

# **Prevalence of moderate and high risk substance use and service needs among psychiatric inpatients at Zomba Mental Hospital in Malawi**

by

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## DECLARATION

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## **DEDICATION**

This thesis is dedicated to my late father, James Napier Japhet Mafuta for his sacrifice and perseverance to lay a good educational foundation for me to face the future diligently.

## ABSTRACT

**Background:** Mental illness increases risk for substance use and the presence of substance use in people living with mental illness makes diagnosis and treatment of both disorders more complicated. For treatment of either disorder to be successful, both must be identified and treated individually. The substance use burden and service needs of psychiatric inpatients in Malawi are unknown.

**Objectives:** The study aimed to determine prevalence of risky substance use and service needs among psychiatric inpatients.

**Methods:** A cross-sectional study was conducted examining subjective substance use using the World Health Organization Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) version 3.1 in 323 new inpatients aged  $\geq 18$  years. The prevalence of risky and lifetime substance use was calculated in addition to bivariate analysis and linear regression. The kappa statistic was calculated to compare diagnosis of substance use during routine clinical assessment on admission with screening using the ASSIST.

**Results:** ASSIST-linked lifetime prevalence for each substance were alcohol 54.8 %, (95 % CI: 49.3 - 60.1 %), followed by tobacco 43.7 %, (95 % CI: 38.4 - 49.1 %), and cannabis 39.0 %, (95 % CI: 33.9 - 44.4 %). No-one reported any use of amphetamine-type stimulants, hallucinogens, or opioids. The prevalence of moderate risk use, requiring brief intervention were tobacco 19.2 %, (95 % CI: 15.3 - 23.9 %), cannabis 9.9 %, (95 % CI: 7.1 - 13.7 %), alcohol 7.1 %, (95 % CI: 4.8 - 10.5 %), sedatives 1.2 %, (95 % CI: 0.4 - 3.3 %) and cocaine 0.6 %, (95 % CI: 0 - 2.4 %). High risk use requiring specialist care was identified for alcohol 18.6 %, (95 % CI: 14.7 - 23.2 %) cannabis 16.7 %, (95 % CI: 13.0 - 21.2 %), tobacco 10.8 %, (95 % CI: 7.9 -14.7 %) and inhalants 0.3 %, (95 % CI: -0.1 - 2.0 %). Interrater agreement for diagnosis of substance use disorder between routine clinical assessment compared to ASSIST questionnaire was Kappa = 0.530 ( $p < 0.001$ ) which is moderate but statistically significant. The multivariate linear regression to determine the risk factors associated with tobacco, alcohol and cannabis. Males are more likely to use all these substances and have a higher ASSIST score than female patients

( $p < 0.001$ ). The model indicated that risky alcohol use is significantly higher in Christians than other religions or no religious affiliation ( $p = .044$ ) while risky cannabis use is significantly higher in rural residents compared to urban residents ( $p = .042$ ).

**Conclusions:** Results suggest that tobacco, alcohol and cannabis are commonly used among psychiatric inpatients in this population. Most patients use substances at risky levels requiring both brief intervention and specialist care. Although substance use is common, the detection of substance use disorders in admission assessments is moderate and could be improved. The ASSIST questionnaire is useful in screening for substance use in psychiatric inpatient populations and is likely to improve detection and management.

## TABLE OF CONTENTS

DECLARATION .....	1
ACKNOWLEDGEMENTS .....	2
DEDICATION .....	3
ABSTRACT.....	4
LIST OF ABBREVIATIONS.....	9
LIST OF FIGURES .....	10
LIST OF TABLES.....	10
DEFINITIONS OF KEY TERMS .....	11
Chapter 1. INTRODUCTION.....	12
Chapter 2. SYSTEMATIC LITERATURE REVIEW .....	16
1. Background .....	16
2. Review Question.....	18
3. Search Strategy .....	19
3.2. Abstract and full-text screening .....	20
3.3. Data extraction .....	21
3.4. Methodological quality assessment.....	22
4. Data analysis .....	22
5. Results.....	22
5.1. Research trends .....	28
5.2. Prevalence of substance use .....	29
5.3. Prevalence of specific substances of abuse.....	29
5.5. Other significant characteristics.....	32
6. Discussion .....	32
7. Conclusion .....	34

Chapter 3. AIM & OBJECTIVES OF STUDY .....	35
1. Aim of the study.....	35
2. Hypothesis.....	35
3. Objectives .....	35
Chapter 4. METHODOLOGY .....	36
1. Study design.....	36
2. Research site .....	36
3. Participants.....	36
3.1. Procedure .....	37
3.2. Recruitment.....	38
4. Sampling and sample size.....	38
5. Data collection tools .....	38
5.1. Translation and Back-translation of data collection tools.....	39
5.2. Sociodemographic Questionnaire .....	39
5.3. ASSIST Questionnaire.....	39
6. Data analysis .....	40
7. Ethical Considerations .....	42
Chapter 5. RESULTS OF THE STUDY .....	44
1. Introduction and sample description .....	44
2. Socio-demographic and socioeconomic characteristics of the participants .....	44
3. Clinical characteristics of the participants .....	47
4. ASSIST-linked prevalence of risky substance use.....	48
5. Lifetime prevalence of substance use .....	50
6. Demographic, socioeconomic and clinical characteristics of participants with substance use compared with non-users .....	51

7. Risk factors associated with substance use .....	53
8. Substance use diagnosis on routine clinical assessment compared to the ASSIST .....	54
9. ASSIST-linked substance use service needs.....	55
Chapter 6 – DISCUSSION .....	57
1. Overview.....	57
2. Sociodemographic & clinical characteristics of participants and risk factors for substance use	57
3. Prevalence of risky substance use and types of substances .....	59
4. Lifetime prevalence of substance use .....	60
5. Agreement between routine clinical assessment of substance use and ASSIST.....	61
6. Study limitations .....	63
Chapter 7 - CONCLUSION & RECOMMENDATIONS .....	65
1. Conclusion .....	65
2. Recommendations.....	65
REFERENCES .....	68
APPENDICES .....	73
Appendix 1: UCT ethical approval letter .....	73
Appendix 2: COMREC Ethical Approval, University of Malawi .....	75
Appendix 3: ZMH institutional approval letter.....	77
Appendix 4: Zomba District Health Office approval letter.....	79
Appendix 5: Participant information sheet and Informed consent form.....	81
Appendix 7: Sociodemographic Questionnaire (English Version) .....	87
Appendix 8: WHO – Alcohol, Smoking and Substance Involvement Screening Test (ASSIST v3.1) (English Version) .....	92

## LIST OF ABBREVIATIONS

ASSIST	Alcohol, Smoking and Substance Involvement Screening Test
AUDIT	Alcohol Use Disorder Identification Test
BI	Brief Intervention
CAGE	Acronym for CUT, ANNOYED, GUILT and EYE OPENER to assess the possibility of alcohol dependence
CINAHL	Cumulative Index to Nursing and Allied Health Literature
DSM-IV TR	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision
HIV/ AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
ICD-10	International Classification of Diseases Tenth Edition
MESH	Medical Subjects Headings
PANSS	Positive and Negative Syndrome Scale for Schizophrenia
PHC	Primary Health Care
PICOS	Acronym for criteria for reporting systematic reviews, refer to Participants, Interventions, Comparisons, Outcomes and Study design
RSU	Risky Substance Use
SCID	Structured Clinical Interview for DSM disorders
SUD	Substance Use Disorder
UNODC	United Nations Office of Drugs and Crime
WHO	World Health Organization
ZMH	Zomba Mental Hospital

## LIST OF FIGURES

No.	Title	Page
2.1	Flow chart of the review process	21
2.2	Graph showing variations of published studies per year	28
2.3	Graph showing variation of published studies by country/year	28
4.1	Flow diagram of study procedure at clinic level	37
5.1	Age distribution of the study participants	45
5.2	Lifetime prevalence of specific substance use among ZMH psychiatric inpatients	50
5.2	ASSIST-linked substance use service level needs	56

## LIST OF TABLES

No.	Title	Page
2.1	PICOS criteria and their corresponding search terms	19
2.2	Characteristics and outcomes of included studies	23
2.3	Summary of studies and their specific substance use prevalence (%)	31
4.1	Data analysis matrix	40
4.2	Interpretation of kappa statistic (Viera & Garrett, 2005)	41
4.3	Household assets assigned weights (unique values) from principal component analysis	42
5.1	Sociodemographic characteristics of participants	46
5.2	Socioeconomic characteristics of participants	47
5.3	Clinical characteristics on referral letters of participants and diagnoses made on admission	48
5.4	Prevalence of substance use as per risk level and overall RSU with 95% Confidence Intervals (n=323)	49
5.5	Summary of polysubstance use	50
5.6	Comparison of clinical, demographic and socioeconomic characteristics between RSU and low risk substance users	52
5.7	Multivariate Linear regression for tobacco use	53
5.8	Multivariate Linear regression for alcohol use	54
5.9	Multivariate Linear regression for cannabis use	54
5.10	Kappa statistic for routine assessment by resident clinicians at ZMH and ASSIST questionnaire	55

## DEFINITIONS OF KEY TERMS

- **Appropriate referral letter:** designated referral letter or any document with working diagnosis made by referring clinician and treatments initiated before referral
- **Clinical Technicians:** Paramedics who undergo three years of training with two years of theory teaching and one year of clinical teaching and graduate with a diploma in clinical medicine. They also undergo a 1-year internship.
- **Comorbidity:** the presence of two or more mental illnesses at the same time.
- **Dual diagnosis:** a concurrent diagnosis of both a primary psychiatric disorder and a substance use disorder.
- **Medical Assistants:** Paramedics who undergo two years of medical training. This is made up of one year of theory and one year of clinical attachments and graduate with a certificate in clinical medicine.
- **Primary Health Care Clinics:** the first level of Malawi Health care delivery system (including health centres and health posts).
- **Primary Health Care Workers:** Medical Assistants and Clinical Technicians working in primary care clinics.
- **Psychiatric Clinical Officers:** Paramedics who are initially train as clinical technician and undergo additional two years of theory and clinical teaching majoring in mental health. They graduate with Bachelor of Science in Clinical Medicine (mental health).

## **Chapter 1. INTRODUCTION**

Substance use remains a significant risk factor for many health problems in general and special populations such as psychiatric patients (World Health Organization, 2009). Substance use is more prevalent in psychiatric patients and there are many explanations for this effect (Cohen and Jacobson, 2001). Despite being prevalent in psychiatric patients, substance use problems are often undetected and remain untreated (Cohen and Jacobson 2001). This necessitates a number of actions, including the use of improved detection methods, such as valid screening questionnaires to detect high-risk patients and the provision of appropriate interventions to improve outcomes. Evidence has shown that there is a significant change in prevalence rates if different screening techniques are used to screen for substance use disorders (SUD). Despite SUDs being quite prevalent among psychiatric inpatients, few receive interventions for their comorbid SUD.

In this quest to address problems resulting from increasing levels of alcohol and drug use across the world, the World Health Organization (WHO) (2002) identified alcohol, tobacco and illicit drug use as among the top 20 risk factors for ill-health. It has adopted a public health approach that includes screening for alcohol and drug abuse as well as provision of early intervention. WHO has commissioned several studies to develop reliable and valid screening instruments in primary and community health facilities to identify people with both moderate and severe substance use problems in general populations. Screening instruments, usually in the form of a brief questionnaire, find subjects who have or are at high risk for a disorder in a population of interest but do not actually establish a diagnosis (Pilowsky & Wu 2012). Several screening tools have been developed and succeeded one another to reduce the complexity of using them. Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) questionnaire was commissioned because of the successful usage of Alcohol Use Disorder Identification Test (AUDIT) in identifying people at risk of developing alcohol use problems (Humeniuk, Henry-Edwards, Ali, Poznyak & Monteiro, 2010). Humeniuk et al (2010) further reported that most known screening tools were meant for one substance and were time-consuming if used in primary health care setting with a large patient load. The ASSIST has been recommended for use

in primary health care and other settings as it is a short (8-item) questionnaire which takes a few minutes to administer and is able to detect SUDs for 10 psychoactive substances.

Despite the availability of internationally validated cross-cultural screening tools for substances such as CAGE and AUDIT for alcohol and ASSIST for all substances of abuse, no substance use screening tools have been validated in, or are currently used in the Malawian health system. There is also no systematic, nationally representative data collection on substance use and abuse (Braathen, 2008a). Although substance use services are integrated into mental health services, the available data on prevalence of SUDs in psychiatric inpatients are of limited quality. Bisika, Konyani & Chamangwana (2004) conducted a rapid situation assessment on drug abuse and HIV at Zomba Mental Hospital (ZMH) in Malawi. The study reported 88.0% of population used cannabis and 12.0% used alcohol at least on a monthly basis. The ZMH medical records, which were collected electronically using International Classification of Diseases Tenth Edition (ICD-10) database between January 2012 and January 2013, recorded an overall prevalence of SUDs of 18.5% amongst inpatients. Mental and behavioural disorders due to use of cannabinoids were highest at 8.8%, followed by multiple substances (cannabis and alcohol) at 6.4% and alcohol at 3.1%. Surprisingly, tobacco use prevalence was very low at 0.1% while clinical experience has shown that more patients report using tobacco rather than cannabis and alcohol.

Different diagnostic systems are used by different services. St. John of God Community Services in the north of Malawi runs mental health services which use Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) and ZMH use ICD-10. The peripheral centres such as district hospitals which offer secondary care and primary health centres which offer primary health care, have no specified screening test and treatment options for SUDs. Despite using ICD-10 diagnostic criteria, screening for risky substance use at ZMH is based on clinician's individual discretion. This diversity creates confusion in standards of case identification for comorbid or primary SUDs.

Pilowsky & Wu (2012) proposed that screening may be useful under the following conditions: disorders lead to substantial morbidity; effective treatments are available; treatment is initiated in at-risk individuals or in early stages of the disease is more effective than later in the disease

course; and disorder is relatively common because it is not cost-effective to screen for disorders with low prevalence in the population of interest. These conditions hold for SUD among psychiatric inpatients in Malawi: substance use is prevalent among psychiatric patients at ZMH; and substance abuse services are available within mental health services (WHO, 2010). However, Malawi has a centralized health system and most secondary care hospitals treat few psychiatric patients (Kauye, 2008). The unavailability of screening and treatment options at secondary care and primary health care levels is a missed opportunity to initiate treatment in at-risk individuals or in early stages of disease.

Cohen & Jacobson (2001) stated that dual diagnosis of substance use and psychiatric disorder is extremely common and often unrecognized. The importance of identifying substance abuse in a patient with psychiatric disorder cannot be overstated. In general, patients with dual diagnosis have higher morbidity (Curran et al, 2002), lower likelihood for initial treatment success (McKay & Weiss, 2001), higher relapse rates, increased rates of hospitalizations, and decreased adherence to treatment (Buckley & Brown, 2006). They are also at increased risk for suicide (Rosenberg et al, 2005). The presence of substance use disorder in people living with a mental disorder makes diagnosis of both disorders more complicated. For treatment of either disorder to be successful, both must be identified and treated individually. The use of a valid screening tool is important in order to identify patients who have SUDs, whether they are comorbid disorder or primary disorders (WHO, 2002; Huang et al., 2009). Since the Malawian health system does not have a specific screening tool for SUDs in general practice or in specialist services such as mental hospitals, the actual burden of SUDs is not known and substance abuse service needs of the population are difficult to estimate.

There are several known studies on substance abuse in Malawi. Peltzer (1989) conducted a qualitative study on causative and intervening factors of harmful alcohol consumption and cannabis use in general urban population. Carr, Ager, Nyando, Moyo, Titeca, and Wilkinson (1994) described characteristics of cannabis (chamba – in Chichewa language) users admitted to ZMH. MacLachlan, Page, Robinson, Nyirenda and Ali (1998) examined the perceptions of the social aspects, triggers and effects of cannabis use among psychiatric patients at ZMH. Bisika et al (2004) reported on substance abuse and its impact on sexually transmitted diseases, more

specifically HIV/AIDS in the general population. Pampel (2005) examined demographic and socioeconomic patterns of tobacco use in the general population in Malawi and Zambia in the period 2000-2002; Zverev (2008) reported on problem drinking among university of Malawi students; Braathen (2008a) reported on substance use and abuse and its implications; and Braathen (2008b) explored the relationship of substance use and gender-based violence in the general population. However, little is known about the prevalence and factors associated with SUDs in Malawi, particularly in psychiatric populations. This study set out to fill this gap by investigating prevalence and factors associated with SUDs and service needs at Zomba Mental Hospital.

This study was conducted to generate new evidence on the current burden of dual diagnosis or comorbid SUDs among psychiatric patients. This should assist in informing the development of services which are aimed at addressing individual needs of each patient with psychiatric illness at all levels of health care as well as the general public.

## **Chapter 2. SYSTEMATIC LITERATURE REVIEW**

### **1. Background**

The United Nations Office on Drugs and Crime (UNODC) (2011) estimated that globally between 149 million (3.3 %) and 272 million (6.1 %) people aged 15-64, used illicit substances at least once in the previous year. About half of these are estimated to have used illicit drugs at least once during the month prior to the survey. This signifies a huge burden of substance use in the age group of 15 to 64 years.

Several studies have estimated the prevalence of substance use disorders (SUD) and conducted research on the common substances of abuse in general and special population such as psychiatric patients. UNODC (2011) indicated that in all its six regions namely North America; South, Central America and Caribbean; Europe; Asia; Oceania; and Africa, the prevalence of drug use in the general population is high among all regions but the types of drugs used vary across regions. The main problem drugs as indicated by treatment demand of all illicit drug use in 2009 were as follows: cannabis contributed significantly to treatment demand in Africa (64%) and Oceania (41%); Opioid use in East and South-East Europe, (76%), Asia, (59%), West and Central Europe, (47%) and Oceania (32%). In America there was a variation in the substances used. Cocaine contributed (50%) treatment demand in South America, while cannabis (28%), opioids (25%) and cocaine (27%) were often used in North America. However, there is a similar pattern in terms of common substances of abuse and cannabis is the mostly frequently used drug. The global prevalence of illicit drug use among population aged 15-64 was around 5% (range: 3.4% - 6.2%) in 2009/2010. Despite the high prevalence of illicit substance use, the prevalence of problem use (substance use which has led to significant problems in user's life) is only 0.3% - 0.9%.

The burden of substance use cannot be overstated and is linked to several risk factors. Globally, studies have indicated that several factors, occurring at the level of individuals, interpersonal relations, or society increase the risk for SUDs. Latvala, Tuulio-henriksson, Perälä, Saarni, Aalto-setälä, et al (2009) and Kendler, Prescott, Myers, & Neale (2003) described family history

as the strongest risk factor, implicating genetic factors, learned behaviour and availability of substances as possible pathways. Young age and male gender have been consistently associated with substance use in several studies (Rutter, Ward, Renton, & Rutter, 2001; Weich & Pienaar, 2009; and Pengpid, Peltzer, & Van der Heever, 2011). Latvala et al (2009) added that low education level both of the users and their parents; and having psychiatric comorbidity also increase the risk for SUDs.

Globally, concurrent diagnoses of both a primary psychiatric disorder and a SUD (sometimes referred to as dual diagnosis) are extremely common and often unrecognized. Approximately 50% of people diagnosed with SUDs have at least one other psychiatric disorder and conversely, almost 30% of patients with other psychiatric disorders also have a history of substance abuse (Cohen & Jacobson, 2001). Studies conducted in different parts of the world and using different assessment tools have shown different but significant prevalence rates of SUD among psychiatric patients. Current (point) prevalence of substance misuse was found to be 24.4% (95% CI: 21.3 - 27.1%) in a cross-sectional study in the United Kingdom among patients with psychotic disorders using DSM-IV criteria (Rutter et al., 2001). Bonsack, Camus, Kaufmann, Aubert, Besson et al (2006) used routine general interviewing and urine screening among the Swiss psychiatric inpatients and found high lifetime substance use disorder prevalence for alcohol (98%; 95% CI: 96 - 100%), benzodiazepines (86%; 95% CI: 82 - 91%) and cannabis (53%; 95% CI: 47-60 %), cocaine (25%; 95% CI: 19 - 30%) and opiates (20%; 95% CI: 15 - 25%). The substances most frequently and currently used were alcohol (32%) and cannabis (17 %). Huang, Yu, Chen, Chen, Shen, & Chen (2009) found significant lifetime prevalence of alcohol use disorder of 9.8% (alcohol dependence of 8.3%, alcohol abuse 1.5%) in a cross-sectional study in Taiwan when they used AUDIT and Structured Clinical Interview for DSM-IV-TR.

In Africa, information on the prevalence of SUD among psychiatric inpatients is limited. However, a number of studies have shown similar patterns of substance use among psychiatric population. Weich & Pienaar (2009) found a prevalence of 23% for current substance abuse and 24% for current substance dependence on self-report by acute psychiatric inpatients in Cape Town, South Africa. The substances of abuse were cannabis, alcohol, amphetamine/metamphetamine, cocaine/crack cocaine, methaqualone, opioids, benzodiazepines, other

stimulants, volatile solvents, ecstasy and hallucinogens. There was a significant increase in the overall prevalence when substance use was confirmed by getting more information from relative and friends (collateral history). Seventy-nine percent of patients had documented collateral substance history and in these cases, dependence was confirmed in 91% and abuse in 82%. Overall prevalence of comorbid SUD on self-report and getting more information from relatives (collateral history) was as high as 51%. Analysis of admission to Amanuel Psychiatric hospital in Ethiopia revealed 35.4% prevalence of substance abuse, mostly Khat and Alcohol (Fekadu, Desta, Alem, & Prince, 2007). In Zimbabwe, Acuda and Sebit (1997) found the point prevalence rate of psychoactive substance abuse among the psychiatric inpatients to be 28.4% (95% CI = 22.1-34.7%) for alcohol, 27.6% (95% CI = 18.7-36.5%) for tobacco and 14.3% (95% CI = 7.4-21.2%) for cannabis. This study used a modified World Health Organization AUDIT. This suggests that there is a significant change in prevalence if different screening techniques are used to screen for SUDs.

To summarise, the high prevalence of substance use among psychiatric inpatients across the world is widely acknowledged. However, there is dearth of documented literature on the prevalence of substance use among psychiatric inpatients in Sub-Saharan Africa, and to my knowledge a systematic review of literature has not yet been conducted. Therefore, this systematic review was conducted in order to address the gap in our current knowledge.

## **2. Review Question**

The review question was: what is the prevalence of substance use and what are the possible substance abuse service needs in adult psychiatric inpatients on the African continent? PICOS criteria for reporting systematic reviews, refer to participants, interventions, comparisons, outcomes and study design (Moher, Liberati, Tetzlaff et al, 2009). In the case of this review, the concerned population is adult psychiatric inpatients aged 18 years and above. The issue of interest (intervention or indicator) is the prevalence of substance use. The context (comparator or control) is psychiatric hospitals in Sub-Saharan Africa and the outcomes are risky substance use (moderate and high risk) and possible substance abuse service needs.

