AFRICA UNIVERSITY

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ADHERENCE TO CLINIC APPOINTMENTS AND MEDICATION AMONG PATIENTS ACCESSING STATIC AND OUTREACH MENTAL HEALTH CLINICS, LILONGWE, MALAWI

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF PUBLIC HEALTH IN THE FACULTY OF HEALTH SCIENCES OF AFRICA UNIVERSITY

2021

Abstract

It is reported that individuals who are non-adherent to medication and other treatment modalities have higher rates symptom recurrence, higher hospital readmission and poor quality of life. Few studies have been conducted on prevalence for non-adherence to clinic appointment and medication as most of them have concentrated on other conditions, for example, hypertension, Diabetes and HIV/AIDS. Although a few studies have been undertaken in Low and Middle Income Countries (LMICs), such as Nigeria and South Africa, poor mental health service organization, missed planned visits, and their consequences may have serious ramifications in Malawi. Nkhoma Mission Hospital (NMH) has been integrating mental health within the existing services to ensure that the services are accessible to people. A cross-sectional analytical hospital and community based study was conducted from June, July 2021 at NMH, Lilongwe, Malawi. The study used a survey/census approach to enroll all the participants into the study. Adherence to clinic appointments and medication was assessed through interviewer administered questionnaires consisting of measures assessing adherence to clinic appointments and medication. Medication Adherence Rating Scale (MARS) was used to assess adherence to medication. Association of alcohol use, insight, and stigma with medication adherence was established using *AUDIT* scale, *BIRCHWOOD* Scale and Internalized Stigma of Mental Illness (ISMI) Scale. There were Ninety-one (91) participants who took part in this study. There were 51 (56%) males and 40 (44%) females in the study. The prevalence of non-adherence to medication and clinic appointment was 64% (n=58) and 46.2% respectively. A multivariate logistic regression analysis found different factors associated with non-adherence to clinic appointments and medication. Females were 4.7 times more likely to miss clinic appointments than males (B =-1.555, Exp (B)=0.221, p=0.029), Protestant Christians were 5 times more likely than Christians from other denominations and non-Christians participants to miss clinic appointments (B = 5.176, p=0.034), clients not married were 15 times more likely not to adhere to clinic appointments (B=2.722, Exp(B)=25.12, p=0.002) and clients who visited a mobile clinic were more likely than those who visited a static clinic to miss appointments (B =-1.762, Exp (B)=0.172, p=0.020). Clients who had been on medication for less than 2 years had significantly lower adherence to medication than those who had been on medication for more than 2 years (B=-1.631, t=-2.053, p=0.043), patients who occupation was farming had lower adherence to medication (B= -1.541, t=-2.057, p=0.043), Psychotic patients had a higher adherence to medication than non-psychotic patients (B=1.753, t=2.041, p=0.044). The prevalence of non-adherence to clinic appointments and medication in this study was high. It is important to address factors that influence non-adherence to clinic appointments and medication in order to avoid relapse.

KEYWORDS: Non-adherence, clinic appointment and medication

Declaration

I declare that this dissertation is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree

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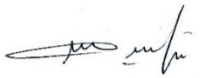
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Dr Caroline Mbuba
Main Supervisor's Name


Main Supervisor's Signature (24/11/2021)

Copyright

Acknowledgements

I would like to express my gratitude to Dr. Caroline Mbuba, my academic supervisor, and Dr. Bwalani Chingati Mbakaya, my field supervisor, for helping me through the study. I also want to thank my family, particularly my wife, Tiyamike and children, for their moral support throughout my studies. I am also grateful to Japhet Myaba and Bickson Gangata for their moral and academic support, which helped me succeed throughout the course.

Dedication

My wife Tiyamike, daughters Shalom, Favour, Rachel, and son Hope are all honored in this dissertation for their moral and spiritual support was reassuring.

List of Acronyms and Abbreviations

ALHIV	Adolescents Living with HIV
ANOVA	One-way analysis Of Variance
ART	Anti-Retroviral Therapy
AUDIT	Alcohol Use Disorder Identification Test
DAYLS	Disability-Adjusted Life Years
DSMIV	Diagnostic Statistical Manual for Mental Disorders Version IV
FGA	First Generation Anti-psychotics
HIC	High Income Countries
HIV	Human Immunodeficiency Virus
ISMI-10	Internalized Stigma of Mental Illness Inventory – 10 Version
LMIC	Low and Middle Income Countries
MARS	Medication Adherence Rating Scale
NHSREC	National Health Sciences Research and Ethics Committee
NMH	Nkhoma Mission Hospital
PHC	Primary Health Care
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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CHAPTER 1 INTRODUCTION

1.1 Introduction

Globally, over 1 billion people were affected by mental and addictive disorders as of 2016 (Rehm & Shield, 2019). These medical conditions were responsible for 7% of all global burden of disease, as measured in Disability-adjusted life years (DALY's). Further to that, 19 % of those years are lived with disability (Rehm & Shield, 2019). By 2017, approximately over 792 million people had a mental disorder. Marginally, this was 10.7% of the global population, with depression and anxiety being most common (Coronado-v & Museros-sos, 2020).

It is reported that mental health conditions are common in local primary health settings (PHC) globally ranging from 20-30% of the general health problems reported at these facilities (Udedi, 2016). The prevalence of common mental disorders in some African countries is as follows: 33% in Ethiopia, 24% in Tanzania and 25-26% in Zimbabwe (Udedi, 2016).

Recently, there have been significant improvements in pharmacotherapy and other treatment modalities of mental illnesses thus leading to prevention of relapse, reduction of symptoms and a general improvement in social functioning (Thyloth, Singh, & Subramanian, 2016). Despite all these gains, a major challenge lies in the treatment of mental disorders. The accurate and actual effectiveness of medications that are antipsychotic and other treatment modalities is reportedly significantly below the efficacy results collected from clinical trials, especially when due consideration is given to relapse rates (Thyloth et al., 2016). Almost 31.7% of individuals that suffer from

mental disorders reportedly have a long-term disability and dependency on clinic appointments and treatment (Semahegn et al., 2020). Therefore, adherence to medication and appointments is essential although often a challenge in managing mental disorders. The World Health Organization (WHO) describes medication non-adherence as "a case in which a person's behaviour in taking medication does not correspond with agreed recommendations from health personnel (Semahegn et al., 2020). Others define adherence as the extent to which a patient correctly follows instructions from medical personnel including the use of medications, self-care, self-directed exercise, including medication use, self-care, self-directed exercises, or counselling sessions (Shah, Patel, Amin, & Shah, 2019). Contrastingly, non-adherence has been defined as a failure to follow instructions and advice from service providers (Shah et al., 2019). Non-adherence with treatment is now recognized as a major challenge in patients suffering from mental disorders. Non-adherent patients are reported to be 70% more likely to be admitted to the hospital than patients with partial adherence, who are 30% more likely to be admitted than adherent patients (Ljungdalh, 2017). In addition, missing appointments and treatment significantly reduces the quality of care offered, resulting in poor treatment outcomes and wastage of financial resources (Si, Morakinyo, Ao, Bo, & Jo, 2014). Most of the studies evaluate non-compliance to the drugs and appointments separately (Alpak et al., 2015).

One of the major challenges that clinicians encounter when dealing with chronic illnesses is treatment effectiveness. Factors such as patient tolerance to medication, the appropriateness of the regimen, and adherence to the prescribed medication determine patient's adherence to treatment (Garcia, Sainza; Martinez-Cengotitabengoa, Monica;

Lopez-Zurbano, Saioa; Zorrilla, Inaki; Lopez, Purificacion; Vieta, Edward; Gonzalez-Pinto, 2016). If a patient does not take medication, even the best medication will not be ineffective.

There is documented evidence that over 50% of individuals on long-term medication fail to complete the regimen, and this situation indicates a worrisome and serious challenge in chronic mental disorders (Garcia et al,. 2016) in which the treatment rate is lower than in other conditions. It is also reported that individuals with mental disorders are more likely to miss appointments and medication owing to several factors such as poor reasoning and lack of insight into their illness and treatment (Semahegn et al., 2020).

Non-adherence in mental diseases varies greatly depending on the patient population. For example, in mental disorders, this proportion can range from 70 to 80%, and in depression alone and bipolar disorder, it is between 26.5 and 70 percent (Alpak et al., 2015). This wide range is mostly due to a lack of agreement among investigators on the appropriate methodology or criteria for assessing adherence (e.g. Quantitative vs qualitative research, direct measurement of blood or urine parameters vs indirect measurements, patient self-reporting vs clinicians' reports) (Garcia et al, 2016).

Studies on treatment adherence conducted in patients with mental disorders and their missed rates of patient follow-up have recorded up to 10-55% of non-adherence (Alpak et al., 2015). Studies evaluating treatment compliance of patients who had different psychiatric diagnoses or were treated with different drugs are scarce (Alpak et al., 2015).

1.2 Background

Malawi remains one of the poorly resourced countries in Africa in provision of mental health services (Kokota, Lund, Ahrens, Breuer, & Gilfillan, 2020). The country has a population of 18.6 million people but has only three main specialist mental health facilities located in each of its three administrative regions with 400 psychiatric beds (2.56 per 100000 population) (Kokota et al., 2020). These institutions are Zomba Mental Hospital in the south and St John of God in the centre and northern regions. Mental health services generally are not integrated into the existing PHC (Udedi, Swartz, Stewart, & Kauye, 2014).

In Malawi, data are scarce on the prevalence of common mental disorders in PHC settings. However, studies conducted found that 20-28% of patients attending PHC had probable common mental health problems (Udedi et al., 2014); (Yang, Sau, Lai, Cichon, & Li, 2015). Although a few studies have been conducted in Low and Middle-Income Countries like Nigeria and South Africa (Si et al., 2014); Semahegn *et al*., 2020; Ramlucken & Sibiya, 2018; Si et al.,2014), in Malawi where mental health services are poorly organized, missed appointments and its resultant consequences may be burdensome. There is also scarce data for studies on the prevalence of non-compliance as most of the studies have concentrated on other conditions such as hypertension, HIV/AIDS and Diabetes. In a study which aimed at examining levels of self-reported Antiretroviral Therapy (ART) adherence, barriers to adherence and factors associated with non-compliance among Adolescents living with HIV (ALHIV) in Malawi, it was found that, of the 519 participants, 153 (30%) reported having missed ART doses within the past week, and 234 (45%) in the past month (Kim et al., 2017). Commonly reported

barriers to adherence included forgetting (39%), travel from home (14%), feeling depressed/overwhelmed (6%) busy with other things (11%), feeling depressed/overwhelmed (6%), feeling stigmatized by people outside (5%) and within the home (3%). Factors that were found to be independently associated with missing a dose in the previous week were: missed clinic appointment in the past 6 months, drinking alcohol in the past month, experiencing violence in the previous 6 months and poor treatment self-efficacy (Kim et al., 2017). However, it is unknown if these factors are the same among patients accessing the mental health services at the outreach and static clinics within the NMH catchment area.

Similarly, research in Malawi that looked at factors that influence antiretroviral treatment among adults receiving care from private health facilities showed that non-adherence rates ranged from 19% to 22%. Individual, psychological, drug-related and human related factors were identified as the facilitators and barriers for retention in care by participants. Follow-up visits after missing, adequate information education and counseling, and supportive relationships were all factors that helped people stay in care (Chirambo, Valeta, Banda Kamanga, & Nyondo-Mipando, 2019).

Another study conducted at Queen Elizabeth Central Hospital in Malawi to assess factors influencing treatment adherence among patients with hypertension showed that 42.7% of them had low adherence to treatment while 39.6% and 17.7% had moderate and high treatment adherence respectively (Mbeba, 2014). Although considerable research has been devoted to adherence to medication for physical conditions, not much attention has been given to research on the prevalence and factors connected to the adherence to mental health appointments and medication. However, a study conducted in

Malawi in 2017 found the prevalence of non-compliance to antipsychotic medication among patients with mental disorders at 43.9% (Myaba, 2017).

Nkhoma Mission Hospital has been integrating mental health within the existing infrastructure, which includes one health centre, and twelve already existing under-five clinics, Family Planning, Antenatal Care, structures in support of the PHC delivery model to ensure that services are accessible to where people are (Mekani & Myaba, 2020). Some of the activities under the project include outreach and static clinics. The outreach and static clinics opened in February 2017 and started registering clients with mental illness and epilepsy. Some of the patients are referred from Medical Ward on discharge or seen in Outpatient Clinic to the Outreach and static clinics. If their nearest facility is the main hospital, they are registered under the Thursday Static Clinic at the Main Hospital for monthly follow-up care. Clients who live close to the outreach clinics are seen at their respective outreach clinics on a scheduled visit day. The outreach clinics give the advantage to move the mental health services closer to the community. The outreach clinics are conducted once a month with some flexibility that clients can also visit the static clinic at the Hospital every Thursday in case of need, i.e. if they have other problems or side effects (Mekani & Myaba, 2020). Therefore, the present study seeks to address the gap by investigating the prevalence and factors of non-compliance or non-adherence to clinic appointments and mental health treatment among patients accessing outreach and static clinics in Malawi.

1.3 Statement of the Problem

Non-adherence to treatment has grave consequences for individuals with mental disorders often resulting in relapse and increase of psychotic symptoms, more violence

than adherent patients, higher hospitalization, poor community adjustment, among other effects (Gebeyehu et al., 2019). People with mental illness who fail to turn up for appointments are generally under-researched and might have some significant unmet health needs (Ellis, McQueenie, McConnachie, Wilson, & Williamson, 2017).

It is reported that individuals who are non-adherent to treatment have lower rates of symptom remission, higher rates of hospital readmission and poor quality of life. In the treatment of any mental illness, achieving and sustaining adherence is difficult. Therefore, a comprehensive understanding of the factors that relate to clinic appointments and medication adherence can assist in maximizing the efficiency of early intervention services.

Anecdotal reports from the mental health service providers from NMH indicated that about 50 patients with mental illness were missing static clinic and 15 patients were missing outreach clinics and about 50 patients defaulted treatment and were lost to follow-up in 2020 despite the availability of mental health services; static clinic and at least a monthly outreach clinic to the communities at a subsidized cost. Patients who fail to show up for appointments have a higher chance of being admitted to the hospital, are more socially impaired and unwell contributing to the already widening gap for treatment among individuals with mental disorders. It was not known what was contributing to the poor adherence to appointments and treatment among patients accessing the mental health services at NMH. Therefore, it was important to determine the prevalence of adherence to clinic appointments and medication and their related factors to help improve the quality of life among patients with mental illness.

1.4 Study Purpose

The study determined the prevalence of non-adherence to clinic appointments and medication and their related factors in order to improve the quality of life among patients with mental illness.

1.4.1 **Broad Objective**

To determine adherence to clinic appointments and medication and the associated factors among patients with mental illnesses accessing static and outreach mental health clinics at NMH Static and its twelve outreach clinics.

1.4.2 **Specific Objectives**

a) To determine the prevalence of non-adherence to medication and clinic appointments among patients with mental illnesses accessing mental health services at Nkhoma Mission Hospital Static Clinic and its twelve (12) outreach clinics.
b) To determine the socio-demographic and clinical factors associated with non-adherence to medication and clinic appointments at Nkhoma static clinic and mental health outreach clinics.

1.5 Research Hypotheses

1. There is no compliance to clinic appointments among patients with mental illness accessing static and outreach mental health clinics at Nkhoma Mission Hospital.

2. There is no association between sociodemographic and clinical factors and adherence of patients to medication and clinic appointments at Nkhoma Mission Hospital.

1.6 Significance of the study

Missing scheduled visits has been shown to have a negative influence on patients' mental health and recovery, and missed medication and non-adherence can also result in service users disengaging from services and ceasing to receive care (Kandeger, Guler, Egilmez, & Guler, 2018). Factors affecting client's non-adherence to clinic appointments and treatment, among clients accessing mental health services at NMH were not known. Therefore, knowledge and understanding of these factors affecting adherence to treatment among patients with mental illness will help to increase access to mental health services and reduce the treatment gap and strengthen the approach in the provision of quality community-based mental health services. This study's findings will also help to form a basis for further interventions to enhance the quality of life for people with mental problems.

