Rate of psychiatric readmissions and associated factors at Saint John of God Psychiatric Hospital in Mzuzu, Malawi.

By

MANSON MWACHANDE MSISKA

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Faculty of Health Sciences
UNIVERSITY OF CAPE TOWN

Supervisor: Prof. Katherine Sorsdahl
Alan J Flisher Centre for Public Mental Health
Department of Psychiatry and Mental Health
UNIVERSITY OF CAPE TOWN

Co supervisor: Dr Stefan Holzer
College of Medicine,
UNIVERSITY OF MALAWI

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DECLARATION

I, Manson Mwachande Msiska , hereby declare that the work of this dissertation/thesis is my original work (except where acknowledgement indicate otherwise) and that neither part of it nor whole has been, is being, or is to be submitted for any other awards or other purposes at University of Cape Town or any other higher learning institution.

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TABLE OF CONTENTS

Contents **Page Number**

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CBT	Cognitive Behavioural Therapy
CI	Confidence Interval
CMD	Common Mental Disorder
DALYs	Disability-Adjusted Life Years
DSM-IV	Diagnostic and Statistical Manual of Mental Health Disorders IV
FGA	First Generation Antipsychotic
HICs	High-Income Countries
HIV	Human Immunodeficiency Virus
ICD-10	Tenth revision of the International Classification of Diseases
IQR	Inter Quartile Range
LMICs	Low- and Middle-Income Countries
MAOIs	Monoamine Oxidase Inhibitors
MNS	Mental, Neurological and Substance Use
NICE	National Institute for Health and Clinical Excellence
RCT	Randomised Controlled Trials
SGA	Second Generation Antipsychotic
SJOG	Saint John of God
SMDs	Severe Mental Disorders
SMS	Short Message Service
SNRIs	Serotonin and Norepinephrine Reuptake Inhibitors
SPSS	Statistical Package for Social Sciences
SSRIs	Selective Serotonin Reuptake Inhibitors
PHC	Primary Health Care

UK	United Kingdom
USA	United States of America
WHO	World Health Organization
WMHS	World Mental Health Survey
YLDs	Years Lived with Disability

ABSTRACT

Background: Globally, studies have established that 40-50% of psychiatric patients with SMDs are readmitted within one year of discharge from the acute hospital admission. Low- and middle-income countries (LMICs) such as Malawi have also reported high rates of psychiatric readmissions. This poses challenges when providing psychiatric care to patients. Most of Malawi`s health institutions, including Saint John of God Psychiatric Hospital (SJOG), rely primarily on donor funding. In order to maximise the available donor funding, there is a need to reduce readmissions resulting from modifiable or controlled factors. There are no studies in Malawi which have investigated these risk factors. The study aimed to establish the frequency of readmissions and the associated factors among patients at SJOG Psychiatric Hospital in Mzuzu, Malawi. The specific areas examined were socio-demographic and clinical-related factors associated with readmission.

Methods: This was a retrospective cohort case record review study. Two hundred and seventy five clinical files of patients admitted for the first time at SJOG Psychiatric Hospital Mzuzu, Malawi between 1 January, 2014 and 31 December, 2015 were extracted. Data on socio-demographics and clinical information were collected using an extraction sheet at 3, 6 and 12 months post-discharge from the acute (first) hospital admission. Logistic regression models were developed to investigate the associations between socio-demographics, clinical-related factors and readmissions. Ethical approval for this study was granted by the Faculty of Health Sciences Human Research Ethics Committee at the University of Cape Town. Approval to conduct this research in Malawi was obtained from the National Health Sciences Research Ethics Committee.

Results: Readmission rates of 1.5%, 4.4%, and 11.3% were found within the 3, 6 and 12 months of discharge from the acute hospital admission respectively. None of the independent variables predicted readmission within the 3 month of discharge from the acute hospital admission. In the unadjusted logistic regression model, having children (OR=0.26, 95% C.I 0.07-0.96) protected against readmissions within the 6 month of follow-up period. In the unadjusted logistic regression model, having children (OR= 0.40, 95% C.I 0.18-0.88), staying outside the hospital catchment area (OR=0.44, 95% C.I 0.20-0.96), and having insight (OR=0.22, 95% C.I 0.10-0.49) into their illness were protective factors to readmission, while taking SGAs (OR=4.67, 95% C.I 1.33-16.39) predicted readmission within the 12 month

follow-up period. After adjusting for age and gender in the multivariable analysis, staying outside catchment area (OR=0.33, 95% C.I 0.14-0.79) and having insight (OR=0.19, 95% C.I 0.08-0.46) to their illness were protective factors, while taking SGAs (OR=5.29, 95% C.I 1.43-19.51) remained a predictor of readmission within 12 months of discharge from the acute admission.

Conclusion: The findings of this study demonstrated that readmissions are associated with socio-demographic and clinical factors such as catchment area, patient insight into their condition and type of antipsychotics. The study identifies the need to develop interventions targeting the groups at risk of being readmitted.

Key words:
Psychiatric Readmission, Hospitalisation, Mental Disorders, Risk Factors, Predictors.

CHAPTER ONE: INTRODUCTION

1.0 Background

Mental, neurological and substance use (MNS) disorders are highly prevalent, cause considerable suffering, and contribute significantly to the burden of disease. Studies have reported that MNS disorders are among the leading causes of disease burden. They are responsible for 10.4% of global disability adjusted life years (DALYs) and 22.9% of global years lived with disability (YLDs) (Patel et al., 2016; Whiteford, Ferrari, Degenhardt, Feigin, & Vos, 2015). The estimated prevalence of having one or more mental disorders varies across countries worldwide. For instance, the World Mental Health Surveys (WMHS) have estimated that the lifetime prevalence of mental disorders varies from 47% in the United States of America (USA) to 12% in Nigeria, with an inter quartile range (IQR) of 18.1%-36.1% (Demyttenaere et al., 2004; Kessler et al., 2009). From these estimates, it can be concluded that mental disorders pose a significant burden on health treatment services in both high income countries (HICs) and low and middle income (LMICs) due to their prolonged course and significant impairment. This is particularly pertinent to people living with severe mental disorders (SMDs). According to Diagnostic and Statistical Manual of Mental Health Disorders (DSM-IV) (2000) and International Classification of Diseases, version 10 (ICD-10) (1993), SMDs include, psychotic disorders, major depressive disorders and bipolar disorders which are associated with functional disabilities and risks of harming to self or others. To address this burden, effective integrated management and intervention strategies for mental and substance use disorders should be prioritised, including treatment for people living with SMDs (Drake et al., 2001; Whiteford et al., 2015; Wittchen et al., 2011).

Although there is a large mental health treatment gap (Burns, 2011; Kohn, Saxena, Levav & Saraceno, 2004; Patel et al., 2007), effective treatments are available for people living with SMDs. Notable examples of such treatments include, both medication and psychotherapy interventions (Patel et al., 2016). Chlorpromazine, Haloperidol and Fluphenazine for example, are prescribed to reduce the most serious symptoms of SMDs such as hallucinations, delusions, agitation, disorganised thought and behaviour (Barbui, Cipriani, & Saxena, 2009). However, for this treatment to be effective, it is recommended that health workers should combine medication and psychotherapy interventions (National Institute for Health and Clinical Excellence (NICE), 2011). Generally, patients with SMDs are offered

inpatient care especially when it is difficult for them to be contained in the community (Bobier & Warwick, 2005).

Since the beginning of the deinstitutionalisation process in the 1950s, government policies worldwide have focused on advocating for community-based management of mental disorders by shifting care from hospitals to the community setting. This resulted in the closure of some psychiatric hospitals, a reduction in the number of beds, and the shifting of care from hospitals to community settings (Dieterich et al., 2017; Malone, Marriott, Newton-Howes, Simmonds & Tyrer, 2010).

Despite the implementation of this community-based care with the aim of maintaining psychiatric patients in their homes, the mental health service is still facing a number of challenges such as a shortage of psychiatric beds, premature psychiatric discharges and a gradual increase in the number of psychiatric readmissions (Niehaus et al., 2008; Priebe et al., 2008; Romansky, Lyons, Lehner & West, 2003; Sullivan, 1989; Wheeler, Moyle, Jansen, Robinson & Vanderpyl, 2011; Yussuf et al., 2008). For instance, literature has reported a global estimate of the psychiatric readmission rate ranging from 10% to 86% (Durbin, Lin, Layne, & Teed, 2007; Jaramillo-Gonzalez, Sanchez-Pedraza, & Herazo, 2014; Lin et al., 2010; Wheeler et al., 2011; Yamada & Korman, 2000; Yussuf et al., 2008). In addition, studies have further estimated readmission rates of 30-40% within a 6 month of discharge from the acute admission (Wheeler et al., 2011; Yamada & Korman, 2000), 40-50% after 12 months, and 65-75% within 5 years of discharge from the acute hospital admission (Wheeler et al., 2011; Yamada & Korman, 2000). Various authors have established readmission rates and factors which are associated with these psychiatric readmissions in different settings of LMICs such as Egypt, South Africa and China (Al-Shehhi, Al-Sinawi, Jose, & Youssef, 2017; Niehaus et al., 2008; Zhou et al., 2014). There is no study in our setting which has investigated readmission rates and associated factors in Malawi. Hence the current study investigates the rate and the associated factors of psychiatric readmissions.

Saint John of God (SJOG) is a psychiatric hospital in Mzuzu, Malawi. SJOG, the only psychiatric referral hospital which serves the entire population of the northern region of Malawi, has experienced an increase in the number of psychiatric readmissions over the years. For instance, the readmission rates were observed to have risen by 8.2% (42% to 50.2%) from 2011 to 2013 (SJOG Annual reports, 2011, 2012, 2013). According to the

World Health Organization (WHO), the acceptable readmission rates are between 3% and 5% of admissions (Ngoma, 2011) Despite being relatively outdated, the data from SJOG suggests that the rates of readmissions are above the 5% upper limit recommended by the WHO. However, at the present time, the rate and factors associated with readmissions in northern Malawi have not yet been investigated, in particular at SJOG mental hospital, hence the need for this study.

1.1 Aim of the study

This study aims to utilise a descriptive service audit to establish the frequency of readmissions and the associated factors among patients at SJOG Psychiatric Hospital in Mzuzu, Malawi.

1.2 Specific Objectives

- To determine the rate of readmissions among patients with mental illnesses at SJOG psychiatric hospital.
- To determine the socio-demographic and clinical factors associated with readmissions at SJOG psychiatric hospital.

1.3 Research Hypotheses

It was hypothesised that:

- There is an association between demographic characteristics and high rates of psychiatric readmissions at Saint John of God Psychiatric Hospital in Mzuzu, Malawi.
- There is an association between clinical characteristics and high rates of psychiatric readmissions at Saint John of God Psychiatric Hospital in Mzuzu, Malawi.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter will begin with providing a description of the prevalence and burden of mental disorders, first with a global view and then with a focus on Malawi specifically. Next, effective treatments that are available for people living with SMDs and barriers to providing such treatment will be discussed. This chapter will then present the available data on the frequency of psychiatric readmissions. Lastly, this chapter will present the available literature that has investigated the socio-demographic and clinical factors associated with readmission to a psychiatric hospital.

2.1 The prevalence and burden of mental disorders

The available literature shows that MNS disorders are highly prevalent worldwide (Kessler et al., 2010; Bagalman & Napili, 2014). Studies have estimated that 17.6% of the population meet the criteria for a common mental disorder (CMD) within the previous 12 months and 29.2% across their lifetime (Steel et al., 2014; WHO, 2011). These CMDs are depressive and anxiety disorders that are classified in the ICD-10 (1993) as neurotic, stress-related, somatoform disorders and mood disorders. On the other hand, global estimates of SMDs have consistently been reported to range from 0.4% to 7.7% with IQR 1.5-3.7% (Demyttenaere et al., 2004; Kessler et al., 2009). For instance, in the USA, results from 3 large surveys have estimated the 12-month prevalence of SMDs to range from 5.8% among adults to 8.0% among adolescents (Bagalman & Napili, 2014). Similarly, in 2013, the prevalence of SMDs excluding substance use disorders was 4.2% among USA adults (Kessler et al., 2010; Bagalman & Napili, 2014). In addition, the prevalence of some SMDs such as schizophrenia is 2.4-6.7 per 1000 people and 1.4-6.8 per 1000 people in HICs and LMICs respectively, while about 4.9% of the world`s population has been diagnosed with a lifetime prevalence of major depressive disorder (Sadock & Sadock, 2007).

MNS disorders are also a leading cause of the burden of disease worldwide, resulting in health loss in individuals of all ages, in both developed and developing regions (Whiteford et al., 2013). Globally, the DALYs of MNS disorders is estimated to have risen by 41% (182 million to 258 million) from 1990 to 2010 (Whiteford et al., 2015; Patel et al., 2016). MNS disorders account for 14% of DALYs, exceeding intentional injuries (3.3%) and HIV/AIDS

(6%) (Pike, Susser, Galea, & Pincus, 2013; Prince et al., 2000). Furthermore, Pike, Susser, Galea and Pincus, (2013), and Prince et al., (2000) reported that the disability caused by MNS disorders worldwide is estimated at 22.9% of YLDs. However, studies have further established that the total DALYs due to MNS disorders are higher in LMICs than in HICs. Large populations in LMICs have been consistently mentioned as one of the contributing factors to this increase (Patel et al., 2016). In addition, YLDs of MNS disorders in LMICs are reported as being between 25.3% and 33.5% (WHO, 2011a). This burden of MNS disorders is reported to be higher in females and young adult populations. Supporting this idea, Pike et al., (2013) reported a higher percentage of disability in the ages of 10 to 44 years. In addition to this, Whiteford et al., (2015) noted higher MNS disorder DALYs in females (134 million) than in males (124 million).

In Malawi specifically, MNS disorders are highly prevalent and contribute significantly to the disease burden in the country. MNS disorders in Malawi are estimated to contribute to 4.3% of the global burden of disease (WHO, 2011b). In 2002, the WHO estimated unipolar depressive disorders as a fourth leading cause of disability, accounting for 4.7% of YLDs in Malawi after HIV/AIDS, cataracts and malaria (Bowie, 2007). Studies in Malawi, have reported a high prevalence of CMDs. For example, CMDs were noted in 28.8% of people attending primary care in Malawi (Kauye et al., 2011). Similarly, Udedi (2014) noted depression in 30.3% of patients attending a general outpatient department. Stewart et al., (2010) found depression in 30.4% of women with young infants in rural Malawi. This was more than double the rate reported by Chilale and Tugumisirize (2000), who found a 12.4% prevalence of postnatal depression among mothers in Northern Malawi. In another study, investigators found that 14.4% of people living with HIV/AIDS were psychologically distressed (Mwale, 2006). There is a possibility that the figures on the prevalence and the burden of mental disorders in Malawi may be underestimated. This is supported by study findings that the mean duration of untreated psychosis is 4.3 years, suggesting the presence of a large number of undiagnosed people living with a mental disorder in Malawi (Chilale, Banda, Muyawa, & Kaminga, 2014). This suggests that people living with mental disorders stay in the community for a longer period before seeking mental health treatment. Unfortunately, at the present time, there is no available data on the prevalence of SMDs in Malawi.

MNS disorders are also responsible for a range of both direct and indirect costs on individuals, households, employers and society as a whole. Globally, the estimated cost of mental disorders in 2010 was US$ 2.5 trillion and is expected to rise to US$ 6.0 trillion by 2030 (Bloom et al., 2011; Patel et al., 2016; Whiteford et al., 2015). Two thirds of this total cost is an indirect cost and the remaining third is a direct cost. The total economic costs of direct treatment for mental disorders have well been documented in developed countries. For instance, WHO (2003) noted that, in the USA, about 2.5% of the gross national product amounting to US$ 148 billion is spent on the direct treatment costs of mental disorders annually. Similarly in 2005, Europe spent close to 386 billion Euros on the treatment of MNS disorders, of which 277 billion Euros was spent on mental disorders alone (Wittchen et al., 2011). On the other hand, estimates of direct treatment costs from LMICs are not easily available. However, psychiatric readmission in a short period of time following discharge increases the cost of the health care system and workload of health workers. For example, Guan, Loh, Yee and Zainal (2012) noted that 60% of psychiatric hospital expenditure is on repeat admissions.

Despite the reports of a huge burden of mental disorders, mental health services are widely underfunded, especially in LMICs. The WHO (2003, 2001) reported that 16% of HICs and 62% of LMICs spend less than 1% of their health budget on mental health. Chronic conditions such as diabetes, cardiovascular diseases and respiratory illnesses receive more support than mental disorders, despite the latter causing the greatest global disease burden (Jenkins, Baingana, Ahmad, Mcdaid & Atun, 2013). As a result, there is a wide gap between the need for treatment of mental disorders and its provision all over the world. For example, studies have consistently reported that 76% to 85% of people with SMDs in LMICs and 35% to 50% in HICs do not receive treatment for their mental health problem (Pike et al., 2013; WHO, 2011).

It is a relief that effective interventions aimed at reducing this existing prevalence and burden of mental disorders are available. Medications and psychotherapies discussed below are among the interventions that may be employed in reducing the global burden of mental disorders (Patel et al., 2007; Whiteford et al., 2013).

2.2 Evidence-Based Treatments for Mental disorders

Effective treatment for people living with mental disorders is available in the form of pharmacological and psychotherapy interventions. To improve patients` outcomes in mental health services, research has suggested the implementation of a number of evidence-based practices to manage mental disorders (Wang, Berglund & Kessler, 2000; Drake et al., 2001).

Literature has also suggested that the availability of these pharmacological and psychotherapy interventions in treating mental disorders plays an important role in reducing psychiatric relapses and readmissions. For instance, Tiihonen et al., (2011) and Guo et al., (2010) found that the use of any antipsychotic drug was significantly associated with a reduced risk of relapse and readmission, especially in randomised controlled trials (RCTs) where medications were combined with psychotherapy interventions. This necessitates the discussion of pharmacological and psychotherapy interventions in the current study.

To begin with, a variety of pharmacological treatments (also known as psychotropic or psychotherapeutic medications) are available for the management of mental disorders such as psychotic disorders (schizophrenia and schizophrenia-like disorders), depressive disorders, bipolar disorders and anxiety disorders. These drugs are primarily aimed at reducing psychotic, mood and anxiety symptoms. They also reduce disability, shorten the length of many disorders, prevent relapses and admissions, and improve psychosocial functioning (Swartz et al., 2007; Barbui, Cipriani & Shekhar, 2009; Hasan et al., 2012). The following are some of the common medications used in the treatment of mental disorders: Chlorpromazine, Fluphenazine, Haloperidol (psychotic disorders); Amitriptyline, Fluoxetine (depression and anxiety disorders) and Carbamazepine, Lithium, Valproate (bipolar disorders) (Stahl, 2008; WHO, 2001).

Depending on the situation, psychotropic medications are given to patients in either oral or injectable form. Patients who can take medication orally are usually started on oral therapy; short-acting injectable drugs are given if patients refuse oral medications (Barbui et al., 2009). In situations where there is a history of drug non-adherence, relapses and multiple admissions, patients are switched to long-acting injectables such as Haloperidol, Fluphenazine, Risperidone and Depixol (Adams, Fenton, Quraishi & David, 2001; Jukic et al., 2013; Oyffe, Kurs, Gelkopf, Melamed & Bleich, 2009). Consistently, previous studies

have found that long-acting injectables are associated with a significantly lower risk of readmissions (Ju et al., 2014). It is therefore important for this current study to discuss drugs used to treat mental disorders and their formulations if aiming at reducing psychiatric readmissions.

In practice, antipsychotic agents are classified into first generation antipsychotics (FGAs) such as Chlorpromazine and Haloperidol, and second generation antipsychotics (SGAs) such as Clozapine and Risperidone (Lieberman et al., 2005). Inconsistent findings on the efficacy of FGAs and SGAs have been reported in various studies. A RCT found FGAs and SGAs having similar efficacy of reducing about 60% of the psychotic symptoms (Kahn et al., 2008). In contrast, some systematic reviews of RCTs have found SGAs, such as Clozapine and Risperidone, to be more efficacious than FGAs in treating symptoms, including positive and negative symptoms. In addition, studies have also found that a certain number (20-30%) of patients do not respond effectively to FGAs (Dold & Leucht, 2014; Hasan et al., 2012). Many researchers such as Cianchetti and Ledda (2011), as well as Park and Kuntz (2014), found Clozapine to be superior among SGAs in reducing symptoms of acute psychosis. Other RCTs have found Clozapine to be more effective in managing schizophrenia which is resistant to other FGAs and SGAs, although there have been reports of life threatening severe side effects (McEvoy et al., 2006; Dold & Leucht, 2014; Beck et al., 2014).