### 3. Search Strategy

Relevant literature reporting results of the prevalence of substance use among psychiatric inpatients and their service needs in Sub-Saharan Africa were identified through search of the following databases: Medline – Pubmed; Africa-wide information; Cumulative Index to Nursing and Allied Health Literature (CINAHL); PsycINFO; and Psychiatryonline; from January 1990 to July 2013 from Sub-Saharan Africa. The search strategy consisted of four elements (i) population (adults aged  $\geq 18$  years); (ii) research design of the studies (cross-sectional, cohort, and retrospective case reviews); (iii) setting (psychiatric hospitals); and (iv) level of substance use (risky, abuse, dependence). Search terms were used as MESH-headings and as free text words (refer to Table 2.1 for details). The search was restricted by excluding comments, letters, expert opinions, case reports, and appraisals of randomized control trials or studies of diagnostic accuracy of tests.

Table 2.1: PICOS criteria and their corresponding search terms

PICO Criteria		Description of the PICOS criteria	Search terms
P	<b>Population</b>	Adult psychiatric inpatients aged 18 years and above	'psychiatric inpatient*' OR 'psychiatr*inpatient*' hospitalized OR admitted OR 'mentally-ill inpatient*'
I	<b>Intervention or indicator</b>	Prevalence of substance use	Prevalence OR occurrence
C	<b>Context (comparator or control)</b>	Psychiatric hospitals in low and middle income country	'psychiatric hospital' OR 'mental hospital' OR 'psychiatric setting' OR 'psychiatric institution*' OR 'mental asylum*' AND 'list of all African countries'
O	<b>Outcomes</b>	Risky substance use (moderate and high risk) and substance abuse service needs	'substance use' OR 'substance abuse' OR 'substance misuse' OR 'substance use disorder' OR 'dual diagnos*' OR 'comorbid disorder*' OR 'drug use' OR 'drug abuse' OR 'psychoactive substance use' OR 'psychoactive substance misuse'
S	<b>Study design</b>	Cross-sectional, cohort, case-and-control studies and baseline results of randomized control trials	No search term were specified

### **3.1. Inclusion and exclusion criteria**

Studies were included if:

- The study utilised a cross-sectional, cohort design and retrospective case reviews;
- The study setting was the Sub-Saharan African country;
- The study described at least one level of substance use in adults aged 18 years and above;
- The results mentioned the prevalence of substance use among psychiatric inpatients determined by self-reporting, laboratory testing for specific psychoactive substances, or using any reliable screening tool or questionnaire;
- Study results were written in English or French language either abstract only or full text article or both;
- The study was published between 1<sup>st</sup> January 1990 and 31<sup>st</sup> July 2013.

Studies were excluded if;

- The subjects were participants in randomised control trials, except the baseline results.
- The study was not conducted in Sub-Saharan Africa
- The study was written in language other than French or English

### **3.2. Abstract and full-text screening**

The researcher (CM) and the supervisor (EB) independently screened research articles for eligibility starting with titles and abstracts. When the research article met only two inclusion criteria, full-text was accessed to further assess eligibility. Further full-text article review was conducted by the researcher (CM) and King's College London research expert (RM). At each stage, discussions and agreements on the studies to be included were made. Additionally, the reference lists of all selected articles and published reviews on this topic were screened for potentially relevant publications (refer to Figure 2.1 below for a flow chart summarizing the whole review process).

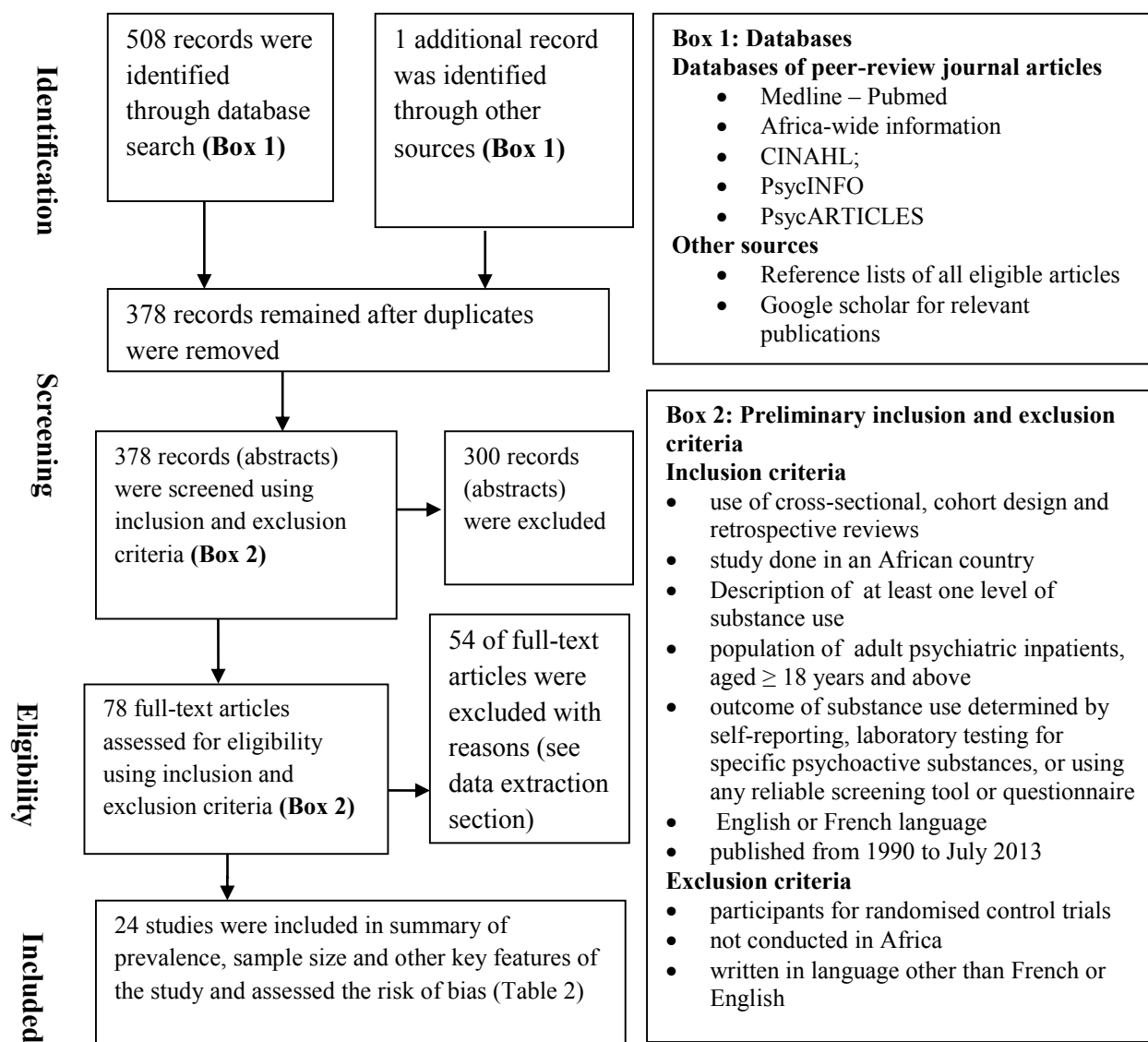


Figure 2.1: Flow chart of the review process

### 3.3. Data extraction

The researcher independently read all the 24 full-text articles chosen to be included in the systematic review. The predetermined data extraction tool was derived from the components of the methodological quality assessment for observational study (Shamliyan, Kane & Dickinson, 2010). Fifty-four articles were excluded for the following reasons;

- 13 studies had mixed study population such as psychiatric inpatients and outpatients resulting in combined substance use prevalence

- 10 studies used psychiatric outpatients as study population
- 1 study had no specific details of any substance use prevalence
- 10 studies whose full-text articles were difficult to retrieve both electronically and paper-based copies
- 20 studies with study participants aged  $\leq 18$  years old

### **3.4. Methodological quality assessment**

The methodological quality of selected studies was scored by the researcher based on an adapted quality criteria list for observational studies. Shamlivan, Kane & Dickinson, (2010) criteria included, (i) nominal components: study design and source for sampling subjects; (ii) dimensional component: response rate; and (iii) ordinal judgement component: appropriateness of statistical method for given research question. Table 2.2 presents the extracted data.

## **4. Data analysis**

The results of the included studies were quantitatively and qualitatively summarized in a table format and thereafter a description of the results in a narrative forms and compare and contrast them. Meta-analysis was not done in this review because of the heterogeneity of the studies.

## **5. Results**

A total of 508 records were identified through the initial database search. After excluding 131 duplicate records, we retrieved 378 potentially relevant studies. During the title and abstract screening 300 of these were excluded because of irrelevant titles and abstracts, and 1 additional article was identified as potentially relevant from the references of these studies and relevant reviews. 78 full text articles were reviewed by two independent reviewers (CM and RM) and 54 of these were excluded. Finally, 24 studies met all inclusion criteria and were included in the systematic review (Figure 2.1). The findings from the included studies are summarised in Table 2.2.

Table 2.2: Characteristics and outcomes of included studies

Author & Year published	Country	Sample size	Instrument (s) used	Study design	Source of sample	Inclusion criteria	Design specific sources of bias	Response rate	Statistical method	Outcome & Results
Abayomi et al (2013)	Nigeria	102	HIV screening instrument (HIS), AUDIT-C	Cross-sectional	Consecutive sampling of psychiatric inpatients	Aged $\geq 18$ years	No direction of causality, convenient sample raises possibility of selection bias and limit generalizability	97.1%	Descriptive statistics; Chi-square test; Yates' Correction	Prevalence of HIV risk behaviour was 48 %, majority were males 72.5 %, no IV drug use, and alcohol use in past year was 40.4 %. Alcohol was significantly related to HIV risk behaviour (P=0.03)
Adamson et al (2010)	Nigeria	214	DATER-questionnaire (clinical assessment tool)	Comparative cross-sectional (retrospective)	Convenience sample of psychiatric inpatients	Aged $\geq 20$ years	Use of single sample source and convenience sample affecting generalizability	100%	Chi-square, t-test and binary regression analysis	Prevalence of substance use between 1992-7 & 2002-7: cannabis, 26.6 %/ 53.3 % males (91.7%, 90.5%), lowering of young age range (30-39, 20-29), common substances of abuse, cannabis, alcohol and common substances used together are cannabis and alcohol
Atwoli et al (2012)	Kenya	114	Casene note review	Cross-sectional (retrospective and prospective)	Consecutive sampling of psychiatric inpatients	Aged $\geq 18$ years	Use of single sample source and convenience sample affecting generalizability	100%	Descriptive statistics; Predictive value/ sensitivity	Prevalence of substance-related disorder at admission (7%) and at discharge (12.3%)
Botha et al (2010)	South Africa	146	PANSS, CAGE	Comparative cross-sectional	Convenience sample of psychiatric inpatients with schizophrenia or schizoaffective disorder	Aged $\geq 18$ years, with schizophrenia or schizoaffective disorder	Recall bias affecting the data quality	Not applicable (N/A)	Descriptive statistics; Chi-square test or Fisher's exact test, student t test or Mann-Whitney U test. Multivariate analysis	Lifetime use of drugs in High Frequency Users, 77.78 %, Low Frequency Users, 54.05 %; substance use in past 3 months in HFU 44.83 %; LFU, 35.71 %. Alcohol CAGE HFU, 44.44 %, LFU, 34.29 %. Common substances - alcohol, cannabis & mandrax for both; methamphetamines and heroin in HFU only.
Eze et al (2010)	Nigeria	90	Semi-structured questionnaire	Survey	Convenience sample of psychiatric inpatients	Aged 18 and above	Use of unvalidated data collection tool, use of single centre and convenience sample affecting generalizability	89%	Descriptive statistics; Chi-square test or Fisher's exact test	Common polysubstance use was that of alcohol, cannabis and tobacco (52.2%), polysubstance use of cocaine, heroin and tobacco misuse (2.2%). Cannabis alone 35.6%, cocaine alone (2.2%), and heroin alone (1.1%)

Author & Year published	Country	Sample size	Instrument (s) used	Study design	Source of sample	Inclusion criteria	Design specific sources of bias	response rate	statistical method	Outcome & results
Frasch (2013)	Nigeria, Denmark, Japan, Germany, Switzerland	2338 (417 - Nigeria)	Clinical assessment, data review	Retrospective /prospective survey	Consecutive sampling of psychiatric inpatients	Aged $\geq 18$ years	Large differences in sample sizes in the study sites; missing information for the retrospective part	N/A	Descriptive statistics and logistic regression	Overall prevalence was 19%; for Nigerian sample was 1.9 %. 82.8% of the study participants with SUD (N = 447, out of 2338) had a lifetime diagnosis of harmful alcohol use, 78.5% harmful tobacco use, 38.3% harmful use of cannabis, 23.5% harmful opioid use, 36.9% benzodiazepine use, and 22.8% CNS-stimulant drugs use
Gbiri et al (2011)	Nigeria	102	Relapse Socio-economic Impact Interview Schedule (RSIIS) Questionnaire and serological tests for HIV and syphilis	Cross-sectional survey	Purposive sample of psychiatric inpatients	Aged $\geq 18$ years	Use of single centre and purposive sample affecting generalizability	N/A	Mann-Whitney U-test, Multiple regression analysis	Prevalence of substance use 25.5%.
Henning et al (2012)	South Africa	195	Sero-prevalence study (survey)	Sero-prevalence study (survey)	Stratified cluster sample of psychiatric inpatients	Aged $\geq 18$ years	Splicing of cases resulted in small sample sizes limiting the data analysis	N/A	Descriptive statistics; Chi-square test, Odds Ratio.	21% had cannabis abuse and/ or dependence. 5% reported intravenous drug use
Jonsson et al (2013)	South Africa	708	Casene notes reviews	Retrospective case-note survey	Convenience sample of psychiatric inpatients	Aged $\geq 18$ years	Use of convenience sample and data quality in archives	N/A	Descriptive statistics; Chi-square test	Prevalence of substance-induced mood/ psychotic disorder, 29.8%
Lund et al (2010)	South Africa	152	Semi-structured interviews and questionnaires	Retrospective & prospective survey	Consecutive sampling of psychiatric inpatients	Aged $\geq 18$ years	Small sample size and exclusive to inpatients limiting generalizability; exclusion criteria based on residence leading to biased sample characteristics; recall bias on retrospective data collection	N/A	Descriptive statistics; Chi-square test or Fisher's exact test	Prevalence of comorbid diagnosis of substance abuse 50%

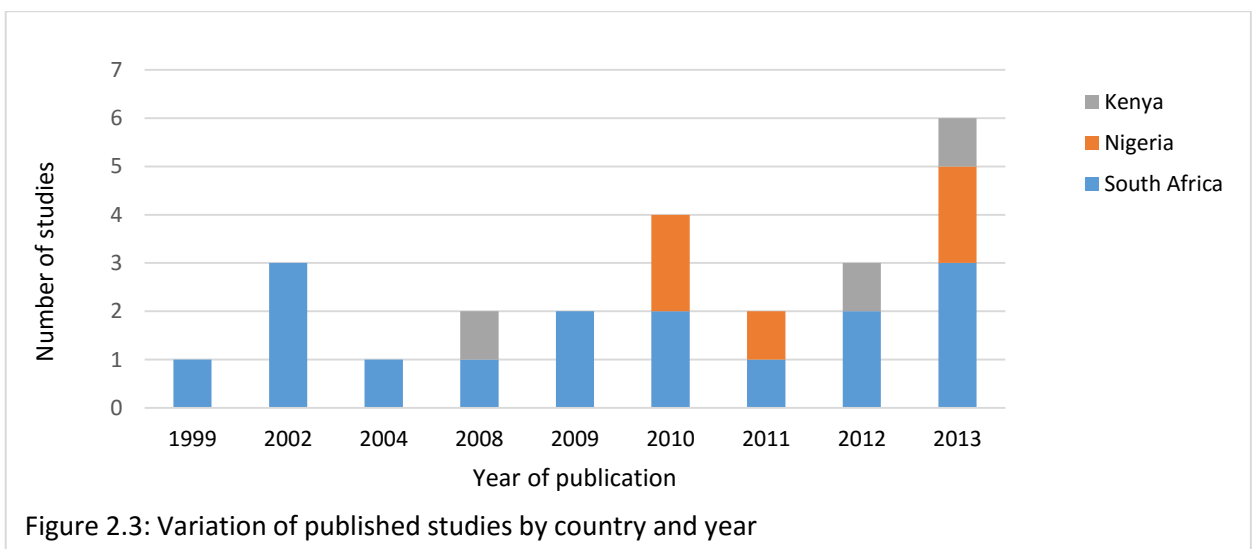
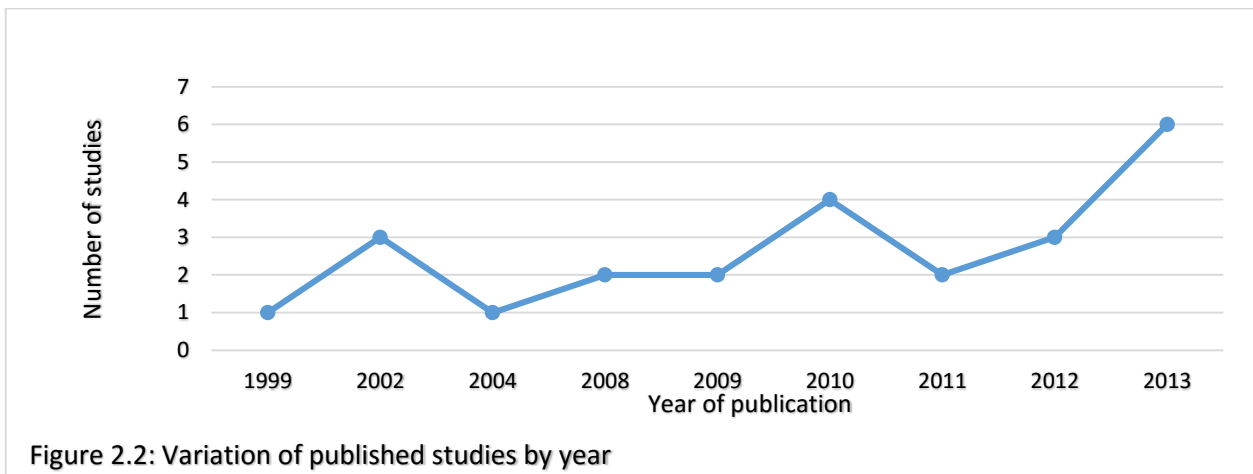
Author & Year published	Country	Sample size	Instrument (s) used	Study design	Source of sample	Inclusion criteria	Design specific sources of bias	Response rate	Statistical method	Outcome & Results
Mamabolo (2012)	South Africa	113	Structured face-to-face interviews	Cross-sectional study	Systematic sample randomly selected psychiatric inpatients	Aged $\geq 18$ years	Poor reliability of source of information; overlapping of sample participants after randomization	Not specified	Descriptive statistics; Chi-square test	13% had substance related disorders. Substances used alcohol and unspecified drugs with no specific prevalence
Moosa et al (2004)	South Africa	114	Questionnaire	Cross-sectional study	Consecutive sampling of psychiatric inpatients	Aged $\geq 18$ years	No specified limitations	N/A	Descriptive statistics and correlation	60% were abusing unspecified drugs
Moosa et al (2002)	South Africa	135	Questionnaire	Cross-sectional study	Consecutive sampling of psychiatric inpatients	Aged $\geq 18$ years	No specified limitations	N/A	Descriptive statistics	51% used any substance:, 44% alcohol, 38% cannabis, 9% benzodiazepines and other drugs respectively
Motala (2013)	South Africa	232	Record review	Cross-sectional study (retrospective)	Consecutive sampling of psychiatric inpatients	Aged $\geq 18$ years	One sample source limiting generalizability; missing data in retrospective records;	N/A	Descriptive statistics, bivariate and multivariate analysis	49.5% used substances, 61.06% used single substance, and 38.04% used multiple substances. Cannabis was used by 39.82%; alcohol 15.93% and heroin 5.31% subjects. Polysubstance combination was that of alcohol and cannabis which was used by 30.97%.
Ndetei et al (2013)	Kenya	691	SCID, structured interview, clinical notes review	Cross-sectional comparative study	Convenience sample of psychiatric inpatients	Aged $\geq 18$ years	Use of unvalidated diagnostic/ data collection tool and convenience sample	100%	Descriptive statistics; chi-square test: Anova test	Alcohol dependence disorders in schizophrenia, 14.7%; schizoaffective disorder, 28.8%; mood disorders, 20.8%. Drug dependence in schizophrenia, 10.6%; schizoaffective disorder, 17.5%; mood disorders, 21.6%.
Niehaus et al (2008)	South Africa	438	Casene notes reviews	Cross-sectional (retrospective)	Convenience sample of psychiatric inpatients (males only)	Aged $\geq 18$ years	Data quality in archives	N/A	Descriptive statistics; chi-square test, cox regression	38.9% had comorbid substance-related disorder

Author & Year published	Country	Sample size	Instrument (s) used	Study design	Source of sample	Inclusion criteria	Design specific sources of bias	Response rate	Statistical method	Outcome & results
Parry et al (2002)	South Africa	1000	Clinical assessment using DSM-IV	Descriptive epidemiological study (retrospective)	Convenience sample of psychiatric inpatients	Aged $\geq 21$ years	Use of convenience sample and data quality in archives	N/A	Descriptive statistics	Since 1998, alcohol-related discharge diagnoses accounted for 5% to 10% in all participating psychiatric facilities in Gauteng and Cape Town. Diagnoses included alcohol related, polysubstance use or dual diagnosis. Between 1997 and 2000, alcohol-related discharge diagnoses accounted for 22% to 27% of more than 1000 annual psychiatric discharge diagnoses at Stikland Hospital in Cape Town
Parry et al (2002)	South Africa	1000	Clinical assessment using DSM-IV	Descriptive epidemiological study (retrospective)	Convenience sample of psychiatric inpatients	Aged $\geq 21$ years	Use of convenience sample and data quality in archives	N/A	Descriptive statistics	From 1997 to 1999, the admission/discharge diagnoses accounted for 5-26% of patients in Cape Town, 6-10% of patients in Port Elizabeth and 10-16% of patients in Gauteng had alcohol-related disorder. Cannabis is common illicit drug of use. In 1998, 40-60% reported use of cannabis in Port Elizabeth
Pillay (2011)	South Africa	732	Structured questionnaire	Descriptive retrospective study	Convenience sample of psychiatric inpatients (forensic)	Aged $\geq 18$ years	Use of convenience sample and data quality in archives	N/A	Descriptive statistics; Chi-square test	Use of substance prior to committing crime, 23.2%; at time of committing criminal offence, 49.6%; alcohol 40 %, cannabis 33%, others include cocaine, mandrax, benzodiazepines, ecstasy, glue, heroin, LSD, crack, MDMA, rocks.
Sall et al (2009)	South Africa	38	Biochemical tests, THC in urine, alcohol screening	Retrospective cross sectional study	Purposive sample of psychiatric inpatients (mine workers)	Aged 21 years	Use of purposive sample; no operationalized research variables; small sample size to permit statistical analysis; potential bias and misinterpretation of data to desired dataset;	N/A	Descriptive statistics	26% screened positive for pathological liver function test GGT and MCV indicating recent alcohol use/ abuse as well as urine positive test for cannabis (THC) 26%.

