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# The prevalence of alcohol use disorders at Luthando neuropsychiatric HIV clinic

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**TITLE**

# *The Prevalence of Alcohol Use Disorders at Luthando Neuropsychiatric HIV Clinic*

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

**Johannesburg, 2016**

DECLARATION

I, Dr Mlinganisi Pius Sibandze, affirm that this research report is my own work. It is being submitted in partial fulfilment of the requirements for the degree of Master of Medicine in the branch of Psychiatry. This work has not been submitted before to this or any other University.

……

_____day of _____ 2016

To Omphe, Rato, Luchi and the rest of my family, who have been, and continue to be, my source of strength and support.

ABSTRACT

Background: The prevalence of Alcohol Use Disorders (AUD) is high in people with Severe Mental Illness (SMI) and in people infected with the Human Immunodeficiency Virus (HIV). The aim of the study was to determine the prevalence of alcohol use disorders in patients with comorbid HIV and SMI attending Luthando Neuropsychiatric HIV clinic at Chris Hani Baragwanath Academic Hospital (CHBAH).

Methods: A retrospective record review was conducted to estimate the prevalence of alcohol use disorders (AUD). The Alcohol Use Disorders Identification Test – self report (AUDIT) was used to estimate the prevalence of AUD. Descriptive analysis was used for categorical data. The $\chi^2$ and the Fisher exact tests were employed to evaluate the relationship between the demographic and clinical variables. The strength of the associations was measured by Cramer's V and the phi coefficient respectively.

Results: A convenient sample of 111 patients participated in the study. The prevalence of AUD was 13.5% (95% CI 7.1 – 19.9%). Of the total participants, 28.8% (95% CI 20.4 – 37.2%) consumed alcohol at a hazardous level, 18.9% (95% CI 11.6 – 26.2%) had incipient alcohol dependence and 20.7% (95% CI 13.2 – 28.2%) had alcohol related harm. There was a significant association between employment status and the categorized AUDIT scores. There was a significant association between viral load suppression and each of the categorized AUDIT scores. There was a significant, association between history of substance abuse and each of the categorized AUDIT scores.

Conclusion: The prevalence of AUD is high among patients attending Luthando Neuropsychiatric HIV clinic. Patients with SMI and HIV should be screened for AUD and the pattern of alcohol consumption should also be assessed as it can negatively affect clinical outcomes.

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TABLE OF CONTENTS


| CONTENTS | PAGE |
|---|---|
| DECLARATION | ii |
| DEDICATION | iii |
| ABSTRACT | iv |
| ACKNOWLEDGEMENTS | v |
| TABLE OF CONTENTS | vi |
| LIST OF FIGURES | viii |
| LIST OF TABLES | ix |
| CHAPTER ONE – INTRODUCTION | |
| 1.1 HIV in South Africa | 2 |
| 1.2 Alcohol Use in South Africa | 4 |
| 1.3 Alcohol use and HIV transmission | 5 |
| 1.4 Alcohol and Medical Aspects of HIV | 6 |
| 1.5 Alcohol and HIV Treatment | 8 |
| 1.6 Prevalence of HIV in People with Severe Mental Illness | 10 |
| 1.7 Common Neuropsychiatric Diagnosis in People with HIV | 11 |
| 1.8 Alcohol abuse, Severe mental illness and HIV | 13 |
| CHAPTER TWO – OBJECTIVES, METHODS AND MATERIALS | |
| 2.1 Objectives | 15 |
| 2.2 Study Design | 15 |
| 2.3 Subjects, Setting and Method | 16 |
| CHAPTER THREE – SAMPLE SIZE AND DATA ANALYSIS | |
| 3.1 Sample size | 20 |
| 3.2 Data Analysis | 20 |
| CHAPTER FOUR – ETHICS APPROVAL | 21 |

CHAPTER FIVE - RESULTS
5.1 Demographic Characteristics 22
5.2 Clinical Characteristics 24
5.3 Associations 27

CHAPTER SIX – DISCUSSION
6.1 Prevalence of AUD 32
6.2 AUD and Demographic Details 33
6.3 AUD and Viral Load Suppression 34
6.4 AUD and History of Substance Use 35
6.5 Treatment and Future Implications 36

CHAPTER SEVEN – LIMITATIONS 38

CHAPTER EIGHT – CONCLUSION 40

APPENDICES
Appendix 1: AUDIT-self report Zulu version 41
Appendix 2: AUDIT-self report English version 42
Appendix 3: Data Sheet 43
Appendix 4: HREC Approval 46

9. REFERENCES 47

LIST OF FIGURES Page

Figure

Figure 1: Association between Age and Total AUDIT score 27

Figure 2: Association between Employment status and Hazardous Alcohol use 28

Figure 3: Association between Viral load, total AUDIT score and Categorised AUDIT scores 29

Figure 4: Association between history of substance use, total AUDIT score and categorised AUDIT scores 30

LIST OF TABLES


| Table | Page |
|---|---|
| Table 1: Definitions and abbreviations | 1 |
| Table 2: Demographic characteristics | 23 |
| Table 3: Total AUDIT score and categorised AUDIT scores | 24 |
| Table 4: Clinical characteristics | 26 |

Table 1: Definitions and abbreviations

| **Abbreviation/word** | **Definition** |
|---|---|
| AUD | Alcohol use disorder. Defined as a score of 8 or greater on the Alcohol use disorders identification test (AUDIT) self-report, which implies presence of hazardous and/or harmful alcohol use. |
| AUDIT | Alcohol Use Disorders Identification Test |
| cART | Combination antiretroviral therapy |
| HIV | Human Immunodeficiency Virus |
| Harmful use | Alcohol consumption that results in physical and/or mental health consequences for the user e.g. acute pancreatitis.<br>On the AUDIT questionnaire, any point scored on questions 7 to 10. |
| Hazardous drinking | Regular consumption of over 40g (5 Units) of pure ethanol per day for males; regular consumption of 24g (3 Units) of pure ethanol per day for females.<br>On the AUDIT questionnaire any points scored on questions 2 and/or 3. |
| Incipient dependence | Possibility of alcohol dependence.<br>On the AUDIT questionnaire a score of 1 or more on questions 4, 5 and 6. |
| PLWHA | People Living With HIV AIDS |
| SACENDU | South African Community Epidemiology Network on Drug Use |
| SMI | Severe Mental Illness.<br>Refers to a range of major psychiatric disorders (including schizophrenia, major depression, and bipolar disorder). |
| Triple diagnosis | The co-occurrence of a mental disorder, alcohol use (or substance use) and HIV infection in the same patient. |
| WHO | World Health Organisation |

# CHAPTER 1

## INTRODUCTION

Neuropsychiatric illnesses are very common in people infected with the Human Immunodeficiency Virus (HIV) (Myer et al., 2008). According to Olley (2003) alcohol dependence is frequent among males infected with HIV. Results from the South African Stress and Health Survey confirmed that there is a high prevalence of substance use and mental disorders (Saban et al., 2014). In South Africa currently, very little work has been done to explore the prevalence of Alcohol Use Disorders (AUD) in patients with severe mental illness who are also HIV positive i.e. patients with a Triple diagnosis.

## 1.1 HIV in South Africa

Globally it is estimated that 34 million people were living with HIV in 2011 with Sub-Saharan Africa carrying the most burden (UNAIDS, 2012). The report estimated nearly 1 in 20 people living with HIV in the region, which accounts for 69% of all people living with HIV.

The 2008 United Nations Programme report on HIV/AIDS (UNAIDS) defined the HIV epidemic in South Africa as being hyper-endemic, because more than 15% of the population aged 15-49 were living with HIV (UNAIDS, 2008).

South Africa has the highest number of people living with HIV in the world. In 2013, approximately 6.3 million were infected with HIV in South Africa (UNAIDS, 2013). Of these 6 .3 million people, 5.9 million are adults aged between 15 and 49 years.

The results of the fourth population based survey, The South African National HIV Prevalence, Incidence and Behaviour Survey, were published in 2012, and it was estimated that 12.2% of the population (6.4 million people) were HIV positive and the estimated prevalence rate was 19.1% for adults aged 15 to 49. In addition to determining the prevalence and incidence of HIV in South Africa, the survey also aimed to gain a better understanding of the factors driving the HIV epidemic. Females had a significantly higher prevalence than males; the prevalence was highest among females aged 30-34 and among males aged 35-49. Black Africans had the highest prevalence when compared to other races namely Coloured, Indians or Asians and Whites (Shisana et al., 2012).

The survey identified the following groups of people as being at high risk of HIV exposure; black African females aged 20 -34, people cohabiting, black African males aged 25 – 49, disabled people 15 years and older, and people 15 years and older who abuse substances. In particular, people 15 years and older who use alcohol in a risky way were also identified as being at a higher risk of contracting HIV. The HIV prevalence among this group was 14.3% (Shisana et al., 2012).

In South Africa, HIV is predominantly transmitted heterosexually between couples (Shisana et al., 2012). Scott-Sheldon (2014) identified alcohol use to have a significant impact on unprotected. In this study they looked at the sexual risk behaviour among black males in the setting of alcohol use. Nearly two-thirds of the males met sufficient criteria for alcohol use (AUD) disorder. Men with an AUD reported they engaged more in unsafe sex than men without AUD.

Shuper et al. (2009) did a meta-analysis looking at the relationship between alcohol use and unprotected sex in People Living with HIV/AIDS (PLWHA). They found significant associations between alcohol consumption, problematic drinking and alcohol use in sexual contexts in PLWHA. Thus they concluded that 'there is a significant link between PLWHA's use of alcohol and risky sexual behaviour'. This risky sexual behaviour, both between PLWHA and non-infected individuals, can result in the spread of HIV and the emergence of treatment resistant strains.

The 2009 HIV Communications Survey found that men were most likely to drink heavily and often. Men also reported engaging in sex when they and/or their partners had used excess alcohol (Johnson et al., 2009).

The above factors strengthen the argument that alcohol use is one of the drivers of the HIV epidemic. Men with alcohol use disorders seem to engage more in unprotected sex, both among PLWHA and HIV negative men (Shisana et al., 2012, Shuper et al., 2009, Johnson et al., 2009).

