PREVALENCE OF HUMAN IMMUNODEFICIENCY VIRUS IN PSYCHIATRIC PATIENTS ADMITTED IN MANKWENG HOSPITAL

by

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[redacted]

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Declaration

I declare that PREVALENCE OF HUMAN IMMUNODEFICIENCY VIRUS IN PSYCHIATRIC PATIENTS ADMITTED IN MANKWENG HOSPITAL is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

Dr Wisani Makhomisane **Date**

Dedication

I dedicate this report to the Makhomisane 4 (my husband Mabowa and my beautiful children, Kayla, Aurora and Omari) for the moral support and giving me a reason to try again even when all seemed lost.
1 Corinthians 16;14 (Let all that you do be done in love.)

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- Limpopo Department of health and Mankweng hospital for granting me permission to conduct the study

Abstract

The prevalence of HIV in psychiatric patients has been studied in urban communities in South Africa but there currently appear to be no published studies concerning Limpopo and limited others focusing on rural communities in South Africa. This study set out to investigate the prevalence of HIV infection and associated factors in psychiatric patients admitted to Mankweng Hospital psychiatric ward. It looked at the prevalence of HIV infection in these psychiatric patients and the socio-demographic risk factors associated with HIV infection in these patients, and it explored the relationship between psychiatric diagnosis, compliance to treatment, and substance use with HIV infection among these patients. A retrospective chart review of 229 clinical files of adult patients admitted to Mankweng psychiatric hospital between 1 October 2018 and 30 September 2019 indicated that most of the patients had a diagnosis of schizophrenia (44.7%) or bipolar disorder (25.9%). It was found that only 88 files had HIV status recorded. This represented a 38.6% testing rate, thus 61.4% of the psychiatric patients did not have a known HIV status. Of those 88 patients who were tested, 52.2% were recorded as HIV positive, and the patients with bipolar disorders had a significantly higher number testing HIV-positive. The overall prevalence rate of 52.2% was considered to be disproportionally high. It was attributed to the very low HIV testing rate. It is recommended that efforts be made to improve HIV testing rates in this at-risk and vulnerable community. The low rate of testing was a limitation in this research.

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Definition of Concepts

Acquired Immunodeficiency Syndrome

Acquired immunodeficiency syndrome (AIDS) is a severe, multi-organ, multi-system illness with multiple and severe comorbid medical and psychiatric illnesses (Cohen & Gorman 2008)

In this study, AIDS refers to the development of multiple illnesses, including psychiatric illnesses, in patients with a high human immunodeficiency viral load due to a weakened immune system.

Adolescents

Adolescents are individuals in the period of development between the onset of puberty and adulthood. The period usually begins between 11 and 13 years with the appearance of secondary sexual characteristics, terminating at 18 to 19 years of age with the completion of the development of the adult form (Mosby's Medical Dictionary, 2013, Sv "Adolescents")

In this study, adolescents were individuals of the ages of 16 to 18 years who were admitted to the psychiatric ward in Mankweng Hospital where age of admission is 16 years and older.

Adults

Adults are individuals that are older than 18 years of age unless national law defines a person as being an adult at an earlier age (World Health Organization 2019)

In this study, an adult was an individual who was 18 years and older admitted in the Mankweng Hospital psychiatric ward.

Highly Active Antiretroviral Treatment

Highly active antiretroviral treatment (HAART) is the first-line treatment for HIV infection which usually consists of three antiretroviral agents, two nucleoside or nucleotide and either a non-nucleoside or a protease inhibitor as a third agent (Adler, Edward, Miller, Sethi & Williams 2012)

In this study, highly active antiretroviral treatment was used interchangeably with *antiretroviral treatment* (ART) and included all human immunodeficiency antiviral medication received by patients from Mankweng Hospital, regardless of antiretroviral treatment regimen.

Human Immunodeficiency Virus

Human immunodeficiency virus (HIV) is the causative agent of AIDS, made up of two lentiviruses, the pandemic forming HIV-1 and less pathogenic HIV-2 viruses (Cohen & Gorman 2008).

In this study, the human immunodeficiency virus was the virus that had infected persons that tested positive to a human immunodeficiency viral antibody test.

Mental Health Care User

Mental health care user (MHCU) is defined by the Mental Health Care Act 17 of 2002 as a person receiving care, treatment and rehabilitation services or using a health service at a health establishment aimed at enhancing the mental health status of the user, state patients or mentally ill prisoner who are classified as voluntary, assisted, or involuntary, depending on their capacity to make decisions (Republic of South Africa, 2002)

Mental health care user in this study was applied to patients diagnosed with mental illnesses according to the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM 5) (American Psychiatric Association, 2013), and admitted to the Mankweng psychiatric unit for a short to medium stay. This term was used interchangeably with *mentally ill patients* and *psychiatric patients*.

Neuroleptic drugs

Neuroleptic drugs are a group of drugs that are also called *antipsychotics* and are primarily used to manage psychotic spectrum disorders (National Institute of Mental Health, n.d.)

In this study, neuroleptic drugs were considered as all treatment issued to patients to relieve psychotic symptoms.

Opt-out HIV screening

Opt-out HIV screening is an HIV testing strategy recommended by the Centre for Disease Control in the United States of America in performing HIV tests and counselling after notifying the patient that the test will be done, unless the patient declines or defers the testing (Galletly, Pinkerton & Petroll 2008).

In this study, opt-out HIV testing was a testing method where a patient was informed that an HIV test would be included in routine blood tests and that HIV counselling would be offered before disclosure of results if the patients consented to the HIV test.

Prevalence

Prevalence is defined as the proportion of people in a population who have a particular disease or condition and measures the amount of a disease that is present in a population at a given time (Kestenbaum 2019).

In this study, prevalence measured the number of patients infected with HIV admitted to the Mankweng psychiatric ward and was used interchangeably with the prevalence rate of HIV infection.

Psychiatric Ward or Unit

Psychiatric ward or unit is a health establishment unit that provides inpatient care, treatment, and rehabilitation for users with mental illness (Republic of South Africa 2013)

In this study, *psychiatric ward* referred to a short to medium (up to eight weeks) stay ward in Mankweng Hospital that admitted moderate to severe mentally ill persons for inpatient care by a multidisciplinary team.

Serious Mental Illness

In the DSM 5 *serious mental illness* (SMI) is defined as a mental, behavioural, and emotional disorder resulting in serious functional impairment which interferes with one or more major life activities (American Psychiatric Association 2013).

In this study, *serious mental illness* referred to psychiatric diagnoses of schizophrenia-spectrum disorders, bipolar and related disorders, recurrent major depressive disorders, and neurocognitive disorders.

Universal Test and Treat Programme

Universal test and treat programme (UTT) is a programme guideline for HIV which was developed by the World Health Organization (2017). It states that all children, adolescents, and adults who test positive for HIV regardless of CD4-count will be offered antiretroviral treatment. This guideline was adopted by South Africa in September 2016.

In this study, the universal test and treat programme was an initiative where patients who were admitted in the psychiatric ward testing positive for HIV had antiretroviral treatment initiated regardless of CD4-count.

Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ANOVA	Analysis of Variance
ART	Antiretroviral Treatment
CDC	Centre for Disease Control
DOH	Department of Health
DSM 5	Diagnostic and Statistical Manual of Mental Disorders, fifth edition
HAART	Highly Active Antiretroviral Treatment
HCT	HIV Counselling and Testing
HIV	Human Immunodeficiency Virus
MHCU	Mental Health Care User
PICT	Provider Initiated HIV Counselling and Testing
PITC	Provider Initiated HIV Testing and Counselling
SA	South Africa
SMI	Serious Mental Illness
TB	Tuberculosis
TREC	Turfloop Research and Ethics Committee
UNAIDS	The Joint United Nations Program on HIV and AIDS
USA	United States of America
UTT	Universal Test and Treat
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

Chapter One: Introduction, Background and Orientation to the Study

1.1. Introduction

The HIV/AIDS epidemic is now in its fourth decade and remains a significant public health challenge (Joska, Stein & Igor 2014). Globally, studies have shown a high prevalence of HIV in persons with mental illness compared to the general population in both low-income (Breuer, Myer, Struthers & Joska 2011) and high-income countries (Bauer-Staeb, Jorgenson, Lewis, Dalman, Osborn & Hayes 2017).

The current global burden of HIV is 36.9 million people living with the disease and most of the burden is in Sub-Saharan Africa (Joint United Nations Programme on HIV/AIDS, 2018). HIV/AIDS seroprevalence in Sub-Saharan Africa is driven more by sexual contact than by using contaminated needles in injection drug use which has been observed more in high income countries (Collins, Berkman, Mesty, & Pillai 2009).

Cognitive challenges, negative symptoms, disinhibition, impaired judgment, and sexual victimisation are factors that increase the risk of contracting HIV in psychiatric patients (Abayomi, Adelufosi, Adebayo, Ighoroje, Ajogbon & Ogunwale 2013). Joska et al (2014) described a bi-directional relationship between HIV and mental illness. They reported that co-morbidity with HIV in psychiatric patients is associated with worsening of the mental illness due to the viral invasion of the brain by the human immunodeficiency virus. They also reported that the majority of HIV-infected people with no previous psychiatric illness experienced a psychiatric disorder in their lifetime (Joska et al 2014).