Author & Year published	Country	Sample size	Instrument (s) used	Study design	Source of sample	Inclusion criteria	Design specific sources of bias	Response rate	Statistical method	Outcome & results
Strebel et al (1999)	South Africa	7938	Record review	Retrospective epidemiological study	Random, stratified sample of psychiatric inpatients	Media age 36.54 years	Missing data for some eligible cases;	N/A	Descriptive statistics; Chi-square test, Wilcoxon 2-sample test,	Substance-related disorders, 32.6%; alcohol abuse in female, 6.3%; male, 15.1%; other substance abuse, female, 3.3% and male, 8.0%
Thuo et al (2008)	Kenya	148	SCID DSM-IV and SCID 1-CV Standard clinical interview using DSM-IV TR criteria for diagnosis	Prospective cross sectional study	Random sample of psychiatric inpatients	Aged $\geq$ 18 years	Single data source limiting generalizability	N/A	Descriptive statistics	30.4% were abusing substances; alcohol dependence, 33%; cannabis 31%; cannabis and alcohol 24%.
Uys (2013)	South Africa	19	Urine test for drugs, clinical assessment (patient and collateral form relatives)	Prospective survey	Purposive sample of psychiatric inpatients	Aged $\geq$ 26 years	Single sex used skewing the results; small sample size; use of convenience sample; single data source limiting generalizability	12%	Descriptive statistics	No substance abuse, 5% (1) used over the counter and prescription medications
Weich et al (2009)	South Africa	298	Urine test for drugs, clinical assessment (patient and collateral form relatives)	Prospective survey	Convenience sample of psychiatric inpatients	Aged $\geq$ 18 years	Use of convenience sample; poor data collection format; missing data or unreliability of data source (patients)	N/A	Descriptive statistics; Chi-square test, one-way ANOVA and Mann-Whitney U-test	Self-reported drug use: cannabis 27% preferred drug vs 40% used in past 6 months; alcohol, 23 vs 31%; amphetamine/ methamphetamine 13 vs 20%; cocaine/ crack cocaine 1 vs 4%; methaqualone 1 vs 9%; opioids 1 vs 3%; benzodiazepines 2 vs 2%. Urine test based drug use: cannabis 23.8%, methamphetamines 7.4%, cocaine 0.7%, Opiates 6.4%, methaqualone 5.4%.

### 5.1. Research trends

There were a number of studies which were conducted in Republic of South Africa, (16, 66.7%); then Nigeria, (5, 20.8%); and Kenya, (3, 12.5%). One study involved multiple countries, in sub-Saharan, Nigeria and overseas, Germany, Japan, Switzerland and Denmark. Most studies utilized retrospective cross-sectional design and reviews of clinical records. More than half of the studies used non-randomised sampling, convenience (9, 37.5%) and purposive (3, 12.5%). Only 11 (45.8%) used random sampling. It is therefore likely that there was a selection bias of participants in the studies. Out of the 24 included studies, 95.8% were conducted between years 2000 and 2013, indicating a growing field of research in recent years (see Figure 2.2). Figure 2.3 shows the variation of studies per country of publication.



In terms of geographical distribution of substances of abuse, South African studies reported a range of substances including methamphetamine/ amphetamines, cocaine/ crack cocaine, mandrax, heroin, glue, volatile substances, opiates, methaqualone, benzodiazepines, cannabis, alcohol and tobacco (Weich & Pienaar, 2009; and Motala, 2013). Nigerian studies reported more cases of cannabis and alcohol and a few cases of heroin and cocaine. Kenyan studies revealed significant use of opioids, alcohol and sedatives/ benzodiazepines and khat. Khat is a native stimulant with a significant cultural importance in eastern Africa, particularly the horn of Africa.

### **5.2. Prevalence of substance use**

The studies revealed a great variation in terms of prevalence of substance use. Some studies recorded the overall prevalence ranging from as low as 1.9% (Frasch et al., 2013) and high as 44.4% in the past 3 months or 77.8% in their lifetime (Botha et al., 2010). It is not very clear though if the diversity of instruments used in the studies changed the prevalence pattern either increasing or decreasing it. The variation in prevalence may have also been influenced by the differing definition of substance use in many studies. The use of psychiatric diagnoses related to overall substance use such as abuse and dependence, and targeting specific substance related disorders change seem to be the main factors in this variations. The South African studies reported marked variations of prevalence of overall substance use. Mamabolo, Magagula, Kruger, Fletcher, & Krüger (2012) found prevalence as low as 13%, while Lund et al., (2010) reported prevalence of 50% based on clinical diagnosis among psychiatric inpatients. The highest prevalence was that reported by Botha et al (2010) above. Another variation was observed in Nigerian studies. The lowest prevalence was that of 1.9% reported by Frascch et al (2013). A significantly higher prevalence of 25.5% for all substances was found in recent study examining the socioeconomic correlates of relapsed patients in a Nigerian mental hospital (Gbiri, Badru, Ladapo, & Gbiri, 2011).

### **5.3. Prevalence of specific substances of abuse**

Alcohol was commonly used substance with variable prevalence. Parry et al., (2002) recorded alcohol use as low as 5% to 10% in 1998 among people being discharged from psychiatric hospitals in Gauteng and Port Elizabeth, South Africa. In similar study, there was an increase in alcohol-related diagnoses on discharge between 1997 and 2000 to range of 22% and 27% of more than 1000 annual psychiatric discharge diagnoses at Stikland in Cape Town. According to this

review, the high alcohol prevalence in South Africa was 44% reported by Moosa & Jeenah (2002). In Nigerian psychiatric hospital in Ogun, Abayomi et al., (2013) reported prevalence of 40.4%.

Cannabis was also common with prevalence ranging from 23.8% as determined by urine test and 40% on self-reporting in the past 6 months at Stikland Hospital in Cape Town, South Africa (Weich & Pienaar, 2009). Almost similar prevalence, 39.8% was reported at Chris Han Baragwanath Academic Hospital psychiatric unit in South Africa (Motala, 2013). There was similar trend in Nigeria and Kenya reporting cannabis prevalence within the range of 20% and 40%; Adamson, Onifade, & Ogunwale (2010) recorded the lowest in Nigeria, 26.6% and (Thuo, Ndeti, Maru, & Kuria, 2008) in Kenya found cannabis prevalence of 31% at Mathari Psychiatric Hospital.

Tobacco use was reported in two studies in Nigeria. Eze, Jame, Omoaregba, & Osahon (2010) reported that 52.2% of patients used tobacco in combination with cannabis and alcohol use at psychiatric hospital in Benin City, Edo state. But Frasch et al., (2013), in a multinational study reported prevalence of 78.5% for the entire study population including Nigeria. There was no specific information on this for Nigeria only. Prevalence of other substances are highlighted in the Table 2.3 below and these include, cocaine, amphetamine like stimulants, benzodiazepines and opiates. There was a reported of abuse of over-the-counter medication as well.

The review has also found polysubstance use among psychiatric inpatients in the sub-Saharan region. The commonest combination of substances is cannabis and alcohol. Adamson et al., (2010) in Nigeria just mentioned the combination but did not highlight the prevalence. While Thuo et al., (2008) in Kenya reported prevalence of 24.0%. In South Africa, (Motala, 2013) reported a higher prevalence of 30.9%. According to Eze, Jame, Omoaregba, & Osahon (2010) in Nigeria found that the patients were being treated for using three substances; alcohol, cannabis and tobacco related problems (52.2%), and cocaine, heroin and tobacco misuse (2.2%).

Table 2.3. Summary of studies and their specific substance use prevalence (%)

Study	Country	Instrument(s)	Tobacco	Alcohol	Cannabis	Cocaine	Amphetamine-type stimulants	Sedatives	Opioids
Abayomi et al (2013)	Nigeria	HIV screening instrument(HIS), AUDIT-C		40.4%					
Adamson et al (2010)	Nigeria	DATER-questionnaire (clinical assessment tool)			26.6%				
Atwoli et al (2012)	Kenya	Casenote review							
Botha et al (2010)	South Africa	PANSS, CAGE		*	*		*	mandrax	heroin
Eze et al (2010)	Nigeria	Semi-structured questionnaire	*	*	35.6%	2.2%			1.1% heroin
Frasch (2013)	Nigeria,	Clinical assessment, data review	*	*	*	*	*	*	*
Moosa et al (2002)	South Africa	Questionnaire		44%	38%			9%	
Motala (2013)	South Africa	Record review		15.93%	39.82%				5.31%
Ndetei et al (2013)	Kenya	SCID, structured interview, clinical notes review		In schizophrenia – 14.7%; schizoaffective disorder, 28.8%; Mood disorders 20.8%					
Parry et al (2002)	South Africa	Clinical assessment using DSM-IV		5 – 10% in 1998; 22 – 27% , 1997 - 2000					
Strebel et al (1999)	South Africa	Record review		Male: 15.1 %; Female: 6.3 %					
Thuo et al (2008)	Kenya	SCID DSM-IV and SCID 1-CV		33%	31%				
Uys (2013)	South Africa	Standard clinical interview using DSM-IV TR criteria for diagnosis							5% OTC prescription medicine
Weich et al (2009)	South Africa	Urine test for drugs, clinical assessment (patient and collateral form relatives)		SR – preferred 23%; used past 6 months, 31%;	SR – preferred 27%; used past 6 months, 40%; Urine – 23.8%	SR – preferred 1%; used past 6 months, 4%; Urine – 0.7%	SR – preferred 13%; used past 6 months, 20%; Urine – 7.4%	SR – preferred 2%; used past 6 months, 2%; Methaqualone SR – preferred 1%; used past 6 months, 9%; Urine – 5.4%	SR – preferred 1%; used past 6 months, 3%; Urine – 6.4%

N – Northern Nigeria; S – Southern Nigeria; OTC – over-the-counter; SR - self-reported substance use; \*substance was mentioned in the study but no specified prevalence was presented; \*\* the percentage is representing all the substances under the merged row

#### **5.4. Instruments used to assess substance use**

There were several instruments which were utilized to assess the level of substance use among the included studies in this review. These include: AUDIT-C; CAGE; Standard clinical interviews such as the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV TR), Structured Clinical Interview for Diagnostic and Statistical DSM Disorders (SCID) or International Classification for Diseases, Tenth Edition (ICD-10) classifications; biochemical tests in urine for cannabis and other drugs and blood to check liver function test for alcohol use disorder. The rest were assessed using unvalidated structured questionnaires developed and administered by the researchers or their assistants. In other studies, multiple methods were used such as self-reporting and urine tests. Fifty percent of the studies collected prospective data while 37.5% used retrospective data and 12.5% of the studies utilized both prospective and retrospective data.

#### **5.5. Other significant characteristics**

Most of studies reported significant substance use in people between 25 to 35 years old as well as male gender. Females were unlikely to use the commonest psychoactive substance. Uys (2013) reported no substance use amongst female psychiatric inpatients with HIV infection. Certain psychiatric disorders were reported in a number of studies as a comorbid illness in people using substances. It was also reported that of those who had comorbid substance use disorder 65.0 % had psychotic disorders and 34.0 % had mood disorders especially bipolar affective disorder (33.0 %) respectively (Motala, 2013). Motala (2013) further reported that current residence (urban) of the patient was significantly associated with substance use.

### **6. Discussion**

This systematic review presents the first findings on the prevalence of risky substance use among psychiatric inpatients in sub-Saharan region. It reports on the factors associated with substance use, and the possible services needs for substance use among this population.

Substance abuse is widespread in psychiatric inpatient populations, although prevalence vary. Possible factors include specific patient population factors (including illness, demographic and regional factors); measurement factors either screening (validated/ unvalidated) or diagnostic instruments; study design and the sampling strategy utilized.

Most studies were retrospective in nature increasing risk of bias especially selection and attrition biases. The data were collected in the format which sometimes do not much with the desired variable. The use of self-developed and unvalidated (Motala, 2013) also increases risk of bias. There is greater chance of having more false positives for a condition as the researcher can simply manipulate the significant variables to have desired outcomes. Several studies determined prevalence as reported by the participants (Self-reporting). There is potential risk of recall bias. Self-reporting might either make participants reduce or inflate their substance use (Weich & Pienaar, 2009; Cassidy et al (2001) and Sinclair and Latifi (2008) in United Kingdom (UK), cited by (Hauli, Ndeti, Jande, & Kabangila, 2011). Prevalence either increased or decreased when biological measures such as urine or blood samples were used to determine use of other psychoactive substances. Biomarkers are not feasible to detect all substances of abuse depending on their half-life but offers evidence of use when refuted on self-reporting in users in urine (Säll, Salamon, Allgulander, & Owe-Larsson, 2009; Weich & Pienaar, 2009). Säll et al., (2009) further utilised pathological liver function test gamma-glutamyl transpeptidase (GGT) and mean corpuscular volume (MCV) indicating recent alcohol use/ abuse. Against this background, it can be concluded that it is very important to use multiple methods to ascertain substance use which might be underreported or misdiagnosed due to overlap of clinical psychopathology of other psychiatric disorders.

There is a trend indicating a growing number of studies over time, indicating a growing literature in Africa on substance use and psychiatric disorders, which is encouraging. However, the review has highlighted a number of gaps in the available literature in sub-Saharan Africa. In terms of research methods, most studies are cross-sectional, and there are very few or no longitudinal studies. Although, cross-sectional studies give good sense of prevalence, there were few well designed cross-sectional studies with random sampling. In this case determination of the causal relationship between mental disorders and SUDs and generalizability of the findings are limited. Again, there is a regional variation with most studies coming from South Africa, but in most African countries there were no studies. In particular, Malawi did not have any study meeting the criteria for this review. This is an opportunity to commission more research studies in the region to determine the regional burden and introduce feasible and evidence-based strategies and interventions.

The review also revealed skewing of substance use towards certain demographic characteristics such as male gender. This phenomenon is comparable to what Abiodun et al., (2013) found in a Nigerian study. Surprisingly, all patients with alcohol use disorders were young aged males. It seems it is general consensus that males are at a higher risk of substance use than females. Young age is another factor which studies have found to be associated with substance use in all populations including mental illness. According to Oshodi, Ikeji, Olotu, Ihenyen, & Obianwu, (2009) when examining cannabis use associated- psychopathology, those using the substance were young (mean age  $25.52 \pm 5.57$ ). In the same study, males constituted 98.7%. Mueser et al., (2000) also reported male gender and young age as associated factors of substance use. It is again highlighted that young males are not only at risk of substance use in psychiatric population even in primary health care settings (Sorsdahl, Stein, Weich, Fourie, & Myers, 2012). It is imperative that the future studies should aim to offer explanations on these phenomenon and develop strategies which are gender or age-based or specific to clinical psychiatric diagnoses. Oshodi, Aina, & Onajole (2010) recommended revision of health educational programmes targeting the youth when high prevalence of substance use was found among them.

This review revealed other associated factors to substance use. Psychiatric disorders such as psychotic, affective (mood) and anxiety disorders were mostly associated with substance users. Grant, Stinson, Dawson, et al. (2004) cited in Pasche (2012) in United States of America found that having a SUD increased the risk anxiety disorder by 1.7 to 2.8 times. According to Chan, Dennis & Funk (2008) cited in Hall, Degenhardt, & Teesson (2009) reported high comorbidity of anxiety, affective and personality disorders. It is recommended that longitudinal studies should be conducted in order to fully understand the comorbidity of substance use and other mental health problems (Hall et al., 2009).

## **7. Conclusion**

The review has confirmed the burden of high prevalence of substance use among psychiatric inpatients in sub-Saharan region. Alcohol and cannabis are the most common substances of abuse across the region. Other substances such as khat, heroin, cocaine, methamphetamines, mandrax and benzodiazepines are used in specific areas in the region. This systematic review shows a clear gap in our current knowledge on the prevalence and correlates of SUD among psychiatric inpatients in Malawi.

## **Chapter 3. AIM & OBJECTIVES OF STUDY**

### **1. Aim of the study**

The aim of the study was to determine the prevalence of risky (moderate and high risk) substance use and service needs among psychiatric inpatients admitted at ZMH in Malawi using the ASSIST questionnaire and compare it with the prevalence identified through routine mental health assessment by resident clinicians on admission.

### **2. Hypothesis**

It was hypothesized that prevalence of substance use among psychiatric patients is higher using the ASSIST than the current 18.5 % being detected by clinicians during routine mental health assessment on admission at ZMH (ZMH records)

### **3. Objectives**

The study aimed to:

- a) determine the point prevalence of moderate and high risk substance use among psychiatric inpatients;
- b) determine the patients' lifetime prevalence of substance use;
- c) identify the risk factors associated with substance use;
- d) assess the extent to which SUDs are detected in routine assessment on admission at ZMH; and
- e) determine the proportion of patients suffering from substances use disorders requiring services at primary and tertiary levels of care (service needs).

## **Chapter 4. METHODOLOGY**

### **1. Study design**

This is a quantitative study using a cross-sectional survey design. It was conducted in three months, from November 2013 to January 2014. The primary data were collected prospectively from patients using structured questionnaires, specifically on socio-demographic characteristics of the participants and substance use history using the ASSIST questionnaire.

### **2. Research site**

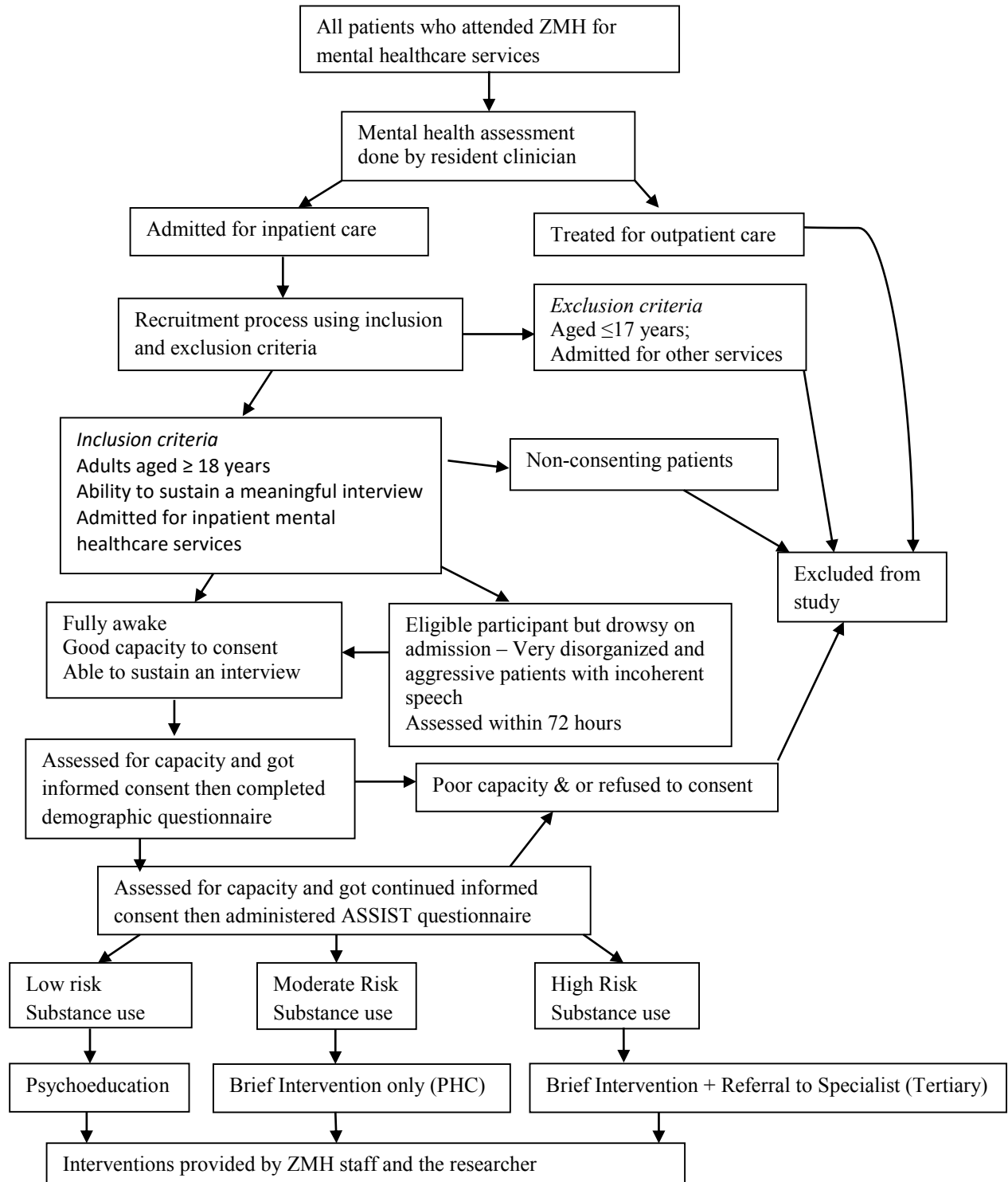
The study was conducted at ZMH, the only government tertiary psychiatric referral hospital in Southern region of Malawi. The hospital offers tertiary services including long-stay care, acute in-patient care, out-patient care, hospital day care, forensic services, community services, rehabilitation services and occupational therapy. It has a bed capacity of 333 beds and it admits 1500 patients annually (Kauye & Mafuta, 2007). Recent infrastructure developments are expected to increase the bed capacity to 400 beds. There is no-one with specialized training in management of substance use disorders in the hospital. The mainstay treatment comprises of alcohol detoxification, symptomatic approach targeting the induced psychiatric disorders, psychosocial and medical complications plus basic psychoeducation and minimally brief intervention for moderate risk users by a psychiatric clinical officer.

### **3. Participants**

The population under study comprised of all patients newly admitted for mental healthcare services at ZMH during the study period who meet the inclusion criteria. As a tertiary mental hospital, patients are usually referred from other institutions include health centres (primary care level) especially in southern region and district hospitals (secondary care level) and general tertiary hospitals across the country. Patients are also referred by policy services, through the courts. All referred cases are expected to bring with them the appropriate referral letter which has at least a working diagnosis.

### 3.1. Procedure

The procedures followed are shown in Figure 4.1 and described below:



**Figure 4.1.** Flow diagram of study procedure at clinic level

### **3.2. Recruitment**

Following admission to hospital, the research assistant responsible for recruitment and administering sociodemographic questionnaires assessed the patients for eligibility for the study using the inclusion and exclusion criteria within 72 hours of admission. The patients were included if they were adults aged 18 and above, and admitted for inpatient mental healthcare services. The patients were excluded if they were admitted for services other than mental health services and were disorganized and aggressive in a manner that rendered them unable to have a meaningful interview within 72 hours of admission.

