University of Nairobi

PREVALENCE AND FACTORS ASSOCIATED WITH RELAPSE IN PATIENTS ADMITTED AT JUBILEE PSYCHIATRIC UNIT, NYANGABGWE REFERRAL HOSPITAL, BOTSWANA.

By

DR KELEBOGILE KELAPILE
STUDENT NUMBER: H58/33965/2019

SUPERVISORS

DR PIUS KIGAMWA
MS ROSELYNE OKOTH

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CERTIFICATION

The undersigned certify that they have read and hereby recommended for examination by University of Nairobi the dissertation entitled: "**Prevalence and factors associated with relapse in patients admitted at Jubilee Psychiatric Unit, Nyangabgwe Referral Hospital, Botswana**" in partial fulfilment of the requirements for the degree of Master of Medicine (Psychiatry), University of Nairobi
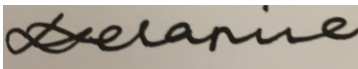
Signature .... Date: 26-07-2022

Dr Pius Kigamwa

(Supervisor)

Signature: _____ **Date**: 26-07-2022

Ms Roselyne Okoth

(Co-Supervisor)

DECLARATION

I, Dr Kelebogile Kelapile declare that the work submitted for assessment is my own; the dissertation is done as partial fulfillment of the requirements to obtain the Degree of Masters of Medicine in Psychiatry from the University of Nairobi. The words and data derived from other sources have been duly acknowledged by means of references. This work has not been submitted to any other institution before for any program of study or purpose.

Signature: _____   Date 26/07/2022

DEDICATION

This research is dedicated to my family, the caregivers of the mentally ill and everyone living with mental illness.

ACKNOWLEDGEMENT

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ABSTRACT

Background

Relapse defined as exacerbation of mental illness symptoms after recovery has a negative impact on the quality of the patient's life as well as their caregivers; it also weighs down on the quality of mental health care services. There is a dearth of information on the prevalence and factors associated with relapse among patients with mental illnesses in Botswana.

Objective of the study

The study objective was to determine the prevalence and factors associated with relapse in patients admitted at Jubilee Psychiatric Unit, Nyangabgwe Hospital, Botswana.

Methodology

A hospital based descriptive cross sectional study was conducted at Jubilee Psychiatric Unit, Nyangabgwe Referral Hospital, Botswana. Purposive sampling was used to select eligible patients. Data collection was carried out using semi-structured questionnaire to obtain socio-demographic, clinical and psychosocial data, relapse evaluation tool and Medication adherence rating scale.

Statistical Package of Social Sciences (SPSS) Version 26 was used to analyze the data. Multivariate logistic regression was used to identify factors associated with relapse. Variables found with P value <0.05 were considered statistically significant. .

Results

A total of 68 participants were enrolled for this study. The age range for the participants was from 18-70 years with over half of them (58.8%) belonging to the 31-44 years age group. The mean age was 37.9 with a Standard deviation of 10.5. Majority of the participants were male (64.7%), single (82.3%), unemployed (70.6%) and stayed with family (91.2%). This study found a prevalence of relapse of 75.0% (n=51). Participants who relapsed were significantly younger at initial diagnosis compared to those who did not have a relapse (p-value= 0.003). In bivariate analysis, male gender was significantly associated with relapse as compared to female gender (OR, 95% CI= 3.78, {1.20, 11.78},

p-value=0.02). Participants who were employed/self-employed were 76% less likely to have a mental illness relapse as compared to those unemployed/students (OR, 95% CI= 0.24, {0.73, 0.80}, p-value=0.02). Bivariate analysis revealed that participants with previous 0-2 admissions were 96% less likely to develop relapse compared to those with ≥3 previous admissions (OR, 95% CI= 0.04, {0.05, 0.33}, p-value<0.01). Participants who experienced problems with medications were 9.48 times more likely to have a relapse as compared to those who had no problems with medications (89.1% versus 45.5%), (OR, 95% CI= 9.48, {2.82, 34.4}, p-value<0.01). Participants with the full insight of the mental illness were 77% less likely to relapse compared to those with partial or nil insight (OR, 95% CI= 0.23, {0.07, 0.75}, p-value=0.01). Participants who received family support were 72% less likely to develop relapse as compared to those were either dissatisfied or received no family support (OR, 95% CI= 0.28, {0.07, 0.80}, p-value=0.02). Participants who were adherent to mental illness medications were 75% less likely to have a relapse compared to those non-adherent (OR, 95% CI= 0.25, {0.08, 0.81}, p-value=0.02). Multivariate logistic regression revealed the following factors to be independently associated with relapse: number of previous admission; family support and experiencing problems with medications.

Conclusions

The prevalence of relapse in this study was very high; this is despite efforts made locally to curb the situation. History of several previous admissions, poor family support and experiencing problems with medications were independently associated with increased relapses. There is a need to conduct future interventional studies involving large sample size to determine factors at family, patient levels that contribute to relapse. Psychoeducation and other community programmes at local level should put more emphasis on factors found to increase the chances of relapse.

DEFINITION OF TERMS

1. **Mental illness/ Psychiatric disorders/Mental Health disorders:** refers to health conditions involving significant changes in thinking, emotion and/or behavior, (or a combination of these). They are associated with significant distress and/or problems functioning in social, work or family activities (American Psychiatric Association(APA), 2020)

2. **Prevalence:** Prevalence is the proportion of a population who have a specific characteristic in a given time period (National Institute of Mental Health, n.d)

3. **Relapse:** For the purposes of this study, relapse is defined as clinically significant exacerbation of mental illness symptoms (Wei-Feng Mi et al, 2020) after recovery, warranting admission or readmission in hospital.

4. **Readmission:** An episode when a patient who had been discharged from a hospital is admitted again within a specified time interval (Wikipedia, 2021)

5. **Medication Adherence:** The degree to which the person's behaviour corresponds with the agreed recommendations from a health care provider (World Health Organisation, 2001)

6. **Stressful Life Event:** Undesirable, unscheduled, nonnormative and/or uncontrollable discrete, observable events with a generally clear onset and offset that usually signify major life changes. (Carlson D., 2014)

7. **Insight:** the patient's awareness and understanding of the origins and meanings of his attitudes, feelings, behavior of his disturbing symptoms. (Miller-Keane Encyclopedia and Dictionary of Medicine,Nursing and Allied Health, 2003)

8. **Stigma (public):** Involves the negative or discriminatory attitudes that others have about mental illness (American Psychiatric Association, 2020)

9. **Neuroticism:** It is a long-term tendency to be in a negative or anxious emotional state. It is a personality trait. (Felman, 2018)

10. **Expressed Emotion:** It is a measure of the family environment that is based on how the relatives of a psychiatric patient spontaneously talk about the patient (Butzlaff, 1998)

11. **Years of Life Lost:** It is expressed per 100 000 population. It is a measure of premature mortality that takes into account both the frequency of deaths and the age at which it occurs. (World Health Organisation, 2006)

ABBREVIATIONS:

a. **APA:** American Psychiatric Association

b. **ASSIST:** Alcohol, Smoking and Substance Involvement Screening Tool

c. **BDI**: Beck Depression Inventory

d. **CGI**: Clinical Global Impression

e. **DSM**-V: Diagnostic and Statistical Manual of Mental Disorders 5th edition

f. **GAD:** Generalized anxiety disorder

g. **GMC:** General Medical Condition

h. **HIV:** Human Immunodeficiency Virus

i. **HOD:** Head Of Department

j. **HPT:** Hypertension

k. **ISMI**: Internalized Stigma of Mental Illness

l. **IPMS:** Integrated Patient Management System

m. **JPU:** Jubilee Psychiatric Unit

n. **KNH:** Kenyatta National Hospital

o. **LAI:** Long Acting Injectables

p. **MARS:** Medication Adherence Rating Scale

q. **MDD:** Major Depressive Disorder

r. **NRH:** Nyangabgwe Referral Hospital

s. **PANSS**: Positive and Negative Syndrome scale

t. **SPSS:** Statistical Package for Social Sciences software

u. **RET:** Relapse Evaluation Tool

v. **RVI:** Retroviral Infection

w. **UoN:** University of Nairobi

x. **UBSoM:** University of Botswana School of Medicine

y. **WHO:** World Health Organisation

z. **WHODAS:** World Health Organisation Disability Assessment

1. CHAPTER 1: Introduction

1.1. BACKGROUND

Relapse in this study is defined as clinically significant exacerbation of mental illness symptoms (Wei Feng Mi et al, 2020) after recovery, warranting admission or readmission in hospital. The chronicity of mental illnesses has deems them highly likely to relapse, unfortunately this negatively affects the patients and caregivers' quality of life as well as being a burden on the limited resources of health sectors of countries (Agenagnew and Kassaw, 2020). For individuals with mental illness; relapse poses a risk of job loss, broken relationships, caregiver fatigue and deterioration in social support, self-blame, loss of confidence and even leads to disability. Patients are at a predicament of being stigmatized in the communities, enduring increased treatment costs and subsequently incurring loss of income (Sartorius, 2007).

The Global burden of mental health illness (2022) revealed that mental health disorders are among one of the leading causes of ill health and disability worldwide, therefore this should raise alarm among the population of the world. There is also a growing rate of mental illness recurrence or relapse and it happens across all the mental illnesses (Moges et al, 2021). According to the World Health Organization report (WHO, 2001), about 450 million people suffer from mental and behavioral disorders worldwide, 1 person in 4 will develop one or more of these disorders in their lifetime.

In Botswana, a report by the Ministry of Health and Wellness on National Policy of Mental Health (2001) indicated an expectation of increment in the population affected by mental illness from 3.7% in 2001. This highlights the rise in the population that needs mental health services as well as highlight the potential magnitude of people vulnerable to negative impact of relapses globally and locally.

Mental health resources have globally been reported as inadequate despite the growing needs of mental health care (Wainberg et al, 2017). The Lancet Commission on global

mental health and sustainable development has made it known that by 2030, the cost to the global economy of all mental health problems could amount to $16 trillion (Patel et al, 2018). Previous studies have reported that countries have not adequately responded to the growing burden of mental health challenges with emphasis that in low and middle income countries 76% to 85% of people with mental disorders did not receive treatment.

Relapse has a wide range of triggers from individual level to community level. Wei-Feng Mi et al (2020) stated that relapse is a multidimensional event influenced by accumulative effect of multiple risk factors. In addition to that, the World Health Organisation (2004) highlighted that these factors predisposes individuals to move from a mentally stable condition to vulnerability. The theory backing up causes of relapses in mental health is based on the Biopsychosocial Model of Mental Health (Borrell-Carrió et, 2004), which points out that integration of biological, social and psychological factors determines the progression of illness.

Ayanleke and Aina (2020) found out that some of the associated factors to relapse were poor adherence to medications, substance abuse, stigmatization, stress, illness perception, poor social support, financial constraints, comorbid mental or medical illness, high expressed emotions and insight.

The prevalence of relapse differs with various diagnoses highest being psychotic disorders (Fikreyesus et al 2016; Birnbaum, 2019). Agenagnew and Kassaw (2020) discovered that the lifetime prevalence rate of relapses was 70.2% in one of the mental health institutions in Ethiopia.

The prevalence and factors associated with relapses among the admitted mentally ill individuals have not been fully explored and understood locally. The study seeks to determine the prevalence and factors associated with relapse in this setting. It will help provide knowledge and a platform for evidence-based interventions in Jubilee Psychiatric Unit. That will eventually help to effectively reduce relapses, improve quality for life for patients and quality of services provided.

1.2. PROBLEM STATEMENT

Jubilee Psychiatric Unit (JPU) in the North of Botswana experiences frequent issues around relapses and subsequent congestion in the wards due to readmissions as it has a limited structure; this also weighs down on the quality of service. According to JPU 2020 statistics, there were 892 total admissions in which 482 (54%) were relapses. The greater number of admissions adds pressure to psychiatric facilities and available limited resources.

1.3. PURPOSE OF THE STUDY

The purpose of this study is to find out factors associated with relapses in patients admitted at Jubilee Psychiatric Unit. This will not only help in improving the understanding of problems patients are faced with concerning relapses but also establish a platform for holistic care and formulating specific interventions that aid in reducing or preventing relapses and subsequent readmissions. Indirectly this is part of the initial process in helping prevent deterioration of conditions in patients, as it will in result in focused strategies on factors associated with relapses, ultimately reducing congestion in psychiatric wards.

 The ultimate purpose of the study is in helping improve the quality of patients' lives as well as their caregivers. On the other hand, decongesting the wards by addressing factors that lead to relapses will result in improving the quality of services offered to patients and lessens the financial/economic burden in caring for relapsed patients.

1.4. JUSTIFICATION OF THE STUDY

 Statistics at JPU have revealed that there is a higher percentage of readmissions related to relapses. Factors associated with relapses at this facility have not been explored. Agenagnew & Kassaw (2020) stated that health systems have not adequately responded to the burden of mental disorders, this study is an opportunity to address the issues surrounding mental disorders in this case specific to Jubilee Psychiatric unit.

This study will add to the limited local studies around mental health in the country. Opondo et al (2020) identified a relative scarcity of mental health related research in

Botswana despite the National Mental Health Policy's objective to promote research purposes of evidence based mental health care.

1.5. RESEARCH QUESTION

What is the prevalence and factors associated with relapse in patients admitted at Jubilee Psychiatric Unit, Nyangabgwe Hospital?

1.6. OBJECTIVES

1.6.1. *Broad Objective*

To determine the prevalence and factors associated with relapse in Jubilee Psychiatric Unit, Nyangabgwe Hospital.

1.6.2. *Specific Objectives*

1. In adult patients aged 18 years and above admitted at Jubilee Psychiatric Unit, to determine the prevalence of Relapse
2. In adult patients aged 18 years and above admitted at Jubilee Psychiatric Unit, to determine the prevalence of Demographic factors associated with relapse.
3. In adult patients aged 18 years and above admitted at Jubilee Psychiatric Unit, to determine the prevalence of Clinical factors associated with relapse.
4. In adult patients aged 18 years and above admitted at Jubilee Psychiatric Unit, to determine the prevalence of psychosocial factors associated with relapse.

1.7. SIGNIFICANCE OF THE STUDY

The rate of relapse of mental illnesses is high and a relapse has an impact in reducing the quality of life for patients as well as adding a burden on the healthcare resources available. Understanding factors associated with these relapses provide an opportunity to plan interventions to reduce the problem of mental illness relapses that is ever increasing. This research will contribute as a platform for evidence based approach in finding ways to curb relapses. It will highlight factors leading or contributing to relapses in patients admitted in mental health institutions, particularly Jubilee Psychiatric Unit. This will be

of great assistance in improving the quality of life of psychiatry patients and reducing the burden on mental healthcare resources.

1.8. NATURE OF THE STUDY

The selected design of the study was descriptive cross sectional as it enabled capturing problems at a particular point in time as they transpired. This study was carried out among patients admitted at Jubilee Psychiatric Unit. Purposive sampling was used in this study for selection of participants. The instruments used for data collection included interviewer-structured questionnaire and others instruments described in details in the methodology section. Sources of data included patients, caregivers, the inpatient file/notes, and electronic through Integrated Patient Management System (IPMS).

1.9. ASSUMPTIONS

1. It was assumed that the participants would cooperate throughout the study and respond as truthfully as possible to the questions given.
2. Data collection and analysis would have only minimal errors

2. CHAPTER 2: Literature Review

2.1. INTRODUCTION TO THE CHAPTER AND BACKGROUND TO THE PROBLEM

This chapter addresses the theoretical framework, conceptual framework and the literature reviewed.

2.2. THEORETICAL FRAMEWORK

The theory for this study encompasses the Biopsychosocial Model of Mental Health formulated by Dr George Engel in 1977 which stipulates that psychological and social factors interact with pathological processes in the development and progress of mental disorders. This indicates there is a biological, psychological and social reason for a relapse.

