

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



 FACULTY OF
HEALTH SCIENCES

**THE IMPACT OF THE HIV EPIDEMIC ON LENGTH OF STAY IN AN
ACUTE PSYCHIATRIC WARD AT A GENERAL HOSPITAL IN
GAUTENG**

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Medicine in the branch of Psychiatry.

JOHANNESBURG

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DECLARATION

I, Sharne O'Brien, declare that this research report is my own, unaided work. It is being submitted for the degree of Master of Medicine (MMed) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

Signature of candidate

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Primary Supervisor: Prof. R. Thom

Signature of Primary Supervisor

_____ day of _____ 20_____ in _____

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NOMENCLATURE

ART: Antiretroviral therapy

ARV: Antiretroviral

CI: Confidence Interval

GIT: Gastrointestinal System

GLM: General Linear Model

HAART: Highly Active Antiretroviral Therapy

HIV: Human Immune Virus

LOS: Length of Stay

LS-mean: Least Square-mean

SAS: Statistical Analysis System

SMI: Serious Mental Illness

WHO: World Health Organization

ABSTRACT

Acute inpatient psychiatric services in South Africa are under pressure, as evidenced by high bed-occupancy rates.^{1 2} Several factors may contribute to this situation, including the policy of deinstitutionalisation, together with a lack of sufficient community mental health services. Another possible factor contributing to a longer length of stay in hospital is the admission of patients with complex conditions, including medical comorbidity. The HIV epidemic in South Africa was predicted to impact on psychiatric services due to the prevalence of neuropsychiatric complications in HIV-infected individuals.

This study aimed to determine whether patients with a comorbid HIV infection admitted to the acute psychiatric unit in a Southern Gauteng general hospital had a longer length of stay compared to patients who were HIV-seronegative.

This study was a retrospective record review of all patients admitted to and discharged from the acute psychiatric unit between the 1st of January and the 31st of December 2016. The patient's demographic and clinical profile is described in this report. Additionally, the association between HIV-serostatus and the presence of any medical comorbidity and length of stay is analysed.

An important finding of this study was that 43% of patients admitted to the unit had unknown HIV-serostatus, suggesting that patients are not routinely tested for HIV during their admission. Patients with a longer length of stay were more likely to be tested for HIV. Of the 295 patients whose HIV status was known, 20.3% were HIV positive. This is similar to national prevalence figures.

There was no significant difference in length of stay between those patients who were HIV positive compared to those who were HIV negative. Therefore, the primary hypothesis of this study was not proved. The record review found that 24.3% of patients had a medical comorbidity that required clinical attention. Almost half of this was due to HIV infection, with cardiovascular diseases following at 5%. This is in contrast to the higher prevalence of comorbid medical conditions in acute psychiatric inpatient populations found internationally.^{71 72} In these studies, which primarily emanate from high-income countries, cardiovascular diseases are the most common comorbid medical condition.

The results of this study suggest that there may be inadequate screening for HIV and other medical comorbidities in psychiatric patients admitted to this unit. Substance use was seen amongst 64% of this study population. A large proportion of these were not tested for HIV, most likely due to shorter admissions. This is most concerning given the bidirectional relationship in causality between HIV infection and substance use.³

It is recommended that more attention is paid to screening all patients for HIV infection who are admitted to an acute psychiatric unit. The opt-out approach to HIV counselling and testing has been recommended for this population,⁴ with due attention to an ethical approach to consent for such testing. Clinicians at all levels of health care should also be reminded to screen psychiatric patients for all medical conditions, however, in the midst of the current HIV epidemic in South Africa it is vital that at any point at which a patient has contact with psychiatric services opt out testing for HIV be routinely offered.

LIST OF FIGURES

Figure 3.1. Outcomes of Patient Admissions	22
Figure 3.2. Gender Distribution	23
Figure 3.3. Mean Age by Gender.....	24
Figure 3.4. Distribution of Relationship Status	24
Figure 3.5. Distribution of HIV Status	25
Figure 3.6. Distribution of Primary Psychiatric Diagnosis	26
Figure 3.7. Medical Comorbidity other than HIV	27
Figure 3.8. Average LOS for Various Groups.....	28
Figure 3.9. Mean LOS for HIV Negative, HIV Positive and Unknown HIV status patients	29
Figure 3.10. Adjusted Mean LOS for Patients With or Without Comorbidity	29
Figure 3.11. Substance Use Distribution	30
Figure 3.12. Gender Distribution for Substance Use	30
Figure 3.13. Comparison of Age Distribution in Substance Users	31
Figure 3.14. Mean LOS According to HIV Status.....	32
Figure 3.15. Adjusted Mean LOS per HIV status	36
Figure 3.16. Interaction of Age on LOS per Gender	36
Figure 3.17. Adjusted Mean LOS per Psychiatric Diagnosis	37
Figure 3.18. Mean LOS in Patients With/Without Medical Comorbidity Adjusted for Gender.....	38
Figure 3.19. LOS Adjusted According to Primary Psychiatric Diagnosis by Gender	40

LIST OF TABLES

Table 3.1. Calculation of LOS for HIV Status	32
Table 3.2. Univariate Analysis of LOS for HIV Status by Gender.....	33
Table 3.3. Multivariate Analysis of Other Confounders on LOS for HIV Status	34
Table 3.4. Calculation of LOS for HIV Status Adjusted for Confounders	35
Table 3.5. Gender, Comorbidity and their Interaction on LOS.....	37
Table 3.6. Multivariate Analysis of LOS in Medical Comorbidity Adjusted for Other Confounders.	39
Table 3.7. Calculation of Adjusted LOS in Medical Comorbidity for Other Confounders	40
Table 4.1. HIV Prevalence Studies in Acute Psychiatric Units in South Africa	44

LIST OF APPENDICES

APPENDIX 1: Data Collection Sheet.....	52
APPENDIX 2: Approval from CEO Helen Joseph Hospital to Conduct Study at Facility	53
APPENDIX 3: Ethics Clearance Certificate	54
APPENDIX 4: Plagiarism Declaration.....	55
APPENDIX 5: Turnitin Report	56

TABLE OF CONTENTS

DECLARATION	1
NOMENCLATURE	3
ABSTRACT.....	4
LIST OF FIGURES	6
LIST OF TABLES	7
LIST OF APPENDICES.....	8
TABLE OF CONTENTS	9
CHAPTER 1: BACKGROUND	11
1.1 Introduction.....	11
1.2 Literature Review	12
1.3 Hypothesis.....	16
1.4 Aim	16
1.5 Objectives.....	16
CHAPTER 2: METHODOLOGY	17
2.1 Study Design.....	17
2.1.1 Study setting.....	17
2.1.2 Study population.....	17
2.2 Data Collection.....	17
2.3 Sample Size	18
2.4 Data Analysis	19
2.5 Ethics Approval	21
CHAPTER 3: RESULTS.....	22
3.1 Descriptive Variables	23
3.1.1 Demographic variables	23
3.1.2 Clinical variables	25
3.2 Comparative Variables	32

3.2.1 The impact of HIV status on LOS	32
3.2.2 Covariate analysis of other known confounders on LOS.....	33
3.2.3 Analysis of the effect of medical comorbidity on LOS.....	37
CHAPTER 4: DISCUSSION	42
CHAPTER 5: LIMITATIONS.....	50
CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS.....	51
APPENDIX 1: Data Collection Sheet.....	52
APPENDIX 2: Approval from CEO Helen Joseph Hospital to Conduct Study at Facility	53
APPENDIX 3: Ethics Clearance Certificate	54
APPENDIX 4: Plagiarism Declaration.....	55
APPENDIX 5: Turnitin Report	56
REFERENCES	58

CHAPTER 1: BACKGROUND

1.1 Introduction

Over the past two decades there has been increasing pressure on bed availability in acute psychiatric units in various hospitals across the country. In 2004, Stikland Hospital had to introduce an 'early discharge policy' to make beds available in the acute setting.¹ This appears to be commonly reported by mental health care providers from various hospitals across the country, including the acute psychiatric unit at Helen Joseph Hospital in Gauteng where bed occupancy during 2017 was between 140-180%.² Unacceptably high bed-occupancy rates result in mental health care workers being forced into ethically and legally compromising positions by having to discharge patients too early to allow for the admission of other acutely psychotic or confused patients.¹

In 1996, the World Health Organization advocated a global policy of community-based care for people with mental disorders and a shift away from chronic hospitalisation.⁵ This policy of 'deinstitutionalisation' was adopted in support of the rights of mental health care users in post-apartheid South Africa.⁶ Subsequently, it has been suggested that there needs to be a balance between community and hospital care. Community-based care needs to be at the point of primary care with sufficient acute psychiatric beds in general hospitals close to patients' homes.^{7 8 9}

Since the political changes in South Africa in 1994, there have been many legislative and policy changes that have impacted on the provision of healthcare. These changes required the establishment of a comprehensive health service for all people living in South Africa. Resources, which had previously been allocated in a racially-based inequitable system of care, now had to provide for the entire population. The strategy has been to establish a district-based system of care, with an emphasis on primary health care (free at the primary point of care), but with adequate hospital-based support at secondary, tertiary and quaternary levels of care.⁶

The HIV epidemic in the mid to late 1990s also resulted in increased pressure on health resources. As the need to provide treatment for people infected with HIV became a major priority, the allocation of resources to other areas, including mental health care, became severely impacted. The expansion of mental healthcare services

and the establishment of the necessary community mental healthcare services required by the deinstitutionalisation policies during this period could, therefore, not be adequately met.^{10 11 12} According to Lund and Flisher, the 'downscaling of psychiatric institutions has not been matched with the development of community services resulting in an over-reliance on central hospital-based services and substantial unmet need,' and the 'revolving door pattern' of frequent readmissions to an acute psychiatric hospital because of inadequate service provision within the community.¹³

In 2018, the Global Health Observatory Data Repository reported an estimated South African HIV prevalence for people between the ages of 15 and 49 years of 20.4%.¹⁴ The HIV epidemic in South Africa has likely created an additional burden on existing mental health services. There is a clear link between HIV infection and mental health, which has been documented nationally^{15 16 17 18} and internationally.^{19 20 21 22 23} Findings internationally also suggest that patients admitted to an acute psychiatric ward with any additional medical comorbidity are more likely to require a longer length of stay (LOS).^{24 25} This is likely because of the need to accommodate the necessary cross-disciplinary referrals and intervention prior to the patient being sufficiently fit for discharge or even sufficiently medically well to facilitate transfer out to specialised psychiatric facilities for longer-term care. Therefore, it is possible that the HIV epidemic has impacted significantly upon the health care needs and service utilisation of mental health care users in South Africa.

This study explores the impact of HIV as a medical comorbidity on the utilisation of acute psychiatric services in a general hospital.

1.2 Literature Review

A literature search conducted in PubMed used various combinations of the following keywords: acute psychiatric admission/hospitalisation, rehospitalisation, length of stay (LOS), severe mental illness and psychiatric service utilisation, to investigate the nature of factors contributing to the frequent use of acute psychiatric services. Both international and local literature revealed the following common factors contributing to the increased use of acute psychiatric services:

- Gender and social support: It has been documented that being female and older is associated with an increased LOS in acute psychiatric settings. This appears to be

directly related to the socioeconomic status of women and the elderly, especially in underdeveloped countries and resource-poor settings.^{26 27 28 29 30 31 32 33}

- Underdeveloped community-based mental healthcare services,^{11 13 13 29 31 33} overcrowded, understaffed primary healthcare facilities,^{8 29 31} and lack of support groups and halfway houses/step down facilities.^{9 10 9 10 33 30 31 33}
- Global and local policies of deinstitutionalisation^{5 6} have made fewer medium- and long-term facilities available for clients with severe mental illness. When combined with poorly-resourced community services this leaves many vulnerable people at risk of repeated acute hospitalisations i.e. the 'revolving door phenomenon'.^{10 33 30}
- Psychiatric diagnosis: Patients with psychotic disorders generally require a longer admission than those with a mood disorder. Patients with acute stress disorders, anxiety disorders or substance-related disorders usually only require brief admissions as these conditions are usually rapidly resolved.^{7 11 12} However, where there is comorbid substance use with another psychiatric diagnosis, as in true dual diagnosis, this may indeed prolong a hospital stay.^{10 26 27 28 33}
- Medical comorbidity: Several studies have documented increased length of stay (LOS) and more frequent utilisation of psychiatric services in patients with medical comorbidities. It is well documented that people with mental disorders have a higher prevalence of medical comorbidity than the general population.^{24 25} In addition, mentally-ill patients face barriers in terms of accessing care for physical complaints within the community, including inadequate screening for physical comorbidity at primary health care level, stigmatisation by health care workers and family, all of which result in general neglect of medical conditions. The inability of some mentally-ill patients to effectively communicate the nature of their health problems also contributes to this overall neglect of other physical medical comorbidities. The tendency for untreated physical conditions to worsen the severity of psychiatric symptoms and exacerbate mental illness results in frequent psychiatric readmissions and increasing the length of acute hospital stays or increasing service utilisation to appropriately manage these medical comorbidities.^{34 35 36 37 38}

Three of the above factors (poor social support, lack of community mental health services and policy changes) that contribute to increased acute psychiatric service utilisation, readmissions and increased length of hospital stay have been fairly well

researched internationally and in our South African context during the late 1990s and early 2000s when deinstitutionalisation and greater emphasis on community psychiatric care were strongly advocated.^{12 11 12 32 33} However, there is a lack of research on medical comorbidity and the effect on acute psychiatric service utilisation globally, and especially in Southern Africa. Such research is important in Southern Africa where the prevalence of HIV infection in the general population is approximately ten times higher than the global prevalence.^{14 14} HIV is an important comorbid medical condition in patients presenting to psychiatric services.