1.7 Limitations

The results of this study must be interpreted in light of its limitations. There was no prospective follow-up of clients who missed appointments and medications because the study was conducted at one point in time.

The other limitation is the use of the Medication Adherence Rating Scale (MARS) which is a subjective measure of assessing medication adherence compared to objective measurements However, the most applied measurement in adherence studies is subjective measures, with almost 75% of the existing studies using information taken from patients, their family members or service providers (Ljungdalh, 2017). In addition, each of the measures has its weaknesses and strengths.

Assessment of adherence to clinic appointments and medication was done by asking the patients only.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter begins by looking at the theoretical framework adopted from some studies. This is followed by looking at the importance of treatment adherence among patients with mental illness. In addition, the section focuses on a review of available literature thereby investigating the factors associated with non-adherence to a medication and clinic appointment.

2.2 Theoretical framework

This study will employ a theoretical framework developed by Michelle and Selmes (2007) which explains how different factors contribute to adherence and non-adherence among patients with mental illness (Figure 1).

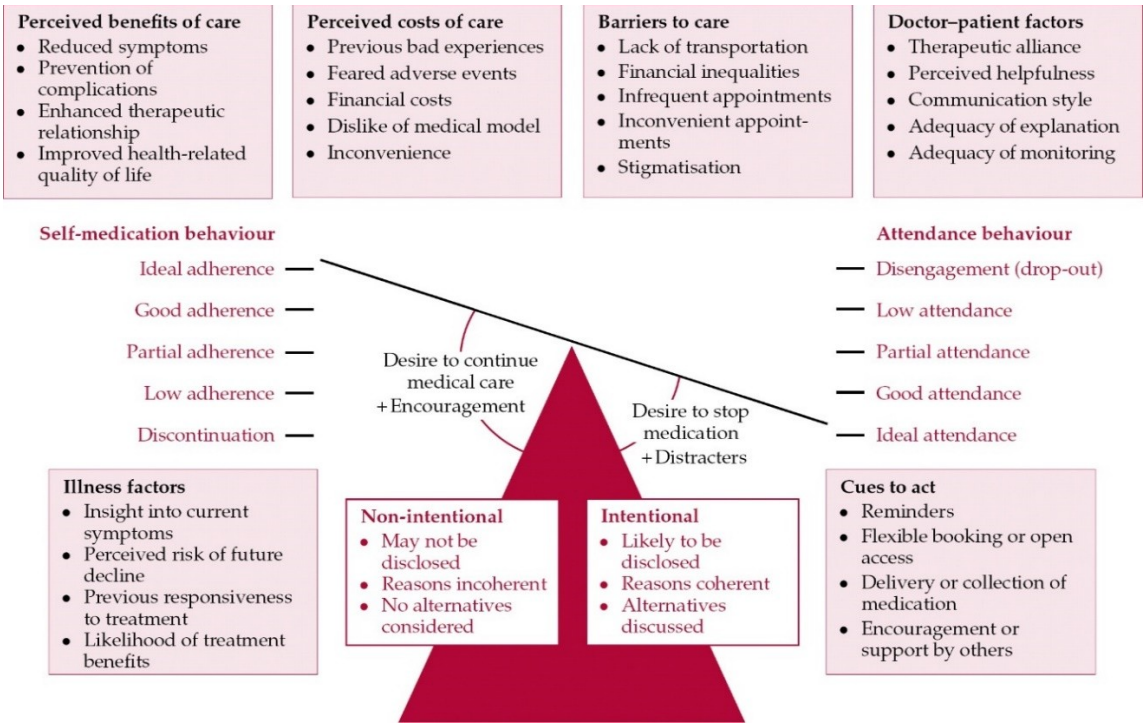

Figure 1: Theoretical framework illustrating the factors influencing adherence to medical advice

Adopted from: Advances in Psychiatric Treatment (Mitchell & Selmes, 2007).

2.3 Importance of adherence to treatment

It is important to ensure that individuals with mental illnesses receive treatment to reduce the burden associated with these disorders and improve their quality of life. However, a comparison between patients receiving treatment for general medical conditions and those with mental illnesses has shown that the latter is the least likely to comply with their medication regimen (Buchman-Wildbaum et al., 2020). Long-term treatment adherence is more difficult to achieve than short-term treatment adherence and this is so among patients with mental illness especially when there are challenges with insight and cognitive functioning (Semahegn et al., 2020).

However, medications for mental disorders are important as they help to relieve or alleviate symptoms thereby preventing relapses (World Health Organization (WHO), 2009). On the one hand, education and psychosocial interventions aid patients and their families in coping with their condition and its repercussions, as well as preventing relapses.

Two groups of antipsychotics are currently employed to treat Schizophrenia and other psychotic disorders: standard antipsychotics (previously called neuroleptics) (and new antipsychotics (also called “atypical” or second-generation antipsychotics) (WHO, 2004). Taken consistently, these medicines can reduce the risk of relapse by 50% (WHO, 2004).

2.4 Prevalence of non-adherence to treatment

Many studies utilize different definitions of the term "adherence," and there is little uniformity. To have a clear comprehension, a leading definition of adherence was informed by the WHO (Leclerc, Noto, Bressan, & Brietzke, 2015). This study looked at adherence to medication and clinic appointment.

Adherence studies have both subjective and objective measures. Subjective measures include self-reporting, ratings by care providers, consensual agreement among the entire treatment team, family members, or a combination of the aforementioned. Objective methods include blood or urine analysis, pill counting, electronic monitoring and electronic refill records and prescription renewals (Wai Yin Lam & Paula, 2015). Objective measures are generally considered to be reliable although costly and indiscreet for patients (Leclerc et al., 2015). However, the most applied measurement in adherence studies is subjective measures, with almost 75% of the existing literature using

information taken from patients, their family members or service providers (Ljungdalh, 2017). Each of the measures has its weaknesses and strengths. The WHO recommends a combination of both as a gold standard for measuring adherence. Due to cost implications and ethical issues, the subjective measure was used to evaluate factors associated with non-adherence in this study.

According to literature, investigations on treatment adherence have primarily been conducted in patients with specific mental illness, with missed appointment rates ranging from 10% to 55% (Alpak et al., 2015). There appear studies examining treatment adherence in people with various mental disorders. Similarly, studies evaluating adherence to mental health clinic appointments are scarce. In addition, most studies on adherence to treatment have been conducted in High-Income Countries (HICs) with a few of them in LMICs. Those done in LMICs, the majority of them have been carried out in Ethiopia and Nigeria while some in South Africa. It is difficult therefore to generalize the findings of these studies to Africa due to different socio-economic and cultural contexts that bring the variations of the prevalence.

Non-adherence prevalence rates among individuals with disorders range from 30% to 65%, globally (Gebeyehu et al., 2019). For instance, in a meta-analysis of forty-six studies, it was found that medication non-adherence for three common mental disorders; schizophrenia, depressive and bipolar disorders were at 56%, 50% and 44% respectively (Semahegn et al., 2020). A review of 46 studies conducted in Asia, Europe, Africa and North America found non-adherence to treatment and appointments was at 48% in Africa, 48% in North Africa and 49% and 57% in Europe and Asia respectively (Semahegn *et al*., 2020).

Studies conducted in some of the African countries had similar findings. For example, a study carried out in Ethiopia found the occurrence of antipsychotic medication non-adherence at 48.4% (Francey et al., 2020). A comparable study conducted in South Africa showed that 46.2 percent of 182 participants attending outpatient mental health appointments had skipped their appointment at some time (Ramlucken & Sibiya, 2018)..

In Malawi, data is scarce on studies conducted to determine with certainty the prevalence of non-adherence among patients accessing mental health services. However, one study conducted by Myaba (2017) found 43.9% medication non-adherence among patients with schizophrenia (Myaba, 2017).

2.5 Factors of non-adherence to clinic appointments and medications

In general, factors affecting adherence to treatment may be divided into environment-related, disorder/illness-related, patient-related, medication-related and therapeutic alliance with a service provider (Mitchell & Selmes, 2007).

2.5.1 **Environment-related factors**

2.5.1.1 Social support

Family and social support have been shown to have an impact on adherence, and there is a strong correlation between these factors (Leclerc et al., 2015). Non-adherence and consequent treatment disengagement have also been linked to lack of social support. Patients who do not adhere to treatment, for example, are less likely to have a family member participating in their care (Leclerc et al., 2015).

There are various dimensions of social support for patients with mental disorders. These include emotional, financial and physical support (Luitel, Jordans, Kohrt, Rathod, & Komproe, 2017). A study conducted in Liberia found that a lot of families did not give social support to individuals with mental illness which led to non-adherence to clinic appointment and treatment (Kisa *et al*., 2016). If clients have good social support, they are encouraged to honour clinic appointments for their treatment. On the other hand, if they do not have family and social support, they feel demotivated and consequently might shun treatment. For instance, a study conducted in Rwanda, found that lack of support or assurance from other people was a deterrent factor against the utilization of mental health services and adherence to treatment (Rugema, Krantz, Mogren, Ntaganira, & Persson, 2015).

In addition, living alone is associated with poor adherence to treatment (Balikci et al., 2013). For instance, a study in Turkey found that 44.7% of patients had missed appointment due to staying alone (Balikci et al., 2013).

2.5.1.2 Stigma and discrimination

Stigma to mental disorders remains a worldwide issue and is one of the factors that contributes to non-adherence to medication and in turn leads to increased hospitalization and higher healthcare costs (Abdisa et al., 2020). A study conducted in in Ethiopia to assess self-stigma and medication adherence among people with mental illness found a significant link between stigma and medication adherence (Abdisa et al., 2020). Similarly, a study in Czech Republic indicated a considerable connection between self-stigma and adherence to treatment (Kamaradova et al., 2016). This underscores the primacy of interventions targeted at lowering levels of self-stigma in individuals with mental illness.

2.5.2 **Disorder-related factors**

Disorder-related factors distinguish specific disorder-associated demands encountered by patients (Sriharsha M, 2015). Other significant factors of adherence are those that are connected or associated with the degree or severity of symptoms, rate of disease progression and the availability of effective treatments (Sriharsha M, 2015). However, their effect largely relies on how they influence individual's perception of risk, the primacy of adhering to treatment and the priority put on adherence. The progression of illness has been identified as a factor affecting adherence in studies (Ljungdalh, 2017)..

2.5.2.1 Severity

The link between symptom severity of mental disorder and adherence to treatment has been proven in the literature, with treatment adherence decreasing as the severity of

symptoms increases (Brown, 2018). In most cases, patients diagnosed with schizophrenia tend to have more severe symptoms which affect their compliance to appointments and treatment (Brown, 2018).

2.5.2.2 Diagnosis

Some mental disorders are more associated with non-adherence than other conditions. According to a study conducted in Haiti, those suffering from depressive or anxiety disorders had lower follow-up rates, whereas those suffering from bipolar disorders had greater follow-up rates (Reginald Fils-Aime et al., 2018). In other studies, schizophrenia is reported to be associated with lower rates of follow-up and adherence to treatment (Eticha, Teklu, Ali, Solomon, & Alemayehu, 2015).

2.5.3 **Patient-related factors**

Some patient-related factors that influence adherence include psychosocial stress, forgetfulness, worries about possible negative side effects, inadequate knowledge and skills in managing symptoms and treatment, low motivation, lack of perceived effect of treatment, among many others (Sriharsha M, 2015). In other studies, patient-related factors include age, educational status, insight, employment (Leclerc et al., 2015). A study in South Africa found forgetfulness as one of the most common reasons cited for missed appointments include mental health care 69% of mental health care users forgetting, 16% having work commitments, 4.5% having no transportation and 6% with financial constraints (Ramlucken & Sibiya, 2018).

2.5.3.1 Age

One of the social demographic factors which affects adherence differently is age. In most studies, younger age is associated with medical non-adherence while other studies have shown older age to be associated with service disengagement. For instance, in a study in Germany, patients' non-adherence was linked with non-modifiable demographic factors like gender and age (Moritz et al., 2013). Three studies showed that older patients (aged 60 and above) were less likely to adhere to their treatment (Eticha et al., 2015); (Davé, Classi, Kim Le, Maguire, & Ball, 2012); (Akincigil et al., 2007). However, in a research conducted in Turkey, there was no difference in age at the onset of the disease between the non-attender and attender groups (Balikci et al., 2013).

2.5.3.2 Education

Some researchers believe that an individual's level of education is related to their life expectancy, health literacy, and the quality of care they receive (Calvo, 2014). Higher levels of education have been associated with improved health literacy, overall better health, and increased mental health knowledge (Mendenhall & Frauenholtz, 2013), whereas lower levels of education have been linked to lower outpatient care utilization (Yamashita & Kunkel, 2015). For instance, research done in India indicated that 37.5% of patients with schizophrenia were non-adherent and further revealed that out of the different sociodemographic variables, education was a chief factor in influencing adherence (Shah *et al*., 2019). A study in India found significantly high adherence to appointments among middle- and high-socioeconomic status patients (Kandeger et al., 2018). Contrastingly, a retrospective analysis of patient's data in the UK indicated that

patients with disadvantaged socioeconomic backgrounds were substantially more likely to miss various scheduled visits (Ellis et al., 2017).

2.5.3.3 Gender

Despite the fact that some studies appear to correlate non-adherence with the male gender, others show that medication adherence and treatment participation are not affected by gender. As a result, it's unclear whether marital status has an impact on adherence, even though other researchers believe that any apparent link could be due to other variables such as a lack of social support or living alone (Leclerc et al., 2015). According to a study done in India, females were nearly three times more likely than males to be non-compliant to treatment (Banerjee & Varma, 2013).

2.5.3.4 Co-morbidity

A co-morbidity disorder is associated with higher rates of non-adherence to appointments. For example, a study conducted in Maryland to assess the clinical predictors and demographic factors of out-patient clinic follow-up after in-patient psychiatric hospitalization found that, having simultaneous occurring substance use disorder diagnosis was among the associated factors with a reduced chance of having a follow-up visit (Marino, et al., 2016).

According to research conducted in Ethiopia, individuals with co-morbid depression were nearly twice as likely to be non-adherent as patients who were not diagnosed with comorbid depression (Girma et al., 2017; (Francey et al., 2020).

2.5.3.5 Insight

Literature shows that most individuals with severe mental disorders do not know about their illnesses (Lysaker, Pattison, Leonhardt, Phelps, & Vohs, n.d.). This implies that individuals who have no insight are not aware that they have a mental disorder. For example, in a study done in Europe that looked at the association between insight with medication and adherence by patients with schizophrenia and bipolar, it was found that adherence was higher in patients with Bipolar disorder and lower in those with schizophrenia (Novick et al., 2015). Higher adherence was linked to better insight.

2.5.4 **Medication side effects**

There exist several medication-associated factors that have a bearing on adherence. Well notable of these factors are associated with treatment duration, the complexity of the medical regimen, previous treatment failures, the immediacy of beneficial effects, frequent chances in treatment, side effects and the availability of medical support to deal with (Sriharsha M, 2015).

Antipsychotic effect has been demonstrated to lessen psychopathology, hence enhancing logic reasoning, which is essential for insight into the illness. Extrapyramidal side effects have been recorded with the first-generation antipsychotics (FGA). When first- and second-generation antipsychotics are compared, the latter has minor advantages in terms of relapse rates and tolerability (Barkhof, Meijer, de Sonneville, Linszen, & de Haan, 2012).

The other factor about medication-related factors relates to the administration route and strategies involved in dosing. While smaller doses may result in fewer side effects, they

may also result in sub-optimal efficacy. Intramuscular medication, such as depot medication, has been demonstrated to be useful in avoiding non-adherence due to fewer side effects (Barkhof et al., 2012).

Some studies have associated non-adherence to medication with side effects. For example, results of a study in Nepal and South Africa in 2017 and 2013 respectively indicated that patients' concerns about drug adverse effects harms their adherence to treatment (Semahegn et al., 2020).

