

**PREVALENCE OF HUMAN IMMUNODEFICIENCY VIRUS INFECTION (HIV)
AMONG PATIENTS AT THE MATHARI NATIONAL TEACHING AND
REFERRAL HOSPITAL**

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DECLARATION

I, Arthur Rubia declare that this Dissertation is my original work and that it has not been presented for any award in any institution of higher learning.

Signed.....

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DEDICATION

This Dissertation is dedicated to my Family with whose support I have been able to accomplish the research.

To the Mathare National teaching and Referral Hospital patients may you know you are not a forgotten lot, we think of you always despite being a vulnerable population.

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ACRONYMS & ABBREVIATIONS

ART:	Antiretroviral Therapy
HIV:	Human Immune Deficiency Virus
KNH:	Kenyatta National Hospital
MOH:	Ministry of Health
NACC:	National AIDS Control Council
OCD:	Obsessive-Compulsive Disorder
PEP:	Post Exposure Prophylaxis
STIs:	Sexually Transmitted Infections
SPSS:	Statistical Package for Social Sciences
VCT:	Voluntary Counselling and Testing
WHO:	World Health Organization

DEFINITION OF TERMS

Mental Illness:	the development of persistent psychiatric symptoms which disrupt an individual's ability to properly function in their daily lives
Stigmatization:	the act of being disapproved and treated unfairly
Substance use disorders:	it is a condition that is attributed to the use and abuse of alcohol and other substances that leads to health complications

ABSTRACT

Background

Mental health still remains a major concern in relation to the management of HIV infection. Little effort has been employed in ensuring the proper management of serious mental illness and in the management of HIV among these patients.

Objectives

The objectives of the study was to determine the prevalence of HIV, to establish the factors that are associated with the infection of HIV and to assess the association between mental illness and HIV infection among patients in Mathari National Teaching and Referral Hospital.

Methodology

This study employed a descriptive cross-sectional study and the study population was comprised of patients of Mathari hospital who have a mental illness. Probability stratified sampling was used in the selection of respondents and Fischer's formula was used in the calculation of the sample size of the respondents. A semi-structured questionnaire was used in the collection of information from the respondents. Descriptive analysis was conducted through the use mean, percentages and frequencies. The inferential analysis was conducted through the use of Pearson correlation and regression analysis to check for associations between the variables. The level of statistical significance was set at $p < 0.05$. Data was then be presented by the use of frequency distribution tables, graphs and charts.

Significance

The study helps capture the prevalence of HIV among individuals with mental illness which will be instrumental in capturing the extent of the problem. This information will in turn help in the development of strategies to help in the management of HIV among individuals in this population.

Findings

A prevalence of 8.3% was captured from the study which captured a total of 385 respondents. Binary Logistic Regression revealed that occupation (OR= 3.30 CI=1.58-6.89; $P=0.001$), gender (OR=5.06, CI=2.32-11.05; $p < 0.001$), Knowledge of partners HIV status (OR=3.57, CI=1.47-8.63; $p=0.005$), Use condoms when having sex (OR=3.32, CI=1.54-7.19; $p=0.002$) and Social support (OR=5.78, CI=2.04-16.33; $P=0.001$) were associated with HIV status. In multivariate analysis only gender (AOR= 3.50, CI=1.38-8.84, $p=0.008$) was significant. There was no association between HIV status and mental illness.

CHAPTER ONE

INTRODUCTION

Vulnerable populations, most especially individuals with mental illness are among the most neglected populations in the society. Individuals with mental with mental illness lack the capability of caring for themselves as such they are prone to various health risks. These individuals are at risk and are prone to acquire Human Immune deficiency Virus.

1.1. Back ground of the Study

1.1.1. Prevalence of HIV and Mental illness

According to World Health Organization (2018), Human Immune deficiency Virus (HIV) still remains as one of the most pressing public health concerns due in the world. The report posits as of the year 2017, there were at least 36.9 million individuals who were living with the virus from which 940, 000 people died as a result of HIV related illnesses. UNAIDS (2018) also posits that only 75% of all individuals living with HIV in the same year were aware of their HIV status with remaining 25% (at least 9 million people) being in need of HIV testing services as it is crucial in the prevention against the management of the virus. HIV is also associated with mental illness from which at least 25 % of the world's population suffers from and 75% of these individuals do not have access to health services (Atwoli et al., 2017).

Africa is the most affected region with HIV which translates to a total of 25.7 million people in the region currently living with the virus. The region also accounts for at least two-thirds of all new cases of HIV infection in the world (WHO, 2018). According to Kharsany & Karim (2016), two out of three new HIV infections occur in Africa with the main mode of HIV transmission being through heterosexual sex. Iheanacho et al., (2016) also noted that the burden of HIV among individuals with mental illness in Nigeria is attributed to stigmatization and myths which limit these individuals from seeking health services.

The Prevalence of HIV in Kenya is recorded at 4.9% which captures a total of 184,718 individuals with women being most affected compared to men (Kimani, 2013). Additionally, there are at least 52,800 new infections across all ages in the country

(NACC, 2018). A study conducted by Kimanga *et al.*, (2016) also revealed a number of contributing factors associated with the prevalence of HIV which include condom usage with the last partner, women in the age of 35-39 years and individuals who reside in Nairobi and Nyanza.

1.2. Problem Statement

HIV is still among the leading causes of mortality and morbidity in the world and extensive studies have been conducted in relation to its prevalence and incidence to the general population (Mainville *et al.*, 2017). However, there are limited studies in relation to the prevalence of HIV among individuals with mental illnesses (Bauer-Staeb *et al.*, 2017). Globally, 25% of the world's population suffers from mental illness and 75% have limited access to health services despite them having substance use disorders and being affected by HIV

However, according to a study conducted by Hughes *et al.*, (2016) individuals with mental illness are at high risk of contracting HIV as a result of poor sexual behaviours and blood-borne viral infections which contributed to a prevalence of 6%. Additionally, Robinson *et al.*, (2016) note that these individuals are at high risk of HIV due to their constant reliance on substances and their constant lack of negotiation especially among users of injected drugs. Bauer-Staeb *et al.*, (2017) posits that individuals with mental illness are at high-risk blood-borne viruses like HIV which was associated with a prevalence of 0.24%. Another study conducted across various ethnicities in the world revealed that women with mental illness are more likely to be associated with antisocial behaviours, substance abuse and HIV risk behaviours (Mainville *et al.*, 2017).

There are minimal studies which have focused on the association of mental illness and the prevalence of HIV transmission in Africa. However, a study conducted in Botswana revealed that the prevalence of HIV among patients with mental illness to be 53% among females and 19% among males (Opondo *et al.*, 2018). Another study in Nigeria revealed that the prevalence of HIV among individuals with mental illness is because they lack access to health services and mental illness is associated with nuisance and possession by evil spirits which leads to stigmatization (Iheanacho *et al.*, 2016).

In Kenya, Kako *et al.*, (2016) also found that the morbidity rates of women with mental illness are high due to low levels of coping abilities and limited access to health services. There are limited studies however which relate to the prevalence of HIV among individuals with mental illness as such this study will be instrumental in determining the prevalence and relationship between mental illness and HIV among patients at the Mathari National Teaching and Referral Hospital.

1.3. Justification of the Study

Mental illness disables an individual's ability to function effectively in their everyday life. This is because these disorders alter an individual's mood, thoughts and behaviours which causes difficulty in thinking or keeping attention. In the DSM V, mental illness is associated with the causation of alterations in behavioural and psychological health resulting in distress and disability (APA, 2013). These individuals, therefore, have impaired judgment as such their ability to ensure proper self-care practices is also limited. Additionally, people suffering from mental illness are among the most vulnerable populations in the world largely due to their reliance on drugs, inability to access condom and other prevention strategies within the health facilities. It is also critical to note that the transmission of HIV among people with mental illness are often overlooked despite the extent of this disorder increases in the world.

1.4. Objectives of the Study

1.4.1. General Objective

The main purpose of the study was to determine the prevalence of Human Immunodeficiency Virus infection (HIV) among patients at the Mathari National Teaching and Referral Hospital.

1.4.2. Specific Objectives

- 1) To determine the prevalence of HIV among patients at the Mathari National Teaching and Referral Hospital
- 2) To establish the factors that are associated with the infection of HIV among patients in Mathari National Teaching and Referral Hospital

- 3) To assess the association between mental illness and HIV infection among patients in Mathari National Teaching and Referral Hospital

1.5. Significance of the Study

This study will help capture the prevalence of HIV among individuals with mental illness which will be instrumental in capturing the extent of the problem. This information will in turn help in the development of strategies to help in the management of HIV among individuals in this population.

1.6. Limitations to the Study

The study will mainly be conducted in Mathari National Teaching and referral hospital as such the findings cannot be generalized to other regions as it mainly captures patients admitted in the facility. Mathari National Teaching and referral hospital mainly caters for patients who are close to Nairobi as such mental health illness among patients in other parts of the country is limited.