Despite the drugs being effective, they do not cure the disorders but treat the symptoms of the disorders so that the patient can feel better and start functioning normally again. In this case, some patients take the medication for a short duration while others, especially those with schizophrenia, bipolar disorders, severe depression or anxiety, may need to take their prescribed medication for a longer period (US National Institute of Mental Health, 2008). In addition, FGAs are associated with more severe side effects than SGAs, such as extra pyramidal side effects and rarely neuroleptic malignant syndrome. In view of this, SGAs were developed to alleviate some of the problems such as side effects (Leucht et al., 2009; Tandon et al. 2008; Barbui, Cipriani, & Shekhar 2009).

Effective medications, such as tricyclics (e.g. Amitriptyline), selective serotonin reuptake inhibitors (SSRIs) (e.g. Fluoxetine), serotonin and norepinephrine reuptake inhibitors (SNRIs) (e.g. Venlafaxine), and monoamine oxidase inhibitors (MAOIs) (e.g. Phenelzine) are used to reduce symptoms of depression and return the patient to the baseline level of

functioning (Stahl, 2008). Among these antidepressants, SSRIs and SNRIs are associated with few side effects, and hence can be prescribed to patients with a risk of self-harm. Unlike SSRIs and SNRIs, tricyclics and MAOI antidepressants have toxic effects in situations where a patient takes an overdose (Stahl, 2002).

Studies have shown that different classes of antidepressants are effective in the acute treatment of depression. For instance, a RCT involving 3 different antidepressants found no difference in response rate (range 57.4%-59.4%) and symptom remission rate (range 41.8%-46.6%) at 12 weeks and 7 months. Further findings showed no difference in their outcome on quality of life, work and social adjustment. The same researchers found that combining two antidepressants did not improve the response or remission rate, but instead caused more side effects than the single antidepressant group (Rush et al., 2004).

Studies have also found that psychological treatments such as cognitive therapy, behavioural therapy, cognitive behavioural therapy, interpersonal therapy and family therapy are effective in treating mental disorders (Asmal et al., 2011; Guo et al., 2010; Jauhar et al., 2014; DeRubeis & Crits-Christoph, 1998). For instance, a RCT, systematic reviews and a meta-analysis study conducted in countries such as the United Kingdom (UK) and Netherlands found that various psychotherapies were associated with a significant improvement of depressive and psychotic symptoms (Valmaggia et al., 2005; Wykes et al., 2008; Turkington, Kingdon & Turner, 2012; McDermut, Miller & Brown, 2001; Mufson et al., 1999). Interestingly, studies which have compared cognitive therapies with antidepressant medications and interpersonal therapy have concluded that cognitive therapy is more efficacious than many other forms of therapy for depression, including antidepressant medication (Crystal, Olfson, Huang, Pincus, & Gerhard, 2009).

There are inconsistent reports of findings on the degree of effectiveness between the use of pharmacological treatment or psychotherapy alone and a combination of the two. Some systematic reviews, for example, concluded that the use of medication combined with psychotherapy is more effective than the use of a single intervention, especially in depression (Cuijpers et al., 2009; Patel et al., 2007; Pampallona et al., 2004; Keller et al., 2000; Casacalenda, Perry & Looper, 2002). Compared with systematic reviews, two Cochrane reviews involving RCTs of psychosocial, pharmacological or a combination of the two failed

to find a treatment which was more effective than the other (Hunt et al., 2013; Cox et al., 2013; 2014).

However, despite the availability of effective treatments for psychiatric disorders, the literature has highlighted a number of barriers to mental health service provision.

2.3 Barriers to the successful treatment of severe mental disorders

Studies have extensively investigated the numerous treatment barriers encountered by people living with a psychiatric disorder. The following are some of the barriers observed during the treatment of severe mental disorders: (1) non-adherence, (2) side effects, (2) lack of knowledge on mental illness, (4) stigma, (5) inadequate resources, and (6) financial instability.

Firstly, medication adherence is one of the barriers to the successful treatment of SMDs. It is defined as the strictness of patients' behavior in taking treatment, following diet, new habits and attending clinic follow-ups as prescribed by health care providers (McDonald, Garg & Haynes, 2002; Touchette & Shapiro, 2008). According to Perkins (2002), adherence is measured either through subjective (e.g. self-report and provider-reports) or objective (e.g. pill count, electronic monitoring and blood or urine levels of drugs) methods. Approximately 40-50% of patients suffering from schizophrenia do not adhere to their treatment. Furthermore, psychiatric patients not adhering to treatment relapse and are readmitted. For example, approximately 50-55% of the readmissions of psychiatric patients are due to non-adherence to treatment (Kazad, Moosa & Jeenah, 2008; Mohr & Volavka, 2012; Novick et al., 2010; Omranifard, 2008; Perkins, 2002; Subotnik et al., 2011).

Secondly, the side effects of psychotropic medication are another common barrier faced in the management of mental disorders. It is also one of the risk factors contributing to non-adherence of treatment (Kazad, Moosa & Jeenah, 2008). In some studies, patients experiencing side effects such as lethargy, sedation, massive weight loss, sexual dysfunction, and tremors have expressed reluctance or decided to stop treatment (Mental Health Commission of NSW, 2015; Sariah, Outwater & Malima, 2014; Dennis & Chung-Lee, 2006). These studies further reported that these side effects result in permanent or life threatening

effects which compromise the patients' activities of daily living (Sariah, Outwater & Malima, 2014).

Thirdly, the other barriers to effective treatment of SMDs are patient and family knowledge and attitude towards medication. To begin with, some patients would stop taking treatment when they feel that they are healed. This may result in relapse and readmission. This happens because they do not know for how long they should be taking antipsychotics (Sariah, Outwater & Malima, 2014). Chaplin (2007) explained that most of these patients do not understand their treatment and this requires giving them information more than twice.

Fourthly, stigma has been described as one of the common barriers to effective treatment. Stigma is when people have negative attitudes, unpleasant thoughts and beliefs which are manifested in peoples' behaviours towards people living with mental illness. Examples of these behaviours are not willing to be with people living with mental illness and fears of associating with them (Gary, 2005). Patients who face stigma while on treatment are at a higher risk of stopping treatment (Corrigan, 2004). In a hospital setting where there is stigma, patients may not receive quality care for both mental and physical illnesses (Knaak, Mantler, & Szeto, 2017).

Fifthly, inadequate resources in mental hospitals and community settings have been identified as barriers to effective treatment of SMDs. According to Rose, Mallinson & Walton-Moss, (2004) and Saraceno et al., (2007), most of the health workers in LMICs are inadequately trained and lack skills. Consequently, these healthcare providers also fail to diagnose and identify necessary interventions for managing the patients. The unavailability of psychotropic drugs in hospitals also hinders the delivery of care to patients with SMDs. In a Jordanian study, health workers and patients reported that not all psychotropic drugs were available in the primary health care centre. For instance, those requiring antidepressants were referred to tertiary psychiatric hospitals (Nasir & Al-Qutob, 2005). In another study, patients and their family members reported a lack of medications, especially SGAs, at their nearest hospital (Iseselo & Ambikile, 2017).

Finally, financial instability among patients and family members also bars patients from accessing treatment for mental disorders through costly mental health services (Huskamp, 2003; Frank, Conti & Goldman, 2005; Lindner et al., 2009). This contributes to an increase in

non-adherence, relapse and readmissions to psychiatric hospitals. In addition, psychotropic drugs, especially SGAs, are scarce and more expensive than other classes of drugs such that patients are unable to pay for them because of a lack of money (Sariah, Outwater & Malima, 2014; Mental Health Commission of NSW, 2015).

The above barriers to treatment may lead to treatment non-adherence, relapse and increase in the rates of psychiatric readmission.

2.4 Readmission to psychiatric facilities

The existing literature has described readmissions to psychiatric hospitals as one of the consequences of deinstitutionalisation (Smith, 2005; Hollander & Slater, 1994; Niehaus et al., 2008).

2.4.1 The deinstitutionalisation of mental health care services

Worldwide, major changes in caring for psychiatric patients are noted to have taken place within the mental health system over a period of time. To begin with, before deinstitutionalisation, large asylums were built to care for psychiatric patients in developed countries such as the USA, UK, and Australia between 1880 and the 1950s (Lien, 2002). It is believed that the dreadful conditions of these asylums, such as overcrowding, ill treatment of patients, loss of life skills, institutionalisation, poor leadership and administration, a lack of finances, inadequate training and inspections, led to their closure and the birth of deinstitutionalisation in the 1950s (Gillis, 2012; Priebe, 2007; Fakhoury & Priebe, 2002; Thornicroft & Tansella, 2003). This process of deinstitutionalisation involved moving admitted psychiatric patients from public or private institutions back to their families or community-based services developed to offer treatment and support (Priebe et al., 2008; Lamb & Bachrach, 2001).

In Malawi, dedicated mental health services were initiated in 1910. As in other countries, psychiatric patients were kept under the care of untrained prison wardens in an asylum at Zomba Central Prison. Poor conditions in this asylum, such as discrimination, poor diet, and being locked away and restrained with handcuffs, led to the opening of Zomba Psychiatric Hospital in 1953. It was in this hospital where patients started receiving modern mental health services such as antipsychotic drugs from professional staff (Chorwe-Sungani, Sefasi,

Jere, Kululanga & Mafuta, 2015). However, psychiatric services have not yet been deinstitutionalised because mental health services are underdeveloped in the country (Udedi 2017; Kauye et al. 2011). Despite the country being behind with the deinstitutionalisation process, there has been some progress. In 2005, SJOG Psychiatric Hospital introduced a domiciliary care programme as an alternative to hospital care where patients are treated in their homes. This service is provided to patients within the hospital's catchment area at a radius of up to 20 and 10 kilometers away from Mzuzu (Northern region) and Lilongwe (central region) respectively (Mwale, 2011).

Several researchers have suggested considering a number of strategies to successfully deinstitutionalise mental health services. According to Lamb and Bachrach (2001) and Sealy and Whitehead (2004), the three processes involved which have to be well planned, are: (1) moving psychiatric patients from the hospitals to other facilities in the community, (2) referring new patients who would usually have been admitted to inpatient care back to community services, and (3) establishing mental health services in the community to care for discharged psychiatric patients. Studies have found that discharged patients integrating into a community with developed mental health services have a reduced risk of readmission and stay longer in their homes (Lerner, Hornik-Lurie & Zilber, 2012; Lamb & Bachrach, 2001). Findings in Cochrane reviews have further concluded that community treatment of patients reduces costs, the number of repeated admissions and the burden to families (Murphy, Irving, Adams & Waqar, 2015).

However, a number of challenges with deinstitutionalisation have been highlighted in the literature. A poorly arranged process of deinstitutionalisation may bring unwanted outcomes, such as avoidable deaths. For instance, in South Africa, the health department in Gauteng province terminated their contract with Life Esidimeni Psychiatric Health Care Centre (an outsourced private health care facility) in March 2016, with the aim of saving money and implementing the policy of deinstitutionalising psychiatric services. This was followed by the rapid transfer of close to 1371 chronic psychiatric patients from Life Esidimeni to families, psychiatric hospitals and non-governmental organisations (NGOs) at the rate of 457 patients per month in 2016. Shockingly, recent reports indicate that about 143 of these psychiatric patients transferred from the care of Life Esidimeni died while under the care of the NGOs (Life-Esidimeni-Fact-Sheet, 2017; Ferlito & Dhai, 2018; Govender, 2017).

Following the deinstitutionalisation process, surveys conducted in countries such as Canada, USA and South Africa found a sharp reduction in the number of psychiatric beds available (Burns, 2011; WHO, 2007; Fuller et al., 2016; Sealy & Whitehead, 2004). The closure of some psychiatric hospitals and the reduction in bed numbers has led to the demand for any remaining beds to be reserved to treat acute illnesses. This demand has prompted health workers in psychiatric hospitals to discharge sick patients by reducing their length of stay in hospital to make way for the new admissions. These prematurely-discharged patients relapse sooner than usual and therefore require another admission, resulting in increased readmissions (Hollander & Slater, 1994; Niehaus et al., 2008). According to literature, the rise in psychiatric readmission rate was first noticed in Europe and the USA around the 1950s following deinstitutionalisation and the decrease in hospital bed capacity (Lien, 2002).

2.5 Rates of readmission to psychiatric facilities

The term "readmission", also referred to as recidivism, revolving door or heavy utilisation, does not have a single standardised definition which is used by all researchers (Shalchi et al., 2009**;** Sfetcu et al., 2017; Oyffe et al., 2009). Chambers and Clarke (1990), Lien (2002) and Guan et al., (2012), have defined readmission as a subsequent inpatient admission to any acute care facility which occurs within a defined period from the initial discharge.

Researchers have calculated readmission rate based on either the number of patients admitted (person-based) or the individual episodes of admission (episode-based). That is to say, in a person-based calculation, each patient is counted once regardless of the number of readmissions experienced (Jaramillo-Gonzalez, Sanchez-Pedraza & Herazo, 2014). This is different from an episode-based calculation where all episodes of readmission experienced by a patient are counted and included. The latter method allows a patient to be counted more than once within the study period (Dixon et al., 1997; Goldacre et al., 1988; Neto & Silva, 2008). From these two different methods, studies have reported higher readmission rates in episode-based than in person-based (Dixon et al., 1997; Goldacre et al., 1988; Neto & Silva, 2008). Therefore, an increase in admission rate may suggest either more people accessing care from the hospital or an increase in multiple admissions per person (Goldacre et al., 1988).

Additionally, the rate of readmission has also been measured at different intervals depending on the design of the study. For instance, the existing research has measured the readmission rate at one month (Han et al., 2016; Chakraborty & Aryiku, 2008), three months (Sánchez, Jaramillo & Herazo, 2013; Lyons et al., 1997), six months (Yamada & Korman, 2000; Guan et al., 2012), one year (Bobo et al., 2004; O'Donoghue et al., 2011) and more than a year (Yussuf et al., 2008; Bowersox, Saunders & Berger, 2012; Cougnard et al., 2006) after initial discharge.

Lin et al., (2010) emphasised investigating readmission rate and its predictors at different periods of time after the initial discharge using the same study cohort for a few reasons. They suggested that the rate and its predictors occurring very close to discharge differ from those that occur much later. These researchers further suggested that readmissions very near to a patient's discharge date may originate from poor care received in hospital, while those occurring a long after the date of discharge are attributed to the quality of after-care services such as services provided at outpatient clinics, in community settings and in families. These researchers have further categorised readmission as early (short-term) or late (long-term). Jaramillo-Gonzalez, Sanchez-Pedraza and Herazo (2014) and Lee et al., (2017) recognised early readmission as those happening within the first three months after discharge from hospital admission. This differs from other studies which consider all readmissions occurring within six months of discharge as early (Guan et al., 2012).

Readmission rates at different intervals have also been suggested in some literature as one way of measuring the outcome or quality of psychiatric services (Sfetcu et al., 2017; Durbin et al., 2007; Mgutshini, 2010). For example, some studies have viewed readmissions occurring after thirty days, ninety days, six months, one year or three years as a negative quality of care indicator. Therefore, a decrease in the number of psychiatric admissions suggests improved mental health care services at inpatient, outpatient and community settings (Guan et al., 2012; Durbin et al., 2007; Barekatain et al., 2013; Vigod et al., 2013). However, some literature has concluded that readmission rate is an unsuitable indicator of quality of care in psychiatric services (Mark et al., 2013; Lyons et al., 1997). In support of this, Lyons et al., (1997) further argued that frequent readmission may result from non-hospital-related factors, such as the natural course of a psychiatric disorder.

Globally, a number of studies have investigated the rate of readmissions in psychiatric hospitals. Literature has revealed that the majority of these studies examining the rate of readmission were conducted in the USA (Machado, Leonidas, Santos & Souza, 2012). For example, in one of the systematic reviews, out of the 121 papers included, 62% of the studies had been done in the USA (Donisi, Tedeschi, Wahlbeck, Haaramo & Amaddeo, 2016). Similarly, USA studies are observed to have dominated in two literature review papers authored by Durbin et al., (2007) (91%) and Machado et al., (2012) (50%). The results of these studies showed that psychiatric readmission rates range from 10% within one month after an initial discharge to 86% within 10 years (Lien, 2002; Lin et al., 2010; Bobo et al., 2004; Yussuf et al., 2008), while others have found rates falling between 22% and 80% for readmission within 5 years of discharge from hospital admission (Durbin et al., 2007; Jaramillo-Gonzalez, Sanchez-Pedraza & Herazo, 2014). Further studies have estimated that about 40-50% of the patients with a mental disorder discharged from a psychiatric hospital are being readmitted within one year (Lin & Li, 2008; Machado et al., 2012). These findings suggest that high numbers of patients with mental disorders are being readmitted to psychiatric hospitals worldwide.

There are factors which have been suggested to have contributed to the variation in readmission rate in psychiatric hospitals. Inconsistent readmission rates reported by studies may be due to the differences in study setting, sample size, population and timeframe used to operationalise readmission in the different studies (Lien, 2002; Chambers & Clarke, 1990). In addition, the existence of incomplete clinical records in psychiatric hospitals may also affect the results (Yussuf et al., 2008).

2.5.1 Readmission rates to psychiatric hospitals in HICs

As mentioned, a number of studies from HICs have investigated the rate of readmissions in psychiatric hospitals. For example, a survey conducted among Medicaid psychiatric patients across USA hospitals established a readmission rate ranging from 0% to 60% with a median of 11% within 30 days following a discharge (Mark et al., 2013). In a prospective study, Hamilton et al., (2015) found a readmission rate of more than half (63%) among 588 psychiatric patients within 2 weeks after discharge. In another prospective observational study, Yamada and Korman (2000) collected data from interviews and medical records of 63 psychiatric patients aged 18 to 64 in a follow-up period of 4 years from the initial discharge.

In this study, readmission rates at 6 months (31%), 12 months (46%) and 4 years (62%) were calculated.

On the other hand, other studies conducted in the USA have reported lower rates of readmissions. For example, in Chicago, Lyons et al., (1997) studied psychiatric patients admitted to the 7 most highly utilised hospitals. The study noted that 17.6% were readmitted during the 6-month following discharge from the hospital. Interestingly, the readmission rates obtained in this study were almost half the rate obtained in Yamada and Korman's (2000) study within the same 6 months of follow-up interval. In this study, it was further observed that 7.1% of the patients were readmitted within 30 days of discharge. On the other hand, a one-year readmission rate in a retrospective record review cohort study at a large military psychiatric hospital was almost one third 14% (n=117) the rate reported by Yamada and Korman (2000) in the same period (Bobo et al., 2004). These authors argued that, depending on the nature of the disorders, some patients will normally fluctuate in symptoms with periods of being stable. In this case, readmission will be necessary and unavoidable. In the same vein, Minott (2008) also argued that policies and criteria followed to admit patients may also contribute to the rise in readmissions when they could have been managed at home.

In Canada, the available literature from retrospective studies based on clinical records has found that up to 44% of patients discharged from psychiatric hospital are readmitted within the three-year period of following discharge from hospital. Further analysis showed that the majority of patients had experienced two readmissions during the study period. In this case, few patients were found to have experienced a third and fourth readmission (Bernardo & Forchuk, 2001). These studies further compared the rates of readmissions in physical illnesses to mental disorders. For instance, a retrospective study based on electronic clinical data from acute hospitals found that readmissions within one year of discharge were higher in mental disorders (37.0%) than in physical illnesses (27.3%) (Madi, Zhao & Li, 2007). It can therefore be argued that psychiatric hospitals also experience higher rates of readmissions than general hospitals.