Another literature search in PubMed using combinations of the terminologies HIV, severe mental illness, comorbidity, hospitalisation and neuropsychiatric manifestations of HIV highlighted the following:

Both studies locally and internationally have found a bidirectional relationship between HIV and mental illness.¹⁵⁻²³ Substance use creates additional risks both for acquiring HIV infection and for HIV disease-progression.^{17 18 19 20 21 22 23} People with mental illness have a higher risk of HIV infection. Studies from South Africa,¹⁷ Australia,²⁰ Uganda,²¹ and USA,²² have found that there is a higher prevalence of HIV infection amongst people with chronic mental disorders than amongst the general population. According to these studies, people with severe mental illness are particularly vulnerable to blood-borne infections such as HIV. Reasons for this include increased sexual drive, impulsivity in acute mania and increased substance use associated with severe mental illness leading to indiscriminate sexual relations, vulnerability due to severe mental illness resulting in the inability to negotiate condom use and vulnerability to sexual abuse.^{20 22 39} Not only are patients with serious mental illness (SMI) more at risk of HIV infection, HIV-infected persons are also at increased risk of developing psychiatric disorders. These disorders may be secondary to HIV-brain infection, or as a result of psychosocial stressors linked to HIV status.^{15 40 41 42 43}

A study by Struthers in 2002, attempted to predict the impact that the HIV epidemic would have on mental health services in Gauteng.⁴⁴ Using a model of care developed by Lund and Flisher based on WHO norms and standards recommended for mental health care,⁴⁵ an estimation was made of the number of psychiatric beds required in 2002 in Gauteng without HIV and factoring in an HIV prevalence of 10%, 15% and 20%. The number of acute psychiatric beds required was shown to be significantly

increased with the rising prevalence of HIV and that provision of acute beds, even at that time, was found to be inadequate, even without factoring in the burden of HIV. Furthermore, due to national strategies of deinstitutionalisation and a focus on community-based care there appears to have been a lack of attention to the availability of acute inpatient psychiatric services since 2002, and as such bed availability has become problematic.^{1 2}

Struthers' study was, however, conducted before the introduction of antiretroviral (ARV) treatment in the South African public sector. The introduction of highly active antiretroviral therapy (HAART) has significantly reduced mortality, and the incidence of new HIV infection appears to have plateaued, or even in some cases, declined.¹⁴ However, people are now living longer with HIV and, therefore, the prevalence of HIV has not decreased.^{46 47} Furthermore, the use of HAART is not particularly effective in reducing or reversing many of the neurocognitive and neuropsychiatric sequelae of HIV infection. This could be due to co-infection with various opportunistic diseases, severe neurocognitive deficits and severity of illness at time of commencement of ARV treatment, poor central nervous system penetration of ARVs as well as a chronic inflammatory reaction to the virus, which persists despite reduced viral load and apparent effective viral suppression, i.e. compartmentalisation.^{18 23 48 49 50} The availability of ARV treatment thus may have further increased the need for psychiatric care for these patients who are now surviving longer and more likely to develop neuropsychiatric sequelae with chronic HIV infection.

While some international studies show that HIV-serostatus in people with mental disorders is associated with increased psychiatric admission rates and service utilisation, no recent studies have been conducted in South Africa. There has, especially been no confirmation of the predicted outcomes of the study by Struthers⁴⁴. The current study aims to build on this report by investigating the occurrence of HIV-seropositivity in acute psychiatric admissions, and to determine whether there is an association between HIV and LOS in psychiatric admissions.

A significant limitation with regards to research on HIV in psychiatric populations has been the need for written informed consent for HIV testing; a thorough assessment of the capacity to provide such permission in this group of patients is necessary. However, as a result of accumulating evidence regarding the relationship between HIV

and mental illness, recommendations for more routine HIV testing in all patients presenting with psychiatric symptoms have been made in South Africa (with opt-out testing and proxy consent at the time of presentation with acute psychiatric symptoms; consent is obtained from the patient once capacity to consent and understand the implications of testing is restored).⁵ This is important not only in terms of the provision of specific individualised care, but also when planning for and funding psychiatric services that can meet the specific needs of our population and as such with opt out testing having been introduced across psychiatric services since 2008 this should be an opportune time to undertake this study.

1.3 Hypothesis

Patients admitted to an acute psychiatric unit in Gauteng, South Africa, who are HIV positive have a longer length of stay (LOS) than those who are HIV negative.

1.4 Aim

The aim of this study was to determine the occurrence of HIV in patients admitted to the acute psychiatric ward at a general hospital and to determine the impact that comorbid HIV may have on the LOS.

1.5 Objectives

- To describe the demographic and clinical (psychiatric) profile of patients admitted to the acute psychiatric unit at Helen Joseph Hospital between January and December 2016.
- To calculate the prevalence of HIV positive serostatus in patients admitted during this period.
- To compare the LOS of patients who are HIV positive with those who are HIV negative in male and female.

CHAPTER 2: METHODOLOGY

2.1 Study Design

2.1.1 Study setting

Helen Joseph Hospital, situated in Johannesburg serves a large portion of the city's population from the eastern suburbs across the central areas to the more western suburbs of Johannesburg. There are several very impoverished areas in the hospital's vicinity, which are home to large lower-income communities, such as Eldorado Park and Westbury. These areas have become gangster related crime havens with a high prevalence of unemployment and substance use.

2.1.2 Study population

This was a descriptive-analytic study based on a retrospective record review. The study population were all patients admitted to and discharged from the acute psychiatric unit at Helen Joseph Hospital between the 1st of January and the 31st of December 2016.

Inclusion Criteria:

1. Admission to the acute psychiatric unit at Helen Joseph Hospital between the dates of 01 January 2016 and 31 December 2016
2. Age 18 years and over

Exclusion Criteria:

1. Admission before the 1st of January 2016 and still admitted on the 1st of January 2016
2. Admission before the 31st of December 2016 but not yet discharged by the 31st of December 2016

2.2 Data Collection

The following information was collected (Appendix 1):

- Demographic variables:

- 1) Gender
 - 2) Age
 - 3) Relationship status, i.e. single, married, divorced, separated or cohabiting
- HIV status: positive or negative or unknown
 - Date of admission
 - Date of completion of stay in the acute psychiatric ward and the nature of it:
 - 1) Discharged
 - 2) Transferred psychiatric
 - 3) Transferred medical
 - 4) Deceased
 - LOS in days (where a part of a day will be calculated as one day upon admission or discharge)
 - Psychiatric diagnosis on discharge
 - Any other medical comorbidity (other than HIV)
 - Any comorbid substance use disorder

2.3 Sample Size

Sample size estimation was based on the key research question to be answered. In this case, the assessment of the difference in LOS with respect to HIV status, controlling for gender, required the use of a General Linear Model (GLM). Sample size calculations were carried out in G*Power by Faul et al., 2007.⁵¹ Using 80% power and the 5% significance level, the detection of a small, medium and large effect size required a sample size of 967, 158 and 64 patients with completed hospital stay, respectively. Aiming for the detection of at least a medium effect size, a minimum sample size of 158 patients with completed hospital stay was thus required.

A total of 697 patients were admitted to and discharged from the Helen Joseph Hospital acute psychiatric ward during the period from the 1st of January 2016 to the 31st of December 2016. However, 174 of these patients were excluded due to missing files or incomplete data. Thus, data were collected from n=523 patients.

Four patients were further excluded (one of whom died in the ward within a week of her admission and three who were transferred out to a medical ward once it was established that these patients' presentation required primarily medical intervention.)

Thus, 519 patients were included in the study. The sample size was adequate for the study and the inclusion of further covariates into the model.

2.4 Data Analysis

Data were entered into a Microsoft Excel spreadsheet in preparation for analysis.

Descriptive analysis was carried out as follows: Categorical variables were summarised by frequency and percentage tabulation, and illustrated as bar charts. Continuous variables were summarised by the mean, standard deviation, median and interquartile ranges and their distribution was shown as histograms.

The prevalence of HIV in the study group was calculated according to the prevalence of those with known HIV status, which was then applied to the sample as a whole.

The prevalence of medical comorbidity was calculated according to the number of patients with any medical comorbidity and not the prevalence of a specific condition. This was to avoid duplication of patients with more than one medical comorbidity when considering LOS.

An overall medical comorbidity indicator (HIV or other) was determined for all patients as far as possible, as follows in Table 2.1.

Table 2.1: Definition of Medical Comorbidity

HIV status	Other comorbidity	Overall comorbidity
Positive	Yes	Yes
Positive	No	Yes
Negative	Yes	Yes
Negative	No	No
Unknown	Yes	Yes
Unknown	No	No

The comparison between the HIV positive, negative and status unknown groups with respect to the LOS was done on the sample of n=519 patients as follows:

- The independent samples t-test was used to assess the relationship between LOS and HIV status. Where the requirements of the test were not met, the non-parametric Wilcoxon Rank-Sum test was used instead. Confounders included gender, age, social support (relationship status), psychiatric diagnosis, other medical comorbidity and substance use comorbidity. These variables were entered into a univariate and multivariate analysis to determine their impact on LOS.
- The effect of HIV status, gender and their interaction on LOS was determined by a GLM within (LOS+0.5) as the dependent variable, and HIV status, gender, and their interaction as the independent variables. A logarithmic transformation of the dependent variable was required to meet the assumptions of the technique. Additional covariates (age, relationship status, psychiatric diagnosis, other medical comorbidity and substance use) were added as further independent variables. Prior to this, the pairwise association between the independent variables was examined by the chi-square test to identify any strongly associated (confounded) variables that should not be included in a model together. Post-hoc tests were conducted using the Tukey-Kramer adjustment for unequal group sizes.

Additional analyses were conducted on the available data describing overall medical comorbidity and its impact on LOS. This was not included in the objectives outlined in the protocol, but it was hypothesised that this might have contributed to an increased LOS.

The comparison between the medical comorbidity and no medical comorbidity groups with respect to the LOS was done as follows:

- LOS for the whole sample, n=519 patients, was calculated for those with a medical comorbidity and for those with no known medical comorbidity. The independent samples t-test was used to determine any relationship between LOS and medical comorbidity. Where the requirements of the test were not met, the non-parametric Wilcoxon Rank-Sum test was used instead. Confounders included gender, age, social support, psychiatric diagnosis and substance use comorbidity. These variables were entered into a univariate and multivariate analysis to determine their impact on LOS.

- The effect of comorbidity, gender and their interaction on LOS was determined by a GLM within (LOS+0.5) as the dependent variable, and medical comorbidity, gender and their interaction as the independent variables. A logarithmic transformation of the dependent variable was required to meet the assumptions of the technique. Additional covariates (age, relationship status, psychiatric diagnosis, and substance use) were added as further independent variables. Prior to this, the pairwise association between the independent variables was examined by the chi-squared test to identify any strongly associated (confounded) variables which should not be included in a model together. Post-hoc tests were conducted using the Tukey-Kramer adjustment for unequal group sizes.

Data analysis was carried out using SAS version 9.4 for Windows. The 5% significance level was used.

2.5 Ethics Approval

Permission was obtained from the hospital manager and the Head of Department of Psychiatry at the hospital to conduct the study at Helen Joseph Hospital (Appendix 2.) Ethical clearance was obtained from the University of the Witwatersrand Human Research Ethics Committee on the 3rd of July 2017 (Certificate No. M170670) (Appendix 3).

There was no need for informed consent from individual patients as the data being collected was a retrospective file review.

Patient anonymity and confidentiality of records were protected through the use of a study number on the data collection sheet. Identifying information was kept secure and separate from the data collection sheets, and only the researcher had access to this information.

