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TOPIC:

LEVEL OF ADHERENCE TO ANTIPSYCHOTIC DRUGS AMONG MENTAL HEALTH CARE USERS IN TSWAING SUB-DISTRICT

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DECLARATION

I, B.J. MOLATO, hereby declare that this dissertation is my own work in design and in execution and that it has not previously been submitted for any Degree or examination at this or any other university. I also declare that all reference material (s) contained herein have been acknowledged.

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Signature

MAY, 2014

This dissertation has been submitted with my approval to be certified according to the requirements for Masters in Nursing, Community Nursing Science rules and regulations

Signed.....

Dr. M.E. Manyedi

Date.....

DEDICATION

I dedicate this dissertation to my late mother Keitheng Maria Molato who raised me with difficulties through hard times when she was unemployed. To my elder sister Betty Galepekwe Molato who was taking care of me after the death of my mother. She acted like my mother and I couldn't feel the absence of my mother. To Mrs. Moseki and Dr. T.M. Thiba who helped me to study at the university. They didn't know me from the start but my background triggered them to apply for me at the University to study BNSc. They have fought with all they had in order to see me studying advancing my studies at the University. To Mrs. Mogodi, the former Executive Mayor of John Taolo Gaetsewe District Municipality, who helped me with fees to register at the University because my family was financially destitute; may God bless this entire people that I have mentioned with Deuteronomy 28: 1-14.

ABBREVIATIONS

CATIE	Clinical Antipsychotics Trials of Intervention Effectiveness
CHC	Community Health Centre
DOT	Directly Observed Therapy
DHIS	District Health Information System
MEMS	Medical Event Monitoring System
MHCU	Mental Health Care Users
MPR	Medication Possession Ratio
NWP	North West Province
PAR	Patient Adherence Record
PIT	Pill Identification Test
RN	Registered Nurses
SPMSQ	Short Portable Mental Status Questionnaire
SPSS	Statistical Packages for Social Sciences
TAU	Treatment as usual
VAS	Visual Analogue Scale

ABSTRACT

Sub-optimal adherence to antipsychotic drugs is a global problem and it is driven by various factors which include patient, treatment, nurse patient relationship and environmental factors. These four level factors have been reported to be associated with low level of adherence among Mental Health Care Users (MHCU). The low level of adherence causes a high rate of relapse which results in re-hospitalization of MHCU in Tswaing Sub-district. The purpose of this study was to determine the level of adherence to antipsychotic drugs among MHCU in Tswaing Sub-district. A quantitative descriptive and cross sectional study was used and the target population for this study was MHCU who were collecting treatment from health care facilities in Tswaing Sub-district. The health care facilities that participated in the study were selected by using purposive sampling technique to select five out of twelve health care facilities.

The inclusion criterion for this study was all MHCU who have been on antipsychotic treatment for more than a year from 21 years old to 55 years old. The sample size was calculated by Raosoft sample size calculator. Based on that, there were 357 MHCU on antipsychotic treatment. Then simple random sampling was used to select 299 MHCU to participate as calculated per clinic. After administering SPMSQ, 234 MHCU qualified to participate in the study.

The study has use done questionnaire to collect data which comprise of three sections namely: Patient Adherence Questionnaire (PAQ), Visual Analogue Scale (VAS) and Pill Identification Test (PIT). The PAQ has 16 questions and comprise two sections namely: Socio-demographic characteristics and patient adherence record which is self-reporting. The VAS is a psychometric response scale which was used in a form of a questionnaire. The PIT was used to assess the knowledge of mental health care users regarding their prescribed medications.

The Statistical Package for Social Sciences (SPSS) for windows version 20 was used for data analysis. The findings of the study revealed that 90% of MHCU did not meet the minimum optimum level of adherence of 80%. This desired effect of 80% was met by only 10% of MHCU. The results are discussed based on the three objectives of the study.

The limitations of the study were also discussed. The main recommendations for this study under practice include adequate supply of antipsychotics to health care facilities by health care providers to avoid medication unavailability.

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CHAPTER ONE

1.1 Background

Adherence to antipsychotic drugs has been defined as the active involvement of the Mental Health Care Users (MHCU) and the nurses to improve clinical outcomes and quality of life among MHCU (Mueser & Mc Gurk, 2004:147). This definition implies that both MHCU and the nurses have to participate voluntarily in order to achieve the treatment goals (Delamater, 2006:71). The treatment goals are determined by adherence behaviour (Caetano, Lam & Morgan, 2006:1411). Adherence behaviour is divided into two concepts namely, full adherence and non-adherence (Caetano *et al.,* 2006;1411). Full adherence means taking all dosages (taking 80% and above of the medication) of prescribed antipsychotics throughout the life time (Cramer, Roy, Burrell, Fairchild, Fuldeore, Ollendorf and Wong (2008:44). Furthermore, MHCU with a Medication Possession Ratio (MPR) greater than 0.8 or 80% are considered to have full adherence (Farmer, 1999:1074).

Non-adherence is defined by Valenstein, Ganoczy and Mc Carthy (2006:1542) as not taking antipsychotics as prescribed, sometimes not taking prescribed antipsychotics at all. Similarly it means that is the situation where the MHCU doesn't come for follow ups and take prescribed medications with prohibited substances like alcohol and drugs. Full adherence to antipsychotics is important in order to prevent recurrent symptoms of psychosis and to improve the quality of life among MHCU (Gray & Robson, 2007:457). Adherence to prescribed antipsychotics reduces the relapse rate and hospitalization among MHCU (Ascher-Svanum, Faries & Zhu, 2006:453). The effectiveness of antipsychotics has been demonstrated on psychosis and cognitive impairment. Although the effectiveness of antipsychotics has been demonstrated on MHCU, adherence to prescribed antipsychotics has been reported to be a major problem (Lacro, Dunn, Dolder, Leckband & Jelste, 2002:892). Non-adherence to antipsychotic drugs is an enormous challenge for psychiatrists, psychiatric nurses and the Department of Health as a whole (Lacro *et al.,*2002:892). It has been mentioned that non-adherence is associated with

different factors (Kgole, Molaba and Mothiba, 2013:242). Authors have categorized such factors in four different ways which include patient related, treatment, nurses and environment related factors (Osterberg & Blaschke, 2005:487). Firstly under patient related factors, the clients could have negative attitude towards the medications because of severe side effects that are experienced whilst on antipsychotics. Some of them are abusing substances when taking treatment hence they relapse due to drug interaction. Cognitive decline may result in memory loss to the elders and ended up forgetting to take their prescribed medications. Moreover, MHCU who are younger are not adherent to their prescribed medications compared to the elders (Lee, Kane, Sereika, Cho & Jolley, 2011:418). Some factors contributing to non-adherence are due to the treatment itself.

Under treatment related factors, the MHCU are likely to experience severe side effects that ultimately lead them to stop taking antipsychotics as prescribed (Newcomer & Haupt, 2006:480). The poly-pharmacy of antipsychotics and the method which is used to take these antipsychotics has also been found to compromise adherence (Diaz, Neuse, Sullivan, Pearsall & Woods, 2004:354). Sometimes the MHCU may have to travel a distance to go for medication collection. When they arrive at the medication collection point the medication is unavailable and because of their compromised judgement they cannot think of alternative places to get their treatment. This situation discourages or demotivates them from continuing to collect medications (Roy, Jahan, Kumeri & Chakraborty, 2005:24). It also leads to the disruption in taking the medication thus compromising adherence.