### **4. Sampling and sample size**

A sample size of 323 patients was calculated for this study. The variables for calculations included, acceptable margin of error of 5 %; confidence level set at 95 %; population of 2000 (the maximum number of patients admitted at ZMH annually); and setting response distribution of 50 % as most conservative assumption to give a larger sample with normal distribution to make a prediction of the variable in the general population.

### **5. Data collection tools**

Data collection was completed using two questionnaires which were translated from original English version into Chichewa language. The first questionnaire was developed by the researcher to obtain socio-demographic factors commonly associated with increased risk of substance abuse. It included items such as age, level of education, diagnoses written on referral letter and diagnoses made by resident clinicians on admission at ZMH. The questionnaire had two parts – one was obtained by interview with the patient and the other by reading the patient's file.

The second questionnaire comprised of the 8-item ASSIST questionnaire (version 3.1) developed by international experts on addiction for the WHO ASSIST Working Group, 2002) (appendix 9.6.1). It is designed to be administered to a client using paper and pencil and takes about 5 -10 minutes to administer. It is culturally neutral and useable across a variety of cultures to screen for use of the following substances: tobacco products, alcohol, cannabis, cocaine, amphetamine-type stimulants (ATS), sedatives and sleeping pills (benzodiazepines), hallucinogens, inhalants, opioids, and 'other' drugs (Humeniuk et al., 2010). It can be used routinely by a variety of professionals in different settings including mental health professionals to assess lifetime prevalence and risk level of substance use.

### **5.1. Translation and Back-translation of data collection tools**

The ASSIST and socio-demographic questionnaires were translated into commonly spoken Chichewa language and back translated to English to check whether their meanings were preserved. The original English versions of questionnaires were translated into Chichewa by native Chichewa speaker and English-taught, qualified Psychiatric Clinical Officer with seven years of experience in mental health practice based at ZMH. The translated Chichewa versions were then back-translated into English by two Chichewa speaking and English-taught Psychiatric Clinical Officers with three years' experience in mental health practice at ZMH and more than 5 years as clinical technicians at various hospitals across Malawi. The main challenge faced was the names of substances of abuse. Tobacco, alcohol and cannabis each have a distinct and widely used one-word Chichewa name. For the rest of the substances, there were no specific Chichewa names, hence it was agreed that instead of attempting to make names for each category, a common substance in that category was mentioned as a prompt to participants. Another issue discussed at length was whether every aspect of the ASSIST questionnaire should be translated. The questionnaire has certain areas such as the calculation of scores for specific substance involvement. This section is only for the one administering the questionnaire not patients. It was therefore resolved that only sections which would be used directly by patients should be translated. These areas include the introduction, the questions, and the response card and feedback report card for patients. The study's data collectors were fluent English speakers. Copies of the original and translated sociodemographic and ASSIST questionnaires are presented in the appendix section.

### **5.2. Sociodemographic Questionnaire**

After recruitment and written informed consent, a research assistant administered the socio-demographic questionnaire. The patient's demographic data were verified by cross-checking the recorded data in the patient's file. This was done to ensure high and standard responses, due to low literacy of most Malawians (National Statistical Office (NSO) and ICF Macro, 2011). The additional data captured from the file were diagnoses made by referring clinicians and by resident mental health clinicians on admission.

### **5.3. ASSIST Questionnaire**

The ASSIST questionnaire was administered orally by another researcher in order to blind him or her to the clinicians' diagnosis. Before administering the ASSIST questionnaire, the researcher obtained a verbal consent. All participants who screened positive for moderate

and high (risky) substance use were referred for appropriate intervention by the ZMH staff.

## 6. Data analysis

Data was analysed using Statistical Package for Social Science, IBM SPSS Statistics version 22 ([www.ibm.com](http://www.ibm.com)). The analyses were conducted according to their corresponding objectives in Table 4.1.

Table 4.1. Data analysis matrix

Objective	Statistical analysis
<ul style="list-style-type: none"> <li>To describe the clinical and sociodemographic characteristics of the sample and comparing substance users and non-users</li> </ul>	Calculation of proportions for each sociodemographic characteristic of the participants
<ul style="list-style-type: none"> <li>To determine the prevalence of moderate and high risk substance use among psychiatric inpatients</li> </ul>	Calculation of proportions of people with moderate and high substance use and their confidence intervals.
<ul style="list-style-type: none"> <li>To determine patients' lifetime prevalence of substance use</li> </ul>	Calculation of proportions of people with moderate and high substance use and their confidence intervals.
<ul style="list-style-type: none"> <li>To identify risk factors associated with substance use</li> </ul>	For bivariate analysis the Pearson Chi-square was used for categorical data. Univariate linear regression was used to determine variables for multivariate linear regression models.
<ul style="list-style-type: none"> <li>To assess the extent to which SUDs are detected in routine assessment on admission at ZMH</li> </ul>	Calculation of Interrater agreement on substance use diagnosis using Kappa statistic comparing routine clinical assessment of substance use to ASSIST questionnaire
<ul style="list-style-type: none"> <li>To determine the proportion of patients suffering from substances use disorders requiring services at primary and tertiary levels of care (service needs)</li> </ul>	Calculation of proportions categorizing cases which were supposed to receive primary care intervention (brief intervention) and those in need of referral to tertiary or specialist hospitals

The prevalence of risky substance use (RSU) for specific substances was calculated by summing up the percentages of moderate and high risk substance use. These two levels were chosen because both levels present with biopsychosocial consequences to the users and require a form of intervention by skilled personnel.

The following categories or cut-off points were used to describe a participants' substance use and determine service needs

- a) Risky alcohol use: ASSIST specific substance involvement score of 11 - 26 (moderate risk) and 27+ (high risk)
- b) Risky use of all other substances: ASSIST specific substance involvement score of 4 – 26 (moderate risk) and 27+ (high risk).
- c) The lifetime prevalence: answering yes to ASSIST questionnaire Q1 for any substance in one’s lifetime regardless of risk level
- d) Service needs: based on substance use risk level and corresponding ASSIST-linked interventions as outlined in Figure 1 – low risk (no intervention); moderate risk (brief intervention at primary health care (PHC) level); and high risk (brief intervention plus referral to specialist services at tertiary level)

Table 4.2 presents the cut-off points and interpretations for Kappa statistics as postulated by Viera & Garrett (2005).

Table 4.2. Interpretation of kappa statistic (Viera & Garrett, 2005)

	Poor	Slight	Fair	Moderate	Substantial	Almost perfect
Kappa	0.0	.20	.40	.60	.80	1.0
Kappa Agreement						
< 0	Less than chance agreement					
0.01–0.20	Slight agreement					
0.21– 0.40	Fair agreement					
0.41–0.60	Moderate agreement					
0.61–0.80	Substantial agreement					
0.81–0.99	Almost perfect agreement					

In order to determine the exact socioeconomic status of the research participants, the wealth index was used as a background characteristic measuring the long-term standard of living. According to the National Statistical Office (NSO) and ICF Macro (2011) this is based on data from the household’s ownership of consumer goods; dwelling characteristics; type of drinking water source; and other characteristics that are related to individual’s socioeconomic status. Gwatkin et al (2000) principles of constructing an index were adapted. The principal component analysis generated weight (factor score) (Table 4.3) which were later assigned to each asset.

Table 4.3 Household assets assigned weights (unique values) from principal component analysis

<b>Household asset(s)</b>	<b>Weight (factor score)</b>
House	0.4767
Radio	0.4103
Television	0.2632
Cellphone	0.5555
Ground telephone	0.4866
Refrigerator	0.2565
Transport means except walking	0.4032
Safe drinking water source	0.9032
Electricity	0.6243
Farming land	0.2860
Animals for food	0.3647

The procedure was that each participant was assigned a score for each asset. The scores were then summed for each participant. Individuals were ranked according to the total score of the items which they possess. The sample was then divided into centiles from one (lowest – poor) to two (highest – non-poor). Eventually, a single asset index was developed on the basis of data from the entire study sample, and this index is used in the tabulation presented (Table 5.2).

The variables that showed significant association in bivariate analysis and univariate linear regression were included in multiple linear regression to determine risk factors for specific substances commonly used by study population namely tobacco, alcohol and cannabis.

## **7. Ethical Considerations**

Ethical approval to conduct this study was obtained from Human Ethics Committee at the Faculty of Health Sciences, University of Cape Town in Republic of South Africa (HREC 312/2013) and College of Medicine Research Committee at University of Malawi in Republic of Malawi. Further permission was sought from the Zomba District Health Office to conduct the study within Zomba district in Malawi, then the actual study site, ZMH through the Director of Mental Health Services and the hospital-based Research and Ethics Committee. And finally the permission was sought from the potential participants.

All eligible participants were informed of the study procedures and given a participant information sheet with consent form (see appendix). All procedures of getting an informed consent were followed and clinical assessments of capacity to consent to the study were done twice or thrice. Firstly, the resident mental health clinicians were asked to do a competence assessment on patients to consent for the study on admission and wrote an advice sheet to research assistants. Secondly, the research assistants did another clinical competence assessment and obtained a written informed consent before proceeding with the interviews. Thirdly, if the participants were unable to give a meaningful interview within 72 hours of admission despite giving written informed consent, another verbal informed consent was obtained. This is referred to as continued consent. Mueller and Instone (2008) indicated that continued consent is ideal for research involving participants with mental illness as is the case in this study for the following reasons: (a) subject's consent capacity can be expected to deteriorate or fluctuate or improve, either due to treatment or progressive or fluctuating disorder, during the study, and (b) subjects hold the right to refuse study interventions or to revoke their previous consent at any time if they regain or lose the decision capacity.

Confidentiality was maintained at all times. The patients' names were replaced with unique codes for research purpose. The main benefit for the participants was increased knowledge on their substance use and those identified by the ASSIST questionnaire to have significant substance use risk level were treated accordingly by ZMH staff. The overall risk classification of this study was minimal without invasive procedures. However, exposure to a series of interviews during data collection was minimized by rescheduling the interviews if participants were tired.

## **Chapter 5. RESULTS OF THE STUDY**

### **1. Introduction and sample description**

During the three-month period of data collection, from November 2013 to January 2014, 360 patients were admitted at the hospital. Out of these 360 patients, 353 were adults aged 18 years old and above. All these adults were approached as planned and 29 potential patients were excluded because they were severely sick even after 72 hours of admission. One patient declined to take part in the study. Three hundred and twenty-three patients were recruited in the study achieving the planned sample size.

### **2. Socio-demographic and socioeconomic characteristics of the participants**

The age range of the participants was 18 and 70 years; the mean age was 29.6 years with standard deviation of 9.2. The age distribution shows a significant number of users were below 45 years (Figure 5.1). Most of the participants were men (210, 65.0%) and more than half (168, 52.0%) had never been married. In terms of current residence of participants 239 (74.0 %) were living in a rural area. The distribution of local tribes of participants was as follows: Lomwe (114, 35.3%), Yao (74, 22.9%), Chewa (51, 15.8%) and Ngoni (31, 9.6%). The hospital is located in the southern region which is dominated by Lomwe and Yao tribes. According to number of years spent on formal education regardless of sex, the majority (182, 56.3%) had some primary education, and while 117, (36.2%) had secondary education. Christians represented 77.4 % of the sample. See Table 5.1 for more details.

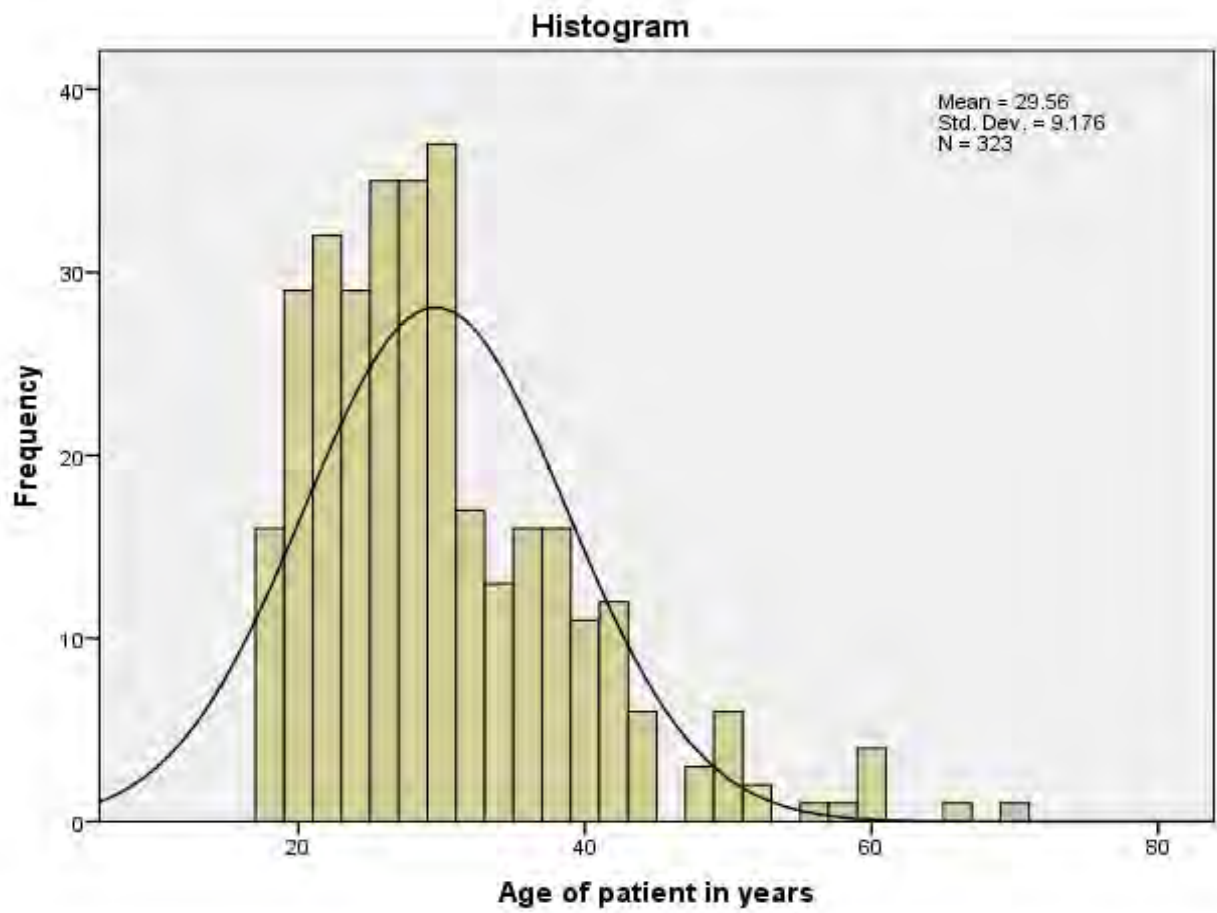


Figure 5.1: Histogram showing age distribution of the study participants

Table 5.1. Sociodemographic characteristics of participants

<b>Background characteristic</b>		<b>N (%)</b>
<b>Sex</b>	Male	210 (65.0%)
	Female	113 (35.0%)
<b>Age</b>	Mean: 29.6 SD± 9.176	
<b>Local tribe</b>	Lomwe	114 (35.3%)
	Yao	74 (22.9%)
	Chewa	51 (15.8%)
	Ngoni	31 (9.6%)
	Mang'anja	18 (5.6%)
	Nyanja	13 (4.0%)
	Sena	8 (2.5%)
	Tumbuka	7 (2.1%)
	Others	7 (2.1%)
<b>Patient's current residence</b>	Rural	239 (74.0%)
	Urban	84 (26.0%)
<b>Marital status</b>	Single	168 (52.0%)
	Married	84 (26.0%)
	Widow/ widower	5 (1.5%)
	Divorced	66 (20.4%)
<b>Number of years spent on formal education</b>	No formal education	16 (5.0%)
	Primary education	182 (56.3%)
	Secondary education	117 (36.2%)
	Tertiary (university) education	8 (2.5%)
<b>Patient's employment status</b>	Unemployed	216 (66.8%)
	Schooling	22 (6.8%)
	Self-employed	58 (18.0%)
	Employed by organization	24 (7.4%)
	Retired	3 (0.9%)
<b>Religious affiliation</b>	Muslim	70 (21.7%)
	Christian	250 (77.4%)
	Pagan (no religious affiliation)	3 (0.9%)

Several variables were considered to determine the socioeconomic status of the participants. Fifty-two percent owned a house of any type; 65 (20.1%) have working radio sets and 58 (18.0%) have a mobile phone. Two hundred and ninety-nine participants (92.6%) use drinking water from protected sources within their neighbourhood. Other variables are ownership of land for agricultural use and farm animals for food. Table 5.2 shows the distribution of these socioeconomic variables' frequencies.

Table 5.2. Socioeconomic characteristics of participants

<b>Socioeconomic characteristic</b>	<b>N (%)</b>
<b>House ownership and type of house</b>	
<i>Did not own house</i>	155(48.0%)
Stay in rented house with grass thatched roof and mud floor	9 (2.8%)
Stay in rented house with iron sheet roof and cement floor	23 (7.1%)
Stay with relative in house with grass thatched roof and mud floor	63 (19.5%)
Stay with relative in house with iron sheet roof and cement floor	57 (17.6%)
Stay with relative in house with iron sheet roof and mud floor	2 (0.6%)
Homeless	1 (0.3%)
<i>Owned a house</i>	168 (52.0%)
Grass thatched roof and mud floor	100 (31.0%)
Iron sheet roof and cement floor	64 (19.8%)
Iron sheet and mud floor	4 (1.2%)
<b>Valuable appliances in patients' household</b>	
Radio	65 (20.1%)
Television	15 (4.6%)
Mobile phone	58 (18.0%)
Landline phone	5 (1.5%)
Refrigerator	11 (3.4%)
<b>Usual means of transport</b>	
On foot	288 (89.2%)
Bicycle	26 (8.0%)
Motorcycle/ scooter	1 (0.3%)
Car	8 (2.5%)
<b>Usual source of drinking water</b>	
Protected source	299 (92.6%)
Unprotected source	24 (7.4%)
<b>Electrification of the house</b>	
	59 (18.3%)
<b>Possession of land for agricultural use</b>	
	165 (51.1%)
<b>Possession of farm animals for food</b>	
	109 (33.7%)
<b>Overall socioeconomic status*</b>	
Poor	189 (58.5%)
Non-poor	134 (41.5%)

\*the categories for overall socioeconomic states derived from centiles calculated from item weights (factor scores) after principal component analysis for each item/ variable used to determine participants' socioeconomic status in Table 4.3

### 3. Clinical characteristics of the participants

Among referred patients 207 (64.1%) had an appropriate referral letter. Out of those with appropriate referral letters, 30 (14.5%) had a diagnosis of substance use disorder. During admission, resident clinicians made presumptive diagnoses according to International Statistical Classification of Diseases and Related Health Problems tenth revision (ICD-10).

Psychotic disorders were the most frequently made diagnosis, (137, 42.4%); followed by mood disorders, (91, 28.2%); and mental and behavioural disorders due to psychoactive substances (48, 14.9%) (Refer to Table 5.3 below for more details).

Table 5.3: Clinical characteristics on referral letters of participants and diagnoses made on admission

<b>Characteristic</b>	<b>N (%)</b>
<b>Clinical characteristic</b>	
Possession of referral letter	207 (64.1%)
Previous psychiatric admission	191 (59.1%)
Substance use diagnosis written on referral letter	30 (14.5%)
<b>Clinical diagnostic group made by ZMH clinicians (ICD-10)</b>	
Psychotic disorder	137 (42.4%)
Mood disorder	91 (28.2%)
Substance use disorder	48 (14.9%)
Epilepsy	17 (5.3%)
Anxiety disorder	1 (0.3%)
Other	2 (0.6%)
No diagnosis	27 (8.4%)

#### **4. ASSIST-linked prevalence of risky substance use**

The overall prevalence of RSU determined by routine clinical assessment was 23.2% (95% CI: 18.6 - 28.5%) and 39.0% (95% CI: 33.4 - 44.6%) using the ASSIST. The overall prevalence of RSU for specific substances were as follows; tobacco 30.0% (95% CI: 25.3 - 35.3%); cannabis 26.6% (95% CI: 22.1 - 31.7%); alcohol 25.7% (95% CI: 21.2 - 30.7%). Very few used sedatives or sleeping pills, cocaine and inhalants and none used other substances.

The prevalence of moderate risk substance use varied between substances with tobacco (19.2% (95% CI: 15.3 - 23.9%)), cannabis (9.9% (95% CI: 7.1 - 13.7%)) and alcohol (7.1% (95% CI: 4.8 - 10.5%)) having been used the most. In terms of the prevalence of high risk substance use, the most frequently used substances were alcohol (18.6% (95% CI: 14.7 - 23.2%)), cannabis (16.7% (95% CI: 13.0 - 21.2%)) and tobacco (10.8% (95% CI: 7.9 - 14.7%)). Only 0.3% (95% CI: -0.1 - 2.0%) used inhalants at high risk level. For more details refer to Table 5.4 below.

Polysubstance use was also seen in this study. Those patients who did use substances typically used at least two substances. The common combination at 14.9% was of tobacco, alcohol and cannabis. Tobacco and alcohol use was at 4.6%. A small percentage used four substances – tobacco, alcohol, cannabis and cocaine, 0.6%. Refer to the Table 5.5 below for more details.

Table 5.4: Prevalence of substance use as per risk level and overall RSU with 95% Confidence Intervals (n=323)

Substance of abuse	Low risk level % (95% CI)	Moderate risk level % (95% CI)	High risk level % (95% CI)	Overall risky substance use prevalence (moderate + high risk level) % (95% CI)
Tobacco	70.0%, (CI: 64.5- 74.7%)	19.2% , (CI: 15.3- 23.9%)	10.8%, (CI: 7.9-14.7%)	30.0% , (CI: 25.3- 35.3%)
Alcohol	74.3%, (CI: 69.3- 78.8%)	7.1%, (CI: 4.8-10.5%)	18.6%, (CI: 14.7-23.2%)	25.7%, (CI: 21.2- 30.7%)
Cannabis	73.4%, (CI: 68.3-77.9%)	9.9%, (CI: 7.1- 13.7%)	16.7%, (CI: 13.0- 21.2%)	26.6%, (CI: 22.1- 31.7%)
Cocaine	99.4%, (CI: 97.6- 100%)	0.6%, (CI: 0- 2.4%)	0.0%	0.6%, (CI: 0- 2.4%)
Amphetamine-type stimulants	100.0%	0.0%	0.0%	0.0%
Inhalants	99.7%, (CI: 98.0- 100%)	0.0%	0.3%, (CI: -0.1, 2.0%)	0.3%, (CI: -0.1- 2.0%)
Sedatives or sleeping pills	98.8%, (CI: 96.7- 99.6%)	1.2%, (CI: 0.4- 3.3%)	0.0%	1.2%, (CI: 0.4- 3.3%)
Hallucinogens	100%	0.0%	0.0%	0.0%
Opioids	100%	0.0%	0.0%	0.0%
Other – specify:	100%	0.0%	0.0%	0.0%
<b>ASSIST- determined prevalence of risky substance use</b>		39.0% (CI: 33.4- 44.6%)		

Table 5.5. Summary of polysubstance use

Substance use combinations	N (%)
Tobacco, Alcohol and Cannabis	48 (14.9%)
Tobacco and Alcohol	15 (4.6%)
Alcohol and Cannabis	3 (0.9%)
Tobacco and Cannabis	3 (0.9%)
Tobacco, Alcohol, Cannabis and Cocaine	2 (0.6%)
Alcohol only	17 (5.3%)
Tobacco only	9 (2.8%)
Cannabis only	8 (2.5%)
No substance used	218 (67.5%)
Total	323 (100.0%)

### 5. Lifetime prevalence of substance use

The lifetime prevalence for specific substances' use are: alcohol 54.8% (95% CI: 49.3 - 60.1%); tobacco 43.7% (95 % CI: 38.4 - 49.1%), and cannabis 39.0% (95% CI: 33.9 - 44.4%). Figure 5.2 shows the lifetime prevalence for specific substances used by inpatients at ZMH during the study period. Psychiatric inpatients at ZMH did not report any use of amphetamine-type stimulants, hallucinogens, or opioids neither unusual psychoactive substance.