CHAPTER 3: RESULTS

Of the n=523 patients on whom data was collected, the outcomes of the admissions were distributed as follows (Figure 3.1):

- n=445 patients (85.1% of the sample) were discharged for outpatient follow-up from the acute psychiatric ward (completed stay).
- Once they had been sufficiently worked up medically and stabilised, n=74 patients (14.2%) were transferred to a specialised psychiatric facility for further management of their psychiatric presentation. It was evident that their psychiatric condition would require a longer admission to manage adequately, which was not possible in the acute ward (Transferred Psych).
- n=1 patient (0.2%) died from medical conditions soon after admission in the psychiatric ward.
- n=3 patients (0.6%) were transferred to a medical ward early in their acute admission for an acute medical condition (Transferred Med).

The patient who died and those patients requiring acute medical stabilisation were not included in the data analysis as their hospitalisation was not considered to be primarily psychiatric. Thus, the sample for the analysis comprised n=519 patients.

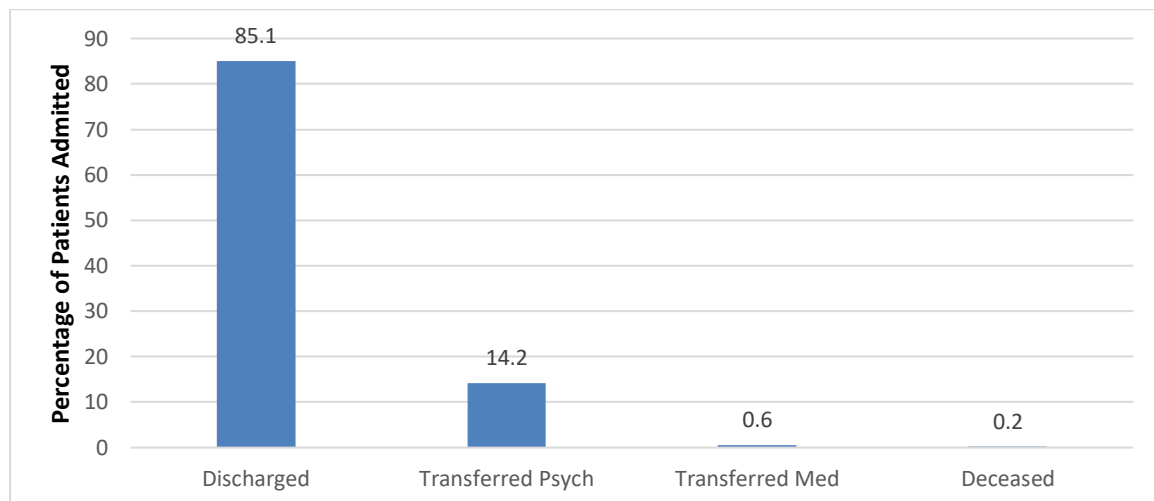


Figure 3.1. Outcomes of Patient Admissions

3.1 Descriptive Variables

3.1.1 Demographic variables

- a) Gender (Figure 3.2): Of the sample of psychiatric patients (n=519 patients), 195 patients were female (37.6%) and 324 were male (62.4%).

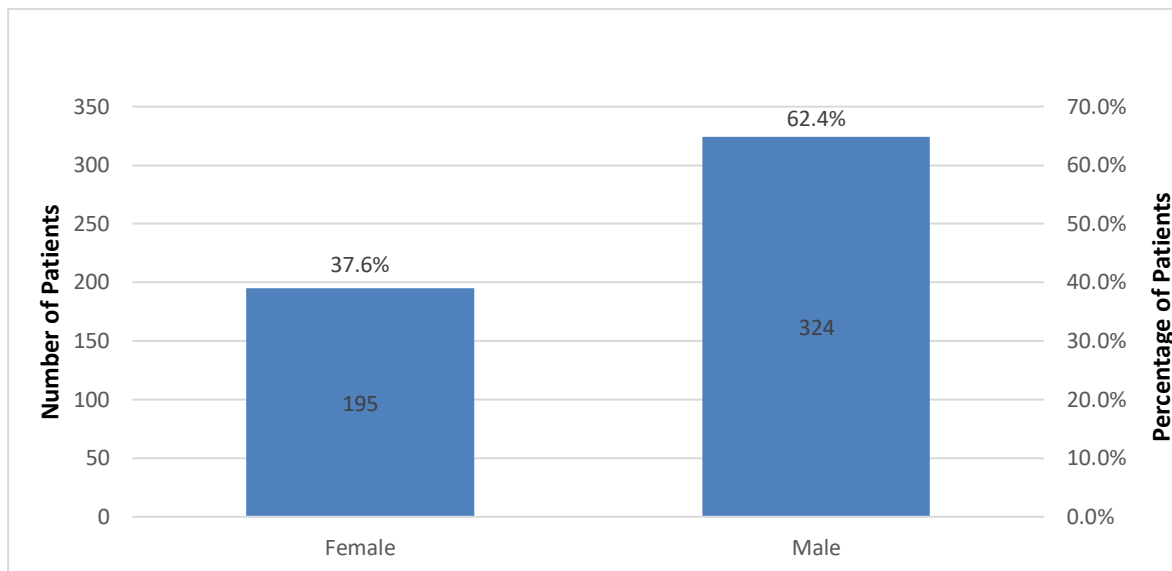


Figure 3.2. Gender Distribution

- b) Age (Figure 3.3): The mean age of the psychiatric patients admitted was 34 years, with a range of 18 to 76 years. Females were generally older than males, with the mean age of females admitted being 36.7 years and that of males being 32.5 years.

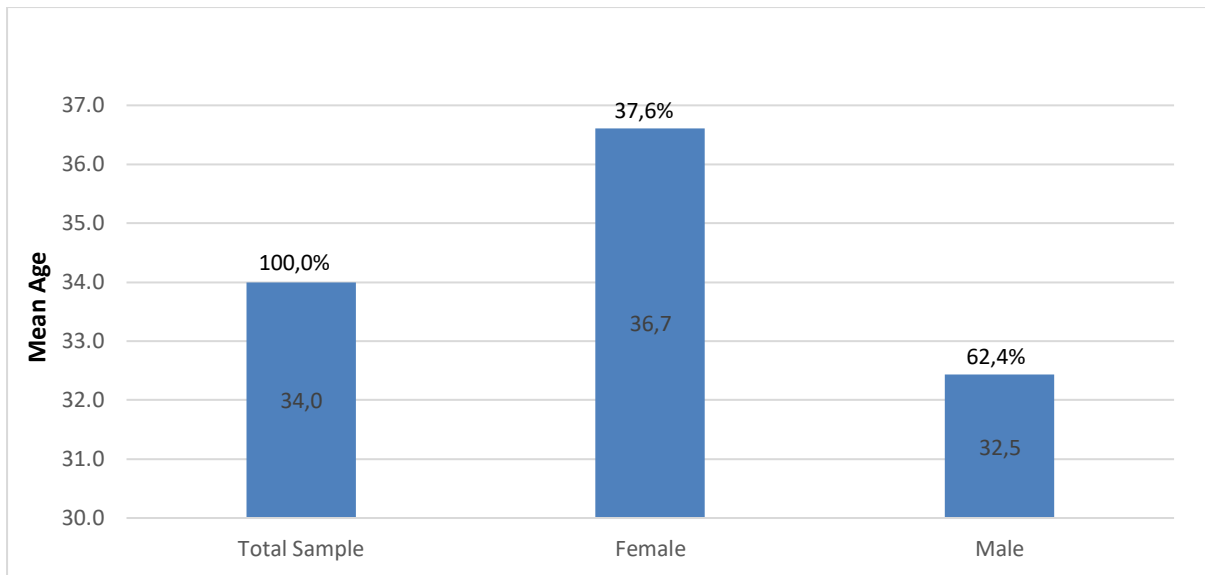


Figure 3.3. Mean Age by Gender

c) Relationship status (Figure 3.4): The majority of patients admitted were single $n=409$ (78.8%), divorced $n=26$ (5.0%), separated $n=11$ (2.1%), or widowed $n=6$ (1.2%). They formed the 'not in a relationship' category for statistical analysis. The remaining patients were either married $n=58$ (11.1%) or cohabiting $n=9$ (1.7%), and they formed the 'in a relationship' category for statistical analysis.

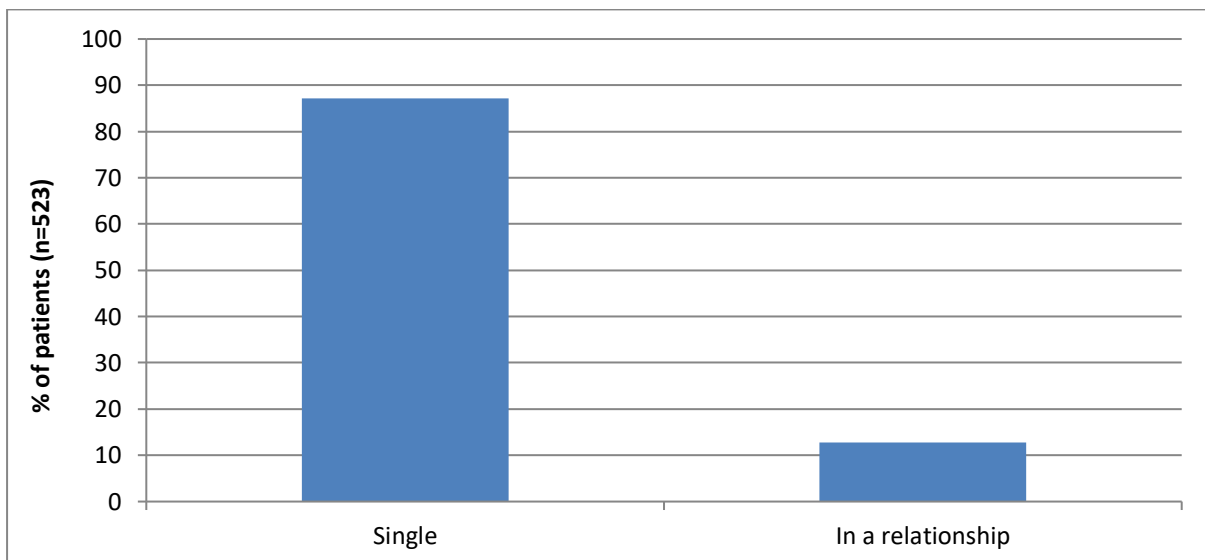


Figure 3.4. Distribution of Relationship Status

3.1.2 Clinical variables

- a) HIV status (Figure 3.5): n=295 (56.8%) patients had a documented HIV status in their records; n=60 (11.6%) were HIV positive and n=235 (45.2%) patients were HIV negative. n=224 (43.2%) patients were not tested during their admission and their HIV status was unknown.

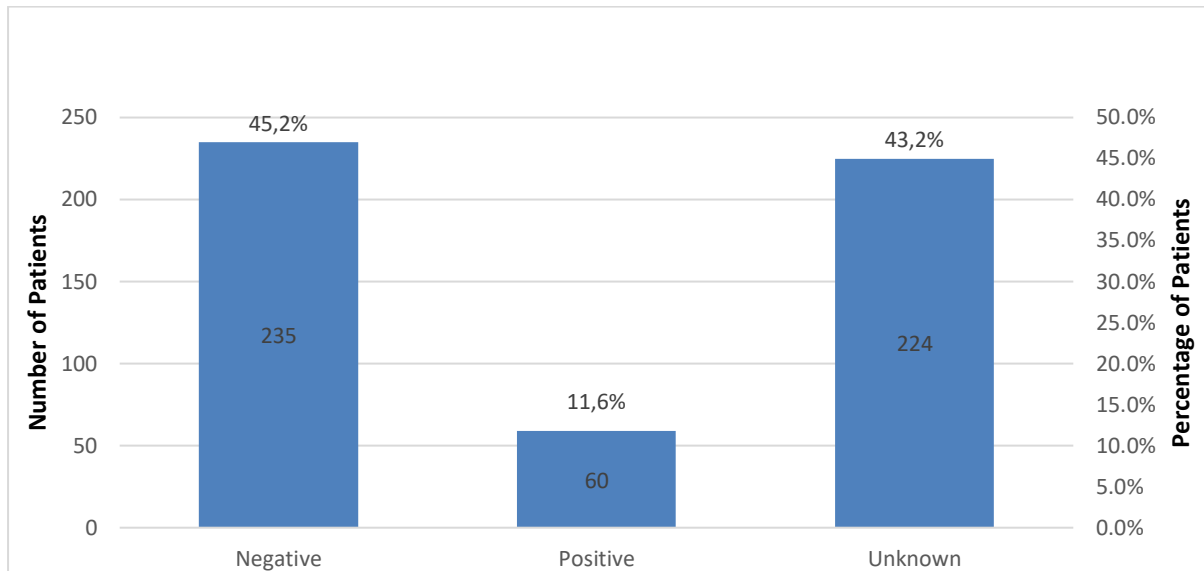


Figure 3.5. Distribution of HIV Status

- b) HIV prevalence: Of the total sample of n=519, just over half (n=295, 56.6%) had been tested for or were already diagnosed with HIV. 20.3% of the patients who were tested (n=60 of the 295 patients tested) were HIV positive (11.6% of the total sample) and 79.7% (n=235 of the 295 patients tested) were HIV negative (45.2% of the sample). The HIV status of 43.2% (n=224) of the patients was unknown, so it is impossible to estimate the true HIV prevalence in the study group; it could theoretically be as low as 11.6% (all Unknown=Negative) or as high as 54.7% (all Unknown=Positive). We can probably not assume that those tested are a random sample of the entire study group and thus conclude that the HIV prevalence is $60/(60+235) = 20.3\%$.
- c) Psychiatric diagnosis on discharge (Figure 3.6): The most common psychiatric diagnosis was a psychotic disorder (49.9%). This included primary psychiatric illnesses such as schizophrenia, substance-induced psychotic disorder or

psychotic disorder due to another medical condition. Mood disorders were the second most common clinical presentation, and included primary mood disorders such as bipolar disorder, as well as substance-induced bipolar disorder and bipolar disorder due to a general medical condition. Still, mood disorders were less than half as common as psychotic disorders.