The last level factor as indicated by Lacro, Dunn and Dolder (2002: 892) include nurse' patient relationship and environment related factors. In this regard, nurses as the frontline and backbone of the health care system are expected to explain the condition, medications (effects and side effects) and lifestyle to the MHCU during discharge in order to instil insight. Failure to explain this might impact negatively on adherence thus aggravating the condition of the MHCU. Furthermore they are expected to harness family and community support because it assists medication taking as well as stability of living conditions (Lacro *et al.,* 2002:892). Moreover, the nurses' work with the MHCU is to make adherence easier by identifying whether MHCU are taking medication as

prescribed. They are using different methods to monitor and measure adherence among MHCU. These include Visual Analogue Scale (VAS), Medication Event Monitoring System (MEMS), Pill count and Electronic pharmacy refill records (Velligan, Diamond, Mintz, Maples, Li X, Zeber, Erefchefsky, 2008:483; Yearly, Nakonenzy, Lescouflair, 2007:437 & Sajatovic, Valenstein, Blow, Ganoczy, Ignacio, 2007:855). The VAS has been defined by Giordano, Guzman, Clark, Charlebois and Bangsberg, (2004:74) as a psychometric response which is used to measure subjective characteristics or attitudes that cannot be directly measured. The VAS is also considered as a scale that is used to measure specified behaviours such as adherence to a therapeutic regimen (Giordano *et al.,* 2004:74).

Adherence is also measured by means of the MEMS, a device that consists of conventional medicine container fitted with a special closure that records the time and date of each time the container is opened and closed (Byerly *et al.,* 2007:437). The electronic pharmacy refill record has been described by Sajatovic *et al.,* (2007:855) as an objective way to measure adherence by using MPR measures. The MPR measures adherence by dividing the number of days which the MHCU needed to take the antipsychotics continuously. The pill count is a direct method which is used to determine how many pills are taken and how many pills are missing (Velligan *et al.,* 2008:483). Despite the implementation of the methods that are used to measure adherence among MHCU, non-adherence to prescribed antipsychotics has been reported to be a global problem (WHO, 2003).

Non-adherence to prescribed antipsychotic drugs has been reported to range from 40-50% (Valenstein *et al.,* 2006: 1542). Gilmer, Ojeda, Fuentes, Garcia, Lanouette and Lee (2009:175) conducted a study on Latinos and Asians in order to determine the level of adherence to antipsychotic drugs in Asia. The results of the study revealed that limited English proficient Asians were more likely to be non-adherent to antipsychotic drugs. In a study that was conducted in Korea by Wan Kim, Sang and Ku Choi (2006:533), there was partial adherence of 60% to antipsychotics. Approximately 45% of MHCU were prescribed antipsychotic drugs in America (Sajatovic, Valenstein, Blow, Ganoczy & Ignacio; 2006:232). Of these, 51.9% appeared to be fully adherent to antipsychotics,

while 48.1% of MHCU were either partially or non-adherent to antipsychotic drugs (Sajatovic *et al.,* 2006:232). A longitudinal study that was conducted in USA showed that non- adherence among the population remained stable over time 37% in each year (Valenstein, Ganoczy, McCarthy, Myra, Blow & Lee, 2006:1542). However, 61% of MHCU had adherence difficulties at some point over the four year period. Approximately 18% had consistent poor adherence, and 43% were inconsistently adherent (Valenstein *et al.,* 2006:1543).

The percentage of MHCU who were not fully adherent to their prescribed antipsychotics was the same as those who were non-adherent (Knapp, King, Pugner & Lapuerta; 2004:509). There are few research studies that have been conducted about adherence to antipsychotics among MHCU in Africa (Adeponle, Baduku, Adelekan, Suleiman & Adeyemi, 2009:19). One of the studies was to describe the level of adherence among 81 MHCU of which the results of the study revealed that 50% of mental health care users failed to adhere to their prescribed medications (Adenponle *et al.,* 2009:19). The reason for non-adherence was side effects from the medications and substance abuse. Similar results about the low level of adherence were reported by the survey that was conducted by Adeponle, Thombs, Adelekan and Kirmayer (2009:86) in Ghana. The survey revealed that 80% of MHCU stopped their medications due to side effects.

In Southern African Development Community (SADC), a cross sectional study about factors associated with the high rate of re-hospitalization at Chaimama Hospital in Lusaka was conducted by Gillies and Sandlers (2006:9). The study revealed that the high rate of re-hospitalization of MHCU is due to non-adherence to prescribed antipsychotics. The study concluded by saying that gender, educational level and employment status were the contributory factors to the low level of adherence among MHCU. In South Africa, the study about adherence of MHCU was conducted by Kgole, Molaba and Mothiba (2013:242). The study revealed that the side effects of antipsychotic drugs led to low level of adherence among MHCU. In the North-West Province (NWP), concerns about the high rate of re-hospitalization of MHCU due to relapse has been raised by a Psychiatric hospital which is a referral hospital for all districts in NWP including Tswaing Sub-district (Bophelong Intra-news, 2010). These districts refer the MHCU for

treatment initiation and rehabilitation at the above mentioned hospital. After being stabilized, they are referred back to their districts to continue with their treatment. Despite being referred back to continue with the treatment, it is reported that they are usually re-admitted two months post discharge at the above mentioned Psychiatric hospital.

This and other anecdotal evidence suggest high rates of re-hospitalization potentially due to low level of adherence to prescribed antipsychotics in Tswaing Sub-district and other areas of the province. Thus leading the study to focus on adherence to antipsychotics because MHCU who were collecting medication in Tswaing Sub-district were of chronic disease and antipsychotics were mainly prescribed. However, Osterberg *et al.,* (2005:487) has mentioned the three level factors that are linked with the low level of adherence among MHCU. With this link, it becomes important to understand variations in these three level factors and profile such as adherence levels and socio-demographic differences. Therefore, it is the interest of the researcher to determine the link between these factors by describing the perceptions of MHCU, the relationship between socio-demographic characteristics and if they do exist in the South African context specifically in Tswaing Sub-district.

1.2 Problem statement

The three level factors that are linked to the low level of adherence globally were reported to predispose MHCU to relapse and result in hospitalization (WHO, 2003). This has been supported by a number of studies which have shown a link between the level of adherence and these three level factors (Lacro *et al.,* 2002:892). In Tswaing Sub-District, there is a high rate of relapse which has led to re-hospitalization of MHCU. This problem has been demonstrated by subjective observations and empirical research studies showing strong correlations between treatment outcome and adherence to antipsychotics (Novick, Harv, Suarex, Perez, Dittman & Haddad, 2010:109). This study therefore sought to provide empirical evidence of MHCU' level of adherence, their perceptions of factors affecting adherence and the effect of MHCU' socio-demographic variations on their level of adherence to prescribed antipsychotics. This information remains mostly scarce in the

South African context and more so in Tswaing Sub-district that is mostly rural and devoid of the capacity for such an important investigation.

1.3 Purpose of the study

The purpose of this study describes the level of adherence to antipsychotic drugs among MHCU in Tswaing Sub District of the North West Province (NWP) in South Africa (SA).