## 1.2 Alcohol Use in South Africa

Alcohol remains the dominant substance of abuse in South Africa. In 2010 the Global Status report on alcohol estimated that 5.6% of the population had an alcohol use disorder. The frequency of alcohol dependence was 2.4% (males 4.2%, females 0.7%). Compared to the WHO African Region the prevalence of Alcohol Use Disorders and Alcohol Dependence was 3.3% and 1.4% respectively (WHO Global status report on alcohol and health, 2014).

South Africa has the highest use of alcohol in Africa (WHO Global Status report on Alcohol, 2014). According to this report, the per capita consumption of alcohol in South Africa among people 15 years of age and older (in litres of pure alcohol) increased from 10.1(2003-2005) to 11.0 (2008-2010). In comparison, the alcohol consumption per capita for the WHO African Region declined from 6.2 (2003-2005) to 6.0 (2008-2010). The total alcohol per capita consumption, drinkers only, in 2010 was 27.1 litres of pure alcohol (WHO Global status report on alcohol and health, 2014). In the year 2000 the estimated burden of disease attributable to alcohol use was 7.1% (Schneider et al., 2007).

The South African Community Epidemiology Network on Drug Use (SACENDU) was established in 1996. It comprises of researchers, practitioners and policy makers who meet once every six months. The aim is to provide public health surveillance of alcohol and other drug use trends in South Africa among patients admitted to community level treatment centres. Their report shows alcohol remains the dominant substance of abuse across all sites in South Africa, but the Western Cape and the Northern Region (SACENDU Research, 2014). Between 20% (Western Cape) and 51% (Central Region and Kwazulu Natal) of patients in treatment have alcohol as a predominant substance of abuse. Patients with a mean age ranging from 28 to 41 years reported alcohol as their main substance of abuse. This is within the age group with the highest prevalence of HIV infection.

When assessing the complications due to alcohol use, one should assess the total consumption and the pattern of consumption. Alcohol ingestion that puts the user at risk of adverse health events (hazardous drinking) or consumption that results in bodily or emotional harm (harmful use) should also be evaluated.

In South Africa alcohol has been shown to play a salient role in community gatherings, rites of passage and local economies (Kalichman et al., 2007). In addition to this, they found that generally men are more prone to drink and drink heavily.

According to a national population based survey 41.5% of men and 17.1% of women disclosed current alcohol use and among those who use alcohol, 17% of men and 2.9% of women reported risky or hazardous and harmful use (Peltzer et al., 2011).

Kalichman et al. (2007) noted the following as harmful patterns of drinking in South Africa; drinking apart from meals, communal drinking, drinking at community events and drinking in public. They also observed that these patterns of drinking were associated with risky behaviour.

## 1.3 Alcohol use and HIV transmission

Alcohol is classified as a central nervous system depressant. Its use can reduce inhibitions and/or decrease the perceptions of risk exposure. It has been identified as a driver of risky sexual behaviour among both PLWHA and HIV negative people (Shisana et al., 2012, Shuper et al., 2009, Johnson et al., 2009). This risky behaviour includes unprotected sex and multiple partners (Simbayi et al., 2006).

Most people who drink alcohol meet new sex partners in places where they drink alcohol e.g. taverns, bottle-stores and informal drinking places i.e. shebeens (Cain et al., 2012). In Cape Town, South Africa, Weir et al. (2003) found that over 85% of the locations where people meet sex partners serve alcohol, with informal drinking places being the highest risk places. Their study also found that over 50% of the men who drink at these informal drinking places disclosed having had two or more sexual companions in 2 weeks and also low condom usage.

Babor et al. (1994) defined hazardous alcohol use as ‘a pattern of alcohol consumption that increases the risk of harmful consequences for the user or others’. These patterns of alcohol consumption are of public health significance, despite the absence of any current alcohol use disorder in the individual user.

Avanlos et al. (2010) demonstrated that hazardous alcohol use is linked to risky sexual behaviours. This includes not using condoms at last sexual encounter. Problem drinking has also been related to greater numbers of sex companions in the past month, experiencing condom failures and a lifetime history of having a sexually transmitted infection (Simbayi et al., 2004).

In Cape Town Olley et al. (2003) showed that men who abuse alcohol and are HIV positive were more inclined to engage in precarious sexual behaviours.

A meta-analysis of African studies concluded that there is a substantial connection between alcohol use and HIV infection. People who use alcohol had a 70% chance of being infected with HIV, when compared with non-drinkers (Fisher et al., 2007).

The above studies suggest that people who abuse alcohol are at a higher risk of contracting and spreading HIV. They are more likely to exhibit risky sexual behaviour. Although alcohol use has been consistently associated with an increased incidence of HIV, further research is needed to substantiate causality. The association between unsafe sex and alcohol use is complex.

## 1.4 Alcohol and Medical Aspects of HIV

Alcohol can impair the immune system. A review article by Molina et al. (2010) concluded that alcohol use directly and indirectly, through dysregulation of other components, affects all the subsystems (innate and adaptive) of the immune system. These range from the host's defence mechanism (gastro-intestinal tract and respiratory tract) to constitutional and adaptive immune systems. This weakens the immune system and increases infection risk. The course and resolution of infectious diseases is impaired resulting in greater morbidity and mortality (Molina et al., 2010).

In 2008 experts from 8 different countries (representatives from the World Health Organisation and UNAIDS) met in Cape Town, South Africa. The aim was to assess the proof relating to the associations between use of alcohol and tuberculosis (TB). They also considered if there are possible causal impacts of alcohol use on the occurrence and the progression of TB.

The meeting comprised of experts from disciplines including epidemiology, biostatistics, hepatology, immunology, psychiatry, psychology and sociology. After reviewing evidence from both published and unpublished studies, they concluded that there was sufficient evidence to conclude that there is a causal linkage between heavy drinking patterns and/or alcohol use disorders and the incidence of active TB. In addition to this, they found that these exposure categories were also causally linked to the worsening of the disease course for both TB and HIV (Parry et al., 2009).

Although the prevalence of alcohol use is the same across the socioeconomic strata, the health impact of chronic alcohol use is higher in lower socioeconomic strata (Room, 2005). Communities at a low socioeconomic level are more predisposed to poor living conditions including over-crowding and malnutrition. These poor living conditions have been associated with an increase the risk of TB infection and re-infection (Gupta et al., 2004, Narasimhan et al., 2013).

A number of studies have shown that heavy alcohol use is a significant independent risk factor for TB infection or re-infection, even if other factors are controlled for (Lönnroth et al., 2008, Rehm et al., 2009). Alcohol weakens the immune system with subsequent development of TB.

A cross-sectional study done among PLWHA attending HIV clinics in the Cape metropolitan area, Cape Town South Africa, found the rate of hazardous and/or harmful use of alcohol to be 37%. In addition to this high prevalence, 'patients with hazardous and harmful use of alcohol were more likely to have a positive TB status, low CD4 count and were not on anti-retroviral (ARV) medication'. Statistical models confirmed the importance of hazardous/harmful use of alcohol as a major determinant (both directly and indirectly) of disease progression (Kader et al., 2014).

Alcohol consumption, especially heavy use, can increase the risk of aspiration. This is as a result of reduced oropharyngeal tone, and decreased broncho-alveolar lavage due to obliteration of coughing and reduction of cilia motility. Alcohol use also impairs both the innate and acquired immunity. This makes heavy alcohol users susceptible to pulmonary bacterial infections.

Chronic heavy use of alcohol may result in neurocognitive disorders. A number of studies indicate that HIV and alcohol synergistically worsen neurocognitive function and brain integrity (Fama et al., 2009, Green et al., 2004, Pfefferbaum et al., 2012).

Cognitive reserve can be reduced through brain injury caused by past and present alcohol use (Yonker et al., 2005, Cardenas et al., 2005). This may make individuals more vulnerable to additional insults to the brain, such as those related to HIV.

Alcohol is known to disrupt the blood-brain barrier (Cornford et al., 1982, Haorah et al., 2005) and this can result in increased infiltration of HIV infected monocytes/macrophages

into the brain. This can exacerbate neuro-inflammation and lead to neuropsychological impairments.

Chronic alcohol use may result in acute and chronic liver damage. Schiff (2013) suggested that one of the consequences could be brain injury as a result of subclinical hepatic encephalopathy. The relationship between alcohol use and hepatitis C virus (HCV) infection is not clear, but according to Singal and Anand (2007) people who abuse alcohol have an incidence of HCV that is 3-fold to 30-fold higher when compared to the general population. Currently there is no clear explanation for the increased prevalence of HCV infection among alcoholics (Safdar and Schiff, 2004).

According to Letendre et al. (2002) HCV and HIV co-infected patients are more susceptible to HIV Associated Neurocognitive Disorders (HAND). The synergistic effects of alcohol and HIV on the brain can result in progression to HAND.

## 1.5 Alcohol and HIV treatment

The treatment for HIV infection is combination Antiretroviral Therapy (cART). There is evidence suggesting that HIV infected people with comorbid alcohol use are more likely not to be on cART compared to those without comorbid alcohol use. A cross-sectional study done in Cape Town (Kader et al., 2014) concluded that patients with hazardous and/or harmful alcohol use were more inclined not to be on cART. Alcohol use seemed to be a barrier for cART uptake. Adherence concerns could be the reason why their cART uptake is low. It could also be due to irregular clinic attendance thus missing pre-cART counselling sessions.

For cART to be effective, the patient has to be 90 to 95% adherent to the prescribed medication (Paterson et al., 2000). Alcohol use can result in poor adherence to cART and viral load non-suppression. Findings of a systematic review (Azar et al., 2010) showed that there is an association between alcohol use disorders and decreased adherence to cART.

According to a meta-analysis the probability of alcohol drinkers to be classified as adherent was 50 to 60% when compared to abstainers or those who drank relatively less (Hendershot et al., 2009).

Chander and colleagues (2006) in their study found that both those who drank alcohol excessively and those who drank in moderation were associated with reduced cART adherence compared to those who did not drink alcohol. Of note, hazardous drinkers were 25% less inclined to have viral load suppression compared to non-drinkers.