Inconsistent findings on the rate of readmissions to psychiatric hospitals have also been reported in Europe. For example, a systematic review that incorporated studies conducted in the UK estimated readmission rates close to 14% after one month, 34% after six months and 47% after one year (Lien, 2002). A recent retrospective observational follow-up study

conducted in Dublin found a readmission rate of 43% (n=39) within one year of discharge from hospital. This study also revealed that, of the patients readmitted, almost half (49%, n=19) of these patients were involuntarily readmitted (O'Donoghue et al., 2011). In London, a retrospective cohort record review found that 24% of patients were readmitted within 1 year of discharge. The study further found that 41% of the patients had been readmitted by the end of the 5 year study period, (Hodgson, Lewis & Boardman, 2001). These findings are lower than the findings noted by O'Donoghue et al., (2011). In Denmark, readmission rates of 50% after 10 months, 75% after 4 years, and 80% after 10 years were calculated from a case register of all patients with schizophrenia in the country (Lien, 2002).

Existing literature has also reported up to 52% readmission rates in countries such as New Zealand, Portugal, Spain and France. For example, a retrospective cohort study conducted in New Zealand based on archival data of 924 patients found a readmission rate of 41% within 5 years of discharge from the acute admission. This study further noted that the number of admissions was constantly decreasing, from 11.1% readmitted in the second year to 2.6% in the fourth year. In the same study, the majority of the patients (34.1%) had experienced three or more readmissions (Wheeler et al., 2011). A study conducted in Portugal established a readmission rate of 39.6% from the reviewed clinical files of 1276 psychiatric patients followed up on for a period of 21 months after the first discharge (Neto & Silva, 2008). A similar study in Spain found a relatively lower readmission rate of 10% (Martínez-Ortega et al., 2012), whereas a French prospective study reported a higher rate, with almost half of the patients with first episode psychosis having had a readmission over the 2 year follow-up period. Further findings in this study showed that nearly a quarter of patients (21.7%) experienced at least 2 readmissions and 59% had a compulsory readmission (Cougnard et al., 2006).

Evidence from two cohort studies done in Taiwan have found readmission rates of 6.1%, 22.3% and 37.8% at 14 days, one year, and five years respectively (Lin & Li, 2008; Lin et al., 2010). Lin and Li, (2008) further reported a readmission rate of 9% within 30 days and 12% within 60 days of discharge. In addition to this, they also noted a higher readmission rate in males (6.5%) than females (2.8%). The study emphasised the need for improved care strategies, especially in high risk groups, to reduce readmission rates. In a similar South Korean study involving patients with 5 selected mental disorders, 4.5% of the patients were readmitted within 30 days of discharge. This study further found that higher rates of

readmissions were found in private hospitals, possibly due to increased admission with an aim of making a profit. The possible reason for finding lower readmission rates in this study could be the limited number of disorders included in the sample (Han et al., 2016). In an Australian retrospective cohort study, clinical file data of 178 patients established that 46% of the patients were readmitted within one year of discharge. The study further found that 23 patients (13%) had had 2 readmissions while 14 patients (8%) had had 3 or more readmissions within the previous 12 months (Zhang, Harvey & Andrew, 2011).

2.5.2 Readmission rates to psychiatric hospitals in LMICs

Moving to the literature from LMICs, in Columbia, psychiatric readmission rates of up to 60% within one year of discharge from the acute admission have been reported (Jaramillo-Gonzalez, Sanchez-Pedraza & Herazo, 2014). In the same population, a prospective cohort study based on clinical records found that 31% of readmissions occurred within 30 days, whereas 49.5% of readmissions were noted after extending the follow-up period to 90 days. It is noteworthy that many patients were readmitted in their first month after discharge (Sánchez, Jaramillo & Herazo, 2013). Similar findings are also reported in a Brazilian prospective observational study based on interview data from 169 patients with bipolar and psychotic disorders. This study found a one-year readmission rate of 42.6% (Loch, 2012).

Consistent with findings from other countries, studies conducted in Asian countries have also reported relatively high rates of readmissions to psychiatric hospitals. For instance, in Malaysia, a retrospective study based on medical records found a readmission rate of 16.8% in a follow-up period of 6 months after a discharge (Amer Siddiq, CG, Aida, Zuraida & Abdul Kadir, 2008). This rate doubled a more recent prospective observational study in Malaysia which recruited 202 patients with a mental disorder. In this study, Guan et al., (2012) found that one third (32.2%) of patients had at least one readmission within 6 months of discharge. Although the authors of this study discussed that the rates may have differed due to the varying methods employed to calculate the readmission rates and gender imbalance in the samples, the quality of care given to patients may have also played a role. Many authors have also identified the possibility that early readmission may frequently occur if patients are discharged earlier than the required time in order to make space for other patients requiring admission (Behr et al., 2002; Niehaus et al., 2008). In China, Zhou et al,. (2014) retrospectively analysed electronic admissions' data from 3455 patients to establish the rate of readmission. Within the study, it was revealed that 13.8% of patients were

readmitted within one year of discharge. In one quarter of the patients, the readmission occurred in the first month. In the same study, it was further noted that 33.8% were readmitted once and 66.2% were readmitted two times or more during the one-year period.

Few studies from Africa have investigated the rate of readmissions in psychiatric hospitals. Existing literature from these countries has shown that up to 60% of patients are being readmitted to psychiatric hospitals. Consistent with the previous findings, studies conducted in South Africa have also demonstrated an increase in readmission. For instance, results from an earlier cohort study in Cape Town found that 36.6% of patients were readmitted after 2 years of discharge. They also observed that more Black African patients (42%) were readmitted than Coloured (41%) and White (26.5%) patients. This study suggests that there may be higher rates of readmissions in African psychiatric hospitals; yet these contexts have not been maximally researched (Gillis et al., 1986).

In the same country, Behr et al., (2002) retrospectively used patients' clinical records to follow up on a cohort of 180 randomly selected admissions for 12 months after the initial discharge. This study found that over half (52.9%) of the readmissions occurred within 3 months of discharge. In the same study, further analysis showed that 37.4% of the studied patients were readmitted within one year. This, therefore, indicates that the risk of readmission is significantly higher during early days after discharge, which, in turn, demands intensive management of discharged patients within 3 months following a discharge. In the same country, Niehaus et al,. (2008) examined male patients' discharge summaries at Stikland Psychiatric Hospital and found a 37.3% readmission rate following one year of discharge. A similar study at Valkenberg Psychiatric Hospital based on discharge summaries reported a 14.9% readmission rate within one year (Smith, 2005).

Relatively high rates of psychiatric readmissions have also been reported in two Nigerian studies. Firstly, in a retrospective study, Yussuf et al., (2008) used 502 cases of admissions to categorise inpatients' records into single and multiple admissions. This study found that 41.1% were readmitted within a 5-year period from the initial discharge. However, a number of case files with incomplete medical information were included in the analysis which may have contributed to these results. Secondly, a cross-sectional survey of all patients admitted to the Federal Neuropsychiatric Hospital in Nigeria found that 34% of patients were readmitted due to a relapse (Gbiri, Badru, Ladapo & Gbiri, 2011).

In Ethiopia, Fekadu et al., (2007) used clinical records of 1558 patients aged from 12 to 90 to determine patterns of admissions at Amanuel Psychiatric Hospital. The study reported that 38.5% of patients were readmitted within one year of discharge. In the same country, a more recent retrospective chart review study of 410 adult patients admitted over a period of three consecutive years to Jimma Hospital found a 22.6% readmission rate (Tadesse, Gizaw, Abraha & Gebretsadik, 2017). In Zambia, a cross sectional study involving 380 psychiatric patients found that 19.72% of patients admitted at the time of data collection were readmissions (Ngoma, 2011).

Despite finding a range of data worldwide, few studies in Malawi have investigated the rate of psychiatric readmissions, specifically in the northern region. However, 77.3% of the respondents included in one of the unmatched control studies conducted at Zomba Psychiatric Hospital, in southern Malawi, had a history of 2 or more readmissions (Nkangala, 2011). This suggests that the readmission rates to psychiatric hospitals in Malawi may be amongst the highest on the continent. With the increasing trend and effort to shift towards community treatment, a better understanding of factors leading to psychiatric readmissions is of paramount importance. For this reason, the present study is necessary in the northern region of Malawi.

2.6 Implications of psychiatric readmissions

The high rates of readmissions revealed in literature from both HICs and LMICs has a number of implications for mental health services in hospitals, for patients and for their families.

Firstly, psychiatric readmission is costly, especially when it involves those with SMDs (Mental Health Commission of Canada, 2017; Fenton et al., 2002; Das Gupta & Guest, 2002; Madi, Zhao & Li, 2007; Jacobs et al., 2010). These costs are both direct costs (i.e. treatment) and indirect costs (i.e. absenteeism) (Ösby et al., 2009). A Swedish study examining the cost of readmission associated with bipolar disorders found that on average, 66% (25M€) of the cost of all admissions was spent on readmissions every year between 1997 to 2005 (Ösby et al., 2009). Additionally, papers in a systematic review involving patients with schizophrenia have associated impaired cognitive function with poor performance on their activities of daily living, including work which has financial

implications for families (Furiak et al., 2014). Sultan-Taïeb et al., (2013), and Das Gupta and Guest (2002), found an excessive absenteeism-from-work rate in patients with major depression compared to workers who had no depression. Referring to these mentioned expenditures, it can be concluded that countries are spending a great deal on psychiatric readmissions both directly and indirectly.

Secondly, families of psychiatric patients frequently admitted to a psychiatric hospital are also affected when their relative relapses or is readmitted. For instance, in a phenomenological study, families of relatives with psychiatric disorders admitted in the hospital complained of leaving their work places to spend more time on the patient's needs, and their finances were used to pay for medication instead of developing their lives. Furthermore, they were also living in fear because of aggressive and destructive behaviours displayed by the patients during the relapses. They further added that their families felt stigmatised because of not being visited by their neighbours and not participating in social activities (Wankiiri, Drake & Meyer, 2013).

Thirdly, readmissions have resulted in high bed occupancy rates in various psychiatric hospitals (Fuller, Sinclair & Snook, 2016; Jeppesen, Christensen & Vestergaard, 2016). For example, a Denmark study found that the rise in the readmission rate of patients with schizophrenia from 51% in 1970 to 70% in 2012 was associated with an increase in bed occupancy rates (Jeppesen, Christensen & Vestergaard, 2016). Similarly, study findings from the UK reported a regular bed occupancy rate of 100% with a total of 327 patients not finding a bed in a psychiatric hospital (Hollander & Slater, 1994). The rise in bed occupancy rates also affects the services delivered by health workers in psychiatric hospitals. For instance, Hollander and Slater (1994) noted that bed occupancy rates of above 100% result in extra work for the hospital staff. In Australian psychiatric units, Carr et al., (2008) found that the increase in admissions required the employment of additional health care providers to care for the patients. Similar findings were reported in a New Zealand study where they found that auxiliary nurses from an agency were called for their services in times when all beds were occupied in a psychiatric unit (Ng, Kumar, Ranclaud & Robinson, 2001). Lin and Lee (2009) in Taiwan and Han et al., (2016) in South Korea also found that increased admissions affected the quality of care delivered by psychiatrists.

Lastly, an increase in psychiatric readmissions is also blamed for having encouraged the development of new forms of institutionalisation such as nursing homes, residential psychiatric and substance abuse treatment facilities, and community hostels. For example, systematic reviews have found an increased rate of this supported housing in some European countries such as Germany (101%), Italy (159%), Spain (149%), Sweden (15%) and England (40%) (Abramowitz, Grinshpoon, Priebe & Ponizovsky, 2008; Priebe et al., 2008). Similarly in Israel, Abramowitz et al., (2008) found a reduction in the number of beds by 42% resulting in a 307% increase in supported housing.

A conclusion can be drawn from these implications that psychiatric readmissions have a significant impact globally on mental health service delivery and the community. Therefore, examining factors contributing to the rise in readmissions in various hospitals will assist in designing interventions aimed at reducing these implications.

2.7 Factors associated with readmissions into psychiatric facilities

Yussuf et al., (2008) observed that many studies predicting readmission were conducted in HICs, while such efforts in LMICs have been minimal or non-existent. The increase in readmissions and pressure on psychiatric beds have prompted research studies worldwide to focus on the variables associated with readmissions, in particular socio-demographic and clinical-related variables (Behr et al., 2002). Having knowledge of the socio-demographic and clinical factors associated with readmissions has the potential to assist in the management of patients requiring readmission (Barekatain et al., 2013). This may also lead to a better understanding of proactive interventions and may assist health staff in planning care to avoid unnecessary readmissions.

2.7.1 Socio-demographic factors associated with readmission

A number of studies in HICs and LMICs have investigated factors that are associated with psychiatric readmissions. These studies have associated psychiatric readmissions with different socio-demographic factors. In general, there are inconsistent findings from various studies conducted around the world, particularly as to whether socio-demographic variables such as age, gender, marital status, education and employment status are significantly associated with readmissions (Kalseth, Lassemo, Wahlbeck, Haaramo & Magnussen, 2016; Machado et al., 2012). Different study settings, lengths of following up discharges, and

sample and population sizes used in these studies are suggested to have contributed to variations in findings.

Age

Age is among the factors noted in various studies to have predicted the occurrence of readmission in psychiatric patients. For instance, a more recent systematic review of 35 quantitative studies from 6 European countries (Austria, Finland, Italy, Norway, Romania and Slovenia) found only one study to have associated age with readmission rate (Kalseth et al., 2016). Another review of the literature on the predictors of readmission reported that 3 of the 16 quantitative studies from USA, Brazil, Finland, Japan, Switzerland, South Africa and Israel found that patients aged 20 to 49 were associated with increased readmission rates as compared to those older than 49 years (Machado et al., 2012).

A prospective observational study in the USA, conducted by Moore (2014) found that patients aged between 35 and 44 were more likely to be readmitted than those over 55 years. On the contrary, the analysis of clinical data collected from various acute psychiatric hospitals across Canada found that readmissions were significantly higher among patients of above 40 years as compared those below (Madi, Zhao & Li, 2007). A similar study in the same country, Canada built on clinical records collected from a teaching psychiatric hospital found that patients aged between 34 and 38 years were significantly associated with readmissions (Bernardo & Forchuk, 2001). Two similar record review studies conducted in Taiwan found that psychiatric patients of ages ranging from 20 to 39 years were significantly associated with readmissions within 12 months of discharge from the acute hospital admission (Lin et al., 2010; Hung, Chan & Pan, 2017). Similarly, Lin et al., (2010) further found that patients between 20-49 years were associated with higher rates of readmission as the length of follow-up extended to 5 years. Data from earlier studies in two psychiatric hospitals of the UK indicated that patients younger than 54 years were more likely to be readmitted than those above 54 years, suggesting that readmissions are frequently occurring in young patients (Thornicroft, Gooch & Dayson, 1992). However, evidence from some earlier and more recent studies conducted in the USA, UK, Israel, New Zealand and Brazil has found no association between age and psychiatric readmission (Dixon et al., 1997; Langdon, Lidia Yágüez & Brow, 2001; Wheeler et al., 2011; Oyffe et al., 2009; Lyons et al., 1997; Loch, 2012).

Evidence from studies investigating the association between age and readmission also varies across LMICs. For instance, a prospective study found that younger age (<35 years) among general psychiatric patients in India at high risk of hospital readmission when compared to those above 35 years (Vijayalakshmi, Reddy, Salaam & Himakar, 2015). This finding contradicts with findings in a Zambian prospective study which found that patients older than 35 years were at a higher risk of being readmitted than patients below the age of 35 (Ngoma 2011). However, a record review retrospective study in Malaysia found that younger patients aged below 38 years had higher odds of being readmitted within one month of discharge from the acute hospital admission than the older ones, although this finding was not statistically significant (Lee et al., 2017).

To add to this, studies conducted in Cote d`Ivoire, South Africa and Malawi have found that a younger age, less than 40 years, is associated with psychiatric readmission (Behr et al., 2002; Nkangala, 2011; Ve et al., 2010). Further findings in South Africa (Behr et al., 2002) showed that patients aged between 40 to 50 years were less likely to be readmitted than those over 50 years. Yussuf et al., (2008) found that younger ages ranging from 21 to 40 years were also significantly associated with readmissions compared to those over 40 years. In the same study, Yussuf et al., (2008) suggested that young patients usually stay with parents who reinforce the supervision of treatment and take action for any change in their illness, which may lead to increased readmissions. These findings contradict the two Malaysian and an Egyptian study which did not find an association (Amer Siddiq et al., 2008; Guan et al., 2012; Saleh & El-Hadidy, 2012). In these studies, age was not a predictor of readmission.

Gender

Gender has been noted in some studies as one of the factors associated with psychiatric readmissions. An inconsistency of study findings regarding the relationship between gender and rate of readmission has been reported in some systematic review studies. A recent systematic review done in Europe found that only one study identified gender to have an association with readmission rate (Kalseth et al., 2016). Another systematic review conducted by Machado et al., (2012) found that, out of the 16 studies retrieved from different countries, 2 indicated an association between the male gender and readmission while one established that the female gender was associated with psychiatric readmission.

A more recent Canadian study utilising electronic clinical records found no gender difference in the psychiatric readmission rate (Vigod et al., 2013). In an Australian study, clinical files from 8 psychiatric hospitals were retrospectively audited to identify risk factors associated with readmission. This study found that females had a higher likelihood of being readmitted than the males (Callaly, Trauer, Hyland, Coombs & Berk, 2011). On the other hand, other studies have associated male gender with readmission. In a South Korean study, for instance, Han et al., (2016) analysed claim data of 37,796 patients drawn from 53 hospitals who had one of the 5 SMDs investigated in the study. It was noted that the readmission rate for males (6.5%) was higher than the rate in females (2.8%) within 30 days of discharge. Additionally, they also observed an increase in the rate of readmission following an extension of the follow-up period. Similarly, in a 5-year follow-up study of patients discharged from a psychiatric hospital, Thornicroft, Gooch and Dayson (1992) found that readmitted patients were significantly more likely to be males than females. Similar findings were also reported in the US study done prospectively, in which Hamilton et al., (2015) interviewed 1286 patients to examine the risk factors associated with readmission. Their analysis of the interview data and electronic clinical data revealed that males were more likely to be readmitted than females during the first week following discharge. To add to this, other studies conducted in Taiwan (Lin et al., 2010) and USA (Moore, 2014) found that being a female patient was a protective factor associated with the reduced risk of readmission. However, other studies did not find an association (Zilber, Hornik-Lurie & Lerner., 2011).

Some studies conducted in LMICs have also found that gender is associated with readmission to a psychiatric hospital. A retrospective study based on case files in China found that patients who were admitted to psychiatric hospitals were significantly more likely to be female than male (Zhou et al., 2014). Similarly, Amer Siddiq et al.'s (2008) study in Malaysia found similar results: that females were more likely to be readmitted as their readmission rate (68.8%) was two times more than the rate in males (31.3%). A more recent study in the same country noted that female gender had higher odds of being readmitted within one month of discharge than in males, despite the difference being statistically insignificant (Lee et al., 2017). In contrast, Vijayalakshmi et al., (2015) found that male Indians were at an increased risk of experiencing readmissions compared to females. Similarly, analysis of archival data in Nigeria found that male patients were at a significant risk ($p < 0.05$) of relapsing and being readmitted (Gbiri et al., 2011) compared to females. However, in the same country, Yussuf et al., (2008) did not find gender as a risk factor of readmission. Moreover, a case control study

conducted in Cote d`Ivoire found that male patients were more likely to be readmitted than females (Ve et al., 2010). This finding is similar to a Zambian study and an Egyptian study, which found that male gender was significantly associated with readmissions compared to female gender (Ngoma, 2011; Saleh & El-Hadidy, 2012).

Marital Status

Marital status has been consistently mentioned in various studies as one of the factors impacting the rate of readmission to psychiatric hospitals. A USA-based study involving clinical records of 424 geriatric patients at a psychiatric hospital found that single patients were at a significant risk of experiencing a readmission compared to married patients (p=0.010) (Woo, 2006). Similar findings have also been reported in studies conducted in adult psychiatric patients. In the USA, for instance, the analysis of 7177 patients' electronic clinical records found that being unmarried and divorced predicted readmissions (Moore, 2014). Similarly, studies in Canadian psychiatric hospitals among adult psychiatric patients found that divorce also predicted readmission (Bernardo & Forchuk, 2001). In Spanish psychiatric hospitals, Martínez-Ortega et al., (2012) found a significant number of single, divorced or separated patients among the frequently readmitted patients (p=0.05). In this study, being married was a protective factor. These results were similar to findings in the UK study which revealed that unmarried patients were at a higher risk of being readmitted to a psychiatric hospital compared to married patients (Hodgson, Lewis & Boardman, 2001). The findings that marital status is associated with readmission contrasts the findings reported in some studies. Oyffe et al., (2009) and Langdon, Yágüez and Brow (2001), for instance, found no significant difference regarding marital status and readmission.