The development of dual-diagnosis clinics for HIV and mental illness led to early diagnosis and management of HIV, reducing disease progression that commonly led to secondary psychiatric symptoms (Jonsson, Davies, Freeman, Joska, Pahad, Thom, Thompson, Woolleett, Furin & Meintjes 2013). Dual-diagnosis clinics in Sub-Saharan Africa have a significant impact on the co-management of HIV and mental illness as the HIV prevalence rate in psychiatric patients with serious mental illness ranges from 2.6 percent to 59.3 percent (Jonsson et al. 2013).

The prevalence of HIV in psychiatric patients has previously been studied in more urban communities in South Africa (Collins et al. 2009; Joska, Kaliski & Benatar 2008;

Moosa & Jeenah 2013; Zingela, Esterhuizen, Kruger & Webber 2002), with results that have shown a high prevalence of HIV in these psychiatric patients.

There currently appear to be no published studies concerning Limpopo and limited others focusing on rural communities in South Africa (SA) that assess prevalence of HIV in psychiatric patients.

This study was designed to assess the HIV prevalence rate and address the sociodemographic and other risk factors that indicate a gap in the co-management of patients with psychiatric disorders and HIV. The proposed outcome is to develop integrated psychiatric and HIV management clinics as dual diagnosis clinics for the prevention, early diagnosing, and treatment of HIV in psychiatric patients.

1.2. Background and Research Problem Statement

The psychiatric ward in Mankweng Hospital admits between 400 and 500 psychiatric patients per annum with a high readmission rate, according to the ward statistics. Non-adherence to treatment and relapse are listed as some of the significant causes of readmission of psychiatric patients in Mankweng Hospital. It has been noted in the ward statistics that some patients who have been readmitted have a mental illness with co-morbid HIV, but the exact statistics have not been studied.

Previous studies in South Africa, such as those of Singh, Berman and Bresnahan (2009), and Collins et al. (2009), have shown HIV sero-prevalence rates of 29,1 percent and 26,5 percent respectively in psychiatric patients, compared to 20,9 percent in the general population at the time. These studies show that psychiatric patients have not been spared from the HIV epidemic. Although there is high prevalence of HIV in psychiatric patients in other provinces of South Africa, this cannot be generalised to Limpopo as it is a predominantly rural province, unlike the other studies.

The high prevalence of HIV in psychiatric patients has been associated with late diagnosis and delayed treatment of HIV leading to secondary psychiatric complications (Jonsson et al 2013) that increase the relapse rate of psychiatric symptoms in this population. Jonsson et al (2013) also found that the co-morbidity of HIV and serious mental illness may have an impact on adherence to HAART and psychiatric treatment. This may be contributing to the re-admission rate in the psychiatric ward in Mankweng Hospital.

Poor insight, judgment, and lack of access to health facilities for psychiatric patients have been identified as barriers to early diagnosis and management of HIV in patients with primary psychiatric illnesses (Joska, Kaliski & Benatar 2008), and have resulted in increased morbidity associated with HIV and mental illness.

The prevalence rate of HIV in psychiatric patients admitted to Mankweng Hospital is currently not known and could be influencing the relapse rate of psychiatric patients due to the worsening of psychiatric symptoms secondary to HIV invasion of the brain.

1.3. Purpose of the Study

This study was designed to determine the prevalence of HIV infection in psychiatric patients admitted to Mankweng Hospital, and to identify the socio-demographic and other risk factors that may influence the co-morbidity of HIV and mental illness in this community.

The results of the study may assist in the development of dual-diagnosis units for the treatment of HIV and mental illness and to increase access to both HIV and psychiatric treatment according to the management guidelines of mental health disorder in HIV positive patients published by the South African HIV Society (Jonsson et al 2013). The results of the study may further influence the Department of Health (DOH) in developing protocols according to the national HIV testing services Policy where the HIV counselling and testing campaign has been changed to HIV testing services (HTS) to include pre- and post-test counselling, linkage to appropriate HIV prevention, treatment and care services with other clinical and support services that are coordinated with laboratory services to ensure delivery of accurate results (Republic of South Africa 2016)

1.4. Literature Review

The literature reviewed involves critical analyses of published studies on the global prevalence of HIV in the general population and the related rollout of HAART. This is followed by a review of studies on the prevalence of HIV specifically in psychiatric patients and the risk factors that influence HIV transmission in these at-risk patients ~~as~~ compared to the general population. The literature review concludes by focusing on low rates of HIV testing in psychiatric patients and the factors associated with such rates compared to the general population. The detailed literature review is outlined fully in Chapter Two.

1.5. Aim and Objectives of the Study

The aim of the study was to investigate the prevalence of HIV infection and associated factors in psychiatric patients admitted to Mankweng Hospital psychiatric ward.

The objectives of the study were:

- To determine the prevalence of HIV infection in psychiatric patients admitted to Mankweng Hospital;
- To determine socio-demographic risk factors associated with HIV infection in patients admitted in Mankweng Hospital, psychiatric ward; and
- To explore the relationship between psychiatric diagnosis, compliance to treatment, and substance use with HIV infection among patients admitted in Mankweng Hospital psychiatric ward.

1.6. Research Questions

Based on the research objectives, the research questions were:

- What is the prevalence of HIV infection among psychiatric patients admitted to Mankweng Hospital?
- What is the association between socio-demographic profiles and HIV infection in patients admitted to Mankweng Hospital?
- What is the relationship between psychiatric diagnosis, compliance to treatment and substance use with HIV infection in psychiatric patients admitted to Mankweng Hospital?

1.7. Research Methodology

A quantitative, retrospective and descriptive research design was used to elicit the prevalence of HIV in psychiatric patients in Mankweng hospital. Clinical files of psychiatric patients admitted between 01 October 2018 and 30 September 2019 were reviewed using a cross-sectional data collection method of pre-existing data.

The study was conducted in the psychiatric unit in Mankweng hospital which offers short- to medium-term inpatient admission. Four hundred and seventy-two (472) adults and adolescent patients were admitted during the study period and 229 clinical files of patients were sampled and analysed using a two-sample t-test and ANOVA for categorical variables. The research methodology is outlined fully in Chapter 3.

1.8. Ethical Considerations

Ethical clearance to conduct the study was obtained from the Turfloop Research and Ethics Committee (TREC) and the study was conducted in a way that was in keeping with the rights described in the Constitution of the Republic of South Africa (Republic of South Africa 1996).

1.9. Significance of the Proposed Research

The results of the study may have a significant role in developing strategies specific for the management of HIV infection in this at-risk (psychiatric patients) population.

The proposed integration of HIV education and testing in all psychiatric departments will improve HIV knowledge and prevention in psychiatric patients.

The study will also contribute to adding knowledge base and lead to more studies in this field.

1.10. Chapter Outline

Chapter One has outlined the background of the study and research structure. Chapter Two is the literature review. It discusses studies regarding the prevalence of HIV in psychiatric patients and associated factors. Chapter Three provides details the research methodology of the study. Chapter Four presents the results of the study, and Chapter Five discusses the findings of the study and its limitations and concludes and makes recommendations.

1.11. Conclusion

This chapter has presented the background and introduction to the study, the research aim and objectives, the research questions and a summary of the research methodology. The next chapter presents the literature review.

Chapter Two: Literature Review

2.1. Introduction

This chapter presents and discusses relevant literature regarding the subject study. Various sources were reviewed, including scholastic (academic) journals, internet search engines, books, and unpublished studies. It starts by reviewing the prevalence of HIV in the general population compared to that in the psychiatric community, and then looks at the risk factors associated with increased transmission of HIV in this community.

2.2. Prevalence of HIV in the General Population

HIV is the virus that causes AIDS and is currently one of the most serious public health challenges, with the World Health Organization (WHO) listing HIV as the second highest cause of death in South Africa (World Health Organization 2016).

According to the Joint United Nations Programme on HIV/AIDS (2018), 36.9 million people were living with HIV in 2017, with 1.8 million new infections, and only 21.7 million people had access to highly active antiretroviral therapy (HAART).

The majority of HIV positive people live in low to middle income countries such as South Africa (World Health Organization 2016). The Eastern and Southern African countries make up 53 percent of the worlds HIV infection, with South Africa having the highest HIV burden in the world where 7.2 million people live with HIV.

The management of HIV includes the use of HAART to control viral replication, improve the body's immune system and prevent opportunistic infections. Adherence to HAART treatment successfully combats HIV infection and limits its progression to AIDS, leaving HIV infection a manageable chronic illness (World Health Organization 2017).

The increased roll-out of antiretroviral treatment (ART) has led to a reduction in AIDS-related deaths, with a 51 percent reduction in HIV-associated morbidity between 2004 to 2017 (Joint United Nations Programme on HIV/AIDS 2018).

South Africa (SA) has the largest antiretroviral programme globally with the aim of reaching the UNAIDS 90-90-90 target to end AIDS by 2020. SA went a step further and introduced the universal *test and treat* HIV guidelines in September 2016 (Department of Health 2016). These initiatives led South Africa to reach '86-61-47' of the 90-90-90 targets which means that 86 percent of South Africans know their HIV status, 61 percent who were HIV-positive were on HAART, with 47 percent being virally suppressed. Viral suppression of HIV leads to a very low risk of transmitting the HIV to other individuals, which effectively reduces new infections.

2.3. Prevalence of HIV in Psychiatric Patients

Psychiatric patients with serious mental illness (SMI) are twenty times more likely to be infected by HIV than the general population (Joska, Stein & Igor 2014).