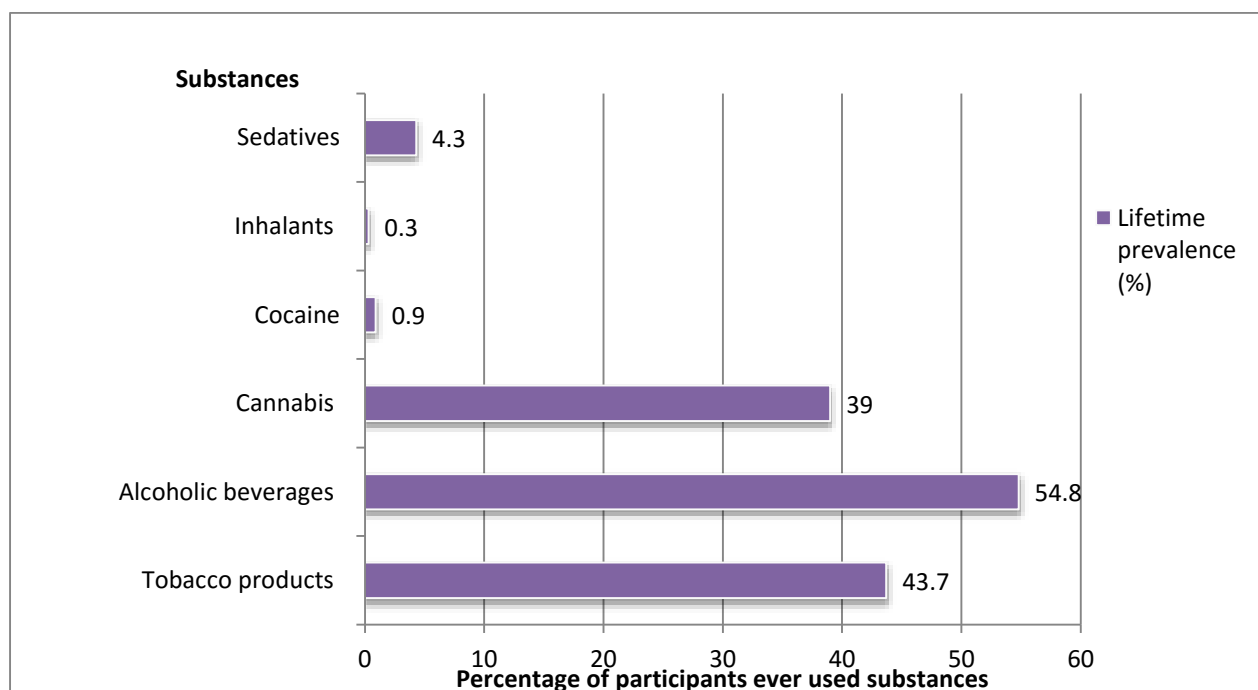


Figure 5.2. Bar chart showing lifetime prevalence of specific substance use among ZMH psychiatric inpatients

## **6. Demographic, socioeconomic and clinical characteristics of participants with substance use compared with non-users**

Comparing those with risky substance use (RSU) (using any specific substance at either moderate or high risk level) to those with low substance use we found that the majority of those with RSU were males (94.4%). This is significantly higher than the proportion of males in those with low risk substance use (46.2%,  $\chi^2 = 78.7$ ,  $p < 0.001$ ). Those with RSU were older ( $M = 27.92$ ,  $SD = 7.43$ ) than those with low substance use [ $M = 30.60$ ,  $SD = 10.02$ ];  $t(314) = 2.76$ ,  $p = .006$ ]. However, the magnitude of the differences in the means was very small ( $\eta^2 = .02$ ).

Residing in the rural area (63.5%) was significantly associated with substance use compared to living in an urban area (36.5%,  $\chi^2 = 11.84$ ,  $p = .001$ ). Psychiatric diagnostic group also shown to be significantly associated with RSU at  $\chi^2(1, N = 323) = 85.88$ ,  $p > .001$ . Education, employment, religious affiliation, marital status, previous psychiatric admission and possession of appropriate referral letter were distributed similarly across those with and without RSU. Most cases with RSU were diagnosed with psychotic, 38.1% and mood disorders, 18.3% and substance use disorders, 36.5%. Full comparative results are provided in Table 5.6.

Table 5.6. Comparison of clinical, demographic and socioeconomic characteristics between RSU and low risk substance users

Variable	Total Population n=323	RSU n=126	Low risk substance use n=197	$\chi^2$	df	t value	p-value
<b>Sex</b>							
Male	210	119 (94.4%)	91 (46.2%)	78.66	1		<.001
Female	113	7 (5.6%)	106 (53.8%)				
<b>Age</b>	Mean ( $\pm$ SD) 29.56y ( $\pm$ 9.18y)	27.92y ( $\pm$ 7.43y)	30.60y ( $\pm$ 10.02y)		314	2.76	.006
<b>Current residence</b>							
Rural	239	80 (63.5%)	159 (80.7%)	11.84	1		.001
Urban	84	46 (36.5%)	38 (19.3%)				
<b>Employment status</b>							
Unemployed	216	78 (61.9%)	138 (70.1%)	8.545	5		.129
Schooling	22	6 (4.8%)	16 (8.1%)				
Self-employed	58	26 (20.6%)	32 (16.2%)				
Employed somewhere	24	15 (11.9%)	9 (4.6%)				
Retired	3	1 (0.8%)	2 (1.0%)				
<b>Marital status</b>							
Single	168	77 (61.1%)	91 (46.2%)	9.258	4		.055
Married	84	26 (20.6%)	58 (29.4%)				
Divorced	66	23 (18.3%)	43 (21.8%)				
Widow	4	0 (0.0%)	4 (2.0%)				
Widower	1	0(0.0%)	1 (0.5%)				
<b>Education attainment</b>							
No formal education	16	8 (6.4%)	8 (4.1%)	3.032	3		.387
Primary education	182	64 (50.8%)	118 (59.9%)				
Secondary education	117	50 (39.7%)	67 (34.0%)				
Tertiary education	8	4 (3.2%)	4 (2.0%)				
<b>Religious affiliation</b>							
Christians	250	102 (81.0%)	148 (75.1%)	3.693	3		.297
Muslims	70	22 (17.5%)	48 (24.4%)				
Pagan	3	2 (1.6%)	1 (0.5%)				
<b>Socioeconomic status</b>							
Non-poor	134	46 (36.5%)	88 (44.7%)	2.109	1		.146
Poor	189	80 (64.5%)	109 (55.3%)				
<b>Previous psychiatric admission</b>	191	81 (64.3%)	110 (55.8%)	2.27	1		.132
<b>Possession of referral letter</b>	207	85 (67.5%)	122 (61.9%)	1.02	1		.312
<b>ICD-10 Clinical diagnostic categories</b>							
Psychotic disorder	137	48 (38.1%)	89 (45.2%)	85.88	1		<.001
Mood disorder	91	23 (18.3%)	68 (34.5%)				
SUD	48	46 (36.5%)	2 (1.0%)				
No diagnosis	27	8 (6.3%)	19 (9.6%)				
Other	2	1 (0.8%)	1 (0.5%)				

## 7. Risk factors associated with substance use

Multivariate linear regression analysis was used in order to determine the risk factors associated with tobacco, alcohol and cannabis use. The focus of the analysis were to see what clinical and demographic variables were associated with a higher score on the ASSIST. One of these was psychiatric diagnosis. The multivariate linear regressions for all the three substances have shown that those with SUD are more likely than those with other psychiatric diagnoses to have a higher ASSIST score ( $p < 0.001$ ). Males are more likely to have higher ASSIST scores for all these substances ( $p < 0.001$ ) and ASSIST scores for alcohol use are significantly higher in Christians compared to other religions or no religious affiliation ( $p = .044$ ). The ASSIST scores for cannabis use are significantly higher in rural residents compared to urban residents ( $p = .042$ ). Several variables were not significant in the models. The model showed no significant difference in ASSIST scores between age, current employment, residence and tobacco, alcohol or cannabis use. Current employment and socioeconomic status were not significant for alcohol and cannabis. Level of education was also not significant for cannabis. The prediction models for each of the three substances were all significant and accounted for 24.0% variance of ASSIST scores for tobacco use, 30.3% variance for alcohol use and approximately 32.0% variance for cannabis use respectively. The details are elaborated in Tables 5.7 to 5.9.

Table 5.7. Multivariate Linear regression for tobacco use

ASSIST score for Tobacco use	B	95% CI for B		p-value	R <sup>2</sup>
		Lower bound	Upper bound		
<b>Psychiatric diagnosis (compared to Substance Use Disorder)</b>	.				<b>.240</b>
Psychotic disorders	-9.628	-13.250	-6.006	<.001	
Anxiety and mood disorders	-11.123	-14.905	-7.342	<.001	
Epilepsy	-15.594	-21.414	-9.774	<.001	
Other and no diagnoses	-9.482	-14.369	-4.595	<.001	
<b>Male</b>	5.996	3.534	8.459	<.001	
<b>Age</b>	.016	-.109	.141	.802	
<b>Currently employed (compared to unemployed)</b>	.106	-2.590	2.802	.939	
<b>Residing in a rural area</b>	-1.138	-3.799	1.522	.401	

Table 5.8. Multivariate Linear regression for alcohol use

ASSIST score for Alcohol use	B	95% CI for B		p-value	R <sup>2</sup>
		Lower bound	Upper bound		
<b>Psychiatric diagnosis (compared to Substance Use Disorder)</b>	.				<b>.303</b>
Psychotic disorders	-12.280	-16.342	-8.219	<.001	
Anxiety and mood disorders	-13.500	-17.768	-9.231	<.001	
Epilepsy	-19.128	-25.637	-12.618	<.001	
Other and no diagnoses	-11.280	-16.803	-5.758	<.001	
<b>Male</b>	8.214	5.420	11.009	<.001	
<b>Age</b>	-.023	-.165	.119	.751	
<b>Residing in a rural area</b>	-1.029	-3.990	1.931	.494	
<b>Christian religion (compared to non-Christian)</b>	3.101	.083	6.119	.044	
<b>Socioeconomic status (rich compared to poor)</b>	-.492	-3.135	2.150	.714	

Table 5.9. Multivariate Linear regression for cannabis use

ASSIST score for Cannabis use	B	95% CI for B		p-value	R <sup>2</sup>
		Lower bound	Upper bound		
<b>Psychiatric diagnosis (compared to Substance Use Disorder)</b>	.				<b>.318</b>
Psychotic disorders	-14.452	-18.421	-10.483	<.001	
Anxiety and mood disorders	-15.758	-19.902	-11.614	<.001	
Epilepsy	-20.139	-26.512	-13.766	<.001	
Other and no diagnoses	-12.702	-18.067	-7.336	<.001	
<b>Male</b>	5.996	3.236	8.756	<.001	
<b>Age</b>	-.016	-.155	.122	.818	
<b>Residing in a rural area</b>	-3.138	.042	-6.167	-.109	
<b>Currently employed (compared to unemployed)</b>	.231	-2.776	3.239	.880	
<b>Educated secondary &amp; above (compared to primary &amp; below)</b>	-.663	-3.414	2.088	.636	
<b>Socioeconomic status (rich compared to poor)</b>	-1.098	-3.712	1.516	.409	

## 8. Substance use diagnosis on routine clinical assessment compared to the ASSIST

In order to assess the extent to which SUDs are detected in routine assessment on admission at ZMH compared to ASSIST, the Kappa statistic was used. The point prevalence of substance use determined by routine clinical assessment was 23.2%, (95% CI: 18.6 – 28.5%). Table 5.10 shows the details of the kappa statistics for various outcomes. The overall kappa statistic to make a diagnosis of SUD regardless of risk level is found to be Kappa = 0.530 (p <.001), (95% CI: 0.425-0.627). This measure of agreement while statistically significant is only moderate.

Table 5.10. Kappa statistic for routine assessment by resident clinicians at ZMH and ASSIST questionnaire

	SUD made on admission			Measurement of agreement		95 % CI	
	Yes	No	Total	Kappa value	p-value	Lower	Upper
<b>ASSIST</b>							
Positive screen	67	59	126	.530	<.001	.425	.627
Negative screen	8	189	197				
Total	75	248	323				
<b>Tobacco</b>							
Low	24	202	226	.341	<.001	.250	.438
Medium	32	30	62				
High	19	16	35				
Total	75	248	323				
<b>Alcohol</b>							
Low	28	212	240	.258	<.001	.179	.336
Medium	12	11	23				
High	35	25	60				
Total	75	248	323				
<b>Cannabis</b>							
Low	24	213	237	.281	<.001	.208	.352
Medium	14	18	32				
High	37	17	54				
Total	75	248	323				

### 9. ASSIST-linked substance use service needs

Substance use service needs were determined based on the ASSIST-linked interventions to corresponding substance use risk level. Patients with moderate risk substance use are offered brief intervention at PHC level; and those with high risk use, brief intervention is offered to promote change plus referral to specialist services at tertiary level. Figure 5.3 shows the distribution of ASSIST-linked substance service needs of substances ever-used by psychiatric inpatients at ZMH. The patients who screened positive for high risk alcohol (18.6%, (95% CI: 14.7 - 23.2%)) and cannabis use (16.7%, (95% CI: 13.0 - 21.2%)) were identified as needing tertiary care while tobacco users (19.2%, (95% CI: 15.3 - 23.9%)) required primary care services, thus psychoeducation on substances.

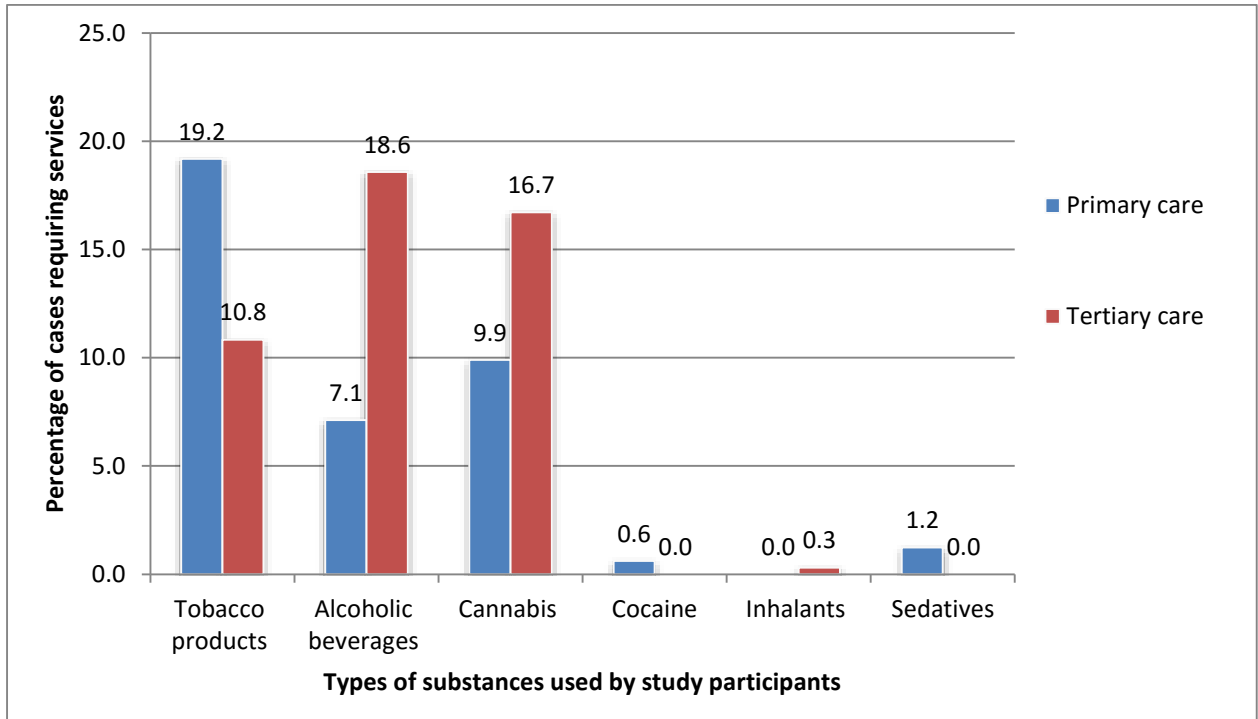


Figure 5.3. ASSIST-linked substance use service level needs

## Chapter 6 – DISCUSSION

### 1. Overview

This study presents the first findings on the prevalence of risky substance use among psychiatric inpatients in Malawi. It reports on the factors associated with substance use, and the needs for services among this population. Finally it reports on the accuracy of clinician diagnosis of substance use disorder on admission to ZMH, highlighting the potential missed opportunities for detection and treatment of this vulnerable group.

### 2. Sociodemographic & clinical characteristics of participants and risk factors for substance use

There are several studies across the world which examined the associated demographic profiles of substance users in general population as well as specific population such as psychiatric patients. These variables include age, gender and psychiatric diagnoses just to mention a few. In this study, most substance users were younger with the mean age of 27.92 years ( $SD=7.43$ ) than those with low substance use [ $M=30.60$ ,  $SD=10.02$ ];  $t(314) = 2.76$ ,  $p = .006$ ]. This finding is similar to many studies conducted among psychiatric inpatients (Adamson et al., 2010; Motala, 2013 & Weich & Pienaar, 2009). This is a worrisome development considering that the most developing countries like Malawi have a youthful population.

According to gender distribution in this study, those reporting RSU were predominantly male (94.4%). The proportion of males is significantly higher than those with low risk substance use (46.2%,  $\chi^2 = 78.7$ ,  $p < 0.001$ ). This is in line with the global trend of a higher prevalence of drug use in males (UNODC, 2014). This phenomenon is similar across the sub-Saharan (Acuda & Sebit, 1997; Adamson, Onifade, & Ogunwale, 2010; Motala, 2013; Ndeti et al., 2008; & Weich & Pienaar, 2009). The evidence signifies that substance use among female psychiatric inpatients is not common in most sub-Saharan countries. This might be attributed to cultural influence disapproving this behaviour.

RSU for cannabis in this study was dominated by rural residents (63.5%). This was significantly associated with substance use compared to living in an urban area (36.5%,  $\chi^2 = 11.84$ ,  $p = .001$ ) was interesting. This is against what was reported by UNODC (2012) cited in Motala, (2013) stipulating that living in city is associated with increased risk of illicit

substance use. The possible explanation for this is that Malawian population is rural based with vast agricultural fields allowing low cost cannabis production with minimal drug law enforcing agents' control. The study also found that that alcohol and tobacco were not associated with residing in a rural area. It is clear that substance use is prevalent in areas where the substance is commonly found. Cannabis use is equally common in Nigeria among psychiatric inpatients (Ohaeri & Odejide, 1993).

Considering the number of years spent on formal education regardless of sex, it was found that slightly more than half (56.3%) had some primary education, and while 36.2% had secondary education. The level of education was not associated with substance use (Motala, 2013). Studies continue to highlight that people with psychiatric illness have some form of good education (Ndetei et al., 2008 and Mahomed, 2008). This good level of education offers an opportunity for uptake of educational interventions on substance use.

Clinically, the study highlighted that psychotic disorders (38.1%) and mood disorders (18.3%) were the main comorbid psychiatric disorders among substance users. This is comparable on higher side to the South African study (Motala, 2013) which reported the psychotic disorders (65%) and mood disorders (34%). Several studies highlighted the importance of recognizing high rates of comorbidity of substance use and other psychiatric diagnoses (Weich & Pienaar (2009), Rensburg (2007), Ndetei et al., (2008)). Cohen and Jacobson (2001) indicated that dual diagnosis is extremely common and often goes undetected. Cohen and Jacobson (2001) further stipulated that the presence of substance abuse makes diagnosis of both disorders more complicated, and for treatment of either disorder to be successful, both must be identified and treated individually. Scientific evidence further revealed that comorbid substance use is a significant precipitating factor for psychiatric relapse and admission (Botha et al., (2010), Mahomed (2008), and Mzimela (1995)). Unfortunately, this study did not examine any effects of substances on the comorbid psychiatric disorders.

As most factors associated with increased risk of substance use have been highlighted in the sociodemographic section, this study examined the risk factors using regression models. The multivariate linear regressions models for all the three commonly used substances namely tobacco, alcohol and cannabis have shown that those with SUD are more likely than those with other psychiatric diagnoses to have a higher ASSIST score ( $p < 0.001$ ). Males are more

likely to have higher ASSIST scores for all these substances ( $p < 0.001$ ) while that ASSIST scores for alcohol use are significantly higher in Christians compared to other religions or no religious affiliation ( $p = .044$ ). ASSIST scores for cannabis use are significantly higher in rural residents compared to urban residents ( $p = .042$ ). These findings are similar to the clinical and sociodemographic characteristics discussed above.

### **3. Prevalence of risky substance use and types of substances**

The study findings have revealed that psychiatric inpatients at Zomba Mental Hospital have significant primary or comorbid substance use at all levels of use. The prevalence of substance use continued to increase from the recent 18.2% (ZMH records) to 23.2% (95% CI: 18.6-28.5%) as determined by the routine mental health assessment. It further increased when the ASSIST questionnaire was utilized to screen for risky substance use to 39.0% (95% CI: 33.4-44.6%). The prevalence of substance use among psychiatric inpatients varies significantly across the sub-Saharan region. This study's ASSIST determined prevalence is comparable on higher side to the Kenyan study, (Ndetei et al., 2008) which reported prevalence of 34.4% using SCID questionnaire and clinical notes. Fifty-one percent of inpatients had comorbid SUD in South African study determined by patients' self-reporting (Weich & Pienaar, 2009). A Tanzanian study reported a significantly higher prevalence of 68.5% using the similar ASSIST questionnaire (Hauli et al., 2011).