1.4 Research question

1. What is the level of adherence to antipsychotics among MHCU in Tswaing Sub District on the NWP in SA?

2. What is the MHCU' perceptions of factors affecting their level of adherence in Tswaing Sub-District on the NWP in SA?

3. What is the relationship between level of adherence and MHCU' socio-demographic characteristics?

1.5 Objectives of the study

The objective of this study is to:

1. Determine the level of adherence to antipsychotic drugs among MHCU in Tswaing Sub-district on the NWP in SA.
2. Describe the MHCU' perceptions of factors affecting their level of adherence in Tswaing Sub-District on the NWP in SA.
3. Describe the relationships between level of adherence and MHCU's socio-demographic characteristics

1.6 Significance of the study

The study is of importance because if the factors that are associated with the low level of adherence to psychiatric medication among MHCU are known, nurses can focus on the specific factors affecting the level of adherence to antipsychotic drugs among MHCU in achieving the desired level of adherence.

It is also hoped that potential findings of this study might help policy makers and mental health co-ordinators in the development of policies and programs that will enhance the level of adherence for the MHCU. The results of this study can be used by other researchers to conduct a qualitative study about the factors affecting the level of adherence among MHCU and the results may be published.

1.7 Operationalization of terms

Mental health care users (MHCU) refers to individuals who are receiving care, treatment and rehabilitation services or using a health service in the health sector in order to enhance the mental health status of a user (Mental Health Care Act 17 of 2002). In this study MHCU refers to all psychiatric patients.

Adherence is defined as the extent to which an individual's behavior of taking medications and executing lifestyle changes correspond with agreed recommendations from a health care provider (WHO, 2003). In this study adherence means taking medications as prescribed with MPR of greater 80%, keeping appointments and following instructions as recommended by nurses.

Non-adherence is defined as missing the number of doses or doses that are taken incorrectly that jeopardizes the patient' therapeutic outcome (Valenstein *et al.,* 2006:1542).In this study non-adherence means failure to keep appointments, failure to follow instructions which are correct frequency of dosing, correct timing of dosing and correct administration of dosing.

Antipsychotics are the foundation of treatment that is used to treat psychotic symptoms among MHCU (Valenstein *et al.,* 2006:1542). In this study antipsychotic drugs includes Haloperidol, Fluphenazine decanoate, Chlopromazine, Fluoxetine, Clopixol, Fluanxol

and Clonazepam. The study mainly focused on these drugs because they were mainly prescribed in Tswaing Sub-district.

Relapse is defined as the recurrence of any disease or that has gone into recovery or remission (Almond, Knapp & Francois, 2004:346). In this study relapse means worsening of psychotic symptoms due to non-adherence to prescribed antipsychotics.

Re-hospitalization means readmission of the patients due to relapse (Lacro *et al.,* 2002:892). In this study re-hospitalization means readmission of MHCU due to non-adherence to prescribed antipsychotics which is caused by relapse.

1.8 Outline of the study

Given the above introduction and background, this report will be presented under the following chapters:

1. Chapter One: introduction of the study by outlining the background, purpose, research questions and objectives of the study.
2. Chapter Two: literature review.
3. Chapter Three: the research design and methods.
4. Chapter Four: the study findings and results.
5. Chapter Five: discussion of the study findings, limitations, conclusions and recommendations

1.9 Summary

This chapter has covered the background, problem statement, purpose of the study, objectives of the study, significance of the study, operationalization of terms and outline of the study. Literature review will be covered in the next chapter.

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CHAPTER TWO

LITERATURE REVIEW OF THE LEVEL OF ADHERENCE AMONG MENTAL HEALTH CARE USERS

2. 1 Introduction

The previous chapter has covered background, problem statement, purpose of the study, objectives of the study, significance of the study and outline of the study. This chapter presents literature review by various authors concerning adherence in the area of mental illness. The aspects that will be covered under this chapter include adherence, non-adherence, factors affecting adherence to antipsychotic drugs among mental health care users and antipsychotics.

2.2 Antipsychotics as a treatment approach for MHCU

Antipsychotics also known as neuroleptics or major tranquilizers are a class of psychiatric medications that is used to treat psychosis, agitation, severe anxiety, mania and violent or dangerously impulsive behaviour (Cubbedu & Luigi, 2009:151). Antipsychotic drugs work by increasing or reducing the effects of natural chemicals (neurotransmitters) in the brain, including dopamine, serotonin, noradrenaline and acetylcholine (Cubbedu & Luigi, 2009:151). These neurotransmitters regulate numerous aspects of behaviour including mood and emotions, control of sleeping and wakefulness and control of feeding (Cubbedu & Luigi, 2009:151). Antipsychotics can be classified by their chemical structure, but also can be distinguished by their pharmacology. Antipsychotics are used to treat Schizophrenia, Schizoaffective disorder, Bipolar disorder and Psychotic depression (Leucht, Corves, Arbter, Engel & Davis, 2009:31; Goikolea, Colon, Torres, Capapey, Valention, Unduranga, Grande, Sanchez-moreno & Vieta, 2013:191 & Taylor, Paton & Taylor, 2012:233). There are two classes of antipsychotics namely Typical and Atypical antipsychotics.

2.2.1 Typical/Conventional/First generation antipsychotics

The Typical antipsychotic drugs were firstly developed in the 1950s (Cubbedu & Luigi, 2009:151). They tend to block the action of dopamine in an individual who will be presenting with psychosis. The Typical antipsychotics are mainly characterized with severe side effects which include stiffness, tremors, feeling sluggish, low libido, akathisia and slowness in thinking (Leucht, Corves, Arbter, Engel, Li & David, 2009:31). Medications under Typical include Haloperidol, Fluphenazine decanoate, Flupentixol and Zuclopenthilol, Trifuoperazie, Chlopromazine, Zuclopenthixol, Flupenthixol and Thiorazine (Cubbedu& Luigi, 2009:151).

2.2.2 Atypical/Second generation antipsychotics

The Atypical are a group of antipsychotic drugs that were developed early in the 1970s and are used to treat a variety of psychiatric conditions (Perkins & Liebermann, 2006:305). The core function of both Typical and Atypical antipsychotics is to block the receptors in the brain dopamine's pathways (Cubbedu & Luigi, 2009:151). The side effects include sleepiness and slowness, weight gain, sexual dysfunction, increased chance of developing Diabetes Mellitus, some can affect blood pressure and make you dizzy, long term use can produce movements of the face (tardive dyskinesia) (Tyrer *et al.,* 2009:4). Hence the Typical and Atypical antipsychotic drugs perform the same function, Atypical is associated with fewer side effects because of decreased extrapyramidal motor control in MHCU (Lin *et al.,* 2008:1473).

The advantages of Atypical antipsychotics also include improvement in cognitive symptoms (Alexander, Gallagher, Mascoli, Moloney & Stafford,2011:1995), and also reduce the development of movement disorder (dystonia) and violence. The effectiveness of Atypical antipsychotics which include the following medications Olanzapine, Quetiapine, Risperidone, Ziprasidone and Typical medication which include Perphenazine was evaluated (Liebermann, Stroup, Mc Evoy, Swartz, Rosenheck, Perkins, Keefe, Davis, Lebowitz & Hsiao, 2005:1209). The MHCU who were using Atypical antipsychotic drugs had a longer median time to treatment discontinuation compared to those who were on Typical antipsychotic drugs (Liebermann *et al.,* 2005: 1209). These

findings indicate that the level of adherence is high on atypical antipsychotics than on Typical antipsychotics (Tamminga, 2006:563). This study mainly focused on the following drugs: Haloperidol, Fluphenazine decanoate, Chlorpromazine, Fluoxetine, Clopixol, Fluanxol and Clonazepam because they were mainly prescribed in Tswaing Sub-district and MHCU who were collecting medication were of chronic disease.