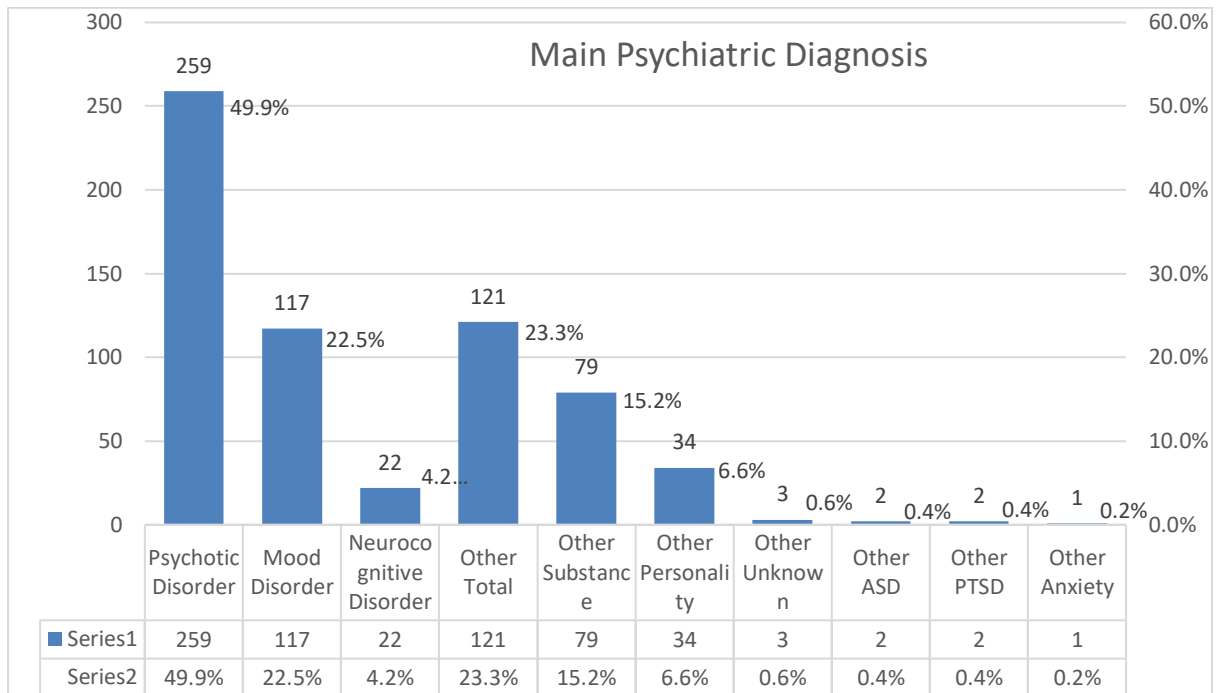


Figure 3.6. Distribution of Primary Psychiatric Diagnosis

d) The distribution of medical comorbidity other than HIV (Figure 3.7): There were n=76 (14.6%) patients who had a medical comorbidity other than HIV with n=26 (5.0%) patients with cardiovascular disease, n=15 patients (2.8%) with epilepsy, n=10 (1.9%) patients with a neurological disease other than epilepsy, n=9 patients (1.7%) with a metabolic disorder, n=7 (1.3%) patients with an endocrine disorder, n=4 patients (0.8%) with a respiratory condition, n=3 patients (0.6%) with a gastrointestinal (GIT) condition and n=2 patients (0.4%) with an infective condition (other than HIV).

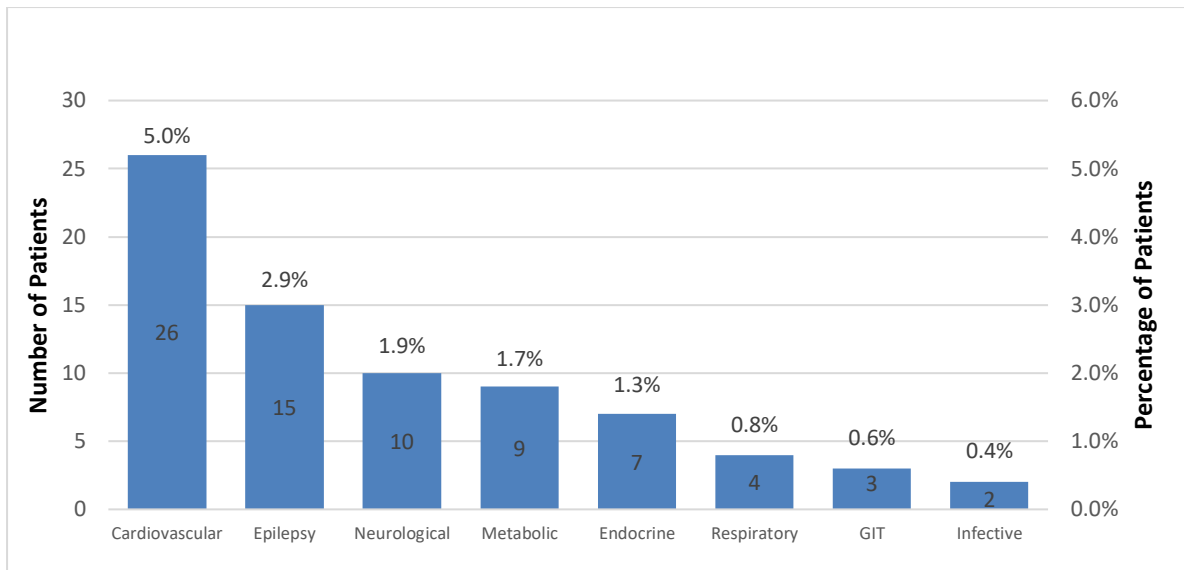


Figure 3.7. Medical Comorbidity other than HIV

- e) Prevalence of medical comorbidity, where medical comorbidity was determined according to Table 2.1: The overall medical comorbidity, including HIV, for the sample of n=519 was n=126 (24.1%). However, of these 126 patients, ten patients were HIV positive and therefore had more than one medical comorbidity.
- f) The average LOS (Figure 3.8): The average length of stay for the sample n=519 was 12.2 days. Females in this sample, on average, had shorter stays (11.8 days) than males (12.4 days). Those with comorbid substance use also had a shorter average stay of 11.1 days, compared to those with no substance use with an average stay of 14.1 days. These data were not adjusted for confounding factors and the statistical significance is unclear.

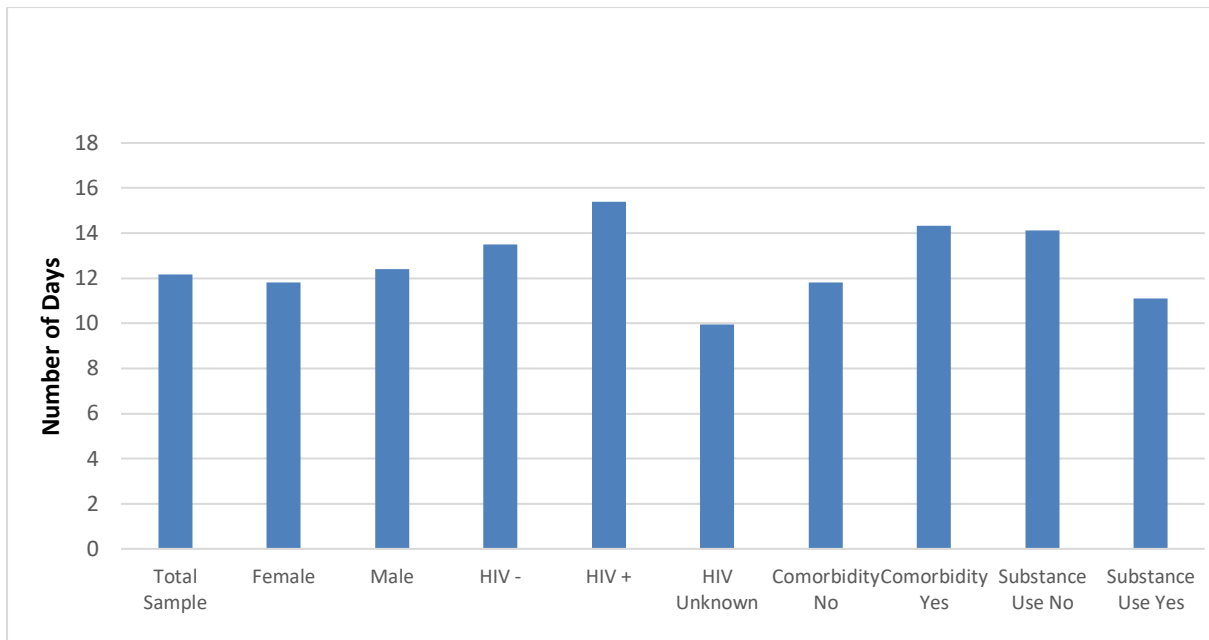


Figure 3.8. Average LOS for Various Groups

g) Those patients whose HIV status was known (HIV negative or HIV positive) had longer stays than the average LOS, and this difference remained significant even once adjusted for other confounding factors ($p < 0.0001$). The Least Square-mean (LS-mean) LOS for those patients who were HIV positive was 10.9 days with a 95% confidence interval (95%CI) ranging from 8.6 to 13.7 days. Those who were HIV negative had a LS-mean LOS of 9.3 days with 95%CI of 8.2 to 10.5 days. However, those whose HIV status was unknown had a LS-mean LOS of 6.0 days with 95%CI of 5.2 to 6.9 days (Figure 3.9).

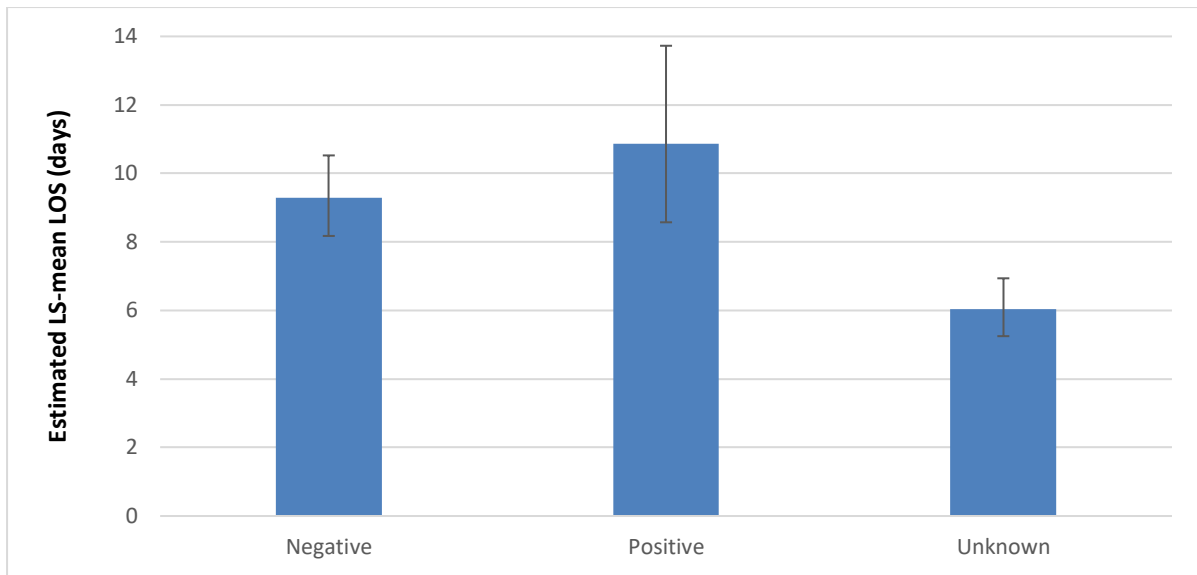


Figure 3.9. Mean LOS for HIV Negative, HIV Positive and Unknown HIV status patients

h) Patients with a medical comorbidity had a LS-mean LOS of 10.6 days (with 95%CI of 9.1-12.5 days) compared to those with no medical comorbidity with a LS-mean LOS of 7.8 days (with a 95%CI of 7.1–8.6) (Figure 3.10). The difference in LOS for those patients with and without a medical comorbidity remained after this was adjusted for confounders, i.e. LS-mean LOS ($p < 0.0014$).