1.7. Conceptual Framework

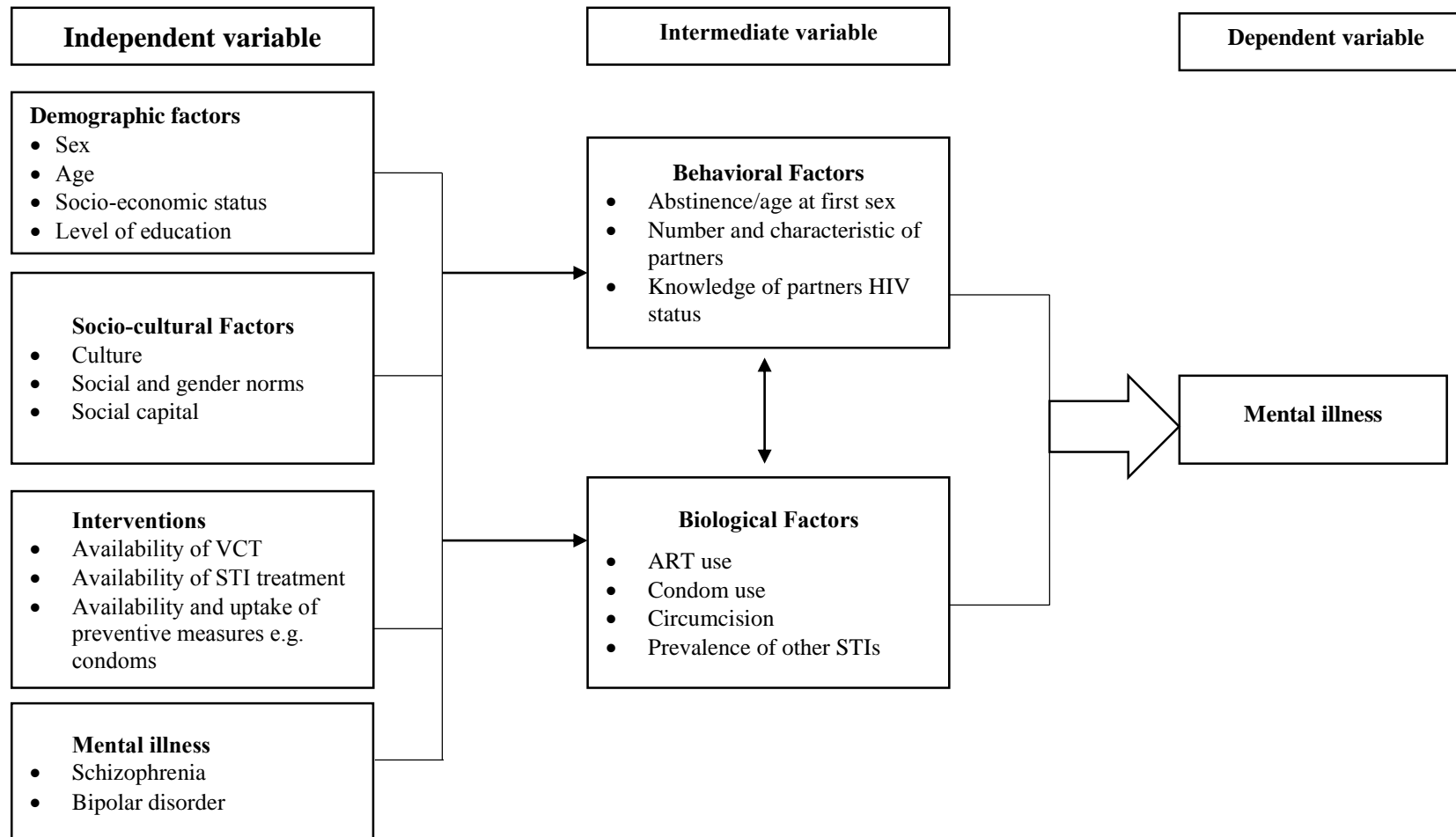


Figure 1.1: Conceptual Framework

Source: Researcher

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This section introduces aspects of the aetiology of HIV and a description of the aetiology of HIV among individuals with mental illness. It also describes the types of mental illness and literature and the prevalence of HIV infection among individuals with mental illness.

2.2. Aetiology of HIV

The Human Immuno-deficiency Virus can be described as a virus which affects the human immune system which makes the body vulnerable to various infections and causes lack of immunity (Hughes et al., 2016). The suppressed immunity forces the body to be reliant on a boost to improve the immunity of the body (Kimani, 2013) The virus penetrates into the body through the contact with the blood and through the mucous membrane. The cluster differential 4 (CD4) are the white blood cells which are mostly attacked and destroyed by the virus and while inside the cell, it continues to reproduce other viruses that eventually leads to the destruction of the host of the cell. The destruction of the CD4 cells is mostly associated with the number of human immune-deficiency viruses that are introduced in the body.

The total number of CD4 cells that are considered a normal range is 400-1800/ml³ of the blood volume. An adult is diagnosed with HIV if the CD4 cells fall between 200/ml³ of the blood. HIV, in turn, results in the development of acquired immune-deficiency Syndrome (AIDS).

2.3. Aetiology of HIV among People with Mental illness

Psychiatric disorders like mental illness are increasingly becoming a major concern due to their association with the transmission of HIV. Mental illnesses are usually associated with the development of persistent psychiatric symptoms which disrupt an individual's ability to properly function in their daily lives. Additionally, despite these disorder having a significant association with HIV infection, there is no existent

program which has been developed to help in detection and prevention of HIV among individuals with mental illness (MDMH, 2011).

Sufferers of mental illness are among the most vulnerable populations in every society especially in relation to the transmission of HIV. This is largely attributed to the fact that these individuals are highly likely to use harmful substances which impair their decision-making processes and may lead to the HIV infection. Additionally, these individuals also have poor sexual behaviours e.g. poor utilization of condoms, being engaged in commercial sex, have poor knowledge in relation to the HIV status of their partners, have multiple partners, utilize injection drugs etc. (Hughes et al., 2016).

There are also other factors which can lead to the HIV transmission among SMI sufferers which are largely environmental. These circumstances increase the risk of acquiring HIV among people with mental illness. A majority of these individuals are institutionalized in facilities (also characterised by the unavailability of condoms) or residing in areas where HIV is prevalent. Poverty also forces these people to engage in sex in exchange for food, shelter and other favours. Lastly, these individuals are subjected to intense levels of stigma which alongside poverty renders the person incapable of seeking medical treatment (Cabassa, 2017).

2.4. Mental illness

Mental illness refers to a wide range of mental complications which affect an individual's ability to properly function in their everyday life. These disorders usually affect the individual's mood, thoughts and behaviour. Patients of mental illness usually experience difficulty in thinking, issues associated with attention, difficulties in sleeping and extreme emotional highs and lows (Cabassa, 2017).

NIMH (2018) defines mental illness as the development of brain disorders which cause alterations in behaviour and emotions. The onset of mental illness can be from childhood however, the diagnosis of these cases can only be made when an individual is older as such initiating early treatment is a concern. According to APA (2013), mental illnesses are patterns that are either behavioural or psychological which are usually associated with distress or disability and can result in intense suffering, pain and loss of freedom. Individuals who are 18 years and older who either currently or any period

in the last year experienced mental, behavioural or emotional disorder can be characterized as having a mental illness (NIMH, 2018).

Table 2.1: Mental illness Criteria

Area	Description
Feeling, Mood, and Affect	This is characterized by disruptive uncontrolled emotions that are associated with mood changes.
Thinking	The individual experience serious concerns in concentration which causes interference in their daily life as a result of impaired thinking. It is also associated with delusions and hallucinations.
Family	This is associated with disruptions in family relationships as the family unit is considered dysfunctional and all existing relationships are psychologically devastated.
Interpersonal	The individual experience serious inability when trying to make or maintain friends or have a personal support system. They also lack close friends and they are not affiliated with any social groups.
Role Performance	A frequent inability to meet usual expectations and they are also unable to gain and maintain employment. These individuals are also unable to conduct household chores
Socio-legal	An inability to adhere to stipulated laws or prescriptions and a complete disregard for safety and constant involvement with law enforcement.
Self-Care/Basic Needs	An inability to provide basic needs and they require assistance in obtaining them. These individuals also experience difficulty in maintaining their hygiene, diet and food preparation.

2.4.1. Types of Mental illness

2.4.1.1.Schizophrenia

Schizophrenia is a brain disease that is associated which mainly affects an individual's thoughts and behaviours. Untreated schizophrenia can result in the causation of distortion of reality and the individual is likely to develop to auditory and visual hallucinations. These individuals are also withdrawn and behave inappropriately in such circumstances. At least one in a hundred people have schizophrenia (APA, 2013)

Table 2.2: Features of Schizophrenia

- The occurrence of delusions and hallucinations during the active phase
 - Deteriorated level of functioning at work, in self-care and in maintaining social relations
 - The onset of the disease is usually before 45 years of age usually during adolescence or early childhood
 - The disease must be present for at least 6 months
-

There are also five types of Schizophrenia which also have different symptoms as presented in Table 2.3.

Table 2.3: Types and Symptoms of Schizophrenia

1) Paranoid Schizophrenia	<ul style="list-style-type: none">• This is characterized by anxiousness, anger and cautious behaviour in which an individual falsely believes that people close to them (family included) are trying to harm them.
3. Disorganized Schizophrenia	<ul style="list-style-type: none">• The individual's experiences difficulty in thinking and clearly expressing ideas. They also have childlike behaviours and have little emotion.
4. Catatonic Schizophrenia	<ul style="list-style-type: none">• This type of schizophrenia is associated with unrest and the individuals are also underactive. They also present various odd facial expressions and are unreceptive to other individuals.
5. Undifferentiated Schizophrenia	<ul style="list-style-type: none">• Individuals with one or more features from other types of schizophrenia
6. Residual Schizophrenia	<ul style="list-style-type: none">• These individuals experience some symptom which is not necessarily similar to that of a full-blown schizophrenic episode

2.4.1.2. Bipolar Disorder

This type of mental illness is also known as a bipolar affective disorder and it is associated with constant mood changes which can be severe (mania) or can lead to the causation of depression. In essence, these episodes are usually either manic or depressive with mood changes which occur between various episodes and they occur within hours or days. Manic episodes are usually associated with overly talkative, lack

of appetite, irritation and anger and false ideas. The individual is also likely to be engaged in risk-taking behaviours which if untreated it progresses to the causation of psychotic delusions and hallucinations (NIMH, 2018).

Individuals with Bipolar disorder also have low mood and experience difficulty in concentrating, they are demotivated and feel worthless and hopeless. The cause of this disorder is relatively unknown however, it mainly occurs among relatives and it is often diagnosed at the ages of 15-25 (APA, 2013). According to a study conducted by Casaletto, Kwan, Montoya, & Obermeit, (2016) both HIV infection and bipolar disorder are associated with emotional regulation and neurocognitive impairment factors which are also linked to antiretroviral non-adherence.