2.3 Adherence and non-adherence to prescribed antipsychotics

Adherence is the degree of willingness and ability of patients to follow health related advice, to attend scheduled appointments and to complete recommended investigations (Moosa, Jeenah and Kazadi, 2007:1). Adherence is defined by Taboz and Lopez (2006:33) as a collaborative relationship between the patient and the practitioner in achieving therapeutic goals. Horne (2006:10) viewed adherence differently to others as the extent to which the patients behaviour matches agreed recommendations from the prescriber. The researcher view adherence as taking prescribed medications as prescribed, complying with the instructions and coming for follow up as requested by the practitioners. In the context of mental health which is also a chronic condition, adherence is the extent to which MHCU follow instructions as prescribed by the psychiatrists.

It is a dynamic process that is influenced by the MHCU to carry out and maintain certain behaviours and also involves supportive environment from the family and community and holistic approach by the healthcare providers (Cramer & Rosenheck, 2008:196). The American Psychiatric Association (2006) has defined adherence as taking 80% and non-adherence as missing greater than 80% of prescribed medication. In the field of mental health, MHCU are regarded as fully adherent to their prescribed medications if their level of adherence ranges from 80% and above (Kane, Leucht, Carpenter & Docherty, 2003:42). Different authors have supported adherence problem among MHCU that 50% of MHCU are not fully adherent to their medications at some time during their illness (Marcus & Olfson,2008:173).

Non-adherence means occasional missing (50% as a cut off) of taking medication as prescribed or taking incorrect dosages or not taking prescribed medications at all (Oehl *et al.,* 2000:408). Non-adherence to prescribed antipsychotics has been noted as a serious

problem among MHCU. Literature has revealed that the high rate of non- adherence is experienced on MHCU who have been discharged from inpatient facilities. The rate of non-adherence among MHCU has been reported to be as high as 40-50% (Lacro *et al.,* 2002:892). Data from the Clinical Antipsychotic Trials of Intervention Effectiveness (CATIE) study showed that 74% of MHCU had discontinued prescribed medication within 18 months due to insufficient efficacy, intolerable side effects or for other reasons (Lieberman, 2005). Lacro *et al.,* (2002:892) has reported that the rate of non-adherence rate ranged from 20-56% with a mean of 41%.

The reports indicate that the rate of non-adherence among MHCU is aggravated by substance use disorders because of the added impairment associated with chronic substance abuse non adherence to antipsychotics has serious negative consequences in MHCU and the population as a whole (Ascher-Svanum *et al.,* 2006:458). Non-adherence to prescribed medications is associated with treatment gaps which lead to early treatment discontinuation and negative consequences of exacerbation of symptoms (Nose *et al.,* 2003:1149).Relapse due to non-adherence to prescribed medications result to personal distress, cognitive impairment and treatment resistance (Piggott, Carson, Saha,Torbeyns & Stock, 2003:1048). The effects of relapse have negative impact on economy of health care systems because it is associated with readmissions of MHCU (Almond, Knapp & Francois, 2004:346). This was supported by the findings of the study that was conducted by Fleischhacker, Oehl and Hummer (2003) which revealed that mental health care users have 50 times greater risk of suicide due to non-adherence to prescribed antipsychotic drugs. These increases the situations that can lead to pathetic and inevitable consequences whereby relatives will lose their loved ones (Liu-Seifert, Adams & Kinon; 2005:21). The results of the study that was evaluated by Menzin, Boulanger and Friedman (2003:719) discovered that MHCU who committed suicide had a relatively more chronic course of the illness due to non-adherence to prescribed antipsychotic drugs.

2.3.1 Factors contributing to non-adherence to antipsychotics among MHCU

The level factors discussed under this sub heading include patient, treatment and nurse and environment level factors.

2.3.1.1 Patient level factors

Different studies have reported that non-adherence to antipsychotic drugs among MHCU can be affected by various individual demographic factors including age, gender, and educational status (Kazadi, Moosa & Jeenah; 2008:52). The studies that were conducted by Kazadi (2008:52) and Velligan *et al.,* (2009:14) revealed similar findings which has associated non-adherence with socio-demographic characteristics. In considering gender as a contributory factor to non-adherence among MHCU, female MHCU are more adherent to their medications than male MHCU (Koster, Lajer, Lindhardt & Rosenbaum, 2008:60). Similarly this was reported by Koster, Lajer, Lindhardt and Rosenbaum (2008:60) who declared female MHCU as more adherent. In contrast, Seeman (2004:1324) conducted the study about factors contributing to non-adherence among MHCU. The level of non-adherence was found to be more on females than males due to the prevalence of mental health disorder in males than females in that study.

The other factors that were reported to be associated with non-adherence included level of education and marital status (Kazadi, 2008:52: Velligan, Weiden & Sajatovic, 2009:14). Levine and Rabinowitz (2010:624) also mentioned age as associated with non-adherence among MHCU. Lee, Kane, Sereika, Cho and Jolley (2011:418) revealed that younger clients are more likely to be non-adherent to their prescribed medications than older clients. All the above discussions imply socio-demographic factors as contributing to non-adherence among MHCU. However, the findings of previous studies did not consider socio-demographic factors as having an influence on non-adherence among MHCU (Ahn, Mc Combs & Jung, 2008:48). Lack of insight into illness was also found to be associated with low level of adherence (Mutsatsa, Joyce, Hutton, Webb, Gibbins, Paul & Barnes, 2003:684).

The MHCU with lack of insight into illness lack awareness of having mental disorder and reject the need for antipsychotics (Buckley, Wirshing & Bhushan, 2007:129). Literature

has shown that between 50-80% of MHCU do not believe that they are ill which makes them not to adhere to treatment (Buckley *et al.,* 2007:129). This means that even if medications can be initiated, if not taken as prescribed it is not going to be effective (Mutsatsa, Joyce, Hutton, Webb, Gibbins, Paul & Barnes, 2003:684). Inability to recognize mental disorder and the importance of being started on antipsychotics is said to be associated with cognitive impairment (Lepage & Bonce, 2010:1213).

The relationship between cognitive impairment and non-adherence has been explored with varied results (Lepage & Bonce, 2010:1213). In the study conducted by Proteau, Verdoux, Briand, Lesage, Lalonde, Nicole, Reinharz and Stip (2005:171) cognitive impairment played a major role in predisposing MHCU to non-adherence because it caused memory deficits which results in MHCU forgetting to take their medications thus leading to low level of adherence to prescribed medications. Low level of adherence could also be due to the negative attitude (Gaebel, Riesbeck, von Wilmsdorff, Derk, Kahn, Rossler & Fleishhacker; 2010).

Negative attitude towards prescribed medications is aggravated by the side effects from the prescribed drugs that increase the risk for non-adherence (Gaebel *et al.,* 2010). This might end up resulting in mental health care users starting to develop signs of low self-esteem (Fung *et al.,* 2008:410). The MHCU develop low self-esteem due to negative attitude towards the medication (Fung *et al.,* 2008:410). In the study that was conducted by Fung, Tsang, Corrigan, Lam and Cheung (2007:490) MHCU who were presenting with negative attitude were having low level of adherence. In a cross sectional study that was conducted by Fung, Tsang and Corrigan (2008:408) the findings of the study revealed a relationship between negative attitude and low self-esteem. Substance abuse was also mentioned as one of the predictive factor for non-adherence among MHCU (Velligan, Velligan, Draper, Stutes, Maples, Mintz, Tais, Turkington & 2009:884).