Internationally Cook et al. (2001) looked at the prevalence of problem drinking among HIV infected adults and drinking patterns. They found prevalence rates of 17%, 15% and 10% for binge drinking, hazardous drinking and heavy drinking respectively. In addition to these high prevalence rates, they also found that hazardous drinking and heavy drinking was strongly linked to adherence problems. People with problem drinking were more liable to miss a dose of medication. Pence and his colleagues (2007) found that the virological response was poor among HIV patients with a comorbid psychiatric illness.

Samet et al. (2004) did a prospective study looking at the different levels of alcohol use on adherence to cART. They surveyed HIV positive people with a history of alcohol use at 6-month intervals and followed them up for 30 months. Among participants who were on cART, the consumption of alcohol was found to be a significant predictor of adherence to cART. Secondly, recent sobriety when compared with at risk alcohol usage or with moderate usage was related to better adherence. This implies that addressing alcohol use among people on cART can improve adherence.

The above studies show that there is a relationship between alcohol use and possible non-adherence to cART; but the association between alcohol use and viral suppression is complex and compounded by the fact that alcohol impairs the immune system regardless of HIV status.

The consumption of alcohol may affect the metabolism of drugs used in cART. The cytochrome P450 (CYP) pathways play a major role in the metabolic clearance of xenobiotics, including alcohol. There is a high risk of alcohol-cART interactions mediated by CYP. All Protease Inhibitors (PI) and Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI) are substrates, and some of them are inhibitors and inducers of CYP3A4. These interactions may result in altered response to cART and increased toxicity (Kumar et al., 2012).

The following factors namely risky sexual behaviour, poor adherence and potential cART-alcohol interaction among HIV infected people with alcohol use disorders may result in

poor treatment outcomes for the individual. This could result in the emergence of resistant strains of the virus.

## 1.6 Prevalence of HIV in People with Severe Mental Illness

There is considerable overlap between HIV infection and Severe Mental Illness (SMI) (Bing et al., 2001). Patients with SMI are more at risk of contracting HIV. Mental illness may impair appreciation of consequences and lead to high risk behaviour for contracting HIV, which includes multiple sexual partners, transactional sex, unprotected sex and low condom usage.

In Pretoria, South Africa, a study by Mamabolo et al. (2012) concluded that mentally ill patients are sexually active and vulnerable and can be victimized e.g. forced into unwanted sexual intercourse and sexual abuse. In their study, 18% of the subjects, mainly females, reported being victims of sexual abuse.

Not much has been done to assess the HIV sero-prevalence rate among mentally ill patients. Studies into the prevalence of HIV in individuals with SMI have given a diverse picture. Some have given estimates similar to or below those in the general population, while others have reported estimates higher than those in the general population.

In a study done in Kwazulu Natal, South Africa, the sero-prevalence rate of HIV infection among psychiatric admissions to public psychiatric institutions was 26.5% (Collins et al., 2009). This study was done in psychiatrically stable patients who could give informed consent.

Singh et al. (2009) found a prevalence rate of 29.1% in acutely ill psychiatric patients at King Edward Hospital in Durban. This prevalence rate was three times higher than that in the general population (11.4% vs. 29.1%).

In Weskoppies Hospital in Pretoria (South Africa), Henning and his colleagues (2012) found a prevalence rate of 11%. This is lower than the national average. Although the prevalence was higher than a study done at the same institution (9%), it was still lower than the national average.

A literature review by Joska et al. (2008) reported an HIV prevalence rate ranging from 0 to 59% with a mean of 10% among psychiatric inpatients. Compared to 1996, their data showed a clear increase in HIV prevalence among patients admitted with SMI.

In Zimbabwe, Acuda and Sebit (1996) found a prevalence rate of 23.8%. A cross-sectional study done in Epworth, Zimbabwe among a convenient sample of 200 people found a prevalence of 59.3%. In addition to this, 71.3% of the HIV positive people suffered from a mental illness. The prevalence of alcohol use/misuse was 41% (Sebit et al., 2003).

In the United States of America, the prevalence rates of HIV infection in the mentally ill is reported to be between 5% and 23%, compared with a range of 0.3% to 0.4% in the general population (WHO, 2008).

From the above studies, one can conclude that people with mental illness are more at risk of contracting HIV.

As pointed out by Mamabolo et al. (2012) this could be due to victimization, lack of negotiation skills for safer sex practices, e.g. using condoms. They also found that persons with mental illness are more likely to be sexually abused.

## 1.7 Common Neuropsychiatric Diagnoses in People with HIV

Psychiatric illness in HIV infected people can result from pre-existing psychiatric conditions or can be as a result of direct HIV Central Nervous System (CNS) infection. It can also result from opportunistic infections (especially CNS), medication side effects and metabolic derangements.

Even though the incidence of HIV is high in sub-Saharan Africa, only a few studies have been done to estimate and characterise the prevalence of psychiatric disorders among HIV infected people in the region. The prevalence of neuropsychiatric disorders in people living with HIV is high. These disorders can present at any time during the course of the illness. Common neuropsychiatric disorders associated with HIV include neurocognitive disorders, mood disorders, schizophrenia, psychotic disorder due to another medical condition, substance abuse and post-traumatic stress disorder. With the exception of schizophrenia, these disorders can predate infection with HIV or be a consequence of HIV infection. At

present there is no evidence suggesting that HIV causes schizophrenia. Cournos et al. (1994) suggests that people with schizophrenia may be at a higher risk of contracting HIV infection due to risky sexual behaviour.

In Cape Town a study done among recently diagnosed HIV patients, the prevalence of psychiatric disorders was 56% (Olley et al., 2003). The most frequent disorders were mood, anxiety and substance abuse disorders (major depression, dysthymic disorder, post - traumatic stress disorder and alcohol dependence). In this study men were more likely to meet diagnostic criteria for alcohol abuse or dependence (43.1%) compared to women (8.5%). This study was conducted in a tertiary institution among patients attending an infectious disease clinic.

In Zimbabwe Sebit et al. (2003) found that the commonest psychiatric signs and symptoms among HIV positive people in their sample were emotional withdrawal, low mood, distrustfulness, unhappiness, sleep difficulties and suicidal ideation. This is in addition to a 21.1% prevalence of alcohol use/misuse (Sebit et al. 2003).

Adewuya et al. (2007) did a case control study in Nigeria looking at the proportion of psychiatric disorders in HIV infected subjects. The aim was to estimate the point prevalence of psychiatric disorders in a sample of HIV positive people in Nigeria compared with HIV negative controls. Among HIV infected people the rate of psychiatric disorders was 59.1% (compared to 19.5% among controls). The common psychiatric disorders were affective disorders (23.9%), anxiety disorders (34.1%) and psychotic disorders (5.7%). In addition to this, the stage of the illness and level of social support were significantly associated with psychiatric disorders. One major draw-back of this study was the small sample size.

Internationally in the United States, Pence et al. (2005), found the prevalence of substance abuse to be 20%. The past year prevalence of alcohol abuse or dependence was 10.9% whilst the lifetime prevalence was 28.6%. This study was conducted in HIV infected individuals. In the Veterans Aging Cohort Five-Site Study, older HIV-positive veterans had a greater prevalence of depressive symptoms, alcohol abuse/dependence and drug use/dependence than age-matched HIV-negative veterans (Justice et al., 2004).

Malee and colleagues (2014) looked at psychiatric and substance use disorders among a cohort of mothers living with HIV. They found that almost half of the mothers living with HIV had a psychiatric disorder. Psychiatric disorders or substance use disorders persisted among the mothers in their cohort. More than half of the mothers with persistent disorders

had a comorbid disorder at initial evaluation, and the commonest disorders were post-traumatic stress disorder, anxiety and depression.

## 1.8 Alcohol abuse, Severe Mental Illness and HIV (Triple Diagnosis Patients)

In South Africa the prevalence of HIV infection and the prevalence of alcohol use disorders are highest in the population group 25 to 44. Most severe mental illnesses (e.g. major mood disorders, schizophrenia) have their onset in this age group (Hasin et al., 2005, Herman et al., 2009, Weissman et al., 1996). Studies have shown that the prevalence of alcohol use disorders is higher among people with severe mental illness when compared to people without mental illness. Dual diagnosis, i.e. severe mental illness and substance use, is the norm rather than an exception. Currently, work has not been done to estimate the prevalence of alcohol use among patient with both mental illness and HIV, i.e. triple diagnosis patients.

These patients are a risk to themselves and to the community in general. This may be through intoxication related hyper-sexuality, as well as through unsafe transactional sex (Simbayi et al., 2004, Cook et al., 2001, Chander, 2011). Possible poor adherence to medication with resultant treatment failure and potential of spreading treatment resistant virus is a concern for this group of patients.

In addition to HIV disease, treatment failure and progression, alcohol use can also impact on the progression of the severe mental illness. Non-adherence to medication, reduced serum medication drug levels (through drug-drug interactions with alcohol and CYP enzymes induction) can lead to recurrent relapses and subsequent poor response to treatment.

When assessing alcohol use, the overall use and the pattern of use should be analysed. Burnhams et al. (2014) did a cross sectional study looking at the prevalence and predictors of problematic alcohol use among safety and security employees in the Western Cape, South Africa. They found that 75.9% of the participants who consumed alcohol engaged in binge drinking, and close to 25% indicated potentially hazardous drinking patterns. Thus in assessing alcohol use among patients, one should also assess the pattern of alcohol use, and not just the overall use.

There is a dearth of studies looking at the prevalence and patterns of alcohol use in patients with comorbid SMI and HIV infection. As such our study will assess the prevalence of AUD among patients with SMI and HIV infection i.e. triple diagnosis patients.

# CHAPTER 2 SUBJECTS AND METHODS

In order to increase our knowledge on the alcohol use and patterns of use in people with both SMI and HIV infection, a retrospective record review study was done. The aim of the current study is to estimate the prevalence of alcohol use disorders among patients attending Luthando Neuropsychiatric HIV clinic.