2.3.1. Global prevalence of HIV in psychiatric patients

Weiser, Wolfe and Bangsberg (2004) reported findings taken from a large sample of psychiatric patients in four American cities between 1997 and 1998. These showed a 3.1 percent prevalence rate of HIV in psychiatric patients compared to the then United States of America's prevalence rate of 0.3% in the general population. This shows that, even early in the HIV epidemic, psychiatric patients had a higher prevalence of HIV than the general population.

Remien, Stirratt, Nguyen, Robbins, Pala *&* Mellins (2019) found that the current prevalence of HIV in the United States of America (USA) is still higher amongst adult psychiatric patient with serious mental illness and ranges from two percent to six percent when compared with the 0,5 percent HIV prevalence rate in the general population.

Hughes, Bassi, Gilbody, Bland and Martin's (2015) meta-analysis of the prevalence of HIV reported poorly recorded data and limited studies on HIV prevalence in the European population. America has supplied most of the data from countries with low seroprevalence HIV.

This high prevalence of HIV in psychiatric patients from high income countries where the general population has low seroprevalence could not be explained by immigration, socio-economic status, and substance abuse alone (Bauer-Staeb et al 2017; Beyer, Taylor, Gersing & Krishnan 2007). This has led to these countries classifying people with SMI as a vulnerable community at high risk of HIV infection (Carey, Carey, Maistro, Gordon, Schroder & Venable 2004), and they recommended the need for an integrated response to HIV and mental health.

Low- to middle-income countries with a low seroprevalence rate of HIV in the general population have also demonstrated a high HIV prevalence rate in the psychiatric population in Brazil (Guimaraes, Mc Kinnon, Cournos, Machado, Melo, Campos & Wainberg 2014) and India (Jayarajan & Chandra 2010). This high prevalence of HIV has been driven predominantly by unprotected sexual intercourse.

2.3.2. Prevalence of HIV in psychiatric patients in the African region

The African region accounts for two-thirds of the total global new HIV infections. In 2018, 1.1 million people from the African continent were newly infected with HIV (Joint United Nations Programme on HIV/AIDS 2018).

Swaziland, Botswana, and Lesotho are currently listed as the countries with the highest HIV infection rates globally, with South Africa having the highest number of new infections in the general population (Joint United Nations Programme on HIV/AIDS 2018). Ziki, Matlala, Moyimane, Matlala and Kekana (2018) reported a high HIV seroprevalence rate of 23 percent in psychiatric patients in Swaziland

Lundberg, Nakasujja, Mussi, Thorson, Cantor-Graae & Allebeck (2013) reported a 12 percent prevalence of HIV in psychiatric patients in Uganda compared to an 8.8 percent prevalence in the general population. South Africa and Zimbabwe shared a similar prevalence of HIV of 26.5 percent and 23.8 percent respectively in the psychiatric patients, which is in line with each individual country's high HIV seroprevalence in the general population (Ziki et al. 2018).

2.3.3. Prevalence of HIV in South African psychiatric patients

Collins et al. (2009) found that the prevalence of HIV in psychiatric patients admitted to a public hospital in KwaZulu-Natal was at 26.5 percent overall, with women more affected than men at 33 percent, while the general population at the time was at 20.9

percent and 24.5 percent for women. Another study conducted in Durban, South Africa, of admitted psychiatric patients showed a 29.1 percent seroprevalence of HIV in both genders, with women at 40 percent prevalence (Singh, Berman & Bresnahan 2009). Beke and Hoffman (2014) reported a similar seroprevalence rate of 21 percent from a Gauteng hospital.

Most of these studies were conducted at tertiary psychiatric hospitals in urban settings. It is not clear if they reflect the seroprevalence rate in the rural provinces of South Africa such as Limpopo.

It is noted in these South African studies that the seroprevalence of HIV in female psychiatric patients has been similar to that of women in antenatal clinics. The South African government has designed programmes such as prevention of mother to child transmission of HIV (PMTCT), which involves regular HIV testing and management of pregnant women to reduce HIV infection and transmission in this vulnerable population. Nkomo and Goga (2015) reported that 95 percent of healthcare systems integrated PMTCT into routine antenatal care, thus reducing the HIV transmission from mother to child.

According to Moosa and Jeenah (2013), there has been a lack of standardised HIV testing programmes for psychiatric patients and low HIV testing rates due to poor HIV testing encouragement by mental health professionals. Moosa and Jeenah (2013) also cited ethical challenges in testing psychiatric patients.

The lack of clear guidelines in the testing and management of HIV infection in psychiatric patients in SA has led to a low rate of HIV education and testing, which increases the high transmission of HIV in this country.

2.4. Risk Factors that Influence HIV Transmission in Psychiatric Patients

According to the World Health Organization (2017), HIV can be transmitted via the exchange of body fluids with an infected person. In addition, it has been found that having unprotected anal or vaginal sex, having another sexually transmitted infection, and sharing injection drug needles increases the risk of contracting HIV.

A Brazilian study (Guimaraes, McKinnon, Campos, Melo & Wainberg 2010) showed that 92.7 percent of psychiatric patients are sexually active, with only 24 percent of them reporting using a condom in their last sexual encounter. Several studies have shown that anxiety and depressive disorders, sexual intercourse under the influence of alcohol, impulsivity secondary to the mental disorder, multiple sexual partners, inconsistent condom use, and anal sex have been classified as risk behaviours that increase the risk of HIV transmission among psychiatric patients (Carey et al. 2004; Schade, Van Grootheest & Smit 2013).

Mere and Paruk (2018) reported that female psychiatric patients under 50 years of age had the highest rate of HIV infection in their study, which was similar to previous studies conducted in KwaZulu-Natal hospitals.

Singh, Berman and Bresnahan (2009) and Collins et al. (2009) showed that the seroprevalence of HIV in female psychiatric patients was between 30 percent and 40 percent, which was similar to that of women in antenatal clinics which were then at 37.5 percent. Thus, the HIV prevalence rate of mentally ill women is at similar rates to that of vulnerable groups listed by the World Health Organization and supports the narrative that psychiatric patients should be classified as more vulnerable to HIV infection than the general population.

Lack of knowledge about aspects of HIV transmission, belief in myths associated with the acquisition and spread of HIV, and a low level of education in psychiatric patients attending clinics in Soweto, an urban area in SA, was found to add to an increased risk of HIV transmission in this population (Jonsson, Moosa & Jeenah 2011). It was recommended that basic HIV knowledge and risk reduction interventions be offered by clinicians to all psychiatric patients at every health setting.

Psychiatric patients also have poor access to outpatient medical care due to poor insight into their mental and physical health. This reduces their opportunities for HIV testing and intervention (Shumway, Mangurian, Carraher & Momenzadeh 2018).

The low-rate HIV testing and poor access to outpatient medical care amongst adult psychiatric patients has contributed to a high HIV prevalence in SA (Mangurian, Cournos, Schillinger, Vittinghoff, Creasman & Lee 2017).

2.5. Factors that Influence the Rate of HIV Testing in Psychiatric Patients

Moosa and Jeenah (2013) noted that HIV testing centres in public hospitals in SA have increased in recent years. However, the number of people who test for HIV is still low as routine HIV testing in South Africa has not been standardised.

Mangurian et al (2017) reported low rates of HIV testing among adults with a SMI in community mental health units which is concerning, given the high prevalence of HIV in this population. Lack of testing for HIV is a missed opportunity for early detection and management of HIV, which would reduce the HIV transmission rate.

The low rates of HIV testing in psychiatric patients have been in keeping with the low rates of HIV testing in the general population. Kaai, Bullock, Burchell and Major (2012) listed socio-demographic, personal-, provider- and system-related factors as facilitators and barriers to HIV testing in the general population. The socio-demographic factors in Canada and United Kingdom associated with an increased HIV testing rate were middle age, female gender, recent immigration, living in larger cities, having a partner, and being well educated with high income.

Personal-related barriers to HIV testing have been associated with fear of stigma and fear of a positive HIV test. At the same time, poor doctor-patient relations and lack of confidentiality in government facilities have been listed as provider-related barriers. Finally, poor access to HIV counselling and testing venues has also been listed as a system-related barrier to HIV testing (Kaai et al 2012; Mohlabane, Tutshana, Peltzer & Mwisongo 2016).

The barriers to testing for HIV in the psychiatric patient community have been similar to those in the general population, but with the added burden of the dilemma in obtaining informed consent from psychiatric patients by health care providers (provider-related), the two-sided stigma of HIV and mental illness (personal-related) and lack of proper coordination between mental health providers and voluntary counselling and testing (VCT) screening (system-related), according to Chakrabartty, Basu, Sarkar and Ali (2017).

South Africa currently has two main programmes related to HIV testing which are client-initiated HIV counselling and testing (CICT) and provider-initiated HIV testing and counselling (PITC) or provider-initiated HIV counselling and testing (PICT). PITC and PICT are used interchangeably in the literature. CICT is also called voluntary counselling and testing (VCT). This programme is client-initiated and includes informed consent, counselling, and confidentiality. CICT respects the client's autonomy to make informed decisions, but it has resulted in low rate of HIV testing. Joska, Kaliski and Benatar (2008) suggested that the lack of proposed principles of HIV testing in psychiatric patients at the time led to even lower HIV testing rates in psychiatric patients. The South African HIV clinician's society has proposed principles of HIV testing in psychiatric patients (Jonsson, Davies, Freeman, Joska, Pahad et al 2013). However, the rate of HIV testing is still low in this at-risk population.