The Biological system explains the anatomical, structural and molecular substrate of disease and its effect on the biological function. It implies anything physical that can cause a problem with an individual's mental health. This includes genetics, prenatal exposure to toxins or infections, brain injuries or malformations, physical illnesses and related management. For instance,

Genetics: a family history of mental illness points towards someone's genetic predisposition to chronic course of illness associated with relapses (Benjamin & Virginia Sadock, 2007). Twin studies have since indicated the role of genetic factors in evolution of mental disorders (Pettersson et al, 2019)

Comorbid Medical and Mental illness: Altmann et al (2006) noted that comorbid illnesses predispose patients to relapse and developing symptoms like: depressed mood, psychosis, and conduct problems in adolescence, anxiety disorder/neuroticism, substance use disorders and suicidal tendencies. Medical illnesses that especially affect the brain are inclined to present with psychiatry related symptoms while other illnesses can interfere with the efficacy of mental illness treatment.

Most the patients who relapse gets inpatient care as part of intervention therefore become readmission statistics. (Barekatain, 2013) In his study about factors associated with readmission found out that patients with previous admissions had a greater chance of

relapse & subsequent readmissions which also depended on the type of diagnosis the patient has: Bipolar disorder and Psychotic disorders were among the ones commonly readmitted and the least being cognitive disorders.

Treatment/Medication Adherence is an important part of management of mental illness for recovery and remission. Non-adherence to treatment exposes the body to imbalance of neurotransmitters and thus a possible relapse.

Reasons associated with relapse have commonly been found as: Side effects experienced especially drowsiness and extrapyramidal side effects, Lack of insight by both the patients and caregivers, presumed recovery when symptoms diminish and self-discontinuation of medications. Other reasons stated as missing of scheduled clinic reviews and Comorbid substance use (Gathaiya, 2018)

The Psychological system highlights the effects of psychodynamic factors, motivation and personality on the experience of illnesses and the subsequent reaction to it. Psychological factors ponder on the attitude or behavior that potentially have a negative impact on the mental illness, in this case cause a relapse. For instance,

Lack of insight: infers denying the presence or severity of the illness and refusing offered treatment or defaulting treatment/ scheduled reviews (Biliamimu & Aina, 2020).

Stress is viewed as a negative life event that has a contribution to relapse of various mental illnesses. The more the stressors one have, the poorer the outcome of mental illness. The demands made by others, restriction and control of the individual's choices and the disappointment that comes with unmet expectations from loved ones contribute to stressors that may lead to a relapse (Ragab, 2009).

Lastly, the **Social system** emphasizes cultural, environmental and familial influences on expression and experience of illness. Hall (2019) emphasized that social inclusion is very important for recovery in mental health. Lack of social support, increased criticism and over involvement by family members is associated with poor outcome in mental illness (Altman, 2006). Studies around depression revealed that social support is very important as it acts as a cushion to reduce the negative impact of stressful life events. Low **socioeconomic status** has been found to as well contribute towards triggering relapses, (Elliott, 2016) highlighted this when he stated that poverty increases the risk of mental health problems and can be both a causal factor and a consequence of mental ill health.
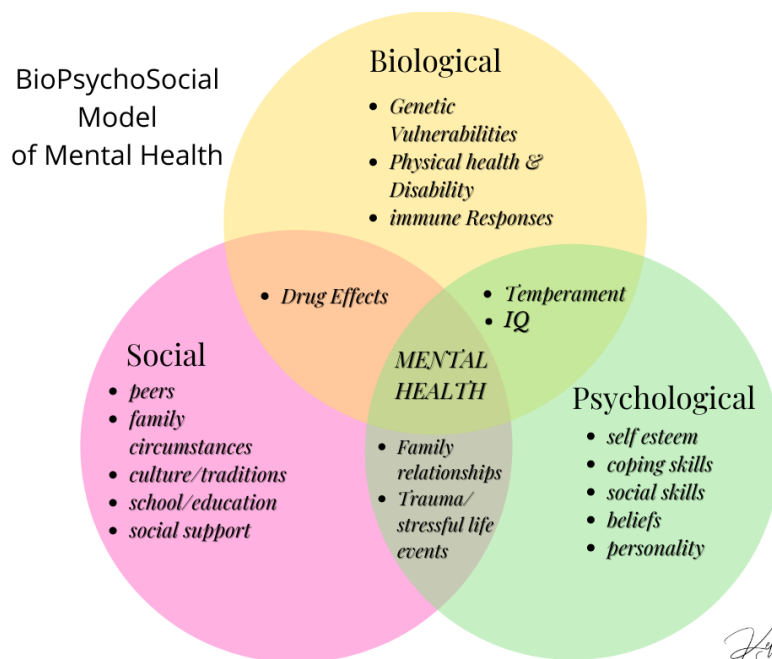
FIGURE II- 1: the illustration of how Biological, Psychological and Social Factors integrate and overlap in leading to a poor mental health state.

In regard to prevalence of relapse, literatures emphasizes that the course of mental illnesses may present as one episode with full recovery, an episode with occasional relapses and full recovery each time, other episodes with repeated relapses followed by presence of residual symptoms, therefore relapse is part of the significant long term problems in mental health.

2.3. CONCEPTUAL FRAMEWORK

2.3.1. **Dependent Variable**: Relapse of Mental illness

2.3.2. **Moderators**:

    2.3.2.1. Family history of mental illness

    2.3.2.2. Adherence to treatment

    2.3.2.3. Insight

2.3.3. Mediators:

    2.3.3.1. Demographic details: Age, Gender, Marital status, Occupation, Educational level, Residence, Cohabitation, Religion

    2.3.3.2. Comorbidities: psychiatry features, physical illness, substance use, disability

2.3.3.3. Diagnosis

2.3.3.4. Age at initial diagnosis

2.3.3.5. Stressful life events

2.3.3.6. Family support
2.3.3.7. Socioeconomic status

FIGURE II- 2: Conceptual Framework showing relationship between the independent and dependent Variable

Mediators:
- Demographic details
- Diagnosis
- Age at initial diagnosis
- Number of readmissions
- Stressful life events
- Family support
- Comorbidities

Independent Variable
Patient admitted with Mental illness

Moderators:
- Family history of mental illness
- Adherence to treatment
- Insight

Dependent Variable
Relapse of Mental illness
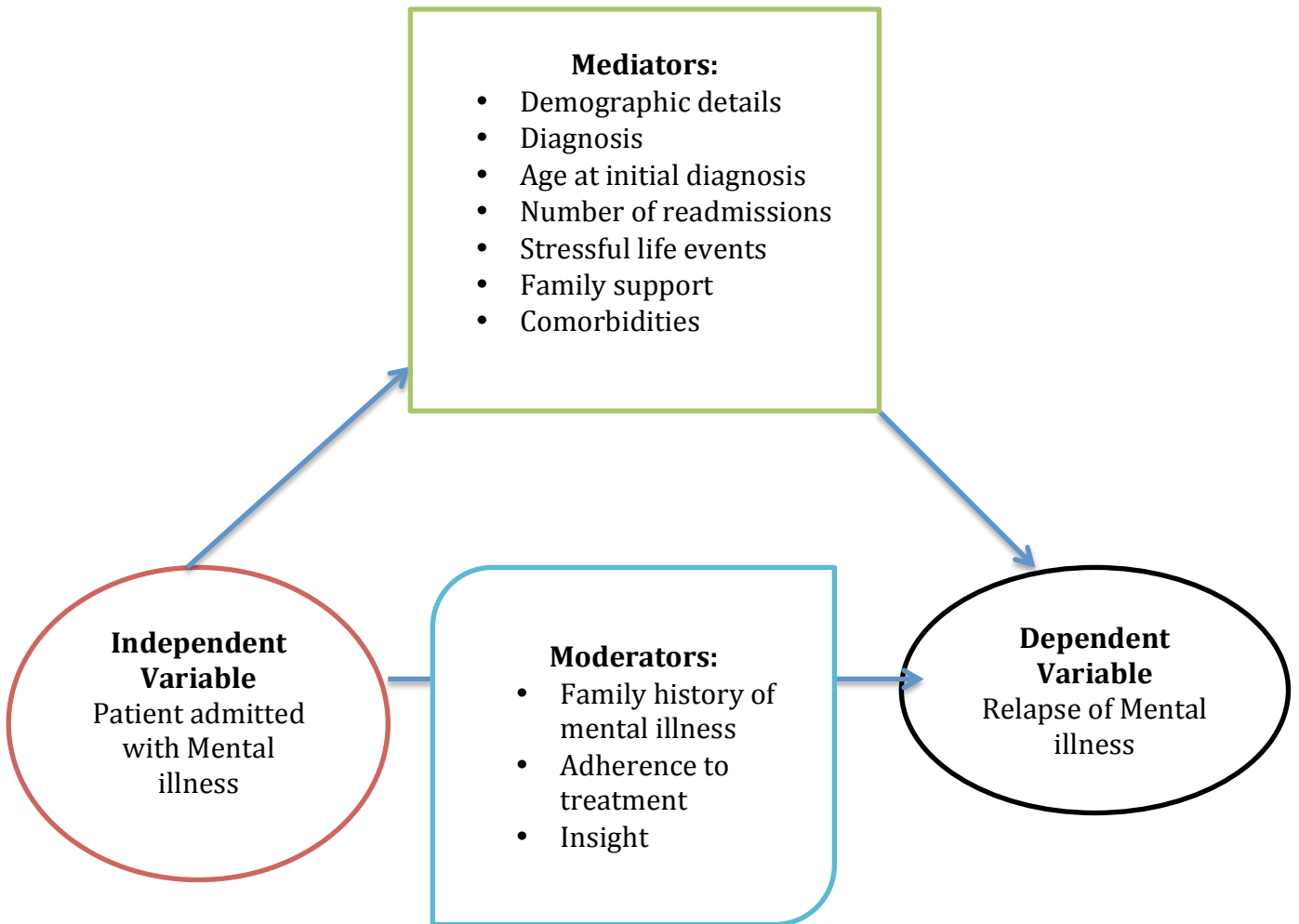
2.4. LITERATURE REVIEW

2.4.1. Global Studies

A retrospective study done by Mutlu & Yanglioglu (2020) in Turkey, on Relapse in patients with serious mental disorders during Covid-19 outbreak, revealed the relapse rate of 11% and significant factor associated was discontinuation of treatment by 59% of the individuals. The relapse criteria were based on 5 factors: Psychiatric re-hospitalization, admission at the emergency room due to psychiatric reasons, discontinuation of medications, new onset of suicidal thoughts or attempt and self-harm or violent behavior. The associated reasons for discontinuation of medications were difficulty in procuring medications, this probably associated with the Covid-19 restrictions at that time which disturbed accessing the health centre however some had stated the wish to discontinue treatment implying a possible lack of insight. The unexpected finding was that the relapsed patients had been on long acting injectables commonly thought to enhance treatment adherence compared to oral medication that are a daily dose.

Demographic factors showed that half of the participants were single and unemployed implying possible socioeconomic difficulties. The mean age was found to be 46 years and males were predominant.

In regard to psychosocial factors it indicated a significant proportion was living with their families but there is no indication of how the social support was in this study. This study was important in highlighting the possible challenges that can be faced during the Covid 19 pandemic.

Buckman et al (2018) in the United States of America carried out a systematic review of studies and Meta-analysis regarding risk factors for relapse and recurrence of depression in adults. They reviewed studies from 1806 to 2017 and found that clinical/biological factors associated with relapse was: residual depressive symptoms at the end of a patient's acute treatment; this might be an alert about ineffectiveness of treatment or treatment resistant depressive episodes. A previous history of recurrence was also a risk factor, as indicated in other studies in the same review. There was limited evidence pointing towards psychiatric comorbidities as contributory to a relapse.

Psychosocial factors found to influence relapse were presence of stressful life events, lack of social support, a background history of childhood maltreatment especially sexual abuse, emotional abuse and family conflict.

Demographic factors did not provide conclusive evidence in influencing recurrence or exacerbation of depressive episodes in this study.

Another retrospective study done in China by Wei-Feng et al (2020) on identifying modifiable risk factors for relapse in patients with schizophrenia, found out that medication adherence was a powerful and first grade predictor of relapse followed by unemployment, a difficult daily living and having to pay medical costs through insurance. These factors encompassed biological and Psychosocial/economic factors respectively. In this study relapse was assessed by four criteria: a change in antipsychotic treatment, more frequent hospital visits, re-hospitalization and closer supervision because of self-harm, aggressive behavior and/or suicidal or homicidal ideation. Adherence to medication was assessed looking at the way medication was taken by patients: either discontinued, taken partially or consistently. The relapse rate was found to be almost 36% in which 55.8% had relapsed due to medication non-adherence.

Altmann et al (2006) in United States of America did a systemic review of articles from 1996 to 2006 and included 38 articles on predictors of relapse in bipolar disorders. They found out that the following were highly predictive of relapses: biological factors being previous episodes of illness, comorbidities like psychotic features and alcoholism. Psychological factors were found to be suicidal behavior in patients who had multiple episodes.

Barekatain et al (2013) did a retrospective cross sectional study in Iran involving 3935 medical files of patients admitted between 2004 and 2010. The study setting was a University hospital psychiatric ward. They found out that comorbid psychiatric disorders and multiple previous admissions had a significant contribution in readmission due to a relapse of mental illness. The psychosocial factor found to be statistically significant in this study was divorce in which it was realized that divorced individuals were more likely

to be admitted than married or single individuals. This study highlighted that indeed there is a relationship between readmissions and relapses.

In the USA, Robinson et al (1999) published a study on predictors of relapse following response from a first episode of schizophrenia or schizoaffective disorder, a longitudinal study from 1986 to 1996 in which there was a sample size of 104 patients for relapse analyses. Biopsychosocial functioning was assessed on the patients who had responded to initial treatment and at were possible risk of relapse. They found out that relapse rate increased with multiple previous relapses: 1st relapse rate was almost 82%, 2nd relapse rate being 78% and 3rd relapse rate found to be 86%. The factors associated were discontinuation of antipsychotic treatment, which was realized to increase chances of relapse by 5 times. Participants with a history of premorbid difficulty in social functioning were found to relapse earlier. This study like the previous researchers emphasized that prior relapses makes a patient prone to subsequent relapses and it also places attention on a high risk of first relapses possibly associated with difficulties in handling a new diagnosis of mental illness.

2.4.2. Regional Studies

In Ethiopia, Agenagnew and Kassaw (2020) did a cross sectional study about the lifetime prevalence and factors associated with relapse among the mentally ill patients at Jimma University Medical Center. The sample size of the study was 178 patients who were assessed using World Health Organisation Disability Assessment Scale 2.0 (WHODAS 2.0), a social support scale, Alcohol, Smoking, Substance Involvement Screening Tool (ASSIST) and Internalized Stigma of Mental Illness scale (ISMI). They found out that the prevalence of lifetime relapse was 70.2% and a major clinical factor associated with the relapses was non-adherence to treatment, which was reported to increase chances of relapse by 6.32 followed by disability, which increased chances of relapse by 3.72. They also discovered that a considerable number of the participants had a background history of using traditional medicine and 58% had more than 2 previous admissions. This draws attention to a new point that in African setting patients may be prone to opt for traditional/cultural interventions before considering medical interventions thus highlight

the need for community involvement in managing mental health illnesses and developing mental health awareness strategies that include traditional doctors.

Demographic factors showed the mean age of the individuals was 36; males were dominant at 61%. Over half of the individuals were single and significant proportion of them living with their families however no evidence of poor social support was discussed in this study.

A cross-sectional study on 209 inpatients done by Gathaiya et al (2018) on factors associated with relapse in patients with schizophrenia in Mathari Hospital, Nairobi, found out that the major risk factor for relapse was stoppage of treatment and failure to attend scheduled reviews. This affirmed findings in other similar studies although reasons associated with failure to attend reviews where not explored in this study. Other significant finding was of comorbid substance use, which also is a growing concern in developing countries.