## 2.1 STUDY OBJECTIVES

Objectives

1. To measure the prevalence of alcohol use disorders, using the Alcohol Use Disorders Identification Test (AUDIT), in patients attending Luthando Neuropsychiatric Clinic,
2. To assess the drinking patterns among patients attending Luthando Clinic,
3. To identify hazardous and harmful alcohol users and to refer them appropriately,
4. To identify any medical and psychiatric associations e.g. viral load suppression and alcohol use disorders.

## 2.2 STUDY DESIGN

A retrospective record review was conducted.

## 2.3 SUBJECTS AND METHOD

### 2.3.1 Subjects and setting

Luthando Neuropsychiatric HIV clinic is a specialist clinic at Chris Hani Baragwanath Academic Hospital (CHBAH). It operates from Monday to Friday and caters for adult patients who have a severe mental illness and are HIV positive – dual diagnosis patients. Most patients are referred to the clinic as acutely ill patients from the psychiatric wards at CHBAH. These patients are seen, Monday to Friday, at the clinic and are cared for by psychiatrists trained in HIV management. The psychiatrists care for both medical and psychiatric problems in an integrated way.

Fridays are reserved for stable outpatients. The patients are reviewed by a doctor. Since January 2013, the Alcohol Use Disorders Identification Test-self report (AUDIT), has been included in the routine care of patients attending the Friday clinic. Routine care includes vitals, urinalysis, adherence counselling, group activities, review by a doctor (physical and psychiatric examination), blood results etc.

Each patient completes the AUDIT questionnaire once every 6 months. Prior to completing the AUDIT, one of the doctors at the clinic explains the need for the assessment. Patients have the choice to or not to complete the AUDIT. This does not impact, negatively or positively, to the care patients receive at the clinic.

A list of patients who attended the Friday clinic from January to June 2013 was accessed through the Luthando Database. Their files were accessed and information collected on a data sheet (Appendix 3).

#### 2.3.1.2 Inclusion criteria

The inclusion criteria were:

- All patients between the ages 18 – 65 years of age attending the Friday clinic were eligible to be part of the study.
- An AUDIT (Alcohol Use Disorders Identification Test) questionnaire must have been completed within the past 6 months.

#### 2.3.1.3 Exclusion criteria

Patients who had not completed the AUDIT questionnaire were excluded.

## 2.3.2 Method

### 2.3.2.1 Procedures

Since January 2013, patients attending the Friday Clinic at Luthando Neuropsychiatric HIV clinic complete the Alcohol Use Disorders Identification Test (AUDIT) self-report (Appendix 1 and 2). They do this while waiting to be seen by the doctor.

## 2.3 .3 Measures

The Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT was developed by the World Health Organization for international use as a simple method of screening for excessive alcohol use and to assist in brief assessment (Babor et al., 2001). It assists healthcare workers to identify hazardous alcohol use, harmful drinkers and alcohol dependence.

Using the AUDIT, practitioners are able identify people who would benefit from cutting down or stopping drinking alcohol (Babor et al., 2001). It assesses alcohol use over the past 12 months. The AUDIT focuses on alcohol use in the recent past, whilst an alcohol use history may include a longer time period.

Hazardous drinking is defined as a pattern of alcohol use that increases the risk of harmful consequences for the user or others. An example is drinking and driving. Hazardous drinking patterns have public health significance, despite the absence of any current alcohol use disorder in the individual. The AUDIT emphasizes identification of hazardous alcohol use, rather than long-term dependence and adverse drinking consequences and focuses primarily on symptoms occurring in the recent past rather than ever.

Harmful use of alcohol is the use of alcohol resulting in physical and/or mental consequences for the individual (Babor et al., 2001). These include reduced resistance to infections, impaired sexual performance in men, nervousness, aggression, depression

Alcohol dependence is defined as ‘a cluster of behavioural, cognitive and physiological phenomena that may develop after repeated alcohol use’ (World Health Organization, 1993). These may include loss of control over alcohol use, a strong desire to use alcohol,

continued use despite physical, social, occupational and psychological consequences as a result of alcohol use.

When compared with other screening tests the AUDIT has the following advantages; it has been validated in a number of countries, including South Africa (Kader et al., 2012) and was specifically designed for international use. It is brief and can be administered quickly. It focuses on recent alcohol use (past 12 months).

The AUDIT consists of 10 questions about recent alcohol use, alcohol dependence symptoms and alcohol related problems. It can either be self-administered or administered by a health-care worker. Each question is scored from 0 to 4, with a maximum score of 40. A total score is obtained by adding up all the scores from each question.

The 10 questions can be grouped into 3 categories;

- consumption (questions 1 - 3),
- dependence (questions 4 - 6), and
- harmful use (questions 7 - 10).

A total score of 8 or more is recommended as an indicator of hazardous and harmful alcohol use, as well as possible alcohol dependence. Using a cut-off of 8, most studies have found very favourable sensitivity and usually lower but acceptable specificity (Conigrave et al., 1995).

In addition to analysing the total score, the scores from the different categories should be analysed: a score of 1 or more on questions 2 or 3 indicates consumption at a hazardous level. Scoring 1 or more on questions 4 to 6 implies the presence or incipience of alcohol dependence. Any point greater than 0 scored on questions 7 to 10 indicate that possible alcohol related harm is already being experienced. The total score, consumption level score, dependence score and harmful score should all play a role in determining how to manage a patient (Babor et al., 2001).

At Luthando Clinic the AUDIT-self report was translated to Zulu and back to English by two independent translators. Patients have a choice of completing the questionnaire in Zulu or English. After completing the questionnaire, they hand it to the doctor who reviews them

on that particular day. The AUDIT-self report was used to assess the prevalence of alcohol use disorders among patients attending Luthando Neuropsychiatric Clinic. A total score of equal and/or greater than 8 for females and males was used to estimate the prevalence of alcohol use disorders at the clinic. In addition to the total score, scores for consumption, dependence and harmful use were also analysed.

Based on the total score and the individual scores in the 3 domains, the doctor advises them or refers them to Zamani Dual Diagnosis Clinic.

Zamani Dual Diagnosis Clinic is a specialist clinic run by the department of psychiatry at CHBAH. It caters for patients with a primary psychiatric illness and substance abuse. It is located in the same building as Luthando Clinic but is run on a Wednesday by psychiatrists and psychiatry registrars.

# CHAPTER 3 SAMPLE SIZE AND STATISTICAL ANALYSIS

## 3.1 Sample Size Calculation

An expected prevalence of rate of 7% (Myer et al., 2008) was used to estimate the sample size. The following formula was used to calculate the sample size:

$$N = \frac{Z^2 P(1P)}{d^2}$$

Where n = sample size

Z = Z –statistic for the chosen level of confidence,

P = expected prevalence

d = precision.

This yielded a minimum sample of 101 which would allow 80% power (5% level of significance $p<0.05$). Descriptive analysis was used for categorical variables. Means, standard deviation and percentages were calculated.

## 3.2 Data Analysis

SAS was used to analyse the data. The $\chi^2$ test was used to assess the relationship between the demographic and clinical variables on the one hand and the categorised AUDIT scores on the other hand. Fisher's exact test was used for 2 x 2 tables or where the requirements for the $\chi^2$ test could not be met. The strength of the associations was measured by Cramer's V and the phi coefficient respectively. The following scale of interpretation was used:

0.50 and above – high/strong association

0.3 to 0.49 – moderate association

0.10 to 0.29 – weak associations

Below 0.10 little if any association.

# CHAPTER 4 ETHICS APPROVAL

The study Protocol was submitted, and approval granted by the Human Research Ethics Committee (HREC) – certificate number M130659 (Appendix 4). This was a retrospective record review study.

Permission to access the Luthando data base was obtained from the head of department, psychiatry, at Chris Hani Baragwanath Academic Hospital and the hospital's research committee.

Our study involved the use of existing data. In addition to this our data sheet had unique identifiers such that the principal investigator could not identify individual patients. In the event that there were discrepancies between the AUDIT and current management of a patient, the principal investigator alerted the Luthando doctors who reviewed the file and managed the patient appropriately. Because we used existing data and the principal investigator could not identify individual patients, the need to obtain informed consent from patients was not necessary.

Currently doctors at the clinic refer patients with alcohol abuse, hazardous alcohol use and harmful alcohol use to Zamani Dual Diagnosis clinic. Patients, who were missed during routine clinical care and subsequently identified during the study, were referred to Zamani Dual Diagnosis Clinic. The Zamani Dual Diagnosis Clinic operates on Wednesday in the same building as the Luthando Clinic. It is also run by the department of Psychiatry at CHBAH.

# CHAPTER 5 RESULTS

## 5.1 Demographic characteristics

Initially 114 participants were recruited to be part of the study. Three participants were excluded because AUDIT questionnaires were not complete, thus only 111 participants were included in the analysis. Demographic details of the participants are described in Table 2.

Of the total participants 73.0% (n=81) were female. The youngest participant was 21 years old, whereas the oldest was 59 years old; with a mean age of 40.2 (standard deviation = 8.8). Due to the small numbers among the groups, the age categories were further grouped into 34 years and younger (n=28, 25.2%), 35 – 39 years (n=24, 21.6%), 40 – 44 years (n=28, 25.2%) and 45 and older (n=31, 27.9%) (Table 2).

Most of the participants were single (n=68, 61.3%), 19 (17.1%) were married, 10 (9.0%) were divorced, 3 (2.7%) were widowed and for 11 (9.9%) participants the relationship status was not stated. For further analysis, the relationship status of the participants was further grouped into single (n=81, 73%), in a relationship (n=19, 17.1%) and unknown (n=11, 9.9%) (Table 2).

For over 90% of the participants the highest level of education was not stated, and for that reason no further analysis could be carried out.

When analysing the employment status, 47 (42.3%) of the participants were unemployed only 26 (23.4%) were employed; 26 (23.4%) were on a disability grant (Table2).