2.5.5 **Therapeutic alliance with the service provider**

Studies indicate that amongst several factors that influence adherence to treatment one of them is a relationship with a psychiatrist (Shah *et al*., 2019). Provider–patient relationships in mental health care are trust-based. Trust in a service provider implies a certain degree of patient willingness to interact with the mental health professional and share their problems at any time (De Las Cuevas et al., 2017). For example, a study conducted in Korea to examine the relationship between medication adherence and therapeutic alliance in schizophrenia patients established a link between the two.

2.6 Summary

Literature has revealed that the prevalence of non-adherence to treatment ranges between 10-55% in general among patients with mental illness. Several studies have shown that adherence to treatment is affected many factors which include the following factors: social and family support, gender, age, severity of condition, co-morbidity, insight and therapeutic alliance.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This chapter highlights the type of study design used, setting, study population, sample size, sampling procedure, data collection, pretesting of instruments, validity and reliability, data analysis and ethical consideration.

3.2 Research design

A quantitative study was conducted using cross-sectional analytical design.

3.3 Study Variables

3.3.1 **Dependent variables**

Adherence to clinic appointments and medication were the main outcomes (dependent variables). At the outreach clinics, patients were given a monthly appointment while at the static clinic, appointment visits ranged from 1 month to three (3) months. Any client who missed any appointment was deemed non-adherent to clinic appointments.

3.3.2 **Independent variables**

The following were the independent variables: social support, stigma, insight, education, marital status, age, gender; substance abuse, individual behaviour/attitude towards treatment by the patient, medication side effects, therapeutic alliance, and co-morbidity (

3.3.2.1 Study setting

This study was carried out at Nkhoma Mission Hospital, a general mission hospital with 250 beds in Lilongwe District. The hospital is a referral facility for ten government and

mission health centres. The Hospital has been implementing a community-based mental health project since 2016 to integrate the mental health services within its existing services. The hospital runs an outpatient (static) clinic and 13 outreach clinics with 858 patients. NMH was chosen as a study setting because it is one of the first General Mission Hospitals to initiate the integration of mental health care in the country (Figure 2).

Figure 2: Map of Malawi showing location of Nkhoma Hospital.

3.3.2.2 Study Population

Patients with mental illness who were enrolled into the static and outreach clinics from 1st February 2017 to May 2021 constituted the study population. Both men and women aged between 18 years and above were included in the study.

Inclusion

Patients with a confirmed clinical diagnosis of a mental disorder on AXIS I based on Diagnostic Statistical Manual for Mental Disorders Version IV (DSM IV) were included in the study. Furthermore, male or female patients aged 18 and above who had been on treatment for mental illness for more than a month were eligible participants.

Exclusion criteria

Patients who were not mentally stable and incapable of giving consent were excluded.

3.3.2.3 Sample Size

There were 111 patients with a diagnosis of mental illness and all of them were included in the study. This was a survey and therefore all the participants who met the inclusion criteria were conveniently sampled.

3.3.2.4 Sampling procedure

Total Population sampling was used. Therefore all participants with mental illness were included in the study.

3.3.2.5 Data Collection Instruments

The questionnaire consisted of measures assessing adherence to medication for various mental disorders, as well as assess factors that affected adherence; patient-related, environment-related and medication factors.

3.3.3 **Patient-related factors**

The following demographic characteristics of the patients were collected: age, gender, occupational status, marital status, religion, education level, and residence. The type of treatment a client has been receiving was collected in addition to information on co-morbid disorders. At the outreach clinics, patients were given a monthly appointment while at the static clinic, appointment visits ranged from 1 month to three (3) months. Any client who missed any appointment was deemed non-adherent to clinic appointments

3.3.4 **Adherence scale**

Medication Adherence Rating Scale (MARS) was used to assess medication adherence. It was designed by Thompson (1988). Medication Adherence Rating Scale is a 10-item multidimensional self-reporting tool with three categories: medication adherence behavior (items 1-4), attitude about taking medication (items 5-8), and negative side effects and attitudes regarding antipsychotic medication (items 9-10). Medication adherence behavior refers to the frequency with which medication is used during treatment and patient's persistence during the course of the treatment. Negative side effects assess side effects as a barrier to medication adherence, while attitude to medication assesses beliefs about medications. The items within each dimension were

added together to get a score for each dimension. There were two options for answering each question: yes or no. A response that indicated non adherence was coded as 0, whereas 1 response indicated adherence. A no response to questions 1-6 and 9-10 indicated adherence and was coded as 1, whereas a yes response to questions 7 and 8 indicated adherence with a 1 as a code. The MARS had a total score range of 0 to 10, with a higher score suggesting better drug adherence. This questionnaire was designed to assess patient's behaviour and attitudes towards medication and was initially designed to be self-administered (Owie, Olotu, & James, 2018). However, in this study, it was interviewer-administered because most people are illiterate in Malawi. On adherence to clinic appointments, participants were asked how many times they have missed clinic appointments with responses ranging from none to more than twice.

Environmental related factors

3.3.4.1 Social Support measure

Social support was measured by questionnaires on demographic details and assessment of clinic appointments.

3.3.4.2 Stigma measure

Internalized Stigma of Mental Illness Inventory -10-item Version (ISMI-10) was used to measure mental illness stigma (Boyd, Otilingam, & Deforge, 2014). The Internalized Stigma of Mental Illness Inventory Scale is originally a 29-item self-report questionnaire developed with consumer input that includes the following subscales: Alienation, Discrimination Experience, Social Withdrawal, Stereotype Endorsement, and Stigma

Resistance (Boyd et al., 2014). The ISMI-10 contains 10 items which produce a total score. Before computing the final score, items 2 and 9 on the scale were reverse coded. The total number of answered items was divided by the sum of the item scores. The final score ranged from 1-4. This questionnaire was adapted from a study conducted in US among patients with mental illness (Boyd et al., 2014).

3.3.5 **Insight measure**

The Insight Scale was used to measure insight (Birchwood et al, 1994). This is a type of a scale that is used to detect differences in levels of insight and collects commonly accepted elements of insight such as: perceived need for treatment, awareness of illness and relabeling of symptoms as pathological. Greater levels of insight were indicated by higher scores. The psychometric properties of the scale are excellent and it is widely used in psychosis research. The questions were graded on a three-point Likert scale ranging from 0 to 2. For a score range of 0 to 12, the total score was added, with higher values indicating better insight. The participants that had less than 9 scores on the total sum were categorized as having poor insight. A total score of 9 or higher was considered to have good insight (Tait, Birchwood, & Trower, 2003).

3.3.6 **Alcohol Use Disorder Identification (AUDIT)**

This was used to evaluate alcohol use as well as reliance/dependence on alcohol-related issues according to World Health Organization (WHO, 2001). It included questions like: "How often do you have a drink containing alcohol? How often during the last year have you found that you were not able to stop drinking once you started?" A score of 8 or more was considered to be harmful drinking in this study (Lawford et al., 2012).

3.3.7 **Validity and Reliability of data collection instruments**

The validity and reliability of the study were improved by ensuring that all the data collection tools were standardized. The questionnaires were also translated into vernacular as well as back-translated from vernacular to English by an independent translator.

3.3.8 **Pretesting of the Data collection instruments**

Pre-testing of the questionnaires was done at Bottom Psychiatric Hospital in Lilongwe among 13 patients. No changes were made to the questionnaire after pretesting.

3.4 Data Collection Procedure

After consulting a mental health practitioner, participants were interviewed at a clinic. On their exit, all possible study participants were sent to a research assistant by the Nurse working on the clinic day. In the participant's case file, the researcher was verifying the primary diagnosis of any mental illness. The questionnaires were administered by the researcher with help of the research assistant who was a Mental Health Nurse who was trained. A psychoeducational sheet on the importance of adhering to medication was provided to patients who were non-adherent to medication. In addition, arrangements were made to refer such participants to a mental health provider for counselling. In the event that any identified concerns necessitated immediate action, participants were referred to the appropriate personnel at the hospital. This included participants with severe side effects. Any missing data was examined and validated as soon as possible after the interviews to ensure that all of the data was complete and that

no missing variables were discovered. Data was collected from 20th June 2021 to 15th July 2021.

3.5 Data Management

When the clinical data was obtained from the participants, it was checked manually to ascertain completeness and later stored in a lockable cupboard before analysis. The entire database was anonymized before analysis. SPSS Version 23 was used for data entry, checking and management. Once data analysis was complete, the researcher returned the results to Nkhoma Mission Hospital and also shared it with Africa University. Upon completion of the study, any working copy of the data to which the investigator had access was kept confidential under key and lock and electronically in the hospital's database.

3.6 Data Analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS) version 23. Descriptive statistics was calculated for all variables collected. Means with standard deviations were used to describe continuous variables and counts and percentages were used for categorical data. The analysis of the data involved describing frequencies of demographics (gender, diagnosis, religion, and district). Pearson Chi-square was done to check any association between adherence to clinic appointments and any of the demographic characteristics; environmental-related factors and medical factors of the patients.

Multiple regression analysis was conducted to identify factors that influenced adherence to medication. A multivariate logistic regression model was used to check for factors that could significantly predict whether a patient was likely going to adhere or not adhere to clinic appointments. In both analyses, stepwise regression method was employed. Explanatory variables were entered into the model one after the other with those factors that had higher correlation with the dependent variable entering first. Those variables that did not result in a change in the value of R when introduced into the model were left out.

In the multiple regression model, the p-values for each of the model coefficients were examined to check for factors that significantly contributed to adherence to medication. All factors that had coefficients with p-values less 0.05 were considered to have significant effect on adherence to medication. In the logistic model, p-values of the model coefficients were examined too. Factors that had coefficients with p-values less than 0.05 were considered significant predictors of whether a certain group of clients would adhere to clinical appointments or not. For those factors that were found to be significant predictors, the odds ratios were calculated. Results were presented in terms of Odds Ratio (OR), 95% Confidence Interval (CI) and p-values.

3.7 Dissemination of study findings

This study's findings will be shared with Nkhoma Mission Hospital, the Africa University Library and National Health Sciences Research Committee (NHSRC). The author will also present at national and international conferences and publish in a peer-reviewed journal.

3.8 Ethical Consideration

3.8.1 **Permission to carry out the study**

Permission to carry out the study was sought from the Chairperson of the Nkhoma Mission Hospital Research Committee. The study was approved by Africa University Research and Ethics Committee and National Health Sciences Research Committee (NHSRC) in Malawi.

3.8.2 **Informed Consent**

Before taking part in the study, each participant signed a consent form. The consent was read in Chichewa to those participants who could not read or understand English. Participants gave both verbal and written informed consent. Participants who could not write used a thumbprint to indicate their consent. Participation in the study was voluntary, and participants were free to withdraw at any time. Interviews were conducted in a private and quiet room. The confidentiality of the participants was maintained by excluding identifiable personal data from questionnaires, so maintaining their anonymity. There was no coercion to participate in the study. When not in use, completed questionnaires and consent forms were kept in a lockable cabinet in a designated office, which was also maintained under the researcher's key and lock. There were no risks or benefits to participants.

CHAPTER 4 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

The findings of data collected on adherence to clinic appointment and medication and the associated factors will be presented in this chapter.

4.2 Data Presentation and Analysis

4.2.1 **Socio-Demographic Characteristics of study participants**

The final sample consisted of 91 participants, representing 81.9% of the total sample size. Initially, it was planned to reach out to 111 participants. However, some refused to consent, some died, some transferred to other places and some did not turn up for the clinic visits. Taking 20% refusal rate into consideration, 91 was an adequate sample size which is more than 89% if 20% had refused participation.

The majority of the participants were male (56%, n=51) and single (39.6%, n=36). Male participants were 32 years old on average (SD=9.03) and were younger than female participants, who were 35 years old on average (SD=9.72) (Table 2).

Table 1: Socio-Demographic characteristics of participants

Socio-demographic Characteristics		Sex of respondent		
		Male (n=51)	Female(n=40)	Pearson Chi-square
Religion	Catholic (n=9)	7	2	8.815*
	Protestant (n=64)	32	32	
	Islam (n=2)	0	2	
	None (n=16)	12	4	
Education level	None (n=16)	7	9	7.349
	Primary (n=59)	30	29	
	Secondary (n=14)	12	2	
	Tertiary (n=2)	2	0	
Main occupation	Farmer (n=72)	36	36	8.028
	Trader/Business(n=4)	4	0	
	Casual laborer (n=11)	7	4	
	Student (n=2)	2	0	
	Other (n=2)	2	0	
Age	Minimum	18	19	18
	Maximum	73	80	80
	Mean	38	44	40
	Standard deviation	13	12	13

4.2.2 **Prevalence of Non-Adherence to Clinic Appointment**

This study showed that 64% (n=58) of the respondents were non-adherent to clinic appointments. 22% (n=20) missed a month appointment and 32% (n=29) missed more than 2 months (Figure 4-1).

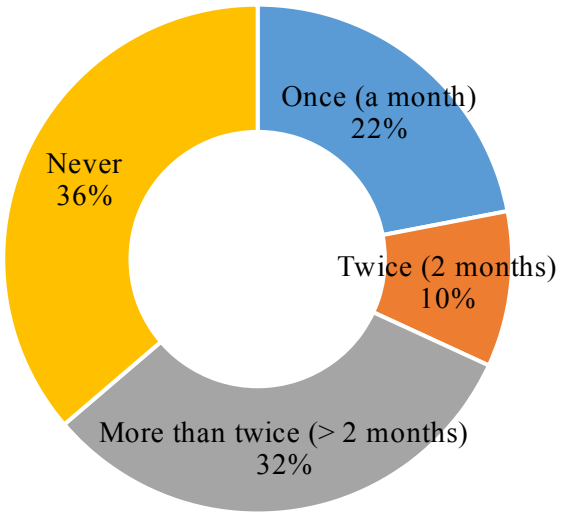

Figure 3: Number of missed clinic appointments

4.2.3 **Factors associated with non-adherence to clinic appointment**

Table 3 presents the findings on association between non-adherence to clinic appointments and patient characteristics. Findings show that socio-demographic characteristics (sex, education level, marital status, main occupation and religion) are not significantly associated with non-adherence to clinic appointments. Results also show that clinical factors (diagnosis of patient, medication type and period on medication) are not significantly associated with non-adherence to medication type.

Table 2: Factors associated with adherence to clinical appointments

	Categories	Adherent (%)	Non-adherent (%)	Pearson Chi-square
Demographic factors				
Sex	Male (n=51)	39	61	0.437
	Female (n=40)	33	67	
Education level	None (n=16)	31	69	
	Primary (n=59)	37	63	0.366
	Secondary (n=14)	36	64	
	Tertiary (n=2)	50	50	
Marital status	Never married (n=36)	20	80	
	Married (n=20)	50	50	
	Separated (n=2)	0	100	9.317
	Divorced (n=27)	48	54	
	Widowed (n=6)	50	50	
Religion	Catholic (n=9)	56	44	
	Protestant (n=64)	30	70	4.116
	Islam (n=2)	50	50	
	None (n=16)	50	50	
Main occupation	Farmer (n=72)	35	65	
	Trader/Business (n=4)	0	100	
	Casual laborer (n=11)	64	36	7.217
	Student (n=2)	0	100	
	Other (n=2)	50	50	
Clinical factors				
Diagnosis of patient	Psychosis (n=75)	40	60	
	Depression (n=3)	33	66	
	Substance use disorder (n=8)	0	100	7.354
	Alcohol use disorder (n=2)	0	100	
	Bipolar (n=3)	67	33	
Medication type	Haloperidol (n=40)	28	72	
	Risperidone (n=5)	40	60	
	Chlorpromazine (n=31)	45	55	2.494
	Modecate (n=7)	43	57	
	Carbamazepine(n=5)	40	60	
	Other (n=3)	33	67	
Period on medication	3-6 Months (n=3)	33	67	
	7-12 months (n=5)	0	100	3.404
	13-24 months (n=10)	30	70	
	>24 months (n=73)	40	40	

4.2.4 **Reasons for non-adherence to clinic appointment**

There were multiple options for the participants to choose from as reasons for non-adherence to clinic appointments. The most frequently mentioned reasons were "I do not have a mental illness" (44%) and Transport problems (44%). (Figure 4-2).