The abuse of substances which include cannabis and illicit drugs has been reported to have negative impact on antipsychotics (Velligan *et al.,* 2009:884). The continuous use of cannabis and illicit drugs has been discovered to affect the course of prescribed antipsychotic drugs and ends up increasing suicidal attempts and rehospitalisation of MHCU (Foti, Kotov, Guey & Bromet (2010:987). It has also been reported to trigger the

positive symptoms that predispose them to relapse (Linszen, Dingerman & Lentoor, 1994:273). All these factors that have been discussed have been reported to affect the effectiveness of prescribed treatment among mental health care users (Haddad, Dursun, 2005:332).

2.3.1.2 Treatment level factors

The Antipsychotic drugs are the primary treatment for psychotic symptoms (Haddad *et al.,* 2005:332). They are said to be associated with severe side effects which reduce the quality of life among MHCU (Haddad *et al.,* 2005:332). Once MHCU experience adverse effects, they started to be in a dilemma whether to continue with prescribed medication or not (Perkins, 2002:1121). It is one of the contributory factors to intolerability and treatment discontinuation among MHCU (Liebermann, Stroup & Mc Evoy, 2005:209). Due to the fact that the medication is prescribed by the psychiatrists and administered by the nurses, sometimes there may be problems if relationship between MHCU and these professionals is not healthy.

2.3.1.3 Nurses and environmental factors

Poor nurse patient relationship among mental health care users also predispose them to non-adherence to prescribed antipsychotic drugs which end up leading to poor discharge planning, and lack of follow up care. The MHCU need to feel involved in making decisions about their treatment and to feel that their treatment team is interested in them. They also need to feel that carers will listen to their concerns regarding medications including side effects (Oehl *et al.,* 2000:418). The environment in which the patient lives can have a significant impact on their adherence, with negative attitudes of relatives or partners adversely affecting adherence with medication (Keith & Kane, 2003:1308). Failure to maintain a good relationship between the nurses, the MHCU and family members might result to non-adherence and bring negative effects to mental to MHCU (Ascher-Svanum, Faries, Zhu, Ernst, Swartz & Swanson; 2006:458). However, all these four level factors were used to develop the tool to collect data in this study.

2.4 Factors influencing adherence to antipsychotics among MHCU

The factors influencing adherence among MHCU discussed under this sub heading include nurses and environmental factors, disease-related factors, treatment-related factors, Directly Observed Therapy (DOT) and compliance therapy.

2.4.1 Relationship factors

The good relationship between nurses, the MHCU and family members has been reported to play a vital role in influencing complete adherence among mental health care users (Stevenson, Cox & Britten, 2004:235). The fruitful relationship amongst the three parties is facilitated by good communication which create an environment to discuss problems which interferes with medication adherence (Wringley, Jackson, Judd & Komiti; 2005:514). The involvement of family members in the treatment plan of MHCU improves medication adherence (Wilk, West, Marcus, Countis, Regier & Olfson, 2007:377; Lincoln, Lullman & Rief, 2007:1324). The findings of the recent study that was conducted in Peshawar, Pakistan has revealed improved level of adherence among MHCU who were supervised by the family members (Faroq, Nazar, Irfan, Akhter, Gul & Naeem, 2011:467). This improved level of adherence was led by the conducive relationship between the nurses. The responsibilities of nurses involve explaining the discharge plan to the family members and MHCU in order to instil insight among MHCU. These include explaining the condition which involves the causes and contributory factors, the importance of medication adherence, side effects, lifestyle and the need for family support.

In the study that was conducted by Canadian Federation of Mental Health (2006), nurses provided the communities with mental health promotion, mental health awareness campaigns, management of treatment and rehabilitation. The main purpose of the above mentioned mental health services was to improve the level of adherence among MHCU by educating them about their conditions, signs and symptoms of their illness, prescribed antipsychotics, the importance of fully adhering to their prescribed medications through campaigns (Kikkert, Scheme, Koeter, 2006:786). Similarly in Australia, the role of the

mental health nurses is to monitor medication use among MHCU. This is performed by bearing in mind that the unreliability of using pill counts and self- report of medication adherence is well documented (Haynes, 2001:1220). In South Africa, the roles and responsibilities of the nurses involve building the rapport with the MHCU and family members, ensuring the correct administration and monitoring the results of treatment (Nursing Act No.33 of 2005). They perform all these duties by working with MHCU in a variety of settings including their own homes, health care institutions to administer medication and monitor and measure adherence to medication (Nursing Act No.33 of 2005). In the community, the role of mental health nurses may also involve coordinating and liaising with the care of MHCU, relatives and professionals in the community treatment team and visiting MHCU in their own homes to monitor progress (Haynes, 2001:1218).

2.4.2 Disease-related factors

Cognitive behavioural therapy (CBT) and psycho-education has been reported to address low level of adherence which is due to disease related factors (Velligan & Weiden, 2006:23). The CBT specifically deals with MHCU who are presenting with lack of insight into illness. Lack of insight to illness is characterized by negative attitudes and beliefs which contribute to low level of adherence to prescribed medications among MHCU (Beck, Caveti, Kvrgic, Kleim & Vauth, 2011:42). The process of CBT includes eliminating negative attitudes and beliefs towards prescribed medications in order to increase insight (Velligan & Weiden, 2006:23). Psycho-education is a therapy which is used to educate the MHCU about his/her illness, treatment and prescribed medication (Kraemer, 2002:136). It is said to be more effective in MHCU who are non-adherent to prescribed antipsychotics due to adverse effects which lead to termination of prescribed medication (Zygmunt, Olfson, Boyer & Mechanic, 2002:1653).

2.4.3 Directly Observed Therapy

Directly Observed Therapy (DOT) is the method that is used to improve the adherence of individuals to antituberculosis drugs through health workers, family members or community members directly observing them taking their prescribed medications (Hart, Jeon, Ivers, Behforouz, Caldas, Drobac & Shin, 2010:167). This method can also be initiated in mental health setting by adhering to the elements of DOT which are standardized treatment supervision and patient support, monitoring and evaluation system (Blumberg, Leonard & Jasmer, 2005:2776). In supervising MHCU who are living alone, nurses or family members can be delegated to supervise him whether he/she follow the instructions of taking prescribed medications. In an adapted DOT study for outpatients MHCU that was conducted by Farooq, Nazar, Irfan, Akhter, Gul, Irfan and Naeem (2011:467) in a resource poor area. They randomized 110 MHCU to family supervised medication administration or Treatment As Usual (TAU). The intervention resulted in better adherence in the intervention group (complete adherence 67.3%) than in the TAU group 45, 5%.

2.4.4 Compliance therapy

Compliance therapy (CT) is an approach that has been built in cognitive behavioural therapy (Kemp, David & Hayward, 1996:331). The CT is performed by inspiring the MHCU to take medication as prescribed and recommended lifestyle (Kemp *et al.,* 1996:331). It also includes conducting interviews which focuses mainly on weighing the advantages and disadvantages from prescribed antipsychotics (Kemp *et al.,* 1996:331). The purpose of the interview is to direct the MHCU on how to differentiate between the goals and values in the service of enhancing adherence to improve quality life (Kemp, Hayward, Applewhaite, Everitt & David, 1996:345).