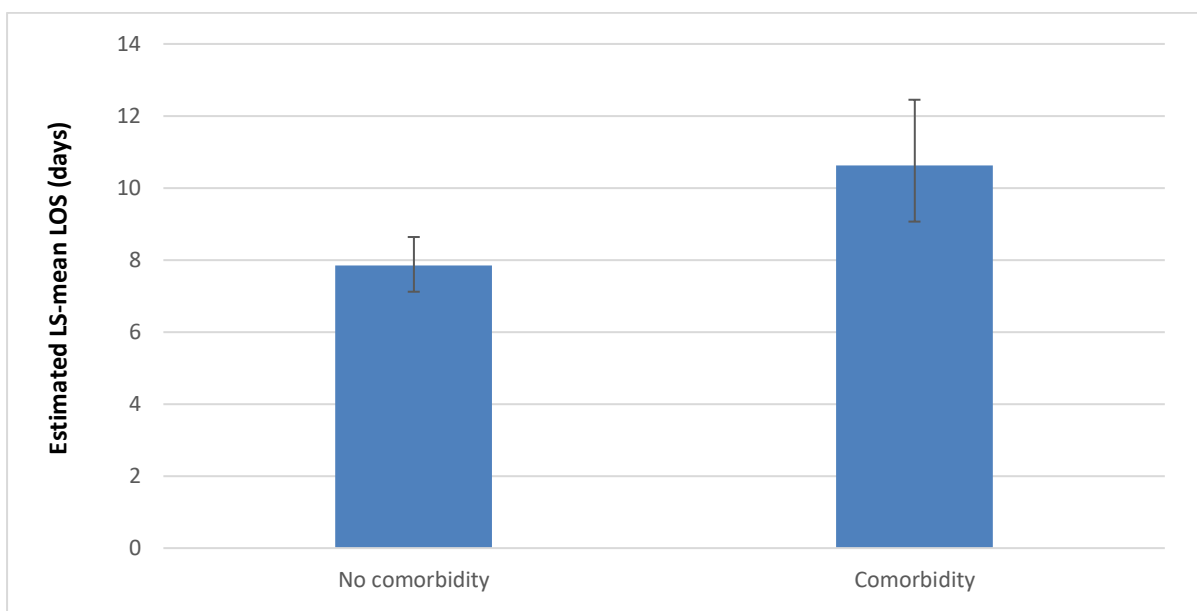


Figure 3.10. Adjusted Mean LOS for Patients With or Without Comorbidity

i) Comorbid substance use: There was comorbid substance use in 64.7% (n=336) of the n=519 patients (Figure 3.11). Of those patients with substance use disorders, 76.5% were male and 23.5% were female (Figure 3.12). Overall, the mean age of those patients using substances was younger than the mean age of the sample, and this applied to both males and females (Figure 3.13).

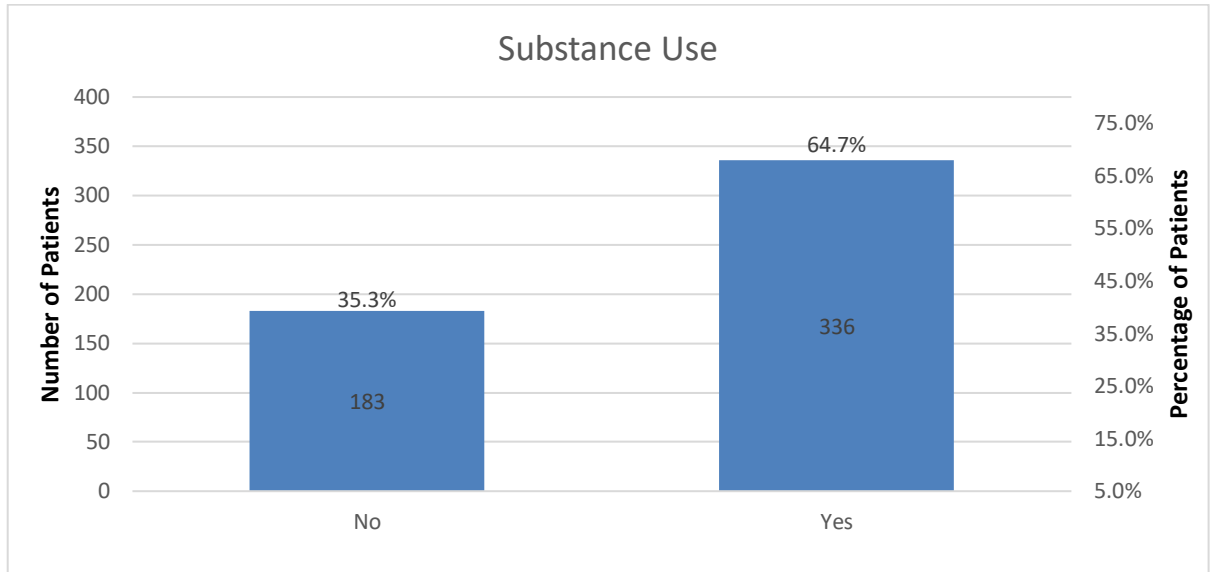


Figure 3.11. Substance Use Distribution

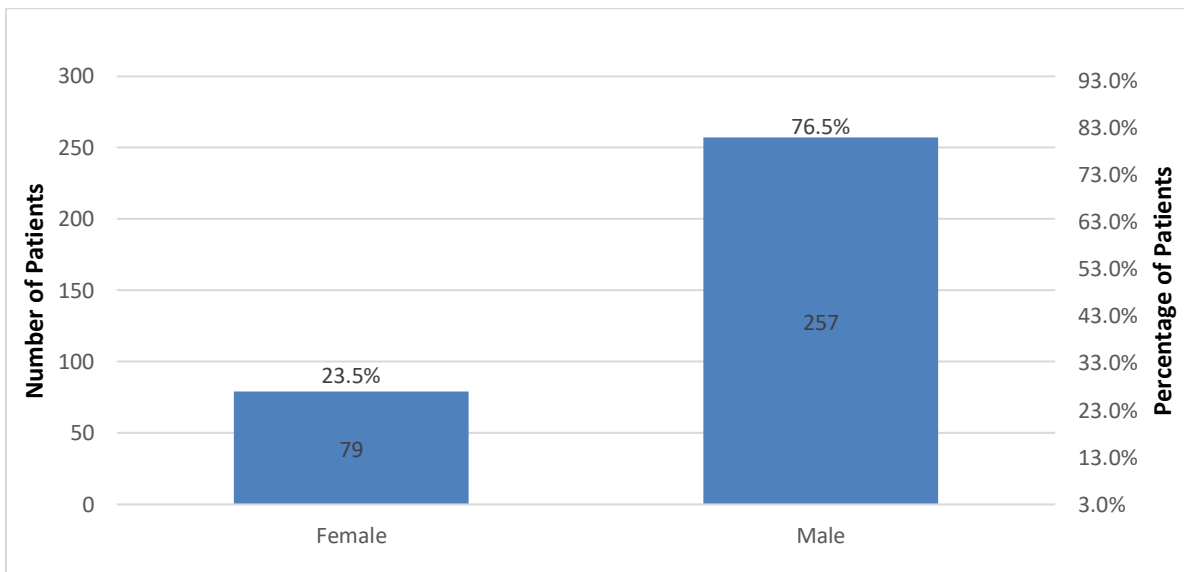


Figure 3.12. Gender Distribution for Substance Use

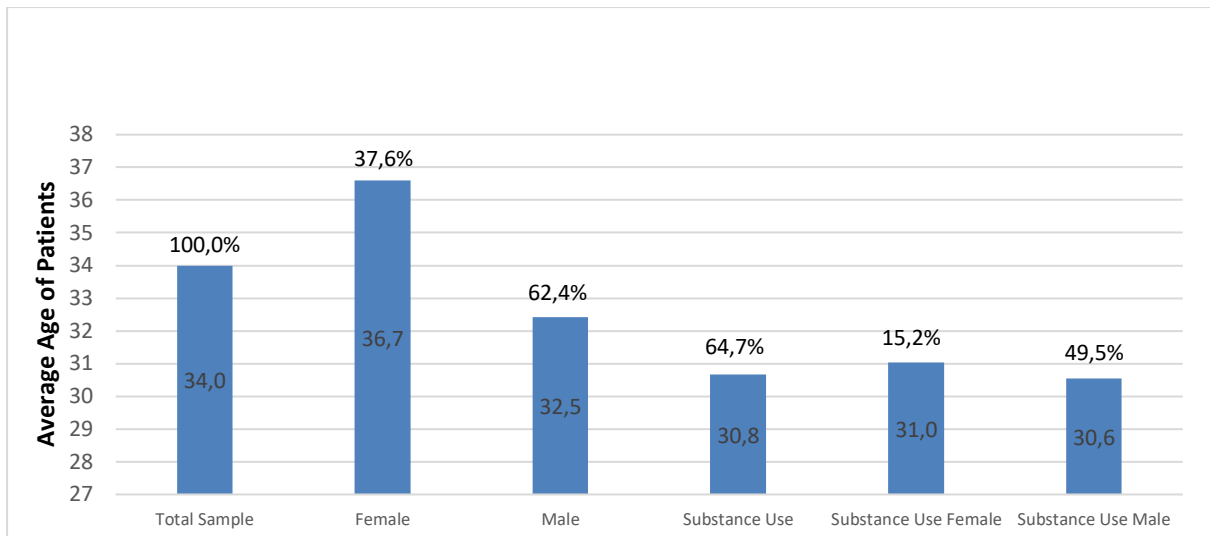


Figure 3.13. Comparison of Age Distribution in Substance Users

3.2 Comparative Variables

3.2.1 The impact of HIV status on LOS

The back-transformed estimated LS-mean LOS for the HIV negative (9.8d; 95%CI 8.7-11.0d) and HIV positive patients (11.2d; 95%CI 11.0-14.0d) was significantly longer than that for the HIV unknown patients (6.6d; 95%CI 5.8-7.4d) ($p < 0.0001$ and 0.0002 , respectively) (Table 3.1 and Figure 3.14).

Table 3.1. Calculation of LOS for HIV Status

HIV Status	LS-mean LOS	95% Confidence Limits	
Negative	9.8	8.7	11.0
Positive	11.2	9.0	14.0
Unknown	6.6	5.8	7.4

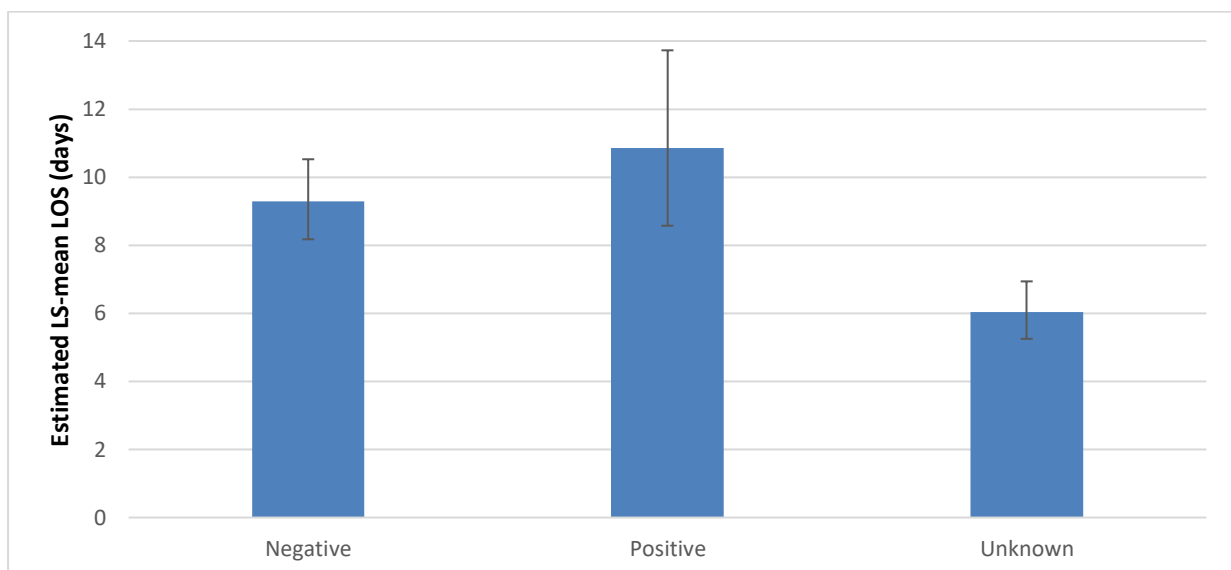


Figure 3.14. Mean LOS According to HIV Status

3.2.2 Covariate analysis of other known confounders on LOS

The effect of gender on LOS and thereafter other known confounders, including age, relationship status, psychiatric diagnosis, other medical comorbidity and substance use comorbidity was determined by covariate analysis of the other known confounders on LOS for HIV (Tables 3.2 and 3.3).