TABLE 2: Demographic Characteristics

| Variable | Category | Overall | |
|---|---|---|---|
| | | n | % |
| Gender | Female | 81 | 73.0 |
| | Male | 30 | 27.0 |
| Age category (regrouped) | 34 or younger | 28 | 25.2 |
| | 35-39 | 24 | 21.6 |
| | 40-44 | 28 | 25.2 |
| | 45 or older | 31 | 27.9 |
| Marital status | Single | 68 | 61.3 |
| | Married | 19 | 17.1 |
| | Divorced | 10 | 9.0 |
| | Widowed | 3 | 2.7 |
| | Unknown | 11 | 9.9 |
| Marital status (regrouped) | Single | 81 | 73.0 |
| | In a relationship | 19 | 17.1 |
| | Unknown | 11 | 9.9 |
| | | | |
| Highest level of education | None | 0 | 0 |
| | Primary school | 5 | 4.5 |
| | Secondary school | 12 | 10.8 |
| | Tertiary | 1 | 0.9 |
| | Unknown | 93 | 83.8 |
| Employment status | Employed | 26 | 23.4 |
| | Unemployed | 47 | 42.3 |
| | On a DG | 26 | 23.4 |
| | Unknown | 12 | 10.9 |

5.2 Clinical characteristics

Fifteen participants had a total AUDIT score of 8 and/or greater. Of these 8 (53.7%) were females and 7(46.3%) were males. The prevalence rate of alcohol use disorders as measured with a total AUDIT score of 8 and greater was 13.5% (95% CI 7.1 – 19.9). The prevalence rates for hazardous alcohol consumption, incipient alcohol dependence and alcohol related harm were 28.8% (95% CI 20.4 – 37.2), 18.9% (95% CI 11.6 – 26.2) and 20.7% (95% CI 13.2 – 28.2) respectively (Table 3).

TABLE 3 Total AUDIT score and categorized AUDIT scores

| | | n | % | 95% confidence interval for prevalence (%) |
|---|---|---|---|---|
| Total AUDIT | ≤ 7 | 96 | 86.5 | 7.1 – 19.9 |
| | ≥ 8 | 15 | 13.5 | |
| Hazardous consumption | No | 79 | 71.2 | 20.4 – 37.2 |
| | Yes | 32 | 28.8 | |
| Incipient dependence | No | 90 | 81.1 | 11.6 – 26.2 |
| | Yes | 21 | 18.9 | |
| Harmful use | No | 88 | 79.3 | 13.2 – 28.2 |
| | Yes | 23 | 20.7 | |

Most of the participants (96.4%) were on cART and for 83 (74.8%) their latest viral load was suppressed. For 23 (20.7%) patients their latest viral load was not suppressed. The mean CD4 (n=100) was 494 (median 492.5, interquartile range 286-655). The commonest psychiatric diagnosis (82%) was mood/psychosis due to a general medical condition (Table 4). Clinical notes showed that 13 (11.7%) of the participants were using substances, yet none had a diagnosis of a substance use disorder. Of these participants 6 were using alcohol and 7 were using cannabis (Table4).

Table 4: Clinical characteristics and total AUDIT score

| Variable | Category | Overall | | Total AUDIT Score | | | | p-value for between group tests |
|---|---|---|---|---|---|---|---|---|
| | | | | ≤ 7 | | ≥ 8 | | |
| | | 111 | | 96 | | 15 | | |
| | | N | % | N | % | n | % | |
| Viral load | Suppressed | 83 | 74.8 | 76 | 82.6 | 7 | 50.0 | 0.012 (phi=0.27) |
| | Not suppressed | 23 | 20.7 | 16 | 17.4 | 7 | 50.0 | |
| | Unknown | 5 | 4.5 | | | | | |
| On HAART | Yes | 107 | 96.4 | | | | | |
| | No | 4 | 3.6 | | | | | |
| Diagnosis | Mood/psychosis due to GMC | 91 | 82.0 | 78 | 7.4 | 13 | 86.7 | 1.00 |
| | Bipolar I or II | 12 | 10.8 | | | | | |
| | MDD/Dysthymia | 8 | 7.2 | | | | | |
| | Schizophrenia | 6 | 5.4 | | | | | |
| | Mood/psychosis due to substances | 4 | 3.6 | | | | | |
| | Substance use | 0 | 0.0 | | | | | |
| | Schizoaffective d/o | 2 | 1.8 | | | | | |
| | PTSD | 0 | 0.0 | | | | | |
| | Other | 22 | 19.8 | | | | | |
| History of substance abuse | Yes | 13 | 11.7 | 7 | 7.4 | 6 | 42.9 | 0.0016 (phi=0.37) |
| | No | 95 | 85.6 | 87 | 92.6 | 8 | 57.1 | |
| | Unknown | 3 | 2.7 | | | | | |

## 5.3 Associations

### 5.3.1 Gender

In total, 15 of the participants had a total AUDIT score ≥8. Of these 53.3% (n=8) were female and 46.7% (n=7) were males. There was no significant association between gender and the total AUDIT score or any of the categorized AUDIT scores (p=0.11).

### 5.3.2 Age

The three youngest and the two oldest age groups were combined for the between group analysis. This was done as a result of the small sample size. There was no significant association between age and any of the three categorized AUDIT scores. There was a significant, moderate association between age category and the overall AUDIT score (p=0.014; phi coefficient=0.31). In the alcohol related harm group, there was a higher proportion of participants in the youngest and the 40-44years groups. However, given the low numbers of participants in this group (n=15), the results should be interpreted with caution (Figure 1).




Figure 1: Association between Age and Total AUDIT score

5.3.3 Relationship status

Marital status data was missing for 9.9% of the participants. For between group analysis, the data were grouped as: single or in a relationship. This is because of the small group sizes for some of the existing categories. There was no significant association between being single or in a relationship and the total AUDIT score or any of the categorized AUDIT scores. For the total AUDIT score p=1.00, consumption score p=0.79, incipient dependence p=0.76 and harmful use p=1.00.

5.3.4 Employment status

There was a significant but weak association between employment status and the categorized AUDIT consumption score (p=0.041; Cramer's V=0.25). In the hazardous consumption group, there were a high proportion of unemployed participants, and a lower proportion of participants on a disability grant compared to the non-hazardous consumption group (figure 2). There was no significant association between employment status and the total AUDIT score or any of the other categorized AUDIT scores.

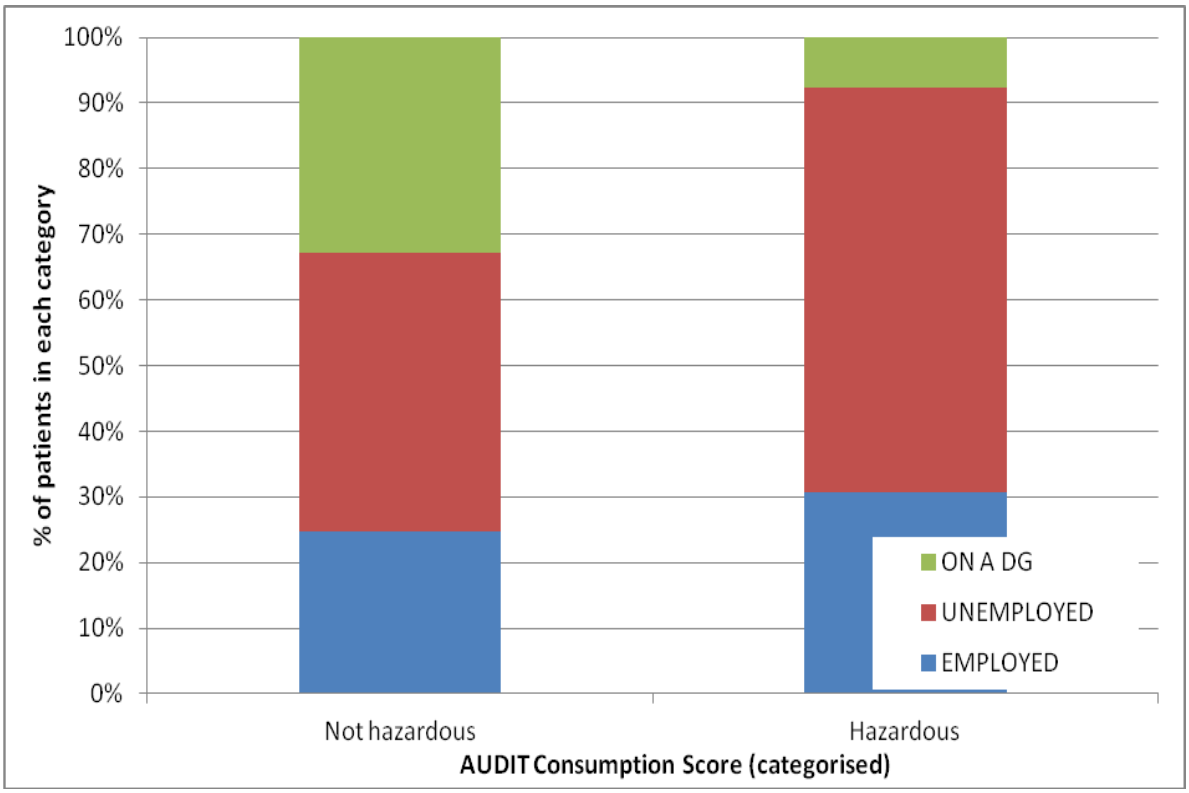



Figure 2: Association between employment status and Hazardous alcohol consumption.