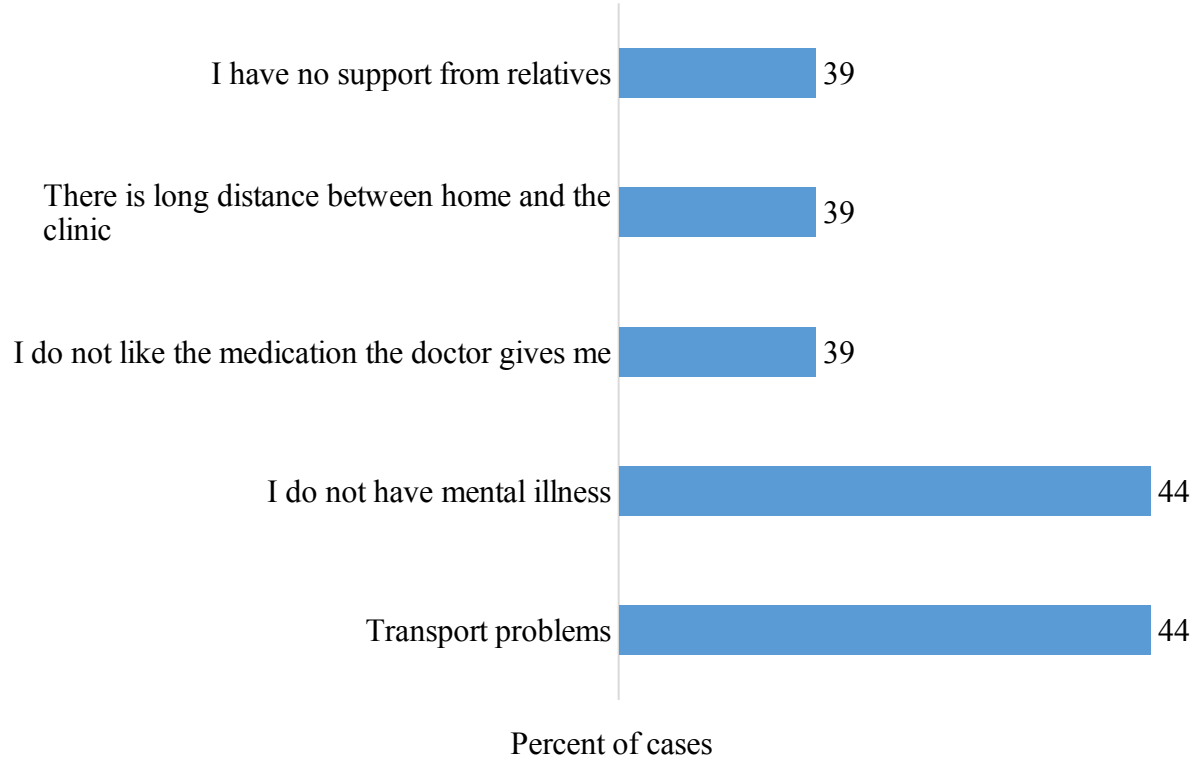

Figure 4: Reasons for Non-Adherence to clinic appointments

4.2.5 **Prevalence of non-adherence to medication**

The MARS mean score was 7.1(SD=0.99) and median score of 9. Using a median score of 8 as a cut-off point for non-adherence to medication using the Medication Adherence Rating Scale (MARS), 46.2% (n=42) of the participants were non-adherent to medication (Owie et al., 2018).

4.2.6 **Factors Influencing Non-Adherence to Clinic Appointments**

The factors in the model account for 40.2% variance in adherence to medical appointments. The model was significant, meaning that it was good at predicting whether a client would adhere to clinic appointments or not.

Sex significantly predicted whether a client would adhere or not. Female clients were 4.7 times more likely than male clients to miss clinic appointments (B= -1.555, Exp(B)=0.221, p=0.029)

Religion significantly predicted whether a client would adhere or not. Protestant were 5 times more likely than those of other religions or those who did not belong to any religion to miss clinic appointments (B= 1.644, Exp(B)=5.176, p=0.034).

Marital status significantly predicted whether a client would adhere or not. Clients who have never been married were15 times more likely not to adhere to clinic appointments than clients who were married (B= 2.722, Exp(B)=25.12, p=0.002).

Clinic attended significantly predicted whether a client would adhere or not. Clients attending a mobile clinic were 5.8 times more likely not to adhere than those attending a static clinic (B= -1.762, Exp(B)=0.172, p=0.020).

Age of client, diagnosis and duration of medication did not significantly predict whether a client would adhere to clinic appointments or not (Table 3).

Table *3*: Multivariate analysis of factors affecting clinic appointments

Characteristic	B	S.E.	Sig.	Odds Ratio	95C.I. C.I. for Odds Ratio	
					Lower	Upper
Sex (Female)						
Male	-1.555*	0.712	0.029	0.211	0.052	0.853
Age	0.035	0.025	0.162	1.036	0.986	1.088
Religion (None)			0.098			
Catholic	-0.273	1.183	0.817	0.761	0.075	7.732
Protestant	1.644*	0.776	0.034	5.176	1.132	23.673
Muslim	-20.766	14011.92	0.999	0	0	.
Marital status (Married)			0.005			
Never married	2.722**	0.919	0.003	15.211	2.512	92.117
Once married but now single	-0.197	0.704	0.780	0.821	0.207	3.263
Clinic type (Mobile)						
Static	-1.762*	0.758	0.020	0.172	0.039	0.759
Duration on medication (> 2 years)			0.843			
<1 year	-0.514	0.879	0.559	0.598	0.107	3.347
1-2 years	21.999	14011.92	0.999	3.58E+09	0	.
Diagnosis type (Non-psychotic)						
Psychotic	0.909	0.947	0.337	2.483	0.388	15.894
District (Dedza)						
Lilongwe	-1.621	0.958	0.091	0.198	0.03	1.293
Constant	-0.936	1.609	0.561	0.392		

*R^2 = .402 (Nagelkerke). ; Model χ^2 (12) = 31.631*** ; *p < .05, **p<0.01, ***p < .001.*

4.2.7 **Factors Influencing Adherence to Medication**

4.2.7.1 Insight Score

The mean score for insight was 8.75 (SD=2.5). The majority of the participants 48 (52.8%) had poor insight into their illness while 43 (47.3%) had good insight. The mean Insight scores are shown in figure 5 below.

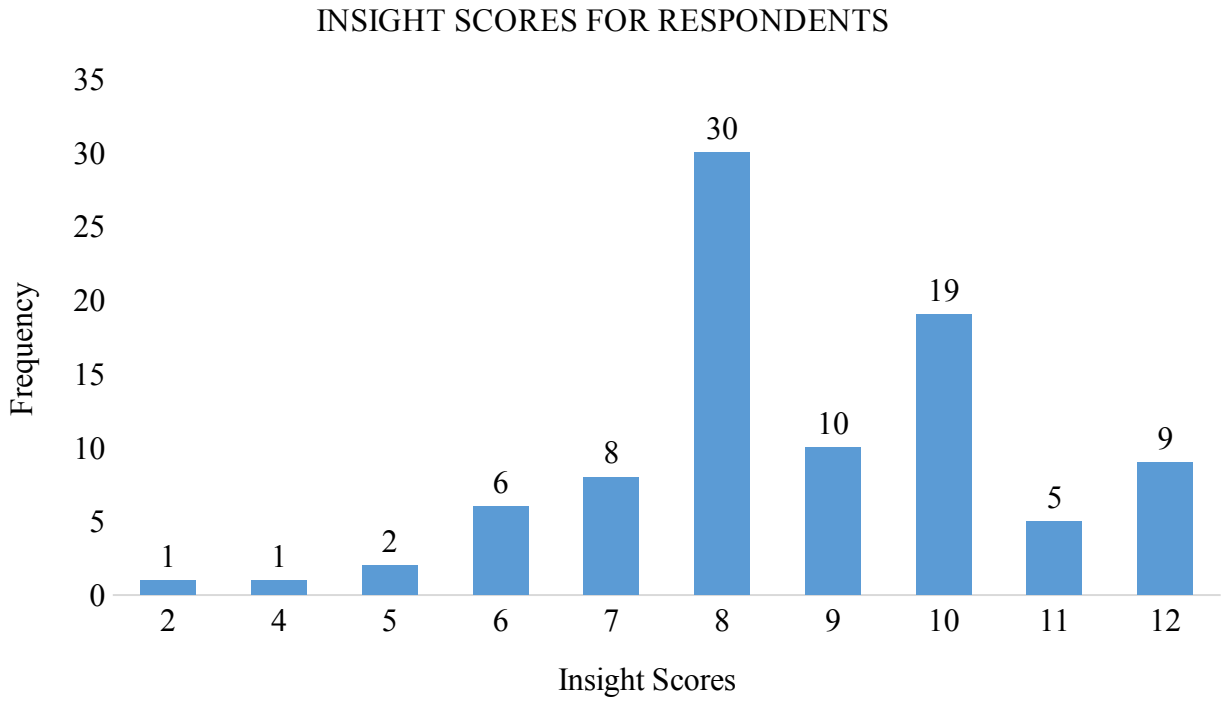

Figure 5: Insight scores

Insight scores detect differences in levels of insight and collects commonly accepted elements of insight such as: perceived need for treatment, awareness of illness and relabeling of symptoms as pathological. Greater levels of insight were indicated by higher scores. Any score less than 9 scores is categorized as having poor insight.

4.2.7.2 AUDIT Score

The mean score for Alcohol Use Disorder Identification Test (AUDIT) was 2.2 (SD=5.9). Seventeen participants indicated that they use alcohol. Out of these, 9 (52.9%)) had a score of 9 and above indicating harmful drinking (figure 6).

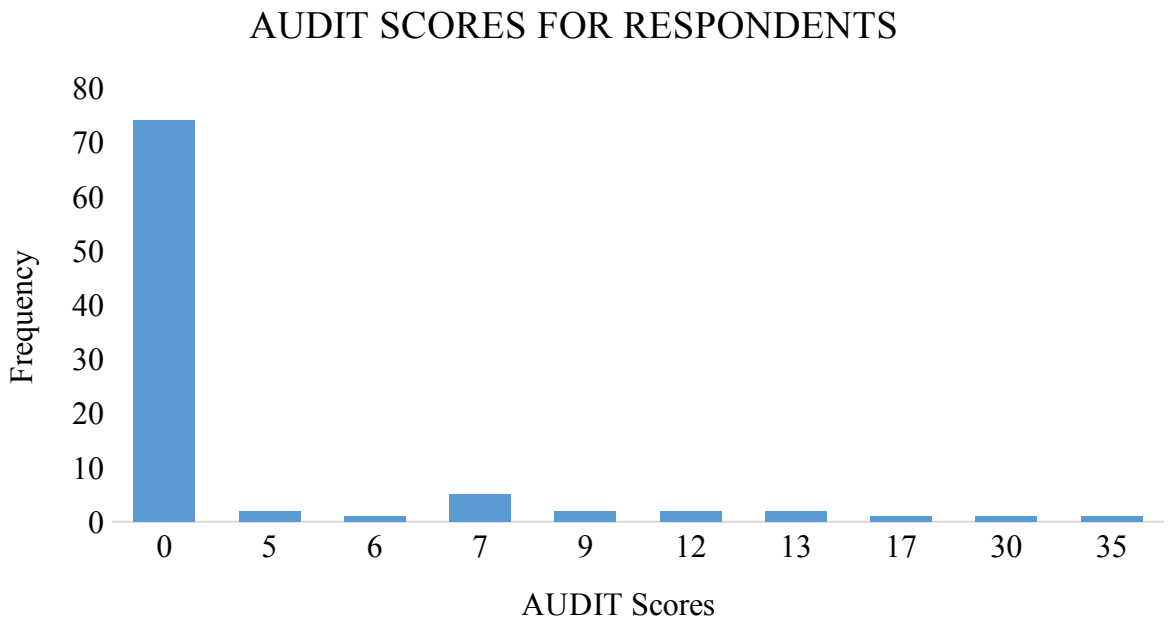

Figure 6: AUDIT Scores

AUDIT is used to evaluate alcohol use as well as reliance/dependence on alcohol-related issues according to World Health Organization (WHO, 2001). A respondent who scores 8 or more is considered to be indulging in harmful drinking (Lawford et al., 2012).

4.2.7.3 ISMI Score

The mean score for the internalized stigma of mental illness (ISMI) was 2.6 (SD=0.6). The majority of the participants, 57 (62.6%) had a score of 2.5 indicating that they had internalized stigma about their mental illness (Figure 7).

Figure 7: ISMI Scores

Internalized Stigma of Mental Illness Inventory -10-item Version (ISMI-10) is used to measure mental illness stigma.

4.2.7.4 Regression Results on Factors Affecting Adherence to Medication

Model Diagnostics

There was very little multicollinearity among the predictors as evidenced by the very low values of VIF which are close to 1. A plot of residuals and predicted values shows that the assumption of linearity has been fairly met. The results also indicate no autocorrelation as evidenced by the value of Durbin-Watson which is 1.517. A scatter plot of the dependent variable and the predicted values shows that the dots are unevenly distributed showing that the assumption of homoscedasticity was met. The scatter plot and PP plot are shown in figure 4-3 below.

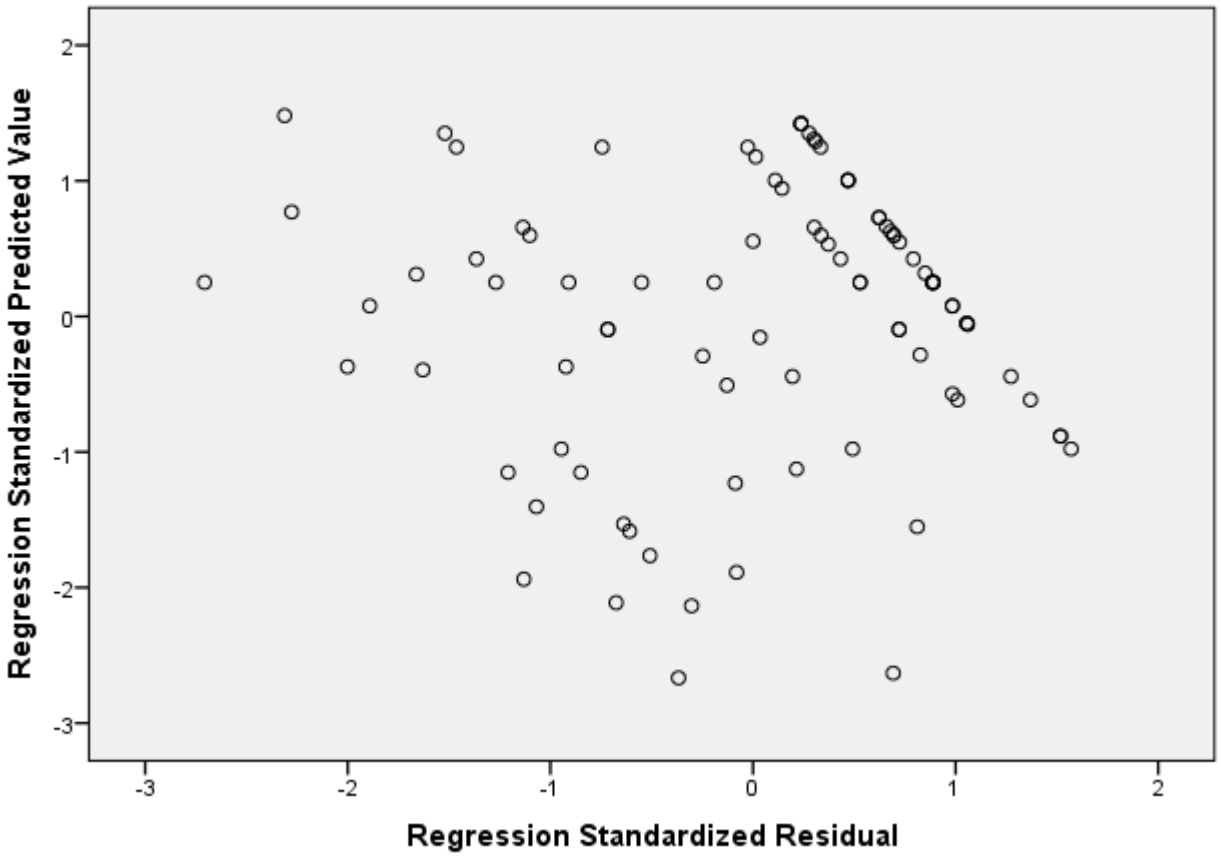

Figure 8: Scatterplot of dependent variable (MARS Total)

