COUPLES IN HOMABAY COUNTY, KENYA.

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A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE

IN EPIDEMIOLOGY AND DISEASE CONTROL OF

MOUNT KENYA UNIVERSITY

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DECLARATION

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

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DEDICATION

I dedicate this thesis to my family; my wife Pauline, children; Regina Amanda and Harry Aldrich and my parents; Archbald Odongo and Turfena Odongo.

ACKNOWLEDGMENT

I take this humble opportunity to convey my hearty gratitude to my supervisors, Dr. John Kariuki and Dr. Samuel Mbugua for their guidance, contribution and timely reviews which have made this Thesis a success.

I appreciate the emotional support my family accorded me. My Pauline, children Amanda and Aldrich were the driving force and support that kept me going even when I almost gave up due to the pressure and financial constraints.

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This work would not have succeeded without God being on my side, may all the glory and honour be back to Him.

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ABSTRACT

HIV sero-discordance is a condition in which one partner is HIV-positive while the other is HIV-negative. The seronegative partner is at great risk of infection. The majority of discordant couples are of reproductive age hence, safe conception interventions is key. Pre-exposure prophylaxis (PrEP) is an HIV prevention strategy that is used to prevent infection ofthe seronegative partners. This strategy involves antiretroviral drugs that are used before a person gets exposed to the risk of infection with HIV. For complete protection against HIV transmission among the sero-discordant couples, daily adherence to oral intake of PrEP is required. However, adherence to the daily intake of Pre-exposure prophylaxis has been noted to be irregular among the sero-discordant couples hence, endangering the safety of the seronegative partner. The specific objectives were to assess the current adherence status to PrEP, to assess the effect of socio-demographic characteristic on adherence to PrEP, to assess the effect of knowledge gap on PrEP and to identify healthcare provider related barriers affecting the adherence to PrEP among discordant couples in Homabay County. The 167 Sero-discordant couples attending monthly clinic at the Comprehensive Care Center at the Homabay County Referral Hospital constituted the target population. Yamane formula was used to calculate the sample size which was 125. This study adopted the use of exploratory sequential design for collection of data. Kobo toolbox was used to collect quantitative data among 105 respondents while audio recordings of Focus Group Discussion was used to collect qualitative. The study was piloted at Marindi Sub-County Hospital. SPSS (version 27) was used to analyze quantitative data while MSQDA software was used in the analysis of qualitative data. The average awareness of PrEP among the respondents was 0.99 with a standard deviation of 0.098. Most of the respondents (51%) had used PrEP for between 1 and 5 years, while 48.6% had used it for less than one year. The coefficients of age ($\beta = 0.001$, $t = 0.063$, Sig. = 0.950), occupation ($\beta = -0.011$, $t = -0.283$, Sig. = 0.778), and level of education ($\beta = 0.017$, $t = 0.489$, Sig. = 0.626) were not statistically significant, indicating these socio-demographic factors, have no significant effect on adherence status to PrEP. The coefficient of knowledge on PrEP ($\beta = -0.030$, $t = -0.12$, Sig. = 0.905) was not statistically significant. Showing no significant association between PrEP awareness and adherence status. Two coefficients of healthcare provider related barriers; provider's willingness PrEP ($\beta = -0.098$, $t = -0.391$, Sig. = 0.697), and whether education of clients ($\beta = -0.120$, $t = -0.467$, Sig. = 0.642) were not statistically significant, hence healthcare provider related barriers did not affect the adherence to PrEP. The study found a high adherence, socio-demographic factors, knowledge and healthcare related barriers didn't have effect on PrEP adherence. The study recommended the authorities and other stakeholders to formulate and implement policies for PrEP adherence and initiate programs to fight stigmatization.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS: Acquired Immunodeficiency Syndrome

CDC: Centre of Disease Control

HIV: Human Immunodeficiency Virus

NACOSTI : National Commission For Science, Technology & Innovation.

NDCC : National Syndemic Disease Control Council

PrEP: Pre-exposure prophylaxis

UNAIDS: Joint United Nations Programme on HIV/ AIDS

WHO: World Health Organization

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CHAPTER ONE

INTRODUCTION

This chapter introduces the research by outlining the background and context of the study, highlighting the key issues and trends relevant to the topic. It presents the problem statement, identifying the gap in existing knowledge or challenges that the study aims to address. The research objectives or questions are then defined, guiding the focus of the investigation. The significance of the study is discussed, emphasizing its potential contributions to the field and the practical or theoretical value of the research. The scope and delimitations clarify the boundaries of the study, detailing what is included and excluded.

1.1 Background to the study

According to CDC (2021), Human Immunodeficiency Virus, is transmitted through contact with body fluids like semen, vaginal fluid, blood, anal mucus and breast milk of someone with HIV. HIV is commonly spread during unprotected sexual intercourse, or by sharing injection needly during drug abuse. If not controlled, HIV can lead to acquired immunodeficiency syndrome (AIDS).

HIV/AIDS has continued to be a serious key public health concern since 1981 creating major negative impacts on both economic and social development in the developing counties more so, the Sub-Saharan Africa (Mwakalapuka *et al*., 2017). Tremendous progress has been achieved in the fight against the HIV pandemic in the low to middle-income countries more so in Sub-Saharan Africa, (Sidibe et al, 2016), however, about two million persons globally acquire HIV infection annually and in the year 2017, twenty-four million people including discordant couples were living with HIV/AIDS (WHO 2017).

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According to UNAIDS, 2016, following the discovery of HIV about three decades ago, at least 60 million people were infected globally. HIV became the leading cause of death in some parts of the world Gaolathe (2016).

According to a report by (Gisslen et al, 2017), around nine hundred and forty thousand people globally succumbed to HIV-related illnesses in the year 2017 and almost thirty-seven million people were living with HIV by the end of the year 2017 while 1.8 million of the people had newly acquired HIV including sero-discordant couples, (Davila et al, 2018).

According to WHO 2017, Africa was the highest affected region globally, where approximately 25.7 million persons were living with HIV in the year 2017.

Recently, 68 percent of the new HIV infections was in the Sub-Saharan Africa with almost 50 percent of all deaths worldwide took place in the Southern Africa. In regions where the HIV/AIDS epidemic was predominant, most of HIV infections occurred among the heterosexual partners, David, (2015).

In Africa, the prevalence of Sero-discordant partners was very high at (16%) (William et al.,2015). Among the Sero-discordant couples, there was a very high level of mortality that was highly associated to HIV infection ranging between 1.8 percent in the South East Nigeria and 5.4 percent in Nigeria, (Idele et al., 2014), (Borre et al., 2017). This phenomenon may be related to the lack of knowledge on discordance and related risk behaviors in Sub-Saharan Africa. Approximately 30 percent of the married HIV positive partners, there is a negative partner, the (sero-negative) and those seronegative spouses are at 10 percent annual risk of being infected with HIV and a greater number of the new HIV infections are taking place in very stable relationships, (Hiam et al., 2014).

A research study done in the northern Vietnam showed 58% sero-discordance rate. Men had a higher rate at 71% of sero-discordance while women trailed behind at 18% sero-discordance, (Van Tam *et al*., 2016). About 30% of positive couples are in HIV-discordant relationship and are at 10% annual risk of acquiring HIV infection, (Hiam *et al*., 2014). A great percentage of the new HIV infections occur in very stable relationships.

A report on a survey on the Ethiopian demographic health done in the year 2016, a study carried out by (Abebayehu et al., 2016), shows that even though the prevalence of HIV/AIDS reduced between the years 2011 and 2016, the burden of the HIV/AIDS disease was still very high across Ethiopia. In Ethiopia, regional HIV prevalence is higher in the town of Gambelia at (4.8%), town of Addis Ababa at (3.4%), the Dire Dawa at (2.5%), and the town of Harari (2.4%) than the other remaining regions in Ethiopia.

The sero-negative spouses in HIV sero-discordant couple relationships are at very high risk of acquiring HIV through the sexual intercourse transmission. Approximately, 60 percent of the newly acquired HIV infections take place in HIV Sero-discordant partners, Tadesse (2014).

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Kenya had a HIV prevalence of 3.7% which is approximately 1.4 million of people living with HIV according to a report released by National Syndemic Disease Control Council (NDCC) (2022), According to this study, Homabay county had the highest prevalence at 15.2%.

Pre-exposure prophylaxis is an HIV prevention strategy that is used to lower the infection rates of new infections of HIV among the seronegative people. This strategy involves antiretroviral drugs that are used before a person gets exposed to the risk of infection with HIV. This is to lower the risk of HIV/AIDS and continues to use the drug for the period of time they get exposed to the risk of infection, (Mitchell *et al*., 2016). The NDCC 2022 report indicates a third of the HIV infected couples to be discordant.

According to (Joseph *et al*., 2023), socio-demographic characteristics affects the level of adherence to PrEP among sero-discordant couples. These include age, education level, marital status, occupation and area of residence.

Knowledge and health education on side effects of PrEP have great statistical importance to adherence of PrEP. The adherence to PrEP is greatly aided by highly and well-structured health education programs to the discordant couples, (Joseph *et al.,* 2023).

There are several healthcare related barriers that affect the adherence to PrEP among the discordant couples. These include: lack of knowledge about the efficacy, worries on developing drug resistance and the guidelines on PrEP among the healthcare providers, disagreement on who is more qualified to prescribe PrEP among the PCPs and HIV specialists, personal biases affecting prescribers' ability and willingness to prescribe PrEP, (Pleuhs *et at*., 2020).

It was therefore crucial to conduct thorough assessment of the adherence to PrEP as a safe conception package among sero-discordant couples with reproductive desires.

1.2 Statement of the problem

According to a report released by National Syndemic Disease Control Council (NDCC) (2022), Kenya had a HIV prevalence of 3.7% which is approximately 1.4 million of people living with HIV. On the basis of Counties, Homabay county had the highest HIV/AIDS prevalence of 15.2% which is way higher than the national prevalence. According to the NDCC 2022 report, an estimate of at least a third of the infected couples are discordant. Targeted HIV prevention strategies such as Antiretroviral therapy for the seropositive partner and PrEP for the seronegative partner can be of great use in minimizing HIV infection among the discordant couples.

According to (Haberer *et al*.,2022), PrEP is a highly effective HIV prevention strategy when taken daily during HIV exposure, unfortunately, adherence to its usage is very low and is on the decline, hence the high discordance prevalence in Kenya and subsequently Homabay County.

If the PrEP adherence level is not timely assessed and addressed accordingly with a more drastic patient-friendly strategy, the seroconversion level may end up skyrocketing, hence, ending up with more HIV related casualties. Therefore, this study sought to fill the knowledge gap by assessing the adherence to pre-exposure prophylaxis as a safer conception package.

1.3 Purpose of the study

This study purposed to assess the adherence to pre-exposure prophylaxis as a safe conception intervention for the HIV sero-discordant partners seeking for treatment at Homabay County Referral Hospital.

1.4 The Study Objectives

The objectives of this study include the following:

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1.4.1 The General Objectives

The objective of the study was to assess adherence to pre-exposure prophylaxis among the HIV sero-discordant couples seeking care at Homabay County Referral Hospital, Homabay County.

1.4.2 The Specific Objectives

i. To assess the current adherence status to pre-exposure prophylaxis among the HIV sero-discordance couples in Homabay County Referral Hospital.
ii. To assess the effect of socio-demographic characteristic among HIV sero-discordant couples on the adherence to pre-exposure prophylaxis in Homabay County Referral Hospital.
iii. To assess the effect of the level of knowledge on pre-exposure prophylaxis adherence among the sero-discordant partners in Homabay County Referral Hospital.
iv. To assess the effect of healthcare provider related barriers on the adherence to Pre-Exposure Prophylaxis among discordant couples in Homabay County Referral Hospital.

1.5 Study questions

i. What is the current adherence status to pre-exposure prophylaxis among the HIV sero-discordance couples in Homabay County Referral Hospital?
ii. What is the effect of socio-demographic factors among HIV sero-discordant partners on the pre-exposure prophylaxis adherence in Homabay County Referral Hospital?
iii. What is the effect of the level of knowledge on pre-exposure prophylaxis adherence among the sero-discordant partners in Homabay County Referral Hospital?

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iv. What is the effect of healthcare provider related barriers on the adherence to Pre-Exposure Prophylaxis among HIV sero-discordant couples in Homabay County Referral Hospital?

1.6 Justification of the study

According to a report released by National Syndemic Disease Control Council (NDCC) (2022), Kenya had a HIV prevalence of 3.7% which is approximately 1.4 million of people living with HIV. On the basis of Counties, Homabay county had the highest HIV/AIDS prevalence of 15.2% which is way higher than the national prevalence. According to the NDCC 2022 report, an estimate of at least a third of the infected couples are discordant.

According to (Haberer *et al*.,2022), PrEP is a highly effective HIV prevention strategy when taken daily during HIV exposure, unfortunately, adherence to its usage is very low and is on the decline, hence the high discordance prevalence in Kenya and subsequently Homabay County.

If the PrEP adherence level is not timely assessed and addressed accordingly with a more drastic patient-friendly strategy, the seroconversion level may end up skyrocketing, hence, ending up with more HIV related casualties. Therefore, this study was seeking to fill the knowledge gap by assessing the adherence to pre-exposure prophylaxis as a safer conception package and identifying possible players responsible for the low adherence among HIV sero-discordant patients in Homabay County.

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1.7 The Study Significance

The findings from the study are useful in understating the level of adherence of sero-discordant couples to pre-exposure prophylaxis and understanding the possible reasons for non-adherence. This will guide the government and other key stakeholders re-align their strategies and innovate better ways to help bridge the gap. This will greatly boost the fight towards zero seroconversion.

Understanding the current prevalence of the HIV-sero-discordance among clients seeking for care at Homabay County Referral Hospital will help form the basis for an informed actions by the HIV/AIDS programs and the government in resource allocations and other innovative programs in helping combat sero-discordance.

By understanding the socio-demographic factors of the HIV sero-discordant couples, the government and other key players will understand the common socio-demographic characteristics of the sero-discordant clients like the age, social status, sex among others. This will inform the resource allocation and priority localities by the government and other program organizations.

The findings in this study will be useful in the academic world as the finding will form basis for further studies in terms of the socio-demographic characteristics of the discordant couples, possible ways for the reduction of seroconversions and unmasking possible gaps in the pre-exposure prophylaxis use as a safe conception option.