2.4.1.3. Obsessive-Compulsive Disorder (OCD)

The obsessive-compulsive disorder usually occurs during childhood is usually characterized by repeated, unwanted thoughts which are largely difficult to control and are associated with ritualized behaviour. This disorder is associated with obsessions which result in distress and are largely time-consuming. It is also associated with an increased need for perfectionism and control (NIMH, 2018). According to Cassin, Rector, & Riskind, (2018) the obsessions and compulsions associated with the disorder are time-consuming (occupying at least 1 hour per day) and they may result from distress and functional impairment. They are also persistent thoughts and ideas and ritualistic tendencies which are aggressive in nature which is usually performed in order to neutralize particular anxiety or to prevent a feared event e.g. exposure to germs or disease (Cassin et al., 2018). Individuals with obsessive-compulsive disorder are usually affected with death anxiety issues which forces them to associate fatal and chronic diseases like HIV with death, in turn, altering their behavioural responses (Menzies et al., 2015).

2.4.1.4. Panic Disorder

This disorder is mostly associated with the occurrence of panic attacks and feelings of terror which are random and recurrent. This, in turn, leads to the causation of chest pains, shortness of breath, fear of dying, abdominal discomfort among others. However, these panic disorders can occur as a result of medical complications like

hyperthyroidism and cardiac concerns (NIMH, 2018). The sufferers of this disorder, however, have a constant fear that they will experience recurrent episodes of panic attacks which forces them to avoid situations that lead to these occurrences (Milrod & Chambless, 2016). A study conducted to determine the association between age, psychological disorder and HIV captured no significant association between age and HIV however there was a significant association between HIV infection and higher rates (mainly 12 months or lifetime) of panic disorder (Brandt et al., 2016). Another study conducted among patients living with HIV who were receiving treatment revealed that a majority of the patients were heavy users of alcohol and illicit drugs and at least 75% of the patients reported full symptoms of panic disorder (DiPRete et al., 2019).

2.4.1.5. Posttraumatic Stress Disorder (PTSD)

This disorder is usually attributed to experiencing terrible or traumatic incidents especially among individuals who include survivors of accidents, victims of abuse and rape and natural disasters. The major symptoms of post-traumatic stress disorder are usually associated with depression, hypervigilance, memory loss, frequent flashbacks and eating disorders (NIMH, 2018). According to a study conducted by Neigh, Rhodes, Valdez, & Jovanovic, (2016) there is an elevated occurrence of stress-related disorders like post-traumatic disorders especially among people living with HIV. Another study also revealed that the level of post-traumatic stress was higher among women who were involved in intimate partner violence which also contributed to an increase in the level of HIV infection (Hansrod et al., 2016). According to Sinayobye, Hoover, Shi, & Mutimura, (2015) post-traumatic stress was associated with an increase in HIV severity and shingles which is therefore linked to immune compromise. A study conducted in the United States also revealed that most patients who are affected with post-traumatic disorder at least 50% of do not seek consistent medical care (Douaihy et al., 2017) Substance-related disorder

According to DSM V, substance-related disorders are mainly associated with the misuse of 10 classes of drugs which include tobacco, alcohol, caffeine, cannabis, hallucinogens, opioids and other psychoactive substances. Substance-related disorders are not equally spread across populations as people have different levels of self-control that make them vulnerable to these conditions (APA, 2013). There are two groups of

substance-related disorders which include substance use disorders and substance-induced disorders. Substance use disorder is associated with the continued use of substances despite experiencing problems as a result. The substance-induced disorder is associated with intoxication, withdrawal and other substances which are captured alongside substance use disorders (NIMH, 2018). A study conducted in the United States revealed that substance use disorders were linked to higher prevalence of HIV especially in urban HIV care centres with drugs like marijuana (31%), alcohol (19%), methamphetamine (13%), cocaine (11%) and Opiates (4%) (Hartzler et al., 2017). HIV infection is also associated with exposure to mental health disorders which are associated with substance use thus predisposing HIV positive patients to conditions which impair their overall quality of life (Pokhrel et al., 2017).

2.5. Factors Associated with HIV Infection

The transmission of HIV is largely attained through sexual intercourse, coming into contact with blood and through mother to child transmission. However, there are a number of factors which are also directly or indirectly associated with the development of HIV. These factors can be categorized into socio-demographic factors, socio-cultural factors, the availability of interventions, behavioural and biological factors.

2.5.1. Socio-Demographic factors

2.5.1.1. Age

Younger age is usually associated with an increased risk of HIV infection compared to older individuals. This is largely attributed to the fact that younger individuals engage in risky sexual behaviours and drug use all which are highly associated with the contraction of HIV. Another study also found out that women who were aged younger than 26 years old were likely to use condoms and seek HIV testing services (Fladseth *et al.*, 2015).

Another study conducted by Crawford (2018) revealed that most younger age is associated with an increased risk of substance use and abuse which can lead to the contraction of HIV. Similarly, a study conducted in Zimbabwe which aimed to determine the relationship between the age and HIV incidence revealed that study participants who had partners who were at least 5 years older were highly likely to

contract the virus. In essence, an increase in the partner's age is associated with an increased risk of getting HIV (Schaefer et al., 2017).

2.5.1.2. Sex

Gender plays a significant role in the transmission of HIV with one major concern being the exposure to risk. Women are at high risk of contracting HIV compared to men largely due to the amount of exposure to sexual risks. Additionally, there are more female sex workers compared to males which therefore depicts that more females are at risk of HIV compared to males. Additionally, more women have higher chances of seeking HIV testing services which are critical in the diagnosis and prevention of HIV compared to men.

Fleming et al., (2016) also found out that poor HIV related behaviours are more common among men due to masculine norms which are associated with uncontrollable sex drive, a need to perform and power mover other sexual partners. However, a study conducted by (Treves-Kagan et al., (2017) men tested less frequently for HIV and were likely to report higher cases of anticipated stigma compared to women.

2.5.1.3. Socio-economic Status

An individual's socioeconomic status can also contribute to HIV infection as it plays a critical role in the access of ART, drug abuse and in the use of HIV prevention interventions. Individuals with low economic status are highly likely to engage in risky sexual behaviours like engaging in commercial sex and or drug abuse which is associated with the sharing of needles that may lead to contraction of HIV. An individual's socioeconomic status also provides a higher burden to the individual as it is associated with a burden in seeking medication which can also act as a barrier in HIV prevention methods (Bunyasi & Coetzee, 2017). Another study also found that an individual's socioeconomic status is significantly associated with adherence to ART among individuals who are infected with HIV (Siefried et al., 2017). Another study also noted individuals with low socioeconomic status who also consumed alcohol were highly likely to test positive for HIV (Probst et al., 2017). Similarly, a study conducted in the United States noted that socio-economic deprivation was associated with a higher level of HIV diagnosis (Ransome et al., 2017).

2.5.1.4. Level of Education

Individuals with low education are at high risk of developing HIV compared to individuals with a high level of education. This is largely attributed to the fact that individuals with low levels of knowledge depict low levels of knowledge in relation to the transmission and prevention of the virus. Mutumba et al., (2016) also found that individuals who were found that people with low levels of education faced difficulty in adhering to anti-retroviral therapy which was also associated with high levels of psychological distress. Another study also found that people who are currently living with HIV and have lower levels of education had the worst responses to antiretroviral therapy (Amo et al., 2017). A study conducted by Aggleton et al., (2018) noted that the development of sex and sexuality education was critical in the provision of information to exposed individuals and it increases their life skills that would help limit the exposure to HIV.

2.5.2. Socio-Cultural Factors

2.5.2.1. Culture

There are cultures which limit from earning money or owning property which in turn forces them to seek other intervention that would act as a source of income e.g. engaging in commercial sex (Amin, 2015). Culture can also be linked to stigmatization which can influence the uptake VCT services among individuals who are unaware of their health status (Chesang et al., 2017). A study conducted in Lesotho revealed that women are more likely to be infected with HIV due to gender biases that are linked to culture (Belle, 2019). A similar study conducted in Russia among immigrants in Russia revealed that migrant women had a less likelihood in engaging in sexual behaviour however, they were also less able to negotiate safer sex with their partners contrary to the local women. The study also revealed that migrant women were less worried about HIV infection compared to local women (Agadjanian & Zotova, 2019).

Tran, Phan, Latkin, & Nguyen, (2019) notes that culture is associated with an increase in the level of stigmatization and discrimination which are two of the biggest challenges for people living with HIV/AIDS. Another study conducted in Zambia revealed culture

has limited the extent of HIV testing which was attributed to misconceptions on HIV testing, discrimination and stigma (Qiao et al., 2018).

2.5.2.2.Social and Gender Norms

These concerns are usually prevalent in African countries which believes that women have a lower status in a family setting and as such, they cannot offer any suggestions for safer sex with their male counterparts despite them being aware of the associated risks of HIV infection. Low participation of women also contributes to reduced privileges in relation to decision making especially on sexuality and ways and the time of having sex with their partners. According to Amin (2015) among the 50% of women who are living with HIV globally, most of them face issues in association with gender inequalities which renders them vulnerable to HIV. Another study also found out that men are likely to engage in HIV testing and management due to the role of masculinity that is embedded in societal norms (Fleming & Dworkin, 2016). Barman-Adhikhar *et al.*, (2017) also found that most individuals are likely to use condoms members if members of the peers also use condoms for the purpose of HIV prevention. Men are also more likely to be engaged in intimate partner violence as a result of their peer networks which increases their level of perpetration with an increase in reliance on traditions or inequity in the society (Mulawa et al., 2018).