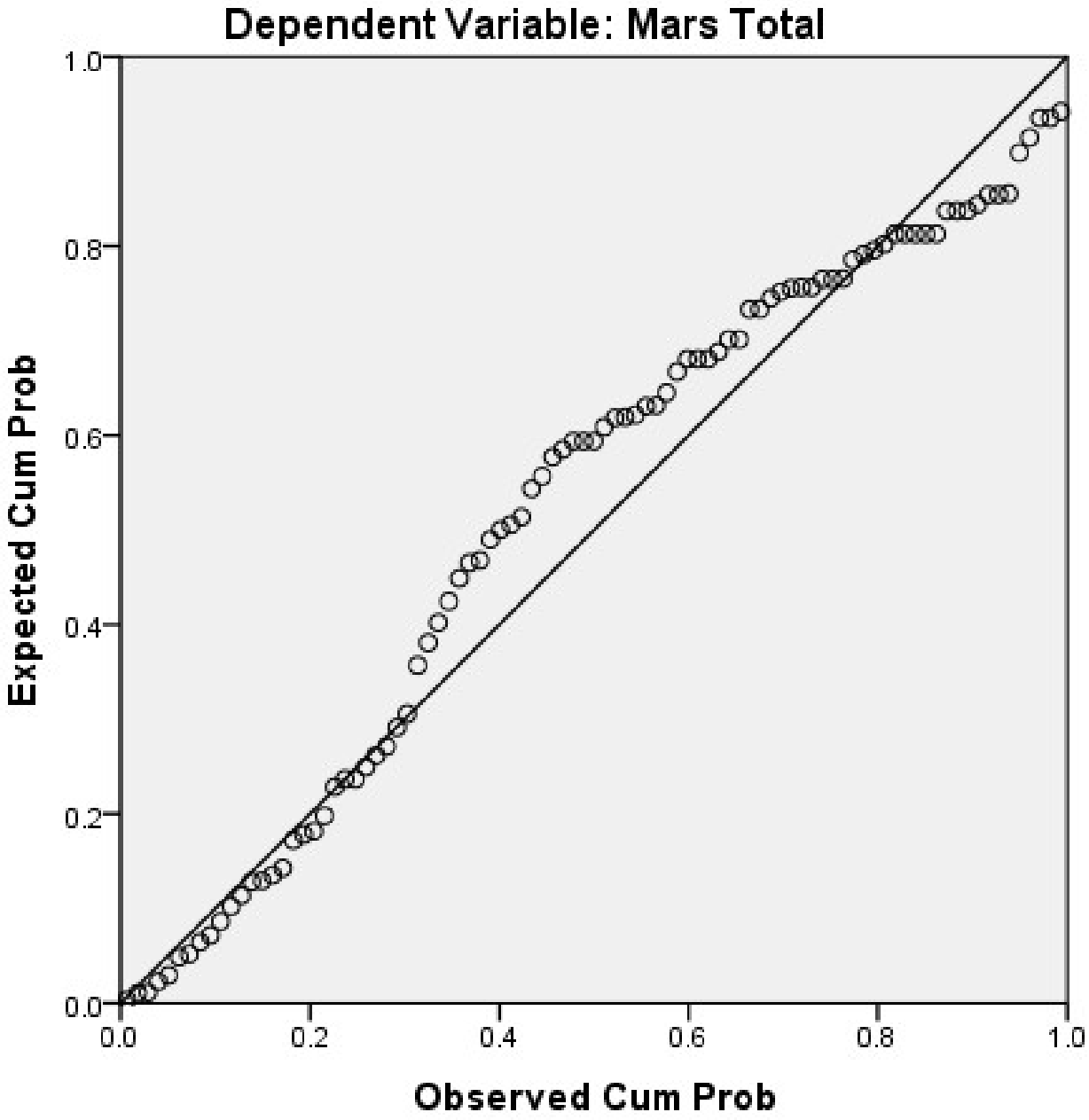

Figure 9: Normal P-P Plot of Regression Standardized Residual Dependent Variable

Model Output

The results on the relationship between adherence to medication, marital status, duration on medication, occupation, patient diagnosis, alcohol intake and insight measure are presented in Table 8. Marital status, medication, diagnosis of patient, alcohol and insight measure explain a significant amount (24.8%) of variation in adherence to medication ($F(6, 90) = 4.629$, $p<0.001$).

The results also show that patients who have been on medication for less than two years have significantly lower adherence to medication than patients who have been on medication for more than two years. The difference in adherence to medication is not significant ($B = -1.631$, $t = -2.053$, $p= 0.043$).

Patient's occupation significantly predicted their medication adherence. Patients whose main occupation is farming have lower adherence to medication than those in other occupations ($B = -1.541$, $t = -2.057$, $p=0.043$).

Diagnosis was a major predictor of medication adherence. Patients with psychotic disorders showed higher adherence to medication than non-psychotic patients ($B=1.753$, $t=2.041$, $p=0.044$). (Table 4).

Table *4*: Factors affecting medication adherence

Independent Variables	B	Std. Error	β	t-statistic	VIF
Constant	9.464	1.829		5.174	
Marital status = married	1.164	0.722	0.156	1.613	1.051
Duration on medication = Less than 2 years	-1.631	0.794	-0.211	-2.053*	1.177
Occupation = Farmer	-1.541	0.749	-0.203	-2.057*	1.091
Diagnosis = Psychotic	1.753	0.859	0.216	2.041*	1.256
Alcohol	-0.061	0.052	-0.115	-1.159	1.091
Insight measure	-0.268	0.152	-0.177	-1.759	1.131
R^2		0.248			
F for R^2 change		4.629**			
Durbin-Watson		1.517			

Dependent variable is Adherence to Medication (MARS)

** Significant at p<0.05 ** P<0.01*

B= model coefficient; β = standardized model coefficient

4.3 Summary of the findings

The prevalence of non-adherence to clinic appointments and medication was 64% and 46.42% respectively which are both high. Factors contributing non-adherence to clinic appointments included being female, a Protestant Church member, unmarried and attending to a mobile clinic. Non-adherence to medication was associated with being on a treatment for less than two years, being a farmer and having a non-psychotic disorder.

CHAPTER 5 DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter discusses the findings reported in chapter four starting with the prevalence of non-adherence to clinic appointments, medication and its associated risk factors at Nkhoma Mission Hospital, Lilongwe, Malawi.. The study's implications for practice and policy and recommendations for further studies are discussed.

5.2 Prevalence

In the current study, the prevalence rate of non-adherence to clinic appointments was 64% in general, 22% of the respondents missed 2 months clinic appointment, 10% missed 2 months while 32% missed more than 2 months of the clinic appointments. This study on non-adherence to clinic appointments is the first to be done in Malawi. A similar study conducted in South Africa found that out of 182 participants who were attending outpatient mental health appointments, 46.2% had missed their appointment at one point (Ramlucken & Sibiya, 2018) which is slightly lower than the findings of this study. Out of the 46.2% participants who had missed appointments, 33.3% had done so once while 53.6% had missed their appointment 2 to 3 times (Ramlucken & Sibiya, 2018) while the current study has found 64% non-adherence to clinic appointments which is considerably higher than other studies. Similarly, a retrospective study in Canada that described the extent of no-shows in a regular psychiatric outpatient clinic, as well as assess associations between missed appointments and patients' demographic and clinical characteristics, as well as the types of services provided, that 26.7% (n=1571) of the 5,892 patients did not show up to their appointments at some point (Tempier, Bouattane, Tshiabo, &

Abdulnour, 2021). Out of the no-shows, 64.2% of patients (n =1,009) had only one no-show, and more than one out of 6 (n= 263, 16.7%) had 2 no-shows; the number of patients with more than 2 no-shows were 299 (19%) (Tempier et al., 2021). Individuals, who frequently missed clinic appointments, may have reduced judgment and understanding of the need for continued follow-up care posing clinical and administrative issues for staff as well as increasing the probability of patient hospitalization and raising overall healthcare costs. In addition, it is likely that patients who did not attend to their clinic appointments may have become non-adherent to prescribed medications which calls for an understanding of the predictors of missed clinic appointment.

The prevalence of non-adherence to medication was at 46.2% which is slightly higher than in a study done in Mzimba, Malawi among patients with a diagnosis of Schizophrenia by Myaba (2017) which found the prevalence of non-adherence to medication at 44% (Myaba, 2017). However, the measures used in these studies were different and a comparison of the two studies should be made with caution. This study focused on patients with various mental diagnoses including Schizophrenia, Bipolar (Mania) and Depression.

The high rate of non-adherence to medication is consistent with several studies. For example, a review of 46 studies conducted in Asia, Europe, Africa and North America found a high non-adherence to treatment and clinic appointments (Semahegn *et al*., 2020). For instance in 35 out of 46 studies with 63,957 cases from 120,134 samples, the collective prevalence of medication non-compliance was at 48% in Africa, 48% in North Africa and 49% and 57% in Europe and Asia respectively (Semahegn *et al*., 2020).

Studies conducted in some of the African countries had similar findings. For example, a study carried out in Ethiopia found the occurrence of antipsychotic medication non-adherence at 48.4% which is slightly higher than in this study (Francey et al., 2020). Similarly, another study done in Ethiopia among patients with mental illness found a 48.4% prevalence of non-adherence to antipsychotic medication (Girma et al., 2017). Factors that might account for the differences in prevalence rates include definition of non-adherence and criteria used to measure it, methods used for evaluating non-adherence, and observation period. However, on the other hand, most studies are based on indirect and subjective measurements such as information reported by patients or their relatives or a review of patients' clinical records. Furthermore, adherence may differ during a patient's evolution; others have observed that adherence is usually good after hospital discharge and tends to decrease with time. Immediately after discharge, patient may remember the instructions and this is why patient education is important to be emphasized throughout patient's lifetime.

5.3 Factors Influencing Non-Adherence to clinic appointments

5.3.1 **Gender**

In the current study, female clients were 4.7 times more likely not to adhere to clinic appointments than males (B= -1.555, Exp(B)=0.221, p=0.029). This study aligns with the findings from a study in India's Kolkata Hospital, which found that women were 2.7 times more likely than men to be non-adherent (OR 2.7; 95% CI 1.0–7.1). (Banerjee & Varma, 2013). Similarly, a study conducted in Canada reported better adherence to treatment among men than women (AOR=2.07, 95% CI: 1.22, 3.50) (Burra et al., 2010). However, a study from Nigeria

indicated that men were 3.3 times more likely than women to fail to adhere to treatment (O.R. = 3.307, 95 percent C.I. = 1.907 - 5.737, P = 0.001) (Ibrahim et al., 2015). In contrast, Lee and Held discovered no significant links between gender and missing clinic appointments in a study conducted in the United States among patients with mental illness (Lee & Held, 2015). Sociocultural factors may be to blame for the disparity in reported findings. Women have many roles, including homemakers, professionals, wives, mothers, and caregivers, which may add to their failure to stick to the suggested regimen. However, this remains speculative and merits further studies to be done to find out the reasons behind it.

5.3.2 **Religion**

Protestants were 5 times more likely not to adhere than those who did not belong to any religion (OR=5.17, 95%CI 1.132-23.673). This study is consistent with a study done at an Outpatient Psychiatric Clinic in Nigeria which found Christians were more likely to default treatment than non-Christians p-value 0.015 (Adeponle, Obembe, Suleiman, & Adeyemi, 2007).

While religious beliefs and spirituality can provide a source of hope and purpose, they can also make it difficult to stick to a treatment plan. Religion, particularly when it replaces or delays medical care, can have a negative impact on the outcome of mental diseases. Because of their religious views, some individuals may refuse medical treatment, particularly for mental illness. Some people may be swayed by spiritual leaders to prioritize spiritual healing above physical care (Borras et al., 2007).

However, this study did not provide sufficient evidence to support the role of religious beliefs as a determinant of non-adherence to clinic appointments among patients with mental illness.

Majority of the participants, 70.3% (n=64) belonged to the protestant Church which is predominantly Church of Central Africa Presbyterian (CCAP) whose members are Christians Patients may combine traditional therapies, as it is usual for patients to consult a traditional healer. On the other hand, believing that God will heal them may prevent them from adhering to clinic appointments and medication. However, this remains speculative and further studies need to be done to find out the reasons why Protestant Christians are more likely to be non-adherent to clinic appointments. Usually, the pathway to care in most communities is from traditional healers or spiritual leaders to hospitals and back and forth which could contribute to non-adherence to clinic appointments. For example, findings of a study done in Malawi found that the majority of patients believe that mental illness is caused by witchcraft and seeking alternative treatment from traditional healers is not uncommon even among Christians (Mekani & Myaba, 2020).

5.3.3 **Marital status**

Clients who have never married were 15 times more likely than married clients to miss clinic appointments [OR=15.2; 95% CI: 2.512-92.117, p-value 0.003]. Respondents who were single and living alone were significantly more likely to miss their first appointment. This study's findings are consistent with those of a Malaysian Outpatient Appointment Psychiatric Clinic study, which found that being alone was statistically connected to missing appointments (Bahagia, Kinta, Health, & River, 2020).

This study is also similar to one done at Federal Neuro Psychiatric Hospital in Nigeria which found that patients who were single ($p=0.04$) and living alone ($p<0.01$) were more likely to miss their clinic appointment (James, Omoaregba, Akhigbe, Morakinyo, & Lawani, 2014). Similar to

this study was a study done at Perak Psychiatric Unit in Malaysia which found that staying alone was associated with higher odds of defaulting treatment (OR=6.205, p-value=0.003) (Bahagia et al., 2020).

Single patients have less social support and are more prone to miss appointments and medications since no one can persuade them to follow medical instructions. Sometimes, they may experience side effects that might make them weak and unable to honour clinic appointments. In this case, a guardian may be the one to help them go to the clinic. Participants who do not have good social support are more likely to be non-adherent than those who do receive social support (James et al., 2014). The possible explanation for this might be having social support to give or reminding them of the importance of medication on time or monitoring medications may influence adherence behavior. Marriage promotes social stability, which decreases the need for treatment (Bahagia et al., 2020). The assistance and support of a spouse may explain why married patients were more obedient to clinic appointments than single and alone participants.

Though research on marital status and defaulting treatment have shown mixed results, a single person may lack the required support that a spouse can provide in promoting clinic attendance and medication adherence (James et al., 2014). Furthermore, living alone deprives the individual of necessary emotional and social support, as well as the ability to bring the patient to the clinic when they are ill or for follow-up care visits.

Being single and having less social support could also mean that these patients have fewer individuals in their lives who have been directly affected by their illness. Furthermore, witnessing the illness's upsetting and disruptive effects on others may serve to reinforce the need for

treatment. This assertion is supported by the considerable role played by family members in seeking help in this patient population. Over time, further attempts to improve family engagement and other treatment therapies may lead to a positive shift on how the patient views the need for their medication.

5.3.4 **Type of clinic**

There were two types of clinics in the current study namely: outreach and static. Clients attending a mobile clinic were 5.8 times more likely not to adhere than clients attending a static clinic (B= -1.762, Exp(B)=0.172, p=0.02). There is a scarcity of data on studies assessing adherence to outreach clinics. Most studies have found that there are many benefits of outreach clinics. Participants attending mobile clinics are within a short distance within the community. According to a study conducted in Nigeria, respondents who lived fewer than 20 kilometers from the hospital were substantially less likely to be clinic defaulters than those who lived 20-50 kilometers away or more than 50 kilometers away (Adelufosi, Ogunwale, Adeponle, & Abayomi, 2013). It is possible that some patients travel long distances to the clinic and this might explain the non-adherence to the clinic appointment. However, this needs further investigation to find the reasons for non-adherence among the beneficiaries of the outreach clinics. It is also possible that patients who access the static clinic get holistic care at the hospital than patients attending the outreach clinics. However, this is still speculative and needs to be investigated further.