Table 3.2. Univariate Analysis of LOS for HIV Status by Gender

Source	DF	Type III SS	Mean Square	F	P
HIV Status	2	19.57	9.79	13.86	<.0001
Gender	1	0.01	0.01	0.01	0.92
HIV Status*Gender	2	2.53	1.26	1.79	0.17

Table 3.3. Multivariate Analysis of Other Confounders on LOS for HIV Status

Source	DF	Type III SS	Mean Square	F	P
HIV Status	2	9.06	4.53	7.96	0.0004
Gender	1	0.58	0.58	1.03	0.31
HIV Status*Gender	2	2.28	1.14	2.01	0.14
Age	1	0.23	0.23	0.41	0.52
Age*Gender	1	1.44	1.44	2.54	0.11
RelStatus	1	0.49	0.49	0.86	0.35
Gender*RelStatus	1	0.31	0.31	0.55	0.46
Psychiatric Diagnosis	3	55.09	18.36	32.28	<.0001
Gender*Psychiatric Diagnosis	3	5.83	1.94	3.41	0.017
Comorbid Medical Condition	1	0.09	0.09	0.16	0.69
Gender*Comorbid Medical Condition	1	0.35	0.35	0.61	0.43
Comorbid Substance Use	1	0.12	0.12	0.20	0.65
Gender*Comorbid Substance Use	1	0.16	0.16	0.29	0.59

The effect of HIV status was significant ($p < 0.0001$) but the effect of gender and the gender-HIV status interaction were not significant ($p = 0.92$ and $p = 0.17$, respectively). Apart from HIV status, psychiatric diagnosis and its interaction with gender were also significant factors impacting on LOS.

Non-significant independent variables were sequentially removed from the model, leaving a model with HIV status, gender, their interaction, age, age*gender interaction, and psychiatric diagnosis (Table 3.4).

Table 3.4. Calculation of LOS for HIV Status Adjusted for Confounders

Source	DF	Type III SS	Mean Square	F	P
HIV Status	2	8.98	4.49	7.94	0.0004
Gender	1	1.27	1.27	2.25	0.13
HIV Status*Gender	2	2.06	1.03	1.82	0.16
Age	1	0.81	0.81	1.43	0.23
Age*Gender	1	2.22	2.22	3.93	0.048
Psychiatric Diagnosis	3	63.37	21.12	37.33	<.0001

Controlling for confounding factors on the effect of HIV status on the LOS (Figure 3.15): The back-transformed estimated LS-mean LOS for the HIV negative (9.1d; 95%CI 8.0-10.4d) and HIV positive patients (9.0d; 95%CI 7.3-11.2d) was significantly longer than that for the HIV unknown patients (6.7d; 95%CI 5.8-7.7d) ($p=0.0004$ and $p=0.038$, respectively). However, an HIV positive status alone was not predictive of an increased LOS in comparison to those who were HIV negative in this sample group.

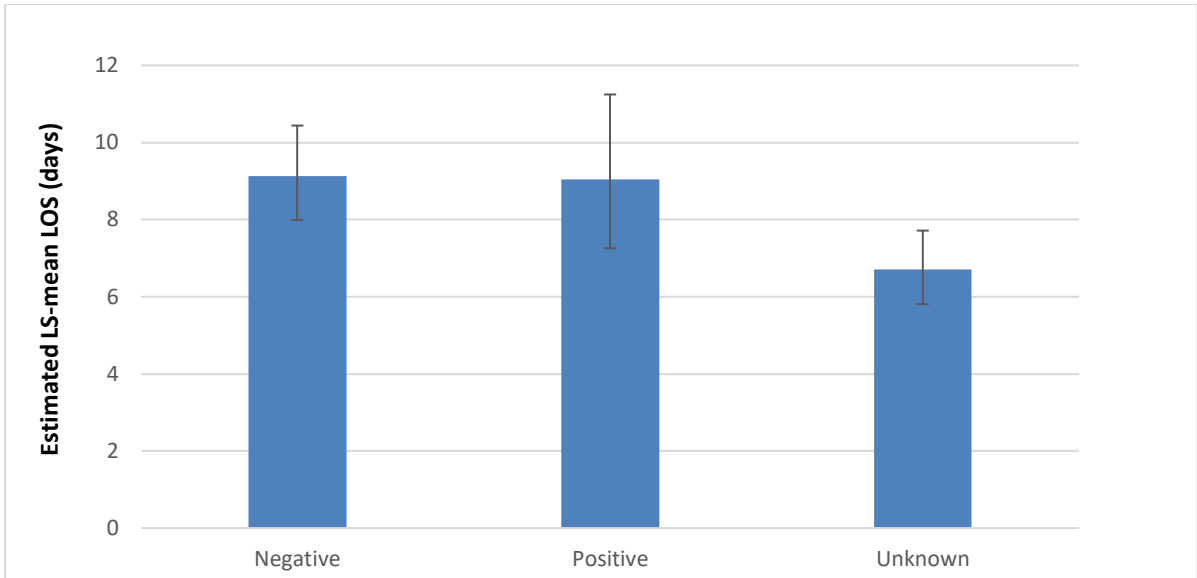


Figure 3.15. Adjusted Mean LOS per HIV status

With regards to the Age*Gender interaction (Figure 3.16), the estimated LS-mean LOS increased with age for females, but was constant regardless of age for males.

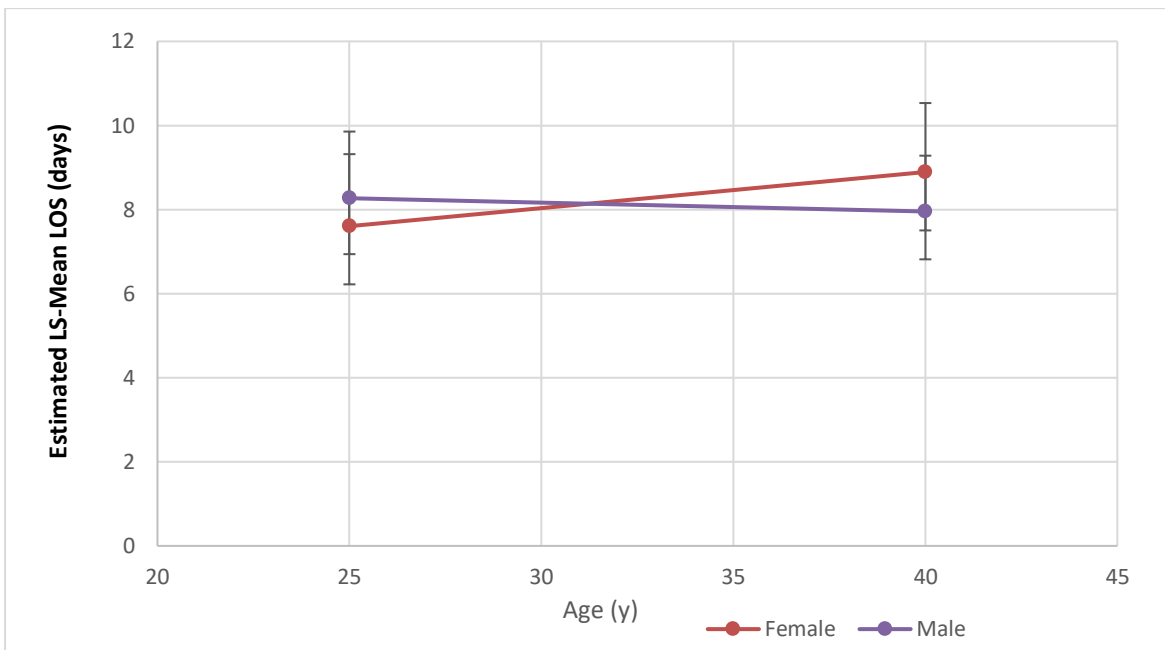


Figure 3.16. Interaction of Age on LOS per Gender

Psychiatric diagnosis (Figure 3.17): Post-hoc tests showed that the estimated LS-mean LOS for psychotic disorder, mood disorder and neurocognitive disorder were significantly longer than for other psychiatric diagnosis. Further, the estimated LS-mean LOS for psychotic disorder was significantly longer than that for mood disorder. There were no other significant differences.

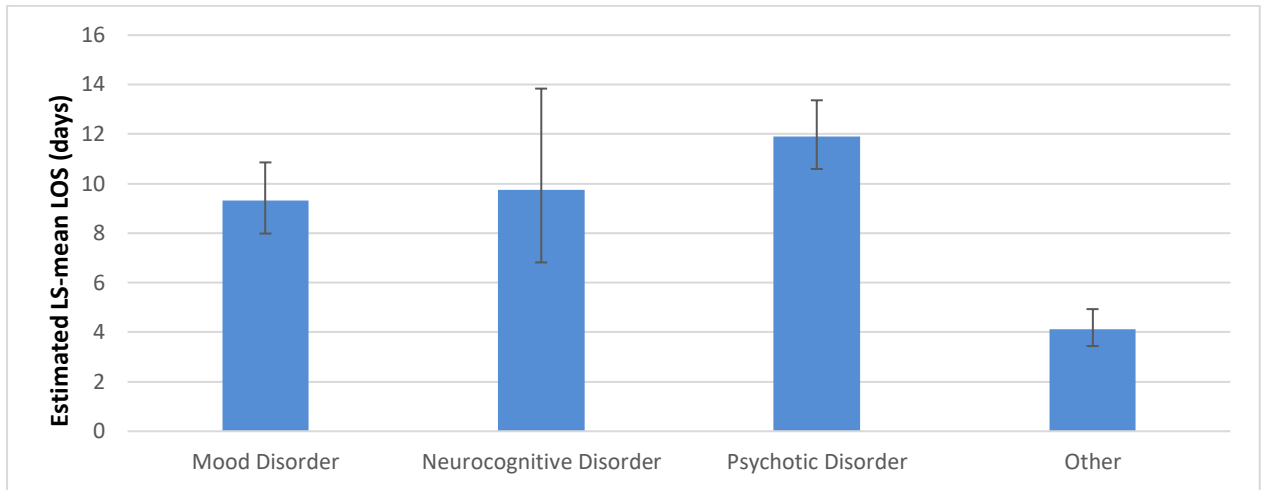


Figure 3.17. Adjusted Mean LOS per Psychiatric Diagnosis

3.2.3 Analysis of the effect of medical comorbidity on LOS

The sample (n=519) was analysed to compare LOS in those patients with or without medical comorbidity (Table 2.1).

Table 3.5. shows the calculation for LOS in medical comorbidity adjusted for gender and their interaction.

Table 3.5. Gender, Comorbidity and their Interaction on LOS

Source	DF	Type III SS	Mean Square	F	P
comorbC	1	7.68	7.68	10.27	0.0014
Gender	1	0.88	0.88	1.17	0.28
comorbC*Gender	1	0.17	0.17	0.23	0.63

The effect of medical comorbidity was significant ($p=0.0014$), but the effect of gender and the gender-medical comorbidity interaction were not significant.

The back-transformed estimated LS-mean LOS for the patients with medical comorbidity (10.6d; 95%CI 9.1-12.5d) was significantly longer than that for the patients without medical comorbidity (7.8d; 95%CI 7.1-8.6d) ($p=0.0014$) (Figure 3.18).