2.5.2.3.Social Capital

The availability or access to a particular social network or members can offer a number of significant benefits to an individual especially in relation to the prevention of contraction of HIV and its management. In Peru, women who are transgender face a significant amount of problems in relation to seeking health care services that would help in the prevention of HIV. However, the increased utilization of social capital like community groups have proved instrumental in the provision of knowledge, peer-to-peer sharing and the provision of supportive clinical aid (Perez-Brumer et al., 2017). Another study also found out that social capital provides the needed social organization required in improving efforts which are directed towards the management of HIV however, this is dependent on an individual's area of residence (Ransome et al., 2017).

In relation to study conducted in the United States, social capital was found to be instrumental in the prediction in severe behavioural health outcomes and it was found to be important in the determination of prevention, transmission and associated outcomes of HIV in a population (Ransome et al., 2017). Another study which aimed to determine the relationship between social capital, HIV self-management and substance among women revealed that a majority of women who substance user have low social capital which is in turn associated with low HIV management (Webel et al., 2019).

2.5.2.4. Gender-based violence

Gender-based violence mainly affects women compared to men which render women them vulnerable to HIV infection contrary to their counterparts. Gender-based violence can be described as violence that is directed towards individuals as a result of their sex which can result in the causation of physical, sexual and psychological harm (Jewkes et al., 2015). There are some cultures in Africa which encourage certain forms of gender-based violence and /or sexual harassment towards women. In such instances, the women are raped, defiled, assaulted and circumcised all which are associated with the development of HIV infection (Amin, 2015). According to Schulkind *et al.*, (2016) also found out that women are more likely to negotiate safer among their clients contrary to their intimate partners. Another study which was conducted among 249 HIV positive women in Kazakhstan revealed a high prevalence of 52% and 30% for intimate partner violence and non-intimate partner violence which were HIV exposure (Jiwatram-Negron et al., 2018).

2.5.3. Availability of Interventions

2.5.3.1. Availability of VCT

Individuals with access to voluntary counselling and testing services are more likely to be engaged in proper sexual behaviour and improve their management HIV contrary to individuals who do not have access to these services (Shaver & Stephenson, 2016). Bibiana et al., (2018) also note that VCT services are instrumental in not only providing knowledge on HIV but also when in providing people with their HIV status. However, a study conducted Zambia found out that individuals who were apparently seen visiting

the VCT were later on subjected to stigma irrespective of their HIV status (Bond et al., 2019).

Another study conducted in Nigeria, however, revealed that the unavailability of VCT services is mainly associated with a limited level of knowledge and awareness on the presence of VCT clinics (Bibiana et al., 2018). According to a study conducted by Duflo, Dupas, Ginn, & Makana, (2019) an increased availability is significantly associated with increased access to HIV prevention strategies like the provision of male condoms which limit the risk of infection.

2.5.3.2. Availability of STI treatment

The availability of STI treatment has also proved to be instrumental in the management of HIV. This is largely attributed to the fact that most individuals report that these clinics not only offer proper information on proper sexual behaviour but they also provide condoms (Chesang *et al.*, 2017). Another study also found out that the incidence of sexually transmitted illness is associated with an incidence in HIV transmission as such the availability of STI treatment would be instrumental in the prevention and reduction of HIV incidence rates (Kelley et al., 2015). Another study conducted among HIV positive patients who also had STIs reported the availability of VCT and STI treatment were instrumental in the HIV diagnosis and management and the management of common STIs like urethral and vaginal discharge (Kilmarx et al., 2018).

2.5.3.3. Availability and uptake of preventive measures

There are HIV risk associated events or places which render various individuals vulnerable to the virus. This includes public events that are associated the consumption of alcohol and can lead to the consumption transmission of HIV as such the provision of condoms instrumental in the prevention of HI and STIs (Pitpan & Kalichman, 2016). Post-exposure prophylaxis is also instrumental in the prevention against HIV especially for individuals who are exposed to HIV (Makhado & Davhana-Maselesele, 2016).

According to a study conducted by Kilmarx et al., (2018) revealed that the increased uptake of VCT services was associated with an increased uptake of STI clinic services which was associated with the utilization of preventive measures like male condoms

which are provided in the clinics. Similarly, a study by Duflo et al., (2019) reveals that the availability and uptake of preventive measures of HIV are associated with a limited risk of infection to HIV and STIs.

2.5.4. Behavioural Factors

2.5.4.1. Abstinence/Age at First Sex

Abstinence is a preventive measure for HIV transmission can be critical in reducing the prevalence of the virus. In essence, abstinence helps in the prevention against various sexual risks and it can be reinforced through peer communication (Steiner et al., 2017). A study conducted in Uganda, however, revealed that young individuals engage in sexual activity despite their belief that contraceptives are ineffective and their fear of the consequences. The study also found that the student's age, gender and perceived sexual desires were associated with an increase in HIV risk vulnerability (de Haas et al., 2017).

According to a study conducted in a community in Uganda, the level of abstinence and fear of infection of HIV was affected through the availability of prevention methods like ART (Ofosu et al., 2018). A similar study conducted among adolescents revealed that an improvement in the level of knowledge attitude and practices towards HIV was associated were significantly linked to the level of condom use and abstinence (Brawner et al., 2019).

2.5.4.2. Number and Characteristic of partners

People with multiple partners are also at high risk of contracting HIV and sexually transmitted illness. These are largely attributed to the fact that a majority of these are unaware of their HIV status (Hoff *et al.*, 2016). According to Brawner et al., (2019) an increased level of knowledge was associated with a reduction of risky behaviours like having multiple sexual partners among the study population. Another study, however, found that men displayed higher chances of risky of behaviours and were expected to have a higher number of sexual partners (Brawner et al., 2018).

Women who also have violent partners are engaged in sexual encounters with non-intimate partners are highly exposed to the risk of HIV infection and/or STIs. This is

largely attributed to the inability of these women to negotiate safer sex (Schulkind et al., 2016). A study conducted in Canada which captured 719 respondents revealed that the number of partners was significantly linked with HIV risk factors which include unprotected sex, unknown HIV status of partners, attending group sex events, sharing sex toys, and exchange of sex for drugs and money (Armstrong et al., 2018).

2.5.4.3. Knowledge of Partners HIV status

In order to prevent the infection of HIV, it is critical that one is aware of their partners HIV status. This will not only be instrumental in improving the prevention of HIV infection but it also helps in reducing the spread of the virus (Amin, 2015). Knowledge of individual's health status also improves the sexual behaviours of the individuals in the relationship as it depicts care for their health (Makhado & Davhana-Maselesele, 2016).

A study conducted in Canada captured a significant association between the knowledge on partners HIV status and the engagement of risky sexual behaviours e.g. unprotected sex, attending group sex events, sharing sex toys, and exchange of sex for drugs and money (Armstrong et al., 2018). A similar study conducted in China revealed that a majority of the respondents rarely disclosed their HIV status to their partners which was associated with an increased risk for HIV (Tang et al., 2018).

2.5.5. Biological Factors

2.5.5.1. ART use

Individuals who are under antiretroviral therapy are positive for the virus and this helps in the proper management of the virus (Amin, 2015). Additionally, these individuals are more likely to engage in better sexual behaviours that are critical in the reduction of the prevalence of the virus (de Haas et al., 2017). A similar study conducted youth revealed that the introduction of ART was associated with a significant improvement in the quality of life of youth living with HIV/AIDS and limited occurrence of mental illness that is linked to HIV infection (Benton et al., 2019).

Additionally, the usage of pre-exposure prophylaxis (PrEP) has been found to be instrumental in the reduction of the risk of HIV infection especially among individuals

who are exposed to risky sexual encounters (Pyra et al., 2018). However, a study that focused on gender-based violence revealed that individuals who are exposed in this conditions are less likely to use or acquire antiretroviral treatment (ARTs) or pre-exposure prophylaxis (PrEP) that are instrumental in the management of HIV (Leddy et al., 2019).

2.5.5.2. Condom Use

One of the major effective methods of HIV prevention is the use of condoms which helps prevent sexual bodily fluids from coming into contact (Bauer-Staeb et al., 2017). However, one major problem associated with the use of condoms is that it is perceived to limit the amount of pleasure during sex and as such convincing the partners to where these devices is a major concern (Bond et al., 2019).

According to a study conducted by Ofofu et al., (2018) the usage of preventive measures like the condom was influenced by the extent of trust on an intimate partner. A similar study conducted in South Africa revealed that men mainly used condoms only in new relationships and this became inconstant with growth in the relationship thus contributing to the HIV incidence rate (Maenetje et al., 2019). Another study also found safer sex communication and the use of condoms with partners who are HIV positive to be critical in the reduction of the risk of the disease (Gause et al., 2018).

2.5.5.3. Circumcision

Circumcision has been deemed instrumental in the prevention of HIV as it lowers the associated risk of the virus. In essence, cutting the foreskin of a male individual is critical in lowering the risk associated with HIV (Bibiana et al., 2018). A study conducted in South Africa captured a significant relationship between medical male circumcision and a reduced risk for HIV infection. The study also revealed that in every three women two were aware of the significance of Medical male circumcision in the reduction of HIV transmission and also endorsed for these beliefs (Kalichman et al., 2018).

Another study also advocated for the for male circumcision especially among individuals aged 15-49 years in high-risk countries in the world which would be significant in reducing the prevalence of HIV (Lane et al., 2018). Similarly, a study by

Hosek & Pettifor, (2019) noted prevention strategies like oral PrEP, rapid HIV testing, behavioural interventions and male circumcision to be instrumental in the reduction of transmission of HIV.

2.5.5.4. Prevalence of other STIs

The prevalence of sexually transmitted illnesses is also associated with an increase in the occurrence of HIV (Kimanga et al., 2016). In order to prevent HIV, it is critical to prevent or reduce the overall trend of such diseases as they are mainly transmitted through having sexual contact with infected persons (Makhado & Davhana-Maselesele, 2016). The prevalence of STIs is also associated with a significant increase in the risk of HIV infection and this is usually linked to unprotected vaginal or anal sex, having multiple sexual partners in a period of 90 days and being under influence (El-Bassel et al., 2019). A retrospective study conducted among 109 respondents revealed that the prevalence of STIs increased with the usage of PrEP. This was associated with an increased incidence of chlamydia, syphilis, gonorrhoea and Hepatitis C which were linked to a high risk of HIV infection (Nguyen et al., 2018).