Demographic variable analysis revealed that individuals aged between 17 to 26 years old were more likely to be readmitted with relapse implying the youth might suffer the impact of relapse at a time when self-development is important.

Two thirds of them were males, unemployed and single, a significant proportion of them had only attained primary education while three quarters lived with their families.

Scovia (2017) in Uganda carried out a cross-sectional research on factors contributing to increased relapses among the mentally ill attending a Mental University Hospital, he had selected 72 relapsed patients for interview. He discovered that psychotic disorders led in the rate of relapses. Of these relapsed individuals, 60% had poor adherence to treatment and lacked insight. Psychotic disorders are known sometimes present with delusions that may inhibit understanding and acceptance of illness, which could explain the high relapse rate although this was not investigated in this study.

Demographic details showed a majority of these participants were aged between 20 to 40 years, single and only attained primary education. Socially, they were most classified as of low social class and had poor relations with their families.

In South Africa, a study done by Kazadi et al (2008) explored factors associated with relapse in Schizophrenia. This was a retrospective study involving medical charts of 217 patients followed up in psychiatry outpatient clinics in Johannesburg from January 1995 to June 2005. The study revealed that relapse rate was 80% supporting the reports that psychotic disorders are more prone to relapse than other mental illnesses. Clinical/biological factors found were that they defaulted treatment and had comorbid features like: depressed mood, suicidal ideation/attempt and substance use.

Sariah et al (2014) in Tanzania did a qualitative study exploring risk and protective factors for relapse among individuals with schizophrenia. They interviewed and recorded 7 patients and their 7 relatives. In this study it was found out that non-adherence to antipsychotics was the perceived leading factor for relapse and other factors were poor family support, stressful life events and substance use. The strength of this study was the involvement of relatives/caregivers who helped provide corroborative information that helped broaden the outlook on the problem of relapses.

A cross sectional study by Biliamina and Aina (2020) in South West Nigeria on assessment of factors associated with relapse among patients diagnosed with psychotic illnesses in two psychiatric hospitals, found out that most of the patients who relapsed were aged less than 40; they were single, and lived with their families. Most were self-employed although it was small-scale businesses and had attained tertiary education; this was contrary to most of the reviewed studies that indicate unemployment and low education level as factors associated with a relapse.

Furthermore, in Nigeria, Adebiyi et al (2018) carried out a retrospective study on 219 admitted patients. They aimed at determining socio-demographic and clinical factors associated with relapse of mental illnesses. They found out patients with a longer duration of illness had higher chances of relapse as well as those with poor drug compliance. Longer duration of illness coincides with probably the illness starting at young age, for instance schizophrenia in males reported to commonly start in adolescence, in this study however the mean age for illness onset was 27. The highest relapse rate was with schizophrenia and overall relapse rate was 41%. Other associated factors for relapse were comorbid substance use and stressful life events. In terms of

demographics, males were many at 54%, mean age was 35, and participants were mostly single, unemployed and a most had attained secondary education.

Mahamba (2009) in South Africa looked into factors influencing relapse of psychiatric outpatients in rural communities, this was a quantitative descriptive cross sectional study on 92 patients. She discovered that lack of adherence to medications was associated with stigma and side effects. This finding alerting the existence of stigma towards the mentally ill and the magnitude at which it can lead to deterioration of the illness. A considerable proportion of the participants, (39%) reported using substances, the commonest was cannabis.

Demographic characteristics revealed many participants were males and the age range was 41 to 59 years. Under half of them were married, attained primary education and living with their parents. Above half of them were dependent on disability grant while only a quarter was employed this underlining the socioeconomic difficulties that exist among the mentally ill.

2.4.3. Local studies

In Botswana, although there were no studies found on factors associated with relapse in the mentally ill or prevalence thereof, a cross sectional study by Hetolang and Amone (2018) on association between stressful life events and depression among the students in the University of Botswana found out that 22% were depressed. This finding indicates that stressful life events were significantly predictive of depression and strong associated stressors were relationship difficulties and losses. This highlights that stress can also trigger a relapse as well as being a causative factor. Demographically, 56% were females with mean age of 21.6 years.

2.4.4. Summary of Reviewed Studies

In summary, the biological/clinical factors associated with relapse are medication non-adherence, previous episodes of relapse/readmission, comorbid psychiatric illness including substance use, longest duration of illness and psychotic illnesses are highly likely to relapse.

Relapses were mostly because of patients defaulting treatment as studies revealed that non-adherence to treatment is the major and powerful cause of relapses across all mental health illnesses. This was linked to lack of insight among the relapsed patients compared to reports of side effects, however it should be pointed out that there are other several reasons attached to non-adherence including: stigma, concurrent substance use, missing scheduled clinic reviews and presumptions that they have recovered the subsequently discontinued treatment. Some studies were able to find the association of relapse with disabilities, physical illness and comorbid psychiatric illnesses/symptoms including depression, psychosis, anxiety and substance use. Several reviewed studies found out that the more the number of previous admissions/relapses, the more the likelihood of future relapses. This in overall might be an indication of the deterioration of the course of illness as the years go by influenced by frequent relapses. It is notable that the kind of diagnosis the patient has may predispose him/her to a relapse more than the others. The commonest relapses included psychotic illnesses mostly schizophrenia, followed by bipolar and substance use disorder. The earlier onset of illness places one on the line of likelihood of increased relapses as well as longer duration of illness.

The commonest psychological factor identified was stressful life events as most of the studies indicated stressful life events as contributory to a relapse except some that had excluded the above as a variable or found it insignificant.

The social factors contributory to a relapse were poor social support, low social class. A major number of relapsed patients were single and either divorced/separated suggesting probable lack of social support or showing the possible inability to sustain interpersonal relationships by the mentally ill. Most of the relapsed were found to be living with their families, in contrast to the notion that family support is protective of relapses. This high rate of relapse of patients living with their families could be associated with families who have high expressed emotions, poor support of the patient, caregivers with poor insight of the patient's condition and related possible stigma. Multiple relapses/readmissions may indirectly contribute to caregiver fatigue and compromised social functionality the patient.

The demographic factors associated with relapses were pointed out to be unemployment, being single, low educational level, age between 20-59 and being male. The education level of a large number of relapsed patients was found to be at primary level. It was a common finding that most were unemployed. Those who were employed earned lower household income or owned small-scale businesses, which were insufficient to cover medical costs of care. Several studies regionally and globally have indicated that most relapses were of males highlighting increased admissions among the youth aged 33 to 36 year old.

The statistical gender differences are notable and may be in part because of socially constructed differences between males and females in roles, responsibilities, status and power which can result in different experiences, and attitude towards mental health seeking behavior. Men have been found to less likely seek medical care when it comes to mental health symptoms compared to women, they rather lean towards alcohol and substance use to relieve symptoms, and tend to have a general view that use of psychotropic drugs indicate loss of autonomy (WHO, 2002).

There is a concerning high prevalence rate of relapse in most studies, psychotic illness topping the list and followed by Bipolar disorder. Mutlu and Yanglioglu, (2020) found the lowest relapse across the reviewed studies of 11% in patients with serious mental disorders and the highest rate was reported by Kazadi et al, (2008) as 80.4% in schizophrenia patients followed by Agenagnew & Kassaw (2020) who found it to be 70.2% of lifetime relapse.

In conclusion, different demographic factors, psychosocial factors and clinical factors play a role in relapse of patients' mental illness and are worth studied more to help understand the evolution of mental disorders, the recovery journey of patients and challenges faced by them and the mental healthcare sectors in general.

3. CHAPTER 3: Methodology

3.1. INTRODUCTION TO THE CHAPTER

The study was focused in finding out the prevalence and factors associated with relapse in patients admitted at JPU, Nyangabgwe hospital. The study was conducted to determine areas that can be addressed as part of efforts in reducing the burden of mental health on resources available and improve the quality of patients' lives including their caregivers and dependents.

In this chapter, key areas covered included;- study design, study setting, study population, sample size calculation, data collection procedure and tools and data management (analysis) plan.

3.2. RESEARCH METHODOLOGY

3.2.1. Research design

The study was a descriptive cross-sectional study design collection. This design allows collection of data on different variables at a particular point in time. In view of the time limitation in this study design is most appropriate as it accommodates collection of data once without longitudinal follow-ups.

This is a design that is widely recommended in trying to establish prevalence in the field of health.

3.2.2. Study site

3.2.2.1. Background of Botswana and its Mental Health Services

Botswana is a landlocked country located in Southern Africa; it is about 581,730 km^2 in size. It has a population of about 2.3 million people. The official language is English and the national language is Setswana. Botswana is classified as a middle-income country with main income from exporting diamonds and beef, from tourism industry where it is known for its diversity of wildlife, the Okavango Delta, Makgadikgadi saltpans and the Chobe River. It has 2 cities the 1st being the capital city Gaborone in the South of the country and 2nd one being Francistown in the North. Francistown is where Jubilee

Psychiatric Unit (JPU) is found as the department of psychiatry under Nyangabgwe Referral Hospital.

In term of mental health services, there is one national psychiatric referral hospital called Sbrana Psychiatric Hospital located in a town called Lobatse in the south of the country, it is also a teaching hospital for students pursuing post graduate studies in psychiatry nursing and Masters of Medicine in psychiatry from University of Botswana School of Medicine (UBSoM). Sbrana has 300 beds. In addition to the hospital, there are 5 psychiatric units in the country, 4 within the different district hospitals and one in Nyangabgwe referral hospital, JPU. Most of the Mental Health services in the district hospitals are coordinated and run by Psychiatric Nurses. There is limited number of psychiatrists and psychologists in Botswana despite the growing needs of mental health services in the country. Psychiatrists do outreach services to cover the peripheral facilities.

There are 3 private outpatient psychiatric clinics, all located in Gaborone. There are different non- governmental organizations that deal with mental health challenges and raise awareness across the country. In January 2020, the University of Botswana, School of Medicine established intake of students to pursue Masters of Medicine in Psychiatry.

3.2.2.2.   <u>Jubilee Psychiatric Unit</u>

The psychiatric services in Nyangabgwe Referral Hospital are through the department of psychiatry known also as Jubilee Psychiatric Unit. It is the main referral point for specialized mental health care in the northern part of the country and through which psychiatry patients are transferred to Sbrana. It serves 3 district hospitals, 10+ primary hospitals and many peripheral and local clinics and health posts. It has 20 beds – 10 males and 10 females however because of the vast coverage area, inpatients number usually exceed the beds available. It has 2 psychiatrists, 2 clinical psychologists, 2 Medical Officers, 1 social worker and a considerable number of psychiatry nurses.

3.2.3. Study Population

This study population is patients with mental illness getting services at Jubilee Psychiatric Unit, Nyangabgwe Referral Hospital, Botswana. The target being adult patients aged 18 years and above with mental illness admitted at Jubilee Psychiatric Unit accompanied by their caregivers for corroborative information. The study population included participants from both female and male wards in the facility.

3.2.4. Study Participation requirements

3.2.4.1. Inclusion Criteria

All patients aged 18 years and above admitted through Psychiatry Outpatient department or Nyangabgwe Referral Hospital A&E department. The patient had a caregiver over the aged 18 and above, in this study a caregiver implied a person who had been taking care of the patient from previous admission or initial diagnosis aged 18 and above. It was mandatory that both cooperated and consented to participate in the study.

3.2.4.2. Exclusion Criteria

Unstable patients who could not engage in a meaningful interview were excluded and patients from other facilities who were on transit to their local hospital or home.

3.2.4.3. Study Sample size calculation

- Fisher's formula:
- $N = Z^2 p(l-p) / d^2$
- N = sample size
- Z = confidence interval 95%(1.96)
- P = estimated proportion of relapsed patients in the previous year (0.5)
- d – degree of precision- 0.05(5%)

$$N = \frac{(1.96 \times 1.96) \times 0.5(1-0.5)}{(0.05 \times 0.05)}$$

$$= \frac{(3.84) \times (0.25)}{0.0025}$$

$$= \frac{0.96}{0.0025}$$

$$= 384$$

Since the study population was less than 10000

n_f = desired sample size population less than 10000
n= desired sample size more than 10000
N= estimate of population size
    = 74 admissions per month

$n_f = n/1 + (n \div N)$

$$= \frac{384}{1 + (384/74)}$$

$$= \frac{384}{1 + 5.2}$$

$$= \frac{384}{6.2}$$

$= 61.9 \approx 62$

10% for possible non-responses was added $= 62 + 6.2 \approx 68.2$ (68). Sample size calculated to be 68.

3.2.5. Sampling Procedure

The method of sampling used was purposive sampling. Participants were chosen from the admission register and inclusive and exclusive criteria used to determine the legibility to participate. This method was accommodative of the allocated study time and resources of the Principal Investigator.

3.2.6. Confidentiality measures

Participants were assigned serial numbers as a way of identification to help maintain confidentiality. Interviews were carried out in a room away from additional audience. Participants' data collection forms were filed and secured in a cabinet with lock and key before completion of data collection process and analysis. The data transferred to the computer was saved in a password-protected file. Access to information was restricted to the researcher and biostatistician.

3.2.7. Instrumentation

3.2.7.1.   Researcher structured questionnaire

This questionnaire developed by the Principal Investigator explored 3 areas: Patient demographic factors, clinical factors and psychosocial factors. It had 23 questions in total with yes or no response options and selection of the most appropriate answer. Insight was assessed based two questions aimed to determine if participants acknowledged to have a mental illness and importance for being on treatment. If a participant responded yes to both questions, he was deemed to have full insight of illness; otherwise if responded yes to one of the question and no to both questions he was deemed to have partial and nil insight of illness respectively (Biliamimu & Aina, 2020). The Principal Investigator administered this questionnaire and the estimated time of data collection was 15- 20 minutes.

3.2.7.2.   Relapse Evaluation tool

This an adapted evaluation criteria from (Wei-Feng Mi et al, 2020) designed in a study done in China based on the definition that relapse as an exacerbation of mental illness symptoms, the same definition also used in DSM V. It has 4 criterions that assess the possibility of a relapse during the course illness. These are paired with a yes/no response options and any yes from the 4 considers the patient as relapsed. This evaluation was administered by the researcher and estimated to take 5-10 minutes.

3.2.7.3.   Medication Adherence Rating Scale (MARS)

This scale was developed by (Thompson et al, 2000) in Australia. It measures compliance to psychoactive medications in psychiatric patients. It covers factors of medication adherence behavior, attitude towards taking medications, negative side effects and attitude towards psychotropic medications. MARS has 10 questions with yes/no response options and a total score ranging from 1-10 in which a score of 6 or higher indicating adherence. This tool will be researcher administered and estimated to take 10-15 minutes. Medication Adherence Rating Scale is a standardized tool. Its reliability and validity concluded that it is a reliable tool and a valid measure of compliancy for psychoactive medications (Thompson et al, 2000). In Africa, Owie et al (2018) in Nigeria did a

reliability and validity study in which they made a conclusion that this tool can be used in Sub Saharan African settings. It has also been used in African countries like Ethiopia.

3.2.7.4. Validity and Reliability of instruments

Pilot survey was carried out as a pre-test procedure to determine the validity and reliability of the data collection tools. Questionnaires were administered to 10 participants in the wards and feedback requested from them to help identify difficult or ambiguous questions. The manner of responses given on the questions was also observed for consistency. No adjustment or corrections were identified.

For content validity the questionnaires was discussed with supervisors to assist in ascertaining the appropriateness of the content and relevance to the objectives of the study. In addition to that, the other experts in the field; a psychiatrist, psychiatric nurse and a medical officer at Jubilee Psychiatric Unit were requested for inputs about the relevance of the questions to the objectives stated.

In regard to reliability, the Principal Investigator conducted test-retest reliability by administering the same questionnaires to the pilot participants twice over the period of one week. The scores from Time A and Time B were correlated to evaluate stability over that time. Coefficient of > 0.80 was obtained for all the study instruments; this translated to questionnaires having good reliability.