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1.7 Scope of the study

This study was conducted at the Homabay County Referral Hospital, Kenya. This study was done at one health facility, the Homabay County Referral Hospital.

The target population were the HIV sero-discordant couples between the age of 20 and 46 years who have stayed together as couples and are attending their monthly clinics at the facility.

This study sought to assess the adherence to pre-exposure prophylaxis as a safe conception intervention among the HIV sero-discordant couples with reproductive desire seeking care in Homabay County Referral Hospital.

1.8 Study limitations

Some of the encountered limitations were;

The study was carried out in one facility, the Homabay County Referral Hospital. Therefore, the findings may not be the true reflection of the views and experiences that other HIV sero-discordant couples seeking care elsewhere have. This was minimized by using a larger sample size of 125 who are believed to be coming from different parts of the Homabay county hence representing the views of majority.

Because of the sensitivity and private nature of the study, a number of the respondents had issues of self-disclosure hence couldn't honestly open up during the research process. This was minimized by giving an assurance for utmost secrecy of the information given and use of unique numbers for the study participants. Hence, the real identity of the participants was concealed.

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1.9 Delimitations of the study

This study was confined to 125 sero-discordant partners attending monthly clinic at the comprehensive care center in Homabay County Referral Hospital since limited data exist on sero-discordance.

The study focused on the Homabay County Referral Hospital since majority of the clients attend their clinics at the facility. Therefore, it gave the true picture of the adherence level to PrEP in the region.

The study was delimited to only four objectives, that will generate in-depth qualitative and quantitative data on the adherence to the use of PrEP as a safe conception package among the sero-discordant couples in Homabay County Referral Hospital.

1.10 Assumptions of the study

This study had the below assumptions;

HIV sero-discordant couples were undergoing challenges with safer conception options and a bigger percentage of HIV sero-discordant couples had fertility desires.

The HIV sero-discordant couple respondents gave honest responses during data collection without fear of breach of privacy.

The participants came from different parts of the county, hence, their views represented the rest of patients seeking care in other facilities.

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1.11 Operational definition of key terms

The operational definitions of terms used in this proposal include the following;

Human Immunodeficiency Virus: This is the virus that causes acquired immunodeficiency syndrome if not treated. The virus is spread through body fluids e.g., semen and blood.

Acquired Immunodeficiency Syndrome: This is the disease caused by the HIV infection due to low immune system.

Challenge: theses are disputes arising between couples in sero-discordant relationships.

Couple: Two partners living together in a marital relationship.

Sero-discordance: This is a situation where one of the two partners is HIV-positive while the other partner is HIV-negative.

Seroconcordance: This is a condition in which the two partners are HIV- positive.

Seroconversion: This is the time from HIV exposure to the infection and to development of detectable antibodies.

Reproductive age: WHO definition as a female of 20 - 46 years of age

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CHAPTER TWO

LITERATURE REVIEW

This chapter provides a comprehensive review of existing literature related to the research topic. This chapter synthesizes key theories, concepts, and findings from previous studies to highlight the current state of knowledge in the field. It critically examines relevant research, identifies gaps, and establishes the theoretical and empirical foundation for the study. The literature review helps to position the current research within the broader academic context and justifies the need for further investigation into the identified problem.

2.1 Introduction

A lot is known about HIV/AIDS, but there are aspects which are yet to be adequately understood, hence impairs the fight against the pandemic. Among the yet to be adequately understood aspects of the HIV/AIDS is the HIV sero-discordance among couples. HIV sero-discordance is a condition in which one of the partners is HIV-positive while the other is HIV-negative. The couples in sero-discordant relationship are facing several challenges which threatens the existence of such marital unions. According to a report released by National Syndemic Disease Control Council (NDCC) (2022), Kenya had a HIV prevalence of 3.7% which is approximately 1.4 million of people living with HIV. On County based HIV prevalence, Homabay County was the highest with a prevalence of 15.2% which is way higher than the national prevalence. According to the NDCC 2022 report, an estimate of at least a third of the infected couples are discordant.

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Pre-exposure prophylaxis (PrEP), is a recommended prevention intervention by the CDC for women who are not aware of their partner's viral load but have reproductive desires (CDC 2017). A study in the United States shows that from 2014 to 2016, the yearly number of PrEP users aged 16 years and above increased by 470%, this is from 13,748 to 78,360, (Smith *et al*., 2015). Pre-exposure prophylaxis is an HIV prevention strategy that is used to lower the infection rates of new infections of HIV among the seronegative people. This strategy involves antiretroviral drugs that are used before a person gets exposed to the risk of infection with HIV.

This is to lower the risk of HIV/AIDS and continues to use the drug for the period of time they get exposed to the risk of infection, (Mitchell *et al*., 2016). A study in the United State shows not more than 40% of participants were consistently adherent as indicated by the levels of drug, (Marrazzo *et al*., 2015).

Being that the majority of these discordant couples are cohabiting together, condomless sex is very low hence the low uptake of preventive measures regardless of the seroconversion risk involved. Targeted HIV prevention strategies such as Antiretroviral therapy for the seropositive partner and PrEP for the seronegative partner can be of great use in minimizing HIV infection among the discordant couples.

According to (Haberer *et al*.,2022), PrEP is a highly effective HIV prevention strategy when taken daily during HIV exposure, unfortunately, adherence to its usage is very low and is on the decline, hence the high discordance prevalence in Kenya and subsequently Homabay County.

It was therefore of essence to investigate the level of adherence to the PrEP use among the sero-discordance couples and to determine its impact on the HIV-seroconversion. This is because it greatly informs the fertility decisions among the discordant couples.

2.2 Empirical literature

The following are some of the relevant previous researches that are correlated with this research that are to be used as the references in this study.

2.2.1 The status of adherence to PrEP.

A study done in the northern Vietnam showed 58% sero-discordance rate. Men had a higher rate at 71% of sero-discordance while women trailed behind at 18% sero-discordance, (Van Tam *et al*., 2016). About 30% of positive couples are in HIV-discordant relationship and are at 10 percent risk annually of acquiring HIV infection (Hiam *et al*., 2014). A great percentage of the new HIV infections take place in stable relationships. A report on a survey on the Ethiopian demographic health done in the year 2016, a study carried out by (Abebayehu et al., 2016), shows that even though the prevalence of HIV/AIDS reduced between the years 2011 and 2016, the burden of the HIV/AIDS disease was still very high across Ethiopia. In Ethiopia, regional HIV prevalence is higher in the town of Gambelia at (4.8%), town of Addis Ababa at (3.4%), the Dire Dawa at (2.5%), and the town of Harari (2.4%) than the other remaining regions in Ethiopia.

According to (Kimanga et al., 2014), Kenyans aged 15-64 years old, 1 in 10 of couples or those cohabiting together are HIV-positive. The majority of the cases are found in Nyanza region while the least cases are in the North Eastern region. This is associated with many lifetime partners among young women and lack of circumcision in men. A report by The National AIDS and Sexually transmitted infections Control Program shows 13% of those seeking Voluntary counseling and Testing are sero-discordant.

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The sero-negative spouses in HIV sero-discordant couple relationships are at very high risk of acquiring HIV through the sexual intercourse transmission. Approximately, 60 percent of the newly acquired HIV infections take place in HIV Sero-discordant partners, Tadesse (2014).

Although the prevalence of sero-discordance in Kenya is higher in Nyanza region, Homabay County included, previous studies have not examined whether there is any relationship between the prevalence of discordance and the level of adherence to PrEP.

Therefore, there is dire need to investigate if association exists between the adherence level of PrEP use and the high prevalence of sero-discordance in Nyanza region, especially in Homabay County.

2.2.2 The socio-demographic characteristic.

A study conducted in Kinshasha shows 52.9% of female spouses are infected with HIV. The greatly affected age bracket was between 36 and 45 years old. The majority of partners at 61.7% had secondary school education level, primary level at 41.7% and 23.5 percentage at the level of university. On occupation, the informal labor sector topped with 44.1% of couples, housewives at 11.7%, electronics technicians at 8.8%, and taxi drivers 5.8%, (Inkale *et al*.,2023).

Therefore, the majority with sero-discordance were of low education level, skilled laborers and of age group of 34-45years.

There is no evidence of a study in Kenya that factored this parameter in investigating its influence on the sero-discordance. Additionally, a few studies have been done globally on the association between PrEP adherence to the socio-demographic characteristics of the sero-discordant couples.

Therefore, there is need to investigate impact that socio-demographic characteristics has on sero-discordance and the adherence to PrEP.

2.2.3 Level of Knowledge on oral pre-exposure prophylaxis.

Pre-exposure prophylaxis (PrEP), is a commended prevention intervention by the CDC for women who are not aware of their partner's viral load but have reproductive desires (CDC 2017). PrEP is CDC-endorsed conception strategy for sero-discordant couples (McMahon *et al*., 2014, Heffron *et al*.,2016). According to a study done in Europe among women at a greater risk of getting infected with HIV, 59% of the women participants showed that lack of information about PrEP had the highest influence on adherence to PrEP among, (Moseholm *et al*.,2021). Information about PrEP among heterosexual discordant partners remains very low, hence a good number of the sero-discordant couples are likely not able to seek for the PrEP even though adherence to PrEP is critical to its efficacy (Walters et al., 2018). A study done in Kenya, Tanzania and South Africa showed PrEP drug level concentrations was consistent with very high adherence at 28.5% of all the visit intervals when the availability of drug for use was maintained. Unfortunately, only 12 percentage of participants attained certifying adherence all through the study. According to the multivariate analysis of the obtained data, the South Africa site with [odds ratio: 2.43; 95% confidence interval: (1.32 to 4.48) and having affection with the pill color of (OR: 2.93; 95% CI: 1.18 to 7.27) were comprehensively associated with very good adherence.

Unlikely, using the oral contraceptive pills at enrollment stage was badly associated with good adherence (OR: 0.37; 95% CI: 0.18 to 0.74), (Corneli *et al.,* 2014). Since conception necessitates condomless sex, it is the right period for all time use of PrEP as either the primary safe option or in addition with other strategies to substitute the use of condom, (Kerry *et al*., 2018).

While ART alone is an effective prevention tool for the infected partner, perhaps viral loads may not always be completed suppressed and could still transmit the HIV virus,s (Ferraretto *et al*., 2014). Pre-exposure prophylaxis therefore adds more protection to the seronegative partner who is at very high risk of being infected with HIV.

In Africa, the prevalence of Sero-discordant partners was very high at (16%) (William et al.,2015). Among the Sero-discordant couples, there was a very high level of mortality that was highly associated to HIV infection ranging between 1.8 percent in the South East Nigeria and 5.4 percent in Nigeria, (Idele et al., 2014), (Borre et al., 2017).

This phenomenon may be related to the lack of knowledge on discordance and related risk behaviors in Sub-Saharan Africa. Approximately 30 percent of the married HIV positive partners, there is a negative partner, the (sero-negative) and those seronegative spouses are at 10 percent annual risk of being infected with HIV and a greater number of the new HIV infections are taking place in very stable relationships, (Hiam et al., 2014). According to (Drainoni *et al*., 2018), HIV sero-discordant couples regularly approved of the use of ART and PrEP as a way to prevent peri-conception risk of HIV. Majority of the couples perceived these strategies as acceptable, easier and very sufficient for prevention. According to this study, couples accepted they had protection against HIV from ART and PrEP in the absence of condom.

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Couples associates safer conception with high cost of the services and their accessibility especially through private healthcare facilities (Ngure *et al.,* 2014). According to (Breitnauer *et al*., 2015), some discordant couples believe HIV transmission is impossible to be prevented when a condomless sex resulting to pregnancy has been committed. This is inspite of the the vast accessibility and availability of safe HIV prevention and treatment interventions.

According to research conducted in East Africa, the use of descriptive statistics showed that 66 percent (569 out of the 859) of the women who participated in the research were infected with HIV and 73% (627 out of the 859) of the women desired to have children in the future. 59% of the women recognized the use of PrEP, while 58% recognized ART, another 50% recognized the timed condomless sex. 23% of the women recognized self-insemination while less than 10% of the participants accepted STI treatment, artificial insemination, male circumcision and washing of sperm as some of safer conception strategies. Among the women who recognized these strategies and desiring to be pregnant, 37% of them reported using Pre-exposure prophylaxis, 14% reported using ART while 30% reported using timed condomless sex. The women who reported having shared their fertility desires with their husbands were more likely to report to have used at least one of the safe conception options as indicated in the data (adjusted OR = 1.91, 95% confidence interval: 1.26–2.89). From the study, the acceptance of use of safe conception interventions among women with reproductive desires is very low. Antiretroviral therapy options and self-insemination are the highly recognized and used interventions.

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Although the health education and knowledge on adherence to the daily intake of Pre-exposure prophylaxis has been noted to be very low among the sero-discordant couples, most studies have not assessed the effect of the level of knowledge on PrEP adherence among discordant couples residing in Homabay.

2.2.4 Healthcare provider related barriers.

According to a study done by (Pleuhs *et at*., 2020), there are several healthcare related barriers that affect the adherence to PrEP among the discordant couples. These include but not limited to; lack of knowledge about the efficacy, worries on developing drug resistance and the guidelines on PrEP among the healthcare providers, disagreement on who is more qualified to prescribe PrEP among the PCPs and HIV specialists, personal biases affecting prescribers' willingness and the ability to prescribe PrEP.

A study done in North Carolina shows 75% of the family planning providers and 42% of the PCPs reported that were not very comfortable in prescribing the PrEP due to lack of knowledge (Clement *et al*., 2018). (Pleuhs *et al.,*2020) reports that 18 out of the 28 articles that were included in their systematic review reported lack of the healthcare provider knowledge as a barrier in PrEP prescription.

On who is more qualified to provide PrEP prescription, a study by (Krakower *et al.,* 2014) shows that HIV specialists for suitable for primary care clinics being that the PCPs attend to HIV negative patients so frequently. On the other hand, the primary care providers reported that Pre-exposure prophylaxis should be provided in the HIV clinic since the primary care providers (PCP) lack knowledge on HIV medication.

On personal biases and stigma as a healthcare provider barrier, there is negative effect of providers' gender, race, and age biases on decision making on PrEP.