CHAPTER THREE

MATERIALS AND METHODS

3.1. Study Design

This study employed a descriptive cross-sectional study as the study was conducted over a specified period of time. This design is also instrumental in the capture findings over a specified time.

3.2. Study Area

The Mathari Hospital is one of the largest psychiatric health facilities in Kenya with a capacity of 675 patients. The health facility is located in Mathare, Nairobi and it admits patients with severe psychiatric disorders and other individuals who are considered disturbed.

3.3. Study Population

The study will mainly focus on patients of Mathari hospital who have a mental illness awaiting discharge

3.3.1 Inclusion criteria

- All patients with mental illness in Mathari Hospital
- All patients aged 18 years and above with mental illness in Mathari Hospital

3.3.2 Exclusion Criteria

- All patients who are ill and unable to partake in the study

3.4. Sampling Technique

Probability stratified sampling was used in the selection of respondents that was captured in the study. Samples of patients from different sections of the facility was included in the study.

3.5. Sample Size Determination

Fisher's formula (1998) was used to calculate the population size of the study.

$$n = \frac{Z^2 pq}{d^2}$$

Where :

(n)=the desired sample size

Z=the standard normal deviate that provides a 95% confidence interval of (1.96)

(p)=prevalence of mental illness (50% was assumed.)

(q)=1-p

(d)=absolute precision (error bound) (0.05)

Hence:

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384$$

3.6. Data Collection

A semi-structured questionnaire was used in the collection of information from the respondents. It will capture sections on socio-demographic factors, socio-cultural factors, availability of interventions, behavioural factors, biological factors and mental illness conditions. Two research assistants were recruited and trained to help in the collection of data.

3.7. Pre-testing

Pretesting was done to check on the length, content, wording and language used in the questionnaire. This study was conducted among 10 patients diagnosed with mental illness in Mbagathi sub-county hospital

3.7.1. Validity

The questionnaire was subdivided in accordance with the variables and objectives to ensure that the content is comprehensive and representative of the domains that were measured. In addition, referring to other research studies was essential in locating similar challenges in a similar context. Other suggestions were sought from the supervisors, and the changes were incorporated in the final document

3.7.2. Reliability

The Lee Cronbach alpha test was used to test for reliability in the questionnaires from the pilot study. A Cronbach Alpha of 0.7 and above is considered as an appropriate threshold. Poor reliability scores, therefore, demeans the precision of the questionnaire.

3.8. Data Collection Instruments

3.9. Data Analysis

Accuracy was ensured through checking the completed questionnaires before they are entered in SPSS software. Descriptive analysis was conducted through the use mean, percentages and frequencies. Inferential analysis was conducted through the use of Pearson correlation and regression analysis to check for associations between the variables. The level of statistical significance was set at $p < 0.05$. Data will then be presented by the use of frequency distribution tables, graphs and charts.

3.10. Ethical Consideration

Before conducting the research, approval was sought from the Institutional Research and Ethics Committee chairperson from the University of Nairobi. A declaration will also be utilized in ensuring that all data collection procedures ensure confidentiality of the respondent's information. The purpose of the study was explained to the respondents they will not be required to provide any forms of identity and they were allowed to withdraw from the study at any point as it is voluntary. All patient's relatives, family or caregivers were required to sign a consent before they take part in the study.

CHAPTER FOUR

RESULTS

4.1. Socio-demographic Characteristics of Respondents

A majority of the respondents were aged between 18-49 years (n=353, 91.7%) with a majority of them being male (n=256, 66.5%). All the respondents were heterosexual (n=285, 100.0%) with nearly four-fifths of the respondents being Christians (n=304, 79.8%). A majority of the respondents had completed primary (n=105, 27.3%) with a majority being employed/Self-employed (n=268, 69.6%) and nearly half of the respondents were married (n=184, 47.8%).

Table 4.1. Socio-demographic Characteristics of Respondents

Characteristic	Category	Frequency (n)	Percent (%)
Age	18-49 yrs	353	91.7
	50+ yrs	32	8.3
Gender	Male	256	66.5
	Female	129	33.5
Sexual Orientation	Heterosexual	385	100.0
Religion	Christian	304	79.8
	Muslim	71	18.6
	Traditionalist	6	1.6
Educational level	No formal education	21	5.5
	Primary incomplete	85	22.1
	Primary complete	105	27.3
	Secondary incomplete	60	15.6
	Secondary complete	86	22.4
	Tertiary	19	4.9
	University	8	2.1
Occupation	Unemployed/Housewife	117	30.4
	Employed/Self-employed	268	69.6
Marital Status	Married	184	47.8
	Divorced	67	17.4
	Single	89	23.1
	Separated	38	9.9
	Widowed	7	1.8

4.2. Respondent Sexual Behaviour

A majority of the respondents had their first sexual encounter at the age of 19-20 (n=257, 66.8%) with a majority of the respondents having had sex last 23 weeks ago (n=170, 44.2%). Nearly four-fifths of the respondents did not use condoms (n=307, 79.7%) the last time they had sex with a majority of the respondents having one partner (n=285, 74.0%). A majority of the respondents were unaware of their partners HIV status (n=345, 90.1%) with a majority of

the respondents not using condoms when having sex (n=319, 82.9%). A majority of their partners also claimed that they did not trust them especially when they insisted on using condoms (n=244, 63.7%) and a majority of the respondents had not suffered from any sexually transmitted illness (n=152, 39.5%).

Table 4.2. Respondent Sexual Behaviour

Characteristic	Category	n	%
Age at first sex	15-18	46	11.9
	19-20	257	66.8
	21 and 22	65	16.9
	23 and above	17	4.4
Last time you had sex	Less than a week	125	32.5
	2-3 weeks ago	170	44.2
	A month ago	42	10.9
	6 months ago	6	1.6
	More than 6 months ago	42	10.9
Did you use condoms the last time you had sex	Yes	78	20.3
	No	307	79.7
How many sexual partners do you have?	1 partner	285	74.0
	2 partners	71	18.4
	3 partners	29	7.5
Are you aware of your partners HIV status	Yes	38	9.9
	No	345	90.1
Do you use condoms when having sex if yes how often	Yes	66	17.1
	No	319	82.9
	Every time	18	29.0
	Sometimes	18	29.0
What is your partner's perception when you insist on using condoms	A few times	26	41.9
	You don't trust them	244	63.7
	You don't love him/her	75	19.6
	You have a sexually transmitted disease	51	13.3
	You must be unfaithful	6	1.6
	They agree	4	1.0
	They are okay using condoms	1	0.3
They agree, they know my status	1	0.3	
We are sick and don't need to use condoms	1	0.3	
Have you ever suffered from any sexually transmitted illnesses?	Yes	152	39.5
	No	233	60.5

4.3. Management of Mental Illness and HIV

A majority of the respondents sought treatment from the public hospital (n=115, 76.2%) when they were infected with a sexually transmitted illness. A majority of the people disliked (n=383, 99.7%) HIV and they noted cultural beliefs did not play any role in the access of health services (n=353, 91.7%). More than half of the respondents did not receive social support from their family (n=232, 60.3%) and they had not come across any social group that offered extensive help in management of HIV (n=363, 94.8%).

Table 4.3. Management of Mental Illness and HIV

Characteristic	Category	n	%
Where did you seek treatment for sexually transmitted illness?	Public hospital	115	76.2
	Private hospital	11	7.3
	Clinics	1	0.7
	Bought drugs	23	15.2
	Herbalist	1	0.7
What are people's perception	Dislike	383	99.7
	Agree	1	0.3
Cultural beliefs that hinder the access to health services	Yes	32	8.3
	No	353	91.7
Does your family offer support in the management of your mental illness and HIV	Yes	37	9.6
	Sometimes	116	30.1
	No	232	60.3
Are you in any social group that offer extensive help in the management of HIV in your area?	Yes	20	5.2
	No	362	94.8

4.4. Respondent Diagnoses and Comorbidities

The finding revealed that only 32 (8.3%) of 384 patients were HIV positive with the main mental illness diagnosis being bipolar disorder (n=154, 40.0%) and the main mental illness comorbidity being substance use disorder (n=2, 100%).

Table 4.4. Respondent Diagnoses and Comorbidities

Characteristic	Category	n	%
HIV test results	Negative	353	91.7
	Positive	32	8.3
Mental Illness Diagnosis	Bipolar	154	40.0
	Schizophrenia	115	29.9
	Substance use disorder	93	24.2
	Personality disorder	13	3.4
	Pueperal psychosis	5	1.3
	Alcohol use disorder	5	1.3
Mental illness comorbidity	Substance use disorder	2	100.0

4.5. HIV results and factors associated with Mental illness

Table 4.5 is representation of the factors associated with mental illness and the HIV result.