2.5 Instruments used to measure adherence to antipsychotics

There are methods that are used to measure the level of adherence MHCU whether is full adherence or non-adherence. These include the Visual Analogue Scale (VAS) self-report, electronic monitoring and direct and objective measures (Mc Nabb, Ross, Abriola, Turley, Nightingale & Nicolau, 2001:700). The VAS is a self-report method that is considered as the most appropriate method that is been used for monitoring adherence as part of continuous quality improvement in clinical practice (Mc Nabb *et al.,* 2001:700). The VAS asks the user to estimate his/her medication doses that they have taken as prescribed for the previous month (Giordano *et al.,* 2004:74).

In a study that was conducted by Seth, Kalichman, Christina, Amaral, Connie-Swetzes, Michelle Jones, Rene Maly, Moira, Kalichman, Chauncey and Cheroy (2009:367) in order to determine the validity and reliability of VAS and Unannounced Pill Counts (UPC) in measuring treatment adherence. The VAS and UPC obtained a similar pattern of correlations with common adherence related factors. The VAS had the results that paralleled the results obtained from the fair and more burdensome UPC. The recommendation of the study was that VAS is valuable because it reflects individual' awareness of adherence. The advantages of VAS are that it offers a simple, brief and inexpensive option for measuring adherence with potentially minimal burden (Deschamps, 2008:735). The disadvantage of VAS is that it is said to overestimate adherence with the data suggesting that the adherence question used with the VAS is accurate according to Horne and Weinman (2006:65).

Medication adherence can also be measured using electronic monitoring (Byerly, Fisher, Whatley, Holland, Varghese & Carmody, 2005:129). The electronic monitoring is assessing used to assess adherence by monitoring medication bottles which consists of monitoring device which looks like medication bottle caps which records date & time of bottle opening when MHCU come for follow up visit device (Byerly, Nakonenzy & Lescouflair, 2007:437). This Medication Event Monitoring System (MEMS) has been recognized as the best method for tracking adherence among MHCU (Byerly, Fisher, Whatley, Holland, Varghese, Carnody, Magurik & Rush, 2005:130).

The advantage of MEMS is that it is said to be related to outcome (Diaz, Levine, Sullivan, Serynyak, Hawkins, Cramer & Woods, 2001:325). It is the most accurate and effective method of detecting non-adherence to prescribed medication (Byerly, Fisher, Whatley, Holland, Varghese, Carnody, Magourik & Rush, 2005:125). The disadvantage of MEMS is that the device is expensive and also it has the tendency of overestimating adherence (Remmington, Kwon, Collius, Laporte, Mann & Christensen, 2007:229). The limitations to the accuracy and practicality of the system restrict its use (Golin, Liu, Hays, Miller, Beck, Ickovis, Kaplan & Wenger, 2002:756 & Mc Nabb et al., 2001:756). The next method for measuring adherence among MHCU is direct or objective method to measure adherence which is pill count (Golin *et al.,* 2002:756). For it to be implemented it does not need special resources or an individual who has undergone special training for doing pill counts. The only thing that is needed when doing pill counts is a skill which will enable the person to detect how many pills are taken and how many are missing. The disadvantage of pill count is that it is sensitive for detecting adherence in a way that if the MHCU removes pills from their containers without taking them (i.e pill dumping) ultimately it will lead to overestimate o adherence (Turner, 2002:143).

Electronic pharmacy records are an objective way to measure the level of adherence among MHCU. The pharmacy data has been declared effective when used to measure adherence among MHCU because it is associated with patient outcomes. There are quite number of measures that originate from pharmacy data which are MPR & gaps in medications use (Sajatovic.Valenstein, Blow, Ganoczy & Ignacio, 2007:855). The MPR measures adherence by dividing the number of days' supply of medication by the number of days the patient needed to take the medication continuously. Retrospective reviews of pharmacy refill data have shown a direct correlation between estimated adherence and risk of psychiatric hospitalization (Karve, Cleves, Helm, Hudson, West & Martin, 2009:2303; Weiden, Kozma, Grogg, & Locklear, 2004:886).

2.6 Summary

The topics that have been covered under this chapter include antipsychotics as a treatment approach to antipsychotics, typical antipsychotics, atypical antipsychotics, adherence and non-adherence to antipsychotics. Under factors contributing to non-adherence to antipsychotics among MHCU topics that were covered include patient level factors, treatment level factors, nurses and environmental factors. Then topics that were covered under factors influencing adherence to antipsychotics include nurses and environmental factors, improving attitude toward treatment, disease related factors, treatment related factors, Directly Observed Therapy and compliance therapy and instruments used to measure adherence to antipsychotics. The next chapter covers results of the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter has covered the literature review. This chapter presents the research design and methods used in this study. The main aspects covered in this chapter include the study design, the research methods that include population, setting, sampling, sampling size, data collection, data analysis and ethical considerations. The chapter presents how each of its components was selected and how they were applied in this study.

3.2 Study design

This study used a quantitative, descriptive cross sectional design. Quantitative research design is based on quantifiable data gathered from a range of sources that is numerically analyzed and presented (Hunter, Laura & Leahey; 2008:68). It is quantitative because it quantifies its variables of interest and presents them using numerical methods. A descriptive study design was used because it seeks to describe the adherence level of MHCU and related perceptions without manipulating the data or establishing causation or inferences across the variables analyzed. The cross sectional study design was used to examine data at one point in time by ensuring that data was collected on one occasion only with different subjects rather than on the same subjects at several points in time This design was also used to determine whether there is low level of adherence and the extent of the problem (De Vos, Strydom, Fouche & Delport, 2011:156).

3.3 The research methods

The topics that will be covered under this chapter include population, study context, sampling, data collection, data analysis, ethical considerations and summary.

3.3.1 Population

The target population for this study was MHCU both male and females in Tswaing Sub-district. All MHCU who were participating in the study were taking Antipsychotics.

Only MHCU who have been on Antipsychotic treatment for more than a year (as at 31 December 2010) were recruited for the study. The reason for selecting them is that the researcher believed that they would be able to answer the questions as required.

3.3.2 Study setting

The study was conducted in Tswaing Sub-district which is situated within the Ngaka Modiri Molema district of the North-West Province of South Africa. Tswaing Sub-district is situated 140 km South of Mafikeng town which is the capital of the North West Province (Statistics South Africa, 2011). Tswaing Sub-district has 124.218 people according to the community survey conducted by Statistics South Africa (Statistics South Africa, 2011). Tswaing Sub-district has a total area of 5.966 km2 (2.303 sq mi) and density of 13. 6/km2 (35/sq mi). There are three small towns in Tswaing Sub-district namely Delareyville, Sannieshof and Ottosdal.

The racial distribution at Tswaing Sub District is as follows: Black African 92.4%, Coloured 0.2%, Indian/Asian 0. 3% and White 5. 6% and Other 1.5% (Statistics South Africa, 2011). The languages that are used are Setswana 83. 5%, Afrikaans 6. 8%, IsiXhosa 2. 2%, Sesotho 2. 5% and other 5% (Statistics South Africa, 2011). The households in Tswaing Sub District range from low to middle income. Tswaing is characterized by mainly rural conditions, high unemployment and extreme poverty (Statistics South Africa, 2011). There are 430 MHCU on records who were on antipsychotic treatment in Tswaing Sub District. The quality of data was cross checked with Mental Health Co-ordinator in Tswaing Sub District and is in accordance with District Health Information System (DHIS) Co-ordinator. There are four Community

Health Centres, four mobile clinics and eight clinics in Tswaing Sub District (see Table 3.1 for the health care facilities and the distribution of mental health care users across them).