The questionnaires were also translated to Setswana then back translated to English to enhance reliability and consistency. The participants in the pilot survey were not involved in the main study.

3.2.8. Quality Assurance

The Questionnaires were designed carefully after review of various studies around this topic and involving the supervisors, specialized mental health care workers at Jubilee Psychiatric Unit to affirm the content validity of the questionnaires. Translation to Setswana language was done and back translation to English carried out so to ensure consistency of the tools. Pre-test of the data collection tools was done to help eliminate confusing and ambiguous questions. The data collected was double checked for completeness. Each instrument was coded for each patient so that no mix up of data

occurred. Follow ups was done over the phone for any information that was missing before data analysis.

3.2.9. Data Collection

3.2.9.1. Data collection instruments

a) Relapse Evaluation Tool
b) Researcher Structured Questionnaire
c) Medication Adherence Rating Scale
d) Ward admission/discharge record book
e) Patient medical record
f) Integrated Patient Management System (IPMS) / electronic patient data record.

3.2.10. **Recruiting**:

Recruitment was done after getting ethical clearance from KNH-UoN Ethics Review Committee, authorization by the Ministry of Health and Wellness in Botswana then permission from Nyangabgwe Referral Hospital together with the JPU administration to work within their premises.

Recruiting was carried out 3-5 days towards a patient's discharge from the facility when she/he is more stable. The process was conducted during working hours (0730hrs to 1630hrs) from Monday to Friday for 3 weeks. Covid-19 control measures were followed ; washing of hands or sanitization, putting on masks appropriately and social distancing.

FIGURE II- 3: A flow chart showing the recruitment process for enrollment of participants in the study

```
┌─────────────────────────────────────────────────────────────────────┐
│ In JPU wards (Female & Male wards) patients was selected from the     │
│ admission book and in reference to their record files                 │
└─────────────────────────────────────────────────────────────────────┘
                                  │
                                  ▼
┌─────────────────────────────────────────────────────────────────────┐
│ During visiting times I introduced myself and requested patient with  │
│ his/her caregiver for a private discussion in the Counselling room to │
│ establish interest in participating in the study                      │
└─────────────────────────────────────────────────────────────────────┘
       If interested                              not interested
            │                                           │
            │                                           ▼
            │                              ┌──────────────────────────┐
            │                              │ Was thanked and excluded │
            │                              └──────────────────────────┘
            ▼
┌─────────────────────────────────────────────────────────────────────┐
│            Apply Inclusion and exclusion criteria for the study       │
└─────────────────────────────────────────────────────────────────────┘
       Meet criteria                          does not meet criteria
            │                                           │
            ▼                                           ▼
┌──────────────────────────────┐          ┌──────────────────────────┐
│ a. Explanation of the study  │          │ Was advised, thanked     │
│ was done fully and the       │          │ and excluded from the    │
│ informed consent form, then  │          │ study                    │
│ signed before data           │          └──────────────────────────┘
│ collection.                  │
│ b. If time inconvenient for  │
│ caregiver, an appointment    │
│ was set for data collection. │
└──────────────────────────────┘
```

3.2.11. Consenting:

The informed consent form was translated from English to Setswana then back translated to ensure consistency; this allowed the participants to choose the language of preference between the two. Informed Consent was sought after establishing the patient's interest and eligibility to participate prior to data collection. Preceding signing of the consent form, the study and the details on the informed consent form were explained by the researcher verbally to the patient and caregiver in Setswana or English depending on the participants' preferred language. Explanation of the consent included defining the title of the study, clarifying the objectives and how the participants will be involved in helping meet those objectives. The risks and benefits of the study were outlined clearly to the participants and assurance of confidentiality and privacy done. It was emphasized that their participation is voluntary and that still

applies even after consent was signed. Covid 19 preventative measures were observed throughout: Sanitization or hand washing, putting on a mask appropriately and social distancing.

The consenting ability of the patient was clinically evaluated grounded on

1. Patients were approached within 3-5 days nearing their discharge as indicated in the recruitment process implying better opportunity for improved mental health status at that point. This approach was to allow patients to be in a better decision-making capacity compared to on admission. Its indicated by Staden & Kruger, 2003 that this approach allows for an individual who was incapable of making a particular decision at one point be able to make at another point in time.

2. An overseer, in this study the caregiver, made part of the interview and present through the explanation of the study. Dyer & Bloch, 1987 emphasized that involving an overseer as the third party of informed consent safe guards against possible abuse.

3. After explanation of the study, participants were quizzed on whether they understood the request to participate in the study, whether they remember and understand what the study was about, their options in regard to participation especially in regard to their volunteering to participate and ending the interview at their own will at any stage they feel uncomfortable.

4. The patients were allowed and given an opportunity to ask questions to clear any misunderstanding before continuing with the interview.

5. The consent was signed after this verification of understanding and established agreeableness of the participants. The signature was done by writing or thumbprint if unable to write.

6. Even though the study composed of patients who were not agreeable to medications, it did not interfere with their ability to decide on participating in the study, as it was a non-interventional. Staden and Kruger, 2003, highlighted that it is established in ethics that a patient's incapacity to give consent to one intervention should not be assumed to imply incapacity to give consent to all medical procedures.

3.2.12. *Data collection stepwise sequence of action*:

3.2.12.1. For the identified interested participants, they were invited to the counselling room where data collection is to be carried out

3.2.12.2. Covid infection control measures were observed; wash/sanitizing of the hands, ensuring the mask is appropriately worn and social distancing is maintained.

3.2.12.3. The study was further explained and participants allowed to ask questions

3.2.12.4. Consent was then signed.

3.2.12.5. Questionnaires were coded then administered by the researcher and she documented the responses as narrated by the participant

3.2.12.6. The first questionnaire administered was researcher-structured questionnaire, followed by the relapse evaluation tool then lastly the medication adherence rating scale.

3.2.12.7. The estimated time for data collection was 30-45 minutes.

3.2.12.8. The data was entered on the questionnaire and it was double checked for completeness and proper instruments coding by the researcher.

3.2.12.9. Debriefing and counselling of the patient on any identified discomfort or distress was done. Any aspect that needed continued intervention; referral was made to the medical team in charge.

3.2.12.10. Participants were then thanked then data filed and later entered in a password-protected file in the computer and flash disk each end of the day to prepare for data analysis.

3.2.13. Data Management and Analysis

Each participant' had a specific similar code on the different questionnaires to maintain that it's of one respondent and avoid mix up of collected data. For instance: 1ST respondent = R001, 2ND respondent= R002 and that continued consecutively in a similar manner for the rest of the participants. All responses were entered on the questionnaires during the interviews.

Paper based data was filed and stored in a lock & key cabinet and transferred to a password-protected file in the computer and flash disk. It was only be accessible to the researcher.

Data was compiled as cross tabulations, frequency tables, graphs and pie charts using Microsoft word or excel. The Software for data analysis was Statistical Package for the Social Sciences version 26 (SPSS V26). Relationship between different variables and associated factors was identified using chi square test and logistic regression analysis. Independent t-test was used to compare the mean between different groups. Data was reported as Odds Ratios and 95% Confidence Interval (CI). Significant P-value was <0.05.

The final work emanating from this study will be shared with the University of Nairobi-Psychiatry department, Nyangabgwe Referral Hospital and Jubilee Psychiatric Unit. PowerPoint Presentations will be made for in peer discussion.

3.3. ETHICAL CONSIDERATIONS

Approval of the study was sought from the KNH UoN Ethics and Research Committee. Authorization and Permission was sought from MoHW Botswana, NRH and JPU administration respectively.

3.3.1. **Ethical issues related to the study**:

The mentally ill are considered a vulnerable group that may have difficulties in comprehending or understanding the discussions in the study. Patients and their caregivers were to disclose some personal details and talk about their behaviours, attitude and possible negative experiences when it comes to relapses, this may be uncomfortable for them or likely trigger emotional distress.

Protection of patients and caregivers details was important as well as of the data collected to preserve privacy and confidentiality as breach of these can result in psychological harm.

As the mentally ill are considered a vulnerable group, informed consent was explained and sought in the presence of a caregiver and form signed by both in consideration of the

patient's approval. The ability of the patient to consent and understand the information provided was clinically assessed. The researcher as a resident in psychiatry applied her skills and knowledge in handling and interacting with the mentally ill so as to uphold their dignity throughout the interview. The data was collected in a private room away from additional audience to allow privacy and confidentiality of any information shared. It was emphasized that at any occasion or at any point that the participant gets emotionally distressed she/he will be allowed to withdraw participation if willing. Counselling was done at that point and appropriate referral made to the psychologist or social worker for further continued intervention. The participants were informed that they are also at liberty to withhold any particular details they were not willing to disclose. There was restricted access to the collected data. The computer used was only accessible to the researcher. The analyzed results bear no specific personal identification of any participant; the information was discussed as a collective and generalized. The results are accessible to the University Department, Supervisors and Nyangabgwe Referral Hospital.

Declaration

This study bears no financial gain for the researcher. It was carried out to meet the requirements for program completion of Master of Medicine in Psychiatry.

3.4. RESULTS FINDING

The outcome of the study highlighted the prevalence and factors associated with relapse in the mentally ill, reveal the burden of care on caregivers and health resources and insight into the gaps of care, add understanding of the experiences and challenges of the patients with mental illness. This will also serve as a foundation for the specific health facility, JPU on intervention measures needed to reduce relapses and readmissions.

4. CHAPTER 4: Results

4.1.1. INTRODUCTION

This chapter reports the results obtained in the data analysis and correlated with the study objectives of prevalence of relapse, demographic factors, clinical factors and psychosocial factors associated with relapse in patients admitted at Jubilee Psychiatric Unit. The results will be displayed as tables, graphs, and pie charts.

4.2. SOCIODEMOGRAPHIC FACTORS OF THE STUDY PARTICIPANTS

A total of 68 participants were enrolled for this study. The age range for the participants was from 18-70 years, Mean age of 37.9 with a SD± 10.5. Over half of them (58.8%) belonged to the 31-44 years age group. Majority of the participants were male (64.7%), single (82.3%), unemployed (70.6%) and stayed with family (91.2%). Mean age at initial diagnosis for the participants was 28.5 with a SD± 9.2. The rest of the sociodemographic characteristics are shown in **Table IV-1** below.

Table IV-1: Demographic factors of the study participants

Variable	Frequency	Percentage
Gender		
Female	24	35.3
Male	44	64.7
Age in years (range); mean	(18-70); 37.9	
18-30	13	19.1
31-44	40	58.8
≥45	15	22.1
Age at initial diagnosis		
>18	4	5.9
18-30	41	60.3
31-44	18	26.5
≥45	5	7.4
(Range): Mean	(15-53): 28.5	
Marital status		
Single	56	82.3
Married	8	11.8
Divorced	1	1.5
In a relationship	3	4.4
Education level		
Primary	9	13.2
Secondary	41	60.3
Tertiary	18	26.5
Occupation status		
Unemployed	48	70.6
Employed	13	19.1
Self-employed	4	5.9
Student	3	4.4
Residence		
Within Francistown	18	26.5
Outside Francistown	50	73.5
Cohabitation		
Alone	2	2.9
With family	62	91.2
With other people	4	5.9
Religion		
Christian	52	76.5
Traditional	1	1.5
Other	1	1.5
None	14	20.5

4.2.1. CLINICAL/PSYCHOSOCIAL FACTORS OF THE STUDY PARTICIPANTS

Over half of the admitted participants (60.3%) were documented to have psychotic disorders, while 35/68 (51.5%) of the participants had been admitted to the hospital for mental illness at least twice prior to the index admission. Majority of study participants (70.6%) denied family history of mental illness. Participants were questioned if they experienced any problem with medications (including but not limited to medication unavailability, adverse effects, and forgetfulness as described in **Figure II-7**). Two thirds of the participants (67.6%) responded to experience problems with medications. On the other hand, over half of the participants, 39/68 (57.4%) had either partial or no insight into their mental illness problem.

In terms of comorbidities, psychiatric condition, general medical condition or both were present in 27.9%, 33.8% and 10.3% of the study participants respectively. Over half of the participants (55.9%) were not adhering to the medications prescribed for their mental illness. Relapse, which was the main interest of this study, was highly prevalent in three-quarters (75.0%) of all the admitted participants. The rest of clinical and psychosocial characteristics are displayed in detail in **Table IV-2** below

Table IV-2: Clinical/Psychosocial factors of the study participants

Variable	Frequency	Percentage
Diagnosis at admission		
Psychotic disorder	41	60.3
Mood disorder	18	26.5
Others	9	13.2
Number of previous admissions		
0X	20	29.4
1X	13	19.1
2X	5	7.4
≥3X	30	44.1
Comorbidity		
Psychiatric features alone	19	27.9
General medical condition alone	23	33.8
Both	7	10.3
None	19	27.9
Family history of mental illness		
Yes	20	29.4
No	48	70.6
Experiencing problems with medications		
Yes	46	67.6
No	22	32.4
Insight into the illness		
Nil	18	26.5
Partial	21	30.9
Full	29	42.6
Stressful life events		
Present	54	79.4
Absent	14	20.6
Family Support		
Very dissatisfied	0	0.0
Dissatisfied	23	33.8
Neither	31	45.6
Satisfied	13	19.1
Very satisfied	1	1.5
Medication Adherence Rating Scale Results (MARS)		
Adherent	30	44.1
Non-adherent	38	55.9
History of relapse		
Yes	51	75.0
No	17	25.0

4.2.1.1. Comorbid General Medical Conditions Reported

Overall, 30 study participants were found with comorbid medical conditions. Of these, HIV-infection, hypertension and hyponatremia accounted for 50.0%, 40.0% and 10.0% respectively **(Figure II-4).**

FIGURE II- 4: Comorbid General Medical Condition
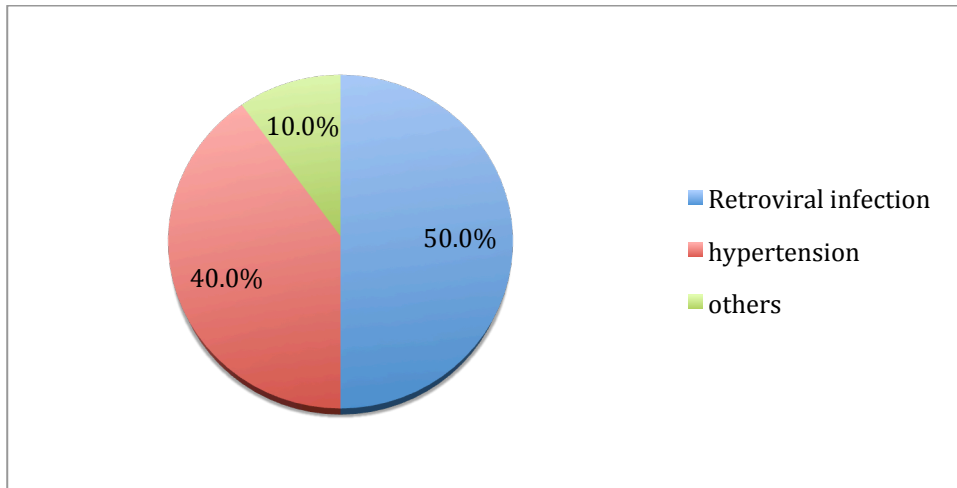
4.2.1.2. Comorbid Psychiatric conditions Reported

Out of 26 participants with reported comorbid psychiatric conditions, substance abuse was the most common finding accounting for 82.6% of cases. Depressed mood with suicidal ideation, depressed mood alone and suicidal ideation alone accounted for 8.7%, 4.3% and 4.3% of cases respectively **(Figure 2-5)**

FIGURE II- 5: Comorbid Psychiatric conditions
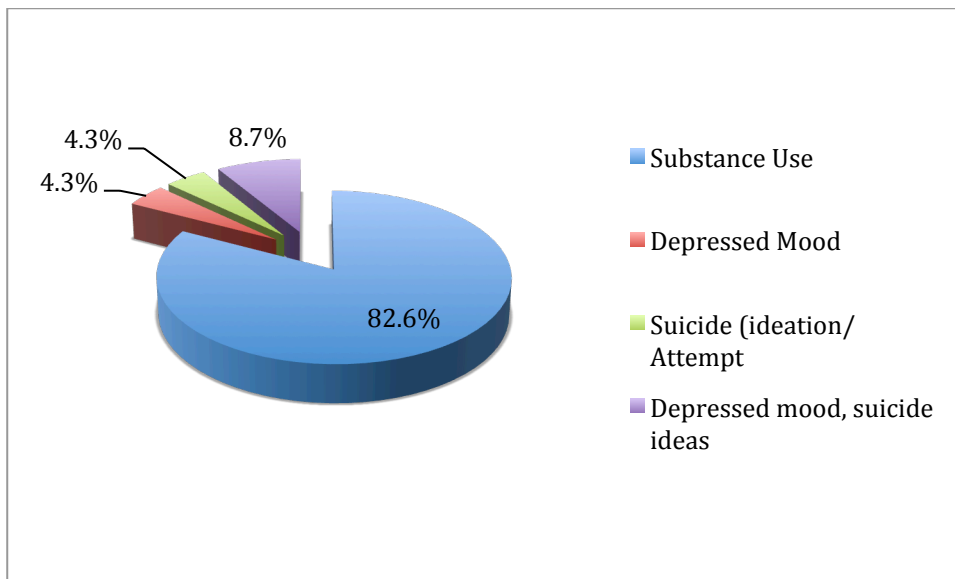
Among study participants who were on substance of abuse, 18/21 (85.7% belong to the relapse group. On the other hand, 33/51 (64.7%) of relapsed participants were not on any substance of abuse (Figure II-6).