PITC was then introduced to improve the HIV testing rate. It refers to HIV testing and counselling which is routinely recommended by health care providers to patients attending any health care facility to aim for early diagnosis and management of HIV (Moosa & Jeenah 2013). PICT results in an increased rate of HIV testing and is an important strategy in high HIV endemic populations with low HIV testing rates where VCT has failed to improve the testing rate (Topp, Chipukuma, Chiko, Wamulume, Bolton-Moore et al 2011).

HIV testing is a gateway to care and treatment-seeking for those who test positive. A systematic review by Kennedy, Fonner, Sweat, Okero, Baggaley et al (2013) showed increased HIV testing, condom use and HAART enrolment in TB (tuberculosis) clinics following PICT.

Moosa and Jeenah (2013) explained that PICT can be offered by mental health clinicians with pre- and post-test counselling tailor-made for the mental capacity of the individual psychiatric patient. Furthermore, the pre-test counselling in PICT focuses on the importance of HIV testing in all individuals, unlike VCT which focuses on risk assessment of the individual requesting the HIV test.

PICT is considered ethically legitimate as patients' autonomy is actively practiced through counselling, confidentiality, and informed consent. PICT aims to balance patient's autonomy with beneficence and justice for the whole population.

PITC has been expanded to include an opt-out HIV testing approach where HIV testing, and counselling is added to standard medical care without written consent unless the patient explicitly refuses the HIV test. The Centre for Disease Control (CDC) revised the HIV prevention guidelines in the USA to recommend HIV screening in all healthcare settings with an annual screening of high-risk communities such as psychiatric patients (Biradavolu, Jia, Withers & Kapetanovic 2016). Opt-out HIV testing aims to increase the rate of HIV testing in populations with a high HIV prevalence. There are however ethical concerns about obtaining inadequate informed consent in opt-out programmes where patients feel coerced to test. They end up receiving insufficient pre-HIV test counselling (Hanssens 2007).

Joska, Kaliski and Benatar (2008) conducted an informal survey on the rate of HIV testing in the Western Cape. Their results showed that patients were not routinely tested despite the association between HIV and mental illness. The physicians reported that it was ethically unjust as HAART was not readily available in South Africa in 2008. Since then, HIV policy (*90-90-90 targets* and *test and treat*) guidelines in South Africa have improved access to HAART for all HIV positive patients. Therefore, it is now ethically and morally just to conduct HIV tests on psychiatric patients as HAART is freely available in South Africa.

Shumway et al. (2018) suggested that acute inpatient psychiatric admissions can provide an opportunity for HIV testing and initiation of HIV care as poor access to specialist out-patient medical care leaves psychiatric patients vulnerable to late HIV diagnosis, under-treatment, and associated morbidity. They further proposed that extended in-hospital stay in psychiatric wards can afford an opportunity for HIV counselling and discussion of HIV results once patients are stable and have regained capacity to consent.

Mankweng Hospital has mainly been using a VCT programme in HIV testing of patients capable of giving informed consent. The prevalence of HIV and the HIV testing rate in psychiatric patients in Limpopo has not been studied and documented.

Treatment for mental illness, HIV testing and its management in psychiatric patients, can be carried out in one unit, which will increase the rate of HIV testing, management, and follow-up on both HIV and mental illness in a dual-diagnosis unit. Provider initiated counselling and testing can be practiced according to the World Health Organization (2017) guidelines in a dual-diagnosis unit. A dual-diagnosis unit will improve the follow-up of patients and reduce rates of non-compliance to both psychotropic and antiretroviral treatment.

2.6. Conclusion

HIV prevalence in psychiatric patients is generally higher than in the general population. There is also a dilemma of obtaining informed consent that adds to other barriers that influence the rate of HIV testing in psychiatric patients negatively. The current study looked at the prevalence of HIV in psychiatric patients admitted to Mankweng Hospital. The next chapter describes the methodology that was used.

Chapter Three: Research Methodology

3.1. Introduction

Chapter Three presents the methodology of the study. It describes the study design, study setting, study population, sampling, data collection and analysis, reliability, validity, bias, objectivity, and ethical considerations.

3.2. Study Design

In this study, a quantitative, retrospective, and descriptive design was used to obtain data from the clinical files of patients admitted to the psychiatric ward in Mankweng Hospital from 01 October 2018 to 30 September 2019.

A quantitative design was chosen as it has appropriate statistical techniques to make comparisons between variables. A cross-sectional data collection method was chosen as it was a one-time assessment method that was inexpensive and not time-consuming.

Retrospective studies are designed to analyse existing data such as chart records. This type of study is quick, inexpensive, and easier than other types of quantitative studies. In this study, existing clinical data from the clinical records of patients were obtained from the administrative clerks' office and information was extracted for analysis

3.3. Study Setting

The study was conducted in Mankweng Hospital, located in the Capricorn district in Limpopo. Limpopo has three long-term psychiatric hospitals, nine psychiatric inpatient units, 29 day-treatment centres and 464 outpatient psychiatric clinics (Republic of South Africa 2013). A map showing its location is presented in Figure 3.1.

The psychiatric unit in Mankweng Hospital is one of the nine psychiatric inpatient units in the province that offers short- to medium-term inpatient admission. The unit is located in a separate building from the other general wards of the hospital and has twenty-four-hour surveillance.

Figure 3.1: A geographical area map of Mankweng Hospital, indicated within the grey circle, and surrounding communities

Source*: https://www.google.co.za/maps/search/mankweng+hospital*

This psychiatric unit currently admits involuntary, assisted, and voluntary psychiatric patients and offers admissions from 72 hours observation to medium-term stay. According to the admission statistics of this ward, 472 psychiatric patients were admitted between 01 October 2018 and 30 September 2019.

The Mankweng psychiatric unit has two full-time psychiatrists with a multidisciplinary team made up of medical officers, nurses, psychologists, social workers, and occupational therapists.

All discharged patients' clinical records and laboratory results are filed and kept in the admissions department at the records filing section that is only accessible to the administrative clerks of the hospital.

Mankweng Hospital was chosen as a site for this research as it is the only tertiary hospital in Limpopo province with a full multidisciplinary team housed in one building primarily to manage psychiatric patients.

3.4. Study Population

Brink, Van der Walt and Rensburg (2017) defined *population* as an entire group of persons or objects of interest that meets the criteria that are to be studied, which a researcher uses to mark a boundary-setting of participants in a study.

In this study, the population comprised of the clinical records of all psychiatric patients admitted for longer than 72 hours in the psychiatric unit in Mankweng Hospital over one year, from 01 October 2018 to 30 September 2019. According to the ward statistics, Mankweng psychiatric ward admits patients 16 years and older with mental illness.

3.5. Sampling

3.5.1. Sampling technique and size

The population (N) included all clinical records of male and female adult patients admitted to the psychiatric ward in Mankweng Hospital for 72 hours or more from 01 October 2018 to 30 September 2019. Overall, 472 adolescents and adult patients were admitted to this ward over the study period and their clinical records were used to generate a sample.

The adult age range of eighteen years and older was chosen for this study for more straightforward comparison with other studies on HIV prevalence in psychiatric patients.

The sample (n) was drawn from this population. The sample size for this study was calculated from the population size using Slovin's formula according to Yamane (1967) where:

$$n = \frac{N}{1 + Ne^2}$$

N: Population size

e: level of precision/ margin error of 0.05

n: sample size

calculated as

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

$$n = 472/ (1 + (472 \times (0.05 \times 0.05))$$

$$n= 216.5$$

The minimum necessary sample size was therefore 217 clinical records.

In this study, a systemic random probability sampling method was used where the clinical records of every second patient admitted to the psychiatric ward over the specified study period was selected from the population, resulting in more than 217 clinical records of psychiatric patients being selected. Systemic random sampling was chosen over the other types of random sampling methods due to its simplicity in selecting the clinical records of the patients (Trochim, Donnelly & Arora 2015).

Using the probability sampling technique ensured that every patient record had a known and equal chance of being selected eliminating sampling bias (Trochim, Donnelly & Arora 2015). Furthermore, the results obtained could be extended to a broader population of psychiatric patients in Limpopo.

3.5.2. Inclusion Criteria

- The clinical records of all adult psychiatric patients admitted for 72 hours or more to Mankweng psychiatric unit between 01 October 2018 and 30 September 2019 were eligible for selection. Admission longer than 72 hours signifies serious mental illness and excludes delirium; and
- The clinical records of all adult males and females with a DSM 5 psychiatric diagnosis were eligible for selection and included for straightforward comparison with other study findings on adult populations.

3.5.3. Exclusion Criteria

- The clinical records of psychiatric patients under the age of 18 years were excluded to enable more straightforward comparison with other studies on the prevalence of HIV, as most documented findings have focused on the adult population;

- The clinical records of patients admitted and discharged from the psychiatric ward in less than 72 hours were excluded as the admission would not have been as the result of a serious mental illness diagnosis according to DSM 5 classification;
- The clinical records of patients admitted and discharged with a diagnoses of substance intoxication or substance withdrawal without a primary psychiatric disorder were excluded as substance intoxication and withdrawal are not listed as serious mental illnesses in the DSM 5 classification;
- The clinical records of patients admitted to the psychiatric ward and diagnosed with delirium were excluded as they presented with temporary psychotic symptoms secondary to a medical or surgical instability; and
- The clinical records of readmitted patients within the study period were excluded to ensure that no patient's records were documented twice.