3.3.3 Sampling

The sampling of study participants followed a number of series. Firstly, the researcher purposefully selected the clinics that were having high head-count of the mental health care users in Tswaing sub-district. The head-counts from the five clinics added up to 357 MHCU. Then the researcher calculated the sample size from the population per clinic using Raosoft sample size calculator using the following equations:

$$x = Z(^{c}/_{100})^{2} r(100\text{-}r)$$

$$n = {}^{Nx}/_{((N\text{-}1)E^{2} + x)}$$

$$E = \mathrm{Sqrt}[{}^{(N - n)x}/_{n(N\text{-}1)}]$$

Where N is the population size, r is the fraction of responses that you are interested in, and $Z(c/100)$ is the critical value or the confidence level c. The margin of error was set at 5% and the confidence level at 95%. The researcher calculated the sample size of each clinic separately to ensure that the population of each clinic was well represented in the sample, in order to increase the sample power. The calculated sample size was 299 MHCU. Then simple random sampling was employed to select 299 MHCU to participate as calculated per clinic. Figure 3.1. Displays the flow of sampling techniques. Then the researcher traced the MHCU with the Home Based Carers to recruit them to participate in the study. The researcher has explained the research project, the purpose and the ethical considerations were explained to the family members of the MHCU. Then the family members granted the permission for the MHCU to participate in the study. The characteristics that were sought by the researcher and hence serve as inclusive criteria were:

1. All MHCU (both males and females) aged 21 years and above.
2. All MHCU who have been on antipsychotic treatment for more than a year
3. All MHCU who have passed Short Portable Mental Status Questionnaire (SPMSQ) to determine cognitive impairment

Figure 3.1. Diagrammatic flow of sampling in the study

Finally, the researcher administered Short Portable Mental Status Questionnaire (SPMSQ) to all the 299 MHCU in order to determine their eligibility to participate in the study. The SPMSQ is a 10 item questionnaires used to screen cognitive impairment of the MHCU (See Appendix 3.1 for SPMSQ).In this regard, MHCU were expected to get all the questions right or erroneously answer at most two questions in order to qualify to participate in the study. Those who erroneously answered three or more questions were declared as having cognitive impairment so they did not qualify to participate in the study. However, the SPMSQ was administered to 299 MHCU and only 234 MHCU qualified to participate in the study. The Registered Nurses (RNs) were engaged to assist administering the SPMSQ in the five health care facilities that were participating in the study for MHCU who were unable to read and write to avoid biasedness. The RNs were filling the SPMSQ for them and in the same time fill the responses of the MHCU in the presence of the researcher. Table 3.1. Summarises the quantities of the sampling process.

Table 3.1: Health Facilities in Tswaing Sub District and their distribution of mental health care users on antipsychotic treatment

Name of the clinic	Population per clinic	Sample size per clinic (as calculated with Raosoft sample size calculator)	MHCUs with 0-2 errors in the SPMSQ
Clinic A	94	76	57
Clinic B	91	74	61
Clinic C	80	67	52
Clinic D	65	56	43
Clinic E	27	26	21
Total	**357**	**299**	**234**

3.4 Validity

An existing tried and tested instrument was adopted for this study. The instrument has been validated in different settings and was also tested in this study during the pretesting. The study was piloted at a Community Health Centre different from the study site. Ten MHCU that were more than six months on treatment were nominated to participate in the study. The results revealed feasibility of the study.

3.5 Reliability

This study was based on a collection of widely tested and used instruments with known reliability. Inter-rater reliability was also done through a random selection of ten MHCU to check responses using two different interviewers who interviewed the same set of respondents using the same instrument at different. The structured interview schedule was translated to Setswana in order to accommodate those who cannot speak English in

the study. Forward and backward translation was used in order to ensure an accurate translation of the interview schedule. This was done by having one language expert translated the original version to Setswana. Following this another expert translated the new Setswana version back to English. Finally the consistency of both English versions were checked and used to correct the Setswana instrument as appropriate.

3.6 Data Collection

Data was collected only during the day during work hours because the MHCU were requested to come to the facilities to enable the researcher to collect data. The researcher was allocated a private room in the health care facilities which participated in this study to collect data in order to maintain privacy and confidentiality of the MHCU. For the MHCU who were unable to read and write they were allocated a registered nurse to read the questionnaire for them and in the same time fill the responses of the MHCU in the presence of the researcher. Data was collected only on MHCU who have passed SPMSQ questionnaire that was administered by the RNs. There was also one questionnaire that was used to collect data. The questionnaire comprises three sections which are: socio demographic characteristics, Patient adherence record, Visual Analogue Scale (VAS) and Pill identification test (PIT).

3.6.1 Patient adherence record

This questionnaire has 16 questions and comprises two sections namely socio demographics characteristics and patient adherence record which is self-reporting. The socio demographic characteristics have 6 questions which are age, gender, educational level and marital status. The MHCU were expected to tick in the appropriate answer where applicable. The patient adherence record which was self-reporting comprises 10 questions which were expected to be answered with Yes or No. The questionnaire was developed based on the four level factors namely patient, treatment, health care provider and nurse level factors (Osterberg & Blaschke, 2005:487). These four level factors were reported to be associated with non-adherence to antipsychotics among MHCU (Osterberg & Blaschke, 2005:487) see adherence questionnaire in Appendix 3.2. After the adherence questionnaire mental health care users were given the VAS.

3.6.2 Visual analogue scale (VAS)

A Visual Analogue Scale (VAS) is a psychometric response scale which is used in a form of questionnaire. The VAS is typically used to measure the intensity, strength, or magnitude of individuals' sensations & subjective feelings, and less often the relative strength of their attitudes and opinions about specific stimuli & frequency of engaging in specified behaviours such as adherence to a therapeutic regimen (Amico *et al.*,2008; Ivanova *et al.,* 2008). In a study that was conducted by Seth, Kalichman, Christina, Amaral, Connie-Swetzes, Michelle Jones, Rene Maly, Moira, Kalichman, Chauncey and Cheroy (2009:367) in order to determine the validity and reliability of VAS and Unannounced Pill Counts (UPC) in measuring treatment adherence. The VAS and UPC obtained a similar pattern of correlations with common adherence related factors. The VAS had the results that paralleled the results obtained from the fair and more burdensome UPC. The recommendation of the study was that VAS is valuable because it reflects individual' awareness of adherence. The advantages of VAS are that it is relatively easy to construct, administer and score. It offers a simple, brief and inexpensive option for measuring adherence with potentially minimal burden (Deschamps, 2008:735). The disadvantage of VAS is that it is said to overestimate adherence with the data suggesting that the adherence question used with the VAS is accurate according to Horne and Weinman (2006:65).