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Healthcare providers noted being less likely to discuss sexual activities with those older than them hence, likely to lower PrEP prescription to this population leading to non-adherence among discordant couples, (Calabrese *et al*., 2019).

There are no studies in Kenya that has factored in this parameter assessing the impact of the healthcare provider barriers on the PrEP adherence among the discordant couples necessitating the need for this study.

2.3 Theoretical literature

This research was informed by two scientific theories; the Health Belief Theory and Reasoned Action Theories. These two theories were very key in explaining the reasons for adherence or non-adherence to Pre-Exposure Prophylaxis. This has in a greater way lead to the success of this study.

2.3.1 Reasoned Action Theory

HIV (Human Immunodeficiency Virus) poses significant health challenges, especially for couples where one spouse is HIV-positive while the other is HIV-negative, termed HIV discordant couples. These couples face unique health dynamics, making the adherence to pre-exposure prophylaxis (PrEP) critical for the negative partner's protection against HIV infection.

PrEP is a medication regimen designed to reduce the risk of HIV transmission, and adherence to this regimen can lower or reduce the risk of HIV acquisition by over 90 percent when taken consistently (Grant et al., 2010). Understanding the factors that influence adherence among HIV-discordant couples is vital for effective public health strategies.

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The Theory of Reasoned Action (TRA), that was developed by Fishbein and Ajzen (1975), posits that individual behaviors are primarily determined by their intentions, which are influenced by attitudes and subjective norms. This theory can provide valuable insights into how HIV-discordant couples make decisions regarding PrEP adherence.

The Theory of Reasoned Action emerged in the 1970s as part of social psychology, aiming to predict and understand human behavior in various contexts, particularly health behaviors (Fishbein & Ajzen, 1975).

Key points of validation included:

i. Correlational Studies: Many studies confirmed that individuals' attitudes and subjective norms correlate with their intentions and behaviors. These findings supported the model's assertions about the importance of attitudes and social influences.

ii. Predictive Validity: Researchers found that TRA effectively predicts behavior across a range of health-related contexts, including smoking cessation, exercise, and medication adherence. For instance, a study on health behaviors found that attitudes towards the health behavior and perceived social pressures were significant predictors of intention (McEachan et al., 2016).

iii. Application in Health Interventions: The TRA has been applied to design health promotion interventions, highlighting how modifying attitudes and enhancing social support can lead to improved health outcomes. This practical application showcased the model's utility in real-world settings, further solidifying its relevance.

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While TRA provided a robust framework for understanding intentions and behaviors, it was recognized that not all behaviors are entirely under an individual's volitional control. In 1985, Icek Ajzen expanded the TRA into the Theory of Planned Behavior (TPB) through the introduction of the construct of perceived behavioral control. This addition accounted for factors that are likely to facilitate or hinder behavior performance, thus acknowledging the complexities of real-life decision-making.

Key Constructs of TRA

The Theory of Reasoned Action (TRA) is built upon several key constructs that together provide a framework for understanding how attitudes and social influences shape behavioral intentions and actions. These constructs include subjective norms, attitude toward the behavior and behavioral intention. Each of these elements plays a critical role in the model, and their interplay is essential for predicting behavior.

i. Attitude towards the behavior

Attitude refers to the person's overall evaluation of a specific behavior. It is the degree by which a person has favorable or unfavorable assessment of that behavior.

Components:

- Beliefs: Attitudes are formed based on an individual's beliefs about the outcome of a behavior. For instance, if a person believes that taking PrEP reduces the risk of HIV infection, this belief positively influences their attitude toward using PrEP.

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- Outcome Evaluation: This aspect involves the value that an individual places on the expected outcomes of the behavior. If the perceived benefits of PrEP (such as improved health and reduced anxiety about HIV) outweigh the perceived costs (such as potential side effects or stigma), the attitude becomes more favorable.

Implications:

- Attitudes are critical in shaping intentions; the more positive the person's attitude towards a behavior, the stronger the person's intention to perform that behavior. For example, individuals with a positive attitude toward using PrEP are more likely to intend to adhere to the medication regimen.

ii. Subjective Norms

Subjective norms is the perceived social pressure for one to engage in or refrain from a specific behavior. It reflects the influence of significant others and the social environment on an individual's intentions.

Components:

- Normative Beliefs: These are the beliefs about whether important others (e.g., family, friends, healthcare providers) approve or disapprove of the behavior. For instance, if an individual believes that their partner supports the use of PrEP, this positive normative belief enhances their intention to take the medication.
- Motivation to Comply: This reflects the degree to which an individual is motivated to conform to the expectations of those important to them. If someone highly values their partner's opinion, they may feel a strong motivation to adhere to PrEP if they perceive their partner supports it.

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Implications:

- Subjective norms can significantly influence behavioral intentions, especially in social contexts where peer and partner support is critical. In the case of HIV-discordant couples, understanding how partners influence each other's perceptions and decisions can provide valuable insights into improving PrEP adherence.

iii. Behavioral Intention

Behavioral intention is the indication of an individual's readiness or plan to perform a specific behavior. It serves as the immediate precursor to actual behavior.

Components:

- Strength of Intention: The stronger the intention to perform a behavior, the more likely it is that the individual will engage in that behavior. Intentions are influenced by the interplay of attitudes and subjective norms.

- Temporal Aspect: Intentions are often time-bound, indicating when an individual plans to engage in the behavior. For example, someone may intend to start taking PrEP next month, which influences their current actions (like scheduling a doctor’s appointment).

Implications:

- Understanding intentions is critical for predicting behavior. Health interventions can focus on enhancing both positive attitudes and supportive subjective norms to strengthen individuals’ intentions to adhere to health behaviors, such as using PrEP.

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The Theory of Reasoned Action (TRA) has not only stood alone as a foundational framework for understanding human behavior but has also been integrated with several other psychological theories to enhance its applicability and comprehensiveness, particularly in the context of health behaviors. Below are some key theories with which TRA has been integrated, illustrating how these collaborations enrich our understanding of behavior change.

Developed by Icek Ajzen in 1985, the Theory of Planned Behavior is an extension of the TRA that incorporates the concept of perceived behavioral control (PBC).

Perceived Behavioral Control: TPB adds to TRA by acknowledging that not all behaviors are entirely within an individual's control. PBC is a reflection of the perceived ease or difficulty of performing the behavior, which can be influenced by internal factors and external factors. This addition allows for a more nuanced understanding of behaviors, particularly in complex health-related contexts where external barriers might impede adherence.

The Health Belief Model focuses on individuals' perceptions of health risks and benefits as the primary motivators of health behavior.

Complementary Constructs

While HBM emphasizes the role of personal beliefs about health risks and benefits, TRA complements this by highlighting how attitudes and subjective norms influence those beliefs and subsequent intentions.

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This integration helps to address the cognitive and social aspects of health decisions.

Enhanced Interventions: Health interventions can be developed that address both perceived risks (as per HBM) and social influences (as per TRA), leading to more comprehensive strategies for improving adherence to behaviors like PrEP usage. For instance, educational programs can inform individuals about the risks of HIV and simultaneously foster supportive social networks.

Developed by Albert Bandura, Social Cognitive Theory emphasizes the role of observational learning, self-efficacy, and social influence in behavior change.

Role of Self-Efficacy:

Integrating SCT with TRA allows for a deeper understanding of how beliefs about one's ability to perform a behavior (self-efficacy) can affect attitudes and intentions. For example, an HIV-negative partner may be more likely to intend to adhere to PrEP if they feel confident in managing their medication regimen.

Reciprocal Determinism:

SCT introduces the concept of reciprocal determinism, where personal factors, behaviors, and environmental influences all interact. This perspective can enhance the TRA framework by providing insights into how social environments can shape attitudes and subjective norms, further influencing intentions and behaviors.

The Transtheoretical Model, or Stages of Change model, describes the stages individuals go through when changing behavior: precontemplation, contemplation, preparation, action, and maintenance.

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Stage-Specific Interventions:

By integrating TRA with TTM, interventions can be tailored based on the individual's readiness to change. For example, individuals in the precontemplation stage may need information to shape their attitudes about PrEP, while those in the action stage may benefit from social support to enhance subjective norms and reinforce their intentions.

Cyclical Nature of Behavior Change: Understanding that behavior change is not linear, the integration allows practitioners to address potential relapse and reinforce intentions through sustained support and education.

Diffusion of Innovations Theory; Developed by Everett Rogers, this theory focuses on how new ideas and technologies spread within communities and the factors that influence their adoption.

Social Influence and Norms: The integration of TRA with Diffusion of Innovations Theory highlights how subjective norms can influence the adoption of new health behaviors, such as PrEP. By understanding the characteristics of innovators and early adopters, public health campaigns can be designed to leverage these social influences.

Attitude Change: The diffusion process can also influence attitudes toward behaviors over time, demonstrating how social networks can affect perceptions and ultimately lead to changes in intentions and behaviors.

The integration of the Theory of Reasoned Action with other behavioral theories enhances its explanatory power and applicability in diverse contexts, particularly in health promotion. By combining insights from multiple theories, researchers and practitioners can develop more robust interventions that consider not only individual beliefs and attitudes but also social influences, self-efficacy, and environmental factors.

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This multifaceted approach is particularly valuable in complex health issues, such as adherence to PrEP among HIV-discordant couples, where a variety of psychological, social, and contextual factors interact. Understanding these dynamics can lead to more effective strategies for promoting health behaviors and improving outcomes in vulnerable populations.

HIV discordance refers to a situation where one partner in a sexual relationship is HIV-positive, while the other is HIV-negative. This condition creates unique health challenges, including the risk of HIV transmission to the negative partner.

PrEP has proven to be an effective method for preventing HIV transmission. Clinical trials have demonstrated that individuals who adhere to the regimen can reduce their risk of contracting HIV by over 90% (Baeten et al., 2012). However, the effectiveness of PrEP is contingent upon consistent adherence.

Factors affecting the adherence to PrEP among HIV-discordant couples

These include; stigma, relationship dynamics, and individual beliefs about health. Research shows that emotional factors, such as fear and anxiety about HIV, can affect adherence (Mugavero et al., 2013).

The application of the Theory of Reasoned Action (TRA) to the context of PrEP (Pre-Exposure Prophylaxis) adherence among HIV-discordant couples offers valuable insights into the factors that influence health behaviors. HIV-discordant couples, where one partner is HIV-positive and the other is HIV-negative—face unique challenges and dynamics that can significantly affect adherence to PrEP. By leveraging the constructs of TRA, interventions can be designed to enhance adherence to PrEP among this vulnerable population.

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Factors shaping attitudes toward PrEP are shaped by various beliefs, including perceptions of its effectiveness, safety, and potential side effects. For HIV-negative partners, a positive attitude is often linked to the belief that PrEP significantly reduces the risk of HIV transmission.

Negative beliefs or misconceptions about PrEP, such as concerns over side effects or a lack of understanding of its effectiveness—can lead to unfavorable attitudes and deter adherence.

Education and Information Dissemination

Providing accurate information about PrEP can help reshape attitudes. Educational campaigns that highlight success stories, the science behind PrEP, and data on its efficacy can improve perceptions.

Addressing Misconceptions

Targeting specific myths or misconceptions about PrEP in educational materials can help to alleviate fears and build a more favorable attitude toward its use.

Subjective Norms

Subjective norms play a crucial role in the decision-making process for HIV-discordant couples. The support of significant others, including partners and family members, can strongly influence an individual's intention to adhere to PrEP.

Social stigma surrounding HIV and PrEP can create pressure that affects subjective norms. If an individual perceives that their social network disapproves of PrEP, they may be less likely to adhere to the regimen.

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Intervention Strategies:

- Involvement of Partners: Engaging both partners in the education process can enhance perceived social support. Couples-focused interventions that emphasize open communication about PrEP use can strengthen subjective norms favoring adherence.
- Community Engagement: Addressing stigma through community-wide campaigns can shift social norms and create a supportive environment for individuals taking PrEP. This could involve testimonials from community members who successfully use PrEP.

Behavioral Intention

- The intention to adhere to PrEP is a crucial predictor of actual behavior. Factors influencing this intention include the combined effects of positive attitudes and supportive subjective norms.
- Individuals who feel confident about their ability to take PrEP (self-efficacy) and perceive strong social support are more likely to form strong intentions to adhere.

Intervention Strategies:

- Goal Setting: Encouraging individuals to set specific, measurable, attainable, relevant, and time-bound (SMART) goals related to PrEP adherence can strengthen their intentions. For example, setting reminders for daily medication can be a practical step.

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- Support Groups: Creating support groups for HIV-discordant couples can foster a sense of community and accountability, reinforcing positive intentions through shared experiences and mutual encouragement.

Creating a Comprehensive Intervention

To effectively apply TRA to PrEP adherence among HIV-discordant couples, a comprehensive intervention strategy should incorporate the following elements:

- Tailored Education: Design educational materials that address specific concerns and promote positive attitudes toward PrEP. This can include workshops, informational pamphlets, and online resources that provide clear and accessible information.
- Enhanced Communication: Facilitate open discussions between partners about PrEP. Couples counseling or support sessions can encourage partners to express concerns, share experiences, and reinforce each other's commitment to adherence.
- Addressing Barriers: Identify and address structural barriers (e.g., access to healthcare services, affordability of PrEP) that may hinder adherence. Collaborating with healthcare providers to ensure that couples have access to necessary resources can improve adherence rates.
- Monitoring and Feedback: Implement systems for regular check-ins and feedback to assess adherence levels and provide support. This could include phone calls, text reminders, or mobile health applications that track medication intake.

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To measure the effectiveness of interventions based on the TRA, several evaluation strategies can be employed:

- Pre- and Post-Intervention Surveys: Collect data on attitudes, subjective norms, and behavioral intentions before and after the intervention to assess changes and effectiveness.
- Focus Groups: Conduct focus groups with participants to gather qualitative data on their experiences, challenges, and perceived impacts of the intervention.
- Adherence Monitoring: Utilize medication adherence tools (e.g., pill counts, electronic monitoring devices) to track actual adherence rates over time and correlate these with changes in attitudes and intentions.

The application of the Theory of Reasoned Action (TRA) to understand PrEP adherence has been the focus of several empirical studies. These studies have explored the relationships between attitudes, subjective norms, behavioral intentions, and actual adherence to PrEP among various populations, particularly focusing on HIV-discordant couples. Below are key findings and insights from this body of research.