5.3.5 Viral Load Suppression.

There was a significant relationship between the total AUDIT score and viral load suppression. Participants whose viral load was not suppressed (Figure 3) were significantly higher in the harmful and hazardous group (p=0.012 phi=0.27). In addition to this, there was a significant relationship between viral load suppression and each of the categorized AUDIT scores. Participants whose viral load was not suppressed were significantly more likely to be in the hazardous consumption group (p=0.0095 phi=0.27), incipient dependence group (p=0.017 phi=0.27) and/or in the alcohol related harm group (p=0.0067 phi=0.29)

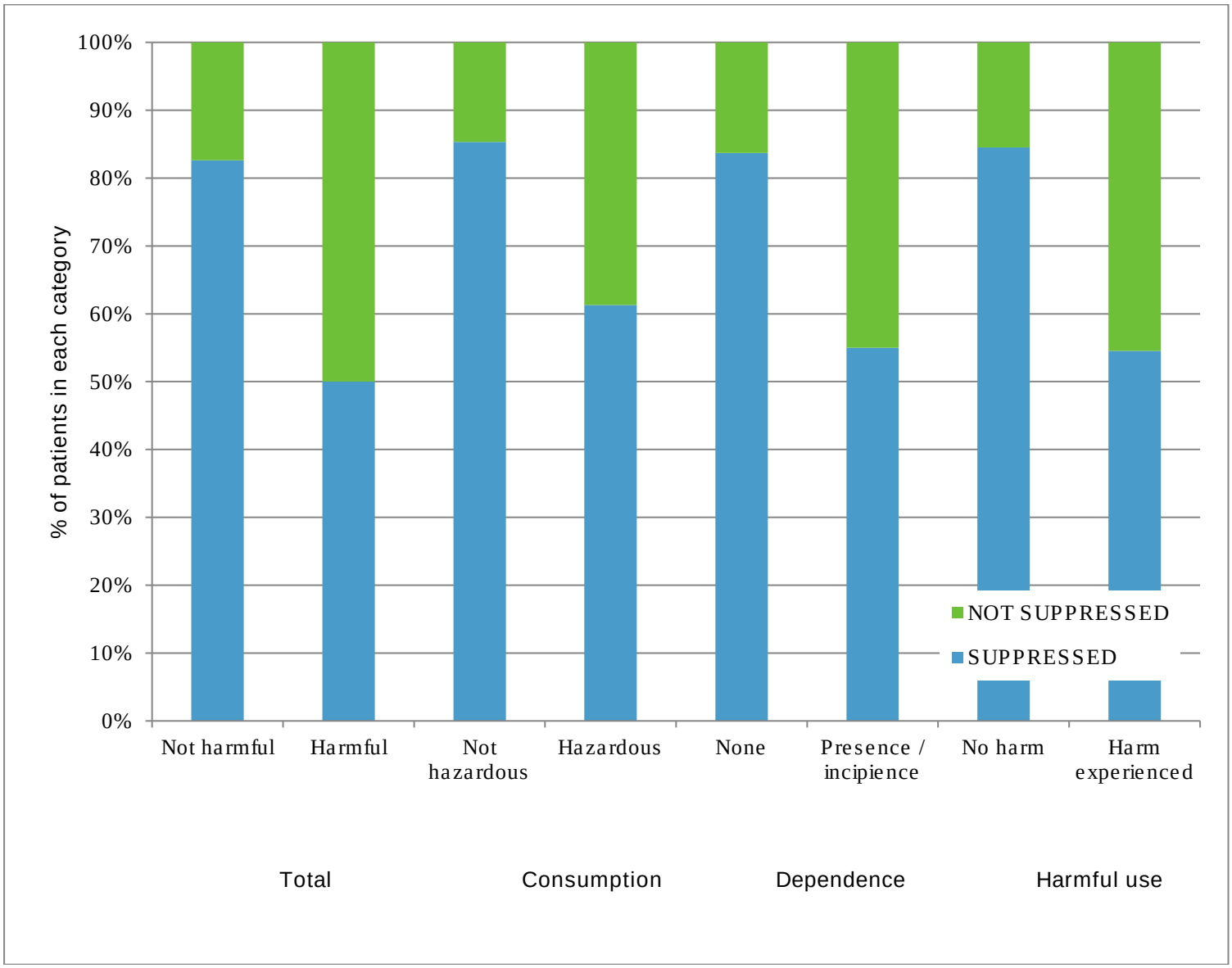



Figure 3: Association between Viral load, Total AUDIT score and categorized AUDIT scores. {Total, Not harmful = AUDIT≤7, Harmful = ≥8}

5.3.6 History of substance use

Thirteen participants had a history of substance use. Of these, 6 had a history of alcohol use and 7 had a history of cannabis use. There was a significant association between history of substance abuse and the total AUDIT score (p=0.0016 phi=0.37). Participants who use alcohol in a hazardous way were significantly more likely to have a history of substance use (p=0.0011 phi=0.34). Lastly participants with incipient dependence (p=0.0016 phi=0.35) and participants with harmful alcohol use (p=0.0045 phi=0.31) were significantly more likely to have a history of substance use. There were too few cases with a history of substance abuse for further analysis of the types of substances abused.

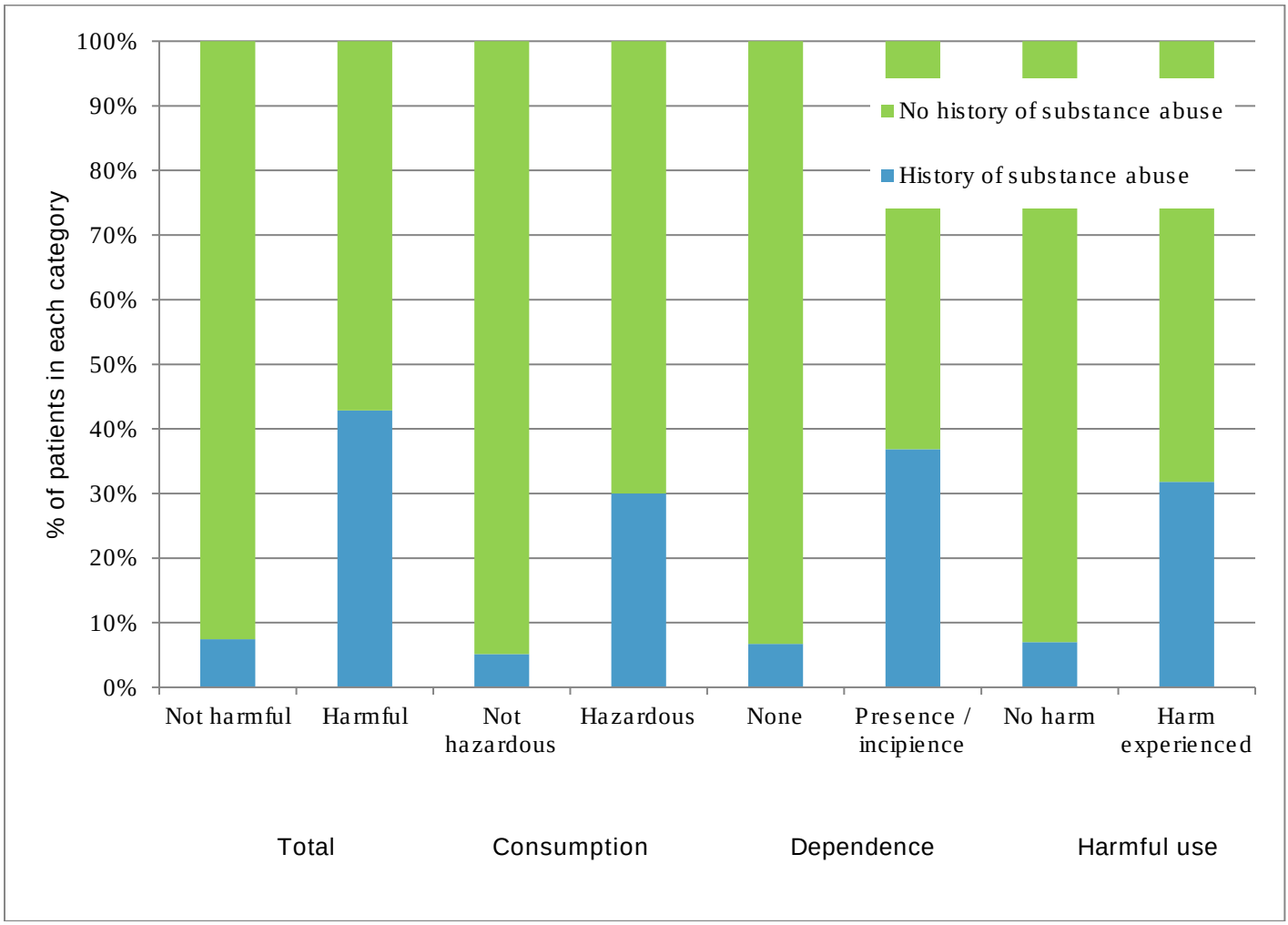



Figure 4: Association between History of substance use, Total AUDIT score and categorized AUDIT scores {Not harmful = Total AUDIT ≤7; Harmful = Total AUDIT ≥8}

### 5.3.7 Psychiatric Diagnosis

The only diagnosis with a sufficiently large group size for further analysis was mood/psychosis due to GMC. There was no significant association between this diagnosis and the total AUDIT score ($p=1.00$) or any of the categorised AUDIT scores.

# CHAPTER 6 DISCUSSION

## 6.1 Prevalence of AUD

The prevalence of alcohol use disorders in this population was 13.5% (95% CI 7.1 – 19.9) and the prevalence rates for hazardous alcohol consumption, incipient alcohol dependence and alcohol related harm were 28.8% (95% CI 20.4 – 37.2), 18.9% (95% CI 11.6 – 26.2) and 20.7% (95% CI 13.2 – 28.2) respectively. As far as we know, this is the first study that has looked at the prevalence of alcohol use disorders in patients with SMI and infected with HIV (i.e. Triple diagnosis patients) attending a Neuropsychiatric HIV clinic at a tertiary hospital in South Africa. It is also the first study to look at the alcohol use patterns among patients attending a Neuropsychiatric clinic.

The prevalence of alcohol use disorder in this population was high. This may have negative implications for the management our patients. Of further concern is the high prevalence of hazardous alcohol use, incipient alcohol dependence and harmful use of alcohol. Interventions at this stage could help prevent disease progression and reduce the other negative effects of alcohol in this group of patients. We were able to recognise these patients and refer them to Zamani Dual Diagnosis clinic for further care.

Most studies have looked at the prevalence of alcohol use in people attending HIV clinics i.e. dual diagnosis patients. As such it is difficult to compare our findings with other studies. Secondly different studies use different tools and/or measures to estimate the prevalence of alcohol use, and one has to take this into consideration when doing comparisons between studies.