Previous studies in LMICs have also investigated the association between marital status and psychiatric readmission. In a cross-sectional study which involved 3935 patients admitted to Isfahan psychiatric ward in Iran, it was found that divorced patients were more likely to be readmitted than married patients. The study further noted that mean readmission in divorced patients was 1.56 times more than the mean found in married patients (Barekatain et al., 2013). This study contrasts with the findings from a cross-sectional study in the same country which recruited patients suffering from schizophrenia. In this study, there was no relationship between marital status and readmission (Mansouri et al., 2013). Findings similar to Barekatain et al., (2013) are reported in two Columbian prospective cohort studies which noted that the readmitted patients were more likely to be those who were separated, divorced

or single than those who were married (Jaramillo-Gonzalez, Sanchez-Pedraza & Herazo, 2014; Sánchez, Jaramillo & Herazo, 2013). Furthermore, Sánchez, Jaramilloand Herazo (2013) found that readmission was three times more frequent in couples who were separated or divorced than those in marriage. Similarly, studies conducted in Brazil and Malaysia found that the majority of patients readmitted within three months following a discharge were not married (Lee et al., 2017). Similar findings have also been reported in studies conducted among Brazilian adult patients (Gastala et al., 2000; Silva, Bassani & Palazzo, 2009). While the majority of studies have found unmarried patients at risk of experiencing frequent admissions, a prospective study among adult Indian psychiatric patients found that being married was a significant predictor of readmission (Vijayalakshmi et al., 2015).

Other studies done in Africa have found an association between marital status and readmission. Evidence from these studies has shown that separated, divorced and single patients are more likely to be readmitted than those who are married (Ve et al., 2010; Saleh & El-Hadidy, 2012; Gbiri et al., 2011; Fekadu et al., 2007; Smith, 2005; Ngoma, 2011). The analysis of hospital records in two South African studies found that being married or cohabiting with a partner has a significant protective effect for readmission as compared to being single (Behr et al., 2002; Niehaus et al., 2008). In Malawi, a case control study found that patients who were being readmitted to Zomba Psychiatric Hospital were less likely to be married than single, although this was not statistically insignificance (Nkangala, 2011). There is evidence in the literature that multiple admissions are associated with being separated, divorced or single because these patients lack social support from their partners in times of stressful moments (Hamilton et al., 2015; Jaramillo-Gonzalez et al., 2014; Nkangala, 2011; Tadesse et al., 2017).

Education and Occupation

Other socio-demographic factors which have been widely found to be associated with psychiatric readmissions are levels of education and occupation. Authors have documented that patients who have low levels of education and who are unemployed may not take care of their daily life and may transfer financial burden to family members. Such problems of unemployment may cause stress, relapse and psychiatric readmission (Mansouri et al., 2013; Nkangala, 2011). In some studies, patients having higher levels of education has been associated with improved health outcomes (Tadesse et al., 2017). Studies have further

documented that the severity of the illness and multiple readmissions reduce a patient's functionality resulting in poor work performance (Silva, Bassani & Palazzo, 2009).

Machado et al.'s (2012) systematic review of literature noted a low level of education as a predictor of readmission in studies conducted in countries such as Japan and Switzerland. The authors reported that most of the readmitted patients had lower levels of schooling and unemployment for a number of reasons, such as being denied rights to education and occupation due to their chronic mental disorder, drug side effects, symptoms, and impaired cognitive and social functioning. Another study investigating factors associated with readmission in the USA also found that not attaining high school education and unemployment were significantly correlated with readmission (Bobo et al., 2004). In the same vein, two German studies found that employment and higher education were protective factors against readmission (Frick et al., 2013; Schennach et al., 2012). Similar findings of lower levels of education and unemployment associated with frequently readmitted patients have also been noted by some studies conducted in France (Cougnard et al., 2006), Georgia (Amirejibi & Zavradashvili, 2016) and the USA (Hamilton et al., 2015; Suzuki, Yasumura, Fukao & Otani, 2003). Some studies conducted in Israel (Oyffe et al., (2009), UK (Langdon, Yágüez & Brow, 2001; Hodgson, Lewis & Boardman, 2001) and Malaysia (Guan et al., 2012), on the other hand, did not find education and employment to be statistically significant regarding readmission.

Similar findings have been reported in LMICs. In Columbia, for instance, patients who had completed secondary school education were at a higher risk of being readmitted than those with a university education (Jaramillo-Gonzalez, Sanchez-Pedraza & Herazo, 2014). In the same study, further analysis showed that students and retired people were at a significantly higher risk of having a readmission than unemployed people. Another study found that a lower level of education (r=-0.460) and unemployment (r=-1.40) were the important factors associated with psychiatric readmission among patients with schizophrenia in Iran (Mansouri et al., 2013). Inconsistent findings have also been reported in Brazilian studies. For example, an electronic record review study found unemployment to be associated with readmission on univariate analysis (Silva, Bassani & Palazzo, 2009), while a case control study did not establish an association (Gastala et al., 2000). Further analysis by Silva et al., (2009) also noted that level of education did not predict readmission.

Similar findings have also been reported in studies conducted in Africa. In South Africa, for example, Smith (2005) found that patients who were employed reported fewer readmissions than those who were unemployed and a Nigerian study found that unemployed patients were more likely to experience a readmission than the employed patients (Gbiri et al., 2011). Additionally, a qualitative study exploring nurses' perceptions of psychiatric readmissions in the same country found that inadequate education was frequently mentioned by participants as a contributing factor (Nxasana & Thupayagale-Tshweneagae, 2014). Evidence from studies conducted in Zambia, Cote d`Ivoire and Malawi indicate that level of education and employment is associated with readmission in psychiatric hospitals. For instance, Ve et al., (2010) and Nkangala (2011) found that the majority of patients readmitted in Ivoirian (95.4%) and Malawian (63%) psychiatric hospitals did not have secondary school education. To add to this, the latter study also found that unemployed patients were more likely to have a readmission than those who were employed (p=0.046). Similarly, two studies conducted in Zambia (Ngoma, 2011) and Egypt (Saleh & El-Hadidy, 2012) found that unemployed patients were more likely to have a readmission than those who were employed. Contrasting with the Egyptian study, the Zambian study further found that educated patients were at a higher risk of having another admission compared to uneducated (p=0001) patients (Ngoma, 2011). On the other hand, some studies done in LMICs such as Malaysia (Guan et al., 2012), Iran (Barekatain et al., 2013) and China (Zhou et al., 2014) did not find education and employment to be associated with readmission.

Catchment Area

Another consistent predictor of readmission found in the literature is the catchment area. Literature has described catchment area as a maximum distance expressed in the form of a radius from the hospital, a circle in which people can take private or public transport, or are prepared to walk if transport is not available (Diesfeld, 1973). Evidence from various studies have associated catchment area with readmission. For example, studies among patients suffering from medical illnesses have associated higher rates of readmission with patients staying closer to the hospital area than those further away (Minott, 2008; Purdy, 2010). Similarly, in psychiatric hospitals, some studies have found that living within a catchment area is associated with a higher rate of readmission. This evidence is seen in a retrospective study following up discharged psychiatric patients who were interviewed 12 months after discharge to determine the risk of subsequent readmissions. In this study, it was found that patients admitted from within the public catchment area were at a greater risk of being

readmitted when compared to those who came from outside (O'Donoghue et al., 2011). However, in a Norwegian retrospective study, findings showed no significant difference in the rate of readmission between patients staying close to and further away from the hospital (Norum, Olsen, Nybrodahl & Sørgaard, 2013).

Consistent with findings from studies conducted in HICs, catchment area has also been reported to be associated with readmissions in LMICs. For example, a case control study in Brazil found that patients admitted from the city where the hospital was allocated had a significantly higher risk of being readmitted than those from outside the city after a 12 month-period of follow-up (Silva, Bassani & Palazzo 2009). Similarly, Fekadu et al., (2007) in Ethiopia found that the majority of psychiatric patients admitted were from within the hospital`s catchment area of Addis Ababa. In this study, they also found that readmission rates in patients from within the hospital's catchment area were about twenty times that which occurred among patients staying further away from the hospital. These authors further concluded that increased readmission happened among patients residing in Addis Ababa because they could easily access the hospital in times of need. To contrast with findings from other countries, a Zambian study found that patients staying more than twelve kilometres away from the psychiatric hospital were more likely to be readmitted than those from within the hospital`s catchment area ($p<0.001$) (Ngoma, 2011). On the other hand, a study in Malawi found that the majority of patients readmitted to a psychiatric hospital came from outside the hospital`s catchment area compared to those that were from within. However this was not found as a predictor of readmissions (Nkangala, 2011). Similarly, an Indian study also did not find that staying within or outside a catchment area was a risk factor to readmission (Vijayalakshmi et al., 2015).

2.7.2 Clinical factors associated with readmission

In addition to the socio-demographic factors described above, a range of clinical factors have also been found by various studies to increase the risk of readmission. The following clinical factors are discussed in the paragraphs below: diagnosis, history of substance use, physical co morbidities, type of antipsychotics, side effects, forensic psychiatric history and insight.

Diagnosis

Various studies conducted in both HICs and LMICs have associated readmission with different diagnoses made by the treating clinicians. These diagnoses are based on either

DSM-IV (Saleh & El-Hadidy, 2012; Fekadu et al., 2007; Guan et al., 2012; Barekatain et al., 2013) or ICD-10 diagnostic categories (Langdon, Yágüez & Brow, 2001; Martínez-Ortega et al., 2012; Hodgson, Lewis & Boardman, 2001; Gillis et al., 1986). The majority of studies from HICs have consistently associated diagnoses of psychotic disorders with an increase in the rate of psychiatric readmission (Lin et al., 2010; Bobo et al., 2004; Han et al., 2016; Hodgson, Lewis & Boardman, 2001; Hamilton et al., 2015; Madi, Zhao & Li, 2007). On further analysis, Bobo et al., (2004) found a diagnosis of bipolar disorder as a significant protective factor to readmission. This differs with findings in some studies from the same region in which they found that mood disorders as predictors of readmission compared to other psychotic disorders (Yu et al., 2015; Thornicroft, Gooch & Dayson, 1992; Webb, Yaguez & Langdons, 2007; Mark et al., 2013; Martínez-Ortega et al., 2012; Lorine et al., 2015).

Retrospective record review studies conducted in Portuguese and Spanish psychiatric hospitals found that patients with diagnoses of schizophrenia spectrum disorders were more likely to be readmitted within six months after discharge than those with other disorders such as bipolar and substance-related disorders (Neto & Silva, 2008; Martínez-Ortega et al., 2012). Similarly, in the USA, Lorine et al., (2015) performed a retrospective chart review study involving 207 inpatients readmitted within six months after being discharged from their first admission. This study found that patients with a diagnosis of schizophrenia and schizoaffective disorder were significantly associated with readmission compared to those who had other affective and psychotic disorders ($p<0.05$). In the same country, the analysis of data extracted from medical records found that a diagnosis of a psychotic disorder was a significant factor associated with readmission when compared to other disorders (Moore, 2014). To add to this, three similar retrospective studies based on clinical charts found that patients with a diagnosis of schizophrenia were more likely to be readmitted to Canadian and Portuguese psychiatric hospitals than those with mood and schizoaffective disorders (Bernardo & Forchuk, 2001; Madi, Zhao & Li, 2007; Neto & Silva, 2008).

Moreover, prospective studies in Taiwan found that diagnoses of schizophrenia and affective disorders were associated with readmission when compared to other disorders (Lin et al., 2007; Lin et al., 2010), which is consistent with findings of retrospective studies conducted in the UK (Webb, Yaguez & Langdons, 2007; Hodgson, Lewis & Boardman, 2001). Bobo et al., (2004) and Hodgson, Lewis and Boardman (2001) further found that a significantly

higher risk of readmission was seen in patients diagnosed with a psychotic disorder than in patients with a non-psychotic disorder. It is argued in literature that patients with bipolar disorder experience few readmissions because they seek hospital assistance earlier than psychotic patients. It is further argued that depression is less likely to be associated with early readmission because the symptoms experienced by patients may result in less of a burden to caregivers compared to symptoms of other disorders, such as schizophrenia. However, some studies conducted in HIC countries such as the UK, USA, Israel and Germany did not find diagnosis to be a predictor of readmission (Zilber, Hornik-Lurie & Lerner, 2011; Frick et al., 2013; Langdon, Yágüez & Brow 2001; Oyffe et al., 2009; Bowersox, Saunders & Berger, 2012).

Studies conducted in LMICs have also found an association between diagnosis and readmission. In Malaysia, for example, Guan et al., (2012) found that the diagnosis of psychotic disorder was significantly associated with readmissions compared to bipolar disorders and major depressive disorders ($p=0.04$). Published studies conducted in India, China, Brazil and Colombia have found patients with diagnoses of schizophrenia, depression, bipolar and substance abuse disorders at a high risk of being readmitted to a psychiatric hospital (Vijayalakshmi et al., 2015; Silva, Bassani & Palazzo, 2009; Alavi, Nakhaee & Sabahi, 2014; Jaramillo-Gonzalez, Sanchez-Pedraza & Herazo, 2014; Zhou et al., 2014; Barekatain et al., 2013; Gastala et al., 2000).

Studies conducted on small and large samples based on medical records of patients found that patients diagnosed with psychosis and bipolar disorders were more likely to be readmitted to Chinese, Iranian, Nigerian and South African psychiatric hospitals than those with other disorders such as substance-related disorders (Alavi et al., 2014; Barekatain et al., 2013; Gillis et al., 1986; Smith, 2005; Yussuf et al., 2008; Zhou et al., 2014). On the other hand, some studies conducted in LMICs found no statistically significant difference between diagnosis and readmissions (Loch, 2012).

History of substance use

Another variable mentioned as having an influence in the occurrence of readmission is substance use. Cannabis, tobacco and alcohol are the most commonly used substances in the world (United Nations Office on Drugs and Crime, 2013; 2015). Studies have established a relationship between substance use disorders and mental disorders (Lai & Sitharthan, 2012).

Arguably, there is a possibility that these co-occurring substance use problems are given less attention than the SMDs during treatment (Bernardo & Forchuk 2001). Among other reasons, a review of literature shows consistently that patients with psychiatric disorders use these substances to reduce the unpleasant effects of psychotropic drugs and to self-medicate their psychotic symptoms such as hallucinations and delusions (Caton & Hasin, 2000; Bimerew, Sonn & Kortenbout, 2007). However, studies have argued that substances such as alcohol and cannabis reduce the effectiveness of antipsychotics on the symptoms of psychiatric disorders. In addition to this, substance use may reduce medication adherence in a patient. This may result in a relapse of symptoms and an increased rate of readmissions (Brunette et al., 2006; Chetty, Miller & Moodley, 1994; Lai & Sitharthan, 2012; Drake & Brunette, 1998).

Studies conducted in HICs have found a statistical significant association between substance use and the rate of readmission. For example, retrospective studies conducted in the USA and Canada involving clinical files and electronic databases found a significant increase in the rate of readmission among patients abusing substances compared to those who did not (Lorine et al., 2015; Madi, Zhao & Li, 2007; Bobo et al., 2004; Mark et al., 2013). In addition to this, Madi, Zhao and Li (2007) reported that the risk of readmission in patients with a co-occurring substance use disorder and schizophrenia was 14.2% higher than that of patients with a substance use disorder or schizophrenia alone.

Similar findings have also been reported in studies conducted in the UK, Germany and Australia on small and large samples. In the UK, for instance, the analysis of data captured from clinical files and electronic databases found a significant increase in the rate of readmission in patients using substances like alcohol and cannabis compared to those who were not (Langdon, Yágüez & Brow, 2001; Chakraborty & Aryiku, 2008). In South London, Patel et al., (2016) found a significant risk of readmission in patients who reported a history of cannabis use at their first admission compared to those who were not using it. In a similar retrospective study conducted in Australia, Zhang, Harvey and Andrew (2011) found that patients with a history of alcohol intoxication at first admission were significantly more likely to be readmitted than those who had never experienced it. Further findings in this study showed that there were a significantly higher number of cannabis users among patients with schizophrenia than in other disorders.

Studies utilising other methodologies also had similar findings. For instance, a prospective observational study of discharged patients found that the risk of relapse and readmission was increased with the continuation of cannabis use at home (Schoeler et al., 2016). In another qualitative study, findings in clinicians' focus groups concurred with patients' chart reviews that substance use increased the risk of readmission. Interestingly during the interviews, the patients did not mention substance use as a risk factor (Mgutshini, 2010). In a similar exploratory qualitative study conducted in Australia, 14 participants also reported that substance use problems contributed to their readmission (Duhig, Gunasekara & Patterson, 2017). However, findings in some studies did not show an association between substance use and readmission (Oyffe et al., 2009; Cougnard et al., 2006; Bernardo & Forchuk, 2001). Inadequate data in other studies on substance use has been reported as one of the reasons for not finding an association between readmission and substance use (Hamilton et al., 2015).

Similar inconsistent findings have also been reported in studies conducted in LMICs. A one-year follow-up study of 316 discharged patients found that the use of psychoactive substances put patients at a greater risk of readmission (Jaramillo-Gonzalez, Sanchez-Pedraza & Herazo, 2014). Similarly, Vijayalakshmi et al., (2015) found that patients using substances such as alcohol were more likely to be readmitted in Indian psychiatric hospitals compared to non-users. The analysis of discharge summaries in South Africa also found that patients with a current history of substance use were at a significantly higher risk of readmission compared to those without (Smith, 2005). Similarly, participants in qualitative studies involving nurses and patients' guardians also reported the use of alcohol to be a contributing factor to increased readmissions. These studies have further documented specific substances such as 'Khat' in Ethiopia and 'Nyaope' in South Africa to have contributed to the increase in readmission. They further reported that the community contributed to this problem by selling these substances to patients (Tadesse et al., 2017; Bimerew, Sonn & Kortenbout, 2007; Nxasana & Thupayagale-Tshweneagae, 2014).

While some studies have cited substance use as a risk factor associated with readmission, some did not establish an association. For instance, chart review studies conducted in Iran and Malaysia did not find an association (Lee et al., 2017; Barekatain et al., 2013; Amer Siddiq et al., 2008). However, Barekatain et al., (2013) further found that the readmission rate in opium users was between one and three times the rate in patients who were not using substances.

Physical comorbidities

The literature has documented high rates of physical diseases in patients with SMDs who are admitted to a psychiatric hospital (Phillips, 1937; Robson & Gray, 2007). Some of the commonly mentioned medical conditions co-occurring with SMDs include: infectious diseases, diabetes, respiratory diseases, cancer and HIV infection (Batki et al., 2009). One study found that patients with schizophrenia and schizoaffective disorders had higher rates of physical diseases such as coronary artery disease, renal failure, hypertension and asthma (Meszaros & Dimmock, 2011). Some studies have also established higher rates of HIV in patients with SMDs such as schizophrenia and severe mood disorders (Cournos, McKinnon & Sullivan, 2005). Evidence has further shown that these physical diseases are missed and under-reported in such patients (Phelan, Stradins & Morrison, 2001; Meszaros & Dimmock, 2011; Daly, 2017).

Various studies have found that these comorbid physical illnesses predict psychiatric readmissions. In a review of literature investigating the association between comorbid physical diseases and readmission, the majority of studies concluded that the risk of readmission increases when psychiatric disorders co-exist with medical illnesses (Sprah et al., 2017). Likewise, studies in the USA have also found that psychiatric disorders co-occur with physical illness and increase the likelihood of readmission. For instance, the analysis of electronic medical records found that psychiatric patients with medical comorbidities were more likely to be readmitted than those who had a psychiatric disorder only. Further analysis revealed a strong association between psychiatric disorders and physical diseases such as cellulitis, pancreatitis, cancer, diabetes, hypertension, liver disease, endocarditis and renal problems (Mark et al., 2013). In contrast to these findings, retrospective and prospective studies in Columbia found that co-occurring medical conditions protected patients from being readmitted to the psychiatric hospital (Jaramillo-Gonzalez, Sanchez-Pedraza & Herazo, 2014; Sánchez, Jaramillo & Herazo, 2013). Further, Sanchez and colleagues 2013 also noted that patients with co-occurring medical conditions were taken to hospital and started on both medical and psychiatric treatment earlier than those with psychiatric disorders alone.