Attitude toward the behavior refers to an individual's overall evaluation of a specific action— in this case, adherence to Pre-Exposure Prophylaxis (PrEP). This construct plays a pivotal role in the TRA, as it directly influences behavioral intentions and, ultimately, actual behavior. Understanding and shaping attitudes toward PrEP is crucial for enhancing adherence, particularly among HIV-discordant couples.

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Attitudes are formed based on two primary components:

- Behavioral Beliefs: These are the beliefs individuals hold about the outcomes of a behavior. In the context of PrEP, positive behavioral beliefs may include:
    - Effectiveness: The belief that taking PrEP significantly reduces the risk of acquiring HIV.
    - Health Benefits: The perception that using PrEP contributes to overall health and peace of mind for both partners in a discordant relationship.
    - Social Acceptance: The belief that using PrEP is increasingly accepted within their social circles, reducing feelings of isolation or stigma.
- Outcome Evaluations: This component refers to the value individuals place on the expected outcomes.

Factors influencing attitudes toward PrEP adherence:

Knowledge and Awareness: Individuals with a better understanding of how PrEP works and its effectiveness are more likely to have positive attitudes. Educational interventions can enhance knowledge and shape favorable beliefs.

Personal Experiences: Prior experiences with healthcare and HIV prevention methods can shape attitudes. Positive experiences with healthcare providers or successful adherence stories can lead to more favorable evaluations of PrEP.

Social Influence: The attitudes and beliefs of significant others (e.g., partners, family, friends) can strongly influence individual attitudes. If a partner supports the use of PrEP and views it positively, it can significantly enhance the other partner's attitude toward adherence.

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Cultural Context: Cultural beliefs about HIV, sexuality, and health can also shape attitudes. In cultures where discussing sexual health is stigmatized, individuals may develop negative attitudes toward PrEP due to fear of judgment or misinformation.

To improve attitudes toward PrEP adherence, several strategies can be implemented:

Education and Information: Develop educational campaigns that provide clear, evidence-based information about PrEP, its benefits, and how it works. This could involve workshops, brochures, and digital media that address common misconceptions.

Testimonials and Peer Advocacy: Sharing success stories from individuals or couples who have benefited from PrEP can be a powerful tool. Peer advocates can help normalize PrEP use and illustrate its positive impact on health.

Engaging Healthcare Providers: Training healthcare providers to communicate effectively about PrEP can enhance patient attitudes. Providers should be equipped to address concerns, provide accurate information, and encourage positive evaluations of PrEP.

Targeted Messaging: Tailor messages to address specific beliefs and concerns of different populations. Understanding the unique contexts of HIV-discordant couples can guide the creation of relevant and resonant messaging.

To effectively assess and improve attitudes, it is essential to measure them accurately:

Surveys and Questionnaires: Use validated scales to assess attitudes toward PrEP. Questions can address beliefs about effectiveness, safety, and social implications, providing a comprehensive view of attitudes.

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Focus Groups: Conduct focus groups to gather qualitative data on attitudes. Engaging discussions can reveal nuanced beliefs and areas of concern that may not be captured in quantitative surveys.

Subjective norms have been shown to play a critical role in shaping intentions to adhere to PrEP. For example, a study conducted among HIV-negative partners in discordant relationships found that perceived support from partners and friends was associated with stronger intentions to adhere to PrEP (Rountree et al., 2019).

Research has also highlighted the impact of social stigma on subjective norms. Couples who perceived negative societal attitudes toward PrEP faced additional barriers to adherence, leading to reduced intention to continue using the medication (Geng et al., 2016).

Behavioral Intention

Numerous studies confirm that behavioral intention is a strong predictor of actual PrEP adherence. For instance, a longitudinal study found that individuals with higher intentions to adhere to PrEP reported better adherence over a 12-month period (Holt et al., 2020).

A study focusing on HIV-discordant couples indicated that intentions to use PrEP were significantly influenced by both individual attitudes and the perceived expectations of their partners (Wong et al., 2021).

Interventions based on TRA have been implemented to enhance PrEP adherence, demonstrating positive outcomes. For example, an intervention that included educational components about PrEP, aimed at shifting attitudes and enhancing social support, showed increased adherence rates among participants (Schneider et al., 2022).

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Studies have also indicated that integrating TRA with motivational interviewing techniques can further improve adherence by addressing individuals' beliefs and enhancing self-efficacy (Carey et al., 2019).

Qualitative studies have provided insights into the personal experiences of HIV-discordant couples. For example, Duncan et al. (2018) highlighted that open communication about health and mutual support within the relationship enhanced adherence to PrEP.

Barriers to adherence identified in the literature include stigma, misconceptions about HIV and PrEP, and logistical issues related to accessing healthcare (Stirratt et al., 2015). Conversely, facilitators include education, supportive healthcare environments, and strong relationship dynamics (Miller et al., 2016).

Educational interventions that address specific attitudes and subjective norms can significantly improve adherence among HIV-discordant couples. These programs should focus on dispelling myths about PrEP and emphasizing its benefits (Hollander et al., 2017).

Encouraging open communication between partners about HIV status, PrEP adherence, and health concerns can enhance mutual support and adherence (Bennett et al., 2013).

Healthcare providers play a crucial role in promoting adherence. Regular follow-ups, motivational interviewing, and supportive counseling can help couples navigate the challenges of adhering to PrEP (Calabrese et al., 2017).

TRA may not fully account for the complexities of health behaviors in real-life contexts, particularly when external factors, such as socioeconomic status, impact adherence (Fisher et al., 2016).

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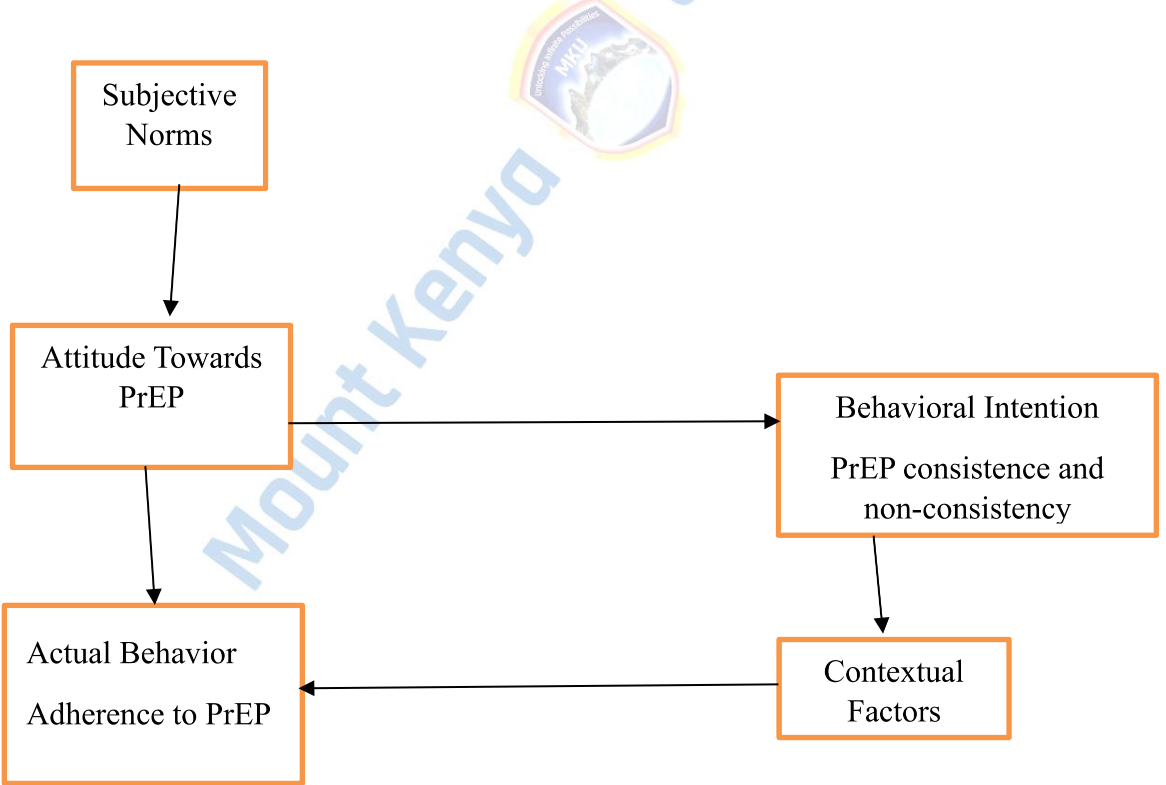
Structural barriers, such as healthcare access and societal stigma surrounding HIV, can significantly hinder adherence to PrEP among discordant couples, indicating a need for a broader approach that includes structural changes (García et al., 2018).

The Theory of Reasoned Action provides a valuable framework for understanding adherence to PrEP among HIV-discordant couples. By addressing attitudes, subjective norms, and behavioral intentions, healthcare interventions can be tailored to enhance adherence rates.

2.3.2 Reasoned Action Model: Adherence of Discordant Couples to Pre-Exposure Prophylaxis (PrEP)

Figure 1:Reasoned Action Model: Adherence of Discordant Couples to Pre-Exposure Prophylaxis (PrEP)



Source: Researcher 2024

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Figure 1 above is a model of Reasoned Action Theory showing how individual's intention affects PrEP adherence. Reasoned Action Theory suggests that adherence to PrEP is influenced by an individual's intention to take the medication, which is shaped by their attitudes and social influences. If a person has a positive attitude toward PrEP, believing it is effective and beneficial, they are more likely to intend to take it regularly. Additionally, subjective norms, or the influence of people around them (such as family, friends, or healthcare providers), play a significant role in shaping these intentions. When individuals feel that important others approve of PrEP use and support their decision, they are more likely to adhere to the regimen. Thus, a combination of personal attitudes and social pressures drives adherence to PrEP.

2.3.3 Health Belief Theory

HIV (Human Immunodeficiency Virus) remains a significant global health challenge, particularly among couples in which one partner is HIV-positive and the other is HIV-negative, known as HIV discordant couples. For these couples, maintaining the health of the negative partner is crucial, and pre-exposure prophylaxis (PrEP) has emerged as a vital preventive strategy. PrEP, when taken consistently, can reduce the risk of HIV transmission by over 90% (Grant et al., 2010).

However, the effectiveness of PrEP hinges on adherence. The Health Belief Theory (HBT) provides a useful framework for understanding how individual beliefs about health can influence behaviors such as adherence to PrEP. This paper explores the intersection of HBT and PrEP adherence among HIV-discordant couples, examining how perceptions of risk, severity, benefits, barriers, and cues to action impact adherence behaviors.

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HIV discordance refers to a situation in which one partner in a sexual relationship is HIV-positive while the other is HIV-negative. This phenomenon has significant implications for both partners' health and their relationship dynamics. In the United States, it is estimated that about 30% of couples living with HIV experience discordance (CDC, 2021).

For HIV-discordant couples, the stakes are particularly high. The negative partner faces the risk of contracting HIV, while the positive partner must manage their health and viral load to minimize the risk of transmission. This dynamic creates both emotional and psychological challenges, often leading to anxiety and stress regarding their sexual health and relationship stability (Mugavero et al., 2013).

PrEP works by establishing a therapeutic level of HIV medications in the body, which helps block the virus from establishing infection upon exposure. When taken consistently, PrEP has shown remarkable efficacy in preventing HIV transmission (Anderson et al., 2012).

Research shows that consistent adherence to PrEP can reduce the risk of HIV transmission by more than 90% (Grant et al., 2010).

However, this effectiveness is heavily contingent upon the level of adherence. Interruptions in PrEP use can lead to increased vulnerability to HIV infection (Baeten et al., 2012).

Key Constructs of HBT

i. Perceived Susceptibility: Refers to an individual's belief about the likelihood of experiencing a health problem. In the context of HIV discordance, the HIV-negative partner must perceive themselves as at risk for contracting HIV.

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ii. Perceived Severity: This involves beliefs about the seriousness of a health issue and its potential consequences. For the negative partner, understanding the severity of HIV and its implications for health and quality of life is crucial.

iii. Perceived Benefits: Refers to an individual's belief in the effectiveness of taking specific actions to reduce risk. In the case of PrEP, understanding its efficacy can motivate adherence.

iv. Perceived Barriers: These are individual assessments of the obstacles to taking a recommended health action. Barriers may include concerns about side effects, cost, or access to healthcare.

v. Cues to Action: These are triggers that prompt individuals to engage in health-promoting behaviors. Cues can include reminders from healthcare providers, educational materials, or supportive relationships.

vi. Self-Efficacy: This construct refers to an individual's confidence in their ability to perform a specific behavior. High self-efficacy can enhance adherence to PrEP among discordant couples.

How HBT Constructs Relate to PrEP Adherence

- Perceived Susceptibility: For the HIV-negative partner, recognizing their susceptibility to HIV is critical. Studies have shown that individuals who perceive themselves at high risk for infection are more likely to adhere to preventive measures like PrEP (Rosenstock et al., 1988).

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- Perceived Severity: Understanding the severity of HIV and its impact on life can motivate the negative partner to engage with PrEP. If they view HIV as a life-altering condition with serious health consequences, they may be more inclined to adhere to PrEP (Bennett et al., 2013).
- Perceived Benefits: The perceived benefits of PrEP; namely, its effectiveness in preventing HIV can significantly influence adherence. Couples who are well-informed about the protective effects of PrEP are more likely to remain consistent in their medication regimen (Yehia et al., 2015).
- Perceived Barriers: Common barriers to adherence include fears about side effects, the stigma associated with taking HIV medication, and logistical challenges such as accessing healthcare. Identifying and addressing these barriers is essential for improving adherence rates among discordant couples (Stirratt et al., 2015).
- Cues to Action: Effective cues to action can include reminders from healthcare providers, regular follow-ups, and support from peers or community organizations. These cues can serve as vital motivators for couples to maintain their PrEP regimen (Thompson et al., 2018).
- Self-Efficacy: Couples who feel confident in their ability to adhere to PrEP are more likely to do so. Building self-efficacy can involve education about the medication, discussing success stories, and providing supportive environments that foster adherence (Brown et al., 2017).