3.5.4. Sample description

The final sample included 228 records, thus exceeding the necessary minimum of 217. Records were obtained for 141 males and 87 females with ages ranging from eighteen years to over fifty years old, and included DSM 5 diagnoses of anxiety disorders, bipolar spectrum and related disorders, depressive disorders, neurodevelopmental disorders, neurocognitive disorders, personality disorders, schizophrenia spectrum and related disorders, and other serious mental illness.

3.6. Data Collection

The clinical records of the psychiatric patients admitted in the psychiatric ward in Mankweng Hospital from 01 October 2018 to 30 September 2019 were traced using the psychiatric ward admission book.

In this study an adapted validated data collection tool was designed. It included information on demographic data (age, gender, marital status, level of education), social data (place of residence, employment status, disability grant), clinical data (DSM 5 diagnosis spectrum, history of non-adherence to medication and substance use), and HIV-related data (HIV status and HAART status). A copy of the data collection sheet may be found in Annexure A.

The data collection tool was adapted to fit this study by removing some components from the original data collection tool used by Beke and Hoffman (2015) and incorporating new elements that were in keeping with the objectives of this study. The data collection tool for this study was used to extract secondary data retrospectively from the clinical records.

Limitations arising from extracting secondary data from existing clinical records led to certain risk factors of consistent condom use and multiple sexual partners, mentioned in Carey et al (2004) and Schade, Van Grootheest and Smit (2013), not to be included in the data collection sheet as such history may have been recorded inconsistently during routine psychiatric history taking in Mankweng Hospital.

Systematic random sampling method was used to ensure a statistically valid sample size that was representative of the adult population in the Mankweng psychiatric ward. Every second clinical file, resulting in 229 files, was selected from the admission book in the psychiatric ward over the study period and collected from the main hospital filing office.

The first eligible clinical record was of the psychiatric patient admitted to the psychiatric unit from midnight onwards on the 01 October 2018. Patients' hospital identification numbers recorded in the ward admissions book were used to trace the clinical files from the clerks' office.

Information on the eligible clinical files was collected according to the data collection sheet and consolidated. The data collected included sociodemographic data (age, gender, marital status, level of education, employment status, and area of residence), DSM 5 diagnosis (anxiety disorders, bipolar spectrum and related disorders, depressive disorders, neurodevelopmental disorders, neurocognitive disorders, personality disorders, schizophrenia spectrum and related disorders and other serious mental illness), history of substance use, psychiatric treatment adherence, HIV status, and use of HAART was recorded against HIV positive status.

The clinical files containing patients' clinical records for this research were collected by one researcher and stored in a locked research office that was only accessible to the researcher.

The data collection tool in this study had good efficiency as it was both inexpensive and is less labour intensive. Confidentiality was maintained at all times.

3.7. Data Analysis

The preliminary analysis was descriptive to include estimation of overall coverage of HIV testing and HIV prevalence among psychiatric patients. The association between categorical variables was assessed using a Chi-squared test. A p-value of less than 0.05 and indicated statistical significance.

Data were entered on an Excel spreadsheet where the preliminary analysis was carried out. The spreadsheet was then exported to JASP (2020) for final analysis.

3.8. Reliability and Validity

Reliability refers to the ability of a test to produce the same results consistently. It measures the precision or repeatability of a test (Kestenbaum 2019). Validity of a research study refers to the accuracy and ability of a study to identify the actual disease determined by a gold standard procedure (Kestenbaum 2019).

Reliability describes the fluctuations naturally occurring within a test or study, while validity measures the capability of the study to detect the actual disease.

Validity in this study was ensured by using a validated data collection statistical instrument. The data collection tool was previously tested in a research study by Beke and Hoffman (2015) at Sterkfontein psychiatric Hospital, and the adaptations to suit this study were evaluated by a biostatistician and specialist psychiatrists.

3.9. Bias and Objectivity

Bias is when a data collection procedure or instrument over- or underestimates the subject being assessed (Tripepi, Jager, Dekker, Wanner & Zoccali 2008), while objectivity is the principle where the researchers constrain their personal prejudices from influencing the outcome of the research. Objectivity and bias refer to similar concepts but differ in that objectivity is a question of interpretation while bias refers to the error of procedure (Payne & Payne 2004)

In this study, selection and sampling bias were avoided by using systemic random sampling statistical methods to select clinical files for data collection. Information bias in a retrospective study might be unavoidable due to possible missing clinical information, it was however minimised by correlating doctors' clinical notes with laboratory results, nursing, and psychologists' notes in the clinical file. The objectivity of this study was improved by the collaboration with an independent biostatistician in the interpretation of the data.

3.10. Ethical Considerations

Ethical clearance to conduct the study was obtained from the Turfloop Research Ethics Committee (TREC) before commencing with the study Certificate No. TREC/327/2020: PG, a copy of which may be found in Annexure B). Accordingly, this study was conducted in a way that was in keeping with the rights described in the Constitution of South Africa (Republic of South Africa 1996), the National Health Act (Republic of South Africa 2003) and the Mental Health Care Act (Republic of South Africa 2002).

Permission to access clinical records of participants was obtained from the Chief Executive Officer (CEO) of Mankweng Hospital (Annexure C), and permission to conduct the study was obtained from the Department of Health, Limpopo Province (Annexure D).

The information that was collected for this study was kept confidential. To ensure that confidentiality was maintained, only the researcher had access to the patients' clinical records which were kept in a secured and locked research office that was only accessible to the researcher.

To ensure anonymity, all data were de-identified. Any identifying details of the patients on the clinical records were not recorded on the data collection tool. Coding numbers were assigned instead of names, hospital numbers or other identifying information on the data collecting tool.

To ensure that data were not manipulated, an independent statistician entered the data into a software programme for analysis.

Chapter Four: Results and Discussion

4.1. Introduction

This chapter begins with a descriptive analysis. It then presents the HIV-positive results, first linking them to demographic and social information. After this, the association between HIV status and psychiatric profile is presented. This chapter concludes with an exploration of HIV testing and HIV prevalence at Mankweng hospital.

4.2. Descriptive Analysis

In this study, the researcher used a retrospective dataset obtained from clinical files of patients admitted to the psychiatric ward in Mankweng hospital from 01 October 2018 to 30 September 2019. The study comprised 228 patients in the psychiatric ward, Mankweng hospital.

The demographic and social data are presented first. Next, the psychiatric information is presented. Finally, the HIV information is presented.

4.3. Demographic and Social Data

Demographic data included age, gender, marital status, level of education, employment status, and area of residence. The demographic may be seen in Table 4.1. and social data may be seen in Table 4.2

4.3.1. Age groups of admitted psychiatric patients

The psychiatric patients admitted to Mankweng hospital were fairly distributed across all age groups, with 27.6% in the 30 to 39 age group. This was followed by age group 40 to 49 at 21.1% and over 50 years at 17.5%, with the remaining 32.9% distributed between the age groups 18 to 24 and 25 to 29 years.

4.3.2. Gender distribution

In terms of gender, most of the patients surveyed were males (61.8%) compared to 38.2% being females.

Table 4.1 : Demographic Data

Demographic Data		
Age	**n**	**%**
18 -24 years	37	16.2
25-29 years	38	16.7
30-39 years	63	27.6
40-49 years	48	21.1
>50 years	40	17.5
Unknown or missing	2	0.9
Gender	**n**	**%**
Male	141	61.8
Female	87	38.2
Marital status	**n**	**%**
Single	191	83.8
Married	28	12.3
Divorced	5	2.2
Widowed	1	0.4
Unknown	3	1.3
Highest level of education	**n**	**%**
No formal education	2	0.9
Primary education	29	12.7
Secondary education	144	63.2
Tertiary education	35	15.4
Unknown	18	7.9
Employment	**n**	**%**
Yes	28	12.3
No	197	86,4
Unknown	3	1.3
Disability Grant	**n**	**%**
Yes	86	37.7
No	140	61.4
Unknown	2	0.9

4.3.3. Level of Education

The educational level of the patients in the psychiatric was that most of them had a secondary education (63.2%), followed by tertiary (15.4%), then primary (12.7%) and lastly, no formal education (0.9%). There were 18 (7.9%) where level of education was unknown.

Table 4.2: Social Data

Social Data		
Residence	**n**	**%**
Urban	36	15.8
Rural	192	84.2
Area	**n**	**%**
Mankweng & surrounding	157	68.9
Elsewhere in South Africa	68	29.8
Another country	3	1.3

4.3.4. Place of residence

Most of the patients admitted to the Mankweng hospital psychiatric ward were from South Africa (98.7%) with most patients coming from rural areas (84.2%) compared to 16% urban from urban areas.

With most patients coming from rural areas 68.9% were from Mankweng and surrounding villages compared to 30.1% who were from other outlying areas.

4.4. Psychiatric Information

The psychiatric information is presented in Table 4.3.

Just under half (44.7%) of patients admitted to the Mankweng hospital psychiatric ward were diagnosed with schizophrenia spectrum and other psychotic disorders while only a quarter (25,9% & 2,2%) had mood-related disorders with both bipolar and depression.