Type of antipsychotics

Studies have reported inconsistent findings on the association of antipsychotics (FGAs and SGAs) with readmission. For instance, a retrospective cohort study conducted among 533

Croatian patients diagnosed with schizophrenia found that SGAs had significantly reduced the rate of readmission compared to FGAs within 12 months after discharge from the acute admission (Herceg et al., 2008). However, further analysis found no statistically significant difference in using SGAs in the second year post-discharge. Besides non-adherence to treatment, Herceg and colleagues (2008) also suggested that side effects are among the contributing factors to the differing results in the first and second year after discharge. Another similar two-year follow-up study involving electronic medical data from 1039 patients with chronic schizophrenia found significantly higher rates of readmission in patients receiving FGAs than those on SGAs (Risperidone and Olanzapine). Additionally, further analysis did not show any statistically significant difference between readmission rates with the two SGAs (Robinowitz et al., 2001). Another study in Germany, which investigated readmissions at 12months after discharge, found a significant number of relapses and readmissions among patients taking FGAs when compared to those taking SGAs (Schennach et al., 2012).

On the other hand some studies have found SGAs to have an association with readmission. For instance, a record review study conducted in the USA among 195 patients with schizophrenia found that patients on SGA (Olanzapine) were at a significant risk of being readmitted compared to those on FGAs within 6 months after discharge (Patel, Dorson, Edwards, Mendelson, & Crismon, 2002). In the same study, further analysis showed that the rate of readmissions were lower in patients taking FGAs (20%) than in those taking SGAs (Olanzapine 34% and Risperidone 35%). Although insignificant results, further analysis in the same study noted that readmission rate was higher in patients using SGAs than in those taking FGAs at one year after readmission (Patel et al., 2002). Other studies did not show any relationship between the type of antipsychotics and readmission. For example, a retrospective study analysing different antipsychotic prescriptions of 1400 discharged Slovakian patients diagnosed with schizophrenia did not establish any significant association between FGAs, SGAs, and readmission (Aziri, Turcek & Pecenak, 2012).

Inconsistent findings on this variable have also been reported by studies conducted in LMICs. For instance, a prospective observational follow-up study conducted in Malaysia found that patients receiving FGAs were more likely to be readmitted than those taking SGAs within 6 months of discharge (Guan et al., 2012). However, a Brazilian retrospective record review study involving 96 patients found lower readmission rates in patients taking Clozapine (SGA

10%) than those on Haloperidol (FGA 16%) and Risperidone (SGA 27%) within 12 months after discharge (De Castro & Elkis, 2007). Aside from these findings, Haloperidol (SGA) users had lower readmission rate (16%) than those on Risperidone (SGA) (27%). However, these differences were not statistically significant. Similarly, a more recent Malaysian retrospective study involving 95 clinical charts of discharged psychiatric patients also found that neither SGAs nor FGAs were significantly associated with high rates of readmissions (Amer Siddiq et al., 2008).

Side effects

Adverse health outcomes of medication prescribed to patients with mental disorders are known as side effects. These side effects are presumed to lead to non-adherence and relapse in some patients (Xiao et al., 2015; Kazad, Moosa & Jeenah, 2008). Moreover, studies have associated these side effects with an increase in readmission to psychiatric hospitals. For instance, a German study conducted among patients with schizophrenia found that patients with side effects were more likely to relapse and be readmitted than those without ($p<0.001$) (Schennach et al., 2012). However, some studies found that side effects were not associated with readmission as the majority did not report any problem with their medication (Hamilton et al., 2015).

In LMICs, in a study examining nurses' perceptions on readmission, participants mentioned drug side effects as being one of the major contributors to readmission. On this finding, participants clarified that side effects cause patients to decide to skip or stop treatment leading to relapse and readmission (Nxasana & Thupayagale-Tshweneagae, 2014). In another study, the odds of having a relapse and readmission among patients experiencing side effects at a health service in South West Ethiopia was 1.83 times more than that of patients without side effects (Fikreyesus, Soboka & Feyissa, 2016).

History of arrests

Another significant predictor of readmission described in some studies is a history of arrest. Although there is a paucity of literature on the history of arrests predicting readmission, a retrospective record review study conducted in a military hospital found that patients with a current or previous history of legal problems were at a significantly higher risk of being readmitted than those without ($p<0.001$) (Bobo et al., 2004). In Sweden, a study on archival data of patients discharged from a forensic psychiatric hospital found that almost two thirds

(69%) of these patients were readmitted to the hospital (Fazel, Wolf, Fimińska & Larsson, 2016). Another similar study in Canada found a significant increase in readmissions among forensic psychiatric patients within 12 months of discharge from the acute hospital admission (Penney, Marshall & Simpson, 2016). This increase in readmission rates of forensic psychiatric patients is viewed as a sign of a failure to integrate these people into the community due to poor housing, a lack of social and financial support, and stress (Penney, Marshall & Simpson, 2016).

Insight

The literature has documented that the majority of patients with severe mental disorders such as schizophrenia have no insight into their illnesses. This means that patients with no insight do not realise that they have a mental disorder. In addition, having no insight is viewed as influencing a patient`s adherence to treatment (Lu & Wang, 2012; DSM-IV, 2000; Omranifard, 2008). A number of studies have found that non-adherence to treatment increases the risk of relapse and readmission (Sariah, Outwater & Malima, 2014; Ngoma, 2011; Yussuf et al., 2008; Mgutshini, 2010; Guan et al., 2012). Nxasana and Thupayagale-Tshweneagae (2014) found that poor insight is one of the major contributing factors to non-adherence, which results in an increased number of patients being readmitted to a psychiatric hospital. Similarly, Omranifard (2008) found that poor insight and the feeling of being cured were the prominent causes of non-adherence to treatment in patients who had registered multiple admissions to psychiatric wards.

Despite finding a number of studies worldwide, there are no studies which have investigated the readmission rate and associated factors among psychiatric patients in Malawi. Again, the previous literature has shown that there are inconsistent findings on the rate of readmission and variables associated with readmission to psychiatric hospitals. The present study therefore aims to establish the readmission rate and the factors associated with readmissions in Malawi. The present research will contribute some knowledge to the existing gap and act as a platform for future research activities in this same area. The variables to be investigated are summarised in Figure 1 below.

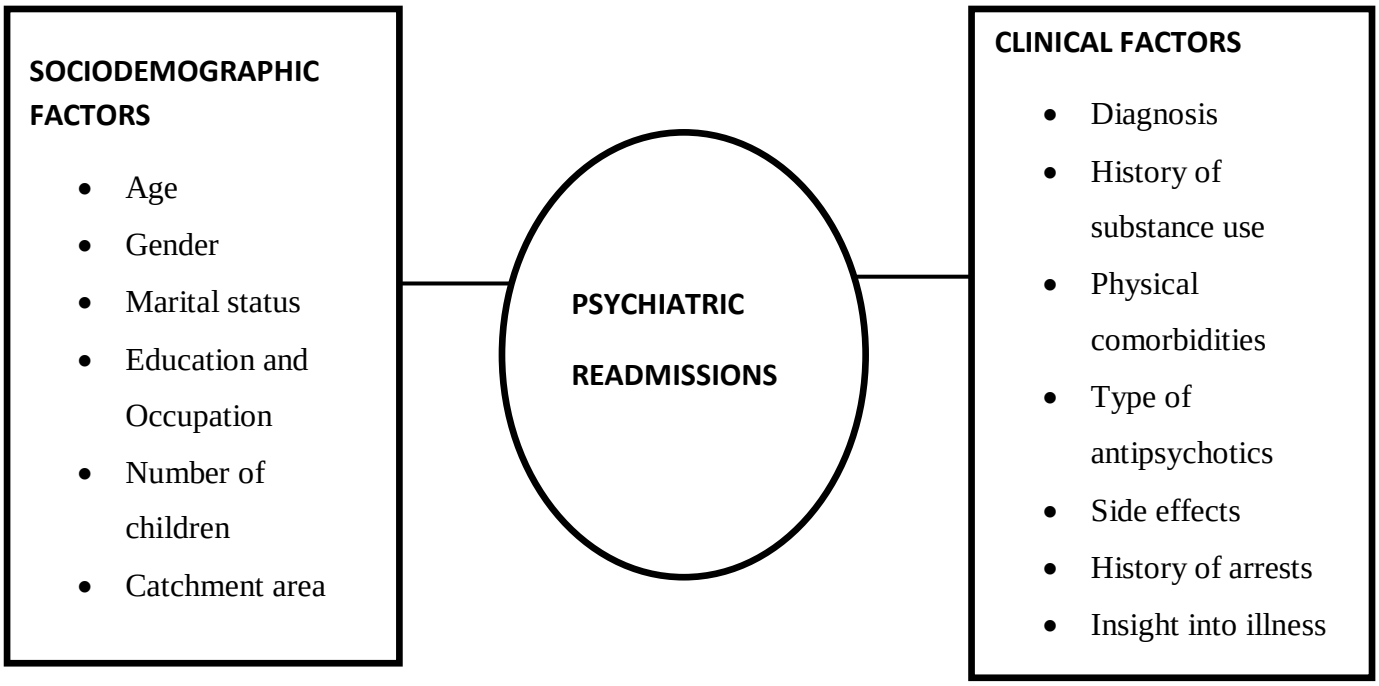

Figure 1: Categories of socio-demographic and clinical factors predicting readmission.

Chapter three details the methodology used to conduct the present study.

CHAPTER THREE: METHODS

3.0 Research design

This study used a quantitative approach to quantify the rate of readmissions and also predict the associated factors (Williams, 2007). It was a retrospective (historical) cohort study. Clinical data from a cohort of patients who were admitted for the first time at SJOG Psychiatric Hospital between 1 January 2014 and 31 December 2015 were retrospectively followed up on for any readmission up to one year after their initial discharge. In cohort studies, a subgroup of people is prospectively or retrospectively followed up over a period of time and possible causal factors are observed. These studies are also longitudinal because subjects are studied at more than one point in time (Stewart, 2002).

3.1 Study setting

This study was conducted at St John of God (SJOG) Psychiatric Hospital`s admission unit known as House of Hospitality (HOH), which has 39 beds, as well as at the outpatient department called St John of God Centre (SJOGC) in the city of Mzuzu. These institutions are allocated on Chimaliro Road and Chibavi Road respectively. The hospital serves all six districts in the northern region (see map in Appendix G) with a total population of 2,235,400 people (National Statistical Office, 2010). As of 1 January 2016, the population of Malawi was estimated to be 17, 738, 678 people (National Statistical Office, 2010).

3.2 Study Population

All the patients admitted to and discharged from the inpatient psychiatric ward of SJOG Psychiatric Hospital from 1 January 2014 to 31 December 2015 were the target population for this study. The hospital admitted a total of 577 patients during this time (293 patients in 2014 and 284 patients in 2015). Out of the 577 admissions, 374 patients were new admissions to SJOG.

3.3 Inclusion criteria

The case files of the following patients were included:

- First admission at SJOG falling between 1 January 2014 and 31 December 2015
- Male or female patients aged 18 and above
- Clinical diagnosis of a mental disorder on AXIS I according to DSM IV criteria

- Complete recorded information at each admission period

3.4 Exclusion criteria

The case files of the following patients were excluded:

- Those with incomplete admissions data recorded - for example, those who died absconded or were transferred/referred to another institution.

3.5 Sampling

The study included all the clinical files meeting the inclusion criteria above. All the 374 clinical case files of those patients who had their first admission at SJOG Psychiatric Hospital between 1 January 2014 and 31 December 2015 were included in the study. The clinical information recorded in the case files during patient's routine follow-up was reviewed at 3 months, 6 months and 12 months post-discharge from the first admission to evaluate the readmission rate and related factors.

3.6 Sample size estimation

A sample size calculation was conducted utilizing an estimate of the prevalence (P) of rates of psychiatric readmissions with an error margin of ± 0.05 and the "best guess" of P at 0.25. The sample size was calculated by using the formula below (Israel, 2012):

$$n = \frac{Z^2_{1-\alpha/2} P (1-P)}{e^2}$$

Where:

n = number to sample

$Z^2 = (1.96)^2$ for 95% confidence interval ($\alpha = 0.05$)

P = "best guess" for prevalence (Baseline level of the selected indicator) (e.g. ± 0.25). This is an anticipated proportion of clinical case files with probably more than one admission (readmission).

1-P =Anticipated proportion of clinical case files without probable readmission.

e = maximum tolerable error for the prevalence estimate (0.05)

The initial estimated sample size is:

$$n = \frac{1.96^2 * 0.5\,(1-0.5)}{0.05 * 0.05} = 289$$

The minimum calculated sample size for the study was 289. It was assumed that some of the files would be excluded for failing to meet the inclusion criteria. For this reason, the study included all the 374 files of those patients who had their first admission at SJOG between 1 January 2014 and 31 December 2015.

3.7 Study procedure

The SJOG Health Management Information System (HMIS) is simple. All patients visiting the SJOG outpatient or inpatient department for the first time are assessed and treated, and their information is recorded in the file. These files are assigned hospital Identity Numbers (ID), which consist of the patients' numbers and the year of their first visit to SJOG. The names together with the diagnoses and IDs are written in an outpatient register designed for recording new patients. These details are later transferred to a computer database. The names of admitted patients also appear in the inpatient register. Detailed information of all subsequent visits and readmissions is recorded in the case file at each contact. These case files are kept in filing cabinets in a lockable room in the outpatient department. This process eases access to the old case file when the patient comes for subsequent review.

For this study, names of all patients who had their first admission at SJOG Psychiatric Hospital between 1 January 2014 and 31 December 2015 were retrieved from the inpatient admission registers. These names were used to identify their IDs in the outpatient register or computer database. The use of IDs eased the exercise of excluding those who had their first admission before 1 January 2014 or after 31 December 2015. These IDs were later used to retrieve case files from the outpatient filing cabinets, outreach clinic boxes and at the inpatient department.

Two research assistants (a nurse and a clinician) were involved in the study after undergoing orientation training on confidentiality and data collection before the actual exercise. One research assistant was assigned to collect data from files at the outpatient department. The research assistant retrieved files from the outpatient department (SJOGC) on Fridays. The retrieved case files were recorded in a separate register before they were moved out of the filing cabinet. These case files were moved to a lockable room accessed only by the researcher and his research assistants. To avoid interrupting normal services during working

hours at the outpatient department, data collection was done at night, over the weekend and on holidays.

The other research assistant was assigned to collect data at the inpatient department. This research assistant followed up on patients who had been admitted between 2014 and 2015 and happened to be in admission at the time of data collection. At the inpatient department, the research assistant also used a lockable room when collecting data. Data collection at the inpatient department was done during working hours. In both settings, the research assistants used an extraction sheet to fill in the necessary information from the case files. Each patient was followed up from his/her first admission up to one year. The information for each admission occurring within the study period was recorded on an extraction sheet. That is to say, a patient who was admitted to SJOG hospital multiple times in one year was counted each time as a separate readmission. The researcher checked the extraction sheets for completeness before returning the case files to the filing cabinets. The filled extraction sheets were kept in lockable filing cabinets to maintain confidentiality.

3.8 Instrumentation and Data collection

Data from case files were collected by the two research assistants. The researcher supervised the data collection process. The research assistants used an extraction sheet (see Appendix A) developed by the researcher. This extraction sheet was developed based on tools used in similar studies done in both HICs and LMICs, including in Africa (Nigeria, South Africa and Zambia) (Loch, 2012; Guan et al., 2012; Lyons et al., 1997; Nkangala, 2011; Zhang et al., 2011; Yussuf et al., 2008; Ngoma, 2011). It was also modified with information from the mental health assessment tool used at SJOG Psychiatric Hospital. The extraction sheet was in English. It was not translated into the local language because the two research assistants could read and write in English. This extraction sheet collected data from case files regarding the patients' socio-demographic and clinical information. It also captured information on admissions. The following were the three measures on the extraction sheet:

a) **Socio-demographics**: This section (Section A) had 6 items for collecting socio-demographic variables, namely: age, gender, marital status, employment, education, number of children, and catchment area.

b) **Measurement of psychiatric admissions:** This section (section B) utilized 3 items to collect data on admission rates. These admissions were recorded up to 12 months of discharge from the acute hospital admission. Data on admissions enabled the researcher to calculate the readmission rate based on the number of patients admitted (person-based) in a period of 12 months after the first admission. In this study, the rate of readmission was calculated at 3 months, 6 months and 12 months after the first admission.

The person-based readmission rate was calculated using Chambers and Clarke's 1990 formula, which recommends that the numerator be the number of readmitted patients in a given time interval after a first discharge from the psychiatric hospital. The denominator corresponds to the number of patients discharged within the same period.

Formula:

$$= \frac{\text{Number of readmitted patients within given time interval of previous initial discharge}}{\text{Number of discharged patients within the same period}}$$

c) **Clinical Factors:** This section (Section C) was used to collect clinical and related variables in patients' files. It comprised 8 items, namely: diagnosis, comorbid physical illnesses, substance use, type of antipsychotics, long-acting injectables, side effects, history of arrests, and insight (as perceived by a healthcare provider)

3.9 Data analysis

Data was analysed using the Statistical Package for the Social Sciences (SPSS) Version 22.0. Case files of single admissions and readmissions in the study period were compared. Descriptive statistics (frequency distribution, percentages, medians and range) were used to assess the distribution of variables between the compared groups. The Pearson chi square test was used to compare proportions of categorical variables (diagnosis, marital status) by gender. A non-parametric test (Mann Whitney's t test) was used to compare the means of a continuous variable – age – in order to determine its potential risk factor because data for age was not normally distributed. The examination of the unadjusted associations between readmission as the dependent variable, and the participants' demographic and clinical characteristics as independent variables was done. Statistical significance was based on a 2-

sided test set at alpha= 0.05. In addition, multiple logistic regression models were developed to calculate odds ratios while controlling for potential confounders (age and gender). The results of the regression models were reported as odds ratios (ORs) with 95% confidence intervals (CIs).

3.10 Ethical Considerations

Ethical approval for this study was granted by the Faculty of Health Sciences Human Research Ethics Committee at the University of Cape Town (HREC REF: 788/2016) (see Appendix D). Approval to conduct this research in Malawi was obtained from the National Health Sciences Research Ethics Committee (16/12/1710) (See Appendix E). Permission to conduct the research at SJOG Psychiatric Hospital in Mzuzu was obtained from the institution's Director of Services (See Appendix C). The study did not seek individual consent from patients because it was an audit project which directly involved case files and only de-identified data is reported in this dissertation, as well as in any papers published.

Clinicians or nurses on duty were informed of patients who needed their attention, according to their files. For example, case notes of treatment defaulters were referred. There was no physical or psychological harm of human beings since the study did not directly involve human subjects. There were no monetary benefits for the patients during the study. The study results will indirectly assist patients by improving care which the service is rendering.

Clients' identities were concealed from the time of data collection and throughout the study. The two research assistants and other health workers directly in contact with the files being reviewed for the study were trained or reoriented on confidentiality. Extraction sheets were identified by newly assigned codes and not by names or hospital IDs to maintain confidentiality. These extraction sheets were also kept in a lockable drawer and the data was captured on a computer secured with a password.

CHAPTER FOUR: STUDY RESULTS

4.0 Introduction

The previous chapter presented the outline of the methodology used in this dissertation. The current chapter provides the results of the data collected from May to September 2017 regarding the rate of psychiatric readmissions and associated factors at SJOG Psychiatric Hospital in Mzuzu, Malawi. The study findings are presented in tables according to the study`s specific objectives in the following sub-topics: a) socio-demographics, clinical and mental health-related sample characteristics; b) rate of psychiatric readmissions; and c) socio-demographic and clinical factors associated with psychiatric readmissions.

4.1 Socio-demographic characteristics of the sample

Data was collected from 275 files meeting the inclusion criteria. The median age was 29 with an age range of 18-88 years. The majority of patients in this study were males (65%, n=181). The females' median age was 31 (range=18-63 years), slightly higher than that for the males (median=28, range=18-88 years). Most of the sample participants were single (61.8%, n=170), unemployed (65.1%, n=179), had attended high school education (56.7%, n=156), and had children (55.3%, n=152). Furthermore, the majority of the participants in this study resided outside the SJOG catchment area (73.8%, n=203) (see Table 1).