Using the AUDIT, Kader (2012) calculated a prevalence of 41.9% for hazardous and/or harmful alcohol use among patients attending an HIV clinic in Cape Town. It is important to mention that their sample size was small (n=43). Myer et al. (2008) calculated a prevalence of 7% for alcohol dependence. In addition to using the AUDIT they also used the Mini International Neuropsychiatric Interview (MINI). Our findings of a high prevalence of hazardous alcohol consumption, incipient alcohol dependence and harmful alcohol use are comparable to their findings.

Internationally, Samet and colleagues (2004) estimated the prevalence of 16% for at risk alcohol use at an HIV clinic. At risk drinking was defined as >7 or more drinks per week or

more than 3 drinks per session for females and >14 or more drinks per week or more than 4 drinks per session for males. Cook et al. (2001) had a prevalence of 17% for binge drinking, 15% for hazardous drinking and 10% for heavy drinking. Pence and his colleagues (2005) found a past year prevalence of 10.9%

Although the above studies have used different tools to measure the prevalence of alcohol use, our findings are consistent with most of the studies. All these studies indicate a high prevalence of alcohol use among HIV positive patients. These findings indicate the importance of screening patients attending HIV clinics for alcohol use. The pattern of alcohol use should also be determined in these patients. Our small sample size has resulted in a wide confidence interval. Screening tools e.g. AUDIT, can assist clinicians in the assessment of alcohol use.

## 6.2 AUD and Demographic details

Our results show that there was a significant association between age and hazardous consumption of alcohol and the total AUDIT score. Participants in the younger age group, 34 and younger and in the age category 40 – 44 were significantly more likely to have an AUD (p=0.014 phi0.31) compared to older participants. According to Shisana et al., this is the age group with the highest HIV infection rate in South Africa (Shisana et al., 2012). The use of alcohol has been linked to the transmission of HIV through unsafe sexual practices (Olley et al., 2003, Fisher et al., 2007, Scott-Sheldon et al., 2014).

Parry and his colleagues (2005) found that the rate of risky drinking was high in the middle age categories for both men and women. In their study the rate was high in the age group 35 – 44 for males and 45 – 54 for females. In addition to that they found that the age groups 25 and older were most likely to have alcohol related problems. They used the CAGE questionnaire to assess alcohol related problems.

Our findings are consistent with the above studies. In addition to the age group 40 – 44 being more likely to have an AUD, the youngest age group 34 and younger was also more likely to have an AUD. Young adulthood is also the time marked by change and exploration. This includes leaving home, getting employment and making one's own decisions, including the decision to drink alcohol. Peer pressure could also explain the high

alcohol use among this group. Thus clinicians should pay particular attention in screening these patients for alcohol use disorders.

Unemployed people who were significantly more likely to consume alcohol in a hazardous way (p=0.041, Cramer's V=0.25). This finding needs further exploration because other studies e.g. Bachman et al. (1997) showed that unemployed men tend to reduce their alcohol intake.

Due to poor record keeping, data for the level of education was missing for 83.3% of our participants, thus we could not assess any associations between the highest level of education and alcohol use.

There is evidence suggesting that students at institutions of higher learning drink more compared with non-college attending peers. They are also more likely to be diagnosed with alcohol abuse. But those who graduate from institutions of higher learning have lower life-time rates of alcohol abuse (Grant, 1997, Dawson et al., 1992).

People with a college education tend to stop these drinking patterns more quickly than their non-college counterparts – maturing out of harmful use before it becomes a long-term problem (White et al., 2005). The general population attending Luthando clinic anecdotally has a lower education. Thus one would expect a higher rate of alcohol use disorders.

## 6.3 AUD and Viral load suppression

In our study 96.4% of the participants were on cART. We did not have viral load data for 4.5% of the participants. Few studies have looked at the relationship between alcohol use and viral load suppression. Most studies have looked at adherence to cART and have consistently found that alcohol use is associated with poor adherence to cART (Pence et al., 2007, Cook et al., 2001, Samet J. et al., 2004). From this, most authors have concluded that the poor adherence results in poor virological response.

We found that participants who have an AUD were significantly more likely to have an unsuppressed viral load (p=0.012 phi=0.27). This finding is consistent with the work done by Chander and his colleagues (2006). They found that people who use alcohol in a

hazardous way were 25% less likely to achieve viral load suppression. In addition to this, participants who consume alcohol in a hazardous way, have incipient alcohol dependence and use alcohol in a harmful way, were significantly more likely to have an unsuppressed viral load.

This is important because these are participants who do not necessarily fulfil criteria for an AUD. Even though they have not been diagnosed with an AUD, the pattern of alcohol use is significantly affecting clinical outcomes.

Samet and his colleagues (2004) showed that adherence improves with abstinence from alcohol. Identifying these patients and referring them appropriately to a substance use clinic, will improve clinical outcomes. In our setting these patients are co-managed by Zamani dual diagnosis clinic and Luthando Neuropsychiatric clinic.

Alcohol, independent of HIV status, has been shown to have a negative impact on the immune system (Molina et al., 2010). As such the relationship between alcohol and HIV viral load non-suppression is complex. Other factors could account for this association in addition to non-adherence to medication.

## 6.4 AUD and history of Substance use

From the clinical notes, 11.7% (n=13; cannabis=7, alcohol=6) of the participants had a history of substance use. None of these participants were diagnosed with a substance use disorder, and the reasons for this were not specified. Although using a substance does not imply the presence of a substance use disorder, participants who have a history of substance use, were significantly more likely to have an AUD (p=0.0016, phi=0.37) and significantly more likely to consume alcohol in a hazardous way (p=0.0011, phi=0.34), have incipient alcohol dependence (p=0.0016, phi=0.35) and alcohol related harm (p=0.045, phi=0.31).

It is important to remember that the AUDIT focuses on the past 12 months, rather than a history of ‘ever’ using alcohol. As such there might be an overlap between the two, and in this study this possible overlap was not analysed. This study did not assess the details with regards to the history of substance use and current multiple substance use. As such the finding that patients with a history of substance use were significantly more likely to have

an AUD, consume alcohol in a hazardous way, have incipient dependence and alcohol related harm, should be interpreted with caution.

In our study patients who have an alcohol use disorder were more likely to have a history and/or current use of other substances as well. Cannabis and alcohol were the two substances participants indicated they use. This is in agreement with the SACENDU report (Dada et al., 2015). Thus, when screening patients for alcohol use, clinicians should assess patients for other substances as well, especially cannabis. The relationship and pattern of use and temporal relationship of use of the different substances should be assessed in future studies.

Using the AUDIT has assisted in identifying more patients with AUD. The AUDIT has been validated in South Africa (Kader et al., 2012) and it can assist clinicians to identify patients with AUD as we have found in our study.

Although we were able to identify participants who had a history of cannabis use, it is not clear if these participants are still using the substances. In future it will be important to know if these participants are current users or not. A prospective study would assist in the understanding of these possible relationships.

## 6.5 Treatment and Future Implications

Our study has found a high prevalence of AUD in patients with comorbid HIV infection and a SMI at a tertiary HIV Neuropsychiatric clinic. The AUDIT-self report was used to estimate the prevalence. Identifying these patients and referring them for appropriate care will help improve their clinical outcomes.

Samet and his colleagues (2004) showed that reduction in alcohol intake results in improved adherence to cART and a reduction in serum HIV viral load. As such it is important to identify and appropriately treat these patients. From our study, one can recommend that the screening of patients for AUD attending HIV clinics should be part of the routine care.

In South Africa the majority of HIV care is managed by Medical Officers and Nurses at a local clinic. The AUDIT has been shown to be a reliable tool that can be used in a busy clinic setting to identify patients with AUD. It is easy to use and it takes approximately 10

minutes to complete and, as we have done in our clinic, patients complete it while waiting to be seen by the doctor. Once a patient with AUD is identified, motivation interviewing skills can be used to counsel patients to reduce and stop alcohol use. Reduction in alcohol use has been shown to improve adherence to cART (Samet et al., 2004). Motivational interviewing skills can be taught to both primary care medical doctors and nurses.

Patients with SMI, AUD and HIV infection may need specialized psychiatric care. As such protocols should be developed and referral systems clearly defined. The department of psychiatry at the University of the Witwatersrand sends registrars to community clinics as part of their training. These registrars could assist in providing support and mentoring to the community health nurses and medical officers.

The model of integration of care as defined in the National Mental Health Policy Framework and Strategic Plan 2013-2020 could be used. This aims to integrate mental health at the primary level with general medical care. The integration will improve referral systems and enhance learning for both general medical care workers and mental health workers. In addition to this, the framework also defines clear links between the different levels of care. Patients who need specialized care are referred to the appropriate level and once stabilized referred back to community clinics.

The primary care teams, community mental health services and tertiary hospitals should also develop guidelines to assist the primary care teams to identify and appropriately refer these patients.

Identification of patients with AUD may increase the strain on the services offered at a busy clinic which could be viewed negatively. Identifying these patient will, in the long run, help lessen the clinic load. For an example an improvement in adherence will result in more patients with suppressed HIV viral load. This could possibly lessen the risk of opportunistic infections. So giving these patients the appropriate care will lessen the clinic load in the medium to long-term.

The AUDIT assesses the use of alcohol over the past 12months, as such patients would be expected to complete the questionnaire once every 12 months.

# Chapter 7 Limitations

The main aim of our study was to estimate the prevalence of AUD among patients attending Luthando Clinic. We also wanted to examine the patterns of alcohol use and the relationship between alcohol use and demographic and clinical detail. Although we achieved our aim and objectives, some limitations should be mentioned.

The study was limited to the Friday clinic which comprises mainly of out-patients. As such this may not be a true representative of the overall clinic. In future it will be necessary to do a study covering all clinic days.

In some of the analysis we had wide confidence intervals as a result of a small sample size. This also limited us in the number analysis we could make e.g. the relationship between history substance use and AUD. A larger sample size would have assisted in performing more analysis.

At Luthando the AUDIT self-report questionnaire is used to determine if a patient has an AUD. Although self-report questionnaires have been associated with under-reporting of symptoms, it is important to note that in our study we were able to identify more participants with AUD than patients identified in clinical notes. Using the AUDIT questionnaire has assisted the clinicians at Luthando to identify more patients with AUD. One should still consider possibility of under-reporting in self report questionnaires.