There were 5.7% with a dual diagnosis of primary psychiatric disorders with substance related disorders and a similar number of patients had co-morbid disorders that did not include substances of abuse. Almost 60% had a history of non-compliance to their psychiatric medication which could have influenced their relapse and admission to hospital.

Table 4.3 : Psychiatric Data

Psychiatric Data		
DSM 5 psychiatric diagnosis	**n**	**%**
Schizophrenia spectrum and other psychotic disorders	102	44.7
Bipolar disorders and bipolar & related disorders	59	25.9
Depressive disorders	5	2.2
Trauma- and stressor-related disorders	2	0.9
Substance related and addictive disorders	30	13.2
Neurocognitive disorders	2	0.9
Co-occurring two (or more) disorders, not substance-related	13	5.7
Dual diagnosis of two (or more) disorders, with substance-related disorders	13	5.7
Note: All personality disorders (n=13) and all neurodevelopmental disorders (n=8) were comorbid with at least one other diagnosis		
Unknown	2	0.9
History of non-compliance to psychiatric treatment	**n**	**%**
Yes	136	59.6
No	82	40.4
History of substance use	**n**	**%**
Yes	102	44.7
No	124	54.4
Unknown	2	0.9

4.5. HIV Information

The HIV information may be seen in Table 4.4.

Using the sample size of 228 clinical files of patients admitted to the psychiatric ward in the Mankweng hospital during the study period, 140 patients' information regarding HIV status was not found (patients not tested), with only 88 of the clinical files with recorded HIV status.

Table 4.4 : HIV Information

HIV Information		
HIV status	**n**	**%**
Positive	46	20.2
Negative	42	18.4
Not tested	140	61.4
HIV positive and on HAART	**n**	**%**
Yes	46	100.0
No	0	0.0

The HIV testing rate was only 38.6% of the 228 sampled patients. This is illustrated in Figure 4.1.

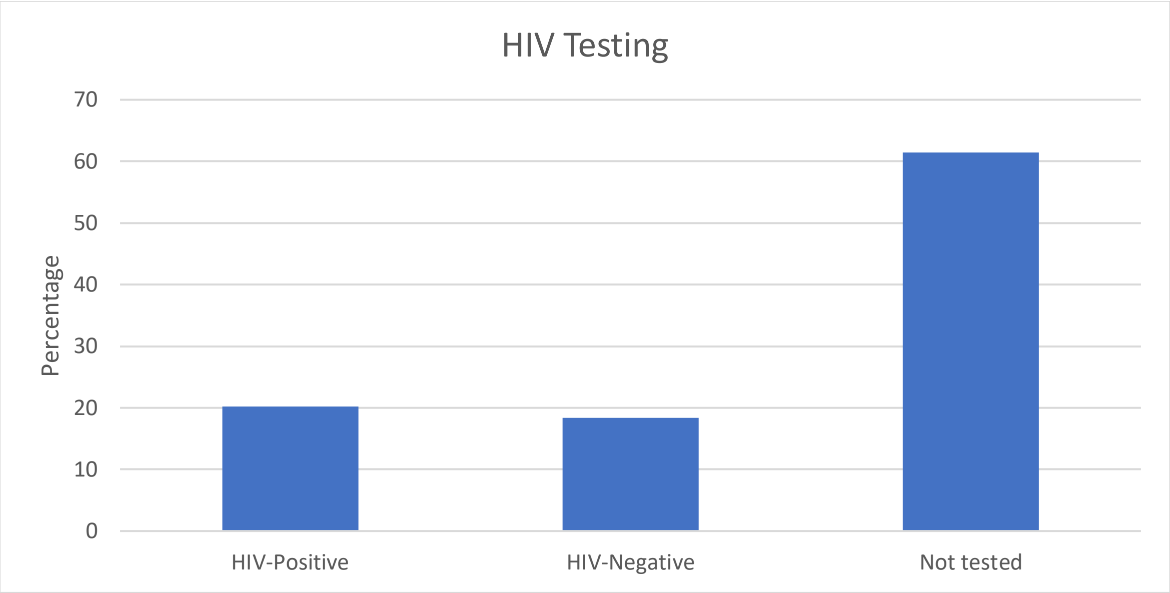

Figure 4.1 : HIV Testing

The prevalence rate of HIV in those with recorded results in clinical files was 52.2%, where 46 of the patients were HIV-positive and 42 of the patients (47.8%) were HIV-negative. (Of those known to be seropositive in the entire sample, 46 out of 228, the prevalence would be 16.0%.)

All patients in the Mankweng hospital psychiatric ward who were HIV positive were on HAART treatment.

Mankweng hospital psychiatric ward still follows client initiated VCT unless in situations where the clinical profile of the patient suggest that an untreated HIV might be influencing slow response of the mental illness to neuroleptic medication. The client-initiated VCT has been shown to be associated with low HIV testing rates similar to the HIV testing rates in Mankweng hospital psychiatric ward.

The information from the 46 patients confirmed to be HIV-positive was then analysed with respect to demographic and social factors, and then psychiatric factors, as presented in the next two sections.

4.6. Prevalence of HIV Infection with Respect to Demographic Factors

The prevalence of HIV infection with respect to demographic factors may be seen in Table 4.5.

This section analysed whether there was an association between HIV positive status with age, gender, marital status, level of education and employment status. None of these associations were statistically significant ($p>0.05$). The results therefore are only described.

4.6.1. Age

Regarding age distribution of HIV positive patients, the age group 30 to 39 years had the highest number of HIV positive patients at 37.08%, followed by 40 to 49 years at 26.1% compared to the younger age groups. These results were in keeping with Ziki et al. (2018) where the age group 33 to 40 years had the highest HIV positive cases for 38% of psychiatric patients in Swaziland. Lundberg et al. (2013) reported a similar high HIV prevalence in the 40 to 49 years age group of psychiatric patients in Uganda when compared to younger age groups. This high risk was attributed to the fact that older age (30 to 49) groups were the most sexually active people in the general population, hence they would be more prone to contracting HIV.

4.6.2. Gender

The clinical files showed that more females (60.9%) than males (30.1%) were HIV positive. This result is in keeping with previous studies such as those of Ziki et al. (2018), Singh, Berman and Bresnahan (2009), and Collins et al. (2009), which showed the prevalence rate of HIV in women to be higher than in men, and similar to those of female clients at antenatal clinics.

Paruk and Mere (2018) showed that HIV positive patients with psychotic disorders were more likely to be women than men in a study in Durban, South Africa.

The Centre for Disease Control and Prevention (2018) reported several risks factors that place women at a higher risk of contracting HIV, such as biology, where HIV enters easily through the mucosal membrane of the vagina, and intimate partner violence that may force women to engage in risky sexual behaviours.

Table 4.5 : Demographic and Social Variables for HIV-Positive Patients

Age	**Count of HIV positive**	**Percentage**
18-24	5	10.9
25-29	3	6.5
30-39	17	37.0
40-49	12	26.1
>50	8	17.4
Unknown	2	2.2
Gender	**Count of HIV positive**	**Percentage**
Female	28	60.9
Male	18	39.1
Marital Status	**Count of HIV positive**	**Percentage**
Divorced	3	6,5
Married	6	13,0
Single	35	76,1
Unknown	2	4,3
Educational Status	**Count of HIV positive**	**Percentage**
Primary	9	19,6
Secondary	27	58,7
Tertiary	8	17,4
Unknown	2	4,3
Employment Status	**Count of HIV positive**	**Percentage**
Employed	8	17,4
Unemployed	38	82,6
Disability Grant	**Count of HIV positive**	**Percentage**
Yes	16	34,8
No	30	65,2

4.6.3. Marital status

According to the data collected, 76.1% of HIV positive patients in the psychiatric ward were single, followed by those who were married at 13.0% and the least was the group of patients who were divorced at 6.5%.

According to Guimaraes et al. (2010), 92.7% of psychiatric patients in their study were sexually active with inconsistent condom use, multiple sexual partners and impulsivity, which could explain the high prevalence of HIV in single (unmarried) patients. This was in contrast to Tenkorang (2014), who found that unmarried women were at a lower risk of HIV infection in Lesotho and Zimbabwe than married and divorced women in Tanzania.

4.6.4. Level of education, employment, and disability grant status

Patients who reached secondary education were amongst those with a high HIV prevalence than primary and tertiary education. None of the patients with a lack of formal education had HIV positive tests results in the files.

Most patients with recorded HIV status in the clinical files were unemployed; the unemployment status was high in both HIV positive (82.6%) and negative (90.5%) patients.

Most of the patients in this study were not on a disability grant, according to the clinical files, regardless of HIV status.

In sum, the majority of HIV positive patients had secondary education, were unemployed and did not receive disability grant. This would classify this community in the low socio-economic index where the prevalence of HIV was the highest (Wabiri & Taffa, 2013).

4.6.5. Place of residence

The overall majority of psychiatric patients in this study were from Mankweng surrounding villages which are all in rural areas. With the association made in Wabiri and Taffa (2013) on higher HIV rates in poor rural communities, poor access to HIV/AIDS information was noted as an added risk of increasing the high HIV rates.

However, residing closer to Mankweng Hospital may be a benefit when dual diagnosis units are opened as these patients will be able to access specialist care

4.7. Association of HIV Infection with Psychiatric Diagnosis

These results may be seen in Table 4.6. These results were statistically significant ($\chi^2(8) = 17.901$; $p=0.022$). These results have been presented graphically in Figure 4.2 to see the source of the significance.