Table 4.5: HIV results and factors associated with Menta illness

		HIV test results			
		Negative		Positive	
		Count	Column Valid N %	Count	Column Valid N %
Age_cat	18-49 yrs	323	91.5%	30	93.8%
	50+ yrs	30	8.5%	2	6.3%
Gender	Male	246	69.7%	10	31.3%
	Female	107	30.3%	22	68.8%
Sexual Orientation	Heterosexual	353	100.0%	32	100.0%
	Lesbian/Gay	0	0.0%	0	0.0%
	Bi-sexual	0	0.0%	0	0.0%
Religion	Christian	277	79.4%	27	84.4%
	Muslim	67	19.2%	4	12.5%
	Traditionalist	5	1.4%	1	3.1%
Educational level	No formal education	16	4.5%	5	15.6%
	Primary incomplete	78	22.2%	7	21.9%
	Primary complete	100	28.4%	5	15.6%
	Secondary incomplete	53	15.1%	7	21.9%
	Secondary complete	81	23.0%	5	15.6%
	Tertiary	17	4.8%	2	6.3%
Marital status	University	7	2.0%	1	3.1%
	Married	170	48.2%	14	43.8%
	Divorced	63	17.8%	4	12.5%
	Single	81	22.9%	8	25.0%
	Separated	35	9.9%	3	9.4%
Job	Widowed	4	1.1%	3	9.4%
	Unemployed/Housewife	99	28.0%	18	56.3%
Age at first sex	Employed/Self-employed	254	72.0%	14	43.8%
	(15-18)	40	11.3%	6	18.8%
Last time you had sex	(19-20)	240	68.0%	17	53.1%
	(21 and 22)	62	17.6%	3	9.4%
	(23 and above)	11	3.1%	6	18.8%
	Less than a week	113	32.0%	12	37.5%
Did you use condoms the last time you had sex	(2-3 weeks ago)	159	45.0%	11	34.4%
	A month ago	39	11.0%	3	9.4%
	(6 months ago)	6	1.7%	0	0.0%
	More than 6 months ago	36	10.2%	6	18.8%
	Yes	68	19.3%	10	31.3%
No	285	80.7%	22	68.8%	

How many sexual partners do you have?	1 partner	260	73.7%	25	78.1%
	2 partners	66	18.7%	5	15.6%
	3 partners	27	7.6%	2	6.3%
	More than 3 partners	0	0.0%	0	0.0%
Are you aware of your partners HIV status	Yes	30	8.5%	8	25.0%
	No	321	91.5%	24	75.0%
Do you condoms when having sex	Yes	54	15.3%	12	37.5%
	No	299	84.7%	20	62.5%
	Not applicable	0	0.0%	0	0.0%
if yes how often	Everytime	14	26.9%	4	40.0%
	Sometimes	13	25.0%	5	50.0%
	A few times	25	48.1%	1	10.0%
What is your partner's perception when you insist on using condoms	You don't trust them	228	65.0%	16	50.0%
	You don't love him/her	69	19.7%	6	18.8%
	You have a sexually transmitted disease	47	13.4%	4	12.5%
	You must be unfaithful	4	1.1%	2	6.3%
	They agree	2	0.6%	2	6.3%
	They are okay using condoms	1	0.3%	0	0.0%
	They agree, they know my status	0	0.0%	1	3.1%
	We are sick and dont need to use condoms	0	0.0%	1	3.1%
Have you ever suffered from any sexually transmitted illnesses?	Yes	136	38.5%	16	50.0%
	No	217	61.5%	16	50.0%
if yes, where did you seek treatment	Public hospital	106	77.4%	9	64.3%
	Private hospital	7	5.1%	4	28.6%
	Clinics	0	0.0%	1	7.1%
	Bought drugs	23	16.8%	0	0.0%
	Herbalist	1	0.7%	0	0.0%
What are people's perception	Dislike	351	99.7%	32	100.0%
	Agree	1	0.3%	0	0.0%
Are there cutura beliefs associated which hinder the access to health services	Yes	27	7.6%	5	15.6%
	No	326	92.4%	27	84.4%
If yes please specify		324	91.8%	29	90.6%
	Belief in witchcraft	0	0.0%	1	3.1%
	Belief in withcraft	0	0.0%	1	3.1%
	Fate	1	0.3%	0	0.0%
	Illness can be due to witchcraft	0	0.0%	1	3.1%
	Some diseases are caused by witchcraft	1	0.3%	0	0.0%
	Some diseases seemlike its witchcraft	1	0.3%	0	0.0%
	Witchcraft belief	1	0.3%	0	0.0%
	Witchcraft belief: bad luck or omen	2	0.6%	0	0.0%
	Witchcraft can cause illness	2	0.6%	0	0.0%
	Witchcraft is a cause of illness	2	0.6%	0	0.0%
	Witcraft	19	5.4%	0	0.0%
	Does you family offer support in the management of your mental illness and HIV	Yes	35	9.9%	2
Sometimes		100	28.3%	16	50.0%
No		218	61.8%	14	43.8%
Are you in anny social group that offer extensive help in the	Yes	14	4.0%	6	19.4%
	No	337	96.0%	25	80.6%

management of HIV in your area?					
HIV test results	Negative	353	100.0%	0	0.0%
	Positive	0	0.0%	32	100.0%
DX	Bipolar	136	38.5%	18	56.3%
	Schizophrenia	107	30.3%	8	25.0%
	Substance use disorder	89	25.2%	4	12.5%
	Personality disorder	13	3.7%	0	0.0%
	Pueperal psychosis	4	1.1%	1	3.1%
	Alcohol use disorder	4	1.1%	1	3.1%
other dx	Bipolar	0	0.0%	0	0.0%
	Schizophrenia	0	0.0%	0	0.0%
	Substance use disorder	2	100.0%	0	0.0%
	Personality disorder	0	0.0%	0	0.0%
	Pueperal psychosis	0	0.0%	0	0.0%
	Alcohol use disorder	0	0.0%	0	0.0%

4.6. Factors associated with HIV among respondents

Table 4.6 captures a correlation analysis of the factors associated with HIV among respondents

Table 4.6. Factors Correlated with HIV among Respondents

	1	2	3	4	5	6	7	8	9	10
1 HIV test results	1									
2 DX	-0.095	1								
3 Age_cat	-0.022	.198**	1							
4 Job	-.169**	.242**	0.035	1						
5 Gender	.225**	-.139**	0.025	-.572**	1					
6 Religion	-0.032	.416**	.480**	0.092	-0.053	1				
7 Educational level	-0.042	.502**	.179**	.403**	-0.010	.373**	1			
8 Marital status	0.053	.503**	.266**	0.070	.115*	.480**	.434**	1		
9 Age at first sex	0.021	.303**	.337**	.254**	-0.076	.516**	.386**	.299**	1	
10 Last time you had sex	0.003	.385**	.264**	-.216**	.504**	.256**	.191**	.523**	.163**	1
11 Condom use (last encounter)	-0.082	.405**	.128*	.215**	0.057	.239**	.357**	.318**	.228**	.435**
12 No. of sexual partners	-0.028	.512**	.347**	.216**	-.131*	.570**	.547**	.628**	.310**	.186**
13 Know partners HIV status	-.152**	.240**	-0.026	.351**	-.174**	0.098	.152**	0.097	.128*	0.067
14 Use Condoms	-.163**	.163**	0.062	.344**	-.407**	.125*	0.055	-0.026	.250**	-0.057
15 Frequency (condom use)	-0.235	.461**	-0.240	0.181	.264*	0.177	0.095	-0.036	0.010	0.246
16 Partner's perception on insistence to use condoms	.115*	.214**	.337**	-.199**	.497**	.492**	.305**	.422**	.237**	.488**
17 STIs	-0.065	.509**	.147**	0.044	.213**	.328**	.465**	.575**	.241**	.527**
18 Location of Tx for STIs	0.049	.618**	.746**	0.147	.244**	.742**	.609**	.741**	.688**	.649**
19 People's perception	-0.015	-0.056	.169**	-0.077	0.072	-0.026	0.023	0.093	.101*	0.061
20 Cultural beliefs present	-0.080	.201**	-0.012	.374**	-0.025	0.078	.291**	.159**	.183**	0.085
21 Family support	-0.082	.446**	0.022	.608**	-.448**	.160**	.392**	.198**	.232**	-0.025
22 Social support	-.188**	.178**	-0.056	.179**	-.185**	0.060	0.037	-0.031	0.091	0.051

Spearman's correlation was used to identify the factors associated with HIV among respondents. The spearman correlation revealed that Occupation ($\rho=-0.169$, $p=0.001$), Gender ($\rho=0.225$, $p<0.001$), Knowledge of partner's HIV status ($\rho=-0.152$, $p=0.003$), Use condoms while having sex ($\rho=-0.163$, $p=0.001$), Partner's perception on insistence on condom use ($\rho=0.115$, $p=0.024$) – EXCLUDED FROM LOGISTIC REGRESSION and Social support ($\rho=-0.188$, $p<0.001$).

The factors were further analyzed using Binary Logistic Regression and presented in the table 4.7 which revealed that occupation (OR= 3.30 CI=1.58-6.89; P=0.001), gender (OR=5.06, CI=2.32-11.05; $p<0.001$), Knowledge of partners HIV status (OR=3.57, CI=1.47-8.63; $p=0.005$), Use condoms when having sex (OR=3.32, CI=1.54-7.19; $p=0.002$) and Social support (OR=5.78, CI=2.04-16.33; P= 0.001) were associated with HIV status. In multivariate analysis only gender (AOR= 3.50, CI=1.38-8.84, $p=0.008$) was significant.

Table 4.7. Logistic Regression

Variable	Category	OR (95% CI)	p-value	AOR (95% CI)	p-value
Occupation	Unemployed/ Housewife	3.30 (1.58-6.89)	0.001	1.31 (0.54-3.15)	0.551
	Employed/ Self-employed	REF		REF	
Gender	Female	5.06 (2.32-11.05)	<0.001	3.50 (1.38-8.84)	0.008
	Male	REF		REF	
Knowledge of partners HIV status	Yes	3.57 (1.47-8.63)	0.005	1.53 (0.48-4.93)	0.477
	No	REF		REF	
Use condoms when having sex	Yes	3.32 (1.54-7.19)	0.002	1.28 (0.48-3.40)	0.616
	No	REF		REF	
Social support	Yes	5.78 (2.04-16.33)	0.001	2.53 (0.72-8.88)	0.147
	No	REF		REF	

CHAPTER FIVE

SUMMARY, DISCUSSION AND RECOMMENDATION

5.1. Summary

One of the most widespread but neglected concerns in the world is mental illness. This condition receives little to no attention especially from health facilities despite its connection with HIV infection. Mentally ill patients are usually at high risk of infection to HIV due to their vulnerability and low level of awareness and testing for HIV. There are at least 25% of the people who suffer from mental illness with at least 75% of this population lacking access to the needed healthcare services.(Atwoli et al., 2017).