This study found that alcohol, cannabis and tobacco were common used substances and other drugs were minimally or rarely used by the study population. Acuda & Sebit (1997) reported the same substances in Zimbabwe. However, the results also showed a specified geographical distribution pattern of specific substances use among psychiatric inpatients in sub-Saharan region; South African studies reported a range of substances including methamphetamine/ amphetamines, cocaine/ crack cocaine, mandrax, heroin, glue, volatile substances, opiates, methaqualone, benzodiazepines, cannabis, alcohol and tobacco (Weich & Pienaar, 2009); Strydom et al, 2011) and Motala, 2013)). Nigerian studies reported more cases of cannabis and alcohol and a few cases of heroin and cocaine. Kenyan studies (Ndetei, Khasakhala, Ongecha, Mutiso, & Kokonya (2007) and Ndetei et al (2008) revealed significant use of opioids, alcohol and sedatives/ benzodiazepines and khat. Khat was also reported in Ethiopian studies (Bimerew, Sonn, & Kortenbout, 2007; & Fekadu et al., 2007). The substance thought to be khat was mentioned in comparative retrospective study between

Malawi and Scotland on forensic inpatients (Hayward et al., 2010). Khat is a native stimulant with a significant cultural importance in eastern Africa and the horn of Africa. Its presence in Malawi might be as a result of migration of people from Ethiopia and Somalia to South Africa. Despite clinical experience and this study highlighting high nicotine (tobacco) use in psychiatric population, low reporting on tobacco within mental health services is not surprising as greater emphasis is placed on its effects on physical health rather than psychological or mental health.

#### **4. Lifetime prevalence of substance use**

Alcohol, tobacco and cannabis were the main substances used by the participants in their lifetime. Among those who reported using the substances, the majority were still using them during the study period. Psychiatric inpatients at ZMH did not report any use of amphetamine-type stimulants, hallucinogens, or opioids neither unusual psychoactive substance. It might be argued that most people continue to use substances once started with only a few stopping on the way. Cohen and Jacobson (2001) argued that several factors including self-medication for psychiatric illnesses can be a possible cause for substance use in psychiatric patients. However, this study did not elicit possible reasons for starting and continued substance use in this population.

The lifetime prevalence of substance use was not reported in most studies in the sub-Saharan region. However, Cantor-Graae, Nordstro, & Mcneil (2001) reported of lifetime prevalence of alcohol of 32.0% as finding for a Zimbabwean study by (Acuda & Sebit, 1997). In fact the study reported the point prevalence rate of psychoactive substance abuse among the psychiatric in-patients as follows; alcohol 28.4% (95% CI: 22.1 - 34.7), tobacco 27.6% (95% CI: 18.7 - 36.5) and cannabis 14.3% (95% CI: 7.4 -21.2). Fowler, Carr, Carter, & Lewin, (1990) reported that 59.8% had a lifetime diagnosis of substance abuse or dependence with 48.4% reporting a lifetime prevalence of alcohol abuse/dependence and 36% cannabis abuse/dependence.. Mueser et al. (1990), (1992); Regier et al. (1990); and Lehman et al. (1994) cited by Mueser et al., (2000) stipulated that across all studies, alcohol and cannabis were the most common type of substance use disorder. This study found a similar trend. But another remarkable finding was the use of tobacco. The above studies despite reporting a variety of substances left out tobacco use. Evidence indicates that despite current guidelines, mental health professionals rarely address nicotine use among their patients (Olivier et al.,

2007). There is need to consider tobacco as a significant substance in psychiatry for the fact that it does occur with other substances.

### **5. Agreement between routine clinical assessment of substance use and ASSIST**

The study findings have revealed that resident clinicians at ZMH are not routinely picking up all risky substance use on admission. Fifty-nine out of 323 patients screened positive on the ASSIST but weren't diagnosed with a substance use on admission. There are a number of possible explanations to this effect. First, the public perception that cannabis is the major cause of mental illness in Malawi seems to be the same among the health workers even at ZMH. Cannabis is the main substance which is screened. If the patient reports cannabis use the screening for other substances will depend on specific substance use features or pointers from the escorting relative or staff of referring hospital. The hospital recently procured urine dipstick for cannabis test – tetrahydrocannabinoid test (THC) to increase its detection. Although, the emphasis is on cannabis use, it was surprising to find that around 35 participants with moderate and high RSU were not diagnosed with SUD. Second explanation is the lack of specific clinical protocols for identifying patients with potential substance use problems. Routinely, mental health assessment involves substance use assessment in all patients who are at the age of using substances. This is not the case for ZMH. Every clinician uses his or her own expertise, therefore those not interested in substance use area have limited diagnostic capacity. The inclusion of the ASSIST in a clinical protocol could assist with the identification of RSU.

This study reported that alcohol, tobacco and cannabis are widely used substances among psychiatric inpatients at ZMH. This trend is similar in the clinical practice. The Malawian ministry of health (MoH) has mental health indicators for cannabis and alcohol only leaving tobacco as a general health indicator. Again services are biased towards cannabis induced disorders like psychotic disorder not substance use disorders. These ideologies have led the ZMH clinical team to misdiagnose patients with potential substance use problems. The alcohol users have been wrongly diagnosed as having psychotic disorders like schizophrenia when they are presenting with alcohol withdrawal symptoms such as various types of hallucinations. Nicotine withdrawal symptoms from tobacco dependent users is one of the main causes of aggressive behaviours in the male acute wards. Tobacco use is totally banned on hospital grounds/in hospital buildings regardless of the level of use. Although improving the identification of substance use on routine admission has been improved lately at the

hospital, emphasis has been placed on cannabis only. The identification of other substances used will not only address their service needs but also improve the clinical outcomes of patients; reduce the treatment costs (Weich & Pienaar, 2009) and provide valuable information for decision-making on substance use issues at hospital, district, regional and country levels.

There is potential to improve assessment of SUDs, through the introduction of substance routine screening using ASSIST at ZMH. It will be advantageous for the patients and the service by improving the early detection and early treatment for substance use disorders. The possibility of incorporating the ASSIST is high. It has now been translated into Chichewa, which is national language it is short, can be administered quickly (3 to 5 minutes) and covers 9 different substances. It is easily scored and the score translates directly to the type of intervention required.

On the other hand, integration of ASSIST might be challenging. ZMH has limited qualified human resources (Kauye & Mafuta, 2007). The hospital currently depends on a few individuals with no specialist knowledge to deliver the substance use services and the organizational culture does not nurture new developments in the long term. Starting the ASSIST-linked substance screening and treatment may be relatively easy but it is unlikely to be sustainable without policy support at hospital and ministerial level. In addition, various strategies to support the screening process could be initiated. There also needs to be enough capacity and resources (financial, space, medications) to provide the interventions otherwise it will not be sustainable. Firstly, substance use indicators should be developed and made clear to health workers. Secondly, a clinical coordinator for substance use screening and interventions should be identified and trained properly in order to offer continued mentorship on the other health workers.

### **Substance use service needs**

According to the findings on substance use service needs, brief intervention services will be needed by more people using tobacco, 19.2% then almost one tenth (9.9%) of cannabis users and 7.1% of alcohol users. This can be offered by specifically trained health workers, at least 3 full-time staff on weekly basis (who might need to be hired). Although, the hospital cater mental health services for the whole country, the opportunity to deliver multiple BI sessions

is available. On average, patient hospital stay is 30 to 40 days. Therefore, the patients will have a minimum of 4 sessions before their discharge. So far, the mainstay treatments for substance use disorders are psychoeducation, oral diazepam detoxification for alcohol withdrawal syndrome and psychotropic medications for induced disorders such as psychotic disorders (antipsychotics) and affective disorders (antidepressants and mood stabilisers).

It was also highlighted that a good number of patients with RSU will require referral to specialist services. BI as a treatment modality has modest effectiveness even in non-psychiatric primary care patients. However, this is not a standalone treatment for severe cases of substance use disorders such as tobacco and alcohol dependence; patients need nicotine replacement therapies (NRTs) and medications to treat addiction. The existing SUD services at ZMH are able to handle alcohol dependence cases only using diazepam. There is limited capacity to handle severe cases of addiction to other substances. Patients using other substances are offered psychoeducation. ZMH as a public hospital, it does not refer cases to private or missionary-run mental health services in Mzuzu city. However, Saint John of God Community Services (SJOG) has residential addiction services for which they charge a fee. The service-level agreement which exists between Ministry of Health through ZMH and SJOG consists of general adult mental health services for people from five districts in northern region of Malawi (<http://www.sjog.mw/venegas.html>). ZMH has not yet established evidence-based specialist substance use services, but there is an opportunity to start developing specialist services. There are several first degree holders who can pursue master degree programmes especially in addiction studies to champion the service development.

## **6. Study limitations**

Although the findings of this study have indicated that substance use is prevalent in people with psychiatric illnesses, several factors limited the reliability of the source of information and limiting the estimation of prevalence. The information was only sought from the patients with active mental illness who might have given answers influenced by their psychopathology. Patients might have given desirable answers thinking they might not be assisted accordingly if they deny substance use. In Malawi, the general public always attribute mental illness among male patients to use of cannabis.

The study was conducted only at ZMH therefore the findings cannot be generalised to the entire population of people with mental or psychiatric illnesses. The cross-sectional design utilised in limit the findings to make any causal relationships between substance use and other related factors. In addition, the ASSIST questionnaire has never been validated in Malawi. However, it was validated in Zimbabwe with similar population profile to Malawi.

## **Chapter 7 - CONCLUSION & RECOMMENDATIONS**

### **1. Conclusion**

The results of this study add to the increasing evidence that substance use disorders is highly prevalent in psychiatric inpatients. It further suggest that tobacco, alcohol and cannabis are the commonly used psychoactive substances at ZMH in Malawi. Among those who use substances, a greater percentage of patients use these substances at risky levels requiring both primary intervention such as the brief intervention and referral for specialist care. The study has also showed that clinicians at ZMH are not routinely diagnosing everyone with substance use at a moderate or high risk level.

### **2. Recommendations**

In the light of the above findings, a number of recommendations have been made for future research possibilities, clinical practice and substance abuse policies.

#### **2.1. Future research possibilities**

This study has provided descriptive prevalence data on risky substance use and service needs among psychiatric inpatients at ZMH, but further research is needed to address unanswered questions. Firstly, there is need to explore the effects of dual diagnosis (having substance use disorder and any major psychiatric disorder) on the clinical outcomes of individual patients using different combinations of substances.

Secondly, considering the high prevalence rate of risky substance use, it can be hypothesized that most patients have multiple biopsychosocial complications secondary to the use of these substances, particularly tobacco, alcohol and cannabis. The most common comorbid physical complications include hepatic, gastrointestinal, pulmonary, cardiovascular and musculoskeletal. It would be beneficial to explore the biopsychosocial effects of these substances on the users.

Thirdly, international studies have shown that RSU can be managed by brief intervention (BI) as primary health care intervention to promote behavioural change in substance use. Yet, despite numerous randomized trials on effectiveness of BI on alcohol use, the effectiveness and cost effectiveness of intervention has never been demonstrated in Malawi.

There is a greater need to have validated interventions with their linked assessment or screening tool. Although, studies acknowledge the cross-validation of BI to other substances such as cannabis and tobacco, there is need to evaluate the case for Malawi. The Chichewa version of the ASSIST could be validated against a gold standard such as the World Mental Health Composite International Diagnostic Interview.

Fourthly, the study again revealed greater use of substances at any stage of one's life, thus the lifetime prevalence. There is need to understand factors for initiation of substance use in order to develop preventive strategies. In particular there is a need to undertake longitudinal studies to develop a more advanced understanding of the causal relationship between various factors identified in this study and substance abuse.

## **2.2. Implications for practice**

The agreement on substance use between ASSIST and routine mental health assessment has revealed a gap in substance use assessment knowledge and skills. It is clear that there is need to increase the knowledge and improve the clinical skills of resident clinicians at tertiary care level in Malawi especially at Zomba Mental Hospital. ZMH's clinical department has seven clinicians and nursing department having 38 nurses. These are smaller numbers and feasible to train. Experience with other programmes such as HIV care are offered throughout the country. Zomba Mental Hospital is among the hospitals to have all its technical staff as certified HIV care providers. The primary and secondary care levels staff also only managed to identify a small percentage of people with substance use problems. Therefore, it is strongly recommended that clinicians at ZMH and in other inpatient and outpatient settings in Malawi should have comprehensive training for the identification of SUDS and eventually the delivery of evidence-based interventions. It is feasible to train health workers at these levels as evidenced by the recent project being piloted in four districts in the Southern region and one in Central region. The project aims at improving the mental health services at secondary and primary health care levels. Synergetic to this programme, substance use especially alcohol is regarded as a risk factor for non-communicable diseases (NCDs). The directorate of clinical services in ministry of health in Malawi is already working on strategies to address alcohol use. Existing NCD coordinators can also be responsible for substance use screening and interventions could be identified and be trained properly in order to offer continued mentorship to other health workers.

The ASSIST was used on psychiatric inpatients at ZMH and found to be quick, easy to administer and detected more people with RSU. The ASSIST with its linked brief intervention could potentially be validated, introduced and standardized for use in Malawi at all levels of care to foster behavioural change on substance use.

Apart from utilizing the ASSIST questionnaire coupled with routine mental health assessment interview, the detection rate of substance use can be improved by using multiple substance use screening or diagnostic tools such as collateral information from relatives and significant others and biological assessments (haematological and urinalysis) where feasible to identify those at risk of substance use and address their significant related complications.

Since psychiatric illness increases the risk for substance use, there is need to raise clinical awareness of comorbid substance use among clinicians and other health workers to intensify screening for substance use in all patients. Comprehensive substance use screening should be made mandatory in all people with possible mental health problems at all levels of care as part of the integrated clinical care package.

### **2.3. Implications for policy**

The study has indeed increased the information on the high rates of substance use among psychiatric inpatients. This alone cannot improve the assessment and management approaches towards substance use problems among psychiatric patients or general public. Substance use disorders should be considered to be among the major risk factor for ill-health. The ministry of health (MoH) needs to develop indicators for all substances of abuse which can be monitored by all relevant stakeholders. Information on substance use can be incorporated in existing curricula in general and specialized education such as medical sciences as well as on-job or in-service training/ continuing professional development programme. The designed and targeted strategies should aim at raising awareness of substance use among all relevant stakeholders to prevent, make early diagnosis/ recognition and offer early interventions to those at risk of developing these substance-related disorders.

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## APPENDICES

### Appendix 1: UCT ethical approval letter

Chitsanzo Mafuta  
C/o Zomba Mental Hospital  
P. O. Box 38  
Zomba

Email: [mftchi002@myuct.ac.za](mailto:mftchi002@myuct.ac.za)  
Cell: 00 265 888 343 953

5<sup>th</sup> May, 2013

FHS Human Research Ethics Admin Office  
C/o Mrs Lamees Emjedi  
Human Research Ethics Committee  
E 52, Room 24, Old Main Building, Groote Schuur Hospital, Observatory  
Telephone: 27 21 406 6338  
Fax: 27 21 406 6411

Dear Madam,

**PREVALENCE OF MODERATE AND HIGH RISK SUBSTANCE USE AND  
SERVICE NEEDS AMONG PSYCHIATRIC INPATIENTS AT ZOMBA MENTAL  
HOSPITAL IN MALAWI**

I write to submit the above captioned and attached study protocol for consideration by your committee.

I am a Master of Philosophy in Public Mental Health student, student number MFTCHI002 at University of Cape Town. My supervisor, Erica Breuer and Co-supervisor, Associate Professor Crick Lund have proofread the protocol and has authorized my protocol submission to your committee.

Attached is submission pack with completed protocol application form and all relevant documents.

I am looking forward to favourable response.

Yours faithfully,

Chitsanzo Mafuta  
Student number: MFTCHI002

Erica Breuer  
Research Supervisor

UNIVERSITY OF CAPE TOWN



Faculty of Health Sciences  
Human Research Ethics Committee  
Room E52-24 Grootes Schuur Hospital Old Main Building  
Observatory 7935  
Telephone (021) 406 6338 • Facsimile (021) 406 5411  
e-mail: [shuretta.thomas@uct.ac.za](mailto:shuretta.thomas@uct.ac.za)  
Website: [www.health.uct.ac.za/research/humanethics/forms](http://www.health.uct.ac.za/research/humanethics/forms)

15 July 2013

**HREC REF: 312/2013**

**Mr C Mafuta**  
c/o Ms E Breuer  
Psychiatry & Mental Health  
J-Block

Dear Mr Mafuta

**PROJECT TITLE: PREVALENCE OF MODERATE AND HIGH RISK SUBSTANCE USE AND SERVICE NEEDS AMONG PSYCHIATRIC INPATIENTS AT ZOMBA MENTAL HOSPITAL IN MALAWI**

Thank you for your response letter to the Faculty of Health Sciences Human Research Ethics Committee dated 11<sup>th</sup> July 2013.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

**Approval is granted for one year till the 30<sup>th</sup> July 2014**

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

(Forms can be found on our website: [www.health.uct.ac.za/research/humanethics/forms](http://www.health.uct.ac.za/research/humanethics/forms))

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

**Please quote the HREC REF in all your correspondence.**

Yours sincerely

**PROFESSOR M BLOCKMAN**  
**CHAIRPERSON, FHS HUMAN ETHICS**

Federal Wide Assurance Number: FWA00001637

Institutional Review Board (IRB) number: IRB00001938

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP) and Declaration of Helsinki guidelines.

08/07/13

## Appendix 2: COMREC Ethical Approval, University of Malawi

Chitsanzo Mafuta  
C/o Zomba Mental Hospital  
P. O. Box 38  
Zomba

Email: [mftchi002@myuct.ac.za](mailto:mftchi002@myuct.ac.za)  
[chitsanzomafuta@yahoo.co.uk](mailto:chitsanzomafuta@yahoo.co.uk)  
Cell: 00 265 888 343 953

5<sup>th</sup> May 2013

Lucinda Manda-Taylor PhD  
COMREC Administrator  
College of Medicine Research and Ethics Committee  
College of Medicine - University of Malawi  
P/Bag 360  
Chichiri  
Blantyre 3  
Malawi  
Email: [mandal@medcol.mw](mailto:mandal@medcol.mw) or [comrec@medcol.mw](mailto:comrec@medcol.mw)

Dear Sir/ Madam,

### **PREVALENCE OF MODERATE AND HIGH RISK SUBSTANCE USE AND SERVICE NEEDS AMONG PSYCHIATRIC INPATIENTS AT ZOMBA MENTAL HOSPITAL IN MALAWI**

I write to submit the above captioned and attached study protocol for consideration by your committee.

I am a Master of Philosophy in Public Mental Health student, student number MFTCHI002 at University of Cape Town. My supervisor, Erica Breuer and Co-supervisor, Associate Professor Crick Lund have proofread the protocol and has authorized my protocol submission to your committee.

Attached is submission pack with completed protocol application form and all relevant documents.

I am looking forward to favourable response.

Yours faithfully,

Chitsanzo Mafuta  
Student number: MFTCHI002

Erica Breuer  
Research Supervisor

**COMREC ethical approval certificate**



## Appendix 3: ZMH institutional approval letter

Chitsanzo Mafum  
C/o Zomba Mental Hospital  
P. O. Box 38  
Zomba



Email: [mufela0174@my.net.sc.mw](mailto:mufela0174@my.net.sc.mw)  
[chitsanzomafum@yahoo.co.uk](mailto:chitsanzomafum@yahoo.co.uk)  
Cell: 00 265 888 343 953

The Director of Mental Health Services  
Zomba Mental Hospital  
P. O. Box 38  
Zomba

Dear Sir/ Madam,

### **PERMISSION TO CONDUCT A STUDY PROJECT AT YOUR HOSPITAL**

I write to seek permission to conduct research study entitled: "*Prevalence of moderate and high risk substance use and service needs among psychiatric inpatients at Zomba Mental Hospital in Malawi*" at your hospital. We plan to start data collection in July 2013.

I and my research assistant will ensure that all ethical principles are adhered to during the data collection exercise. Further, the study proposal has already been reviewed by the College of Medicine Research and Ethics Committee.

The details of the study are as follows;

**Aim:** To determine the prevalence of moderate and high risk substance use and service needs among psychiatric patients admitted at Zomba Mental hospital (Malawi) for mental healthcare services by using Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) questionnaire and comparing it with routine mental health assessment by resident clinicians on admission.

**Procedure:** Once patients have agreed to take part in the study, they are expected to answer the questionnaire. The first questionnaire will be concerning patients' personal identification information and second questionnaire will be concerned with patients' substance use in their lifetime and past 3 months.

**Potential Participants:** This study will recruit all adults aged 18 years and above, who have been admitted to the hospital during the study period and are willing to take part in the study.

**Benefits of study:** The main benefit of this study is patients' increased knowledge and understanding of substance use and the effect of these substances on their lives. If they are

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identified to have substance related problems they will receive appropriate treatment or referred to appropriate services

**Risks of study:** The overall risk is low as no invasive procedures will be performed. However, patients might be tired after a series of interviews.

**Privacy and confidentiality:** All interviews will be conducted in designated room to ensure privacy. The information gathered about patients will be kept in secure place and access will be strictly granted to the researcher and all people involved in day to day activities of the study.

**Taking part in study:** Taking part in this study is voluntary. Patients can decide either to take part or not. If patients consider not taking part, their decision will not jeopardise the treatment they are expected to receive from this hospital.

I will be looking forward to your response soon.

Sincerely yours,

Signed by candidate

Chitsanzo Mafuta  
Student number: MFTCH1002

Erica Breuer  
Research Supervisor

## Appendix 4: Zomba District Health Office approval letter

Chitsanzo Mafuta  
C/o Zomba Mental Hospital  
P. O. Box 38  
**Zomba**

Email: [mfic002@myweb.zm.zm](mailto:mfic002@myweb.zm.zm)  
[chitsanzomafuta@yolinet.zm.zm](mailto:chitsanzomafuta@yolinet.zm.zm)  
Cell: 00 265 888 343 953

4<sup>th</sup> October 2013

The District Health Officer  
Zomba District Health Office  
Private Bag 18  
**Zomba**

Dear Sir/ Madam,

### **PERMISSION TO CONDUCT A STUDY PROJECT IN ZOMBA DISTRICT**

I write to seek permission to conduct research study entitled: "*Prevalence of moderate and high risk substance use and service needs among psychiatric inpatients at Zomba Mental Hospital in Malawi*" in Zomba district. We plan to start data collection in October 2013.

I and my research assistant will ensure that all ethical principles are adhered to during the data collection exercise. Further, the study proposal is being reviewed by the College of Medicine Research and Ethics Committee.

The details of the study are as follows:

**Aim:** To determine the prevalence of moderate and high risk substance use and service needs among psychiatric patients admitted at Zomba Mental hospital (Malawi) for mental healthcare services by using Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) questionnaire and comparing it with routine mental health assessment by resident clinicians on admission.

**Procedure:** Once patients have agreed to take part in the study, they are expected to answer to questionnaire. The first questionnaire will be concerning patients' personal identification information and second questionnaire will be concerned with patients' substance use in their lifetime and past 3 months.