Table 4.6 : Association of HIV Infection with Psychiatric Diagnosis

DSM 5 psychiatric diagnosis	HIV-Positive		HIV-Negative	
	n	%	n	%
Schizophrenia spectrum and other psychotic disorders	21	45,7	17	40,5
Bipolar disorders and bipolar and related disorders	19	41,3	8	19,0
Depressive disorders	0	0,0	2	4,8
Trauma- and stressor-related disorders	0	0,0	2	4,8
Substance related and addictive disorders	3	6,5	4	9,5
Neurocognitive disorders	0	0,0	2	4,8
Co-occurring two (or more) disorders, not substance-related	0	0,0	4	9,5
Dual diagnosis of two (or more) disorders, with substance-related disorders	1	2,2	3	7,1
Unknown	2	4,3	0	0,0
Total	**46**	**100,0**	**42**	**100,0**

As can be seen in Figure 4.2, most of the seropositive patients had a DSM 5 diagnosis of schizophrenia spectrum and other psychotic disorders (n=21). This was not surprising, given that the most frequent DSM 5 diagnosis was schizophrenia (n=102). The next most frequently diagnosed condition was bipolar disorders and bipolar and related disorders (n=59), 26 of whom were tested for HIV. In this group, 19 patients tested seropositive, making up a 42.3% proportion of the HIV-positive group in total, and being over two-thirds of the bipolar disorders patients who were tested. Said in another way, there were more than twice as many bipolar patients (n=19) who were HIV-positive compared to HIV-negative bipolar patients (n=8) of those who were screened for HIV. Symptoms for manic and hypomanic episodes, according to DSM 5, such as impulsivity, engaging in high-risk activities could be influencing the association between bipolar disorders and a higher prevalence of HIV.

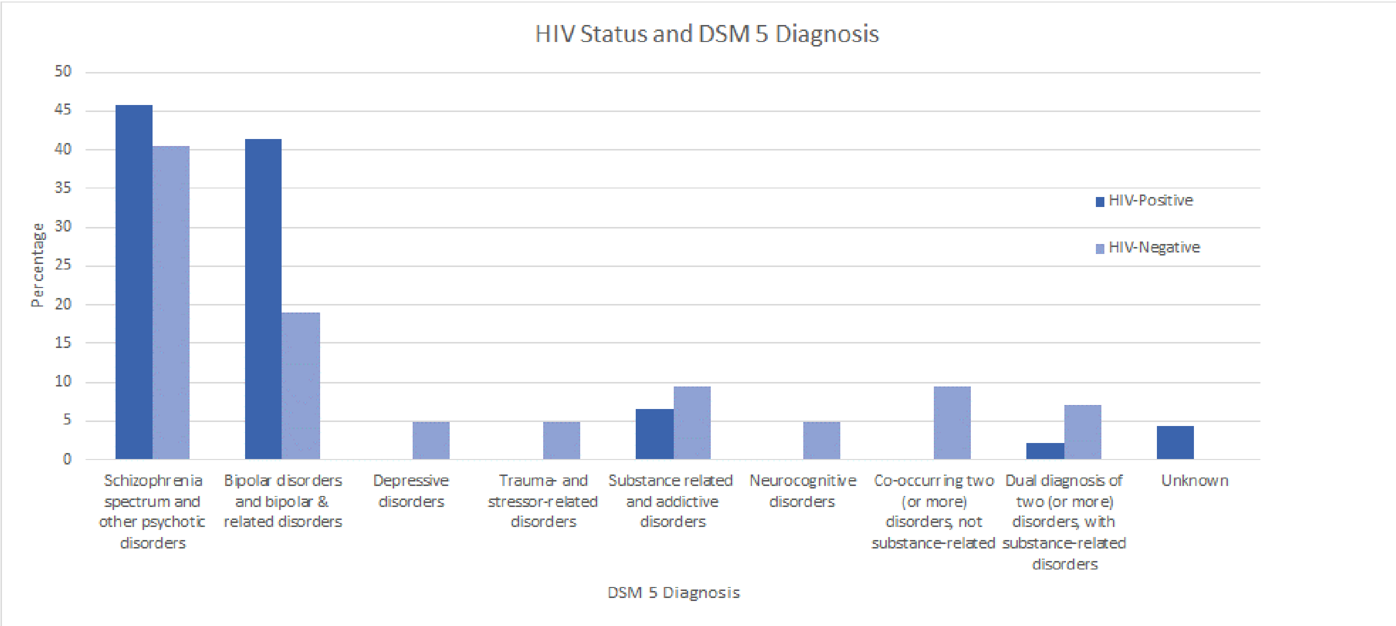

Figure 4.2 : DSM 5 Psychiatric Diagnosis and HIV Status

Breuer et al. (2011) showed a bi-directional relationship between HIV and mental illness. Their systemic review showed that depression and anxiety disorders were the most common mental illnesses in people living with HIV.

Bauer-Saeb et al. (2017), Beke and Hoffmeyer (2014), and Remien et al. (2019) all reported a high prevalence of HIV in patients with a serious mental illness (SMI) such as psychotic disorders, bipolar disorders, and recurrent depressive disorders., that led to functional impairment with no cluster separation.

With respect to substance use as a co-morbidity to primary psychiatric illness, Guimaraes et al. (2010) listed injection drug use as a high-risk factor for contracting HIV due to sharing of unsafe needles. They also reported alcohol use associated with more likelihood of having unprotected sexual intercourse. In the present study there were relatively few with substance-related and addictive disorders who were HIV-positive. This could be influenced by most psychiatric patients admitted in Mankweng hospital using cannabis rather than alcohol or injected drugs.

4.8. HIV Screening Revisited

It has been seen that HIV screen at Mankweng hospital has been rather low, which has made it difficult to address the main research question posed in the current research. The use of DSM 5 diagnoses has also not been straightforward in that many patients co-occurring or dual diagnoses. These issues are now addressed.

4.8.1. HIV Testing

Compared to Collins et al. (2009), where they tested the psychiatric patients admitted in their study setting, this current study was a retrospective study and did not influence testing of the patients. It rather took results that were in the clinical records. This and the fact the Mankweng hospital follows VCT could have influenced the low rate of HIV testing.

According to Collins et al. (2009), the prevalence of HIV in psychiatric patients admitted to a hospital in KwaZulu-Natal was at 26.5% overall, with the general population at 20.9%. Another study in Durban, KwaZulu-Natal, showed a similar prevalence at 29.1% of HIV in psychiatric patients. Beke and Hoffman (2014) reported a 21% sero-prevalence of HIV in a closed forensic psychiatric unit in Krugersdorp, Gauteng, which was higher than that of the general population.

Of the 228 clinical files used in the current study, only 88 files had HIV status recorded, meaning 61.5% of the psychiatric patients admitted to Mankweng psychiatric hospital between 1 October 2018 and 30 September 2019 did not have a known HIV status. Of the 88 patients, 52.2% of them were recorded as HIV-positive. The 52.2% prevalence rate was disproportionally large due to the very low HIV testing rate of 38.6%.

According to UNAIDS (2022), 90-90-90 was an ambitious treatment target to help end the AIDS epidemic. It was initiated in 2015. Its target was that by 2020, 90 percent of all people living with HIV would know their HIV status, by 2020, 90 percent of all people who were HIV-positive would receive sustained antiretroviral therapy, and by 2020, 90 percent of all people receiving antiretroviral therapy would have viral suppression. South Africa reached 92-70-64 of the UNAIDS 90-90-90 target in 2019, meaning that 92 percent of South Africans knew their HIV status, including rural communities such as uMkhanyakude district which reached 94-93-90, where 94 percent of the community knew their HIV status (Joint United Nations Programme on HIV/AIDS, 2019). However, at the time of this research there were no UNAIDS 90-90-90 target statistics for Mankweng community. The HIV testing rate, however, was expected to be higher than 38.6% for adults with a SMI. Mangurian (2017) reported that the barriers to testing for HIV in psychiatric patients has the added burden of the dilemma in obtaining informed consent from psychiatric patients and the two-sided stigma of having HIV and a mental illness. One can add to this a lack of proper co-ordination between mental health providers and VCT screening, according to Chakrabartty (2017).

South Africa initially proposed and followed client-initiated VCT and later proposed provider-initiated VCT to improve the number of people testing for HIV. There have been no recorded 90-90-90 UNAIDS targets for Mankweng hospital, which has opted for an extension of the provider-initiated VCT into opt-out HIV testing. This will improve the percentage of HIV testing as HIV testing is the gateway to care and treatment seeking for those who test HIV-positive.

4.8.2. DSM 5 Diagnosis

Due to the fact that this study was retrospectively conducted some patients (5,7%) had a co-morbid psychiatric diagnosis not related to substance use and a similar 5,7% had dual diagnosis of mental illness with substance use disorders. This however did not seem to influence the relationship of mental illness to HIV as none of the patients with co-morbid disorders had HIV positive results and only 2,2% of those with a dual diagnosis were found to be HIV positive.

4.9. Limitations of this Study

The biggest limitation for this research was the low rate of HIV testing which made it difficult to address the research question and establish a plausible prevalence rate of HIV infection at Mankweng hospital.

This study used secondary data with no control over primary data collection which resulted in some missing clinical files or information.