Further analysis comparing the males to the females indicated that most of the participating males were single (75.1%, n=128), whereas over half of the females (55.3%, n=52) were married. The differences in the proportions was statistically significant ($p<0.001$). A greater proportion of males had attained a high school education (61.3%, n=111) as compared to females (47.9%, n=45). It is also worthy to note that the proportion of females without high school education (52.1%, n=49) was higher than that of males (38.7%, n=70). The differences in their proportions were statistically significant ($p=0.03$). Unemployment was more prevalent among females (73.4%, n=69) than in males (60.8%, n=110; $p=0.04$). The study further showed that a higher proportion of males (55.8%, n=101) had no children as compared to the females (23.4%, n=22) (see Table 1).

Table 1: Socio-demographic characteristics of sample by gender

Variables	Total Sample (N=275)	Male (N=181)	Female (N=94)	p-value
	n(%)	n(%)	n(%)	
Age				0.16
(median, range)	29.0(18-88)	28.0(18-88)	31.0(18-63)	
Marital Status				<0.001*
Single	170(61.8)	128(70.7)	42(44.7)	
Married	105(38.2)	53(29.3)	52(55.3)	
Employment				0.04*
Employed	96(34.9)	71(39.2)	25(26.6)	
Unemployed	179(65.1)	110(60.8)	69(73.4)	
Education				0.03*
Less than high school	119(43.3)	70(38.7)	49(52.1)	
High school or more	156(56.7)	111(61.3)	45(47.9)	
Number of children				<0.001*
No Children	123(44.7)	101(55.8)	22(23.4)	
1 or more Children	152(55.3)	80(44.2)	72(76.6)	
Catchment area				0.64
Within SJOG catchment area	72(26.2)	49(27.1)	23(24.5)	
Outside SJOG catchment area	203(73.8)	132(72.9)	71(75.5)	

*p<0.001

4.2 Clinical and mental health-related characteristics of the sample

The majority of participants had a diagnosis of schizophrenia spectrum disorders (41.8%, n=115), followed by substance-related psychosis (26.5%, n=73) and mood disorders (20.4%, n=56). The other disorders, schizoaffective disorders (6.2%, n=17) and psychotic disorder due to general medical condition (5.1%, n=14), had similar proportions in the sample. Only 22.5% (n=62) of the sample participants had co-morbid physical illnesses, and 45.8% (n=126) were abusing substances. The majority of the sample participants had insight into their illness as recorded in their case files (67.3%, n=185). Most of the samples were receiving FGAs (92.0%, n=253) and the majority were on oral medications (68.7%, n=189). Only 13.5% (n=37) reported side effects of the drugs they were taking. Of the total sample, only a few reported a history of arrest (11.6%, n=32) (See Table 2).

Further analysis comparing males to females found that the proportion of females diagnosed with schizophrenia spectrum disorder was greater (55.3%, n=52) than that of males (34.8%, n=63), whereas the proportion of males diagnosed with substance-induced psychotic disorder

was greater (37.6%, n=68) than that of females (5.3%, n=5). The proportional differences were statistically significant (p<0.001) (see Table 2). The proportion of males (37%, n=67) with poor insight was slightly higher than that of females (24.5%, n=23), Males (64.6%, n=117) were more likely to use substances than females (9.6%, n=9) and this was statistically significant (p<0.001) (see Table 2).

In terms of antipsychotic medication, the proportion of male participants (94.5%, n=171) treated with FGAs was slightly higher than that of females (87.2%, n=82). The proportion of females with side effects (20.2%, n=19) was higher compared to the males (9.9%, n=18). The proportional difference reported was statistically significant (p=0.02) (see Table 2). On the history of arrests, males (16.6%, n=30) reported more numbers of arrests than females (2.1%, n=2), and the proportional difference was statistically significant (p<0.001) (see Table 2).

Table 2: Clinical and mental-health related characteristics of sample by gender

Variables	Total Sample (N=275)	Male (N=181)	Female (N=94)	p-value
	n(%)	n(%)	n(%)	
Diagnosis				<0.001*
Schizophrenia spectrum disorders	115(41.8)	63(34.8)	52(55.3)	
Schizoaffective disorders	17(6.2)	7(3.9)	10(10.6)	
Substance-related psychosis	73(26.5)	68(37.6)	5(5.3)	
Psychotic disorder due to medical condition	14(5.1)	12(6.6)	2(2.1)	
Mood disorders	56(20.4)	31(17.1)	25(26.6)	
Co morbid Physical illness				0.39
Yes	62(22.5)	38(21.0)	24(25.5)	
No	213(77.5)	143(79.0)	70(74.5)	
Insight				0.04*
Poor Insight	90(32.7)	67(37.0)	23(24.5)	
Full Insight	185(67.3)	114(63.0)	71(75.5)	
Substance Use				<0.001*
Yes	126(45.8)	117(64.6)	9(9.6)	
No	149(54.2)	64(35.4)	85(90.4)	
Type of Antipsychotic				0.07
FGA	253(92.0)	171(94.5)	82(87.2)	
SGA	13(4.7)	5(2.8)	8(8.5)	
No antipsychotics	9(3.3)	5(2.8)	4(4.3)	
Long-Acting Injectable Medication				0.70
Yes	86(31.3)	58(32.0)	28(29.8)	

No	189(68.7)	123(68.0)	66(70.2)	
Side Effects				0.02*
Yes	37(13.5)	18(9.9)	19(20.2)	
No	238(86.5)	163(90.1)	75(79.8)	
History of Arrests				<0.001*
Yes	32(11.6)	30(16.6)	2(2.1)	
No	243(88.4)	151(83.4)	92(97.9)	

*p<0.001

4.3 Rate of psychiatric readmissions

The readmission rate in this study was calculated by dividing the number of readmitted patients within the given time interval since previous initial discharge by the number of discharged patients within the same period. Of the 275 reviewed clinical case files, 244 (88.7%) had had single admissions by the end of the 12-month study period. Readmission rates of 4 (1.5%), 12 (4.4%), and 31 (11.3%) were found at intervals of 3 months, 6 months and 12 months respectively (see Table 3). Additionally, there were no patients with more than two admissions within a 12 month-period of discharge from the acute hospital admission.

Table 3: Rate of readmissions

Interval	**Total Admissions**	**Single Admission N(%)**	**Readmission N(%)**
3-month readmissions	275	271(98.5)	4(1.5)
6-month readmissions	275	263(95.6)	12(4.4)
12-month readmissions	275	244(88.7)	31(11.3)

4.4 Socio-demographic and clinical factors associated with psychiatric readmissions

In this study, binary logistic regression was conducted to determine if any socio-demographic and clinical variables were associated with readmission at 3, 6 and 12 months.

4.4.1 Factors associated with psychiatric readmission within 3 months after discharge

In the unadjusted model, none of the independent variables predicted readmission within 3 months of discharge from the acute hospital admission in the present study. Given these non-significant findings, an adjusted model was not developed. More information is reported in Table 4 below.

Table 4: Logistic regression model of factors associated with readmission within 3 months after discharge.

Characteristic/Variable	Readmission		Unadjusted OR (95% CI)
	Yes n(%)	No n(%)	
	(N=4)	(N=271)	
Age (median, range)	32.5(26-51)	29.0(18-88)	1.03(0.96-1.11)
Gender			
Male	2(50.0)	179(66.1)	1.00
Female	2(50.0)	92(33.9)	1.95(0.27-14.04)
Marital Status			
Single	2(50.0)	168(62.0)	1.00
Married	2(50.0)	103(38.0)	1.63(0.23-11.76)
Employment			
Employed	2(50.0)	94(34.7)	1.00
Unemployed	2(50.0)	177(65.3)	0.53(0.07-3.83)
Education			
Less than high school	0	119(43.9)	-
High school or more	4(100.0)	152(56.1)	-
Number of children			
No Children	2(50.0)	121(44.6)	1.00
1 or more Children	2(50.0)	150(55.4)	0.81(0.11-5.81)
Catchment area			
Within SJOG catchment area	2(50.0)	70(25.8)	1.00
Outside SJOG catchment area	2(50.0)	201(74.2)	0.35(0.05-2.52)
Diagnosis			
Schizophrenia spectrum disorders	3(75.0)	199(73.3)	1.00
Mood disorders	1(25.0)	75(26.6)	0.92(0.09-9.00)
Comorbid Physical illness			
Yes	1(25.0)	61(22.5)	1.00
No	3(75.0)	210(77.5)	0.87(0.09-8.53)
Insight			
Poor Insight	2(50.0)	88(32.5)	1.00
Full Insight	2(50.0)	183(67.5)	0.48(0.07-3.47)
Substance Use			
Yes	1(25.0)	125(46.1)	1.00
No	3(75.0)	146(53.9)	2.57(0.26-25.01)
Type of antipsychotic			
FGAs	3(75.0)	250(92.3)	-
SGAs	0	13(4.8)	-
No antipsychotics	1(25.0)	8(3.0)	

Long-Acting Injectable Medication			
Yes	2(50.0)	84(31.0)	1.00
No	2(50.0)	187(69.0)	0.45(0.06-3.24)
Side effects			
Yes	1(25.0)	36(13.3)	1.00
No	3(75.0)	235(86.7)	0.46(0.05-4.54)
History of Arrests			
Yes	1(25.0)	31(11.4)	1.00
No	3(75.0)	240(88.6)	0.39(0.04-3.84)

4.4.2 Factors associated with psychiatric readmission within 6 months after discharge.

Table 5 demonstrates the findings of the unadjusted and adjusted model of variables predicting readmission within 6 months of discharge from the acute hospital admission. In the unadjusted model, patients having one or more children were less likely to be readmitted within 6 months of discharge from the acute hospital admission (OR=0.26, 95% C.I 0.07-0.96) than those without children. The other socio-demographic and clinical variables did not predict readmission in the unadjusted model at the 6-month (see Table 5). However, after adjusting for age and gender in the multivariable logistic regression model, number of children was not statistically significant (see Table 5).

Table 5: Logistic regression model of factors associated with readmission within 6 months after discharge.

	Readmission		**Unadjusted/Crude OR (95% CI)**	**Adjusted OR (95% CI)**
	Yes n(%)	**No n(%)**		
Characteristic/Variable	(n=12)	(n=263)		
Age				
(median, range)	27.5(20-51)	29(18-88)	0.98(0.92-1.04)	1.00(0.93-1.08)
Gender				
Male	9(75.0)	172(65.4)	1.00	1.00
Female	3(25.0)	91(34.6)	0.63(0.17-2.39)	0.67(0.15-2.98)
Marital Status				
Single	9(75.0)	161(61.2)	1.00	
Married	3(25.0)	102(38.8)	0.53(0.14-1.99)	
Employment				
Employed	5(41.7)	91(34.6	1.00	
Unemployed	7(58.3)	172(65.4)	0.74(0.23-2.40)	
Education				
Less than High school	3(25.0)	116(44.1)	1.00	
High school or more	9(75.0)	147(55.9)	2.37(0.63-8.94)	

Number of children				
No Children	9(75.0)	114(43.3)	1.00	1.00
1 or more Children	3(25.0)	149(56.7)	0.26(0.07-0.96)*	0.27(0.06-1.26)
Catchment area				
Within SJOG catchment area	6(50.0)	66(25.1)	1.00	
Outside SJOG catchment area	6(50.0)	197(74.9)	0.34(0.10-1.08)	
Diagnosis				
Schizophrenia spectrum disorders	9(75.0)	193(73.4)	1.00	
Mood disorders	3(25.0)	70(26.6)	0.92(0.24-3.49)	
Comorbid Physical illness				
Yes	2(16.7)	60(22.8)	1.00	
No	10(83.3.0)	203(77.2)	1.48(0.32-6.93)	
Insight				
Poor Insight	7(58.3)	83(31.6)	1.00	
Full Insight	5(41.7)	180(68.4)	0.33(0.10-1.07)	
History of Substance Use				
Yes	6(50.0)	120(45.6)	1.00	
No	6(50.0)	143(54.4)	0.84(0.26-2.67)	
Type of antipsychotic				
FGA	8(66.7)	245(93.2)	1.00	
SGA	1(8.3)	12(4.6)	2.55(0.30-22.09)	
No antipsychotics	3(25.0)	6(2.3)		
Long-Acting Injectable Medication				
Yes	4(33.3)	82(31.2)	1.00	
No	8(66.7)	181(68.8)	0.91(0.27-3.10)	
Side effects				
Yes	4(33.3)	33(12.5)	1.00	
No	8(66.7)	230(87.5)	0.29(0.08-1.01)	
History of Arrests				
Yes	1(8.3)	31(11.8)	1.00	
No	11(91.7)	232(88.2)	1.47(0.18-11.78)	

4.4.2 Factors associated with psychiatric readmission within 12 months after discharge.

Table 6 demonstrates the findings of the unadjusted and adjusted model of variables predicting readmission within 12 months of discharge from the acute hospital admission. In the unadjusted logistic regression model, the number of children, catchment area, insight, and type of antipsychotics significantly predicted readmissions within 12 months of discharge

from the acute hospital admission. The patients with children were less likely to be readmitted (OR= 0.40, 95% C.I 0.18-0.88) and those living outside the SJOG Catchment area were also less likely to be readmitted within 12 months of discharge (OR=0.44, 95% C.I 0.20-0.96). The model also showed that patients who had insight into their illness were less likely to be readmitted within 12 months (OR=0.22, 95% C.I 0.10-0.49). However, patients on SGAs were more likely to be readmitted within 12 months of readmission (OR=4.67, 95% C.I 1.33-16.39). (see Table 6). The other socio-demographic and clinical variables did not predict readmission at 12 months (see Table 6).

All the four statistically significant variables were also entered into the multivariable logistic regression model, adjusting for age and gender. Of these, three variables emerged as statistically significant. Thus, patients staying outside the hospital's catchment area were less likely to be readmitted within 12 months of discharge than those who stayed nearby (OR=0.33, 95% C.I 0.14-0.79), and those patients with insight into their condition were less likely to be readmitted than those who had poor insight (OR=0.19, 95% C.I 0.08-0.46). Patients who were on SGA drugs were more likely to have a readmission than those on FGAs within 12 months of discharge (OR=5.29, 95% C.I 1.43-19.51). In this model, having children was not a significant predictor of readmission occurring within 12 months of discharge from the first hospital admission after adjusting for age and gender (see Table 6).

Table 6: Logistic regression model of factors associated with readmission within 12 months after discharge.

Characteristic/Variable	**Readmission**		**Unadjusted/Crude OR (95% CI)**	**Adjusted OR (95% CI)**
	Yes n(%)	**No n(%)**		
Total sample n=275	(n=31,)	(n=244,)		
Age				
(median, range)	28(19-60)	29(18-80)	0.98(0.94-1.02)	0.98(0.92-1.03)
Gender				
Male	21(67.7)	160(65.6)	1.00	1.00
Female	10(32.3)	84(34.4)	0.91(0.41-2.02)	1.20(0.45-3.19)
Marital Status				
Single	23(74.2)	147(60.2)	1.00	
Married	8(25.8)	97(39.8)	0.53(0.23-1.23)	
Employment				
Employed	9(29.0)	87(35.7)	1.00	
Unemployed	22(71.0)	157(64.3)	1.36(0.60-3.07)	
Education				

Less than High school	11(35.5)	108(44.3)	1.00	
High school or more	20(64.5)	136(55.7	1.44(0.66-3.14)	
Number of children				
No Children	20(64.5)	103(42.2)	1.00	1.00
1 or more Children	11(35.5)	141(57.8)	0.40(0.18-0.88)*	0.48(0.17-1.34)
Catchment area				
Within SJOG catchment area	13(41.9)	59(24.2)	1.00	1.00
Outside SJOG catchment area	18(58.1)	185(75.8)	0.44(0.20-0.96)*	0.33(0.14-0.79)*
Diagnosis				
Schizophrenia spectrum disorders	19(61.3)	183(75.0)	1.00	
Mood disorders	12(38.7)	61(25.0)	1.90(0.87-4.13)	
Comorbid Physical illness				
Yes	5(16.1)	57(23.4)	1.00	
No	26(83.7)	187(76.6)	1.59(0.58-4.32)	
Insight				
Poor Insight	20(64.5)	70(28.7)	1.00	1.00
Full Insight	11(35.5)	174(71.3)	0.22(0.10-0.49)*	0.19(0.08-0.46)*
Substance Use				
Yes	18(58.1)	108(44.3)	1.00	
No	13(41.9)	136(55.7)	0.57(0.27-1.22)	
Type of antipsychotic				
FGA	22(71.0)	231(94.7)	1.00	1.00
SGA	4(12.9)	9(3.7)	4.67(1.33-16.39)*	5.29(1.43-19.51)*
No antipsychotics	5(16.1)	4(1.6)		
Long-Acting Injectable Medication				
Yes	12(38.7)	74(30.3)	1.00	
No	19(61.3)	170(69.7)	0.69(0.32-1.49)	
Side effects				
Yes	7(22.6)	30(12.3)	1.00	
No	24(77.4)	214(87.7)	0.48(0.19-1.21)	
History of Arrests				
Yes	4(12.9)	28(11.5)	1.00	
No	27(87.1)	216(88.5)	0.88(0.29-2.69)	

CHAPTER FIVE: DISCUSSION AND CONCLUSION

5.0 Introduction

This chapter will interpret and discuss the findings reported in chapter four. It starts by discussing the main study findings regarding the rate of psychiatric readmissions at 3, 6, and 12 months, and associated socio-demographic and clinical-related factors at Saint John of God (SJOG) Psychiatric Hospital in Mzuzu, Malawi. Implications for policy and intervention development will follow. Lastly, this chapter will present study limitations followed by the study conclusion.

5.1 Summary of the main study findings

This study resulted in a number of main findings. Firstly, readmission rates of 4 (1.5%), 12 (4.4%), and 31 (11.3%) at 3 months, 6 months and 12 months respectively were found. Secondly, although none of the independent variables were associated with readmissions at 3 months post-discharge, patients with children were less likely to be readmitted at 6 and 12 months in the unadjusted model. Thirdly, after adjusting for age and gender, patients residing outside the hospital catchment area, and having insight into their illness were less likely to be readmitted at 12 months while those receiving SGAs were more likely to be readmitted at 12 months.

5.2 Rate of readmission

In the current study, readmission rates of 1.5%, 4.4% and 11.3% at 3 months, 6 months and 12 months post-discharge respectively were lower than the rates reported in other studies from various countries. Previous studies have found rates of up to 66% occurring within 3 months (Craig, Fennig, Tanenberg-Karant & Bromet, 2000; Hung, Chan & Pan, 2017; Lyons et al., 1997), 30-40% within 6 months (Amer Siddiq et al., 2008; Hung et al., 2017; Sánchez et al., 2013; Wheeler et al., 2011; Yamada & Korman, 2000) and 40-50% within 12 months after discharge (Lin & Li, 2008; Machado et al., 2012; Sharma, Singh & Solanki, 2017; Vasudeva, Kumar & Sekhar, 2009; Vijayalakshmi et al., 2015; Wheeler et al., 2011; Yamada & Korman, 2000).

Comparing results from the present study to findings from HICs, studies in USA psychiatric hospitals have reported readmission rates of 31% and 46% at 6 and 12 months respectively which are higher than in the present study (Yamada & Korman, 2000). Similarly, findings

from the present study are lower than findings reported in European countries. For instance, readmission rates of 34% and 47% occurring within 6 and 12 months of discharge from the acute hospital admission respectively have also been reported in a previous systematic review (Lien, 2002). Other studies in the UK and Denmark reported readmission rates of 24% (Hodgson et al., 2001), 43% (O'Donoghue et al., 2011), 50% (Lien, 2002) within 12 months of discharge from the acute hospital admission. Although the literature from HICs did not report on readmission rates at 3 months after discharge, rates of 63% (Hamilton et al., 2015), 14% (Lien, 2002) and 12% (Lin & Li, 2008) at 2 weeks, 1 month and 2 months respectively were found.

Similar to findings from HICs, rates of readmissions from LMICs are also higher than those found in the current study. In Columbia, for instance, studies have reported readmission rates of 49.5% within 3 months of discharge from the acute hospital admission (Sánchez et al., 2013) and 60% within 12 months (Jaramillo-Gonzalez et al., 2014). In Malaysia, two studies reported inconsistent readmission rates of 16.8% (Amer Siddiq et al., 2008) and 32.2% (Guan et al., 2012) within 6 months of discharge from the acute hospital admission. A Brazilian study also found a readmission rate of 42.6% within 12 months of discharge from an acute hospital admission (Loch, 2012). Literature from Africa has also reported rates higher than findings in the current study. For example, rates of 37% in South Africa (Behr et al., 2002; Niehaus et al., 2008), 38.5% in Ethiopia (Fekadu et al., 2007), and 39% in Egypt (Al-Shehhi et al., 2017) have been reported at 12 months after discharge from psychiatric facilities.