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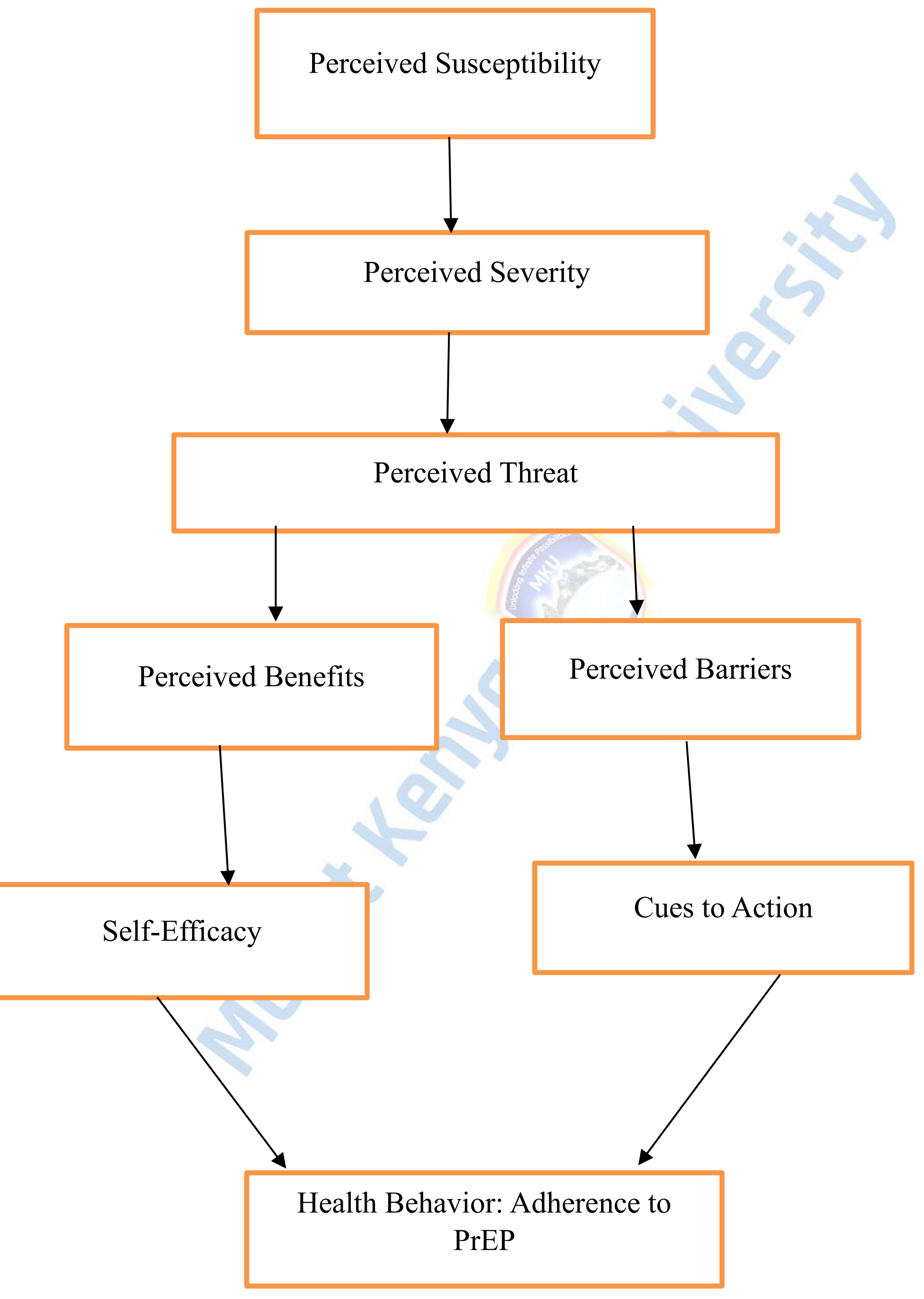
2.3.4 Health Belief Model: Adherence of Discordant Couples to Pre-Exposure Prophylaxis (PrEP).

Figure 2:Health Belief Model: Adherence of Discordant Couples to Pre-Exposure Prophylaxis (PrEP).



Source: Researcher 2024

Figure 2 above is a model that shows how the Health Belief Theory affects adherence to PrEP. Health Belief Theory suggests that adherence to PrEP is influenced by individuals' perceptions of risk, severity, benefits, and barriers. People are more likely to adhere to PrEP if they perceive themselves as at high risk for HIV, believe the consequences of HIV are severe, and understand that PrEP is an effective preventive measure. However, perceived barriers like cost, side effects, or stigma can decrease adherence. Additionally, external cues such as healthcare provider reminders can encourage consistent use. Overall, when individuals see the benefits of PrEP and feel confident about overcoming obstacles, adherence improves.

2.4 Summary of Literature Review.

Pre-exposure prophylaxis is an HIV prevention strategy that is used to lower the infection rates of new infections of HIV among the seronegative people. This strategy involves antiretroviral drugs that are used before a person gets exposed to the risk of infection with HIV. This is to lower the risk of HIV/AIDS and continues to use the drug for the period of time they get exposed to the risk of infection, (Mitchell *et al*., 2016).

According to (Joseph *et al*., 2023), socio-demographic characteristics affects the level of adherence to PrEP among sero-discordant couples. These include age, education level, marital status, occupation and area of residence.

Knowledge and health education on side effects of PrEP have great statistical importance to adherence of PrEP. The adherence to PrEP is greatly aided by highly and well-structured health education programs to the discordant couples, (Joseph *et al.,* 2023).

There are several healthcare related barriers that affect the adherence to PrEP among the discordant couples.

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2.5 Conceptual framework

Figure 3: Conceptual framework

Independent Variables

Moderating Variables

Dependent Variables

Social-demographic Factors of the sero-discordant couples

- ✓ Occupation
- ✓ Education level
- ✓ Age

Current status of PrEP adherence

- ✓ Frequency of PrEP usage.
- ✓ Duration of Usage

Healthcare provider Barriers

- ✓ Health education on PrEP
- ✓ Personal bias/ willingness

Level of Knowledge on oral pre-exposure prophylaxis adherence

- ✓ PrEP Awareness

High adherence to PrEP usage as a safe conception intervention

- ✓ Education on the adherence to PrEP as safe conception option.
- ✓ Government policies

Source: Researcher 2024

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Figure 3 above is a conceptual framework showing variables of the study; independent, dependent and moderating variables. The independent variables include; Status of sero-discordance, Healthcare provider Barriers, Level of Knowledge on oral pre-exposure prophylaxis adherence and Socio-demographic characteristics among the sero-discordant couples. Dependent variable was adherence to PrEP and moderating variables were the health education on PrEP and government policies on PrEP.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter entails the procedures that the researcher employed in conducting the study. It entails the steps the researcher will follow throughout the study. This includes the study design, the study location, the target population, procedures and techniques for sampling, sample population, construction of research instruments for collection of data, methods of data collection, proposed data analysis techniques and considerations on ethical reviews.

3.1 Study design

This study was conducted using a descriptive cross-sectional sequential exploratory study design. Qualitative and quantitative data collection methods was employed in this study. This study design helped the researcher get a more comprehensive understanding of the research problem. A descriptive cross-sectional sequential exploratory study design helped understand adherence to PrEP by providing a comprehensive view of adherence patterns and the factors influencing them. The descriptive aspect allowed the researcher to identify prevalence rates of adherence at a specific time, while the cross-sectional approach captured a snapshot of adherence in a population. The sequential component enabled tracking of changes over time, such as after interventions, and the exploratory element provided qualitative insights into barriers and motivations for adherence, like stigma or side effects. This mixed-methods design helped the researcher gain both broad trends and in-depth understanding, ultimately guiding interventions to improve PrEP adherence. Focus group discussions was used to collect qualitative data while closed-ended interviewer administered questionnaires was applied to collect

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quantitative data. The collection of data took place between May and July, 2024 during which 125 participants in a HIV- sero-discordant couple relationship were interviewed through closed-ended electronic questionnaire and focus group discussions.

3.2 Study variables

This study had independent, dependent and moderating variables. The independent variables were grouped under four main categories; Status of sero-discordance, Healthcare provider Barriers, Level of Knowledge on oral pre-exposure prophylaxis adherence and Socio-demographic characteristics among the sero-discordant couples. HIV prevalence in a region determines the prevalence of sero-discordance hence, adherence or non-adherence to PrEP as a safe conception intervention.

Under the current status of PrEP adherence; there are duration and the frequence of PrEP usage which greatly affects the PrEP adherence. Socio-demographic factors include the age, level education, and occupation. These greatly affects the adherence to PrEP use. Under Healthcare provider Barriers; there is Health education and Personal bias/ willingness. These also affects adherence to PrEP hence safe conception. The knowledge of the sero-discordant couples on the use of PrEP as a safe conception option also plays a key role on the PrEP adherence. Variables here include; PrEP awareness. Lastly on independent variables is, the adherence to oral use of the PrEP which include education on PrEP and concurrent use of ART. Education on PrEP use greatly affects the adherence to its use. Likewise, the use of ART reinforces the safety that comes with the use of PrEP.

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The dependent variables which are the outcome/ response of the effects of the independent variables as either adherence or non-adherence include. Adherence or non-adherence to PrEP affects the rate of seroconversion among the sero-discordant couples, fertility decision on whether the couples are safe or not hence may find it hard in making fertility decision. Adherence or non-adherence also affects the unity of the sero-discordant couples.

Moderating variable in this study is education or training of the sero-discordant couples on the availability, use and adherence to PrEP as a safe conception option for the sero-discordant couples with fertility desires and also favorable government policies.

3.3 Location of the study

This study was conducted in Homabay County, which is one of the 47 counties in the republic of Kenya. According to the national simple random sampling 2019, the total population of Homabay County was 1.132 million**.**

The major economic activities of this region include agriculture and agro-processing, fishing and fish trade and industrialization. Homabay County has a total of 304 healthcare facilities of which 202 are public health facilities, 74 are private owned facilities and 28 are faith-based facilities. These include one Sub- County hospital in each of the eight sub-counties. This study was conducted at Homabay County Referral Hospital. Homabay County Referral Hospital is located between a latitude of 0.5331 ° S and a Longitude of 34.4616 ° E. The sero-discordant couples who were enrolled in this study were drawn from the Comprehensive Care Center at the Homabay County Referral Hospital.

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According to a report released by National Syndemic Disease Control Council (NDCC) (2022), Kenya had a HIV prevalence of 3.7% which is approximately 1.4 million of people living with HIV. On the basis of Counties, Homabay county had the highest HIV/AIDS prevalence of 15.2% which is way higher than the national prevalence. According to the NDCC 2022 report, an estimate of at least a third of the infected couples are discordant.

Refer to the map of Homabay County in the appendix III.

3.4 Target population

This study targeted an estimate population of 167 HIV seronegative partners in discordant relationship attending clinics at the Comprehensive Care Center in Homabay County Referral Hospital. The participants were between 20 and 46 years of age (WHO reproductive age) and who have lived together as couples.

3.4.1 Inclusion Criteria

This study participant included willing sero-discordant couples who have lived together for at least one month and are attending their monthly clinics at the Comprehensive Care Centre in Homabay County Referral Hospital.

3.4.2 Exclusion Criteria

This study excluded the unwilling sero-discordant couples and those who have not lived together for at least one month.

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3.4.3 Sample size determination

To determine this study's sample size, Yamane's formula will be employed as shown below;

$n = N/(1+N(e)^2)$

Where; n= sample size

N= Population size

e = margin of error (5%)

The study will work with a population of 167 sero-discordant partners.

Therefore, $n= 171/ (1+171(0.05)^2)$

=125

3.5 Sampling procedures and techniques

The researcher used simple random sampling method because it is more accurate and reliable and minimizes possibilities of personal biases. In this method, a clinician and the HIV Testing Counselors (HTC) at the CCC identified and enrolled the eligible participants randomly with which every member of the population having same probability of being selected until a sample size of 125 was obtained.

3.6 Sample population

The study worked with a sample population of 125 participants in a discordant couple relationship. 105 participants were for quantitative data and 20 for qualitative data. The participants were between 20 and 46 years of age (WHO reproductive age) and who have lived together as couples for at least one month.

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3.7 Research Instruments

The study used two data collection tools; electronic questionnaire and focused group discussion (FGD) guide. Questionnaires were administered electronically using KOBO toolbox to the sero-discordant couples seeking care at the Comprehensive Care Center in Homabay County Referral Hospital. Two FGDs were conducted during the study.

3.8 Data Collection Techniques

3.8.1 Quantitative Data

The data was collected by the use of Kobo toolbox, which is an electronic questionnaire data collection tool. The kobo toolbox allows streamlined data entry and reduces any chances of data entry errors. The mobile phones that were used to collect the data all had passwords to ensure that the data that was collected remained encrypted. The kobo toolbox gave us features for validation and data quality assurance. Skip logic was initiated to ensure participants only answer the relevant questions.

Data that was collected each day was automatically stored in the Kobo toolbox account of the head researcher and after the data collection period the data was downloaded from kobo toolbox in a CSV format then exported to excel for data cleaning and then uploaded into R for data analysis.

A consent form was administered and translated in a language participant understands before the administration of the questionnaire for them to sign.

The questions were read to the respondents and answers recorded using cell phone.

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3.8.2 Qualitative Data

The qualitative data was collected using Focus group discussion (FGD) guide. This targeted the available sero-discordant respondents. Two FGDs were conducted targeting available participants. The group of the focus group discussion involved 20 persons. The answers were recorded on cell phones.

3.9 Testing for validity

To ensure the accuracy of the data collection tool, a literature review of other studies was done to guide the construction of the tools. The tool was formulated to answer the study questions. Supervisors were consulted when designing the tool. Continuous refinement of the questionnaire was.

3.10 Testing for Reliability

The questionnaire and FGD manual were pre-tested among sero-discordant couples seeking care at Marindi Sub- County Hospital in Homabay County. After one week, the same tool was subjected to the same respondents to check if the questionnaire would yield the same results. For inconsistencies, corrections were made. The reliability of this tool was tested by the use of Cronbach alpha values using SPSS. Values of 0.7 or higher shows acceptable internal consistency of the instrument i.e. $\alpha \geq 0.70$.

3.11 Data Analysis and Presentation

For quantitative data, Statistical Package for Social Sciences (SPSS) version 27 was employed in which data was entered and cleaned to identify the missing variables. All data were numerical in nature and were described using mean and standard deviation. All statistically significant variables were fitted into the multiple linear regression model at a 95% confidence interval.