This was a retrospective record review and there was missing data. For an example we could not analyse any associations between AUD and highest level of education as 83.3% of the participants had missing data with regards to highest level of education. Secondly 9.9% of the participants had missing data on marital status. We regrouped the participants into those who were single and those in a relationship. This limited us in exploring if there is a relationship between being married and AUD.

Most of our participants were diagnosed with a Mood/psychosis due to GMC. This skewed our data and we could not analyse if there was any association between the psychiatric diagnosis and AUD. This limited our ability to analyse if there was any difference between AUD among participants diagnosed with a primary psychiatric disorder and those diagnosed with secondary psychiatric disorders.

In our study, participants who had a history of substance use were identified. We did not study the pattern of use, when the substance/s was used and current use. As such our finding that participants with a history of substance use were significantly more likely to have an AUD should be interpreted with caution. In future it will be necessary to examine this possible association.

Participants with an AUD were more likely to have unsuppressed viral load. One should not forget that there are other factors which can result in virological failure e.g. non-adherence to cART. Besides alcohol use, we did not explore other factors which could have resulted in virological failure. In addition to this, alcohol, independent of HIV status, has been shown to cause immunosuppression. Thus the relationship between alcohol use and HIV viral load non-suppression is complex and needs further study.

Luthando is a specialist HIV clinic at a tertiary hospital; as such one should be careful in generalising these findings. This does not negate the high prevalence in this population, and raises important issues e.g. screening for alcohol use in patients attending HIV clinics. Clinicians should also identify patients with the triple diagnosis of HIV, SMI and alcohol use.

Although we had the above limitations, we have shown that patients with SMI and HIV should be screened for the possibility of an AUD. The pattern of alcohol use should also be analysed as these factors may have clinical implications for our patients.

# Chapter 8 CONCLUSIONS

The prevalence of AUD is high at Luthando Neuropsychiatric clinic and a significant number of patients consume alcohol in a hazardous way, have incipient alcohol dependence and possible alcohol related harm.

In a busy clinic setting, the AUDIT can assist clinicians in screening patients for alcohol use disorders and identifying patients who use alcohol in a hazardous way, have incipient alcohol dependence and possible alcohol related harm, thus it is recommended that clinicians routinely use it.

The early identification of patients with Triple Diagnosis and providing them with appropriate care may improve clinical outcomes.

Appendix 1: AUDIT self-report questionnaire Zulu version

**The Alcohol Use Disorders identification Test: Self-Report Version Zulu**

Ngoba ukuphuza utshwala kungaphazamisa impilo yakho nemithi oyisebenzisayo, kubalulekile ukuthi sikubuze lemibuzo ngokuphuza kwakho utshwala. Izimpendulo zakho zizohlala ziyimfihlo, sicela uphendule yonke imibuzo ngeqiniso. Sicela ubuze umakukhona odinga sikucacisele kona.

| **Imibuzo** | **0** | **1** | **2** | **3** | **4** | |
|---|---|---|---|---|---|---|
| 1.Ingabe uyabuphuza utshwala? | Cha | Kanye ngenyanga | Kabili kuya kane ngenyanga | kabili okanye kathathu ngesonto | Kane ngesonto okanye ngaphezulu | |
| 2.Lingakanani inani lotshwala obuphuzayo ngosuku nxa uphuza? | 1 noma 2 | 3 noma 4 | 5 noma 6 | 7 kuya ku 9 | Ngaphezu kuka 10 | |
| 3. Ingabe uvamile ukuphuza utshwala weqe kweyizithupha zilandelana ngesikhathi esisodwa? | Angikaze | Ngaphansi kwenyanga | Njalo ngenyanga | Njalo ngesonto | Zonke izinsuku okanye cishe zonke izinsuku | |
| 4.Kubekangaki kulonyaka owedlule lapho uzithole wehluleka ukuyeka ukuphuza utshwala ngemuva kokuba usuqalile ukuphuza? | Angikaze | Ngaphansi kwenyanga | Njalo ngenyanga | Njalo ngesonto | Zonke izinsuku okanye cishe zonke izinsuku | |
| 5. Kubekangaki kulonyaka odlule lapho khonawehlulekile ukwenza obekulindekile ngenxa yokuthi ubuphuze utshwala? | Angikaze | Ngaphansi kwenyanga | Njalo ngenyanga | Njalo ngesonto | Zonke izinsuku okanye cishe zonke izinsuku | |
| 6.Kubekangaki ngonyaka owedlule lapho uzizwe welangazelela utshwala ekuseni ngemuva kokuba ubuphuzile ngayizolo? | Angikaze | Ngaphansi kwenyanga | Njalo ngenyanga | Njalo ngesonto | Zonke izinsuku okanye cishe zonke izinsuku | |
| 7.Kubekangaki ngonyaka owedlule lapho khona ubuzisola, ushaywa ngunembeza ngemuva kokuphuza utshwala? | Angikaze | Ngaphansi kwenyanga | Njalo ngenyanga | Njalo ngesonto | Zonke izinsuku okanye cishe zonke izinsuku | |
| 8.Kubekangaki ngonyaka owedlule lapho khonawehluleke ukukhumbula obekwenzeka ngayizolongenxa yokuthi ubuphuza utshwala? | Angikaze | Ngaphansi kwenyanga | Njalo ngenyanga | Njalo ngesonto | Zonke izinsuku okanye cishe zonke izinsuku | |
| 9.Ingabe uke walimala okanye kulimale omunyeumuntu ngenxa yokuphuza kwakho utshwala? | Cha | | Yebo. Kodwa hhayi kulonyaka odlule | | Yebo, kuwo lonyaka odlule | |
| 10.Likhona ilunga lomndeni,umngani, udokotelaokanye umhlengikazi okhathazekile ngokuphuzakwakho, okanye wakucebisa ngokuthi wehlise indlela ophuza ngayo? | Cha | | Yebo, kodwa hhayi kulonyaka odlule | | Yebo, kuwo lonyaka odlule | |
| | | | | | **Total** | |

**The Alcohol Use Disorders Identification Test: Self-Report Version**

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest.

Place an X in one box that best describes your answer to each question.

| Questions | 0 | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|---|
| 1. How often do you have a drink containing alcohol? | Never | Monthly or less | 2-4 times a month | 2-3 times a week | 4 or more times a week | |
| 2. How many drinks containing alcohol do you have on a typical day when you are drinking? | 1 or 2 | 3 or 4 | 5 or 6 | 7 to 9 | 1<br>0 or more | |
| 3. How often do you have six or more drinks on one occasion? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily | |
| 4. How often during the last year have you found that you were not able to stop drinking once you had started? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily | |
| 5. How often during the last year have you failed to do what was normally expected of you because of drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily | |
| 6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily | |
| 7. How often during the last year have you had a feeling of guilt or remorse after drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily | |
| 8. How often during the last year have you been unable to remember what happened the night before because of your drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily | |
| 9. Have you or someone else been injured because your drinking? | No | | Yes, but not in the last year | | Yes, during the last year | |
| 10.Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down? | No | | Yes, but not in the last year | | Yes, during the last year | |
| | | | | | **Total** | |

Appendix 3: Data Sheet

Section 1
Demographic Characteristics
Age:

| |
|---|
| |

Gender:

| Female | Male | Unknown |
|---|---|---|
| 1 | 2 | 3 |

Marital status:

| Single | Married | Divorced | Widowed | Unknown |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

Education:

| None | Primary | Secondary | Tertiary | Unknown |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

Employment:

| Employed | Unemployed | Unknown |
|---|---|---|
| 1 | 2 | 3 |

Section 2

Clinical Characteristics

Current CD4 (within last 6 months)

| |
|---|
| |

Latest Viral Load (within last 6 months) compared with baseline viral load:

| Suppressed | Not suppressed | Unknown |
|---|---|---|
| 1 | 2 | 3 |

HAART:

| Yes | No |
|---|---|
| 1 | 2 |

Previous change of HAART regimen due to immunological and/or virological failure:

| Yes | No |
|---|---|
| 1 | 2 |

Psychiatric Diagnosis (mark all relevant boxes):

| | |
|---|---|
| Schizophrenia | 1 |
| Schizoaffective disorder | 2 |
| Bipolar disorder 1 or 2 | 3 |
| Major depressive/dysthymic disorder | 4 |
| Substance abuse | 5 |
| Mood/psychosis due to substances | 6 |
| Mood/psychosis due to GMC | 7 |
| Post-traumatic stress disorder | 8 |
| Other | 9 |
| | |

AUDIT Score:

| Consumption | Dependence | Problem drinking | Total score |
|---|---|---|---|
| | | | |

History of Substance abuse:

| Yes | No | Unknown |
|---|---|---|
| 1 | 2 | 3 |

History of substance abuse, if so what substance:

| | |
|---|---|
| Cannabis | 1 |
| Nyaope/heroin | 2 |
| Alcohol | 3 |
| Stimulants | 4 |
| Hallucinogens | 5 |
| Other | 6 |

Appendix 4 HREC approval

R14/49 Dr Mlinganisi P Sibandze

## HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

## CLEARANCE CERTIFICATE NO. M130659

| | |
|---|---|
| **NAME: (Principal Investigator)** | Dr Mlinganisi P Sibandze |
| **DEPARTMENT:** | Psychiatry<br>Chris Hani Baragwanath Academic Hospital<br>Luthando Neuropsychiatry HIV Clinic |
| **PROJECT TITLE:** | The Prevalence of Alcohol Use Disorders at Luthando Neuropsychiatric HIV Clinic |
| **DATE CONSIDERED:** | 28/06/2013 |
| **DECISION:** | Approved unconditionally |
| **CONDITIONS:** | Title change (20/04/2016) |
| **SUPERVISOR:** | Dr Gregory Jonsson |
| **APPROVED BY:** | Professor P. Cleaton-Jones Chairperson, HREC (Medical) |
| **DATE OF APPROVAL:** | 20/04/2016 |

**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 Secretary in Room 10004, 10th floor, Senate House, University.
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**.

Principal Investigator Signature Date

**PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES**

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