5.4 Factors Influencing Adherence to Medication

Marital status, medication, diagnosis of patient, alcohol and insight measure explain a significant amount (24.8%) of variation in adherence to medication ($F(6, 90) = 4.629$, $p<0.001$).

The results of this study also show that patients who have been on medication for less than two years have significantly lower adherence to medication than patients who have been on medication for more than two years (B = -1.631, t = -2.053, p= 0.043). Such findings were unexpected as most studies indicate that being on long treatment is associated with poor medication adherence. The findings of this study are similar to a study conducted in Montreal, Quebec which found that non-adherent patients were more likely to refuse treatment in the first 6 months after initiation (X^2=19.70, df=1, P=0.001) (Rabinovitch, Béchard-Evans, Schmitz, Joober, & Malla, 2009). However, this study is inconsistent with a study done at Emmanuel Psychiatric Hospital in Central Ethiopia which found that long treatment duration was significantly associated with non-adherence among patients with Schizophrenia [AOR=2.07; 95%CI: 1.22, 3.50] (Tareke, Tesfaye, Amare, Belete, Abate, et al., 2018). Another study done at Perak Psychiatric Unit in Malaysia found clients who had been in the clinic for less than 36 months were more likely to default treatment (Bahagia et al., 2020). The results of this study could be indicative of early stages of treatment, when difficulties such as treatment engagement and acceptance are still being ironed out with the patient as the patient might still be in denial. This might indicate lack of knowledge on the importance of adhering to medication.

Patients whose main occupation is farming have lower adherence to medication than those patients whose main occupation is not farming (B = -1.541, t = -2.057, p=0.043). Most studies have looked at the association between occupation and non-adherence and have found that occupation status is strongly associated with medication adherence. However, there are no specific studies that have looked at the association between farming and adherence. Although farming is a source of income, it may make the patients busy leading to non-adherence. The

majority of the participants, 79.1% (n=72) were predominantly farmers. Similar studies have found being busy as a reason for non-adherence to medication. Being a farmer is so involving that makes one busy. For example, a study in Ethiopia at Jimma Specialised Hospital found 21% of the patients indicated being busy as a reason for non-adherence to medication (Alene et al., 2012). However, no associations were established. Similarly, a study done in Ethiopia at Adama Hospital found that 17.7% of the patients with Schizophrenia indicated being busy as one of the common reasons for non-adherence to medication (Mamo, E.S. Gelaw, B.K. Tegenge, 2016).

The study has found that psychotic patients have higher adherence to medication than non-psychotic patients (B=1.753, t=2.041, p=0.044). This study is inconsistent with so many studies which have found that patients with a diagnosis of psychosis have poor medication adherence. Other than psychotic disorder, the other diagnoses in this study were depression, Bipolar (mania), substance use disorder, alcohol use disorder which is related to medication non-adherence. This study is consistent with a study done in Ethiopia which showed that patients who were using psychoactive substances after initiation of treatment were nearly twice as likely to be non-adherent to antipsychotic medication compared to those who had no history of substance use (AOR = 1.67, 95%CI: 1.09, 2.56) (Tareke, Tesfaye, Amare, Belete, & Abate, 2018). However, this study differs with a study done in Europe which found that adherence to medication was higher among patients with Bipolar Disorder (MARS mean score (SD) 6.5 (2.8) compared to 5.8 (2.7) in schizophrenia; $p < 0.001$) and patients with schizophrenia had poor adherence and were unaware of their mental disorder, mean (SD) of 2.5 (1.3) in schizophrenia versus 1.9 (1.2) in bipolar, $p < 0.001$) (Novick et al., 2015). Higher adherence was related to better insight. However, it is not known why patients with non-psychotic disorder were more likely to be non-adherent to

medication in this study and this requires further investigation. A study done in Haiti found patients with Bipolar disorder had higher rates of follow-up care while patients with Depression and anxiety had lower rates of follow-up care to the mobile clinic (Reginald Fils-Aime et al., 2018). There are no statistically significant associations reported. However, Bipolar disorder is associated with poor medication adherence due to more manic symptoms experienced by the patients such as lack of concentration, moving up and down. For example, a study done at Massachusetts General Hospital in the USA found that non-adherence to medication was associated with more manic symptoms (Sylvia et al., 2014).

5.5 Conclusion

Non-adherence to clinic appointments and medication was high. It is important to address factors that influence non-adherence to clinic appointments and medication in order to avoid relapse and improve the overall quality of life.

5.6 Implications of the study

Non-adherence to medication and appointments has grave consequences for individuals with mental disorders often resulting in relatively high rates of relapse and increase of psychotic symptoms, more violent than adherent patients, higher hospitalization, poor community adjustment, among other effects. It is therefore important to address non-adherence to clinic appointments and medication among patients with mental illness in order to improve their health and quality of life.

5.6.1 **Implications for policy**

In Malawi, Service Level Agreement (SLA) is a formal agreement between the Malawi Government and Christian Health Association (CHAM) to provide selected services to people accessing these services at Mission Hospitals for free (Zeng, W., H. Mphwanthe, T. Huan, J. Nam, P. Saint-Firmin, 2017). However, mental health although essential is not on the list of conditions supported by the SLA. It is therefore important that care of patients with mental illness should be included in SLA in order to increase access to these services. On the other hand, a functional review to include critical staff such as community nurses, psychosocial counselors, social workers to help in the provision of mental health services should be considered.

Additionally, the mental health services should be provided in line with the current Mental Treatment Act which has recently been revised to be in line with the required standards.

Given the results of this study, Protestant Church members were more likely to be non-adherent than other members, it is important to engage religious leaders and other relevant stakeholders. Furthermore, revisions of relevant documents used as reference materials such as Malawi Standard Treatment Guidelines (MSTG) must be made to ensure that medication is prescribed using updated relevant materials. The hospital should develop manuals for the training of different stakeholders including religious leaders, chiefs, volunteers, and patients to provide them with enough information.

5.6.2 **Implications on clinical practice**

There is a need to provide psycho-education to patients and their significant others.

Because all approaches have advantages and weaknesses, there is no gold standard strategy for gauging adherence. Psychoeducation and other psychosocial interventions, antipsychotic long-acting injections, , service-based interventions, and financial incentives are all used to enhance adherence (Haddad, Brain, & Scott, 2014). These are all related, have some evidence of usefulness, and should be tailored to the individual. However, some of the interventions such as electronic reminders and financial incentives are not feasible in the current setting due to cost implications.

Financial incentives to improve antipsychotic adherence create ethical concerns, and their application in clinical practice is questionable (Haddad et al., 2014). Shared decision-making, regular adherence assessment, simplification of the medication regimen, ensuring that treatment is effective and side effects are managed, and promoting a positive therapeutic alliance and good communication between the clinician and the patient are all simple pragmatic strategies to improve medication adherence (Haddad et al., 2014). Given the results of the current study that patients attending mobile clinics are less likely to adhere to clinic appointments and medication, involving them and their guardians in decisions about their clinic appointment is crucial. As a result, it's critical that service providers pay attention to the patient, gain a thorough understanding of their viewpoint, including their beliefs and fears about their condition and medication, and verify that their treatment preferences are founded on facts rather than misconceptions. Involving patients in the choice of their medication increases the likelihood of adherence. However, the amount of information required will vary between patients. Where possible, a choice of medication should be offered. Caregivers of patients should also be involved in discussions.

On the other hand, it is important to provide training to the health workers, community support workers such as HSAs, for them to effectively manage patients with mental illness.

In addition, the service providers must organize informational and concrete aids to support medication use which should be made available to every patient during a clinic visit. On the other hand, use effective self-management support strategies that include assessment, goal-setting, action planning, problem-solving and follow-up. In addition, every service provider should offer and encourage patients to participate in effective programs (e.g., Illness Management and Recovery, Wellness Self-management) which will help to improve adherence to appointments and medication. Furthermore, all service providers must be trained on how to deal with adherence issues.

5.7 Recommendations

Service providers should remind patients on each visit on importance of adherence to appointment and medication. In addition, community health workers (HSAs) should be oriented to follow up patients on medication and encourage them to follow clinic appointments

5.7.1 **Suggestions for further research**

There is a need for further research in the area of medication and clinic appointment adherence. A similar study targeting guardians and health workers to learn their perspective as regards adherence to clinic appointments and medication among people with mental disorders is important. In addition, qualitative research can be done among similar patients to learn their experiences with clinic appointments and medication.

A national survey should be conducted to determine the prevalence of non-adherence of treatment and its associated factors among patients with mental illness.

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Appendices

Appendix 1. Informed consent form (English)

Section A: English Version

My name is Paul Mekani, final student Masters in Public Health from Africa University, Zimbabwe. I am carrying out a study on factors affecting adherence to medication and appointments at mental health clinics. I am kindly requesting for your participation in this study.

Purpose of the study:

The purpose of the research is to analyze the characteristics of patients accessing mental health outreach and static clinics under Nkhoma Mission Hospital, Lilongwe Malawi. This study also aims at identifying the follow-up status of patients accessing the mental health services whether they comply with treatment or not. You were selected to participate in this study because you are among the patients accessing the mental health services at this clinic.

Procedures and Duration

If you consent to participate, you will be asked a series of questions that will take about 40 minutes to complete.

Risks and discomforts

No physical and emotional risks are anticipated in this study but if you feel uncomfortable with questions, you are free to express your concerns.

Benefits and /or compensation

One thousand five hundred (MK) (2 US Dollars) will be provided to every participant who will take part in the study as compensation for the effort and time taken. This will take care of transport costs and lunch allowance.

Confidentiality

Any individual information you provide in this study that can be identified with you will be kept strictly confidential and will not be disclosed without your permission. No names or contact details will be asked by the researcher. The information collected will be kept in a lockable locker and only the researcher/ supervisor(s) will have access to it.

Voluntary participation

Your participation in this study is strictly voluntary. Your decision whether or not to participate will not affect any benefits to which you are entitled or any relationship with the researcher or Nkhoma Mission Hospital. You are free to withdraw your consent and discontinue participation anytime without penalty.

Offer to answer questions

Before you sign this form, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think over it before responding.

Authorization

If you have decided to participate in this study, please sign this form in the space provided below as an indication that you have read and understood the information provided above and have agreed to participate. You may use your thumb print if you have difficulties to sign.

Signature of research participant or legally authorized representative……

Witness's name……

Witness's signature……/Thumb print…….

Date…….

If you have any questions concerning this study or consent form not answered by the researcher including questions about the research, your rights as a study participant, or if you feel that you have been treated unfairly and would like to talk to someone other than the researcher, you are free to address your concerns through the Africa University Research Ethics Committee at the following email address: aurec@africau.edu or National Health Sciences Research and Ethics Committee at the following address: Email: mohdoccentre@gmail.com and phone number: Tel: +265 1 726 422/418 (Attention: Dr. Collins Mitambo +265999397913).

Appendix 2. Informed Consent (Chichewa Version)

Dzina langa ndi Paul Mekani, wophunzira womaliza wa Masters mu Public Health kuchokera ku Africa University. Ndikuchita kafukufuku pazinthu zomwe zimakhudza kutsatira zamankhwala komanso madokotala omwe pa zipatala zamaganizidwe. Ndikukupemphani kuti muchite nawo kafukufukuyu poyankha mafunso omwe adzafunsidwe kuchokera pazofunsidwa.

Zomwe muyenera kudziwa pa kafukufukuyu:

Cholinga cha kafukufukuyu ndikuwunika momwe odwala amapezera chithandizo chamankhwala amisala ndi zipatala pansi pa Nkhoma Mission Hospital, Lilongwe Malawi. Kafukufukuyu cholinga chake ndikudziwitsanso momwe odwala angathandizire kupeza chithandizo chamankhwala kaya akutsatira chithandizo kapena ayi. Mwasankhidwa kuti mudzatenge nawo kafukufukuyu chifukwa muli m'gulu la odwala omwe amalandila chithandizo chamankhwala pachipatala chino.

Ndondomeko ndi Kutalika

Ngati mwasankha kutenga nawo mbali mudzafunsidwa mafunso kuchokera pafunso kuti mukwaniritse cholinga cha phunziroli ndipo zikuyembekezeka kutenga mphindi 20.

Zowopsa komanso zosasangalatsa

Palibe zoopsa zakuthupi ndi zamaganizidwe zomwe akuyembekezeredwa phunziroli koma ngati mukumva kuti simuli omasuka ndi mafunso, ndinu omasuka kufotokoza nkhawa zanu.

Ubwino ndi / kapena chipukuta misozi

Simulipidwa chifukwa chakutenga nawo gawo ndipo simulandila ndalama kapena mtundu uliwonse. Tikuyembekeza kuti zomwe apeza mu kafukufukuyu zitha kuthandiza pakukweza ntchito zamisala zomwe zimaperekedwa ku chipatala cha Mission cha Nkhoma komanso mdziko muno.

Chinsinsi

Chidziwitso chilichonse chomwe mungapereke mu kafukufukuyu chomwe chimadziwika ndi inu chidzasungidwa mwachinsinsi ndipo sichidzaululika popanda chilolezo. Palibe mayina kapena manambala olumikizirana omwe adzafunsidwe mufunso. Mafunso omwe ayankhidwa adzasungidwa mozikhiya ndipo ndi okhawo omwe adzawafufuze.

Kutenga nawo gawo mwaufulu

Ndikuyamikira kwambiri kuti mukutenga nawo mbali pazokambirana izi, koma chonde dziwani kuti kutengako gawo ndikungodzipereka. Kusankha kwanu kutenga nawo mbali kapena ayi sikungakhudze phindu lililonse lomwe mungakhale nalo kapena ubale uliwonse ndi wofufuzayo kapena chipatala cha Mission cha Nkhoma. Ngati mungasankhe kutenga nawo mbali, muli ndi ufulu wochotsa chilolezo chanu ndikusiya kuchita nawo nthawi iliyonse popanda chilango.

Pemphani kuyankha mafunso

Musanasaine fomuyi, chonde funsani mafunso pazinthu zilizonse za kafukufukuyu zomwe simukuzidziwa. Mutha kutenga nthawi yochuluka kuti muganizire musanayankhe.

Kuvomerezeka

Ngati mwasankha kutenga nawo mbali phunziroli chonde lembani fomu iyi pamalo omwe aperekedwa pansipa ngati chisonyezero chakuti mwawerenga ndikumvetsetsa zomwe zaperekedwa pamwambapa ndipo mwavomera kutenga nawo mbali.

Siginecha ya ochita nawo kafukufuku kapena woimira ovomerezeka mwalamulo ……

Dzina la mboni ……

Saina ya Mboni …….

Tsiku …….