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Variables that retained their statistical significance, i.e. p- < 0.05 were considered to be greatly associated with adherence to pre-exposure prophylaxis. Analyzed data were presented in table form.

MSQDA software was applied to analyze qualitative data. Transcription was done to convert audio recordings to transcripts. Transcribed data was then uploaded into Excel. The data was cleaned to ensure it is clear and readable. After cleaning, the data was then imported to MSQDA software for analysis.

MSQDA (Mixed Methods Software for Qualitative and Quantitative Data Analysis): works with qualitative data by providing tools for efficient data management, coding, and analysis. Researchers can import textual data from interviews, focus groups, open-ended surveys, or documents into the software, where it supports the organization and categorization of the data. The core feature of MSQDA for qualitative analysis is its coding system, which allows researchers to assign labels or "codes" to specific segments of text that represent themes, ideas, or patterns. These codes can be grouped into categories to facilitate thematic analysis. MSQDA also offers a range of data visualization tools, such as code maps, matrices, and frequency charts, helping users to identify relationships and trends within the qualitative data. Additionally, it supports memo writing, where researchers can document thoughts, interpretations, and insights during the coding process, enriching the analysis. The software also enables the searching and querying of coded data, allowing for deeper exploration and comparison across different segments of text. MSQDA's user-friendly interface and versatile coding functions make it easier for researchers to manage large volumes of qualitative data, uncover patterns, and develop a nuanced understanding of the data, ultimately enhancing the quality of qualitative research outcomes.

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3.12 Ethical considerations research permit?

The following ethical considerations were observed in this study:

The approval to carry out data collection was obtained from the Mount Kenya University's Ethics Review committee and the NACOSTI.

Field entry authorization letters were issued by the Homabay County Director of medical services and the Chief Executive Officer of the Homabay County Referral Hospital.

Due to the sensitivity that comes with HIV/AIDS and discordance, confidentiality of the study participants is paramount. Therefore, the sampling frame and questionnaires only had numbers and not names. The consent forms also had a confidentiality statement among participants in the focus group discussions.

Approval to carry out the study was sort from the Homabay County Referral Hospital management.

The participants' rights, privacy and welfare were taken care of according to Human subjects' protection and Good Clinical practice (GCP).

The participants had the freedom to quit from the study at will whenever they feel uncomfortable with the study.

There were no incentives of whatever item, participation will be purely voluntary.

Refer to the consent form in appendix I

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CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This study sought to answer four research questions about adherence to PrEP among HIV sero-discordant couples in Homabay County Referral Hospital, Home Bay County; status of adherence, effect of socio-demographic factors, effect of level of knowledge, and provider related barriers to PrEP adherence. The study was conducted between the months of May, 2024 and July, 2024 at the comprehensive Care Center in Homabay County Referral Hospital, Homabay County. A total of 105 participants turned up for the quantitative data collection using electronic questionnaire through KOBO toolbox while 20 turned up for the qualitative data collection using Focus Group Discussion.

Below are the presentation of the findings, interpretation, analysis and discussion of the findings.

4.1 Descriptive Statistics

Table 1: Descriptive Statistics

	Age	Occupation	Level of Education	Are you aware of PrEP?	For how long have you used PrEP?	Do you use PrEP daily
Valid	105	105	105	105	105	105
Missing	0	0	0	0	0	0
Std. Deviation	1.161	0.713	0.815	0.098	0.502	0.233

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4.1.1 Level of Knowledge on oral PrEP adherence

Table 2: Are you aware of PrEP

Are you aware of PrEP				
	Frequency	Percentage	Valid percentage	Cumulative Percentage
No	1	1.0	1.0	1.0
Yes	104	99.0	99.0	100.0
Total	105	100.0	100.0	

The average awareness of PrEP among the HIV sero-discordant couples in Homabay County is 0.99 with a standard deviation of 0.098 as shown in the above Table 2. It indicates that nearly all the respondents were aware of pre-exposure prophylaxis. Table 1 also shows that on average, the sero-discordant couples in Homabay County surveyed had used pre-exposure prophylaxis for a duration of between 1 and 5 years. The mean rating for pre-exposure prophylaxis daily usage is 0.94 (SD = 0.233) suggesting most of the HIV sero-discordant couples in Homabay County were using pre-exposure prophylaxis daily.

Table 1 shows that 99% of the HIV sero-discordant couples in Homabay County surveyed were aware of pre-exposure prophylaxis. Only one of the respondents was not aware of pre-exposure prophylaxis.

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4.1.2 Current status of PrEP adherence: Duration of usage

Table 3: Duration of usage

For how long have you used PrEP?				
	Frequency	Percentage	Valid percentage	Cumulative Percentage
Less than 1 year	51	48.6	48.6	48.6
Above 1 year	54	51.4	51.4	100.0
Total	105	100.0	100.0	

Table 3 above shows that most (51.4%) of the HIV sero-discordant couples in Homabay County surveyed had used pre-exposure prophylaxis for between 1 and 10 years, while 48.6% had used it for less than one year. The duration of usage can be associated with increased knowledge of pre-exposure prophylaxis.

4.1.3 Current status of PrEP adherence: Daily Usage of PrEP

Table 4: Daily Usage of PrEP

Do you use PrEP daily?				
	Frequency	Percentage	Valid percentage	Cumulative Percentage
No	6	5.7	5.7	5.7
Yes	99	94.3	94.3	100.0
Total	105	100.0	100.0	

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Table 4 above indicates that 94.3% of the respondents used pre-exposure prophylaxis daily, with only 5.7% (6 respondents) not using pre-exposure prophylaxis daily. Those who did not use pre-exposure prophylaxis daily had valid reasons including spouse being away due to work, and pre-exposure prophylaxis' side effects, among other reasons.

4.1.4 Coefficients of socio demographic factors, awareness and healthcare related barriers.

Table 5: Coefficients

Coefficients					
Unstandardized coefficient			Standardized coefficient		
Model	B	Std Error	Beta	t	Sig
Constant	1.011	.509	.007	.063	.050
Age	0.001	.023	.007	.063	.950
Occupation	-.011	.040	-.035	-.283	.778
Level of Education	0.017	.034	.058	.489	.626
Are you aware of PrEP?	-.030	.251	-.013	-.120	.905
For how long have you use PrEP?	-.040	.052	-.086	-.765	.446
Was the healthcare willing to prescribe PrEP to you?	-.098	.250	-.041	-.391	.697
Did the healthcare provider explain to you what PrEP is and how to use it?	-.120	.257	-.050	-.467	.642

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Table 5 above indicates the coefficients of age (β = 0.001, t = 0.063, Sig. = 0.950), occupation (β = -0.011, t = -0.283, Sig. = 0.778), and level of education (β = 0.017, t = 0.489, Sig. = 0.626) are not statistically significant. The coefficient of pre-exposure prophylaxis awareness or knowledge (β = -0.030, t = -0.12, Sig. = 0.905) is not statistically significant and the two coefficients of healthcare provider related barriers; provider's willingness to prescribe PrEP (β = -0.098, t = -0.391, Sig. = 0.697), and whether the provider explained what PrEP is and how to use it (β = -0.120, t = -0.467, Sig. = 0.642) are not statistically significant.

The coefficients of age (β = 0.001, t = 0.063, Sig. = 0.950), occupation (β = -0.011, t = -0.283, Sig. = 0.778), and level of education (β = 0.017, t = 0.489, Sig. = 0.626) are not statistically significant. This indicates that socio-demographic factors age, level of education, and occupation have no significant effect on adherence status to pre-exposure prophylaxis among the HIV sero-discordance couples in Homabay County.

The coefficient of pre-exposure prophylaxis awareness or knowledge (β = -0.030, t = -0.12, Sig. = 0.905) is not statistically significant. This shows that there is no significant association between PrEP awareness and adherence status to pre-exposure prophylaxis among the HIV sero-discordance couples in Homabay County. The result is attributed to the fact that 99% of the respondents were aware of pre-exposure prophylaxis and how to use it. Only one of the respondents indicated lack of awareness of pre-exposure prophylaxis.

The above results also indicate that healthcare provider related barriers did not affect the adherence to Pre-Exposure Prophylaxis among HIV sero-discordant couples in Homabay County.

The two coefficients of healthcare provider related barriers; provider's willingness to prescribe PrEP (β = -0.098, t = -0.391, Sig. = 0.697), and whether the provider explained what PrEP is and how to use it (β = -0.120, t = -0.467, Sig. = 0.642) are not statistically significant.

Analysis of qualitative data collected during focus group discussions identified the following key themes; awareness of PrEP, usage consistency, usage timing and frequency, and healthcare provider interaction.

All the 20 respondents who participated in focus group discussions were aware of PrEP. While most participants defined PrEP as a drug used for HIV prevention, some had varied definitions on those who should use PrEP. For instance, participant 2 indicated that PrEP is used by HIV negative partners to prevent them from infection, while others indicated that PrEP is used by discordant couples or those exposed to HIV. All the participants agreed that the rationale for taking PrEP is HIV prevention. All the participants also perceive PrEP as safe with some emphasis on consistent usage. This analysis is consistent with the quantitative data analysis which found that 99% of the respondents were aware of PrEP.

Most participants indicated that PrEP should be used every time one is exposed to HIV. However, there were some variations in the timing of usage with one participant indicating that PrEP should be used two weeks before sexual intercourse with a HIV positive partner.

This is consistent with quantitative data analysis which showed that 94% of the respondents are using PrEP daily, with those who do not use PrEP daily providing valid reasons including spouse being away due to work, and pre-exposure prophylaxis' side effects, among other reasons.

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All participants indicated that healthcare providers were sufficiently aware of PrEP, its usage and dosage, as well as side effects. The healthcare providers explained these aspects to the respondents before use.

Most participants indicated that healthcare providers were willing to prescribe PrEP, with a few incidences of bias where the provider believed the respondents were not serious or needed counselling. The analysis also shows easy access to PrEP. Most participants were not transferred between multiple attendants or providers when seeking PrEP.

4.2 Discussion of Results

This study sought to answer four research questions about adherence to PrEP among HIV sero-discordant couples in Homabay County; the current status of adherence, effect of socio-demographic factors, effect of the level of knowledge, and healthcare provider related barriers to PrEP adherence.

This study finds a high adherence to PrEP among the HIV sero-disrcordant couples in Homa Bay County. 94% of the respondents indicated that they use PrEP daily, while the 5.7% of the respondents who do not use PrEP daily cited valid reasons including their partners being away due to work. The high adherence of 94% is an attribute of the 99% awareness of the PrEP, its usage, dosage and benefits. The awareness on PrEP created by the key stakeholders in Homabay County which has contributed to the 99% awareness and subsequently 94% adherence.

The healthcare providers have also contributed greatly to the high adherence. The healthcare providers passionately explaining the complete aspects of PrEP to the respondents before use was very fundamental in achieving the 94% adherence. By most participants indicating that healthcare providers were willing to prescribe PrEP, this greatly reduces stigma and encourages adherence of the clients.

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The study also shows easy access to PrEP which also be key in ensuring adherence. This finding is in agreement with the findings of a study by Corneli et al., 2014 where the availability of the drug resulted to high adherence to PrEP among the discordant couples. Other studies are also consistent with the findings of this study which emphasizes the importance of awareness in improving adherence to pre-exposure prophylaxis (PrEP) among HIV serodiscordant couples. A qualitative study in rural Mozambique by Haberer et al. (2024) explored the perceptions of individuals in serodiscordant relationships regarding PrEP use. The research identified several barriers to PrEP uptake, including discomfort discussing PrEP and a lack of knowledge about its benefits. To address these challenges, the study developed oral stories aimed at educating and empowering couples, thereby normalizing PrEP use and potentially improving adherence. The findings from this study emphasize the importance of targeted educational campaigns to enhance awareness and increase adherence to PrEP among these couples (Haberer et al., 2024).

Similarly, a study conducted in Uganda by Mutonyi et al. (2024) examined the experiences of PrEP users within HIV serodiscordant couples. The study found that increased awareness and understanding of PrEP were strongly associated with higher adherence rates. Participants who were well-informed about PrEP's purpose and benefits demonstrated a stronger commitment to consistent use, highlighting the significance of education in enhancing adherence. This study underscores that awareness of PrEP's mechanisms and benefits is essential for its success as a preventive tool for HIV (Mutonyi et al., 2024).

Earlier studies, such as one conducted by Baeten et al. (2014), also demonstrated that awareness of PrEP's effectiveness plays a significant role in adherence among serodiscordant couples.

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In a large-scale clinical trial in Kenya and Uganda, Baeten et al. (2014) found that higher levels of understanding about PrEP led to increased uptake and adherence to the medication, particularly among couples who were educated about its protective benefits against HIV transmission. This research was instrumental in confirming that awareness is a critical factor in PrEP adherence, emphasizing the need for ongoing education to ensure consistent use in high-risk populations (Baeten et al., 2014).

In addition, a study conducted in South Africa by Pillay et al. (2020) also emphasized the role of awareness in increasing adherence to PrEP among HIV serodiscordant couples. The study revealed that couples who received comprehensive counseling about the use and benefits of PrEP showed significantly higher levels of adherence compared to those with limited or unclear information. Pillay et al. (2020) concluded that awareness-raising interventions, particularly those that engage both partners in the educational process, were essential to improving adherence and ensuring the effectiveness of PrEP as a preventive measure (Pillay et al., 2020).

Further research by Anderson et al. (2016) demonstrated that adherence to PrEP was significantly higher among serodiscordant couples who participated in regular educational sessions and counseling about HIV transmission and prevention methods. The study, which involved couples in sub-Saharan Africa, showed that consistent education and awareness efforts led to better understanding and higher commitment to adhering to PrEP. The research highlighted that addressing both individual and relationship dynamics through tailored counseling is crucial for improving PrEP adherence in discordant couples (Anderson et al., 2016).

Additionally, a systematic review by Liao et al. (2019) examined multiple studies on PrEP adherence across various populations, including serodiscordant couples.

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The review found that higher awareness about PrEP was associated with better adherence, particularly in settings where couples had access to ongoing support and education. The authors emphasized that interventions that increase awareness of both HIV transmission risks and the preventive benefits of PrEP were key to improving adherence rates in high-risk populations (Liao et al., 2019).