FIGURE II- 6: Substance Use in relapsed participants
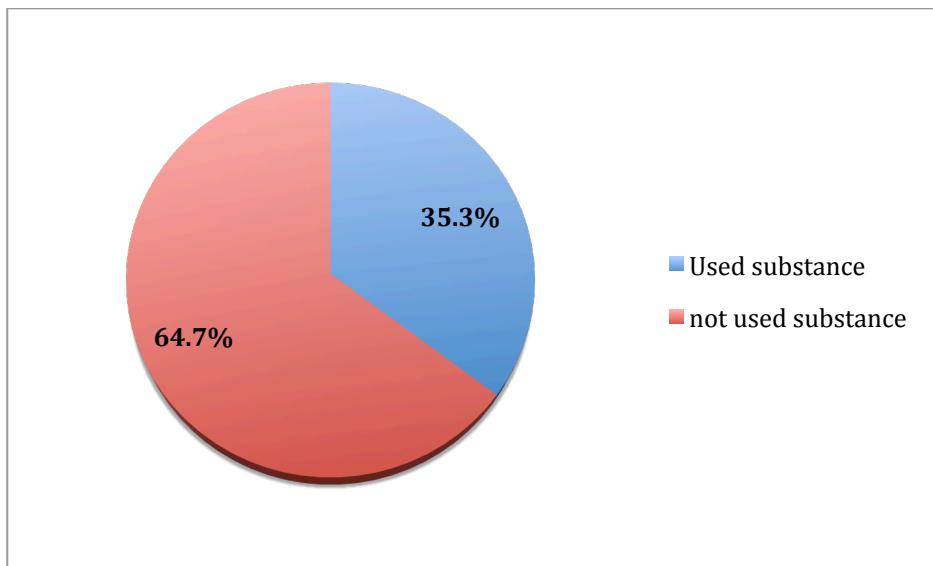
4.2.1.3. Substance use by relapsed participants

Among relapsed participants on substance abuse; half of them, 9/18 (50.0%) were on a combination of alcohol and Cannabis, whereas over a quarter of them, 5/18 (27.8%) on using alcohol alone (Table II-3)

Table IV-3: Common type of substances used by relapsed participants

SUBSTANCE	FREQUENCY	%
Alcohol	5	27.8
Alcohol+ Cannabis	9	50.0
Alcohol + Cannabis+ Nicotine	4	22.2

4.2.1.4. Reasons associated with having problems taking medications

Over a third (34.8%) of the participants mentioned a combination of reasons as reasons for not taking medications. The combinations included but not limited to forgetting/neglecting to take medications, side effects, thinking they recovered, medication unavailability and others. For participants who mentioned one reason; forgetting, medication side effects and assumed recovery accounted for 28.3%, 13.0% and 13.0% respectively. **(Figure II-7).**

FIGURE II- 7: Reasons associated with having problems with taking medications
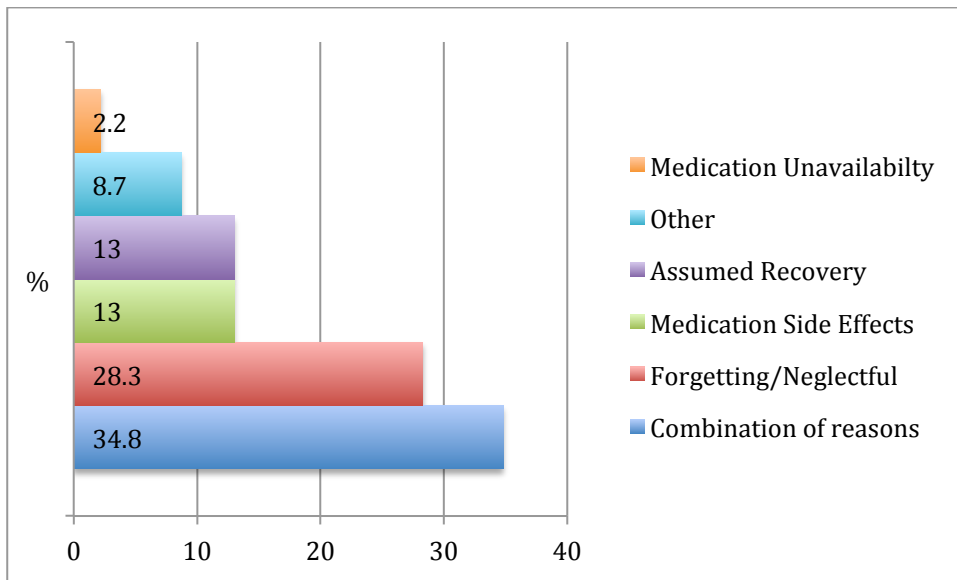
4.2.1.5. *Common Stressful Life events reported*

Among participants with stressful life events, 21/54 (38.9%) reported family conflicts as their source of stress. Combination of different stressors was reported in 10/54 (18.5%). Relationship stress and chronicity of the illness with relapses each accounted for 5 (9.3%) of cases **(Figure II-8).**

FIGURE II- 8: Common Stressful Life events
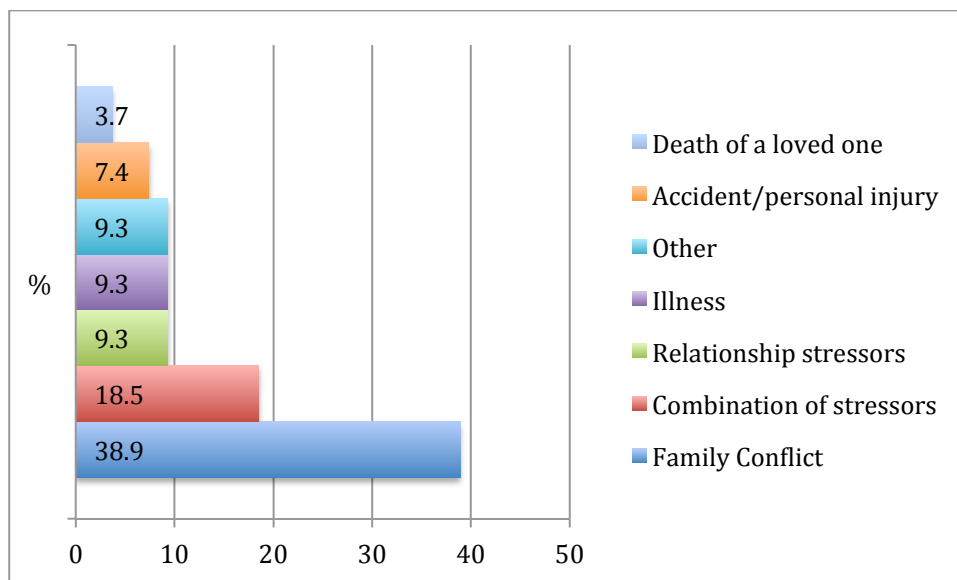
4.2.2. ASSOCIATION BETWEEN DEMOGRAPHIC FACTORS AND HISTORY OF RELAPSE

In bivariate analysis, male gender was significantly associated with relapse as compared to female gender (OR, 95% CI= 3.78, {1.20, 11.78}, p-value=0.02). Participants who were employed/self-employed were 76% less likely to have a mental illness relapse as compared to those unemployed/students (OR, 95% CI= 0.24, {0.73, 0.80}, p-value=0.02). Patients who relapse were significantly younger at initial diagnosis compared to those who did not have a relapse (p-value= 0.003). The rest of the socio-demographic characteristics including age, marital status, level of education, whether stayed with family or not and religion were not associated with relapse of mental illness **(Table IV-4)**

Table IV-4: Association between demographic factors and history of relapse

	History of relapse, n (%)		Crude OR (95%CI)	P-value
Variable	**Yes**	**No**		
Gender Male Female	37 (84.1%) 14 (58.3%)	7 (15.9%) 10 (41.7%)	3.78 (1.20,11.87) Reference	0.02
Age in years 18-44 ≥45	39 (73.6%) 12 (80.0%)	14 (26.4%) 3 (20.0%)	0.92 (0.17, 2.84) Reference	0.61
Age at initial diagnosis (Mean ±Standard deviation	26.22±7.71	35.24±10.32		0.003
Marital status Single Married and others	45 (76.3%) 6 (66.7%)	14 (23.7%) 3 (33.3%)	1.61 (0.71, 7.28) Reference	0.54
Education level Primary Secondary and Tertiary	8 (88.9%) 43 (72.9%)	1 (11.1%) 16 (27.1%)	2.98 (0.34, 25.73) Reference	0.30
Occupation status Employed and Self-employed Unemployed and student	9 (52.9%) 42 (82.4%)	8 (47.1%) 9 (17.6%)	0.24 (0.73, 0.80) Reference	0.02
Residence Within Francistown Outside Francistown	12 (66.7%) 39 (78.0%)	6 (33.3%) 11 (22.0%)	0.56 (0.17, 1.85) Reference	0.35
Cohabitation With family Without family	49 (76.6%) 2 (50.0%)	15 (23.4%) 2 (50.0%)	3.27 (0.42, 25.2) Reference	0.23
Religion Christianity Other	38 (73.1%) 13 (81.3%)	14 (26.9%) 4 (18.8%)	0.63 (0.16, 2.53)	0.51

4.2.3. ASSOCIATION BETWEEN CLINICAL/PSYCHOSOCIAL FACTORS OF STUDY PARTICIPANTS AND HISTORY OF RELAPSE

Bivariate analysis revealed that participants with previous 0-2 admissions were 96% less likely to develop relapse compared to those with ≥3 previous admissions (OR, 95% CI= 0.04, {0.05, 0.33}, p-value<0.01). Participants who experienced problems with medications were 9.48 times more likely to have a relapse as compared to those who had no problems with medications (89.1% versus 45.5%), (OR, 95% CI= 9.48, {2.82, 34.4}, p-value<0.01). Participants with the full insight of the mental illness were 77% less likely compared to those with partial or nil insight (OR, 95% CI= 0.23, {0.07, 0.75}, p-value=0.01). Participants who received family support were 72% less likely to develop relapse as compared to those were either dissatisfied or received no family support (OR, 95% CI= 0.28, {0.07, 0.80}, p-value=0.02). Participants who were adherent to mental illness medications were 75% less likely to have a relapse compared to those non-adherent (OR, 95% CI= 0.25, {0.08, 0.81}, p-value=0.02). On the other hand; type of diagnosis at admission, family history of mental illness, presence comorbidity conditions and stressful life events were not associated with relapse **(Table IV-5).**

Table IV-5: Association between clinical/psychosocial factors of relapse

	History of relapse, n (%)		Crude OR (95%CI)	p-value
Variable	**Yes**	**No**		
Diagnosis at admission				
Psychotic disorder	33 (78.6%)	9 (21.4%)	1.63 (0.54, 5.00)	0.39
Mood disorder + Others	18 (69.2%)	8 (30.8%)	Reference	
Number of previous admissions				
0-2	20 (55.6%)	16 (44.4%)	0.04 (0.05, 0.33)	<0.01
≥3	31 (96.9%)	1 (3.1%)	Reference	
Comorbidity				
None	15 (78.9%)	4 (21.1%)	1.35 (0.38, 4.83)	0.64
Psychiatric features, General medical condition and both	36 (76.3%)	13 (26.5%)	Reference	
Family history of mental illness				
Yes	14 (82.4%)	3 (17.6%)	1.77 (0.44, 7.10)	0.41
No	37 (72.5%)	14 (27.5%)	Reference	
Experiencing problems with medications				
Yes	41 (89.1%)	5 (10.9%)	9.48 (2.82, 34.4)	<0.01
No	10 (45.5%	12 (54.5%)	Reference	
Insight into the illness				
Full	18 (60.0%)	12 (40.0%)	0.23 (0.07, 0.75)	0.01
Partial and nil	33 (86.8%)	5 (13.2%)	Reference	
Stressful life events				
Present	38 (70.4%)	16 (29.6%)	0.18 (0.02, 1.52)	0.08
Absent	13 (92.9%)	1 (7.1%)	Reference	
Family Support				
Satisfied	7 (50.0%)	7 (50.0%)	0.28 (0.07, 0.80)	0.02
Dissatisfied	44 (84.5%)	10 (18.5%)	Reference	
Medication Adherence Rating Scale Results (MARS)				
Adherent	19 (61.3%)	12 (38.7%)	0.25 (0.08, 0.81)	0.02
Non-adherent	32 (86.5%)	5 (13.5%)	Reference	

4.3. MULTIVARIATE LOGISTIC REGRESSION OF FACTORS ASSOCIATED WITH RELAPSE

Multivariate logistic regression revealed the following factors to be independently associated with relapse: number of previous admission (OR, 95% CI= 16.87, {1.30, 219.7}, p-value=0.03); family support (OR, 95% CI= 8.55, {1.10, 67.1}, p-value=0.04) and experiencing problems with medications (OR, 95% CI= 9.42, {2.0, 28.6}, p-value=0.01). Gender, insight into illness and adherence were not associated with relapse **(Table IV-6)**

Table IV-6: **Multivariate logistic regression of factors associated with relapse**

Variable	Adjusted OR (95% CI)	P-value
Gender	0.76 (0.15, 4.00)	0.74
Occupational status	2.06 (0.41, 10.30)	0.38
Number of previous admissions	16.87 (1.30, 219.7)	0.03
Family support	8.55 (1.10, 67.1)	0.04
Experiencing problems with medications	9.42 (2.0, 28.6)	0.01
Insight into illness	0.17 (0.003, 8.53)	0.37
Medication Adherence Rating Scale Results (MARS)	0.27 (0.01. 6.27)	0.41

5. CHAPTER 5: Discussion

5.1. INTRODUCTION

A total of 68 participants were enrolled for this study. The age range for the participants was from 18-70 years with 77.9% of participants being between the age group of 18-44 years (mean age of 37.9 years, SD± 10.5). Our findings corroborate to several other studies which have indicated that majority of participants admitted with mental illness relapse fall below the age of 40 years (Wheeler, 2007; Ndetei et al, 2008; Ndukuba, 2011). This study revealed a male preponderance among the enrolled admitted participants, which consisted almost two-thirds (64.7%). This finding has also been observed in other studies (Mutlu & Yanglioglu, 2020; Gaithaya, 2018; Agenagnew & Kassaw, 2020).