In this light, this study sought to to determine the prevalence of HIV, to establish the factors that are associated with the infection of HIV and to assess the association between mental illness and HIV infection among patients in Mathari National Teaching and Referral Hospital.

This study employed a descriptive cross-sectional study and the study population was comprised of patients of Mathari hospital who have a mental illness. Probability stratified sampling was used in the selection of respondents and Fischer's formula was used in the calculation of the sample size of the respondents. A semi-structured questionnaire was used in the collection of information from the respondents. Descriptive analysis was conducted through the use mean, percentages and frequencies. The inferential analysis was conducted through the use of Pearson correlation and regression analysis to check for associations between the variables. The level of statistical significance was set at $p < 0.05$. Data was then be presented by the use of frequency distribution tables, graphs and charts.

Findings captured from this study will not only be instrumental in capturing the prevalence of HIV among patients with severe mental illness but it will also be instrumental in capturing factors associated with the infection of the disease. This will be critical in the development of appropriate strategies to help in the management of HIV especially among the patients with mental disorders

5.2. Discussion

5.2.1. Prevalence of HIV among respondents

The first objective was to find out the prevalence of HIV among the patients in Mathari National Teaching and referral hospital. A prevalence of 8.3% was captured from the study which captured a total of 385 respondents. However, a similar study conducted in the United States which was dependent on secondary sources of data like the Cochrane library, Medline and Psychinfo captured a prevalence of 6.0% for HIV among patients with severe mental health concerns (Hughes et al., 2016). A similar study which was conducted in Sweden utilized a cross-sectional study approach which captured a total of 97797 adults who were diagnosed with severe mental illness. The study revealed that 518 of the respondents had HIV which is representative of a prevalence of 0.53%. (Bauer-Staeb et al., 2017).

According to a study conducted by Ziki, (2018), there was no association between the psychiatric disorder and HIV transmission. The study however captured a prevalence rate of 23% for HIV infections among the psychiatric patients admitted to the National Psychiatric Referral Hospital. According to Atwoli et al., (2017) there are a least 25% of people in the world who suffer from various mental disorders from which 75% of these individuals do not have access to proper health services. A study conducted in Nigeria also revealed that this population also suffers from the fact that they are exposed to stigmatization and myths which inhibit their access to acquire health services (Iheanacho et al., 2016).

According to Kimanga *et al.*, (2016) there are a number of contributing factors that associated with the prevalence of HIV among mentally ill patients in Kenya include ignorance in the usage of condoms as a protective measure against HIV, lack of social support and gender. Similarly, Pyra et al., (2018) posits that the usage the usage of pre-exposure prophylaxis (PrEP) is low among mentally patients despite its benefits in reducing the risk of HIV infection. Access to voluntary counselling and testing services for mentally ill patients is also limited despite its relative importance in minimizing the occurrence of HIV (Shaver & Stephenson, 2016).

5.2.2. Factors associated with the infection of HIV among respondents

The second objective aimed at findings the factors which are associated with HIV infection among patients in Mathari National Teaching and Referral hospital. The study found significant association between HIV infection and Occupation ($\rho=-0.169$, $p=0.001$), Gender ($\rho=0.225$, $p<0.001$), Knowledge of partner's HIV status ($\rho=-0.152$, $p=0.003$), Use condoms while having sex ($\rho=-0.163$, $p=0.001$), Partner's perception on insistence on condom use ($\rho=0.115$, $p=0.024$) and Social support ($\rho=-0.188$, $p<0.001$). These findings relate to a study conducted by Fleming et al., (2016) who found out that gender play a significant role in the transmission of HIV especially in relation to the level of exposure to the risk. They also found out that poor sexual behaviours are more common among men due to their uncontrollable sexual drive and power over women. Similarly, Treves-Kagan et al., (2017) also found out that men check their HIV status less frequently as such they are more likely to report higher cases of the disease compare to women.

Socioeconomic status of an individual is also highly likely to be associated with the extent of HIV infection among the patients. A low socioeconomic status predisposes people into poor paying high risk jobs like commercial sex which increases the chances of acquiring HIV. Commercial sex workers are also likely to be drug addicts which is linked with the sharing of needles and can lead to the risk of infection of HIV (Bunyasi & Coetzee, 2017). A similar study also found that a low socio-economic status and occupation has a significant relationship with the level of adherence to ART especially among those who are already infected with HIV (Siefried et al., 2017).

Similarly, Probst et al., (2017) also found significant association between an individual's occupation and socio-economic status with the level of adherence to ART. The study also revealed that a majority of these individuals also consume alcohol which makes them highly likely to test positive for HIV. Another study conducted in the United States also captured a significant relationship between socio-economic deprivation, occupation and a higher chance of a positive HIV diagnosis (Ransome et al., 2017). Additionally, employed individuals are highly likely to have a much stable income thus increasing their access to proper healthcare services which would help in the management of HIV and the mental illness. This will also be critical in capturing

other needs of the patients which could help in limiting the risk of exposure (Bauer-Staeb et al., 2017).

The prevention against the acquisition of HIV infection is highly dependent on the level awareness of one's partners HIV status. In essence, the prevention of HIV can only be achieved by ensuring that individuals engaged in sexual activity have knowledge of their partners HIV status in order to protect themselves and others from getting the disease as such minimizing the spread of the disease (Amin, 2015). According to a study conducted by Makhado & Davhana-Maselesele, (2016) knowledge one partner's HIV status is instrumental in improving and individuals sexual behavior through protected sex, limiting the exchange and sharing of drugs, exchange of sex for money, avoiding group sex events and the sharing of sex toys (Armstrong et al., 2018). Another study conducted in China also revealed that the respondents rarely disclosed their HIV status to their partners nor did they have knowledge about the HIV status of their partners which in turn predisposed them to an increased risk of HIV infection (Tang et al., 2018).

Condom use is one of the most effective methods of HIV infection as it is instrumental in ensuring bodily contact with bodily fluids which harbor the virus (Bauer-Staeb et al., 2017). However, one concern in relation to the usage of condoms is that it limits the extent of sexual pleasure as such it convinces individuals not use these devices which in turn predisposes them to a high risk of infection of HIV (Bond et al., 2019). The usage of condoms also helps in increasing the level of trust among sexual partners (Ofosu et al., 2018). It also helps in increasing the level of sexual communication and increased usage which reduces the risk of infection to the disease (Gause et al., 2018). A study conducted by Maenetje et al., (2019) in South Africa also revealed that men mostly used condoms in new relationships which eventually became inconstant in accordance with the growth of the relationship as such it resulted to a rapid increase in the incidence of HIV.

Social support is also key in the provision of knowledge and supportive care for individuals affected with HIV. An individual who has access to a social network can be able to effectively prevent themselves from being exposed to HIV and also receive support in relation to its management (Perez-Brumer et al., 2017). According to

Ransome et al., (2017) social support provides a number of significant benefits to an individuals which helps in limiting the extent of contraction of the disease. The study also revealed that it provides the needed social organization support that is critical in the management of HIV which is however dependent on an individual's area of residence.

In the United States, the availability of social capital was instrumental in the prediction of severe behavioral health outcomes which were critical in the determination of the prevention, transmission and associated outcomes of HIV in the population (Ransome et al., 2017). According to Webel et al., (2019) social capital helps increase HIV self-management practices among women with low social capital which improves the level of HIV management.

Other studies also reveal that age is associated with a higher risk of HIV infection with younger individuals being at high risk contrary to older individuals. Younger individuals with Severe mental illness are highly likely to be engaged in risky sexual behavior and drug abuse which increases the risk of contracting HIV (Fladseth et al., 2015; Schaefer et al., 2017). Crawford (2018) also notes that younger age is linked with increased substance abuse which is associated with an increased risk of contracting HIV.

5.2.3. The association between mental illness and HIV infection among respondents

The third objective of the study was to investigate the association between mental illness and HIV infection among patients in Mathari National Teaching and Referral Hospital. The study revealed that the main mental illness diagnosis was bipolar disorder (n=154, 40.0%) and the main mental illness comorbidity being substance use disorder (n=2, 100%) among the patients. There was no association between HIV infection and the type of mental disorder of the patient. A study conducted in Swaziland utilized a quantitative cross-sectional design that captured total of 307 hospital records of psychiatric patients who were admitted to the National Psychiatric referral hospital. The study captured a prevalence level of 23% however, there was no association between the psychiatric diagnosis and being HIV positive. The study however found a

significant association between patients with schizophrenia as being the many in relation to being HIV negative (Ziki, 2018).

A similar study conducted in Botswana captured patients admitted to the psychiatric hospital during the period of 2011 and 2012. The study revealed that the HIV prevalence among the hospitalized psychiatric patients was more common among females (53%) contrary to the males (19%) ($p < 0.001$). Additionally, women were at more risk of infection and HIV infection was more common patients with mental disorder (female 68% and male 48%), neurotic, stress related and somatoform disorders. The extent of HIV infections co-occurred with disorders such as schizophrenia, schizotypal and psychotic disorders (Opondo et al., 2018).

Another study also revealed that mental disorders exacerbate the risk of acquiring HIV. There is therefore a need to prioritize both mental health treatment and the provision of appropriate control measures which will be instrumental in the management of HIV among the psychiatric patients (Remien et al., 2019). Another study that captured a total of 82 empirical reviews from the year 1985 to 2015 revealed that people suffering from severe mental illness were at highly vulnerable to HIV infection contrary to the general population (Gorlaza-Tejada et al., 2017).

5.3. Conclusion

In sum, the prevalence of HIV among patients affected with mental illness from Mathari National and referral hospital was 8.3%. Factors like Occupation, Gender, Knowledge of partner's HIV status, use condoms while having sex, Partner's perception on insistence on condom use and Social support. There was no association between HIV infection and the type of mental disorder of the patient.