These studies collectively underline the critical role that increasing awareness and understanding of PrEP plays in improving adherence among HIV serodiscordant couples. Education and knowledge about the benefits and mechanisms of PrEP, as well as ongoing support and counseling, are essential components in ensuring the success of PrEP as a preventive tool for HIV transmission. Enhancing awareness through tailored interventions can ultimately lead to better adherence, making PrEP a more effective strategy in the fight against HIV.

On the effect of socio-demographic factors on PrEP adherence, this study found no evidence of a significant association between adherence to PrEP and age, level of education, occupation, and gender. This finding is consistent with a study by Haberer et al. (2014) in Kenya, Uganda, and South Africa which found that despite variations in socio-demographic characteristics, adherence to PrEP was not strongly linked to gender, education, or occupation. Similarly, Cohen et al. (2014) conducted a study in the United States and observed that socio-demographic characteristics such as gender, age, education level, and occupation had little impact on PrEP adherence. A systematic review by Liao et al. (2019) also found that while socio-demographic factors like education and occupation were considered in multiple studies, they did not consistently show a significant correlation with adherence. Additionally, Karim et al. (2014) conducted a study in sub-Saharan Africa and found that while demographic factors varied among participants, they did not have a substantial effect on adherence.

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These studies collectively suggest that socio-demographic factors, while relevant in some contexts, do not consistently influence PrEP adherence.

However, this finding is not consistent with study by Inkale et al. (2023) who found that socio-demographic factors have significant effect on adherence to PrEP. According to Inkale et al., 2023, a study conducted in Kinshasha shows 52.9% of female partners were affected by HIV. The greatly affected age bracket was between 36 and 45 years old. The majority of partners at 61.7% had secondary school education level, primary level at 41.7% and 23.5% at the university level. On occupation, the informal labor sector topped with 44.1% of partners, housewives at 11.7%, electronics technicians at 8.8%, and taxi drivers 5.8%. A study by Mayer et al., (2014), found that younger age, lower education levels, and lack of stable employment were associated with lower adherence rates.

Another study by Johnson et al., (2014) found that higher education levels were correlated with better adherence, whereas employment status, housing stability, and access to healthcare were important factors influencing adherence. The study emphasized that social determinants such as income, employment, and access to healthcare must be addressed to improve PrEP adherence, particularly among marginalized groups.

The finding of this study also inconsistent with the findings by Smith et al., (2016) which found that individuals with higher levels of education were more likely to understand the benefits of PrEP and, as a result, were more likely to adhere to the regimen.

Additionally, a study by Lopez et al., (2015) revealed that Black and Hispanic women faced distinct socio-demographic barriers that affected their adherence to PrEP. The study found that women with lower levels of education, unstable housing, and financial insecurity were less likely to stay on PrEP.

Furthermore, research by Grant et al. (2014), highlighted how both occupation and educational background affected adherence. The study found that those with professional and managerial jobs were more likely to adhere to PrEP than individuals in service or manual labor jobs. The level of education also played a critical role, with individuals holding at least some college education being more likely to follow through with PrEP regimens.

The outcome of this study may be attributed to the sample used. The study included only HIV discordant couples attending their monthly clinics at the Comprehensive Care Center in Homabay County Referral Hospital. Most of the respondents surveyed used PrEP daily hence a regression of socio-demographic factors shows no significant associations. The inclusion of couples who are not attending monthly clinics may show a different outcome on the effect of socio-demographic factors.

On the effect of knowledge on PrEP adherence, this study finds no effect of level of knowledge or awareness on PrEP adherence. The outcome is attributed to the fact that all the respondents were aware of PrEP. Quantitative data analysis showed that 99% of the participants were aware of PrEP.

Qualitative analysis also showed high level of knowledge on PrEP including its definition, usage, and the rationale for usage, among other aspects. The 99% awareness led to the 94% adherence to PrEP. This awareness is attributed to the healthcare providers whom the study shows to be providing adequate information on the PrEP to the clients prior to initiation to the drug. This finding is in agreement with the finding of a study done in Europe among women at a greater risk of getting infected with HIV, 59% of the women participants showed that lack of information about PrEP had the highest influence on adherence to PrEP among, (Moseholm *et al*.,2021).

A study done by Gilbert et al., (2014) found that while participants understood the importance of taking PrEP consistently, adherence was low. Despite the awareness of its benefits, factors like structural barriers, social stigma, and poor healthcare access were major obstacles to adherence. This study suggested that simply having knowledge about PrEP was insufficient to ensure adherence among participants.

Similarly, Grant et al., (2014), also found that while participants had knowledge about the purpose and importance of PrEP, adherence remained inconsistent. Many participants struggled to maintain consistent use due to forgetfulness, lack of support, and socio-economic barriers. This indicates that while knowledge is crucial, it does not necessarily lead to sustained behavior change.

Thigpen et al., (2014) found that while participants were educated about PrEP, no direct correlation was observed between knowledge and adherence. Structural challenges such as stigma, access to healthcare, and logistical issues were more influential in adherence.

These studies collectively highlight that while knowledge about PrEP is important, it does not necessarily ensure high levels of adherence. Socio-economic factors, structural barriers, and personal motivations play a more significant role in ensuring that individuals consistently take PrEP.

However, findings by Walters et al., 2018, do not conform to the findings of this study. According to Walter et al.,2018, the information about PrEP among heterosexual discordant partners remains very low, hence a good number of the sero-discordant couples are likely not able to seek for the PrEP even though adherence to PrEP is critical to its efficacy. Though, the findings of this study on PrEP awareness cannot explain the variations in PrEP adherence among the participants since 99% of the participants were aware.

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If the sample had included participants who do not attend monthly clinic at the Comprehensive Care Center, the level of knowledge could have been found to significantly affect PrEP adherence as in previous studies such as Moseholm et al. (2021). The study also found that healthcare provider related barriers did not affect the adherence to Pre-Exposure Prophylaxis among HIV sero-discordant couples in Homabay County. Qualitative data analysis shows that healthcare providers were well-informed on PrEP, its usage, dosage, and side effects, among other relevant aspects. Most participants indicated that healthcare providers were willing to prescribe PrEP. The study finds that there are no significant healthcare provider related barriers which is not consistent with the findings of other studies such as (Clement *et al*., 2018) and (Pleuhs *et al.,*2020).

According to the study done by (Clement *et al*., 2018) in North Carolina, 75% of the family planning providers and 42% of the PCPs reported that were not comfortable prescribing the PrEP due to lack of knowledge. (Pleuhs *et al.,*2020) reports that out of the 28 articles that were included in their systematic review, 18 reported lacks of the healthcare provider knowledge as a barrier in PrEP prescription.

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CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

In this section, the researcher summarizes the results of the study, draw conclusion that comes from the study results, recommend appropriate action to be taken by the stake holders in line with the finding and desired suggestion for further studies.

5.1 Conclusions

5.1.1 The current status of adherence to PrEP

This study finds a high adherence to PrEP among the HIV sero-discordant couples in Homa Bay County. 94% of the respondents indicated that they use PrEP daily, while the 5.7% of the respondents who do not use PrEP daily cited valid reasons including their partners being away due to work.

5.1.2 The socio-demographic characteristic affecting adherence to PrEP

The coefficients of age ($\beta = 0.001$, $t = 0.063$, Sig. = 0.950), occupation ($\beta = -0.011$, $t = -0.283$, Sig. = 0.778), and level of education ($\beta = 0.017$, $t = 0.489$, Sig. = 0.626) are not statistically significant. This indicates that socio-demographic factors age, level of education, and occupation have no significant effect on adherence status to pre-exposure prophylaxis among the HIV sero-discordance couples in Homabay County.

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5.1.3 Level of Knowledge on oral PrEP adherence

The coefficient of pre-exposure prophylaxis awareness or knowledge (β = -0.030, t = -0.12, Sig. = 0.905) is not statistically significant. This shows that there is no significant association between PrEP awareness and adherence status to pre-exposure prophylaxis among the HIV sero-discordance couples in Homabay County. The result is attributed to the fact that 99% of the respondents were aware of pre-exposure prophylaxis and how to use it. Only one of the respondents indicated lack of awareness of pre-exposure prophylaxis.

5.1.4 Healthcare provider related barriers that affect the adherence to PrEP.

Healthcare provider related barriers did not affect the adherence to Pre-Exposure Prophylaxis among HIV sero-discordant couples in Homabay County. The two coefficients of healthcare provider related barriers; provider's willingness to prescribe PrEP (β = -0.098, t = -0.391, Sig. = 0.697), and whether the provider explained what PrEP is and how to use it (β = -0.120, t = -0.467, Sig. = 0.642) are not statistically significant.

Homa Bay County has a high adherence to PrEP among the HIV sero-disrcordant couples. The high level of adherence to PrEP among the sero-discordant couples indicates that the discordant couples use PrEP daily, while the a very few of the respondents who do not use PrEP daily cited valid reasons including their partners being away due to work. The high adherence to PrEP use is an attribute of the high awareness of the PrEP, its usage, dosage and importance.

This study found no evidence of a significant association between adherence to PrEP and age, level of education, occupation, and gender.

This is likely because most of the respondents surveyed used PrEP daily hence a regression of socio-demographic factors showing no significant associations. The inclusion of couples who are not attending monthly clinics may show a different outcome on the effect of socio-demographic factors.

This study finds no effect of level of knowledge or awareness on PrEP adherence. The outcome is attributed to the fact that all the respondents were aware of PrEP. If the sample had included participants who do not attend monthly clinic at the Comprehensive Care Center, the level of knowledge could have been found to significantly affect PrEP adherence.

The study found that healthcare provider related barriers did not affect the adherence to Pre-Exposure Prophylaxis among HIV sero-discordant couples in Homabay County. Healthcare providers were well-informed on PrEP, its usage, dosage, and side effects, among other relevant aspects. Most participants indicated that healthcare providers were willing to prescribe PrEP.

5.2 Recommendations

i. The high adherence level of PrEP among the discordant couples in Homabay County is attributed to the high awareness or knowledge on PrEP and availability of the drug. Therefore, it is the recommendation of this study that the national government and county authorities to formulate and implement government policies that promotes the adherence to PrEP for both men and women who are at substantial risk of acquiring HIV.

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ii. The government and other players should plan and facilitate more focus group discussions and other friendly activities among the serodiscordant couples. This will reduce stigmatization among the discordant couples, increase friendly counselling and health education programs, ensure efficient and ready availability of the PrEP across the country and expand the awareness campaign programs to other counties up to the lowest tier of the healthcare system. This will ensure adherence to PrEP is high across the country which in turn will boost the fight against HIV/AIDS.

iii. The high level of adherence to PrEP among the discordant couples in Homabay County has also been greatly attributed to the efficient and coordinated efforts of other stakeholders like the healthcare providers. It is therefore the recommendation of this study to the other stakeholders to equally join hands with the governments, healthcare providers and other stakeholders to initiate programs that help in fighting stigmatization, biasness among other issues that may affect the level of adherence to PrEP among the discordant couples.

5.3 Recommendations for further research in this field of study

i. I suggest studies on this subject to be carried out with incorporation of a larger population and a larger sample size to ensure the findings greatly represent the discordant couple population.

ii. I suggest studies on this subject to be carried out with inclusion of couples who are not attending monthly clinics at the facility to have a wider view of the whole phenomenon.

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APPENDICES

Appendix I: RESEARCH TOOLS

I. KOBO TOOLBOX (ELECTRONIC QUESTIONNAIRE)

II. FOCUS GROUP DISCUSSION GUIDE

III. MOBILE PHONE

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Appendix II CONSENT FORM FOR PARTICIPATION IN THE RESEARCH.

RESEARCHER: ODONGO PAPPINE ODHIAMBO

REG. NUMBER: MPH/2023/39394

TITLE OF STUDY: ASSESSING THE PRE-EXPOSURE PROPHYLAXIS ADHERENCE AMONG HIV SERO-DISCORDANT COUPLES IN HOMABAY COUNTY REFERRAL HOSPITAL, KENYA.

INSTRUCTIONS

1. Keenly read the entire content of this form

2. Accordingly mark the boxes with a tick.

3. Kindly seek clarification for any question that is not clear.

4. Append your signature at the end of the form.

I understand the purpose of this study following the deep explanation by the researc ☐

I am aware that I will give information on my HIV status and answer questions to adherence to PrEP as a safer conception intervention among sero-discordant couples ☐

I understand that I am free to drop from this study at any point should it it becoming necessary. ☐

I understand that the information I will provide will be handled with privacy and I will remain anonymous in any writing or publication made from this study. ☐

Mount Kenya University

I am in agreement of the fact that this study will not attract any form of monetary or material compensation. ☐

Without any coercion I voluntarily offer my consent to give information on this study.

Researcher's Signature: …….

Date: …………………

Respondent's Signature: …….

Date: ……………………………

Thank you for your participation.

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Appendix III: QUESTIONNAIRE

These questions will form the guide the researcher will use for data collection in the interview:

Instructions:

Mark a tick in the box corresponding to the question, to show your answer i.e. [ ]

Respondent`s Unique Code……………………………………………

Section A: Socio-demographic data of the respondents

1. Age of respondents (years)

   a) 20-29[ ]
   b) 30-34[ ]
   c) 35-40[ ]
   d) 41- 46 [ ]

2. Occupation of respondents

   a) Employed [ ]
   b) Self-employed [ ]
   c) Unemployed [ ]

3. Level of Education

   a) Primary level [ ]
   b) Secondary level [ ]
   c) Tertiary level [ ]

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SECTION B: Level of knowledge on Pre-exposure prophylaxis as a safe conception option

6. Are you aware of pre-exposure prophylaxis (PrEP) ? Yes [ ] No [ ]

7. For how long have you used PrEP (in terms of years)?

    a) <1 [ ]
    b) 1-5 [ ]
    c) 6-10 [ ]
    d) > 10 [ ]

8. Do you use PrEP daily? Yes [ ] No [ ] , If No, Why?...

9. What other safe conception options do you know?...................

10. Which of the safe conception options do you prefer the most? ....

11. How can you rate your preference for PrEP in a scale of 1-10?......,...

SECTION C: Healthcare provider related barriers that affect PrEP adherence.

12. Was the healthcare provider willing to prescribe PrEP to you? Yes [ ] No [ ]

13. Were you referred by the first provider to be attended to by another provider? Yes [ ] No [ ]

14. Did the healthcare provider explain to you what PrEP is and how to use it? Yes [ ] No [ ]

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SECTION D: PrEP adherence status.