The data collection in this study did not separate schizophrenia from HIV-induced psychotic disorders in patients which might be the reason for the high prevalence of HIV in the schizophrenia spectrum and other psychotic disorders. This is a significant limitation as new onset psychosis is a serious complication of HIV infection and accounts for one to fifteen percent of psychotic episodes in patients who are HIV positive (Hammond & Treisman, 2007).

Another limitation was conducting a retrospective study that did not allow testing for HIV in psychiatric patients admitted to Mankweng Hospital.

Finally, the occurrence of co-occurring and dual diagnoses clouded the clinical profile of the patients. This, together with the absence of any specific diagnosis of HIV psychosis made it difficult to establish any conclusive association between HIV status and clinical profile.

4.10. Conclusion

Psychiatric patients admitted in Mankweng hospital psychiatric ward were evenly distributed across all adult age groups and this sample was made up of more males than females.

The data collected also showed more patients to have been single (unmarried) 83.8%, unemployed (84,2%) and not on any social grant (61,4%). This was a community that came from a mostly rural background with most of the patients staying in Mankweng and surrounding areas.

The majority of the HIV-positive patients were in the age range of 30 to 39 years and 40 to 49 years, most of them were females (60,9%) and single (76,1%) with a secondary education and they had a SMI of schizophrenia spectrum and other psychotic disorders or bipolar and related disorders.

The next chapter concludes this study and makes recommendations.

Chapter Five: Conclusion and Recommendations

5.1. Introduction

The aim of this study was to investigate the prevalence of HIV infection and its associated factors in psychiatric patients admitted to Mankweng Hospital psychiatric ward.

The rationale for the study was that psychiatric patients with a SMI have been found to be twenty times more likely to be infected by HIV than the general population (Joska, Stein & Igor 2014).

Remien et al. (2019) reported the prevalence of HIV in the USA as higher amongst adult psychiatric with SMI at 2% to 6% compared to 0,5% in the general population. This trend was common in high income countries and led to these countries classifying people with SMI as a vulnerable community at high risk for HIV infection (Carey et al. 2004).

African countries such as Uganda (Lundberg et al.2013), Swaziland (Ziki et al. 2018) and South Africa (Collins et al. 2009) have all reported a higher prevalence of HIV in psychiatric patients as compared to the general population.

There were no previous studies on HIV prevalence in psychiatric patients in Limpopo at the time of this study.

5.2. Conclusion

5.2.1. Demographic and social factors

The overall majority of psychiatric patients in this study were from Mankweng surrounding villages which are all in rural areas. It was found that the age group of 30 to 39 years had the highest number of HIV positive cases followed by 40 to 49 years, with a lower prevalence in the younger age groups. There were more female patients (women) who were HIV-positive. Most of the HIV positive patients in Mankweng Hospital were single. The majority of HIV positive patients had secondary education, were unemployed and not receiving a disability grant.

5.2.2. Clinical factors

In this study, most of the patients admitted had schizophrenia and other psychotic disorders, or bipolar and related disorders. The prevalence of HIV-positive patients was highest for these diagnoses, and this was statistically significant. It was also noted that there were significantly more patients with bipolar and related disorders who were HIV-positive compared to those who were HIV-negative of those who were tested for HIV status.

5.2.3. Prevalence of HIV and rate of testing

Of the 229 Clinical files, only 88 files had HIV status recorded. This represented a 38.6% testing rate and meant that meaning 61.4% of the psychiatric patients admitted to Mankweng psychiatric hospital between 1 October 2018 and 30 September 2019 did not have a known HIV status. From the files of 88 patients who were tested, 52.2% were recorded as HIV positive. The 52.2% prevalence rate was considered to be disproportionally large and attributed to the very low HIV testing rate of 38.6%. Efforts should therefore be made to improve HIV testing rates in this at-risk and vulnerable community. The low rate of testing was a limitation in this research.

5.3. Recommendations

Mankweng Hospital commonly practices client initiated VCT, which has been known to result in low HIV testing rates. It is recommended that they move toward PICT to increase the testing rate where physicians will offer HIV counselling and testing at all contacts for status-unknown patients. This would be in line with current practices reported in the literature.

It is necessary to introduce HIV education as part of the mental health education that psychiatric patients receive during in- or out-patient visits.

Future research is necessary to assess the prevalence of HIV in psychiatric patients for both in- and out-patients at other psychiatric hospitals, in both urban and rural areas.

Finally, it is recommended that a dual-diagnosis unit be developed to follow up psychiatric patients with HIV and to prevent HIV transmission to those who are HIV negative.

Mankweng hospital in general and the psychiatric ward and psychiatric outpatient department in particular need to come up with more proactive strategies for ending the HIV pandemic by following the extended provider initiated VCT of opt-out, meaning that when baseline and monitoring blood tests are taken, HIV testing should be included. This will not only improve the HIV testing rate, but also add to HIV education as HIV counselling will be offered during psychiatric review before disclosing the HIV status.

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Annexure A: Data Collection Tool

Section A: Demographic data

1. Hospital number			2. Unique Coding number		
3. Age (tick X relevant box)	18 -24 years	25-29 years	30-39 years	40-49 years	>50 years
4. Gender	Male		Female		
5. Marital status	Single	Married	Divorced	Widowed	
6. Highest level of education	No formal education	Primary education	Secondary education	Tertiary education	

Section B: social data

7. Residence	Name:	Urban	Rural
Mankweng & surrounding	Limpopo province (except Mankweng)	South African Provinces (except Limpopo)	Other countries (except South Africa)
8. Employment	Yes	No	
9. Disability grant	Yes	No	

Section C: Psychiatric data

10. DSM 5 psychiatric diagnosis		
Neurodevelopmental disorder		
Schizophrenia spectrum and other psychotic disorder		
Bipolar disorders and bipolar & related disorders		
Depressive disorder		
Anxiety disorders		
Trauma- and stressor- related disorders		
Substance related and addictive disorders		
Neurocognitive disorders		
Personality disorders		
Other, specify		
11. History of non-compliance to psychiatric treatment	Yes	No
12. History of substance use	Yes	No

Section D: HIV

13. HIV status recorded in clinical file	Yes	No
14. HIV status	Positive	Negative
15. HIV positive & on HAART	Yes	No

Annexure B: Ethical Clearance

University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 3766, Fax: (015) 268 2306, Email: makoetja.ramusi@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE

ETHICS CLEARANCE CERTIFICATE

MEETING: 21 October 2020

PROJECT NUMBER: TREC/327/2020: PG

PROJECT:

Title:	Prevalence of Human Immunodeficiency Virus in Psychiatric Patients Admitted in Mankweng Hospital
Researcher:	W Makhomisane
Supervisor:	Dr VN Mzimba
Co-Supervisor/s:	Dr PJ Mokoena-Molepo
School:	Medicine
Degree:	Master of Medicine

PROF P MASOKO
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE
The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: REC-0310111-031

Note:
i) **This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.**
ii) **Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.**
iii) **PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.**

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Annexure C: Permission Letter from the CEO

Restricted

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH
MANKWENG HOSPITAL

Ref: S5/3/1/2
Enq: Modula MC
Ext: 1017/1282
Email: Motlatso.Modula@dhsd.limpopo.gov.za

To: Dr. Makhomisane Wisani
University of Limpopo

REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT MANKWENG HOSPITAL: PREVALENCE OF HUMAN IMMUNODEFICIENCY VIRUS IN PSYCHIATRIC PATIENTS ADMITTED IN MANKWENG HOSPITAL.

1. The above matter has reference.
2. This is to confirm that the CEO has granted permission to conduct research on "**prevalence of human immunodeficiency virus in psychiatric patients admitted in Mankweng hospital**".
3. The permission to conduct the research will be for a period of 1 year as stipulated on the approval letter from the Provincial Head Office.
4. Attached please find her application letter, approval from Provincial Office, ethics clearance certificate and research proposal.

Yours in service delivery

P.P.

Acting Chief Executive Officer
Mrs. Kobola ME

DEPARTMENT OF HEALTH
Mankweng Hospital
PRIVATE BAG X1117
SOVENGA 0727
Tel. 015 286 1000
LIMPOPO PROVINCE

2020/207
Date

Private Bag X1117, SOVENGA, 0727 Tel: 015 286 1000 Fax: 015 267 0206
Houtbos Road, Sovenga
Restricted
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Annexure D: Approval Letter from Department of Health

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Department of Health

Ref	:	LP_2020_11_013
Enquires	:	Ms PF Mahlokwane
Tel	:	015-293 6028
Email	:	phoebefaith26@gmail.com

Wisani Makhomisane

PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below**;**

Prevalence of human immunodeficiency virus in psychiatric patients admitted in Mankweng hospital.

1. Permission to conduct research study as per your research proposal is hereby Granted.
2. Kindly note the following:
   a. Present this letter of permission to the institution supervisor/s a week before the study is conducted.
   b. In the course of your study, there should be no action that disrupts the routine services, or incur any cost on the Department.
   c. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
   d. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
   e. The approval is only valid for a 1-year period.
   f. If the proposal has been amended, a new approval should be sought from the Department of Health
   g. Kindly note that, the Department can withdraw the approval at any time.

   Your cooperation will be highly appreciated

02/12/2020

A/ **Director Research**
Dr. Ramalivhana NJ

Date

Private Bag X9302 Polokwane
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Website: http/www.limpopo.gov.za

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