On the other hand, a 12-month readmission rate of 11.3% reported in the current study is more in line with rates of 13. 8% and 14.9% reported in China (Zhou et al., 2014) and South Africa (Smith, 2005) respectively. In addition, despite the current study reporting readmission rates lower than the rates reported in HICs and LMICs, the figures are still on the higher side when compared to the WHO recommended acceptable readmission rate of 3-5% (Ngoma, 2011).

Generally, one would hypothesise that those studies from LMICs, including Malawi, would report high readmission rates due to socio-economic problems among community members. However, readmission rates reported in the current study contradict this hypothesis. The findings of the present study could be the result of a number of factors. Firstly, a number of studies have suggested that organisational processes are a significant contributor to hospital

readmissions. Factors such as poor quality of patient education and follow-up care are significantly associated with inpatient psychiatric admissions (Hansen, Young, Hinami, Leung & Williams, 2011; Vigod et al., 2013). Malawi has well-established community mental health services such as domiciliary mental health care and outreach clinics within the hospital`s catchment area. Domiciliary mental health care, also known as home health care, family care, home treatment or home help, is a provision of care and support to patients with acute psychiatric disorders and challenging behaviours in their own homes. This type of service was piloted within the hospital's catchment area and was found to be effective in reducing relapse and readmission (Mwale, 2011). Patients under this type of care are candidates for hospital admission but are not a danger to themselves or others in their homes. The domiciliary team, which is comprised of mental health nurses, clinicians and social workers, conducts home visits daily or weekly depending on the patient`s response to treatment. Some of the activities the team conducts during home visits are: assessment of the patient, provision of nursing and medical care, and monitoring of treatment adherence. They also offer psycho-education to the patient and the family on mental health promotion and care at home (Chorwe-Sungani et al., 2015; Mwale, 2011).

In addition to this service, the hospital also conducts a total of 15 outreach clinics which are strategically located within and outside the hospital's catchment area. These clinics are conducted by mental health nurses and clinicians on a monthly basis. During the clinic days, patients and guardians are also given psycho-education on mental health promotion and care at home through health talks. On the same clinic days, patients are assessed, prescribed treatment and referred to other hospitals if the need arises (Chorwe-Sungani et al., 2015; Mwale, 2011). The delivery of mental health care services through these outreach clinics in the community reduces relapses and readmissions from within and outside the catchment area.

A second possible explanation for the low prevalence of readmission rates is that patients discharged from the psychiatric facility that would have required a readmission did not get readmitted for a number of possible reasons. It is possible that the traditional and cultural beliefs that mental illness is associated with God`s punishment, demons or bewitchment (Chilale et al., 2014; Crabb et al., 2012) contributed to a delay in health-seeking behaviour leading to fewer readmissions within the timeframe investigated in the present study. It is also possible that patients who had relapsed following a discharge lost confidence in hospital

treatment and decided to seek help from alternative treatment providers such as traditional healers and churches (Chilale et al., 2014; Crabb et al., 2012).

Thirdly, there is a possibility that participants within and outside the catchment area may also fail to access inpatient mental health services due to the introduction of user fee charges at the hospital. Patients coming to access inpatient services at SJOG Psychiatric Hospital were required to pay an average user fee amounting to R873 (US$65) for their stay in the hospital. The user fee was introduced with the aim of empowering the community to own these services.

Fourthly, not finding more than one readmission in patients can also be due to problems with follow-up of discharged patients. There is a possibility that within the 12-month period after a discharge, some patients in the current study might have experienced a readmission but in another hospital which was not captured. Another possibility is that the use of archival data captured from patients' case files may have been incomplete, or information on further admissions may have been misplaced. These reasons may have caused a reduction in readmission rates.

Fifthly, the inconsistent findings in the current study when compared to those from previous studies are also perhaps due to varying methods of calculating readmissions adopted by individual researchers (Goldacre et al., 1988). For instance, Neto and Silva (2008) and Dixon et al., (1997) found readmission rates of 19.9% and 27% respectively when calculations were based on the number of readmitted patients. These rates doubled to 39.6% in the former study while in the latter study the rate increased by 2% to 29% when the numerators included all the episodes (events) of readmission. In addition, these authors also differed on the published rates such that Neto and Silva (2008) reported the rate calculated based on all readmission episodes while the latter study published the rate based on the number of patients admitted. In the current study, the readmission rate of 11.3% was calculated based on the number of patients admitted (person-based) (Goldacre et al., 1988). The calculation of readmission rate, which includes all episodes in the current study, was not done since there were no patients with more than two readmissions.

Sixthly, it is also possible that the readmission rate reported in the current study differed from previous research due to differences in the study setting, sample size, population and the

period of follow-up on discharges. For instance, other studies have reported readmission rates from a sample of participants drawn from all diagnoses, while others have measured the rate of readmission of a specific disorder (Lien 2002; Chambers & Clarke, 1990). The current study included all SMDs.

5.3 Factors associated with psychiatric readmission

The current study also investigated the socio-demographic and clinical factors associated with readmission. Of all the variables included in this study, only 3 factors – one socio-demographic and two clinically-related – were significantly associated with the rate of readmission after adjusting for age and gender. Patients residing outside the hospital`s catchment area (socio-demographic variable) and those having insight (clinical variable) were less likely to have a readmission within 12 months of discharge from the acute hospital admission. Patients taking SGA drugs (clinical variable) were more likely to have a readmission within 12 months of discharge from the acute hospital admission.

5.3.1 Socio-demographic factors

The current study found that none of the socio-demographic independent variables predicted readmission within 3 months of discharge from the acute hospital admission. In this study, the catchment area was the only socio-demographic variable associated with readmission within 12 months of discharge after adjusting for age and gender. However, having children was associated with a lower risk of readmission in the unadjusted model within 6 months of discharge from the acute hospital admission. Conversely, other studies have found an association between readmission and socio-demographic variables such as age and gender (Lin et al., 2010; Mark et al., 2013; Vijayalakshmi, Reddy, Salaam & Himakar, 2015), marital status (Barekatain et al., 2013; Bernardo & Forchuk, 2001; Hodgson et al., 2001; Martínez-Ortega et al., 2012; Sánchez et al., 2013; Sousa-pinto et al., 2013), education, and employment (Frick et al., 2013; Jaramillo-Gonzalez et al., 2014).

5.3.1.1 Catchment Area

In the current study, residing outside the hospital`s catchment area was the only socio-demographic factor associated with a lower risk of readmission within 12 months of discharge. In other words, patients who were staying within the SJOG catchment area, within a radius of 20 kilometres from the hospital, were more likely to have a readmission within 12 months of discharge compared to those staying outside the catchment area. Findings in the

current study are consistent with results from other studies conducted in HICs. For instance, O'Donoghue et al., (2011) and Mark et al., (2013) reported a high risk of readmission in patients from the hospital`s catchment area within 12 months of discharge compared to those from outside the area. Similarly, a study conducted in LMICs found that residing near the hospital was significantly associated with readmission within 12 months of discharge compared to those residing further away (Silva, Bassani & Palazzo, 2009). However, contradicting results were reported in a Zambian study which found that patients staying more than 12 kilometres from the hospital were more likely to be readmitted than those closer to the hospital (Ngoma, 2011).

There are a number of possible reasons to explain these findings. One could expect high utilisation of hospital services among patients staying within the catchment area as compared to those living outside the catchment area. This could be due to patients staying close to the hospital area having fewer barriers to accessing services when the need arises, since they spend less on transport than those from outside the hospital`s catchment area (Fekadu et al., 2007). Despite patients living in the catchment area being more likely to have a readmission, the majority of the sample for this study (73%) came from outside the catchment area. Researchers have suggested that patients from outside the catchment area often do not return for follow-up visits, and it is often at the follow-up visits that readmissions occur (Mark et al., 2013). There is the possibility that these patients outside the catchment area had sought alternative Western or traditional health services in other places (Chilale et al., 2014; Udedi, 2017).

Another factor that may have contributed to a reduced number of readmissions from outside the catchment area in the current study is that, in Malawi, patients are required to pay for transport and the hospital user fee, unless they have been referred from a district hospital. This may have prevented patients residing outside the hospital catchment area from accessing mental health services (Crabb et al., 2012; World Health Organization, 2011b). This differs from those who stay within the catchment area. These patients spent less on transport and had access to free domiciliary mental health care services offered by the hospital team. This team offers mental health talks, assessments and treatment in patients` homes. These interventions may have also reduced stigma and promoted early help-seeking behaviour in relapsed patients within the catchment area (Mwale, 2011).

Another possible explanation for the reduced readmission rates from outside the catchment area is the introduction of a short-term community mental health programme, which provided treatment on a monthly basis to first-episode psychotic patients in their homes. This was part of a study entitled 'Duration of Untreated Psychosis (DUP)'. The current study recruited case notes of patients admitted to SJOG psychiatric hospital between 2014 and 2015. It was in the same period when this programme started providing treatment to study participants within and outside the hospital catchment area. In addition, the programme also provided treatment to non-participating patients, especially those residing outside the catchment area (Chilale et al., 2014). This is also suggested to have reduced relapses and readmissions from outside the catchment area.

Despite these hospitals having catchment areas, there is inconsistency in their sizes. It can be argued that the differences in the sizes of the catchment areas where these studies were conducted impacted the research outcome. For example, a Zambian study reported that staying more than 12 kilometres away from the hospital was significantly associated with readmission (Ngoma 2011). Contrary to the Zambian study, the current study used a catchment area of a 20-kilometre radius to find those within the catchment area at risk of readmission. On the other hand, some studies in HICs and LMICs did not find a significant association between the catchment area and readmission (Norum et al., 2013; Vijayalakshmi et al., 2015).

5.4.1 Clinical factors

The current study found that none of the independent clinical variables predicted readmission within 3 months after discharge. After adjusting for age and gender, insight into illness and the use of SGAs were the only clinical variables that predicted readmission at 12 months post-discharge.

Firstly, the present study found that patients who were perceived by a healthcare provider as having insight into their illness were less likely to be readmitted than those who had poor insight. The findings in the present study are consistent with most of the findings from studies conducted in LMICs, despite the limitation of the present study not using a validated tool for measuring insight. For instance, Omranifard (2008) and Nxasana and Thupayagale-Tshweneagae (2014) reported that poor insight was associated with treatment non-adherence and an increase in readmission. This result is also in line with the results of another study

conducted in Malawi which found that patients with poor insight were more likely not to adhere to treatment than those with insight (Muyaba, 2017). This suggests that the majority of patients who were readmitted to this hospital did not adhere to treatment and this resulted in relapse and readmission.

However, there are mixed views surrounding the genesis of insight which is still not clear (Vohs, George, Leonhardt & Lysaker, 2016). Studies have described insight as the ability to recognise the existence of a psychiatric disorder, its consequences, and the need for treatment (Chakraborty & Basu, 2010; Rakitzi, Georgila, & Efthimiou, 2016). Some studies have related insight to neurobiological causes such as neurocognition and reduced volume of the hippocampus in the brain (Husted, 1999; Rakitzi et al., 2016; Riggs, Grant, Perivoliotis & Beck, 2012), whereas other articles have related it to the disturbance of psychiatric symptoms such as hallucinations and delusions (Vohs, George, Leonhardt & Lysaker, 2016). In addition, some researchers have associated insight with socio-cultural differences existing among patients, therefore causing challenges in assessing insight. These researchers have also viewed insight differently, as either a symptom of mental illness or a coping strategy (Chakraborty & Basu, 2010; David, 2002).

Secondly, participants who were taking SGAs were more likely to be readmitted than those taking FGAs within 12 months of discharge from the acute hospital admission. These results are inconsistent with the findings reported in other studies. Unlike in the present study, most of the previous studies on antipsychotics have been conducted in patients with schizophrenia disorders. For instance, one-year follow-up studies conducted in Germany and Croatia reported that FGAs were associated with a significant increase in the rates of readmission as compared to SGAs among patients with schizophrenia (Herceg et al., 2008; Robinowitz et al., 2001; Schennach et al., 2012). However, some studies from HICs and LMICs did not find an association between antipsychotics (FGAs and SGAs) and readmissions in a 12-month follow-up on discharges (Amer Siddiq et al., 2008; Aziri et al., 2012; Guan et al., 2012; Loch, 2012)

People may first identify the differences in effectiveness of the two types of antipsychotics (FGAs and SGAs) in treating these psychotic disorders as being the cause of relapse resulting in readmission. However, studies have reported contradicting information on the efficacy of antipsychotics. For example, Kahn et al., (2008) found that FGAs and SGAs had similar

efficacy in treating psychiatric disorders. Further findings have indicated that some patients (20-30%) do not respond to these antipsychotics. On the contrary, Cianchetti and Ledda (2011) found that SGAs were more effective than FGAs in treating psychosis. This suggests that the findings in the current study could be a result of a number of reasons discussed below.

Firstly, the current findings are perhaps a result of patients' non-adherence to treatment (SGAs). In clinical practice, patients who first present to a Malawian psychiatric hospital with mental disorders are started on FGAs. Patients experiencing side effects with FGAs are switched to SGAs, which have fewer side effects (Tandon et al., 2008; Barbui, Cipriani & Shekhar, 2009). Despite switching to SGAs, most of these patients continue to experience side effects as a result they stop taking the oral SGAs. Side effects of these medication are associated with an increase in readmission as a result of poor adherence (Herceg et al., 2008; Nxasana & Thupayagale-Tshweneagae, 2014; Schennach et al., 2012). Further evidence from these studies found that patients who do not adhere to treatment have a reduced risk of readmission when they are prescribed long-acting injectables, especially SGAs (Ju et al., 2014; MacEwan et al., 2016; Pollack et al., 1998). Unfortunately, SGAs found in the Malawian setting are all in oral tablet form, which may have resulted in readmissions among non-adherent patients.

Secondly, the unavailability of SGAs such as Risperidone and Clozapine in district hospitals and health centres located near to patients` homes in Malawi may contribute to an increase in relapses and readmissions. Health services are centralised and only 0.3% of health facilities provide mental health services in Malawi (Kauye et al., 2011; Udedi, 2016; Udedi, 2017). These SGAs are found in tertiary psychiatric hospitals such as SJOG and Zomba Psychiatric Hospitals. For this reason, patients who were discharged on a SGA prescription may not come back for subsequent visits due to transport expenses. Sadly, there is also a limited variety of SGAs which are also erratically supplied in these tertiary hospitals. For instance, Clozapine, which is used in resistant schizophrenia, is only found and prescribed at Zomba tertiary psychiatric hospital in Malawi. In addition, patients taking Clozapine are required to have regular laboratory investigations. This forces clinicians in other hospitals to continue prescribing FGAs or other available SGAs in patients who cannot afford access to Clozapine and laboratory services at a tertiary hospital. This may have resulted in relapse and readmissions.

5.6 Implications for policy

Although the current study found readmission rates lower than findings in majority of studies conducted in HICs and LMICs, efforts to maintain and potentially reduce these readmission rates at the policy level could include: 1) Integrating mental health services into primary health care; 2) Maintaining the existing community outreach programmes 3) Improving the availability of medication.

Firstly, improving access to community mental health resources for patients who are admitted has the potential to reduce readmission rates. Integrating these mental health services into primary health care (PHC) ensures that these services are closer to peoples' homes and communities. In the current study, integration of mental health in PHC will provide equal access to services for those within or outside the hospital catchment area. However, mental health services in Malawi are not well integrated into PHC (Udedi, 2016). Therefore, the country's mental health policy and law should support and guide the integration of mental health services in PHC. For a successful integration of mental health services into PHC, there is a need for trained and skilled mental health workers who are able to diagnose and treat mental disorders within the PHC settings. The government and stakeholders should provide training for health workers and students in health disciplines. However, the reason for not making progress in integrating mental health in PHC is due to economic problems, as mental health services in Malawi receive only 1.01% of the budget allocated to health care services (Udedi, 2016). Therefore the updated policies should also address issues of budgetary allocation to mental health services to reduce drug stock shortages and higher user fees.

Secondly, readmission rates in the current study are lower than findings reported in the majority of studies possibly because of domiciliary health care and outreach clinic services conducted both within and outside the hospital catchment area. Looking at the impact of these interventions, it is important that government and stakeholders should include, in mental health policy and law, strategies of strengthening and scaling up the existing interventions to all areas of Malawi.

Thirdly, the study findings suggest that improving the availability of long-acting SGA antipsychotic drugs may reduce non-adherence, relapse and readmissions. The government

and stakeholders should advocate for utilization of SGAs as first-line treatment of mental disorders to reduce non-adherence, relapse and readmission which resulting from side effects of FGAs. Unfortunately, the Malawi Standard Treatment Guidelines (MSTG) which is used by prescribers at all levels recommends the use of FGAs as a first-line treatment of mental disorders. In addition, these guidelines recommend using one SGA drug, risperidone tablets, as a second line. Furthermore, the guidelines recommend the use of long-acting injectable FGAs in non-adherent patients (Ministry of Health, 2015). These FGA injectables also cause more side effects which may increase risk of relapse. Sadly, the guidelines do not highlight the use of long-acting injectable SGAs in Malawi. This poses a challenge in patients who do not adhere to SGAs tablets. There is need for the government to also put in place measures advocating for use of long-acting injectable SGAs in all hospitals.

5.5 Implications for intervention development

Developing an intervention to reduce readmission requires further understanding of the associated factors (Kagabo et al., 2016). Rates of readmission and associated factors identified in the current study can inform the selection of future interventions. Generally, people would think that the prevention of readmissions involves hospital intervention alone. Studies have argued that the goal of reducing readmissions can be achieved when hospitals collaborate with community services and families (Linden, 2014).

Given that staying within the catchment area predicted readmission, interventions need to be aimed at reducing readmissions within this area. Studies have suggested that proper transition of care between the inpatient and community settings plays a major role in preventing unnecessary readmissions (Penney et al., 2018). There are several activities which studies have recommended to improve this process of transferring care from the inpatient to outpatient or community setting. Examples of these interventions discussed below are psycho-education, assertive community care (domiciliary care), discharge planning, telephone, and short message service (SMS) reminders.

Psycho-education is one of the recommended interventions frequently used to improve insight and drug adherence in patients (Rady & El-Nady, 2017; Rummel-Kluge, Pitschel-Walz, Bäuml, & Kissling, 2006), consequently preventing readmissions. During psycho-education, patients and guardians are given information pertaining to the disorder, treatments, relapsing symptoms and beliefs associated with the illness and drugs. In the sessions, patients

and guardians are also given knowledge to use on solving problems related to illness, care and social support (Prasko, Vrbova, Latalova & Mainerova, 2011; Rummel-Kluge et al., 2006). In some studies, psycho-educational programmes have been associated with a significant improvement in adherence, relapse and readmission (Petretto et al., 2013). Two of the possible reasons given in the current study for reduced readmissions from outside the catchment area are the introduction of a user fee and the possibility that patients are seeking alternative treatments. This requires further investigation. There is a possibility that some of these patients staying outside the catchment area were taken to traditional healers following a relapse. These patients may seek alternative treatments perhaps because of having no insight to their illness. Offering psycho-education messages in these patients and guardians improve their understanding of mental illness and help seeking behaviours. Studies have also recommended imparting knowledge through psycho-education to community influential leaders such as traditional healers on mental disorders and their treatment (Sorsdahl, Flisher, Wilson, & Stein, 2010). Another intervention recommended for improving insight and adherence is psychotherapy. One of the psychotherapies, cognitive behavioural therapy (CBT), has been used to make patients aware of their illness. In this therapy, distorted thoughts, beliefs and behaviours are identified and worked on together with the patient for better understanding of the disorder (Bastiaens & Agarkar, 2014; Rakitzi et al., 2016).