15. Are you aware of the HIV status of your partner? Yes [ ] No [ ]

16. Who in your couple relation is the seropositive partner?

a) Male [ ]

b) Female [ ]

QUALITATIVE QUESTION GUIDES FOR TAPE RECORDING DURING FOCUS GROUP DISCUSSION

1. Are you aware of pre-exposure prophylaxis (PrEP)? If, yes, what is it?...
2. When are you supposed to take PrEP? Why?
3. Do you use PrEP every time you are exposed to HIV? If not, why?
4. What is your take on the safety of PrEP as a safe conception intervention?
5. From your own observation, was the healthcare provider willing to prescribe PrEP to you? If NO, was he/she bias while attending to you? Explain your answer.
6. Were you tiptoed from one attendant to the other while seeking PrEP prescription? If yes, which reasons were you given?
7. From your own observation, was the provider adequately aware of the PrEP usage, dosage and side effects? Did he/she explain them to you before use?

THANK YOU

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Appendix IV: MOUNT KENYA UNIVERSITY ETHICS REVIEW

CERTIFICATE

REF: **MKU/ISERC/3743** Date: 30 May 2024

TO: **ODONGO PAPPINE ODHIAMBO**

REG: **MPH/2023/39394**

Dear Sir/Madam,

RE: ASSESSING THE PRE-EXPOSURE PROPHYLAXIS ADHERENCE AMONG HIV SERO-DISCORDANT COUPLES IN HOMABAY COUNTY.

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2787.** The approval period is **30/05/2024 - 29/05/2025.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

The Chairman
Mount Kenya University
Ethics Review Committee

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

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Appendix V: INTRODUCTION LETTER TO NACOSTI

DIRECTORATE OF GRADUATE STUDIES

MPH/2023/39394

30th May, 2024

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki, Upper Kabete
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: ODONGO PAPPINE ODHIAMBO – REGISTRATION NO. MPH/2023/39394

The purpose of this letter is to introduce the above named student who is pursuing **Master of Public Health** in the department of **Community Health, Epidemiology and Biostatistics** in the school of **Public Health.**

The title of the research is **"Assessing the Pre-Exposure Prophylaxis Adherence among HIV Sero-Discordant Couples in Homabay County."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **June, 2024 and August, 2024.**

Any assistance accorded to the student will be highly appreciated.

Thank you

Mount Kenya University
P.O. Box 342-01000, THIKA
Office of the Director
Graduate Studies

Dr. Samuel M. Karenga, Ph.D
Director, Graduate Studies
Enc.

Main Campus, General Kago Road, P.O. Box 342-01000 Thika. Tel: +254 67 2820 000,
Cell: +254 720 790 796, 0709 153 000
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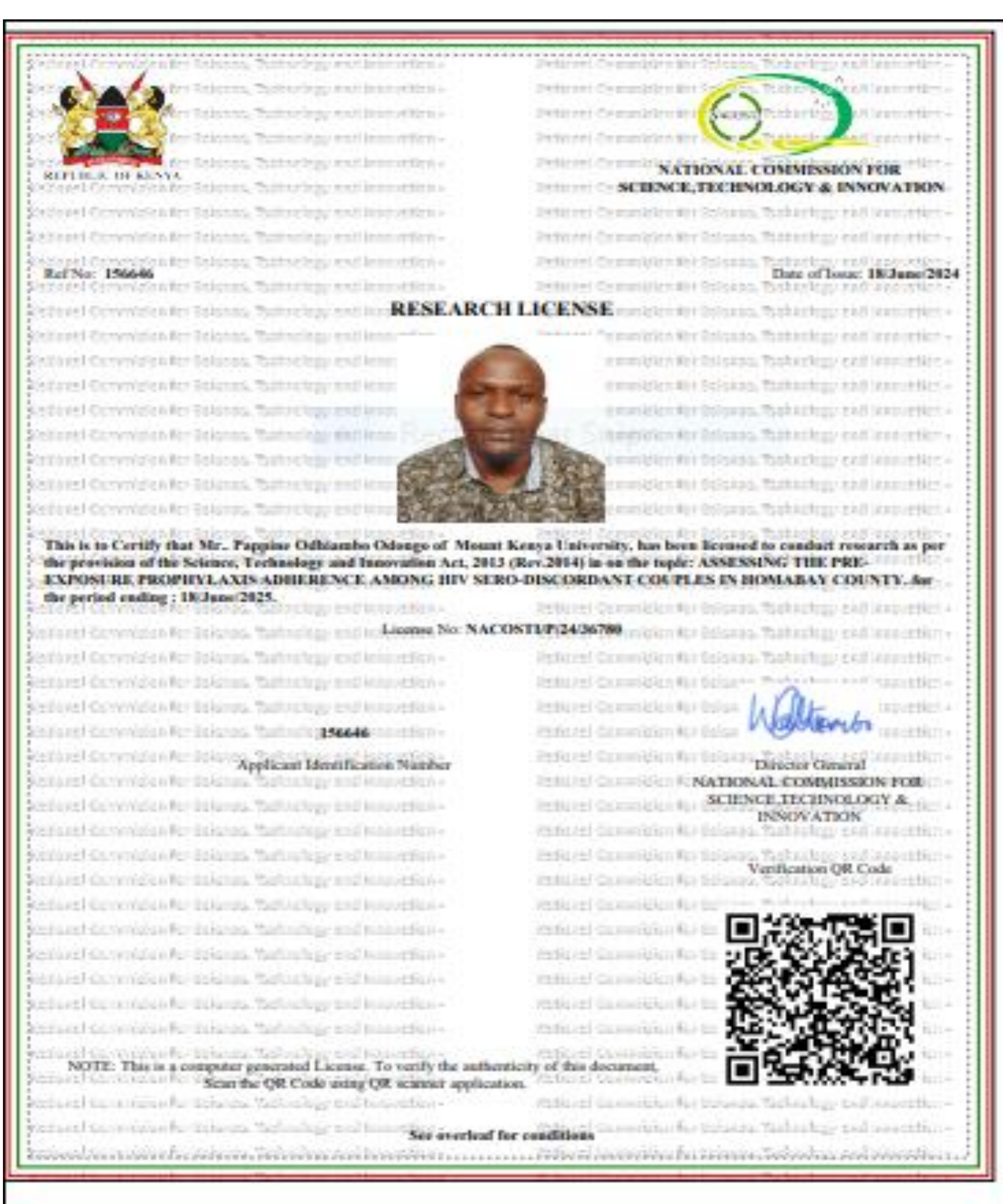
Appendix VI: RESEARCH PERMIT BY NACOSTI



REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 156646

Date of Issue: 18/June/2024

RESEARCH LICENSE

This is to Certify that Mr.. Pappine Odhiambo Odongo of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in on the topic: ASSESSING THE PRE-EXPOSURE PROPHYLAXIS ADHERENCE AMONG HIV SERO-DISCORDANT COUPLES IN HOMABAY COUNTY. for the period ending : 18/June/2025.

License No: NACOSTI/P/24/36780

156646

Applicant Identification Number

Director General

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Appendix VII: FIELD ENTRY AUTHORIZATION LETTER I

DEPARTMENT OF HEALTH SERVICES

Telegrams: "MOH" Homa Bay
TELEPHONE: 21039
When replying please quote
director.health@homabay.go.ke

OFFICE OF THE DIRECTOR
HOMA BAY COUNTY
P.O. BOX 52
HOMA-BAY

REF: MOH/RA/VOL.VI (62)

19th June 2024

Odongo Pappine Odhiambo
REG. MPH/2023/39394

RE: AUTHORITY TO COLLECT DATA

Your request to conduct a research study entitiled: **"Assessing the Pre-Exposure Prophylaxis Adherence Among HIV Sero-Discordant Couples in Homa Bay County Referral Hospital"**, has been granted for the period ending 18th June 2025.

You will be required to adhere to the hospital's norms and regulations, and you are expected to communicate your findings to the Directors' Office at the end of the research period.

Wish you all the best in your studies.

Dr. Gordon Okomo
County Director of Health Services
HOMA BAY

DEPARTMENT OF HEALTH SERVICES,
COUNTY DIRECTOR OF HEALTH
19 JUN 2024
P. O. BOX 52 - 4300, HOMA BAY - KENYA

Appendix VIII: FIELD ENTRY AUTHORIZATION LETTER II

COUNTY GOVERNMENT OF HOMA BAY
OFFICE OF THE CHIEF EXECUTIVE OFFICER
HOMA BAY TEACHING AND REFERRAL HOSPITAL
P.O BOX 52 - 40300, HOMA BAY
Email: homabayctrh@gmail.com

DHS/HBCTRH/GEN/CORR/VOL.1 (225) 19th June 2024

Your ref: Odongo Pappine Odhiambo .
REG. MPH/2023/39394.

To whom it may concern

RE: AUTHORITY TO COLLECT DATA.

Your request to conduct a research study entitled; **Asessing the Pre-Exposure Prophylaxis Adherence Among HIV Sero-Discordant Couples in Homabay County Referral hospital** has been granted for the period ending 18th June 2025.

You will be required to adhere to hospital's norms and regulation, and you are expected to communicate you findings to the Director's office at the end of research period.

Wish you all the best in your studies.

HOMA BAY TEACHING AND REFERRAL HOSPITAL
OFFICE OF THE C.E.O.
19 JUN 2024

DR. STEPHEN OKELLO
CHIEF EXECUTIVE OFFICER
HOMABAY CTRH

Appendix IX: TURNITIN REPORT

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by Pappine Odongo

Submission date: 31-Jan-2024 05:06AM (UTC+0300)
Submission ID: 2282540231
File name: Pappine_Odongo-_Final_reviewed_Thesis_Proposal..docx (195.52K)
Word count: 10634
Character count: 59419

Mount

ASSESSING THE PRE-EXPOSURE PROPHYLAXIS ADHERENCE AS A SAFER CONCEPTION INTERVENTION AMONG HIV-SERODISCORDANT COUPLES IN MIGORI COUNTY REFERRAL HOSPITAL, KENYA.

BY

ODONGO PAPPINE ODHIAMBO

MPH/2023/39394

A RESEARCH PROPOSAL SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE IN EPIDEMIOLOGY AND DISEASE CONTROL OF MOUNT KENYA UNIVERSITY

JANUARY, 2024

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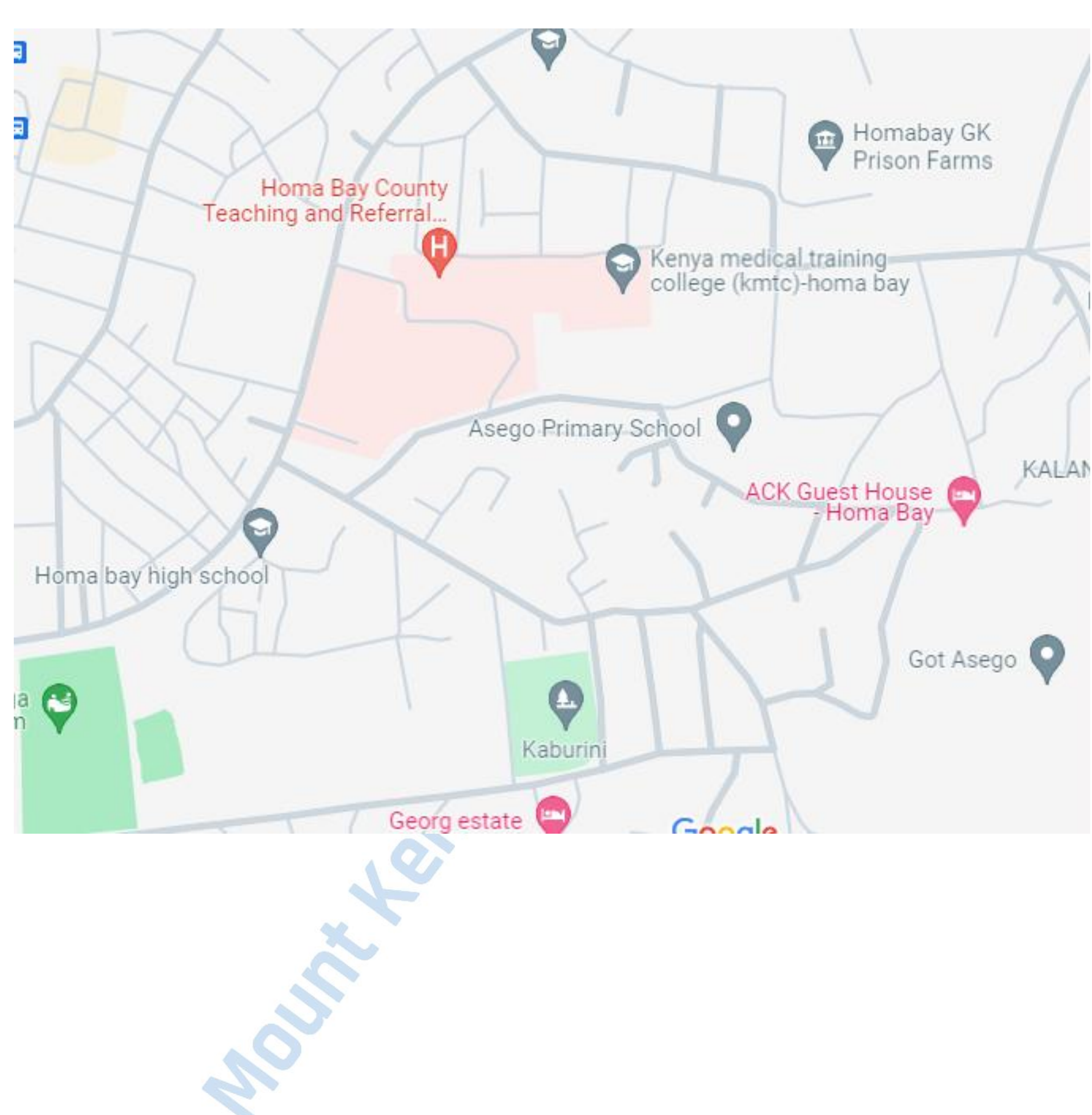
9	"Encyclopedia of AIDS", Springer Science and Business Media LLC, 2018	Publication	1%

Appendix X: MAP OF HOMABAY COUNTY REFERRAL HOSPITAL



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