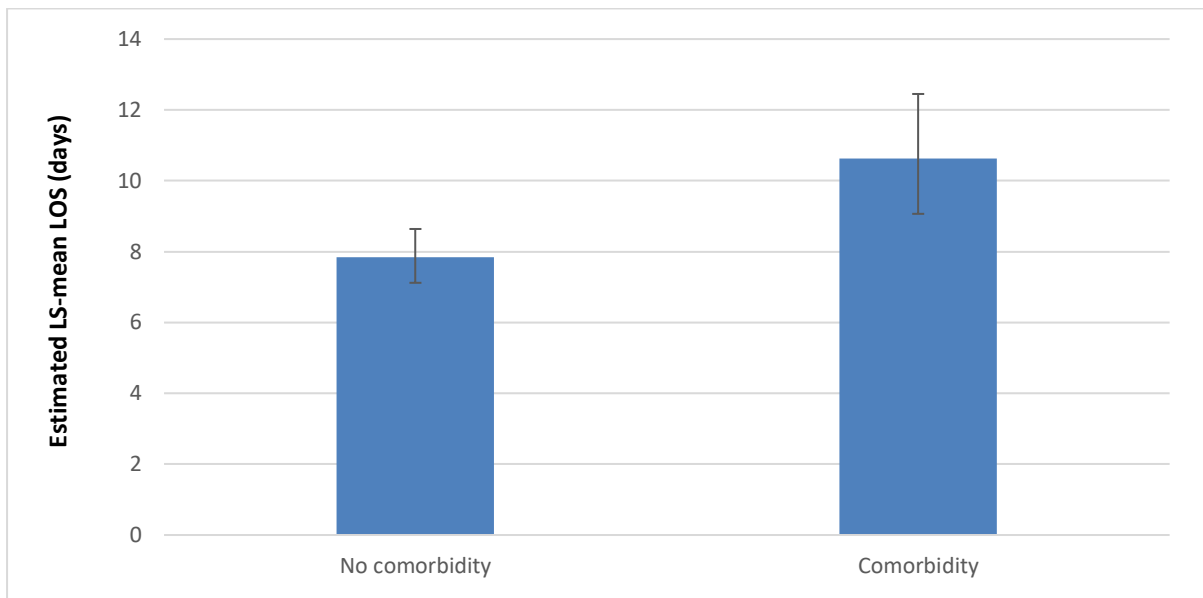


Figure 3.18. Mean LOS in Patients With/Without Medical Comorbidity Adjusted for Gender

The other variables of interest were added, together with their respective interactions.

Only the gender*psychiatric diagnosis interaction (along with the main effect of diagnosis) was significant (Table 3.6).

Table 3.6. Multivariate Analysis of LOS in Medical Comorbidity Adjusted for Other Confounders.

Source	DF	Type III SS	Mean Square	F	P
comorbC	1	1.23	1.23	2.08	0.15
Gender	1	0.23	0.23	0.39	0.54
comorbC*Gender	1	0.00	0.00	0.00	0.94
Age	1	0.00	0.00	0.00	0.97
Age*Gender	1	0.71	0.71	1.20	0.27
RelStatus	1	0.28	0.28	0.48	0.49
Gender*RelStatus	1	0.52	0.52	0.89	0.35
Psychiatric Diagnosis	3	68.46	22.82	38.73	<.0001
Gender*Psychiatric Diagnosis	3	5.48	1.83	3.10	0.027
Comorbid Substance Use	1	0.09	0.09	0.16	0.69
Gender*Comorbid Substance Use	1	0.08	0.08	0.13	0.72

Non-significant independent variables were sequentially removed from the model, leaving a model with comorbidity, gender, their interaction, and psychiatric diagnosis and its interaction with gender (Table 3.7).

Table 3.7. Calculation of Adjusted LOS in Medical Comorbidity for Other Confounders

Source	DF	Type III SS	Mean Square	F	P
comorbC	1	1.39	1.39	2.36	0.13
Gender	1	0.07	0.07	0.12	0.73
comorbC*Gender	1	0.04	0.04	0.06	0.81
Psychiatric Diagnosis	3	78.87	26.29	44.74	<.0001
Gender*Psychiatric Diagnosis	3	5.96	1.99	3.38	0.018

Post-hoc tests showed that psychiatric diagnosis ($p<.0001$) itself and psychiatric diagnosis*gender interaction ($p=0.018$) were clinically significant factors in predicting an increased LOS. Still, there was no significant difference in LOS due to medical comorbidity ($p=0.13$). Figure 3.19 shows the significant differences between males and females with regards to their specific diagnosis.

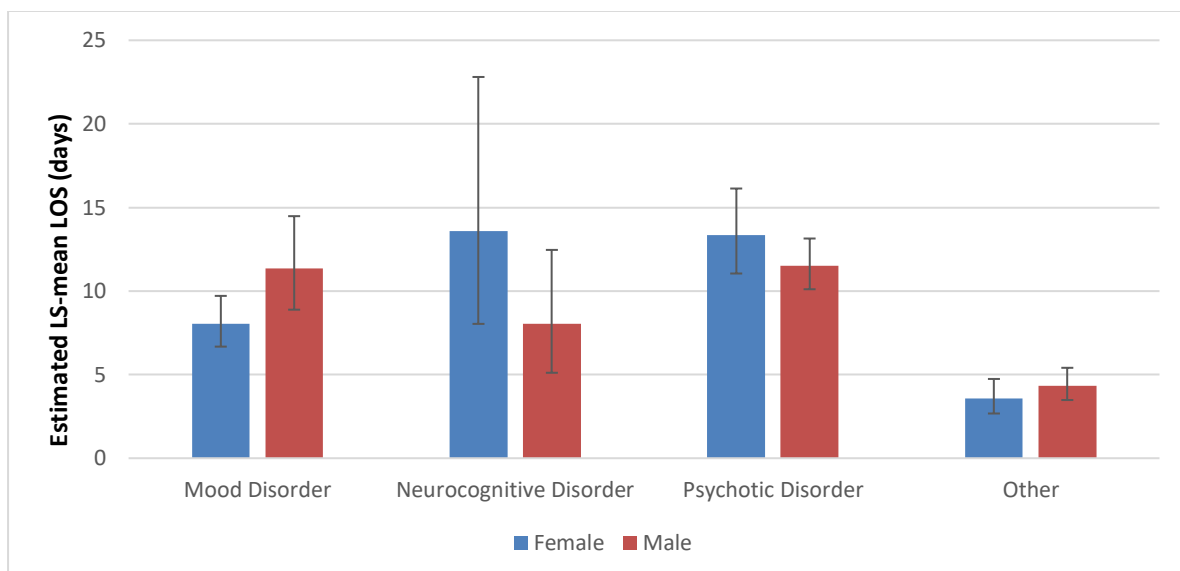


Figure 3.19. LOS Adjusted According to Primary Psychiatric Diagnosis by Gender

Within females: Those with a neurocognitive disorder stayed longer (mean=13.6; 95%CI = 8.0–22.8 days) than those with a psychotic disorder (mean=13.4; 95%CI =

11.0–16.1 days) who stayed longer than those with a mood disorder (mean=8.1; 95%CI = 6.7 days-9.7 days.) All of these patients stayed longer than those with any other psychiatric diagnosis (Figure 3.19).

Within males: Those with a psychotic disorder stayed longer (mean=11.5 days; 95%CI = 10.1–13.1 days) than those with a mood disorder (mean=11.4; 95%CI = 8.9–14.5 days), who stayed longer than those with a neurocognitive disorder (mean=8.0; 95%CI = 5.1–12.5 days), who stayed longer than those with any other psychiatric diagnosis (mean=4.4 days; 95%CI = 3.5–5.4 days) (Figure 3.19).

CHAPTER 4: DISCUSSION

The demographic profile of patients admitted to the Helen Joseph Hospital acute psychiatric ward is similar to that reported in other studies from South Africa.^{1 52 53 54} Overall, more males are admitted, and they tend to be younger than the admitted females.

In this study the average LOS was 12,2 days. There is limited information from local studies on the average LOS in acute units in general hospitals, but the findings of this study are in accordance with international literature in general, which reports a tendency to shorter stays over recent decades, due to both a drive towards community care as well as the impact of managed care in an attempt to minimise health care costs and shorten the duration of hospitalisation.⁵⁵ The average length of hospitalisation for SMI in a general hospital in the USA declined from 12.8 days in 1995 to 9.7 days in 2002⁵⁶, and was found to have been further reduced to 8.2 days in 2006 in a study by Glick et al.⁵⁵ However, in the South African public sector, where more than 80% of the population is uninsured and LOS is not driven by managed care policies, the most likely reason for the reduction in LOS is due to the shortage of beds available and the need for crisis discharges to be made. This also drives frequent readmissions (the 'revolving door phenomenon') where the most well patients on the ward are discharged prematurely to allow admission of more acutely ill patients. This may shorten the average LOS but may also result in more frequent readmissions leading to one patient often requiring several short admissions within a year. Although not an acute unit, the LOS at Stikland Hospital in South Africa, in a 2008 study by Niehaus et al.¹ recorded a mean LOS of 43.9 days, but cases requiring crisis discharge due to a shortage of psychiatric beds available for acute admissions had a reduced LOS of 40.6 days. This pressure on availability of acute psychiatric beds has continued, and a study in 2017 by Anic on admissions to the acute psychiatric unit at Helen Joseph Hospital found the mean LOS to be only 14.3 days.⁵³ A study done on LOS in acute psychiatric unit in Kenya, Africa in 2014 recorded an average LOS of 11.8 days, which is similar to the 12,2 days found in this study.⁵⁷ This study also found multiple readmissions of the same patient as was noted in this study, thus confirming the shift in service utilisation from longer LOS to multiple readmissions (the revolving door phenomenon).⁵⁷ Other studies in Africa, however, still recorded longer LOS of 22

and 22.08 days in Ethiopia in 2015⁵⁸ and Malawi in 2011,⁵⁹ respectively. The longer average LOS seen in Africa as compared to the USA is most likely due to the majority of the population in these African countries not being medically insured and a lack of community-based care.

The clinical profile of patients reviewed in the current study is also similar to other local studies.^{1 52 53 54 60} The HIV prevalence was calculated as 20.3% for this sample. However, this is an estimate since the HIV status of 43.2% of the patients was unknown. This prevalence is similar to the estimated prevalence of HIV in South Africa in the age group of 15 to 45 years. According to the WHO Global Health Observatory repository data in 2017, HIV prevalence in the general population was estimated to be 18.8% (16.2-20.9%, 95%CI).¹⁴ Collins et al. found an estimated prevalence of HIV infection in an inpatient psychiatric setting in 2009 of 26.5%.¹⁶ A study in 2000 in Kwazulu Natal in South Africa found an HIV seroprevalence in psychiatric patients of 29,1%.¹⁷ In a 2007 study by Janse van Rensburg and Bracken, the prevalence of HIV infection in the Helen Joseph Hospital psychiatric unit was 7.7% in 2003/4; however, only 17.4% of patients were tested in this study.⁶⁰ Henning et al. recorded a prevalence of 11% in an inpatient population at Weskoppies Hospital in 2012.⁶¹ In a 2013 study by Uys on female inpatients in an acute psychiatric ward in East London, the prevalence was calculated at 13%⁶² (Table 4.1).

Table 4.1. HIV Prevalence Studies in Acute Psychiatric Units in South Africa

HIV Prevalence in Acute Psychiatric Inpatients		
Study	HIV Prevalence	% Patients Tested
Collins et al., 2009 (Conducted on population in a specialist psychiatric hospital)	26.5%	100% tested Anonymous testing
Singh et al., 2009 (conducted in an acute psychiatric unit at a general hospital)	29.1%	100% tested Anonymous testing
Janse van Rensburg et al., 2007 (conducted in an acute psychiatric unit at a general hospital)	7.7%	17.4%
Henning et al., 2012 (conducted in an acute psychiatric unit at a general hospital)	11%	195/410 = 47.6%
Uys 2013 (conducted in an acute psychiatric unit at a general hospital)	13%	Not declared in the study

These variations in the prevalence of HIV in psychiatric populations have also been reported in many other sub-Saharan countries known to have high HIV prevalence rates within their general populations. In Uganda, Maling et al. found an HIV prevalence in the psychiatric population of 18.4%,²¹ which was higher than the prevalence in the general population (8.5%). However, in another Ugandan study by

Lundberg et al., the prevalence was reported to be 7.7%.⁶³ These variations are likely due to factors such as variations in sampling strategies as well as the fact that there is insufficient routine screening for HIV infection in patients admitted to inpatient psychiatric units. An additional variation could be the fact that in sub-Saharan Africa, prevalence rates in the general population are so high and sample sizes of in-patients with psychiatric disorder may be too small to show any difference in prevalence. In the early years of the HIV epidemic, this was out of concerns around patients' capacity to consent, as well as the lack of availability of ARV treatment. Despite the current availability of ARVs and the 2008 proposal by Joska et al. that a more proactive approach to testing is adopted in this vulnerable population group,⁴ it appears from the current study that routine testing for HIV infection is not being systematically implemented. It seems, rather, that it is only patients who stay longer in hospital who are tested for HIV. The reasons for this are not clear and deserve further exploration.