**Potential Participants:** This study will recruit all adults aged 18 years and above, who have been admitted to the hospital during the study period and are willing to take part in the study.

**Benefits of study:** The main benefit of this study is patients' increased knowledge and understanding of substance use and the effect of these substances on their lives. If they are

identified to have substance related problems they will receive appropriate treatment or referred to appropriate services

**Risks of study:** The overall risk is low as no invasive procedures will be performed. However, patients might be tired after a series of interviews.

**Privacy and confidentiality:** All interviews will be conducted in designated room to ensure privacy. The information gathered about patients will be kept in secure place and access will be strictly granted to the researcher and all people involved in day to day activities of the study.

**Taking part in study:** Taking part in this study is voluntary. Patients can decide either to take part or not. If patients consider not taking part, their decision will not jeopardise the treatment they are expected to receive from this hospital.

I will be looking forward to your response soon.

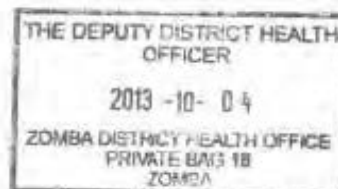
Sincerely yours,

Chitsanzo Matluta  
Student number: MFTCH1002

Erica Breuer  
Research Supervisor

Permission is granted to  
Mrs Matluta to conduct  
this study in Zomba District  
If anything contact the  
undersigned.

WGC MLOTHA (DDHO)



## **Appendix 5: Participant information sheet and Informed consent form**

### **Participant Information Leaflet (English Version)**

**Title of study: Prevalence of moderate and high risk substance use and service needs among psychiatric inpatients at Zomba Mental Hospital, Malawi**

**Principal Investigator: Chitsanzo Mafuta**

**Contact Address:**

**Zomba Mental Hospital**

**P. O. Box 38**

**Zomba**

**Malawi**

**Contact Number: 00 265 888 343 953**

Thank you for considering taking part in this research study. Please take your time to read through this participant information sheet concerning the research. Feel free to ask any questions or concerns about this study before consenting taking part. It is very important that you are satisfied with the procedures of this research and what is expected of you as participant. You must know that taking part in this research is voluntary and you have the right to refuse to take part. Your refusal will not jeopardise the kind of care you were supposed to receive at this hospital.

This research has been approved by Human Ethics Committee at the Faculty of Health Sciences, University of Cape Town in Republic of South Africa and College of Medicine Research Committee at University of Malawi in Republic of Malawi. Further permission to conduct the research has been sought from the Director of Mental Health Services through the hospital-based Research and Ethics Committee at Zomba Mental Hospital. The research will adhere to all necessary guidelines and protocols of conducting human research by international community and countries of Malawi and South Africa.

### **Information about the research**

**Study setting:** The research will take place at Zomba Mental Hospital

**Aim:** To determine the prevalence of moderate and high risk substance use and service needs among psychiatric patients admitted at Zomba Mental hospital (Malawi) for mental healthcare services by using Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) questionnaire and comparing it with routine mental health assessment by resident clinicians on admission.

**Procedure:** Once you have agreed to take part in the study, you are expected to answer two questionnaires. The first questionnaire will be concerning your personal identification information and second questionnaire will be concerned with your substance use in your lifetime and past 3 months.

**Potential Participants:** This study will recruit all adults aged 18 years and above, who have been admitted to the hospital during the study period and are willing to take part in the study.

**Benefits of study:** The main benefit of this study is your increased knowledge and understanding of substance use and the effect of these substances on one's life. If you are identified to have substance related problems you will receive appropriate treatment or referred to appropriate services

**Risks of study:** The overall risk is low as no invasive procedures will be performed. However, you may be tired after completing the interviews.

**Privacy and confidentiality:** All interviews will be conducted in designated room to ensure privacy.

The information gathered about you will be kept in secure place and access will be strictly granted to the researcher and all people involved in day to day activities of the study. However, parts of the questionnaire may be shared with ZMH ward staff who may be assisting you in your inpatient management.

**Taking part in study:** Taking part in this study is voluntary. You can decide either to take part or not. If you consider not take part, your decision will not jeopardise the treatment you were expected to receive from this hospital.

**Note:**

1. If you have any questions about this study, please call the principal investigator Chitsanzo Mafuta on this number **00 265 888 343 953**
2. If you have questions or complaints about this study, please call or write to:

Faculty of Health Sciences, Human Research Ethics Committee  
**C/o Mrs Lamees Emjedi**  
University of Cape Town  
E 52, Room 24, Old Main Building,  
Groote Schuur Hospital, Observatory  
South Africa  
Telephone: **00 27 21 406 6338**  
Fax: **00 27 21 406 6411**

Or\_

Lucinda Manda -Taylor Ph.D  
COMREC Administrator  
College of Medicine Research and Ethics Committee  
College of Medicine - University of Malawi  
P/Bag 360  
Chichiri  
Blantyre 3  
Malawi  
Email: [mandal@medcol.mw](mailto:mandal@medcol.mw) or [comrec@medcol.mw](mailto:comrec@medcol.mw)  
Telephone: **00 265 1 877 245**

3. You will receive this leaflet to indicate that you have taken part in this study.

## **Participant Information Leaflet (Chichewa Version)**

**Mutu wakafukufuku: Chiwerengero cha wodwala amene agonekedwa pachipatala cha Zomba Mental Hospital ku Malawi chifukwa chogwiritsa ntchito mankhwala ozunguza bongo mopitiliza muyezo (Prevalence of moderate and high risk substance use and service needs among psychiatric inpatients at Zomba Mental Hospital, Malawi)**

**Wamkulu woyang'anira kafukufuku: Chitsanzo Mafuta**

### **Keyala:**

**Zomba Mental Hospital**

**P. O. Box 38**

**Zomba**

**Malawi**

**Nambala ya foni: 00 265 888 343 953**

Muli wolandilidwa kutenga nawo mbali mukafukufuku uyu. Chonde tenganoi nthawi kuti muwerenge uthenga womwe walembedwa pachikalatachi umene ukufotokoza za kafukufukuyu. Muli omasuka kufunsa amene akuyendetsa kafukufukuyu ngati simunamvetse bwino lomwe kuti akulongoselerani mwatsaanetsatane zakafukufuku ameneyu musanavomereze kutenga nawo mbali. Ndichofunika kwambiri kuti mukhale okhutitsidwa ndi m'mene kafukufukuyu ayendere komanso m'mene inu mungatengere nawo mbali. Dziwani kuti kutenga nawo mbali ndikosakakamiza ndipo muli ndi ufulu wokana kutenga nawo mbali. Kukana kwanu sikudzabweretsa vuto linalililonse pachithandizo chimene munayenera kupatsidwa pachipatala chachikulu cha matenda amisala cha Zomba Mental Hospital.

Kafukufukuyu wavomerezedwa ndi Human Ethics Committee yaku University of Cape Town ku South Africa komanso ku College of Medicine Research & Ethics Committee yaku Malawi. Kafukufukuyu azatsatira ndondomeko zones zoyenera komanso zololezedwa zoyendetsera kafukufuku padziko lonse lapansi komanso m'mayiko a Malawi ndi South Africa

### **Dziwani za kafukufukuyu**

**Malo:** Kafukufukufuyu achitikira kuchipatala chachikulu chathandiza matenda amisala cha Zomba Mental Hospital ku Zomba

**Cholinga:** kufufuza uku ndi kwa matenda amene amdza chifukwa chakugwiritsa ntchito mankhwala ozunguza bongo komanso kuti chithandizo cha matenda awa chimapezeka motani muzipatala m'dziko muno.

**Ndondomeko yake:** pamene mwavomera kutenga nawo gawo mukafukufukuyu mufunsiidwa mafunso mizgawo ziwiri. Mafunso ena akhala okhudzana ndi m'mene mumagwiritsira ntchito mankhwala ozunguza bongo kuyambira pamene munabadwa komanso pamiyezi itatu yapitayi.

**Kutenga nawo mbali:** aliyense wodwala amene ali ndi zaka 18 zakubadwa ndikupitilira apo, komanso wagonekedwa kuti alandile chithandizo m'chipatala ndiponso ali omasuka kutenganowo gawo mosakakamizidwa. Anthu ofunika ndi 323

**Ubwino wa kafukufukuyu:** ubwino waukulu woonekeratu ndi wakuti anthu amene adzatenge nawo mbali adadziwa bwino lomwe za mankhwala ozunguza bongo m'mene angaononge moyo wa munthu. Kwa amene adzapezeke ndi vuto ndi mankhwalawa adzapatsidwa chithandizo choyenera pa nthawiyo

**Vuto la kafukufukuyu:** Palibe vuto kwenikweni koma kuti nthawi imene mumaonedwa mukabwera kuchipatala izakhala yochulukirapo pang'ono mwina ndikudzakhala wotopa chifukwa chofunsiwa mafunso katatu musanagonekedwe.

**Chinsinsi:** Zonse zimene mungatiuze zizasungidwa mwachninsi, ndipo zizagwiritsidwa mukafukufuku yekhayu. Dzina lanu silidzalembedwa mulipoti lakafukufukuyu. Omwe akupangitsa kafukufukuyu ndi okha ovomerezeka kugwiritsa ntchito zones zomwe mungatiuze komanso omwe apereka chilolezo chakafukufukuyu atha kuona ngati njira imodzi yowunikira ngati kafukufukuyu akutsatira ndondomeko. Angakhale chinsinsi chidzasungidwa chomwechi, zinthu zina zokhudza mndanda wa mafunso zizaziwitsidwa kwa anthu wothandiza wodwala akagonekedwa ku chipatala cha Zomba Mental Hospital.

Choti mudziwe

1. Ngati muli ndi mafunso ena aliwonse muli omasuka kufunsa mkulu wa kafukufukuyu Chitsanzo Mafuta, pa nambala iyi **00 265 888 343 953**
2. Ngati muli ndi mafunso ena aliwonse kapena chidandaulo chokhudza kafukufukuyu muli omasuka kuyimbira foni kapena kulemba kalata kwa:

Faculty of Health Sciences, Human Research Ethics Committee

**C/o Mrs Lamees Emjedi**

University of Cape Town

E 52, Room 24, Old Main Building,

Groote Schuur Hospital, Observatory

South Africa

Telephone: **00 27 21 406 6338**

Fax: **00 27 21 406 6411**

Or

Lucinda Manda -Taylor PhD

COMREC Administrator

College of Medicine Research and Ethics Committee

College of Medicine - University of Malawi

P/Bag 360

Chichiri

Blantyre 3

Malawi

Email: [mandal@medcol.mw](mailto:mandal@medcol.mw) or [comrec@medcol.mw](mailto:comrec@medcol.mw)

Telephone: **00 265 1 877 245**

3. Muzalandira chikalatachi kuti musunge nokha kuti munalowa mukafukufukuyu.

**Appendix 6: Consent form (English Version)**

**Statement by the participant:**

I.....

I am consenting to take part in this study after receiving all necessary information about this study. I have understood very well what this research study is all about.

- I know that I have the right to withdrawal from the study any time even without giving any proper reason
- I am freely consenting to take part in this study and I know that all my personal information will be kept confidential during and after the study.
- I know that I am expected to spend at least 20 minutes in total with the research assistants and/ researcher
- I know that I will not be compensated in any form or paid any money for participating in this study

Participant's signature: ..... Date: .....

If not able to write, use the right thumb fingerprint.

**Statement by the interviewer:**

I.....

Strongly agree that I have explained all the details of the research, aims, benefits and risks of this study to the participant.

Interviewer's signature: ..... Date: .....

## Consent form (Chichewa Version)

### Mau ovomereza kulowa mukafukufuku:

Ine .....  
Ndikuvomereza kuti ndafotokozeredwa momveka bwino ndi kukhutira ndi kafukufukuyu ndipo ndikuvomera kutenga nawo mbali mukafukufukuyu. Ndikumvetsa bwino lomwe zomwe kafukufukuyu akukhuza.

- Ndikudziwa kuti ngati ndili ndi maganizo ofuna kusapitiliza kutenga nawo mbali mukafukufukuyu, ndingathe kudziwitsa owona zakafukufukuyu ndikundichotsa nthawi yomweyo angakhale osawauza chifukwa chenicheni.
- Ndikuvomereza kutenga nawo mbali makafukufukuyu ndikumvetsetsa kuti nkhani zokhudza ine zikasungidwa mwachinsinsi
- Ndikudziwa kuti ndiyenera kucheza ndi mwini wake kafukufukuyu kapena wothandizira kafukufukuyu kwa nthawi yosachepera mphindi makumi awiri
- Ndikudziwa kuti palibe chipukuta misonzi chinachilichonse kapena malipilo ena aliwonse pakutenganowo mbali m'kafukufukuyu

Woyankha mafunso atikitile: ..... Tsiku: .....  
Chidindo cha chala chackulu chakumanja (ngati samatha kulemba)

Kuvomereza kwa wofunsa mafunso:

Ine .....  
Ndikutsimikiza kuti ndafotokoza mwatsatanetsatane m'mene kafukufukuyu alili, zofuna zake ndi zovuta zina ndi zina kwa olowa mkafukufukuyu.

Wofunsa atikitile: ..... Tsiku: .....

## Appendix 7: Sociodemographic Questionnaire (English Version)

### Section A: Research Questions on Sociodemographic data

Patient ID: ..... Date of Interview: ..... Time: .....

*Note: When answering the some questions please circle what is applicable to the patient.*

- a) Gender: M/ F (circle what is applicable)
- b) Age: .....
- c) Tribe: .....
- d) Where do you stay?
  1. Rural
  2. Urban
- e) Marital Status
  1. Single
  2. Married
  3. Widow/ Widower
  4. Divorced
- f) Years of completed education
  1. 0 (no formal education)
  2. 1 – 8 (primary education)
  3. 9 – 12 (secondary education)
  4. 13 and above (tertiary education)
- g) Employment Status
  1. Unemployed and looking for work
  2. Unemployed and not looking for work
  3. Schooling
  4. Self-employed
  5. Employed somewhere
  6. Retired
- h) Religious affiliation
  1. Muslim
  2. Christian
  3. Pagan
  4. Other
- i) Do you own a house and what type is it?
  1. No, stay in rented house with grass thatched roof and mud floor
  2. No, stay in rented house with iron sheet roof and cement floor
  3. No, stay with relative in house with grass thatched roof and mud floor
  4. No, stay with relative in house with iron sheet roof and cement floor
  5. Yes, with grass thatched roof and mud floor
  6. Yes, with iron sheet roof and cement floor
- j) What kind of valuable household appliances do you have?
  1. Radio
  2. Television set
  3. Mobile phone
  4. Landline phone
  5. Refrigerator
- k) What is your usual means of transport?
  1. On foot
  2. Bicycle
  3. Animal driven cart
  4. Motorcycle/scooter
  5. Car
- l) What is your usual source of drinking water??
  1. Protected source e.g. tap, protected dug well etc.
  2. Unprotected source e.g. river, lake, unprotected dug well,

- m) Does your house in which you stay in have electricity?
  - 1. No
  - 2. Yes
- n) Do you own an agricultural land for cultivation?
  - 1. No
  - 2. Yes
- o) Do you own any farm animals for family consumption or sale?
  - 1. No
  - 2. Yes
- p) Do you normally have enough food in your house for everyone?
  - 1. No
  - 2. Yes

**Section B: Assessment of factors related to diagnoses of Substance Use Disorders or risky substance use as recorded in participant’s hospital file (circle what is applicable)**

- a) Has the patient ever been admitted in any hospital for mental health problem before?
  - 1. No
  - 2. Yes
 If yes, how many times and where was she or he admitted?  
 .....  
 .....
- b) Did the patient come with appropriate referral letter?
  - 1. No
  - 2. Yes
- c) Is Substance use disorder diagnosis or risky substance use written on referral letter?
  - 1. No
  - 2. Yes
 If yes write down exactly what is recorded  
 .....  
 .....
- d) What diagnosis has been made by the clinician?(write down exactly what is recorded)  
 .....
- e) Is substance use disorder diagnosis or risky substance use made by clinician on admission at Zomba Mental Hospital?
  - 1. No
  - 2. Yes
 If yes write down exactly what is recorded  
 .....

## Sociodemographic Questionnaire (Chichewa Version)

### Gawo A: Research Questions on Sociodemographic data

Patient ID: ..... Tsiku: ..... Nthawi: .....

(poyankha mafunso otsatirawa, zungulitsani ndi cholemba yankho lomwe likugwirizana ndi zimene wodwala wanena)

- a) Ndinu: Mamuna / Mkazi (zungulitsani ndi cholemba yankho lomwe likugwirizana ndi zimene wodwala wanena)
- b) Zaka akubadwa: .....
- c) Mtundu wanu: .....
- d) Kodi mumakhala kuti?
  1. kumudzi
  2. kutauni
- e) Ndondomeko yabanja lanu lili bwanji?
  1. Wosakwatiwa/ wosakwatiwa
  2. Ndili pabanja
  3. Nafedwa
  4. Ukwati unatha/ kulekana
- f) Kodi mwakhala pa sukulu kwa zaka zingati?
  1. 0 (sindinapiteko kusukulu)
  2. 1 mpaka 8 (pilaimale)
  3. 9 mpaka 12 (sekondale)
  4. 13 ndikupyolera apo (sukulu yaukachenjede)
- g) Kodi mumapanga chiyani chokhudzana ndi ntchito pamoyo wanu?
  1. Sindili pantchito
  2. Ndili pasukulu
  3. Self-employed
  4. Employed somewhere
  5. Retired
- h) Chipembedzo chanu
  1. Muslim
  2. Christian
  3. Pagan
  4. Others

- i) Kodi mulindi nyumba yanuyanu? Nanga nyumbayo ndiyomangidwa bwanji?
1. Ayi, ndimakhala ya renti, yofolera ndi udzu, yozila
  2. Ayi, ndimakhala ya renti, yofolera ndi malata, ya simenti pansi
  3. Ayi, ndimakhala ndi achibale, yofolera ndi udzu, yozila
  4. Ayi, ndimakhala ndi achibale, yofolera ndi malata, ya simenti pansi
  5. Eya, yofolera ndi udzu, yozila
  6. Eya, yofolera ndi malata, ya simenti pansi
- j) Kodi mulindi katundu wamtengo wapatali wotani m'nyumba mwanu?
1. Wailesi
  2. Wailesi yakanema
  3. Foni ya m'manja
  4. Foni ya m'nyumba
  5. Filiji
- k) Kodi mukafuna kuyenda nthawi zambiri mumayenda bwanji?
1. Wapansi
  2. Panjinga yakapalasa
  3. Pangolo ya abulu kapena ng'ombe
  4. Panjinga yamoto
  5. Pagalimoto
- l) Kodi madzi akumwa mumakatunga kuti?
1. Pamalo otetezedwa
  2. Pamalo osatetezedwa
- m) Kodi m'nyumba imene mumakhala ili ndi magetsi?
1. Ayi
  2. Eya
- n) Kodi mulindi malo anu olimapo?
1. Ayi
  2. Eya
- o) Kodi mulindi ziweto zomwe mungagwiritse ntchito kudya pakhomo panu kapena kugulitsa?
1. Ayi
  2. Eya

**Section B: Assessment of factors related to diagnoses of Substance Use Disorders or risky substance use as recorded in participant's hospital file (circle what is applicable)**

- a) Has the patient ever been admitted in any hospital for mental health problem before?
3. No
  4. Yes
- If yes, how many times and where was she or he admitted?
- .....
- b) Did the patient come with appropriate referral letter?
3. No
  4. Yes

c) Is Substance use disorder diagnosis or risky substance use written on referral letter?

3. No

4. Yes

If yes write down exactly what is recorded

.....  
.....

d) What diagnosis has been made by the clinician? (write down exactly what is recorded)

.....

e) Is substance use disorder diagnosis or risky substance use made by clinician on admission at Zomba Mental Hospital?

3. No

4. Yes

If yes write down exactly what is recorded

.....  
.....

**Appendix 8: WHO – Alcohol, Smoking and Substance Involvement Screening Test (ASSIST v3.1) (English Version)**

**Patient ID:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Introduction (please read to client or adapt for local circumstances)\***

*The following questions ask about your experience of using alcohol, tobacco products and other drugs across your lifetime and in the past three months. These substances can be smoked, swallowed, snorted, inhaled or injected (show response card).*

*Some of the substances listed may be prescribed by a doctor (like amphetamines, sedatives, pain medications). For this interview, we will **not** record medications that are used **as prescribed** by your doctor. However, if you have taken such medications for reasons **other** than prescription, or taken them more frequently or at higher doses than prescribed, please let me know. While we are also interested in knowing about your use of various illicit drugs, please be assured that information on such use will be treated as strictly confidential.*

Before asking questions, give ASSIST response card to client

<b>QUESTION 1   In your life, which of the following substances have you ever used (non-medical use only)?</b>		
<b>a.</b> Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	<b>No</b>	<b>Yes</b>
<b>b.</b> Alcoholic beverages (beer, wine, spirits, etc.)	<b>0</b>	<b>3</b>
<b>c.</b> Cannabis (marijuana, pot, grass, hash, etc.)	<b>0</b>	<b>3</b>
<b>d.</b> Cocaine (coke, crack, etc.)	<b>0</b>	<b>3</b>
<b>e.</b> Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	<b>0</b>	<b>3</b>
<b>f.</b> Inhalants (nitrous, glue, petrol, paint thinner, etc.)	<b>0</b>	<b>3</b>
<b>g.</b> Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	<b>0</b>	<b>3</b>
<b>h.</b> Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	<b>0</b>	<b>3</b>
<b>i.</b> Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	<b>0</b>	<b>3</b>
<b>j.</b> j Other – specify:	<b>0</b>	<b>3</b>
Probe if all answers are negative: “Not even when you were in school?”	If “No” to all items, stop interview. If “Yes” to any of these items, ask Q2 for each substance ever used	

<b>QUESTION 2   In the past three months, how often have you used the substances you mentioned (first drug, second drug, etc.)?</b>	<b>Never</b>	<b>Once or twice</b>	<b>Monthly</b>	<b>Weekly</b>	<b>Daily or almost daily</b>
<b>a.</b> Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
<b>b.</b> Alcoholic beverages (beer, wine, spirits, etc.)	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
<b>c.</b> Cannabis (marijuana, pot, grass, hash, etc.)	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
<b>d.</b> Cocaine (coke, crack, etc.)	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
<b>e.</b> Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
<b>f.</b> Inhalants (nitrous, glue, petrol, paint thinner, etc.)	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
<b>g.</b> Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
<b>h.</b> Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
<b>i.</b> Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
<b>j.</b> Other – specify:	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>6</b>
If “Never” to all items in Q2, skip to Q6.					

If any substances in Q2 were used in the previous three months, continue with Questions 3, 4 & 5 for each substance used.