5.2. DISCUSSION

5.2.1. Demographic factors of the study participants

Majority of participants in this study were single (82.3%). This is not surprising given the fact that majority of our participants belonged to the age group below 40 years; and with the number of relapses observed, most likely developed mental illness early in their lives. The findings of this study are similar to what was observed in previous several studies Scovia, 2017 in Uganda, Adebiyi et al, 2018 in Nigeria and Gathaiya, 2018 in Kenya. The current study observed a very high unemployment rate of 70.6%; whilst among the relapsed only it was found to be 80.4%, this was despite the fact that at least 60.3% of participants had attained secondary school education and may have been expected to have opportunities of finding employment. The cause of unemployment was not interrogated, it can be speculated that due to the chronicity of the illness, accompanied stigma of mental illness and poor socialization skills common in most mental illnesses. High unemployment rate among participants with mental illness has been well documented in the previous studies (Boardman, 2003 in United Kingdom; Oyekanmi et al, 2012 in Nigeria: Adebiyi et al, 2018 in Nigeria). Luciano and Meara (2014) stated that employments rates decrease with mental illness severity; in relapse there is a high likelihood of the illness to deteriorate with each episode of relapse.

5.2.2. Clinical factors of study Participants

Over half of the admitted participants (60.3%) in this study were documented to have psychotic disorders. This is similar to the profile of participants admitted in most of the previous studies (Kazadi et al, 2008 in South Africa; Ndukuba, 2011 in Nigeria). Participants with psychotic disorders tend to have more of chronic disease pattern, poor disease compliance due medication side effects and poor insight (Ndukuba, 2011). Partial or no insight was found among 57.4% of participants in this study which fairly corroborated Gaithaya et 2011 in Kenya who found out that 64.1% had poor insight and closely followed by Scovia, 2017 in Uganda who found 56.9% of participants lacked insight. The variations may be accounted to by differences in the research tools in which they had both stated studies also had developed a semi-structured questionnaires tailored to their studies, the differences in participant characteristics and background also can be taken into consideration as the studies were conducted in different African countries with varying cultures.

Poor drug compliance has been found to be one of the commonest reasons for relapses and readmissions in participants with mental illness (Kazadi et al, 2008 found 66.7%; Scovia, 2017 found 29.8% and Adebiyi et al, 2018 found 73.3%). Medication non-adherence was also a common finding in his study found in over half (55.9%) of the study participants with 62.7% non adherence rate among the relapsed participants. Most studies reported that non-adherence to treatment is the major cause of relapse. Reasons were noted as adverse effects, lacking insight and limited efficacy of the medications among other reasons. Non-adherence to treatment in this study was measured using Medications Adherence Rating Scale compared to the noted studies, study by Kazadi et al, 2008 and Adebiyi et al, 2018 were retrospective and depended only on documentation of whether there was failure to fill any prescription, refusal to take medications and prematurely stopping treatment while Scovia, 2017 used a semi-structured questionnaire in which he asked about compliance to medications on previous hospital discharge.

In this study, participants were questioned if they experienced any problems with taking medications; forgetfulness and adverse effects were among the most common problems this correlated with Kazadi et al, 2008 findings and in contrary to Scovia 2017, who had

found out that the commonest associated reason as presumed recovery by patients. Overall two thirds (67.6%) of participants experienced problems with taking medications and this % increased to 80.4% among the relapsed only.

While it is well documented that mental illness run in families; majority of participants in this study (70.6%) denied family history of mental illness. The explanation for this is possibly due to other reasons in physiological factors, psychological and social factors as reiterated by the Biopsychosocial Model. Substance abuse is well documented as a cause of relapse and readmissions (Kazadi et al, 2008; Adebiyi et al, 2018). In this study, substance abuse was a predominant feature among participants with relapse, it was found in over a third, 18/57 (35.2%) of relapsed participants as compared to 3/17 (17.6%) of non-relapsed participants.

5.2.3. Prevalence of relapse

This study found a prevalence of relapse of 75.0% (n=51). This is almost similar to findings of the studies in India and Ethiopia, which found a prevalence of relapse of 70.0% and 70.2% respectively (Olfson, 1995; Agenagnew & Kassaw, 2020). The prevalence of relapse in this study was however lower than reported in the study by Ayano & Duko (2017) in Addis Ababa, Ethiopia who found a prevalence of 87.9% among participants with schizophrenia. On the other hand, lower prevalence of relapse was found in multiple other studies including; - study done in Johannesburg (61.8%) (Kazadi et al, 2008), London (53%) (Lam et al, 2003), Jimma, Ethiopia (24.6%) (Fikreyesus et al, 2016), Addis Ababa (43%) (Weret & Mukherjee, 2014) and Butajira, Ethiopia (65.9%) (Fekadu et al, 2006). The possible reasons for differences in prevalence of relapse across different settings include differences in study settings like outpatient vs inpatient, study designs like crossectional vs retrospective, sample sizes which were larger in other studies and eligibility criteria.

5.2.4. Psychosocial factors of Participants

Stressful life events and lack of family support were highly common in our study regardless of presence or absence of relapse each accounting for 79.4% of participants. Stress vulnerability model highlights that if an individual is unable to adapt to stress,

psychiatric symptoms may develop or even worsen. The commonest stressor identified in this study was family conflict, (Iseselo et al, 2016) documented that mental illness can cause disruption of routine family functioning and this may in turn be distressing to the family, the overburdened caregivers employ less effective coping strategies which results in further misunderstandings (Mueser et al, 2009). Psychosocial challenges are usually made worse by stigma therefore needs holistic approach involving the patient, family and the community. Psychosocial approaches that compliment use of medications in mental health have been shown to reduce relapses significantly compared to when medications are used alone (Hogarty &Ulrich, 1998). The common psychosocial approaches include community programmes such as foster home care and psychosocial rehabilitation centres; social skills training, personal therapy and psychoeducation (Joubert, 2002). There has been a concern of increasing number of relapses cases at JPU prior to this research, and several psychosocial intervention have been recently introduced to curb the situation. The interventions introduced include; - psychoeducation of patients and their caregivers, conducting outreaches to peripheral clinics and hospitals, telephonic follow up of defaulters and conducting community sensitization on mental health awareness. The findings of this study will act as evidence to help in conducting intervention studies as well as focusing on effective strategies to reduce rate of relapses.

5.2.5. Association between demographic factors and history of relapse

Male gender was 3.78 times more likely to develop relapse than female gender in bivariate analysis. This finding is similar to previous studies by (Agenagnew & Kassaw, 2020: Gathaiya et al, 2011: Mutlu and Elif, 2020: Haro et al, 2008) from Ethiopia, Kenya, Germany and Spain respectively. However on multivariate logistic regression analysis, there was no statistical significant association in gender. The relatively smaller sample size in this study might have contributed; however it should be born in mind that another study also showed similarity in relapse rate by gender (Schimmele et al, 2009) in Canada. Males and Females are subject to different societal perspectives on seeking help (Grella et al, 2008) they tend to have a delayed help seeking behavior therefore many present in relapsed stages. Men are most likely to be labeled weak in different cultural backgrounds if they suffer from mental illness or related symptoms, this adding to the discomfort in

seeking medical interventions on time before relapses or mental illness occurred. Most men have a diagnosis of psychotic illnesses, which are reported to be highly prone to relapse, 50%-92% as stated by Kazadi et al (2008).

Previous studies have revealed that age is associated with relapse; with young people more likely to have a relapse (Robinson, 1999; Dolder et al, 2003; Adebiyi et al, 2018). A study by Kazadi et al (2008) revealed no age difference in terms to relapse rate similar to this study however participants who had relapses were significantly younger at initial diagnosis of their mental illness compared to those with no relapses (mean age of 26.22 versus 35.24 years). This finding was similar to what was found in previous studies whereby a chronic course of illness due to underlying psychotic disorder like schizophrenia was associated with relapses (Kazadi et al, 2008; Moges et al, 2021). Christiana et al (2000) reported that usually people seek treatment for a mental disorder after a long time of developing symptoms, even up to 10 years, this meaning that it is possible that the true mean age of illness onset found in this study might be lower therefore implying patients may have initially presented with advanced stages of disease already prone to frequent relapses.

On the other hand, participants who were employed/self-employed were 76% less likely to have a mental illness relapse as compared to those unemployed/students in bivariate analysis. Psychiatric illness has the ability to reduce chances of employability because of cognitive decline, poor socialization skills and debilitation by the nature of the illness itself (Nirmala et al, 2020). Luciano & Meara, 2014 highlighted that employment rates decrease with severity of mental illness, in view of this in terms of relapse, it is a common understanding that each relapse episode may contribute to the deterioration of mental illness therefore further decreasing chances of employability.

There was no association between occupation status and relapse in multivariate analysis. This is in contrast to a previous study that showed unemployment to be significantly associated with relapse (Adebiyi et al, 2008). There is a need to conduct further studies in our settings to verify this association.

Marital status was not associated with relapse, similar to a previous study (Kazadi et al, 2008). This is most likely explained by small sample size, as well participants in this study being predominantly single. Being single was a significant factor for relapse in a

study done in Nigeria (Adebiyi et al, 2018). Future studies in this setting with large sample size and different study design such as prospective or case control may provide a better picture. Higher level of education has been previously found to be a protective factor for relapse (Suzuki et al, 2003; Kazadi et al, 2008); however, this study revealed no association between level of education and relapse similar to a previous study (Almond et al, 2004).

5.2.6. Association between clinical factors with history of relapse

Bivariate analysis revealed that participants who adhered to their medications were 75% less likely to have a relapse compared to that non-adherent. This finding was similar to findings of previous studies (Fikreyesus et al, 2016; Gopinath et al, 2007; Schoeler et al, 2017; Chaurotia et al, 2016; Yassin & Alli, 2019;) from Ethiopia, United States of America, United Kingdom, India and Jordan. Non-adherence to medications remains a challenge as shown by most studies and patient related factors, health care related factors treatment related factors or socioeconomically related factors singularly or in combination contribute to this ongoing problem (Kazadi et al, 2008). Adherence to medications is a cornerstone of preventing relapse in mental illness, hence a need to devise strategies that improve adherence of medications among participants with mental illness. In this study, there was no statistical significant association between adherence and relapse in multivariate analysis, probably because of a sample size effect. However there was a significant finding that participants who experienced problems with medications were 9.42 times more likely to have a relapse as compared to those who had no problems with medications in multivariate analysis. Reasons associated with this problem ranged from but not limited to medication unavailability, forgetting to take medications, side effects, getting worse of treatment and assumed recovery. Having problems with medications is a leverage that may incline patients towards relapse regardless of whether they are adherent to medications or not. This emphasizes the importance of follow up at individual level to address these issues and a need for cost-effective studies to assess possibly of transitioning to more tolerable medications.

In this study, multivariate regression analysis revealed that, participants with three or more previous admissions were 16.87 times more likely to have a relapse compared to

those previous 0-2 admissions. This finding is similar to previous studies (Agenagnew & Kassaw, 2020; Alphs et al, 2016; Jørgensen et al, 2021) from Ethiopia, USA and Sweden. Moges et al (2021) in Ethiopia reported that frequent admissions are associated with progressive functional deterioration in patients, cognitive impairment and poor clinical prognosis, which increases the burden of care on both the caregiver and the healthcare institutions and mainly impact on the quality of life. It is also stated in literature that readmission rate at times is considered an indicator of the quality of healthcare services therefore also shifts attention towards having to review and reevaluate the services offered to patients in the facility.

5.2.7. Association between psychosocial factors with a history of relapse

Previous studies have emphasized the importance of family support; family support has resulted into less relapses; family members help in encouraging medication adherence, regular follow-up and also encouraging religious support seeking behavior (Kazadi et al, 2008; Fikreyesus et al, 2016; Hui et al, 2013; de la Vega et al, 2011;). This study also observed that participants who received family support were 8.55 times less likely to have a relapse. Agenagnew & Kassaw, 2020 in Ethiopia had found a much lesser percentage of poor family support 65.2%, the discrepancy probably due to the different data collection tools for they used the Oslo Social Support Scale, the participants background and culture as well could contribute to the difference seen. Muesler et al (2009) stated that high family conflicts increases chances of relapse. Iseselo et al (2016) stated that some family members do not view mental illness as a disease but a curse or product of witchcraft therefore are more likely to hold the patient responsible for his or her symptoms than supporting him/her get mental health care therefore this stigmatizing attitude is highly likely to push a patient towards relapsing. Adebiyi et al, 2018 highlighted that an individual with poor family support has higher chances of defaulting treatment and experiencing difficulties in taking care of self. In addition early signs of relapse maybe missed in those people with poor family support thus result in a more complex presentation of relapse.

Stressful life events were not associated with relapse in this study. Similar to Kazadi et al (2008) this study did not find significant association between relapse and stressful life

events however in contrast to findings of other studies (Adebiyi et al, 2008; Sariah et al, 2014) that found a significant association.

5.3. CONCLUSION

The prevalence of relapse in this study was very high at 75.0%; this is despite efforts made locally to curb the situation. Males constituted a higher percentage. Psychotic disorders were the more prevalent diagnosis then mood disorders in these relapses.

In bivariate analysis, Demographic factors associated with relapse were age at initial diagnosis, being male gender and unemployed whereas clinical factors were 3 or more previous admissions, lack of/partial insight, experiencing problems with medications and non-adherence to medications. The psychosocial factor found to be associated with relapse was poor family support.

Marital status, comorbidity and stressful life events were not found significantly associated with relapse.

In Multivariate analysis, independent factors associated with relapse were found to be several number of previous admissions which made one 16.9 times likely to relapse, experiencing problems with medications which increased chances of relapse by 9.42 times and poor family support which made one 8.6 times likely to relapse.

It is therefore important to pay particular attention to these noted factors in order to help curb the high rate of relapse in the facility, this emphasizing a holistic approach to individual patient's assessment including full history taking also taking into account collaborative history. This approach will be effective in identifying associated factors in relapses. This will in the long term improve the quality of life for those relapsed patients and their caregivers, the quality of care in mental health services including reducing the cost of care.

5.4. RECOMMENDATIONS

5.4.1.   As the study findings revealed a very high prevalence of relapse in the admitted patients, developing an inpatient program aimed at curbing future relapses and readmissions as the hospital setting provide easier access to specialized personnel

that is; Psychiatrist/Psychiatric Nurse, Psychologist, Social Worker, Occupational Therapist and others. This program should help reinforce treatment adherence, build insight, develop communication skills, coping skills and problem solving skills for patients so that they may have smooth reintegration into their families and communities after discharge and likely avoid multiple relapses/readmissions.

5.4.2. As found that poor family support is contributory towards relapses, reviving the dormant caregiver workshops and facilitating family support groups in the local areas to assist in equipping caregivers with knowledge and skill on how to handle the mentally ill, to understand mental illness, its course and interventions, at the same time ensure their social and psychological states are optimal. It is important to reinforce family support as it has been found to be a protective factor against relapse in this study.

5.4.3. In addition to the above factor, provision psychosocial interventions locally instead of referral to the main psychiatric unit may ease the access to care and ensure effective interventions.

5.4.4. In view that most of the admitted patients were from the peripheral areas and that non-adherence to treatment, having problems with taking medications increased chances of relapse, reinforcing Community Psychiatry Services in the peripheral facilities in terms of holistic assessments of patients, follow up of treatment defaulters with emphasises on patients with a history of several previous admissions will help in curbing rate of relapses.

5.4.5. Encouraging Prescribers in mental health field to always explore tolerance of the medications by patients, its availability and affordability thereof and be ready to adjust available alternatives in possible situations will help to reduce chances of not adhering to medications. Therapeutic alliance with the patients should be ensured to open channels of communicating discomforts regarding medications.