Appendix 3. Research questionnaire (English)

SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS			
NO	**Question /ITEM**	**Response**	**Code**
	Name of Clinic (NAMCL)		
	Village **(VIL)**		
	Traditional Authority **(TA)**		
	District **(DISTR)**		
1	SEX **(SEX)**	1. Male 2. Female	**[ ]**
2	AGE **(AGE)**	Number	**[ ]**
3	Religion **(RELIG)**	1. Catholic 2. Protestant 3. Islam 4. Traditional 5. None 6. Other (specify)	**[ ]**
4	Education level **(EDULEV)**	1. None 2. Primary 3. Secondary 4. College/University 5. Other (specify)	**[ ]**

5	Occupation **(OCCUP)**	1. Farmer 2. Trader/Business 3. Casual labourer 4. Student 5. Other (specify)	**[ ]**
6	Marital status **(MARST)**	1. Never married 2. Married 3. Separated 4. Divorced 5. Widowed	**[ ]**
7	Diagnosis of the patient	1. Psychosis 2. Depression 3. Substance use Disorder 4. Alcohol use disorder 5. Bipolar 6. Psychosis with epilepsy	**[ ]**
8	Medication type **(MEDTYPE)**	1. Haloperidol 2. Risperidone 3. Chlorpromazine 4. Modecate 5. Carbamazepine	**[ ]**

		6. Sodium Valproate 7. Others (Specify)	
9	For how long on medication (**HOWLOMED)**	1. 3-6 months 2. 7-12 months 3. >12 to 24 months 4. >24 months	**[ ]**
10	Average income a day	1. <1 USD 2. >1 USD	**[ ]**

SECTION B: ASSESSMENT OF ADHERENCE TO APPOINTMENTS			
I am now going to ask you questions about how you adhere to your appointment			
		Response	**Code**
11	How many times have you missed appointments to the clinic since you began attending to this clinic? **(MISSINGAPOINT)**	1. Once (a month) 2. Twice (2 months) 3. More than twice (>2 months). **4.** Never	**[ ]**
12	If yes to above question, what are the reasons for missing appointments? **(REASONS MISSING APPOINTMENTS)** Please tick all yes or	1. Yes 2. No	**[ ]**

	no		
13	I was not taking my medication and was embarrassed to tell my doctor	1. Yes 2. No	**[ ]**
14	Previous bad experience with appointments (long waiting, being shouted at)	1. Yes 2. No	**[ ]**
15	Transport problems	1. Yes 2. No	**[ ]**
16	Inconvenient time for appointment	1. Yes 2. No	**[ ]**
17	It is expensive to attend appointments	1. Yes 2. No	**[ ]**
18	I do not like my doctor/service provider	1. Yes 2. No	**[ ]**
19	I felt stigma when people saw me going to the clinic/people laugh at me	1. Yes 2. No	**[ ]**
20	The appointment was not helpful for me	1. Yes 2. No	**[ ]** **[ ]**
21	I do not like the medication the doctor gives me	1. Yes 2. No	**[ ]**
22	I do not have mental illness	1. Yes	**[ ]**

		2. No	
23	I have a mental illness but I do not need to see a doctor	1. Yes 2. No	**[ ]**
24	I sometimes go to a traditional healer	1. Yes 2. No	**[ ]** **[ ]**
25	I go to work/field and the appointment fell on a wrong date	1. Yes 2. No	**[ ]**
26	I am tired on being on treatment	1. Yes 2. No	**[ ]**
27	I hear voices telling me to stop going to the clinic	1. Yes 2. No	**[ ]**
28	There is long distance between home and the clinic	1. Yes 2. No	**[ ]**
29	I have no support from relatives	1. Yes 2. No	**[ ]**
30	I was sick	1. Yes 2. No	**[ ]**
31	Poor services	1. Yes 2. No	**[ ]**
32	Facility was closed	1. Yes 2. No	**[ ]**

Section C: Medication Adherence Rating Scale (MARS)			
Tick either yes or no for which best describes your answer.			
	Over the past week	Response	Code
33	Do you ever forget to take your medication? **(FORGET)**	1. Yes 2. No	[ ]
34	Are you careless at times about taking your medication? **(CARELESSNESS)**	1. Yes 2. No	[ ]
35	When you feel better, do you sometimes stop taking your medication? **(STOPPING)**	**1.** Yes **2.** No	[ ]
36	Sometimes if you feel worse when you take your medication, do you stop taking it? **(STOPPINGWORSE)**	1. Yes 2. No	[ ]
37	I take my medication only when I am sick **(WHENSICK)**	**1.** Yes **2.** No	[ ]
38	It is unnatural for my mind and body to be controlled by medication **(USED NOT TO)**	1. Yes 2. No	[ ]
39	My thoughts are clearer on medication **(THOUGHTS)**	**1.** Yes **2.** No	[ ]
40	By staying on medication, I can prevent getting	1. Yes	[ ]

	sick **(STAYINGON MEDS)**	2. No	
41	I feel weird, like a 'zombie' on medication **(FEELINGS)**	**1.** Yes **2.** No	[ ]
42	Medication makes me feel tired and sluggish **(FEELINGTIRED)**	1. Yes 2. No	[ ]

Section D: Assessment of Insight Using BIRCHWOOD Scale			
	Item	Response	**CODE**
43	Some of your symptoms are made by your mind.	1. Disagree 2. Unsure 3. Agree	[ ]
44	You are mentally well.	1. Disagree 2. Unsure 3. Agree	[ ]
45	You do not need medication.	1. Disagree 2. Unsure 3. Agree	[ ]
46	Your stay in the hospital is necessary/your coming to the clinic is necessary.	1. Disagree 2. Unsure 3. Agree	[ ]

47	The doctor is right in prescribing medication for you.	1. Disagree 2. Unsure 3. Agree	[ ]
48	You do not need to be seen by a doctor or psychiatrist.	1. Disagree 2. Unsure 3. Agree	[ ]
49	If someone said you have a nervous or mental illness, they would be right.	1. Disagree 2. Unsure 3. Agree	[ ]
50	None of the unusual things you are experiencing are due to illness.	1. Disagree 2. Unsure 3. Agree	[ ]
	TOTAL		

Section E: Alcohol Use Disorders Identification Test (AUDIT)			
For each question in the chart below, place an X in one box that best describes your answer.			
	Question/Item	**Response**	**CODE**
51	1. How often do you have a drink containing alcohol?	0. Never 1. Monthly or less 2. 2 to 4 times a month 3. 2 to 3 times a week 4.	[ ]

		4 or more times a week	
52	2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1. 1 or 2 2. 3or 4 3. 5 or 6 4. 7 to 9 5. 10 or more	[ ]
53	3. How often do you have 5 or more drinks on one occasion?	1. Never 2. Less than monthly 3. Monthly 4. Weekly 5. Daily or almost daily	[ ]
54	4. How often during the last year have you found that you were not able to stop drinking once you had started?	1. Never 2. Less than monthly 3. Monthly 4. Weekly 5. Daily or almost daily	[ ]
55	5. How often during the last year have you failed to do what was normally expected of you because of drinking?	1. Never 2. Less than monthly 3. Monthly 4. Weekly 5. Daily or almost daily	[ ]
56	6. How ofte	1. Never	[ ]

		2. Less than monthly 3. Monthly 4. Weekly 5. Daily or almost daily	

57	7. How often during the last year have you had a feeling of guilt or remorse after drinking?	1. Never 2. Less than monthly 3. Monthly 4. Weekly 5. Daily or almost daily	[ ]
58	8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	1. Never 2. Less than monthly 3. Monthly 4. Weekly 5. Daily or almost daily	[ ]
59	9. Have you or someone else been injured because of your drinking?	1. Yes 2. Yes, but but not in the last year 3. Yes, during last year	[ ]
60	10. Has a relative, friend, doctor, or other health	1. Yes	[ ]

	care worker been concerned about your drinking?	2. Yes, but not in the last year 3. Yes, during last year	
TOTAL			

Section H: Internalized Stigma of Mental Illness Inventory – 10-item Version (ISMI-10)			
For each question, please mark whether you strongly disagree (1), disagree (2), agree (3), or strongly agree (4).			
	Question/Item	**Response**	**CODE**
61	1. Mentally ill people tend to be violent.	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	[ ]
62	2. People with mental illness make important contributions to society.	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	[ ]
63	3. I don't socialize as much as I used to because of mental illness	1. Strongly disagree 2. Disagree 3. Agree	[ ]

		4. Strongly agree	
64	4. Having a mental illness has spoiled my life.	1. Strongly disagree 2. Disagree	[ ]
		3. Agree 4. Strongly agree	
65	5. I stay away from social situations in order to protect my family or friends from embarrassment	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	[ ]
66	6. People without mental illness could not possibly understand me.	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	[ ]
67	7. People ignore me or take me less seriously just because I have a mental illness.	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	[ ]
68	8. I can't contribute anything to society because I have a mental illness.	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	[ ]

69	9. I can have a good, fulfilling life, despite my mental illness.	1Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	[ ]
70	10. Others think that I can't achieve much in life because I have a mental illness.	1. Strongly disagree 2. Disagree 3. Agree 4. Strongly agree	[ ]
TOTAL			

Appendix 4. Research Questionnaire (Chichewa)

SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS			
NO	**Question /ITEM**	**Response**	**Code**
	Dzina la Chipatala cha ching'ono		
	Mudzi wa kwanu		
	Mfumu Yaikulu		
	Boma		
1	Mkazi/Mwamuna	**1. Bambo**	**[ ]**

		2. Mayi	
2	Zaka zanu	Ikani nambala	**[ ]**
3	Chipembedzo chanu	1. Katolika 2. Pulotesitanti/Dutch 3. Chisilamu 4. Wamakolo/Gule 5. Palibe 6. Ena (Tchulani)	**[ ]**
4	Maphunziro ano	1. Palibe 2. Pulayimale 3. Sekondale 4. Univesite/Koleji	**[ ]**
5	Ntchito	1. Mlimi 2. Ya bizinezi 3. Ya casual 4. Mwana wa sukulu 5. Ena (Tchulani)	**[ ]**
6	Muli pabanja?	1. Ayi, sindinakwaiwe/re 2. Wokwatiwa/wokwatira 3. Pachilekaniro 4. Banja linatha	**[ ]**

		5. Woferedwa	
7	Mtundu wa matenda	1. Pyschosis 2. Bipolar 3. Depression 4. Substance Use disorder 5. Alcohol use disorder 6. Ena (Tchulani)	**[ ]**
8	Mtundu wamankhwala	1. Haloperidol 2. Risperidone 3. Chlorpromazine 4. Modecate 5. Carbamazepine 6. Sodium Valproate 7. Others (Specify)	**[ ]**
9	Mwakhala mukugwilitsa kwa nthawi yaitala mankhwala?	1. Miyezi 3-6 2. Miyezi 7-12 3. Kudutsa chaka mpaka zaka ziwiri 4. Kudutsa zaka ziwiri	**[ ]**
10	Mumapeze chuma chochuluka bwanji mongoyerekeza pa tsiku?	1. <1USD 2. >1USD	**[ ]**

Section B: Assessment of Adherence to clinic Appointments			
Tsopano ndikufusani mafuso kuti tidziwe ngati mumatsatira ndondomeko yopitira kuchipatala			
		Response	**Code**
11	Mwalepherapo kangati kubwera kuchipatala monga mwandondomeko?	1. Kamodzi 2. Kawiri 3. Kudutsa kawiri **4.** Palibe	**[ ]**
	Ndizifukwa ziti zomwe zimakupangitsani kuphonya kupita kuchipatala?		
12	1 Sindimamwa mankhwala ndipo ndimachita manyazi kukawawuza a dokotala anga	1 Eya 2 Ayi	**[ ]**
13	1. Ulendo watha sindinakondwe ndimmene zinakhalira (Kudikira nthawi yaitali, kukalipilidwa ndi achipatala)	1 Eya 2 Ayi	**[ ]**
14	2. Vuto la mayendedwe	1 Eya 2 Ayi	**[ ]**
15	3. Nthawi yovuta kusankhidwa	1 Eya 2 Ayi	**[ ]**
16	4. Nkodula kukwanilitsa kubwera ku chipatala	1 Eya	**[ ]**

		2 Ayi	
17	5. Sindimakondwera ndi a dokotala anga/samandisangalatsa	1 Eya 2 Ayi	**[ ]**
18	6. Ndimava kusalidwa pamene anthu amandiwona popita kuchipatala/anthu amandiseka	1 Eya 2 Ayi	**[ ]**
19	7. Zinali zofunikira kwa ine kutsatira ndondomeko	1 Eya 2 Ayi	**[ ]**
20	8. Sindimawakonda mankhwala womwe a dokotala amandipatsa	1 Yes 2 No	**[ ]**
21	9. Ndilibe matenda aku ubongo/misala	1 Eya 2 Ayi	**[ ]**
22	10. Ndilinawo matenda aku ubongo/misala koma sindiwona kufunika kwake	1 Eya 2 Ayi	**[ ]**
23	11. Nthawi zina ndimapita kwa a sing'anga	1 Eya 2 Ayi	**[ ]**
24	12. Ndinapita ku ntchito/kumunda ndiye tsiku ili linabwera patsiku loyipa	1 Eya 2 Ayi	**[ ]**
25	13. Ndinatopa kukhala pa mankhwala/treatment	1 Eya 2 Ayi	**[ ]**
26	14. Ndimava kulankhulidwa kuti ndisapite	1 Eya	**[ ]**

	kuchipatala	2 Ayi	
27	15. Pali mtunda wautali kukafika kuchipatala kuchokera kwathu	1 Eya 2 Ayi	**[ ]**
28	16. Ndilibe chisamaliro kuchokera kwa achibale ndi azanga	1 Eya 2 Ayi	**[ ]**
29	17. Ndinadwala	1 Eya 2 Ayi	**[ ]**
30	18. Chithandizo sichabwino (poor services)	1 Eya 2 Ayi	**[ ]**
31	19. Chipatala antseka	1 Eya 2 Ayi	**[ ]**
32	Fotokozani zifukwa zina		

Section C: Medication Adherence Rating Scale (MARS)			
Mafunsowa adapangidwa kuti athe kuwunika momwe mumamvera ndi momwe mukumvera zamankhwala, ndipo muyenera kudzipangira nokha.			
	Over the past week	**Response**	**Code**
33	Kodi mumayiwala kumwa mankhwala anu?	3. Eya 4. Ayi	**[ ]**
34	Kodi nthawi zina simusamala zammene	3. Eya	**[ ]**

	mukuyenera kumwera mankhwala anu?	4. Ayi	
35	Pamene mukupeza bwino, ilipo nthawi imene mumasiya kumwa mwankhwala?	**3.** Eya **4.** Ayi	**[ ]**
36	Ilipo nthawi zina pamene mukumwa mankhwala simumava bwino ndipo mumasiya kwamwa mankhwala?	3. Eya 4. Ayi	**[ ]**
37	Ndimamwa mankhwala pokhapo ndadwala	**3.** Eya **4.** Ayi	**[ ]**
38	Ndichinthu chachirendo kuthupi langa ndi mmaganizo anga kuti zizilamulidwa ndi mankhwala	3. Eya 4. Ayi	**[ ]**
39	Maganizo anga ngokhazikika pa mankhwala	**3.** Eya **4.** Ayi	**[ ]**
40	Pakumwa mankhwala, ndikhoza kupewa kudwala	3. Eya 4. Ayi	**[ ]**
41	Mankhwala amandipangitsa ngati mzukwa	**3.** Eya **4.** Ayi	**[ ]**
42	Mankhwala amandipangitsa kutopa ndikuchita zinthu mochedwa	3. Eya 4. Ayi	**[ ]**

Section D: Assessment of Insight BIRCHWOOD Scale

Malangizo: Chongani m'bokosi lomwe likugwirizana ndi yankho lanu			
	Item	Response	**CODE**
43	Zina mwazizindikiro zanu zimapangidwa ndi malingaliro anu.	1. Sindikuvomereza 2. Sindikudziwa 3. Ndikuvomereza	[ ]
44	Mulibwino mmaganizo anu? Simukudwala matenda aku ubongo?	1. Sindikuvomereza 2. Sindikudziwa 3. Ndikuvomereza	[ ] [ ] [ ]
45	Simukufunikira mankhwala?	1. Sindikuvomereza 2. Sindikudziwa 3. Ndikuvomereza	[ ] [ ] [ ]
46	Kukhala kwanu m'chipatala ndikofunikira /kubwera kwanu kuchipatala ndikofunikira?.	1. Sindikuvomereza 2. Sindikudziwa 3. Ndikuvomereza	[ ] [ ] [ ]
47	Dokotala akunena zoona kuti akupatseni mankhwala.	1. Sindikuvomereza 2. Sindikudziwa 3. Ndikuvomereza	[ ] [ ] [ ]
48	Simuyenera kuchita kuwonedwa ndi adotolo	1. Sindikuvomereza 2. Sindikudziwa 3. Ndikuvomereza	[ ] [ ] [ ]
49	Ngati wina ati muli ndi matenda amisala, akhoza	1. Sindikuvomereza	[ ]

	kunena zoona?	2. Sindikudziwa 3. Ndikuvomereza	[ ] [ ]
50	Palibe zachilendo zomwe mukukumana nazo chifukwa cha matenda	1. Sindikuvomereza 2. Sindikudziwa 3. Ndikuvomereza	[ ] [ ] [ ]