5.4. Recommendations

- 1) There is a need for the government and other health institutions to direct more focus on individuals who are affected with mental illness in order to reduce the risk of infection and prevalence of HIV among this vulnerable population.
- 2) Further intervention should be implemented towards the eradication of factors that predispose patients affected with mental illness to the risk of HIV.

- 3) There is a need to develop an intervention strategy that focuses on the type of mental illness to provide appropriate medical interventions in relation to the needs of the patient

5.5. Suggestions for future studies

There is a need to conduct further studies that focus on the different types of mental illness and the extent of HIV infection.

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APPENDICES

Appendix 1: Consent Form

My name is Arthur Rubia which a student currently pursuing a Master's Degree in Psychiatry at the University of Nairobi. I am currently seeking your participation in this study which is entitled "the prevalence of Human Immunodeficiency Virus infection (HIV) among patients at the Mathari National Teaching and Referral Hospital."

Purpose of the Study

This study mainly seeks to determine the prevalence of HIV infection among individuals with serious mental illness in the Mathari National Teaching and Referral Hospital.

Benefits

This study will not only be instrumental in determining the prevalence of HIV among individuals with Serious mental illness but it will also be critical in the development of ways through which the prevention of the spread of HIV can be dealt with. It will also be beneficial in the creation of policies to help patients to protect themselves against contracting such diseases.

Risks

There are no risks which are associated with taking part in the study.

Voluntary participation

Incentives will not be offered in exchange for participation in the study and there is the space to withdraw from the study at any stage where you deem fit. However, in the event that you agree to participate, you will be given supportive aid when there are difficulties associated with participation in the study.

Confidentiality

Confidentiality will be ensured throughout the study and information provided in the study will be kept confidential and no information will be shared by any other individual who is not in any way associated with the study.

Sign below to give consent for your participation

I consent to participate in the study after reading and understanding the purpose study.

Sign **Date**

Appendix 2: Questionnaire

Section A: Socio-Demographic Factors			
1)	What is your age?	_____years	
2)	What is your gender?	Male	
		Female	
3)	What is your sexual orientation?	Heterosexual Male	
		Lesbian/ Gay Female	
		Bi-sexual	
4)	What is your religion?	Christian	
		Muslim	
		Traditionalist	
5)	What is your level of education?	No formal education	
		Primary incomplete	
		Primary complete	
		Secondary Incomplete	
		Secondary complete	
		Tertiary	
		University	
6)	What is your occupation?	Housewife	
		Student	
		Free worker	
		Employed (government)	
		Employed (private facility)	
		Other specify	
Section B: Behavioural Factors			
7)	Age at first sex	_____years	
8)	Last time you had sex	Less than a week	
		2-3 weeks ago	
		A month ago	
		6 months ago	
		More than 6 months ago	
9)		Yes	

	Did you use condoms the last time you had sex?	No	
10)	How many sexual partners do you have?	1 partner	
		2	
		3	
		More than 3	
11)	Are you aware of your partners HIV status	Yes	
		No	
SECTION C: BIOLOGICAL FACTORS			
12)	Do you use condoms when having sex?	Yes	
		No	
		Not applicable	
13)	If yes how often	Every time	
		Sometimes	
		A few times	
14)	What is your partner's perception when you insist on using condoms?	You don't trust them	
		You don't love him/her	
		You have a sexually transmitted disease	
		Others please specify	
15)	Have you ever suffered from any sexually transmitted illnesses?	Yes	
		No	
16)	If yes, where did you seek treatment	Public hospital	
		Private hospital	
		Clinics	
		Bought drugs	
		Other please specify	
17)	What is people's perception of the use of condoms?		

SECTION D: SOCIO-CULTURAL FACTORS			
18)	Are there cultural beliefs associated which hinder the access to health services	Yes	
		No	
19)	If yes please specify		
20)	Does your family offer support in the management of your mental illness and HIV?	Yes	
		Sometimes	
		No	
21)	Are you in any social group that offers extensive help in the management of HIV in your area?	Yes	
		No	

Appendix 3: VCT testing form

Pre HIV test counselling interview form			
Client name _____			
Client code _____			
No names should be recorded on this form. In situations of confidential testing, names and contact details are to be stored in a separate location.			
2. Number of previous HIV test:			
Last test date	Result (check one):		
Last test Time	HIV positive		
	HIV negative		
	Indeterminant		
	Cannot remember		
3. Individual risk assessment:			
Client has regular partner	Yes		
	No		
Is any regular partner HIV positive:	Yes		
	No		
	Unknown		
In case of minor:	The HIV status of the mother	HIV positive	
		HIV negative	
		Unknown	
	The HIV status of the father	HIV positive	
		HIV negative	
		Unknown	
Please indicate code and date of most recent potential exposure			
Sex with	Men		
	Women		
	Both		
(Only tick when there is exposure risk)	Last occasion when this risk occurred	Window period (only tick if within the window period)	
Accidental Exposure in the workplace			
Tattoo, scarification, piercing			
Blood products/organ			
Vaginal intercourse (female) or transgender (neo-vaginal)			
Oral sex			

Anal intercourse			
Sharing injecting equipment			
The client requires a repeat HIV test due to window period exposure YES/ NO (please circle) If Yes, the date for repeat test: __/__/__			
Client risk was with a known HIV positive person	Yes		
	No		
Client is pregnant	Yes		
	No		
Clients partner is pregnant	Yes		
	No		
If Yes, the stage of pregnancy:	1-3 months		
	4-6 months		
	>7 months		
The client is using contraception regularly	Yes		
	No		
Client's partner is using contraception regularly	Yes		
	No		
Family planning referral required	Yes		
	No		
Have you ever been forced to have sex without your consent	Yes		Referral required
	No		
The client indicates history and/ or STI infection	Yes		Treatment required
	No		
Client's partner has history and/or STI infection	Yes		Treatment required
	No		
Client reports symptoms of TB	Yes		Treatment required
	No		
Client's partner has symptoms of TB	Yes		Treatment required
	No		
A brief statement of self-reported medical history of the client. Write brief note here regarding past significant or current illnesses that may affect diagnosis: (e.g. Hepatitis B or C			
<hr/>			
<hr/>			
<hr/>			
<hr/>			
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5. Assessment of personal coping strategies:		
ASK "How do you think you would cope if your test shows that you have HIV?" Briefly note any changes? (Note client response and tick any of the boxes below that apply)		
The client indicates suicide intent if test result is HIV positive	Yes	
	No	
The client has prior history of self-harm or suicide attempt	Yes	
	No	
The client indicates the intent to harm another if test result is HIV positive	Yes	
	No	
The client indicates a potential risk of violence if discloses to partner	Yes	
	No	
The client has adequate personal support network	Yes	
	No	
Orientation on Condom Use:	Verbally	
	A written leaflet is given	
	Demonstration	
	Client practice	
Condoms provided to the client		
7. Orientation on HIV prevention for injecting drug or hormone users	Verbally	
	A written leaflet is given	
	Demonstration	
	Client practice	

Appendix 4: Budget

Component	Activity Description	Item	Unit of measurement	Unit cost	Total
Research proposal	Final document	LAP TOP Mac 13.3 (Refurbished)	1pc	48,500ksh	48,500
		Printer (Kyocera)	1pc	41,500ksh	41,500
		Printing paper	5 Rims	500ksh	2500
		Printer ink	1 complete set	12000ksh	12,000
	Binding services				3,000
Data collection	Data collection assistant		2 staff	10000	20,000
	Biostatistician		15000		15000
	Communication				2000
	Printing paper		10 rims	500	5000
	Test kits (primary)		(7 packets) of 100 pieces each (total 600 test kits)	8000ksh	56,000ksh
	TEST KITS (secondary)		1 packet of 100 pieces	10,000	10,000
	Counsellors		5 counsellors	10,000	50,000ksh
	Printing ink		2 complete sets	12000	24,000
	Binding services				3,000
	Sharps, spirit and cotton wool				5,000
Contingency					15000
Total					312, 500

Appendix 5: Work Plan

Activities	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun-Sept 2019
Development of the study					
Proposal writing					
Proposal defence					
Data Collection					
Data entry and cleaning					
Data Analysis					
Report writing					
Defence of the report					

Appendix 6: KNH Ethical Approval Letter



UNIVERSITY OF NAIROBI
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Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC



KENYATTA NATIONAL HOSPITAL
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Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/150

18th May 2020

Dr. Arthur Rubia
Reg. No.H58/68599/2013
Dept. of Surgery
School of Medicine
College of Health Sciences
University of Nairobi



Dear Dr. Rubia

RESEARCH PROPOSAL – PREVALENCE OF IMMUNODEFICIENCY VIRUS(HIV) INFECTION AMONG PATIENTS AT THE MATHARI NATIONAL TEACHING & REFERRAL HOSPITAL (P833/10/2019)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 18th May 2020 – 17th May 2021.

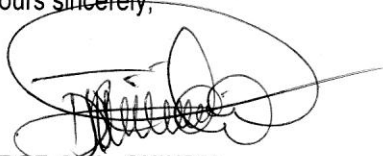
This approval is subject to compliance with the following requirements:

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

For more details consult the KNH- UoN ERC website <http://www.erc.uonbi.ac.ke>

Protect to discover

Yours sincerely,



PROF. M. L. CHINDIA
SECRETARY, KNH-UoN ERC

- c.c. The Principal, College of Health Sciences, UoN
 The Director, CS, KNH
 The Chairperson, KNH- UoN ERC
 The Assistant Director, Health Information, KNH
 The Dean, School of Medicine, UoN
 The Chair, Dept.of Psychiatry, UoN
 Supervisors: Dr. Fredrick Owiti, Dept. of Psychiatry, UoN
 Dr. Pius Akivanga Kigamwa, Dept.of Psychiatry, UoN

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