5.4.6. Lastly, as this study involved a small sample size and non-interventional, there is a need to conduct future interventional studies involving large sample size to determine factors at family, patient levels that contribute to relapse.

5.5. STUDY LIMITATIONS

This is the first documented study in Botswana to provide information on relapse among participants with mental illness. It provides information to guide good practices in mental care as well as provide literature to the field with scarcity of publications in Botswana. The findings of the study should however be interpreted with some cautions. The study was a based on a single center, hence may not be generalizable to the whole of Botswana. Secondly, with a questionnaire being administered by the Principal Investigator, there is a possibility of interviewer bias. Moreover interviews that are based on assessing behavior and attitude are bound to have social desirability bias. Lastly, inherently of the cross-sectional study design, the current study findings only provide associations; it is not possible to determine a causal-relationship.

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APPENDICES

APPENDIX I: CONSENT TO BE A PARTICIPANT IN THE STUDY

PARTICIPANT INFORMATION AND CONSENT FORM FOR ENROLLMENT IN THE STUDY

Title of Study:
PREVALENCE OF AND FACTORS ASSOCIATED WITH RELAPSE IN ADMITTED PATIENTS AT JUBILEE PSYCHIATRIC UNIT, NYANGABGWE REFERRAL HOSPITAL, BOTSWANA.

Principal Investigator\and institutional affiliation:
DR KELEBOGILE KELAPILE, Mmed Psychiatry student at the University of Nairobi, College of Health Sciences.

Introduction:
The purpose of this consent form is to give you the information you will need to help you decide whether or not to be a participant in this study. Please be free to ask any questions about the purpose of the research, what happens **if** you participate in the study, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When your questions have been fully answered, you may make a decision whether to participate in the study.

This process is called 'informed consent'. Once you understand and agree to be in the study, your signature will be requested on this form. The following are the general principles that apply to all participants in a medical research:

1. Your decision to participate is entirely voluntary
2. You may withdraw from the study at any time without necessarily giving a reason for your withdrawal
3. Refusal to participate in the research will not affect the services you are entitled to in this health facility or other facilities. We will give you a copy of this form for your records.

May I continue? YES / NO

This study has approval by The Kenyatta National Hospital-University of Nairobi Ethics and Research Committee Protocol No. _____

WHAT IS THIS STUDY ABOUT?

The researcher named above is interviewing male and female patients aged 18 years and above admitted in Jubilee Psychiatric Unit. The purpose of the interview is to find out

risk factors contributing to mental illness relapse and the magnitude of mental illness relapses in this facility. These factors are divided into demographic factors, clinical factors and psychosocial factors. Participants in this research study will be asked questions about their personal details, details about their condition, whether they have any stressful events in their lives and how they perceive the family support they receive. Three questionnaires will be used to help get the needed information.

There will be 68 participants in total accompanied by their caregivers selected according to the exclusion/inclusion criteria developed by the researcher. I am kindly asking for your consent to consider participating in this study.

WHAT WILL HAPPEN IF YOU DECIDE TO BE IN THIS RESEARCH STUDY?

If you agree to participate in this study, the following things will happen:
The researcher will interview you and your caregiver in a private area where you feel comfortable answering questions. The interview will last approximately 30-45 minutes and done in your language of preference whether Setswana or English. The interview will cover topics in a researcher structured questionnaire where by demographic details, details of the mental illness, whether there are other medical conditions present and a family history of mental illness, challenges that may be contributing to medications not being adhered to or missing the clinic reviews, any stressful life events and the level of satisfaction in the support gotten from the family. A relapse evaluation tool will then be used to help determine whether there are symptoms indicating that the mental illness has relapsed or not and lastly the Medication Adherence Rating Scale will be used to rate adherence to medications.

 After the interview, you are allowed to ask any further questions and if there is a distressing matter that arose during interview you will be counseled and then referred to the appropriate professionals for further continued help.

The researcher will ask for a telephone number where she can contact you if necessary. If you agree to provide your contact information, it will be used only by the researcher in this study and will never be shared with others. The reasons why we may need to contact you include getting clarities on some information that may be found missing or checking on how you are coping after a stressful state during interview.

ARE THERE ANY RISKS, HARMS DISCOMFORTS ASSOCIATED WITH THIS STUDY?

This study has the potential to introduce psychological, social and emotional risks. Effort will be put in place to minimize these risks. One potential risk of being in the study is loss of privacy, as you will be sharing your personal details and family history. The researcher will employ all means at hand to preserve confidentially of the information given. The questionnaires will be stored in a locked cabinet; the electronic information will be stored in a password-protected computer and file. Only your initials will be used to identify you. However, no system of protecting your confidentiality can be absolutely secure, so it is still possible that someone could find out you were in this study and could find out information about you.

It is possible that answering some questions in the interview may be uncomfortable for you. If there are any questions you do not want to answer, you are at liberty to skip them.

You have the right to refuse the interview or any questions asked during the interview at any point in time.

It may be embarrassing for you to have to talk about your illness and associated stressors in your life. The researcher will do everything she can to ensure that this is done in private. Furthermore, the interviewer is professional trained to conduct interviews in a dignifying way

ARE THEIR ANY BENEFITS BEING IN THIS STUDY?

You may benefit by receiving free counselling and health advice regarding the illness and any problems identified that may be affecting you in a negative way. There is an opportunity to explore and remedy medical problems before they escalate. In a hospital setting there is a team of professionals accessible through the researcher's referral.

Also, the information you provide will help us better understand the circumstances influencing relapse in mental illness and how possibly they can be handled and relapse prevented. This information is a contribution to science and mental health interventions and will provide a platform to improve the quality of mental health services as well as the quality of patients' life by formulating effective policies in the mental health field.

WILL BEING IN THIS STUDY COST YOU ANYTHING?
There will be no cost incurred in this study; it is free and done out of your willingness to participate.

WHAT IF YOU HAVE QUESTIONS IN FUTURE?
If you have further questions or concerns about participating in this study, please call, send a text message or email the researcher. My contacts are as follows:
1. +267 72616641 (Botswana) / +254 799954848 (Kenya)
2. ktaboka@gmail.com / kellykelapile@students.uonbi.ac.ke

For more information about your rights as a research participant you may contact the Secretary/Chairperson, Kenyatta National Hospital-University of Nairobi Ethics and Research Committee Telephone No. +254 2726300 Ext. 44102 email uonknh_erc@uonbi.ac.ke.

The study staff will pay you back for your charges to these numbers if the call is for study-related communication.

WHAT ARE YOUR OTHER CHOICES?
Your decision to participate in research is voluntary. You are free to decline participation in the study and you can withdraw from the study at any time without injustice or loss of any benefit.

CONSENT FORM (STATEMENT OF CONSENT)
Participant's statement

I have read this consent form or had the information read to me. I have had the chance to discuss this research study with the researcher. I have had my questions answered in a language that I understand. The risks and benefits have been explained to me. I understand that my participation in this study is voluntary and that I may choose to withdraw any time. I freely agree to participate in this research study. I understand that all efforts will be made to keep information regarding my personal identity confidential. By signing this consent form, I have not given up any of the legal rights that I have as a participant in a research study.
I agree to participate in this research study: Yes/ No
I agree to provide contact information for follow-up: Yes/ No

Participant printed name: _____
Participant signature / Thumb stamp _____ Date _____

Researcher's statement
I, the undersigned, have fully explained the relevant details of this research study to the participant named above and believe that the participant has understood and has willingly and freely given his/her consent.
Researcher's Name: _____ **Date**: _____
Signature _____
Role in the study: Principal Researcher

For more information contact me, Dr Kelebogile Kelapile at +267 72616641/+254 79995 4848 or email
ktaboka@gmail.com/kellykelapile@students.uonbi.ac.ke from
0800hrs to 1700hrs
Witness Printed Name (*If witness is necessary, A witness is a person mutually acceptable to both the researcher and participant*)
Name _____ Contact information _____
Signature /Thumb stamp: _____ Date; _____

APPENDIX II: SETSWANA TRANSLATION OF CONSENT TO PARTICIPATE IN THE STUDY
TUMALANO YA GO NNA KAROLO YA PATLISISO

Setlhogo sa Patlisiso:
SEEMO SA GO TSOGA GA BOLWETSE JWA TLHALOGANO LE MABAKA A A NANG LE SEABE MO GO TSOGENG GA BOLWETSE MO BALWETSENG BA BA ROBADITSWENG MO JUBILEE, LEPHATA LA BOTSOGO JWA TLHALOGANYO, SEPATELA SA NYANGABWE, BOTSWANA.

Mosekaseki/ Sekolo:
DR KELEBOGILE KELAPILE/ UNIBESITHI YA NAIROBI, KENYA.

Matseno:
Ke na le kgatlhego ya go go itsise ka patlisiso e. Lebaka la kopo tletla e ke go go neela tshedimosetso e e tlhokegang gore o kgone go dira tshwetso ya go nna karolo ya patlisiso e, kgotsa nnyaya. O gololesegile go botsa dipotso ka mosola wa patlisiso e; gore go diragalang fa o nna motsaya karolo, bodiphatsa le bomolemo jwa patlisiso e, ditshwanelo tsa gago jaaka moitlhaopi le sepe fela ka ga patlisiso le foromo ena.

Fa ke sena go araba dipotso tsotlhe mo go kgotsofatsang, o ka dira tshwetso ya go nna karolo mo patlisisong e, kgotsa nnyaya. Fa o tlhalogantse gape o dumetse go nna karolo ya patlisiso e ke tla kopa gore o kwale leina la gago o bo o rurifatsa mo foromong e. O tla fiwa moriti wa foromo e go ipeela.

Melawana ya tsamaiso ya dipatlisiso mo botsogong e nankotswe fa tlase, go botlhokwa go tlhaloganyo gore:

1. Tshwetso ya gago go nna karolo ga e patelediwe ka tsela epe.
2. O ka emisa go nna karolo nako nngwe le nngwe o sa fe lebaka.
3. Go gana go nna karolo ya patlisiso e ga go thibele ditirelo kgotsa dithuso tse di go lebaganeng mo kokelong kgotsa dipatela.

A ke tswelele? EE/NNYAYA

Patlisiso e ne leteletswe ke Kenyatta National Hospital-University of Nairobi Ethics and Research Committee protocol No_____

PATLISISO E KE KA GA ENG?
Mosekaseki o tla bo a botsa balwetse ba dingwaga tse lesome le boferabobedi le go feta, ba e leng gore ba robaditswe mo Jubilee, lephata la tlhaloganyo. Dipotso tse di thusa go batlisisa mabaka a a rotloetsang go tsoga ga bolwetse jwa tlhaloganyo. Di kgaogantswe ka dikarolo tse: dintlha ka molwetse, dintlha ka bolwetse le dintlha ka seemo sepe se se

ka amang maikutlo le tirisano mmogo mo lwapeng. Go tla bo go dirisiwa diforomo di le tlharo tsa dipotso mo patlisisong e..

Go tla bo go na le batsaya karolo ba le masome a marataro le boferabobedi ba patilwe ke batlhokomedi ba bone, ba tlhophilwe ke mosekaseki a lebile se se tlhokegang mo patlisisong. Ke kopa ka boikokobetso gore o sekegele go nna karolo mo patlisisong e.

GO TLA DIRAGALA ENG FA O NNA KAROLO YA PATLISISO E?
Fa o dumela go nna karolo ya patlisiso e, mosekaseki o tla go botsa dipotso wena le motlhokomedi wa gago mo lefelong le le kgethegileng ko le tla kgonang go araba dipotso ka tshosologo. Dipotso di tla tsaya lebaka la metsotso e masome a mararo go ya ko go masome a mane le botlhano. O na le tletla ya go tlhopha teme e o e batlang e leng Setswana kgotsa Sekgoa. Dipotso go tswa mo di foromong tse tlharo di ama dintlha ka molwetse, dintlha ka bolwetse jwa tlhaloganyo go akaretsa le ba losika, malwetse a mangwe a sele, dikgwetlho tse di bakang gore melemo e seka ya tsewa sentle kgotsa tse di kgoreletsang go tla bongakeng le dipe tse di amang maikutlo le tirisano mo lwapeng.
Go tsweng foo go tla sekasekwa gore a ne dikai tse di supang gore bolwetse jwa tlhaloganyo bo tsogile di teng, ko phelelong go tla sekasekwa seemo sa go obamela ditaelo tsa go tsaya kgotsa go nwa melemo.
Morago ga dipotso ka mosekaseki le letlelelwa go botsa dipotso. Tshidilo maikutlo e tla dirwa fa dipotso dipe di bakile kgoberego ya maikutlo.

Mosekaseki o tla kopa mogala go itshwaraganya le lona fa go tlhokega. Mogala o tla a bo o dirisiwa fela ke mosekaseki go batla tlhaloso mo dikarabong tse di ka tswang di sa felela kgotsa go le tlhola fa go nnile le bothata nako ya therisanyo.

A GO NA LE BODIPHATSA JO BO AMANNGWANG LE PATLISISO E?
Patlisiso e e na le kgonagalo ya go baka kgoberego ya maikutlo, jaanong gotlhe go tla dirwa go thibela kgotsa go fokotsa tiragalo e. Se sengwe ke kgonagalo ya gore o ntshe diphiri tsa gago ka o tla bo o bua ka dintlha ka ga gago le bolwetse jwa gago. Mosekaseki o tla tlhomamisa go sireletsa dintlha tsotlhe tse o di mmolelelang. Diforomo tsa dipotso di tla bewa fa go lotlelwang. Tshedimosetso yotlhe e e tsenngwang mo sebala-makgolo e tla bo e sireletswa ka password. Maina a gago a a tletseng ga a na go dirisiwa gope mo patlisisong e. Nna podi matseba gore ko ntleng ga maiteko ana, go kgona go diragala gore tshedimosetso e wele mo diatleng di sele.

Dipotso dingwe di kgona go dira gore o se tseege sentle, itse fa o letlelelwa go sa araba dipotso tseo fa o sa batle. O na le tletla ya go emisa puisanyo e nako nngwe le nngwe. Therisanyo yotlhe e tla a bo e direlwa fa go kgethegileng. Mosekaseki jaaka mmereki wa botsogo o na le boitsaanape jwa go tsamaisa therisano sentle mo go tla sireletsang seriti sa gago.

A GO NA MOSOLA GO NNA KAROLO MO PATLISISONG E?
O ka thusega ka go neelwa tshidilo maikutlo le dithuto ka bolwetse jwa gago le bothata bope fela jo bo lemogilweng nako ya therisanyo. Mo sepatela, dithuso tsa boitsaanape di tla nna gaufi ka mosekaseki a ka go tshwaraganya le bone.

Tshedimosetso go tswa mo patlisisong e e tla thusa go oketsa kitso mo go tsa botsogo jwa tlhaloganyo le go thusa ka togamaano e e tlhomameng go tlhabolola dithuso tsa botsogo jwa tlhaloganyo, matshelo a balwetse ga mmogo le batlhokomedi.

A GO NNA MO PATLISISONG E GO KA TLHOKA DITUELO?
Ga gona tuelo epe e e tla tlhokegang mo go wena, therisanyo yotlhe le dithuso di mahala ebile di dirwa ka tumalano ya gago.

Fa go na le dipotso mo malatsing a a latelang ka go tsaya karolo mo patlisisong e, nteletsa mo megaleng e latelang:
1. +267 72616641 (Botswana) / +254 799954848 (Kenya) kgotsa kwalela ktaboka@gmail.com / kellykelapile@students.uonbi.ac.ke

Fa o batla go itse go feta fa ka ditshwanelo tsa gago o le motsaya karolo mo patlisisong, itshwaraganya le:
The Secretary/Chairperson, Kenyatta National Hospital-University of Nairobi Ethics and Research Committee Telephone No. +254 2726300 Ext. 44102 email uonknh_erc@uonbi.ac.ke.