Section E: AUDIT (Alcohol Use Disorder Identification Test)			
Pa funso lirilonse pa tchati pansipa, ikani X m'bokosi limodzi lomwe likufotokoza bwino yankho lanu.			
	Question/Item	**Response**	**CODE**
51	1 Kodi mumamwa kangati chakumwa choledzeletsa?	0. Palibe 1. Mwezi uliwonse kapena kuchepera 2. 2 mpaka 4 pamwezi 3. 2 mpaka 3 pa sabata 4. 4 kapena kupitilira apo pamlungu	[ ]
52	2. Kodi mumamwa zakumwa zingati zomwe mumakhala mowa tsiku lililonse mukamamwa?	6. 1 or 2 7. 3 or 4	[ ]

		8. 5 or 6 9. 7 to 9 10. 10 or kapena kupitilira	
53	3. Kodi ndikangati komwe mumamwa zoledzera kasanu kapena kangapo nthawi imodzi?	6. Palibe 1. Mwezi uliwonse kapena kuchepera 2. Mwezi uliwonse 3. Mlungu uliwonse 4. Tsiku lililonse kapena pafupifupi	[ ]
54	4. Kodi kangati mchaka chatha mwapeza kuti simunathe kusiya kumwa mutangoyamba kumene?	7. Palibe 8. Mwezi uliwonse kapena kuchepera 9. Mwezi uliwonse 10. Mlungu uliwonse 11. Tsiku lililonse kapena	[ ]
55	5. Ndi kangati mchaka chatha chomwe	1. Palibe	[ ]

	mwalephera kuchita zomwe amayembekezeredwa kuchita chifukwa chakumwa?	2. Mwezi uliwonse kapena kuchepera 3. Mwezi uliwonse 4. Mlungu uliwonse 5. Tsiku lililonse kapena	
56	6. Ndi kangati mchaka chatha pomwe mudafunikira kumwa kaye m'mawa kuti mupitlire ndizochita zanu mutamwa kwambiri?	1. Palibe 2. Mwezi uliwonse kapena kuchepera 3. Mwezi uliwonse 4. Mlungu uliwonse 5. Tsiku lililonse kapena	[ ]
57	7. Kodi kangati mchaka chatha mudakhala ndikudzimva kuti ndinu wolakwa kapena kumva chisoni mukamamwa?	1. Palibe 2. Mwezi uliwonse kapena kuchepera 3. Mwezi uliwonse 4. Mlungu uliwonse	[ ]

		5. Tsiku lililonse kapena	
58	8. Ndi kangati mchaka chatha chomwe simunathe kukumbukira zomwe zinachitika usiku watha chifukwa chakumwa kwanu?	1. Palibe 2. Mwezi uliwonse kapena kuchepera 3. Mwezi uliwonse 4. Mlungu uliwonse 5. Tsiku lililonse kapena	[ ]
59	9. Kodi inu kapena munthu wina wavulala chifukwa chakumwa kwanu?	4. Ayi 5. Inde, koma osati chaka chatha 6. Inde, chaka chatha	[ ]
60	10. Kodi pali wachibale, bwenzi, dokotala, kapena wogwira ntchito yazaumoyo ali ndi nkhawa ndi zakumwa kwanu kapena wakuuzani kuti muchepetse?	**1.** Ayi **2.** Inde, koma osati chaka chatha **3.** Inde, chaka	[ ]

		chatha	
TOTAL			

Section H: Internalized Stigma of Mental Illness Inventory – 10-item Version (ISMI-10)			
Pa funso lirilonse, lembani ngati mukutsutsa kwambiri (1), simukugwirizana (2), mukuvomereza (3), kapena mukuvomereza mwamphamvu (4).			
	Question/Item	**Response**	**CODE**
61	1. Odwala m'maganizo amakhala achiwawa.	1. Ndikutsutsa mwamphamu 2. Ndikutsutsa 3. Ndikuvomera 4. Ndikuvomera mwamphavu	[ ]
62	2. Anthu omwe ali ndi matenda amisala amathandizira kwambiri mdera.	1. Ndikutsutsa mwamphamu 2. Ndikutsutsa 3. Ndikuvomera 4. Ndikuvomera mwamphavu	[ ]
63	3. Sindimacheza monga momwe ndimakhalira chifukwa matenda anga amisala angandipangitse	1. Ndikutsutsa mwamphamu	[ ]

	kuwoneka kapena kukhala "wodabwitsa.	2. Ndikutsutsa 3. Ndikuvomera 4. Ndikuvomera mwamphavu	
64	4. Kukhala ndi matenda amisala kwasokoneza moyo wanga.	1. Ndikutsutsa mwamphamu 2. Ndikutsutsa 3. Ndikuvomera 4. Ndikuvomera mwamphavu	[ ]
65	5. Ndimakhala kutali ndi anzanga kuti nditeteze abale anga kapena anzanga ku manyazi.	1. Ndikutsutsa mwamphamu 2. Ndikutsutsa 3. Ndikuvomera 4. Ndikuvomera mwamphavu	[ ]
66	6. Anthu opanda matenda amisala samandimvetsetsa	1. Ndikutsutsa mwamphamu 2. Ndikutsutsa 3. Ndikuvomera 4. Ndikuvomera	[ ]

		mwamphavu	
67	7. Anthu amanyalanyaza kapena kunditenga mopepuka chifukwa chongokhala ndi matenda amisala	1. Ndikutsutsa mwamphamu 2. Ndikutsutsa 3. Ndikuvomera 4. Ndikuvomera mwamphavu	[ ]
68	8. Sindingathe kupereka maganizo anga pagulu chifukwa ndili ndi matenda amisala	1. Ndikutsutsa mwamphamu 2. Ndikutsutsa 3. Ndikuvomera 4. Ndikuvomera mwamphavu	[ ]
69	9. Nditha kukhala ndi moyo wabwino, wokhutira, ngakhale ndili ndi matenda amisala.	1. Ndikutsutsa mwamphamu 2. Ndikutsutsa 3. Ndikuvomera 4. Ndikuvomera mwamphavu	[ ]
70	10. Ena amaganiza kuti sindingathe kuchita zambiri pamoyo chifukwa ndili ndi matenda amisala.	1. Ndikutsutsa mwamphamu	[ ]

		2. Ndikutsutsa 3. Ndikuvomera 4. Ndikuvomera mwamphavu	
TOTAL			

Appendix 5. Data Analysis Plan

Objective	**Variable**	**Measurement of variables**	**Statistical Test**	**Statistical package**
To determine the prevalence of non-adherence to medication and clinic appointment among patients with mental illnesses accessing mental health services at Nkhoma Mission Hospital Static Clinic and its twelve (12) outreach clinics.	Dependent variable (Adherence to clinic and medication)	Categorical	Chi-square, Bivariate and multivariate logistic	SPSS Version 23

	Independent (demographic characteristics)	Numerical	Chi-square, Bivariate and multivariate logistic	SPSS Version 23
	Type of clinic attended	Dichotomous variable	Pearson Chi-Square, simple linear regression	SPSS Version 23
To determine the socio-demographic and clinical factors associated with non-adherence to medication and clinic appointments at Nkhoma static clinic and mental health outreach clinics.	Diagnosis	Categorical variable	ANOVA	SPSS Version 23
To determine the socio-demographic and clinical	Gender	Dichotomous	T-test	SPSS Version

factors associated with non-adherence to medication and clinic appointments at Nkhoma static clinic and mental health outreach clinics.		variable		23
To determine the socio-demographic and clinical factors associated with non-adherence to medication and clinic appointments at Nkhoma static clinic and mental health outreach clinics.	Age	Continuous distribution	T-test	SPSS Version 23
To determine the socio-demographic and clinical factors associated with non-adherence to medication and clinic appointments at Nkhoma static clinic and mental	Environmental-related (social support, living conditions, stigma), patient related,	Nominal and categorical	Odds Ratio using multivariate analysis	SPSS Version 23

health outreach clinics.	Disorder related and medication-related factors			

Appendix 6. Request to conduct a study at Nkhoma Mission Hospital

Africa University,

P.O. Box 1320,

Mutare, Zimbabwe.

2nd June, 2021.

The Director,

Nkhoma Mission Hospital,

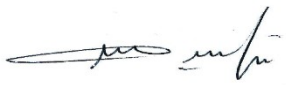
P.O. Box 48,

Nkhoma.

Dear Sir,

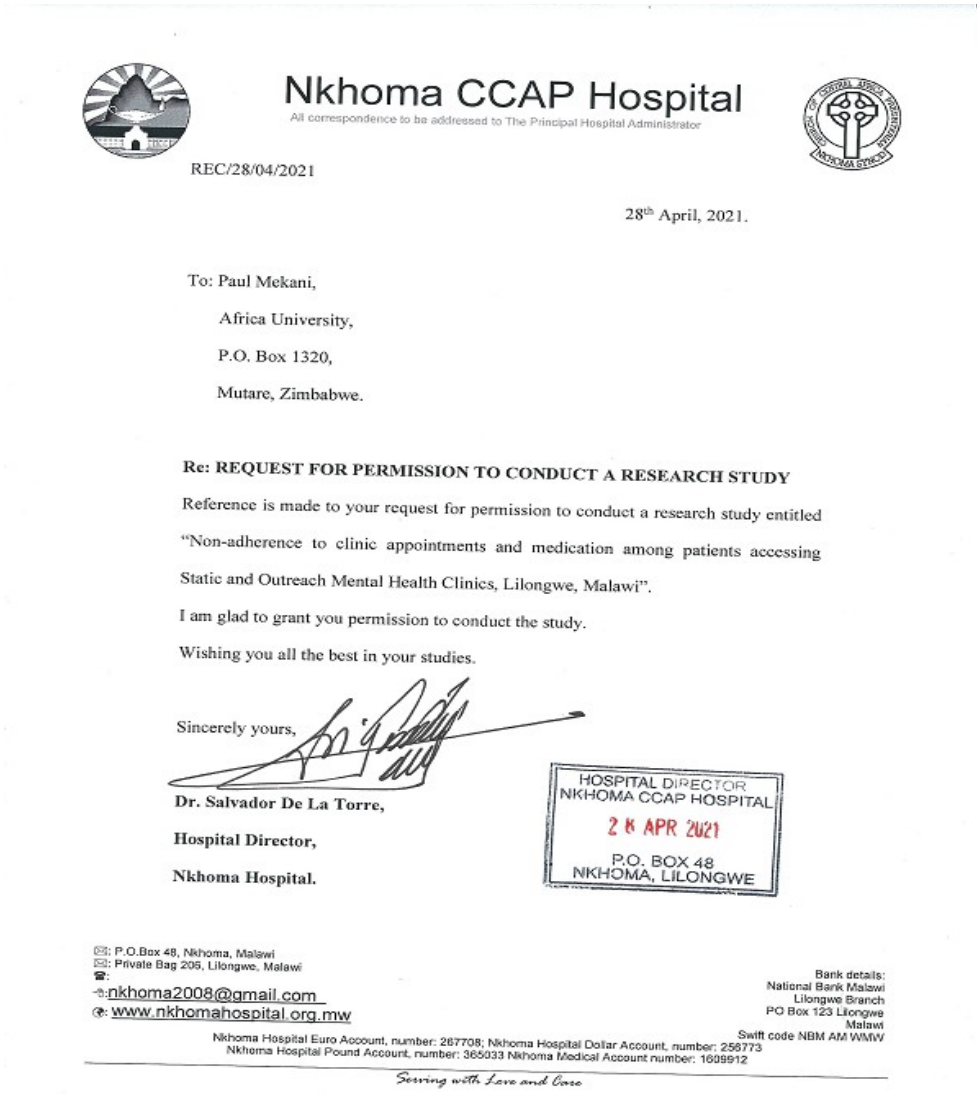
RE: APPLICATION FOR AN EXPEDITED REVIEW TO CONDUCT A STUDY

I am Paul Mekani, a Malawian National, currently studying MPH at Africa University. I would like to apply for an expedited review to conduct a study entitled: **"Non-adherence to clinic appointments and medication among patients accessing Static and Outreach Mental Health Clinics, Lilongwe, Malawi" at Nkhoma Mission Hospital.** Yours faithfully,



Paul Mekani,

Appendix 7. Clearance Letter from Nkhoma Mission Hospital



Nkhoma CCAP Hospital

All correspondence to be addressed to The Principal Hospital Administrator

REC/28/04/2021

28th April, 2021.

To: Paul Mekani,

Africa University,

P.O. Box 1320,

Mutare, Zimbabwe.

Re: REQUEST FOR PERMISSION TO CONDUCT A RESEARCH STUDY

Reference is made to your request for permission to conduct a research study entitled "Non-adherence to clinic appointments and medication among patients accessing Static and Outreach Mental Health Clinics, Lilongwe, Malawi".

I am glad to grant you permission to conduct the study.

Wishing you all the best in your studies.

Sincerely yours,

Dr. Salvador De La Torre,

Hospital Director,

Nkhoma Hospital.

HOSPITAL DIRECTOR
NKHOMA CCAP HOSPITAL
26 APR 2021
P.O. BOX 48
NKHOMA, LILONGWE

P.O.Box 48, Nkhoma, Malawi
Private Bag 205, Lilongwe, Malawi
nkhoma2008@gmail.com
www.nkhomahospital.org.mw

Bank details:
National Bank Malawi
Lilongwe Branch
PO Box 123 Lilongwe
Malawi
Swift code NBM AM WMW

Nkhoma Hospital Euro Account, number: 267708; Nkhoma Hospital Dollar Account, number: 256773
Nkhoma Hospital Pound Account, number: 365033 Nkhoma Medical Account number: 1609912

Serving with Love and Care

Appendix 8. University Ethics Approval

AFRICA UNIVERSITY
A United Methodist-Related Institution
Investing in Africa's future

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 website: www.africau.edu

Ref: AU2100/21 28 May, 2021

PAUL MEKANI
C/O CHANS
Africa University
Box 1320
Mutare

RE: NON-ADHERENCE TO CLINIC APPOINTMENTS AND MEDICATION AMONG PATIENTS ACCESSING STATIC AND OUTREACH MENTAL HEALTH CLINICS, LILONGWE, MALAWI

Thank you for the above titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal
b) Data collection instruments
c) Informed consent guide

- **APPROVAL NUMBER** AUREC 2100/21
  This number should be used on all correspondences, consent forms, and appropriate documents.
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** May 28, 2021
- **EXPIRATION DATE** May 28, 2022
- **TYPE OF MEETING** Expedited
  After the expiration date this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before expiration date.
- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

AFRICA UNIVERSITY
RESEARCH ETHICS COMMITTEE (AUREC)
APPROVED
P.O. BOX 1320, MUTARE, ZIMBABWE

Yours Faithfully

MARY CHINZOU – A/AUREC ADMINISTRATORFOR CHAIRPERSON, AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE

Appendix 9. National Ethics Approval

CERTIFICATE OF ETHICS APPROVAL

This is to certify that the National Health Sciences Research Committee has reviewed and approved the study titled:

Study Title: Protocol # 21/06/2727: Non-Adherence to Clinic Appointments and Meditation among Patients Accessing Static and Outreach Mental Health Clinics, Lilongwe Malawi

Investigator: Paul Mekani

StartDate: 18/06/2021 EndDate: 17/06/2022

Date of issue: 18/06/2021

Dr Collins Mitambo
For Chairperson-NHSRC

National Health Sciences Research Committee
2021 -06- 18
APPROVED

Mr Billy Nyambalo
NHSRC Administrator

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

All Communications should be addressed to:

The Secretary for Health and Population

In reply please quote No. MED 4/36c

MINISTRY OF HEALTH AND POPULATION

P.O. BOX 30377
LILONGWE 3
MALAWI

18th June, 2021

Paul Mekani
Nkhoma Mission Hospital

RE: Protocol # 21//06/2727: Non-Adherence to Clinic Appointments and Medication among Patients Accessing Static and Outreach Mental Health Clinics, Lilongwe 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 : 2727**
- The above details should be used on all correspondences, consent forms and documents as appropriate.
- **APPROVAL DATE : 18/06/2021**
- **EXPIRATION DATE : 17/06/2022**
  This approval expires on **17/06/2022**. 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 999397913* 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.

.....
CHAIRPERSON, NATIONAL HEALTH SCIENCES RESEARCH COMMITTEE
Promoting Ethical Conduct of Research[1]