In this study, there is a high prevalence of associated substance use prior to admission (64.7%), and this is the most common comorbidity in the study sample. This has been noted in other local and international studies, which have shown the high rate of substance use among people seeking psychiatric help or with any mental illness.^{64 65}

66 67

It is a concern that so many of the patients that were not tested had a comorbid substance use disorder. It is known that substance use may increase the risk of HIV infection^{20 19 20} and substance use tends to occur in younger, male patients, similar to findings in this study (Figure 3.13). Younger population groups are known to be at higher risk of contracting HIV and other sexually transmitted diseases due to their higher impulsivity and high sexual activity. This is reflected in population trends, where the highest HIV prevalence occurs in the 18 to 45-year age group. Therefore, it is possible that the HIV prevalence in the patients who were not screened or tested may be higher than the prevalence calculated for the sample. It is also documented that men's infrequent health-seeking behaviour results in a late diagnosis of medical conditions, including HIV.⁶⁸ The high proportion of males in this sample makes it possible that HIV positive serostatus may have been missed in the young males admitted to the unit, especially those with a substance use disorder, with a short LOS.

It is, therefore, possible that the estimated HIV prevalence of 20.3% in this study is an underestimate. Botswana, another sub-Saharan country, which also has a high HIV prevalence in the general population, has a policy to screen every patient admitted to an inpatient psychiatric unit for HIV without the need for consent as records are kept separately on an anonymous basis.⁶⁹ The prevalence of HIV amongst female inpatients in a psychiatric unit was found to be 53% in 2012 compared to the prevalence in females in the general population of 29%.⁶⁹ In a study conducted in an acute psychiatric unit in Kwazulu-Natal, South Africa in 2000, where anonymous testing was carried out, the overall prevalence was 29.1%.⁷⁰ 40% of the females in this sample were HIV positive. The lack of reliable information on HIV prevalence in patients admitted in psychiatric units makes it difficult to plan appropriate services and to provide the best possible care. It is suggested that the opt-out proposal by Joska in 2008 be implemented more widely.³

The overall medical comorbidity for the current study sample was 24.1%. According to a systematic review by Šprah et al. in 2017, between 50% and 80% of individuals with SMI have one or more comorbid medical conditions that may worsen prognosis and contribute to high morbidity and premature mortality.⁷¹ A study by Bahorik et al. in California, USA in 2017, reported that patients with bipolar disorder and schizophrenia had a greater than 1.5 times chance of having a chronic or severe medical condition compared to the general population.⁷² The range of prevalence of comorbid medical conditions found in various studies was mainly dependent on the setting and the specific inclusion criteria. The lower prevalence of overall medical comorbidity in this study, together with the fact that almost 43% of patients were not tested for HIV, may reflect a lack of attention to the screening of medical comorbidities in the mentally ill and the need for more comprehensive screening of all medical comorbidities, not only HIV.

The most common medical comorbidity in this study was HIV infection; this condition was four times more common than the next most common condition (cardiovascular disease). This is in contrast to the findings by Šprah et al.⁷¹ and Bahorik et al.⁷² This is not surprising since the prevalence of HIV infection in developed countries is much lower than in sub-Saharan Africa and other low- and middle-income countries.

The current study did not find an association between HIV positive status and an increased LOS, as was expected. Patients who were tested for HIV had a longer LOS, regardless of whether they tested positive or negative. This suggests that patients were only tested for HIV if they required a longer stay on the ward. This has introduced significant bias into the analysis of LOS. Thus, it appears that LOS acts as a confounder in itself.

The additional analysis of overall medical comorbidity and its impact on LOS was carried out to determine whether this was a significant factor. Indeed, the back-transformed estimated LS-mean LOS for the patients with medical comorbidity (10.6d; 95%CI 9.1–12.5d) was significantly longer than that for the patients without medical comorbidity (7.8d; 95%CI 7.1–8.6d) ($p=0.0014$). However, once adjusted for other significant confounders, this was no longer found to be of significance. A meta-analysis by Jansen et al. in Rotterdam, Netherlands in 2017 on the impact of psychiatric-medical comorbidity on health economics revealed that the presence of medical-psychiatric comorbidity was related to increased LOS, higher medical costs and more rehospitalisations.⁷³ The systematic literature review by Šprah et al. noted that having medical comorbidities places SMI patients at risk of repeat hospital visits, readmission and longer hospital stays that raise health care costs and increase the burden of disease.⁷¹

Other factors associated with a longer LOS in the current study were the presence of a psychotic disorder, female gender and older age. The diagnosis of a psychotic disorder has been frequently and consistently documented as a significant reason for an increased LOS in psychiatric patients.^{31 32 33 32 33 30 31 32 71} It is related to the greater severity of psychopathology and disability associated with these illnesses and the longer time to recovery compared to substance-induced or mood disorders. The literature has also consistently found that both older age and the female gender are predictors for a longer LOS.^{31 32 33 32 33 30 31 32 71} In the current study, although an association between increasing age and increased LOS was seen in females, LOS seemed to be consistent in males despite increasing age. This may be due to the over-representation of younger males, especially those with substance use disorders, who had a shorter LOS. Additionally, the association of LOS generally being increased in both females and those of older age, with older age further predicting a higher chance of having an associated neurocognitive disorder.

It is noted in the literature that the average LOS of individuals with substance use problems alone is shorter than those with a primary psychiatric disorder alone or with comorbid substance use (dual diagnosis).^{7 11 276} The current study found that patients with substance use disorders had a shorter stay, and this could be explained by individuals with substance-induced psychosis settling quickly once the offending substance was removed. This is in keeping with the policy for this acute psychiatric unit, i.e. that admissions due to substance use disorders alone, and not as part of a dual diagnosis, are largely treated on an outpatient and voluntary basis. This is in line with most psychiatric units around the world due to the influence of policies such as deinstitutionalisation and the development of community care, together with managed care policies instituted by health care funders, which have been instrumental in ensuring admissions are kept shorter.⁷⁴ However, in the South African setting, psychiatric community care is underdeveloped and referral to substance treatment and rehabilitation after discharge is disjointed as it falls under the mandate of the Department of Social Development, rather than the Department of Health. Unfortunately, due to these factors, there are recurrent hospital readmissions, which contribute to the well-described 'revolving door phenomenon'.^{31 32 33 32 33 30 31 32} Thus, many of the admissions in this sample may be due to frequent readmissions of the same patients, who are not able to access the necessary assistance for their problem in the community. This would also help to explain why there is an over-representation of males admitted compared to females in this study, as the majority of substance users were male. This fits with the finding in this study of the high percentage of substance users, especially males, whose HIV status is unknown and in whom no comorbid medical conditions are detected (Figures 3.13 and 3.14), especially since an increased LOS seemed to be required to determine the presence of these comorbidities. This phenomenon is likely to have significantly skewed the results with regard to the analyses on the LOS as well as the estimation of HIV prevalence and prevalence of comorbid medical conditions.

It is also important to consider that this study has only considered psychiatric inpatients. Since patients who are HIV positive are now commenced on antiretroviral therapy (ART) earlier and more readily, they are generally well for longer and as such may not develop the more severe forms of HIV-related mental illness that required acute admission as in the pre-ART era. It is likely that much of the HIV-related mental

illnesses in the post-ART era are subtler, e.g. neurocognitive disorders, but equally disabling in terms of occupational and social functioning.^{49 50 50} **Error! Bookmark not defined.** Thus, these patients are less likely to be admitted to hospital, and remain in the community. This further serves to highlight the need for more integrated management of psychiatric patients at all levels of care, starting at primary healthcare.

CHAPTER 5: LIMITATIONS

The current study was a retrospective record review and there was a large amount of missing data, which is a limitation in this study. For example:

- 1) The lack of routine testing for HIV on every patient who is admitted to the unit is a limitation.
- 2) Confounding variables such as the high prevalence of substance use disorders may have impacted on the analysis of the association between HIV status and medical comorbidity and LOS.
- 3) Data on readmissions was not collected, and this may have been an important variable to consider.
- 4) The cross-sectional nature of the study does not possess sufficient power to individually determine the extent to which multiple possible causes for increased LOS may have contributed. This would require a longer more prospective study, possibly with matched control groups.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

The HIV prevalence amongst acute psychiatric admissions in this study was estimated at 20.3%. This is in keeping with the estimated community prevalence of HIV infection, but may be an underestimate of the true prevalence in this population due to the low rate of testing. Nevertheless, HIV represents over half of the total medical comorbidity in this population.

This study was not able to prove an association between HIV infection or having a medical comorbidity and a longer LOS in an acute psychiatric unit. It does suggest that there may be inadequate screening for HIV infection and other medical comorbidities.

The study found that being female, being older, and having a psychotic disorder was associated with a longer LOS. However, the most common demographic and clinical profile of the patients reviewed was that of a younger male with a comorbid substance use disorder and a shorter LOS.

Acute psychiatric inpatient services are consistently under pressure, and clinicians are often required to discharge patients early without being able to offer appropriate and adequate care. The lack of adequate community-based services results in the well-described 'revolving door phenomenon', with repeated readmissions. There is a lack of appropriate community-based interventions for substance use disorders (both preventive and treatment interventions); this particular phenomenon is placing additional pressure on acute psychiatric units.

The following recommendations are thus made:

- 1) In this study only 295 patients had known HIV status. Possibly a larger sample with known HIV status may have detected an impact of HIV status on LOS.
- 2) Routine (opt-out) HIV testing and screening for common medical comorbidities should be instituted in acute psychiatric units.
- 3) There needs to be greater collaboration between psychiatric and medical care in inpatient settings.

APPENDIX 1: Data Collection Sheet

Data Collection Sheet

Study Number:

A). Gender:

- Female
- Male

B). HIV Status:

- Positive
- Negative
- Unknown

Date of Admission (DOA): _____

C). Outcome:

- Discharged
- Transferred Psych
- Transferred Med
- Deceased

Date: _____

D). Total LOS: _____ days

E). Age:

F). Relationship Status:

- Married
- Single
- Divorced
- Cohabiting
- Widowed
- Separated

G). Psychiatric Diagnosis at D/C:

1. Mood Disorder
2. Psychotic Disorder
3. Neurocognitive Disorder
4. Other:
 - Anxiety
 - OCD Spectrum
 - Impulse Control Disorder Spectrum
 - Post traumatic Stress Disorder
 - Acute Stress related/Adjustment

H). Comorbid Medical Condition (other than HIV):

1) Yes

- a) Cardiovascular
- b) Endocrine
- c) Metabolic
- d) Epilepsy
- e) Respiratory
- f) Neurological
- g) Infective
- h) GIT

2) No

I). Comorbid Substance Use: 1) Yes 2) No

APPENDIX 2: Approval from CEO Helen Joseph Hospital to Conduct Study at Facility



GAUTENG PROVINCE
REPUBLIC OF SOUTH AFRICA

Gauteng Department of Health
Helen Joseph Hospital
Enquiries: Dr. M. Mukansi
Research Committee: Chairperson
Tel : (011) 489-0306/1087
Fax : (011) 489 1038
E mail: murimisi.mukansi@wits.ac.za

05 April 2017

To whom it may concern

Subject: HELEN JOSEPH HOSPITAL RESEARCH COMMITTEE APPLICATION

PROTOCOL TITLE: The Impact of the HIV Epidemic on length of stay in an acute psychiatric unit at a general hospital in Gauteng.

Protocol Ref No: Dr. Sharne O'Brien
Ethic Clearance: Pending
Principal investigator: Dr. Sharne O'Brien

Department: Psychiatric

Committee Recommendations

1. Conditional access approval is given while waiting the final ethical clearance certificate from the University of Witwatersrand HREC.
2. Please enter references on page 2 of your protocol (6th sentence) Starting with several studies..... We seems to be missing a page please assist.

Dr. Murimisi Mukansi
Chairperson of the HJH Ethic and Research Committee

APPENDIX 3: Ethics Clearance Certificate



R14/49 Dr Sharne O'Brien

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M170670

NAME: Dr Sharne O'Brien
(Principal Investigator)
DEPARTMENT: Psychiatry
Helen Joseph Hospital

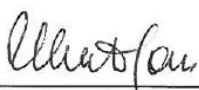
PROJECT TITLE: The Impact of the HIV Epidemic on Length of Stay
in an Acute Psychiatric Unit at a General Hospital in Gauteng

DATE CONSIDERED: 30/06/2017

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Prof Rita Thom

APPROVED BY: 

Professor P Cleaton-Jones, Chairperson, HREC (Medical)

DATE OF APPROVAL: 03/07/2017

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 301, Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.** The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in June and will therefore be due in the month of June each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature

Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

APPENDIX 4: Plagiarism Declaration



Postgraduate Office, Faculty of Health Sciences

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PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I Sharne O'Brien (Student number: 8901586M) am a student registered for the degree of mmed Psych in the academic year Final.
(completed 4th year)

I hereby declare the following:

- I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.

Signature: Sharne O'Brien Date: 20/7/2020

APPENDIX 5: Turnitin Report

8901586m:final_edit_sharne_obrien_research_report_5_sep_202

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