<b>QUESTION 3   During the past three months, how often have you had a strong desire or urge to use (FIRST DRUG, SECOND DRUG, ETC)?</b>	<b>Never</b>	<b>Once or twice</b>	<b>Monthly</b>	<b>Weekly</b>	<b>Daily or almost daily</b>
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	3	4	5	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	3	4	5	6
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	3	4	5	6
d. Cocaine (coke, crack, etc.)	0	3	4	5	6
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	0	3	4	5	6
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	3	4	5	6
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	0	3	4	5	6
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	0	3	4	5	6
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	0	3	4	5	6
j. Other – specify:	0	3	4	5	6

<b>QUESTION 4   During the past three months, how often has your use of (FIRST DRUG, SECOND DRUG, ETC) led to health, social, legal or financial problems?</b>	<b>Never</b>	<b>Once or twice</b>	<b>Monthly</b>	<b>Weekly</b>	<b>Daily or almost daily</b>
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	4	5	6	7
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	4	5	6	7
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	4	5	6	7
d. Cocaine (coke, crack, etc.)	0	4	5	6	7
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	0	4	5	6	7
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	4	5	6	7
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	0	4	5	6	7
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	0	4	5	6	7
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	0	4	5	6	7
j. Other – specify:	0	4	5	6	7

<b>QUESTION 5   During the past three months, how often have you failed to do what was normally expected of you because of your use of (FIRST DRUG, SECOND DRUG, ETC)?</b>	<b>Never</b>	<b>Once or twice</b>	<b>Monthly</b>	<b>Weekly</b>	<b>Daily or almost daily</b>
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	5	6	7	8
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	5	6	7	8
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	5	6	7	8
d. Cocaine (coke, crack, etc.)	0	5	6	7	8
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	0	5	6	7	8
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	5	6	7	8
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	0	5	6	7	8
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	0	5	6	7	8
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	0	5	6	7	8
j. Other – specify:	0	5	6	7	8

Ask Questions 6 & 7 for all substances ever used (i.e. those endorsed in Question 1)

<b>QUESTION 6   Has a friend or relative or anyone else ever expressed concern about your use of (FIRST DRUG, SECOND DRUG, ETC.)?</b>	<b>No, Never</b>	<b>Yes, in the past 3 months</b>	<b>No, in the past 3 months</b>
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	6	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	6	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	6	3
d. Cocaine (coke, crack, etc.)	0	6	3
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	0	6	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	6	3
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	0	6	3
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	0	6	3
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	0	6	3
j. Other – specify:	0	6	3

<b>QUESTION 7   Have you ever tried and failed to control, cut down or stop using (FIRST DRUG, SECOND DRUG, ETC.)?</b>	<b>No, Never</b>	<b>Yes, in the past 3 months</b>	<b>No, in the past 3 months</b>
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	6	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	6	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	6	3
d. Cocaine (coke, crack, etc.)	0	6	3
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)	0	6	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	6	3
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)	0	6	3
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)	0	6	3
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)	0	6	3
j. Other – specify:	0	6	3

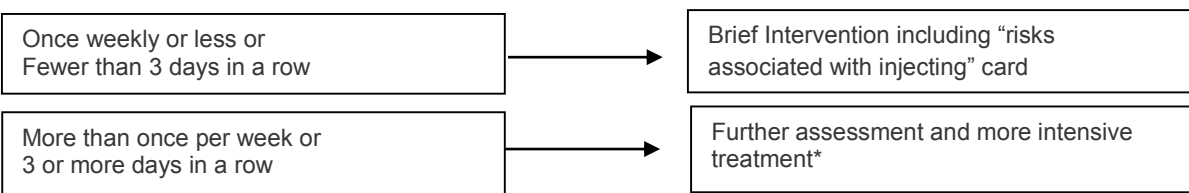
<b>QUESTION 8  </b>	<b>No, Never</b>	<b>Yes, in the past 3 months</b>	<b>No, in the past 3 months</b>
<b>Have you ever used any drug by injection? (NON-MEDICAL USE ONLY)</b>	0	2	1

**IMPORTANT NOTE:**

Patients who have injected drugs in the last 3 months should be asked about their pattern of injecting during this period, to determine their risk levels and the best course of intervention.

**PATTERN OF INJECTING**

**INTERVENTION GUIDELINES**



**HOW TO CALCULATE A SPECIFIC SUBSTANCE INVOLVEMENT SCORE**

For each substance (labelled a. to j.) add up the scores received for questions 2 through 7 inclusive. Do not include the results from either Q1 or Q8 in this score. For example, a score for cannabis would be calculated as: Q2c + Q3c + Q4c + Q5c + Q6c + Q7c

Note that Q5 for tobacco is not coded, and is calculated as: Q2a + Q3a + Q4a + Q6a + Q7a

**THE TYPE OF INTERVENTION IS DETERMINED BY THE PATIENT’S SPECIFIC SUBSTANCE INVOLVEMENT SCORE**

	<b>Record specific substance score</b>	<b>No intervention</b>	<b>Receive brief intervention</b>	<b>More intensive treatment*</b>
<b>a. Tobacco</b>		<b>0 – 3</b>	<b>4 - 26</b>	<b>27 +</b>
<b>b. Alcohol</b>		<b>0 – 10</b>	<b>11 - 26</b>	<b>27 +</b>
<b>c. Cannabis</b>		<b>0 – 3</b>	<b>4 - 26</b>	<b>27 +</b>
<b>d. Cocaine</b>		<b>0 – 3</b>	<b>4 – 26</b>	<b>27 +</b>
<b>e. Amphetamine</b>		<b>0 – 3</b>	<b>4 – 26</b>	<b>27 +</b>
<b>f. Inhalants</b>		<b>0 – 3</b>	<b>4 – 26</b>	<b>27 +</b>
<b>g. Sedatives</b>		<b>0 – 3</b>	<b>4 – 26</b>	<b>27 +</b>
<b>h. Hallucinogens</b>		<b>0 – 3</b>	<b>4 – 26</b>	<b>27 +</b>
<b>i. Opioids</b>		<b>0 – 3</b>	<b>4 – 26</b>	<b>27 +</b>
<b>j. Other drugs</b>		<b>0 – 3</b>	<b>4 - 26</b>	<b>27 +</b>

## WHO ASSIST V3.0 RESPONSE CARD FOR PATIENTS

### Response Card – Substances

a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)
b. Alcoholic beverages (beer, wine, spirits, etc.)
c. Cannabis (marijuana, pot, grass, hash, etc.)
d. Cocaine (coke, crack, etc.)
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)
j. Other – specify:

### Response Card (ASSIST Questions 2 – 5)

**Never:** not used in the last 3 months

**Once or twice:** 1 to 2 times in the last 3 months.

**Monthly:** 1 to 3 times in one month.

**Weekly:** 1 to 4 times per week.

**Daily or almost daily:** 5 to 7 days per week.

### Response Card (ASSIST Questions 6 to 8)

**No,** Never

**Yes,** but not in the past 3 months

**Yes,** in the past 3 months

**ALCOHOL, SMOKING AND SUBSTANCE INVOLVEMENT SCREENING TEST (WHO ASSIST V3.1) FEEDBACK REPORT CARD FOR PATIENTS**

Name \_\_\_\_\_ Test Date \_\_\_\_\_

**Specific Substance Involvement Score**

Substance	Score	Risk level
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)		0-3 Low 4-26 Moderate 27+ High
b. Alcoholic beverages (beer, wine, spirits, etc.)		0-10 Low 11-26 Moderate 27+ High
c. Cannabis (marijuana, pot, grass, hash, etc.)		0-3 Low 4-26 Moderate 27+ High
d. Cocaine (coke, crack, etc.)		0-3 Low 4-26 Moderate 27+ High
e. Amphetamine-type stimulants (speed, meth, ecstasy, etc.)		0-3 Low 4-26 Moderate 27+ High
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)		0-3 Low 4-26 Moderate 27+ High
g. Sedatives or sleeping pills (diazepam, alprazolam, flunitrazepam, midazolam, etc.)		0-3 Low 4-26 Moderate 27+ High
h. Hallucinogens (LSD, acid, mushrooms, trips, ketamine, etc.)		0-3 Low 4-26 Moderate 27+ High
i. Opioids (heroin, morphine, methadone, buprenorphine, codeine, etc.)		0-3 Low 4-26 Moderate 27+ High
j. Other – specify:		0-3 Low 4-26 Moderate 27+ High

**What do your scores mean?**

**Low:** You are at low risk of health and other problems from your current pattern of use.

**Moderate:** You are at risk of health and other problems from your current pattern of substance use.

**High:** You are at high risk of experiencing severe problems (health, social, financial, legal, relationship) as a result of your current pattern of use and are likely to be dependent

## WHO – ASSIST V3.1 Chichewa Version

Nambala ya wodwala: \_\_\_\_\_ Tsiku: \_\_\_\_\_

### Mau oyamba (chonde m’muwerengere wodwala izi)

Zikomo posankha kutenga nawo mbali kuti mufunsidwe mafunso wokhuzana ndi nkhani za mowa, fodya ndi mankhwala osiyanasiyana ozunguza bongo. Ndikufunsani mafunso ammene mwakhala mukugwiritsira ntchito mankhwala ozunguza bongo amenewa m’ moyo wanu wonse komanso pamiyezi itatu yapitayi. Mankhwala ozunguza bongowa anga gwiritsidwe ntchito posuta, pakuwameza, kufwekheza, kupumidwa mufweya, kuchita kuperekedwa munjira ya kubayidwa jakisoni, kapena ngati mapilitsi.

Ena mwamankhwalawa angathe kukhale mankhwala woti adokotala akupatsani kuchipatala monga mankhwala wochepetsa ululu, wothandiza kuti munthu agone). Mafunso amene ndikufunsiwa sakhudzana ndi mankhwala amene mwachita kulemberedwe ndi adokotala anu. Koma ngati mankhwalawo mukugwiritsa ntchito osati chifukwa choti adokotala akuuza kutero kapena mulingo wake ndiwochulukirapo kuposa mmene amayenera kugwiritsidwira ntchito mukuyenera kundiuza. Chinthu choti mundziwa ndichakuti angakhale m’kafukufukuyu akufunitsitsa kudziwa zam’mene mukugwiritsira ntchito mankhwala ozunguza bongo, khalani okhulupirira kuti chinsinsi chanu chisungidwa bwino lomwe.

Choyenera kukumbukira musanayambe kufunsa mafunso: Perekani kadi yowenetsa ndondomeko yam’mene wodwala akuyenera kuyankhira mafunso kwa wodwala

### Funso loyamba (1)

Kodi, m’ moyo wanu mwagwiritsako ntchito mankhwala ozunguza bongo awa (pantchito zosakhudzana ndikudwala)	Ayi	Eya
a. Fodya wosiyanasiyana		
b. Mowa wosiyanasiyana		
c. Chamba		
d. Kokeni		
e. Mankhwala ozunguza bongo wopumidwa monga guluwu, petulo		
f. Mankhwala ozunguza bongo wopatsa mphamvu monga ekistase ndi ena		
g. Mankhwala ogonetsa monga valiyamu		
h. Mankhwala ozunguza bongo wobwebwetetsa monga ketamini		
i. Mankhwala othetsa ululu ndinso ogonetsa monga herowini, mofini, codini		
j. Ena – tchulani dzina lake:		

Fufuzani bwino lomwe ngati wodwala wakanitsitsa kuti sanagwiritseko ntchito mankhwala ozunguza bongo: “angakhale nthawi imene munali pasukulu?”

Ngati wodwala wayankha ayi kumankhwala onse, siyilani pomwe kumufunsa.

Ngati wodwala wayankha eya kumankhwala ena aliwonse, funsani funso lachiwiri pamankhwala aliwonse amene anagwiritsidwapo ntchito

**Funso lachiwiri (2)**

Kodi pamiyezi itatu yapitayi, mwagwiritsa ntchito motani mankhwala ozunguza bongo munatchula aja?	Ayi konse	Kamodzi kapena kawiri	Pamwezi kamodzi	Pasabata kamodzi	tsiku lililonse kapena pafupifupi tsiku lililonse
a. Fodya wosiyanasiyana	0	2	3	4	6
b. Mowa wosiyanasiyana	0	2	3	4	6
c. Chamba	0	2	3	4	6
d. Kokeni	0	2	3	4	6
e. Mankhwala ozunguza bongo wopumidwa monga guluwu, petulo	0	2	3	4	6
f. Mankhwala ozunguza bongo wopatsa mphamvu monga ekistase ndi ena	0	2	3	4	6
g. Mankhwala ogonetsa monga valiyamu	0	2	3	4	6
h. Mankhwala ozunguza bongo wobwebwetetsa monga ketamini	0	2	3	4	6
i. Mankhwala othetsa ululu ndinso ogonetsa monga herowini, mofini, codini	0	2	3	4	6
j. Ena – tchulani dzina lake:	0	2	3	4	6

Ngati sigwiritsa ntchito konse panopa mukafunsa funso lachiwiri, pitani kufunso lachisanu ndi chimodzi (6) Ngati alipo mankhwala amene anagwiritsidwa ntchito miyezi itatu yapitayi, pitilizani kufunsa funso lachitatu, lachinayi ndi lachisanu kwa mankhwala onse anagwiritsidwa ntchito.

**Funso lachitatu (3)**

Kodi pamiyezi itatu yapitayi, mwakhala ndi chibaba chachikulu chofuna kugwiritsa ntchito mankhwala ozunguza bongo munatchula aja?	Ayi konse	Kamodzi kapena kawiri	Pamwezi kamodzi	Pasabata kamodzi	tsiku lililonse kapena pafupifupi tsiku lililonse
a. Fodya wosiyanasiyana	0	3	4	5	6
b. Mowa wosiyanasiyana	0	3	4	5	6
c. Chamba	0	3	4	5	6
d. Kokeni	0	3	4	5	6
e. Mankhwala ozunguza bongo wopumidwa monga guluwu, petulo	0	3	4	5	6
f. Mankhwala ozunguza bongo wopatsa mphamvu monga ekistase ndi ena	0	3	4	5	6
g. Mankhwala ogonetsa monga valiyamu	0	3	4	5	6
h. Mankhwala ozunguza bongo wobwebwetetsa monga ketamini	0	3	4	5	6
i. Mankhwala othetsa ululu ndinso ogonetsa monga herowini, mofini, codini	0	3	4	5	6
j. Ena – tchulani dzina lake:	0	3	4	5	6

**Funso lachinayi (4)**

Kodi pamiyezi itatu yapitayi, ndikangati magwiritsadwe ntchito amankhwala ozunguza bongo munatchula aja akhala akukupezetsani mavuto aumoyo wathupi, moyo wakhala pagulu ndi anthu ena, kuphwanya malamulo kapena mavuto achuma?	Ayi konse	Kamodzi kapena kawiri	Pamwezi kamodzi	Pasabata kamodzi	tsiku lililonse kapena pafupifupi tsiku lililonse
a. Fodya wosiyanasiyana	0	4	5	6	7
b. Mowa wosiyanasiyana	0	4	5	6	7
c. Chamba	0	4	5	6	7
d. Kokeni	0	4	5	6	7
e. Mankhwala ozunguza bongo wopumidwa monga guluwu, petulo	0	4	5	6	7
f. Mankhwala ozunguza bongo wopatsa mphamvu monga ekistase ndi ena	0	4	5	6	7
g. Mankhwala ogonetsa monga valiyamu	0	4	5	6	7
h. Mankhwala ozunguza bongo wobwebwetetsa monga ketamini	0	4	5	6	7
i. Mankhwala othetsa ululu ndinso ogonetsa monga herowini, mofini, codini	0	4	5	6	7
j. Ena – tchulani dzina lake:	0	4	5	6	7

**Funso lachisanu (5)**

Kodi pamiyezi itatu yapitayi, ndikangati mwakhala mukukanika kupanga zinthu zimene mumayenera kuchita chifukwa chakugwiritsa ntchito mankhwala ozunguza bongo munatchula aja?	Ayi konse	Kamodzi kapena kawiri	Pamwezi kamodzi	Pasabata kamodzi	tsiku lililonse kapena pafupifupi tsiku lililonse
a. Fodya wosiyanasiyana	0	5	6	7	8
b. Mowa wosiyanasiyana	0	5	6	7	8
c. Chamba	0	5	6	7	8
d. Kokeni	0	5	6	7	8
e. Mankhwala ozunguza bongo wopumidwa monga guluwu, petulo	0	5	6	7	8
f. Mankhwala ozunguza bongo wopatsa mphamvu monga ekistase ndi ena	0	5	6	7	8
g. Mankhwala ogonetsa monga valiyamu	0	5	6	7	8
h. Mankhwala ozunguza bongo wobwebwetetsa monga ketamini	0	5	6	7	8
i. Mankhwala othetsa ululu ndinso ogonetsa monga herowini, mofini, codini	0	5	6		8
j. Ena – tchulani dzina lake:	0	5	6	7	8

Funsani funso lachisanu ndi chimodzi ndi chisani ndi chiwiri kukhudza mankhwala onse amene wodwala anagwiritsapo ntchito (onse amene anatchulidwa kuti anagwiritsidwapo ntchito pafunso loyamba lija)

**Funso lachisanu ndi chimodzi (6)**

Kodi alipo mzanu kaepna wachibale kapena munthu wina aliyense anaonetsa kukhudzika ndim'mene mwakhala mukugwiritsa ntchito mankhwala ozunguza bongo munatchula aja?	Ayi konse	Eya, pamiyezi itatu yapitayi	Eya, koma osati pamiyezi itatu yapitayi
a. Fodya wosiyanasiyana	0	6	3
b. Mowa wosiyanasiyana	0	6	3
c. Chamba	0	6	3
d. Kokeni	0	6	3
e. Mankhwala ozunguza bongo wopumidwa monga guluwu, petulo	0	6	3
f. Mankhwala ozunguza bongo wopatsa mphamvu monga ekistase ndi ena	0	6	3
g. Mankhwala ogonetsa monga valiyamu	0	6	3
h. Mankhwala ozunguza bongo wobwebwetetsa monga ketamini	0	6	3
i. Mankhwala othetsa ululu ndinso ogonetsa monga herowini, mofini, codini	0	6	3
j. Ena – tchulani dzina lake:	0	6	3

**Funso lachisani ndi chiwiri (7)**

Kodi ilipo nthawi imene munayeserako ndikukanika kuchepetsa, kapena kusiya kugwiritsa ntchito mankhwala ozunguza bongo munatchula aja?	Ayi konse	Eya, pamiyezi itatu yapitayi	Eya, koma osati pamiyezi itatu yapitayi
a. Fodya wosiyanasiyana	0	6	3
b. Mowa wosiyanasiyana	0	6	3
c. Chamba	0	6	3
d. Kokeni	0	6	3
e. Mankhwala ozunguza bongo wopumidwa monga guluwu, petulo	0	6	3
f. Mankhwala ozunguza bongo wopatsa mphamvu monga ekistase ndi ena	0	6	3
g. Mankhwala ogonetsa monga valiyamu	0	6	3
h. Mankhwala ozunguza bongo wobwebwetetsa monga ketamini	0	6	3
i. Mankhwala othetsa ululu ndinso ogonetsa monga herowini, mofini, codini	0	6	3
j. Ena – tchulani dzina lake:	0	6	3

**Funso lachisanu ndi chitatu (8)**

	Ayi konse	Eya, pamiyezi itatu yapitayi	Eya, koma osati pamiyezi itatu yapitayi
<b>Kodi munagwiritsako ntchito mankhwala ozunguza bongo pazibaya jekeseni? (osakhudzana ndi nkhani zachipatala)</b>	<b>0</b>	<b>2</b>	<b>1</b>

## WHO ASSIST V3.1 RESPONSE CARD FOR PATIENTS

### Response Card – Substances – Chichewa Version

Fodya wosiyanasiyana
Mowa wosiyanasiyana
Chamba
Kokeni
Mankhwala ozunguza bongo wopumidwa monga guluwu, petulo
Mankhwala ozunguza bongo wopatsa mphamvu monga ekistase ndi ena
Mankhwala ogonetsa monga valiyamu
Mankhwala ozunguza bongo wobwebwetetsa monga ketamine
Mankhwala othetsa ululu ndinso ogonetsa monga herowini, mofini, codini
Ena – tchulani dzina lake:

#### **Khadi ya mayankho kumafunso nambala 2 mpaka 5**

**Ayi konse:** ayi, sindinagwiritse ntchito pamiyezi itatu yapitayi

**Kamodzi kapena kawiri:** kamodzi kapena kawiri pamiyezi itatu yapitayi

**Pamwezi kamodzi:** kamodzi kapena katatu pamwezi

**Pasabata kamodzi:** kamodzi kapena kanayi pasabata

**Tsiku lililonse kapena pafupifupi tsiku lililonse:** masiku asanu kapena asanu ndi awiri

#### **Khadi ya mayankho kumafunso nambala 6 mpaka 8**

Ayi konse

Eya, koma osati pamiyezi itatu yapitayi

Eya, pamiyezi itatu yapitayi

**ALCOHOL, SMOKING AND SUBSTANCE INVOLVEMENT SCREENING TEST (WHO ASSIST V3.1)  
FEEDBACK REPORT CARD FOR PATIENTS – Chichewa Version**

Dzina: \_\_\_\_\_ Tsiku: \_\_\_\_\_

Substance	Score	Risk level
a. Fodya wosiyanasiyana		0-3 Low 4-26 Moderate 27+ High
b. Mowa wosiyanasiyana		0-10 Low 11-26 Moderate 27+ High
c. Chamba		0-3 Low 4-26 Moderate 27+ High
d. Kokeni		0-3 Low 4-26 Moderate 27+ High
e. Mankhwala ozunguza bongo wopumidwa monga guluwu, petulo		0-3 Low 4-26 Moderate 27+ High
f. Mankhwala ozunguza bongo wopatsa mphamvu monga ekistase ndi ena		0-3 Low 4-26 Moderate 27+ High
g. Mankhwala ogonetsa monga valiyamu		0-3 Low 4-26 Moderate 27+ High
h. Mankhwala ozunguza bongo wobwebwetetsa monga ketamini		0-3 Low 4-26 Moderate 27+ High
i. Mankhwala othetsa ululu ndinso ogonetsa monga herowini, mofini, codini		0-3 Low 4-26 Moderate 27+ High
j. Ena – tchulani dzina lake:		0-3 Low 4-26 Moderate 27+ High

**Kodi chiwerengero chokhudzana ndi mankhwala ozunguza bongo chimene chikutanthauza chiyani?**

**Chiopsyeyo chotiska:** chiopsyeyo chanu ndichochepa kuti mukhala ndi mavuto ndi thanzi lanu komanso mavuto ena chifukwa cham'mene mukugwiritsira mankhwala ozunguza

**Chiopsyeyo chomvererako:** muli pachopsyeyo chokhala ndi mavuto ndi thanzi lanu komanso mavuto ena chifukwa cham'mene mukugwiritsira mankhwala ozunguza

**Chiopsyeyo chachikulu:** muli pachopsyeyo chachikulu chokhala ndi mavuto akulu pa moyo wanu wam'thupi, ubale ndi anthu ena, chuma, kuswa malamulo adziko, ngati mupitiliza kugwiritsa ntchito mankhwala ozunguza bongo m'mene mukuchitira panopo.