FOROMO YA TUMALANO GO TSAYA KAROLO

Ke badile kgotsa ke baletswe foromo e. ke nnile le tshono ya go botsa dipotso mo mosekaseking, ke arabilwe ka teme e ke e tlhaloganyang. Bodiphatsa le mosola wa patlisiso e di tlhalositswe. Ke tlhaloganya gore go tsaya karolo ke tshwetso yame gape nka emisa therisanyo nako nngwe le nngwe. Ke tlhaloganyo gore maiteko otlhe a tla dirwa go sireletsa dintlha tse ke tla di buang ka game. Go baya Monwana mo foromong ena ga go reye gore ke aba ditshwanelo tsame jaaka motsaya karolo mo patlisisong e.
Ke dumalana go tsaya karolo: Ee/Nnyaya
Ke dumalana go neela mogala: Ee/Nnyaya

Leina   la   motsaya   karolo:
_____
Baya
Monwana_____letsatsi:_____
___

Ke le mosekaseki, ke tlhaloseditse motsaya karolo wa leina le le fa godimo ka patlisiso e, le ditshwanelo tsa gagwe, ke dumela fa a tlhalogantse ka botlalo le gore o tsere tshwetso e ka kgololesego.

Mosekaseki……………………………………………
Letsatsi……………………………………………

Fa o tlhoka tshedimosetso go feta fa, itshwaraganya le nna, Dr Kelebogile Kelapile mo +267 72616641 (Botswana) / +254 799954848 (Kenya) kgotsa kwalela ktaboka@gmail.com / kellykelapile@students.uonbi.ac.ke

Leina la Mosupi (*fa go tlhokega*)

_____ **Mogala** _____

Baya Monwana: _____ **letsatsi**; _____

Date: _____ Serial number: _____

Initials_____

Participant:
The following questions will be asked and responses documented on this form by the researcher. The questions will cover 3 sections, which are: the demographic factors, clinical factors and psychosocial factors.

Instructions
Y= Yes, N=No.
Tick, circle and write the appropriate response as narrated by the participant.

1. DEMOGRAPHIC FACTORS

1.1. Initials

1.2. Age

1.3. Gender

F	M

1.4. Relationship status

Single	Married	Divorced	Widowed	In a relationship

1.5. Occupation

Employed	Unemployed	Self-employed

1.6. Religion

Christianity	Islam	Traditional	Other

1.7. Educational level

None	Primary	Secondary (junior/ senior)	Tertiary

1.8. Residence

Francistown	Outside Francistown

1.9. Cohabitation

Staying alone	With family	Other

2. CLINICAL FACTORS

2.1. Diagnosis

2.2. Age at diagnosis_____

2.3. Number of previous admissions

1	2	>3

2.4. Insight:

Does the patient admit to having mental illness?	Y/N
Does she/he acknowledge the need for treatment?	Y/N

2.5. **Comorbidity**:
   2.5.1. Is there another Psychiatric condition (Y/N)

   2.5.2. If yes, please indicate which one

CONDITION	ANSWER
A. Substance Use	Y/N
B. Depressed Mood	Y/N
C. Anxiety	Y/N
D. Suicide (ideation/attempt)	Y/N
E. Other	Y/N

If the answer is other, please specify_____

   2.5.3. If there is substance use, please indicate which one:

SUBSTANCE	ANSWER

A. Alcohol	Y/N
B. Cannabis	Y/N
C. Nicotine (cigarettes, tobacco)	Y/N
D. Others	Y/N

2.5.4. General Medical Condition (Y/N)
2.5.5. Physical disability (Y/N), please specify_____
2.6. Is there a Family history of mental illness: (Y/N)

2.7. **In regard to Treatment**:
  2.7.1. Are there any problems with taking medications? Y/N
  2.7.2. If yes, what is/are the issue(s) related?

REASON	ANSWER
A. Medication unavailability	Y/N
B. Forgetting to take	Y/N
C. Medication side effects	Y/N
D. Assumed recovery	Y/N
E. Lack of food	Y/N
F. Lack of help	Y/N
G. Administering instructions unclear	Y/N
H. Other	Y/N

If the reason is other, please specify……………………………………………………

3. PSYCHOSOCIAL FACTORS
3.1. Any stressful life events at the moment?

STRESSOR	ANSWER
A. Death of a loved one	Y/N
B. Family conflict	Y/N
C. Loss of a job	Y/N
D. Financial problem	Y/N
E. No place to live	Y/N
F. End of a relationship	Y/N
G. Academic failure	Y/N
H. Accidents or personal injury	Y/N
I. Illness	Y/N
J. Legal problems	Y/N
K. Others	Y/N

3.2. How satisfied are you with the support you get from your family?

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied

FOROMO YA DIPOTSO GO TSWA MO MOSEKASEKING

Letsatsi_____ Nomoro ya serial/foromo_____
Khutshwafatsa Maina_____

Go Motsaya Karolo:
Dipotso tse di latelang di tla botswa ke mosekaseki a bo a kwala dikarabo mo foromong e. Dipotso tse di tla nna ka ga dintlha tse tlharo e bong: dintlha ka molwetse, dintlha ka bolwetse le dintlha tse di amang maikutlo le tshedisanyo mo lwapeng.
Ditaelo:
Tshwaya, agelela kgotsa kwala dikarabo tse di tshwanetseng jaaka di arabiwa ke motsaya karolo.

1. DINTLHA KA MOLWETSE
2.
1.1. Maina ka bokhutshwane

1.2. Dingwaga

1.3. Bong

Monna	Mosadi

1.4. Botsalano

Ga ke mo lenyalong	Ke mo lenyalong	Lenyalo le fedile	Ke Motlholagadi	Ke na le mokapelo

1.5. Tiro

Ke a bereka	Ga ke bereke	Ke a ipereka

1.6. Bodumedi

Mokeresete	Mo-Islam	Setso	Tse dingwe

1.7. Thuto

Ga ke a tsena sekolo	Sekolo se se potlana	Sekolo se se golwane	Mmadikolo

		(secondary junior/ senior)	

1.8. Bonno

Francistown	Ko ntle ga Francistown

1.9. O nna le mang?

Nosi	Le ba lelwapa	Bangwe ba sele

2. DINTLHA KA BOLWETSE

2.1. Leina la Bolwetse

2.2. Bolwetse bo tshwerwe o le dingwaga tse kafe?_____

2.3. O robaditswe ga kafe?

Gangwe fela	Gabedi	Go feta boraro

2.4. Ponatshegelo ya bolwetse:

A molwetse o dumela a lwala?	Ee /Nnyaya
A o lemoga botlhokwa jwa kalafi?	Ee /Nnyaya

2.5. Ka Malwetse a mangwe:

2.5.1. Bolwetse jo bongwe jwa tlhaloganyo (Ee /Nnyaya)
    2.5.1.1. Fa Karabo e le ee, tlhagisa gore ke bofe

BOLWETSE	KARABO
A. Tiriso ya ditagi	Ee /Nnyaya
B. Maikutlo a ko tlase	Ee /Nnyaya
C. Letshogo le le feteletseng	Ee /Nnyaya
D. Dikakanyo tsa go ipolaya kgotsa go leka go ipolaya	Ee /Nnyaya
E. Malwetse a mangwe a tlhaloganyo	Ee /Nnyaya

    2.5.1.1.1. Tiriso ya ditagi (Ee/Nnyaya), Ke dife?

DITAGI	KARABO
A. Bojalwa	Ee /Nnyaya

B. Motokwane	Ee /Nnyaya	
C. Motsokwe	Ee /Nnyaya	
D. Ditagi tse dingwe	Ee /Nnyaya	

2.5.1.1.2.   Tsatsi la bofelo la tiriso ya ditagi _____

2.5.2.   A go na le malwetse mangwe ko ntle ga a tlhaloganyo (Ee /nnyaya)

2.5.3.   A gona le Bogole mo mmeleng? (Ee/nnyaya)   ke bofe?_____

2.6. A gona le wa losika yo o nang le bolwetse jwa tlhaloganyo (Ee /nnyaya)

2.7. **Tsa kalafi**:

2.7.1.   A o na le bothata jwa go nwa melemo? (Ee/nnyaya)

2.7.2.   Fa o na le bothata, lebaka ke eng? :

LEBAKA	KARABO
A. Melemo ga eyo	Ee /Nnyaya
B. Go lebala	Ee /Nnyaya
C. Ditamorago tsa melemo	Ee /Nnyaya
D. Kakanyo ya gore o fodile	Ee /Nnyaya
E. Ga o dumele gore bolwetse bo teng	Ee /Nnyaya
F. Go tlhoka kgotlhatso / go kgobotetswa ka ntlha ya bolwetse	Ee /Nnyaya
G. Ditaelo tsa go nwa melemo ga di a tlhatswega	Ee /Nnyaya
H. Mabaka a mangwe	Ee /Nnyaya

Fa go na le mabaka a mangwe, tlhomamisa_____

3. DINTLHA KA TSE DI AMANG MAIKUTO LE TSHEDISANYO MO LWAPENG

3.1. A go na le sengwe se se kgoberang maikutlo kgotsa se se go utlwisang botlhoko?

BOTHATA JO BO AMANG MAIKUTLO	KARABO
Loso lwa mongwe yo o rategang	Ee /Nnyaya
Kgogakgogano le ba masika	Ee /Nnyaya
Go lathegelwa ke tiro	Ee /Nnyaya
Mathata a madi	Ee /Nnyaya
Go tlhoka bonno	Ee /Nnyaya
Go kgaogana le mokapelo	Ee /Nnyaya
Go sa dira sentle ko sekolong	Ee /Nnyaya
Go golafala/kotsi	Ee /Nnyaya

Bolwetsi	Ee /Nnyaya
Mathata le ba molao	Ee /Nnyaya
Sengwe se se sa nankolwang fa	Ee /Nnyaya

3.2. Kemo nokeng ke ba lelwapa

Ga e kgotsofatse thata	Ga e kgotsofatse	E fa gare	E kgotsofatsa	E kgotsofatsa thata

Date_____ Serial Number_____
Initials_____

Participant:
The researcher will ask the following questions to help find out if signs of mental illness relapse are present.

Instructions:
I.   Circle the appropriate answer
II. Participants with no previous history of mental illness will be considered non-relapsed.
III. A patient meeting 1 of the 4 relapse criteria is considered relapsed.

_____

1. Is there a previous history of mental illness? Yes/No

Relapse Criteria:	Answer
In the course of your illness has there been any need of the following:	
a. Change/Adjustment of medications in order to control symptoms	Yes/No
b. Psychiatric rehospitalization for re-emergence of or worsening of symptoms	Yes/No
c. Frequent hospital visits with unremitting symptoms	Yes/No
d. A need for closer supervision because of self-harm, aggressive behavior and/or suicidal or homicidal ideation?	Yes/No

TSHEKATSHEKO YA GORE BOLWETSE BO TSOGILE

Letsatsi_____ Nomoro ya serial/Foromo_____
Khutshwafatsa maina_____

Go Motsaya karolo:
Mosekaseki o tla botsa dipotso tse di latelang go thusa go tlhomamisa dikai tsa gore bolwetsi bo ka tswa bo tsogile kgotsa nnyaya.

Ditaelo:
   I.   Agalela karabo e tshwanetseng
  II.   Batsaya karolo ba e leng la ntlha ba tshwarwa bolwetsi jwa tlhaloganyo ba tla tsewa gore bolwetse ga bo seko bo tsoge
 III.   'Ee' ope mo dikarolong tse nne o supa fa bolwetse bo tsogile.
_____

1. A o kile wa tshwarwa bolwetsi jwa tlhaloganyo?

KAROLO YA TSHEKATSHEKO	KARABO
Mo tsamaong ya bolwetse, a go nnile le:	
a. Tlhokego ya go oketsa kana go fetola melemo go ritibatsa dikai?	Ee /Nnyaya
b. Seemo sa go tla sepateleng kgapetsa-kgapetsa ka mabaka a dikai tse di sa ritibaleng?	Ee /Nnyaya
c. Gore o robatswe ka gore dikai di boile gape kgotsa di gaketse?	Ee /Nnyaya
d. Tlhokego ya go lebelelwa thata ka ntlha ya go nna le dikakanyo tsa go ikgolafatsa, go nna le maitsholo a dikgoka le dikakaknyo tsa go ipolaya kana go bolaya?	Ee /Nnyaya

Date:_____ Serial Number:
Initials:_____

Participant:
 The questions below will help assess whether there is adherence to medications or not considering attitude and behavior towards medications.

Instructions on scoring:
2. Circle the appropriate answer
    1. Compliance is indicated by:
        • 'No' to question 1-6 and 9-10
        • 'Yes' to question 7-8
        • The responses are coded as 1
    2. Non-compliant responses are coded 0.
    3. Total score = 10
    4. Score ≥ 6: adherent
    5. Score ≤ 5: Non-adherent

	Question	Answer
1	Do you ever forget to take your medication?	Yes / No
2	Are you careless at times about taking your medication?	Yes / No
3	When you feel better, do you sometimes stop taking your medication?	Yes / No
4	Sometimes if you feel worse when you take the medication, do you stop taking it?	Yes / No
5	I take my medication only when I am sick	Yes / No
6	It is unnatural for my mind and body to be controlled by medication	Yes / No
7	My thoughts are clearer on medication	Yes / No
8	By staying on medication, I can prevent getting sick.	Yes / No
9	I feel weird, like a 'zombie' on medication	Yes / No
10	Medication makes me feel tired and sluggish	Yes / No

TSHEKATSHEKO YA SEEMO SA GO TSAYA MELEMO KA FA TSHWANELONG

Letsatsi_____ Nomoro ya serial/Foromo_____

Khutshwafatsa Maina:_____

Go Motsaya karolo:

Mosekaseki o tla botsa dipotso tse go thusa go sekaseka fa ditaelo tsa go tsaya melemo di obamelwa sentle kgotsa nnyaya go lebaganwe le boitsholo.

Ditaelo:

1. Agalela karabo e tshwanetseng
2. Melemo e tsewa sentle fa go na le:
   - 'Nnyaya' mo potsong ya ntlha go ya ko go ya borataro (1-6), le boferabongwe go ya ko go ya lesome (9-10).
   - 'Ee' mo dipotsong tsa bosupa go ya ko go boferabobedi (7-8)
   - Karabo nngwe le nngwe mo go tse, e fiwa bongwe (1)
3. Karabo e e supang go sa tsaya melemo sentle e fiwa lefela (0)
4. Tshobokanyo ya Matshwao otlhe ke lesome (10)
5. Matshwao a lekanang kgotsa a feta borataro ($\geq$ 6) a supa gore melemo e tsewa ka fa tshwanelong.
6. Matshwao a a lekanang kgotsa a le ko tlase ga botlhano ($\leq$ 5) a supa gore melemo ga e tsewe ka fa tshwanelong.

	Potso	**Karabo**
1	A o a tle o lebale go nwa melemo?	Ee / Nnyaya
2	A o a tle o nne botlhaswa fa gongwe mo go nweng melemo?	Ee / Nnyaya
3	A o a tle o tlogele go nwa melemo fa gongwe fa o ikutlwa o le botoka?	Ee / Nnyaya
4	Fa gongwe fa seemo sa gago sa bolwetse se maswafala fa o nwa melemo, a o a e tlogela?	Ee / Nnyaya
5	Ke nwa melemo yame fela fa ke lwala	Ee / Nnyaya
6	Ga se tlholego gore tlhaloganyo yame le mmele di laolwe ke melemo.	Ee / Nnyaya
7	Dikakanyo tsame di a tlhatswega fa ke nwa ke nwa melemo	Ee / Nnyaya
8	Ke ka kganela bolwetse ka go nna ke nwa melemo.	Ee / Nnyaya
9	Ke ikutlwa o ka re ga nna sentle, ekete ga kena botshelo "setotwane" fa ke le mo melemong	Ee / Nnyaya
10	Melemo e ntira gore ke ikutlwe ke lapisegile gape ke kgobegile marapo	Ee / Nnyaya