Assertive community care (domiciliary care) has been demonstrated to be effective in reducing non-adherence, relapse and readmissions. Cochrane reviews have recommended the use of assertive community care programmes to reduce readmissions. In these programmes patients maintain their contact with mental health services while residing in their communities (Marshall & Lockwood, 2011). During the intervention, patients are followed up by the team in their homes within 24 hours after having been discharged. In some studies, this has also been associated with a significant reduction in the readmission rate from 20% to 11% (Molfenter, Connor, Ii, Hyatt & Zimmerman, 2016). This intervention appears to improve the integration of patients with their families after being absent for long periods. Since domiciliary care is provided for patients within the catchment area, and this may be reducing the readmission rates, it is hypothesized that extending this service beyond the hospital catchment area could prove beneficial.

Discharge planning is another recommended intervention which is widely used in hospitals to improve the transition of care from the inpatient to the outpatient department (Steffen,

Kösters, Becker & Puschner, 2009). The lack of discharge planning is blamed for causing poor community support to patients (Puschner et al., 2008). In this type of intervention, the patient is prepared for discharge before leaving the psychiatric ward. The outpatient department staffs are informed of issues concerning treatment and appointment dates for follow-up visits arranged. This intervention aims at facilitating the continuity of care from the inpatient to the outpatient departments (Shepperd et al., 2013; Toufighi, Sharifi, Alaghband Rad & Shadloo, 2018). Smith et al. (2017) found that patients who had undergone all 3 discharge planning sessions honoured the first review dates at the outpatient clinic, and Cochrane reviews (Gonçalves-Bradley, Lannin, Clemson, Cameron, & Shepperd, 2016) noted a reduction in readmission among patients who had gone through the discharge plan. This suggests that proper discharge planning plays a vital role in reducing non-adherence, relapse and readmissions.

Some studies have recommended the use of telephones in times of emergencies and for reminding patients and guardians of the appointment dates in order to reduce non-adherence, relapse and readmission. In this intervention, the rapid response team or domiciliary team identifies a designated person responsible for responding to emergency calls from community patients requiring urgent attention. This programme ensures that patients are attended to earlier in their homes to prevent readmissions. In support of this, evidence from studies has shown a significant reduction (36%) in the readmission rate after introducing an emergency telephone programme (Molfenter et al., 2016). RCTs on sending a reminder via SMS to cell phones to discharged patients 3 to 7 days prior to the appointment day showed a significant reduction in missed appointment dates, relapse and readmissions (Sims et al., 2012; Thomas, Lawani & James, 2017). For instance, after sending the reminder SMS, Thomas et al., (2017) in Nigeria noted that the number of patients who came for review doubled, while in London absenteeism from clinics reduced by 25% (Sims et al., 2012).

Literature has also reported a statistically significant reduction of readmissions in hospital and communities using peer support programmes (Chien & Chan, 2004; Conner et al., 2018; Sledge et al., 2011). These peer support programmes use peer educators or mentors who had once suffered from a severe mental illness and are currently stable, playing the role of a guardian. Usually, peer support programmes will identify such people and then orient them to the basics of mental health care and leadership. These peer educators improve patients' knowledge of their illness and treatment through involving them in meetings and activities.

This intervention assists patient in gaining an understanding of their illness because they hear information from a person who previously experienced the same problem. This also helps them to integrate into the community (Conner et al., 2018). In Conner et al's., (2018) study, a significant number of patients agreed to take treatment and honour their appointment dates after getting information from the peer educators, reducing relapse and readmissions.

5.10 Study limitations

This study had a number of limitations. Firstly, this study involved participants attending a single hospital in Mzuzu, SJOG, which may not be representative of all mental hospitals in Malawi or generalizable to other settings. However, since the study was conducted in the only referral hospital for the northern population, the results do provide valuable insight into readmission rates in Malawi. Secondly, the assessment of readmissions and associated factors relied on archival data from patients' files. This type of data may provide limited information leading to biased results. Thirdly, the assessment of patient insight into their illness did not use a validated tool. It was through clinical judgement of a healthcare provider. Fourthly, it is also worthy to mention that the readmissions rate calculated from these data is limited to SJOG hospital. There is the possibility that some of these patients had another admission in a different hospital. It is possible that some of these admissions were missed, leading to under-calculated readmission rates. Lastly, some of the commonly associated factors reported by other studies such as environment, hospital and family-related variables were not included in the current study as the source of data could not provide this information. Future researches addressing these limitations are recommended to take this work forward.

5.11 Study conclusion

This study assessing the rate of psychiatric readmission and associated factors is the first study to be conducted in the northern region of Malawi. The study has established readmission rates for psychiatric patients at 3 months, 6 months and 12 months after the acute admission. The study also found 3 factors associated with these readmissions, namely: catchment area, insight, and use of SGAs. These findings are consistent with findings from other studies conducted in HICs and LMICs, and will add evidence to the already existing literature. These results will assist in developing interventions to reduce readmissions. The current study results will also act as a platform from which further research in this area may be generated. The recommendations have already been highlighted above.

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APPENDIX A: EXTRACTION SHEET

Title: Rate of psychiatric readmissions and associated factors at St John of God Psychiatric Hospital in Mzuzu, Malawi.

Code Number: ……...

Date: ……..……..……

Time…….....

Place……..…….…….

Name of Data collector.....….

Year of 1st Admission to St John of God Mzuzu.....

SECTION A: SOCIO-DEMOGRAPHIC DATA

1. **Gender:** Male ☐ Female ☐

2. **Age:** _____ years

3. **Tribe: _____**

4. **Marital status:**

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Single					
Married					
Widowed					
Divorced/Separated					
Others specify					

5. **Number of patient`s Children**

Specify…….

6. **Occupation:**

- ☐ Employed
- ☐ Student
- ☐ Farmer
- ☐ Business man/woman
- ☐ Unemployed

7. **Education:**

- ☐ Never went to school
- ☐ Nursery/kindergarten
- ☐ Primary
- ☐ Secondary
- ☐ Tertiary

8. **Religion:**

- ☐ Christian
- ☐ Muslim
- ☐ None
- ☐ Others specify…….....

9. **District where patient lives:**

- ☐ Nkhata-Bay
- ☐ Rumphi
- ☐ Karonga
- ☐ Mzimba
- ☐ Chitipa
- ☐ Likoma
- ☐ Others specify……..

10. Catchment Area:

☐ Within St John of God (SJOG) Catchment area

☐ Outside SJOG Catchment area

-If within SJOG catchment area, Mention the client`s nearest outreach clinic?

Specify……..

11. Was the client referred from a general hospital in this admission?

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					
If referred, specify the district					

12. Psychosocial issues identified by Social Worker/Counselor/Pastoral Care Team/Occupational Therapist?

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					
If yes, Specify the issues					

<u>SECTION B: PSYCHIATRIC READMISSIONS</u>

13. Were there any readmissions in the year after the first admission?

☐ Yes

☐ No

14. If yes to above, number of admissions to this institution in the year after the first admission

Admission No.	**Date of Admission**	**Date of discharge**	**Length of Stay(LOS)**	**1st Readmission at 3, 6, 12 months interval**
1				
2				
3				
4				
5				

15. How many times has the client been readmitted to this institution in the last;

3 months……..

6 months…….

12 months…….

SECTION C: CLIENT`S CLINICAL FACTORS

16. Diagnosis of the mental illness on discharge (From 1st Admission):

☐ Schizophrenia

☐ Schizophreniform disorder

☐ Brief psychotic disorder

☐ Schizoaffective disorder

☐ Bipolar disorder

☐ Depressive disorder

☐ Substance induced psychotic disorder

☐ Psychotic disorder due to general medical condition

☐ Others specify……..

17. Duration between readmissions (Length of time between psychiatric admissions). Specify the period.

Admission	**Duration in Weeks/months**
1st to 2ndAdmi	
2nd to 3rdAdmi	
3rd to 4thAdmi	
4th to 5thAdmi	
5th to 6thAdmi	

18. Suffering from any other mental health condition (Comorbid Disorder)?

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					
If yes, specify					

19. Suffering from any medical condition (Comorbid physical illness)?

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					
If yes, specify the illness					

20. History of mental illness in the family

☐ Yes

☐ No

21. Age of onset of mental illness (Early/Late onset)

Specify the age…….

22. History of Arrests

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					

23. Type of admission

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Voluntary					
Involuntary					

24. Type of discharge

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Normal					
Discharge against med advice					

25. Mental Health contact at OPD/Domiciliary after discharge

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					

26. Reasons for admissions (Symptoms on admission)

1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm

27. Remission of symptoms on discharge from the first admission.

☐ Full remission

☐ Partial remission

☐ No remission

28. Type of antipsychotics given on discharge

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Conventional					
Atypical					
Mixed					
Nil					
Specify the name of drug					

29. Given depot medication on discharge

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					
If given Depo, specify					

30. Side effects with the medication

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					
If side effects, specify					

31. History of suicidal thoughts/attempt

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					

32. Treatment compliance after admission

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Complied to treatment					
Defaulted treatment					
Not sure					
N/A					

33. Substance use

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					
Not sure					
If yes, specify substance					

34. Electroconvulsive therapy during admission

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					

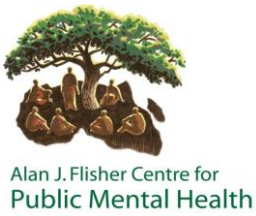
35. Insight on discharge in this admission

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Full insight					
Partial insight					
No/poor insight					
Not sure					

36. Any history of absconding or attempted to abscond

	1st Adm	2nd Adm	3rd Adm	4th Adm	5th Adm
Yes					
No					

APPENDIX B: CLEARANCE LETTER TO SAINT JOHN OF GOD MENTAL HOSPITAL.



Alan J Flisher Centre for Public Mental Health
Department of Psychiatry and Mental Health
University of Cape Town
46 Sawkins Road, Rondebosch, 7700
Cape Town, South Africa

The Director of Services
Saint John of God Hospitaller Services
P.O. Box 744, Mzuzu
Malawi.
25th November, 2016.

Dear Sir/Madam,

APPLICATION FOR PERMISSION TO CONDUCT A STUDY AT YOUR INSTITUTION.

I write to ask for permission to allow me to conduct a study at your institution. The study is entitled "**Rate of psychiatric readmissions and associated factors at Saint John of God Psychiatric Hospital in Mzuzu, Malawi".**

I am a Mental Health Clinical Officer currently pursuing Master of Philosophy degree in Public Mental Health (Mphil PMH) at the University of Cape Town, South Africa. As part of the requirements for this course, I am supposed to conduct a mental health related research study.

The study is an audit of clinical files aimed to establish the frequency of readmissions and its associated factors among patients at SJOG Mental Hospital in Mzuzu, Malawi. The identification of admission rates and associated factors will assist in generating interventions so as to improve the quality of mental health delivery in Malawi. All ethical considerations will be adhered to. There are no serious risks attached to the study.

Enclosed herein is the ethical clearance letter from the University`s Human Research Ethics Committee; **HREC REF 788/2016**.

For more information, contact **Manson M Msiska** or supervisors on the contacts below:

Dr. Katherine Sorsdahl
Alan J Flisher Centre for Public Mental Health,
Department of Psychiatry and Mental Health,
University of Cape Town, South Africa
Mobile: 082 055 4676
Katherine.sorsdahl@uct.ac.za

Dr Stefan Holzer
Head of Department of
Mental Health
College of Medicine
University of Malawi
sholzer@medcol.mw

Your favorable consideration will be highly appreciated

Yours faithfully,

MANSON M MSISKA
Mphil. Public Mental Health Fellow.
Student ID number: MSSMAN005
Email: mansonmsiska@yahoo.com
Mobile: (+265) 888687553

APPENDIX C: CLEARANCE LETTER FROM SAINT JOHN OF GOD MENTAL HOSPITAL

Saint John of God Hospitaller Services

Registered company under Companies Act 1984

25th November, 2016

Manson Mwachande Msiska
St John of God Hospitaller Services
P.O. Box 744
Mzuzu

Dear Sir/Madam,

RE: PERMISSION TO CONDUCT A STUDY WITHIN ST. JOHN OF GOD HOSPITALLER SERVICES.

Your earlier communication requesting permission to conduct a study within St. John of God Hospitaller Services.

I am pleased to grant you permission to carry out the said exercise subject to the following conditions:-

- Participants will be facilitated to understand the purpose of your study, their personal involvement in the study and involvement of other people/groups
- Consent of participants will be sought before participation in the study – the participants will also be given freedom to withdraw during any stage of the study.
- Participants will be assured of confidentiality e.g. their identity and views.

Would you need any clarification on any of the above, feel free to contact the undersigned.

Wishing you the very best in your research project.

Faithfully yours,

Charles Masulani
DIRECTOR OF SERVICE.

P.O. Box 744 Katoto, **Mzuzu**, Malawi **Tel:** 265 (0) 1 311 495 **Fax:** 265 (0) 1 311 213 **Email:** sjog@sjog.mw **Web:** www.sjog.mw

Hospitality . Compassion . Respect . Justice . Excellence

APPENDIX D: UNIVERSITY ETHICS APPROVAL

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E52-24 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone (021) 404 7682 • Facsimile (021) 406 6411
Email: post.hsme@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

11 November 2016

HREC REF: 788/2016

Dr K Sorsdahl
Alan Fisher Centre for Public Mental Health
Psychiatry & Mental Health
Room 108
46 Sawkins Road
Rondebosch

Dear Dr Sorsdahl

PROJECT TITLE: RATE OF PSYCHIATRIC READMISSIONS AND ASSOCIATED FACTORS AT ST JOHN OF GOD PSYCHIATRIC HOSPITAL IN MZUZU, MALAWI (MPH candidate- Hanson M Msiska)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee for review.

It is a pleasure to inform you that the HREC has **formally approved** the proof of concept for phase 1 of the above-mentioned study.

Approval is granted for one year until the 30th November 2017. This is subject to supplying the local Malawi approval.

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/fhs/research/humanethics/forms)

We acknowledge that the student MM Msiska will be involved in this study.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval before the research may occur.

Please quote the HREC REF in all your correspondence.

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

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE

APPENDIX E: NATIONAL ETHICS APPROVAL

Telephone: + 265 789 400
Facsimile: + 265 789 431

All Communications should be addressed to:

The Secretary for Health and Population

In reply please quote No.

.....

MINISTRY OF HEALTH AND POPULATION
P.O. BOX 30377
LILONGWE 3
MALAWI

14th December, 2016

Manson M. Msiska
St John of God Hospitaller Services
Lilongwe

Dear Madam,

RE: PROTOCOL # 16/12/1710: RATE OF PSYCHIATRIC READMISSIONS AND ASSOCIATED FACTORS AT ST JOHN OF GOD PSYCHIATRIC HOSPITAL IN MZUZU, MALAWI

Thank you for the above titled proposal that you submitted to the National Health Sciences Research Committee (NHSRC) for review. Please be advised that the NHSRC has **reviewed** and **approved** your application to conduct the above titled study.

- **APPROVAL NUMBER : 1710**
- The above details should be used on all correspondences, consent forms and documents as appropriate.
- **APPROVAL DATE : 14/12/2016**
- **EXPIRATION DATE**
  This approval expires on **13/12/2017**. After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the NHSRC Secretariat should be submitted one month before the expiration date for continuing review.
- **SERIOUS ADVERSE EVENT REPORTING:** All serious problems having to do with subject safety must be reported to the NHSRC within 10 working days using standard forms obtainable from the NHSRC Secretariat.
- **MODIFICATIONS**: Prior NHSRC approval using forms obtainable from the NHSRC Secretariat is required before implementing any changes in the protocol (including changes in the consent documents). You may not use any other consent documents besides those approved by the NHSRC.
- **TERMINATION OF STUDY**: On termination of a study, a report has to be submitted to the NHSRC using standard forms obtainable from the NHSRC Secretariat.
- **QUESTIONS**: Please contact the NHSRC on phone number *+265 888 344 443* or by email on mohdoccentre@gmail.com.
- **OTHER**: Please be reminded to send in copies of your final research results for our records (Health Research Database).

Kind regards from the NHSRC Secretariat.

SECRETARY FOR HEALTH
2016 -12- 14
P.O BOX 30377, CAPITAL CITY, LILONGWE 3

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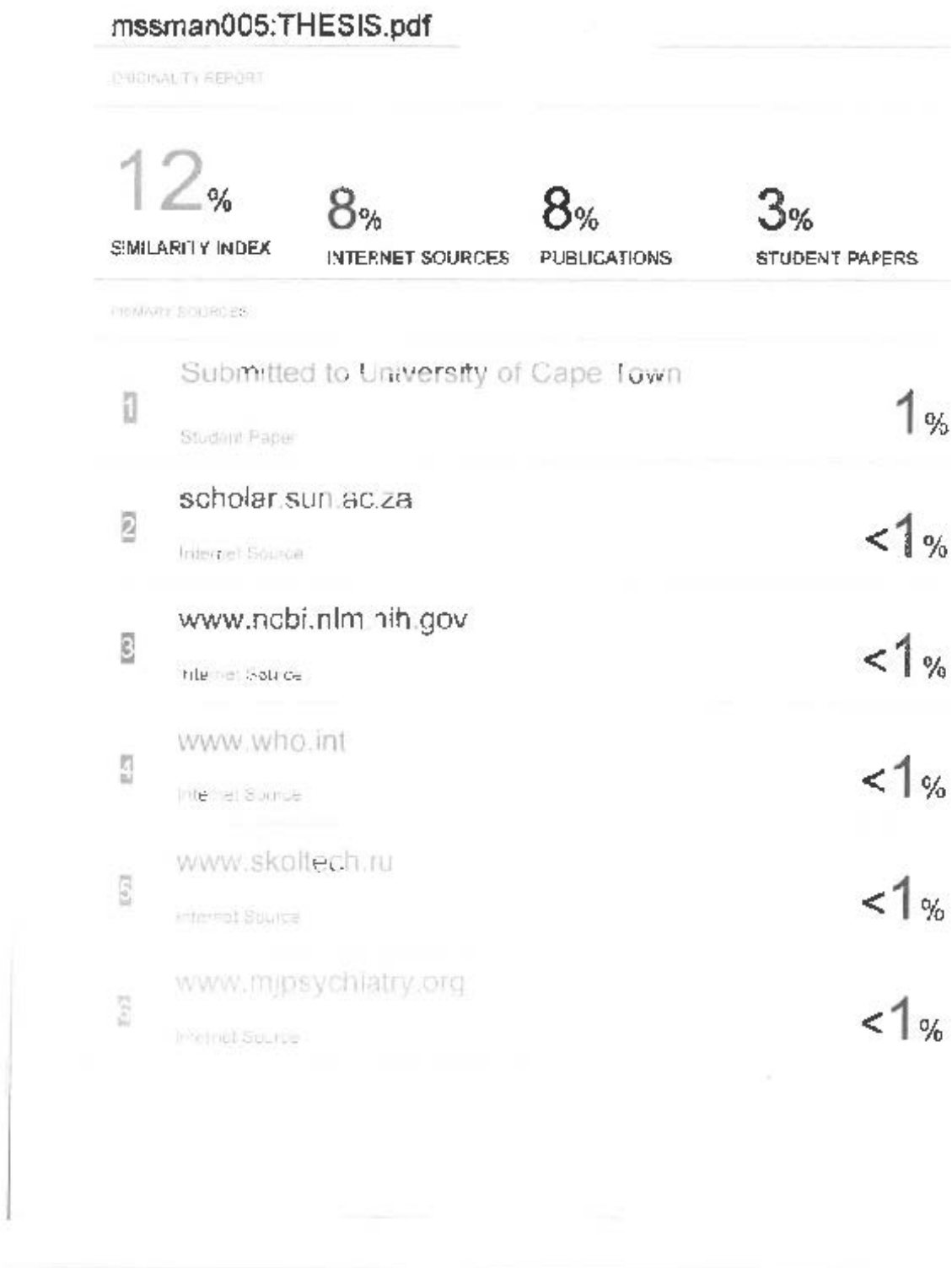
For: **CHAIRPERSON, NATIONAL HEALTH SCIENCES RESEARCH COMMITTEE**
Promoting Ethical Conduct of Research[1]

APPENDIX F: TURNITIN REPORT



mssman005:THESIS.pdf

ORIGINALITY REPORT

12%	8%	8%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of Cape Town Student Paper	1%
2	scholar.sun.ac.za Internet Source	<1%
3	www.ncbi.nlm.nih.gov Internet Source	<1%
4	www.who.int Internet Source	<1%
5	www.skoltech.ru Internet Source	<1%
6	www.mjpsychiatry.org Internet Source	<1%

APPENDIX G: MAP OF MALAWI