When using the VAS, the researcher asks the client to think back over the past four days and identify the times when he/she either missed a dose. Show a client a copy of this VAS, or an unmarked enlarged version. While placing your finger on the appropriate scale, tell the client that if he/she had taken all medicine doses to point to 10. If the MHCUs missed all the doses, he/she would point to 0- in the meantime; you move your finger to 0. Now give the MHCU an opportunity to point their level of adherence. The researcher then marks the VAS. If the scale is marked off at 4, then the percentage of adherence would be 40%. (See VAS in Appendix 3.2). The VAS is then followed by the PIT

3.6.3 Pill identification test (PIT)

The Pill Identification Test was used to assess the knowledge of MHCU regarding their prescribed medications. The questionnaire comprises the name of the medication, the number of pills per dose, the time medication is taken and any instructions. The researcher held sachets of prescribed medications of mental health care who were participating in the study and asked them the above mentioned which appeared in the questionnaire.

3.7 Data analysis

The Statistical Packages for Social Sciences (SPSS) for windows version 20 was used for data analysis. Chi-square test was used to assess the relationship between demographic characteristics and level of adherence. The level of adherence was determined by using frequency distribution. Graphs and tables were mostly used to present the results given the descriptive design of the study.

3.8 Ethical considerations

The study had various measures to protect the rights and dignity of the MHCU. The measures also took cognisance of the fact that MHCU are often classified among vulnerable populations hence extra-efforts were taken to include MHCUs who were competent to consent and participate by screening them using the SPMSQ questionnaire. Other rights covered include the rights to autonomy and self-determination, protection from harm, confidentiality and anonymity, justice and fairness.

To ensure the MHCU informed consent, the family members were provided with an information sheet (see Appendix 3.3) providing all the information they needed to know before they could consent to participate in the study. This information was explained to them in their preferred language. This was followed by a request to participate in the study at their volition and the signing of the consents forms. The MHCU were also informed of their right to refuse to answer any particular question or withdraw from the

study at any time. The MHCU were also reassured that they will not be prejudiced or treated unfairly as a result of their non/participation in this study.

The interview questionnaires did not have any personal detail of the MHCU that could be linked to them and hence ensure their confidentiality and anonymity. The interviews were also conducted in a separate room where the MHCU could be interviewed in a quiet and conducive environment. They were reassured that the information provided by them would be confidential it would not be provided to a third party without the consent of the MHCU. The questionnaires will be safely kept by the researcher for a minimum of six years following the study's completion. To further ensure that all the rights of the MHCU covered, the study proposal was reviewed and approved by Research Ethics Committee of North west University, North West Provincial Department of Health. Please see appendixes 3.4 and 3.5 respectively for these documents.

3.9 Summary

This chapter has covered the research design and methods that included study design, population, the study setting, sampling, sample size, pilot study, data collection, data analysis and ethical considerations. Results will be presented in the next chapter.

CHAPTER FOUR

RESULTS

4.1 Introduction

In this chapter findings of this study are presented. The findings will be presented in relation to the manner in which data was analyzed and in relation to the objectives of the study which include describing the level of adherence to antipsychotic drugs, self-reports of known determinants of adherence, the relationships between the level of adherence and socio-demographic characteristics in Tswaing sub-district.

4.2 Data description

Two hundred and ninety nine (299) MHCU were selected to participate in the study before administration of SPMSQ. After the administration of SPMSQ, 234 MHCU qualified to participate in the study. The questionnaire was analyzed and there were no missing values.

4.3 Demographic characteristics of MHCU

The minimum age of the mental health care users who participated in the study was from 21 years and the maximum age was 55 years with average of 36 years and standard deviation of 6.98. About 22.6% of the MHCU were from 21 to 30 years old age group. Most of the MHCU were in the 31 to 40 years old age group 58.0% and about 13% of MHCU who participated were aged 41 to 50 years old and 6.4% of the MHCU were 51 years old and above.

The majority of the MHCU were male (70.0%) and the females were 30.0%. Close to half of the MHCU (45.7%) reported that they have had no formal education and 33.8% had finished schooling at primary level whilst 20.5% have gone to secondary level and

above. The majority of the MHCU 82.5% were single, 12.0% of the MHCU were married and 5.5% of the MHCU were widowed or divorced. Approximately 76.5% of the MHCU were unemployed while only 23.5% were employed (see Table 4.1).

Table 4.1: Demographic characteristics of the mental health care users

Characteristics	Frequency	Percentage
Age		
21 to 30 years old	53	22.6
31 to 40 years old	136	58.0
41 to 50 years old	30	13
51 and above	15	6.4
Gender		
Male	163	70.0
Female	70	30.0
Educational level		
No education	107	45.7
Primary	79	33.8
Secondary and above	48	20.5
Marital status		
Single	193	82.5
Married	28	12.0
Widowed/divorced	13	5.5

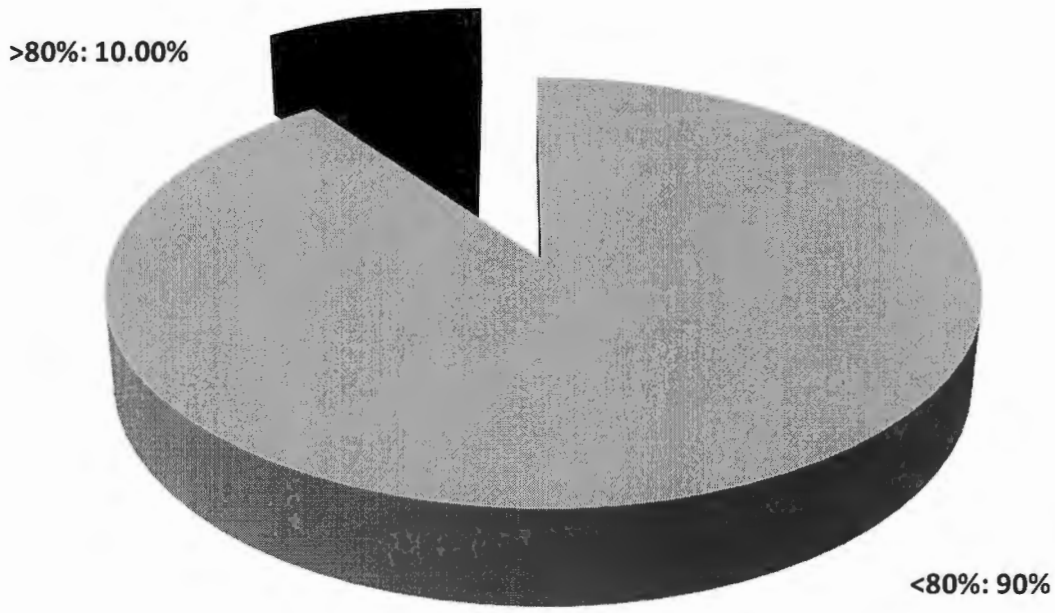
4.4:Level of adherence and the MHCU' perceptions, treatment and health system related determinants of adherence

This section presents the findings of the mental health care users reported adherence level, based on their reported scores on a visual analogue scale. The section also has findings on the frequency of the MHCU using the different recommended antipsychotic drugs and their level of adherence to the respective dugs. MHCU, treatment and health system related determinants of adherence are also reported in this section.

4.4.1 Level of adherence to antipsychotics

Based on the visual analogue scale (VAS), 90% of the MHCU did not meet the minimum optimum level of adherence of 80% as required for antipsychotic drugs to achieve their desired effect. In this regard, only 10% of the MHCU were able to achieve the 80%. These proportions are illustrated in Figure 4.1 below.

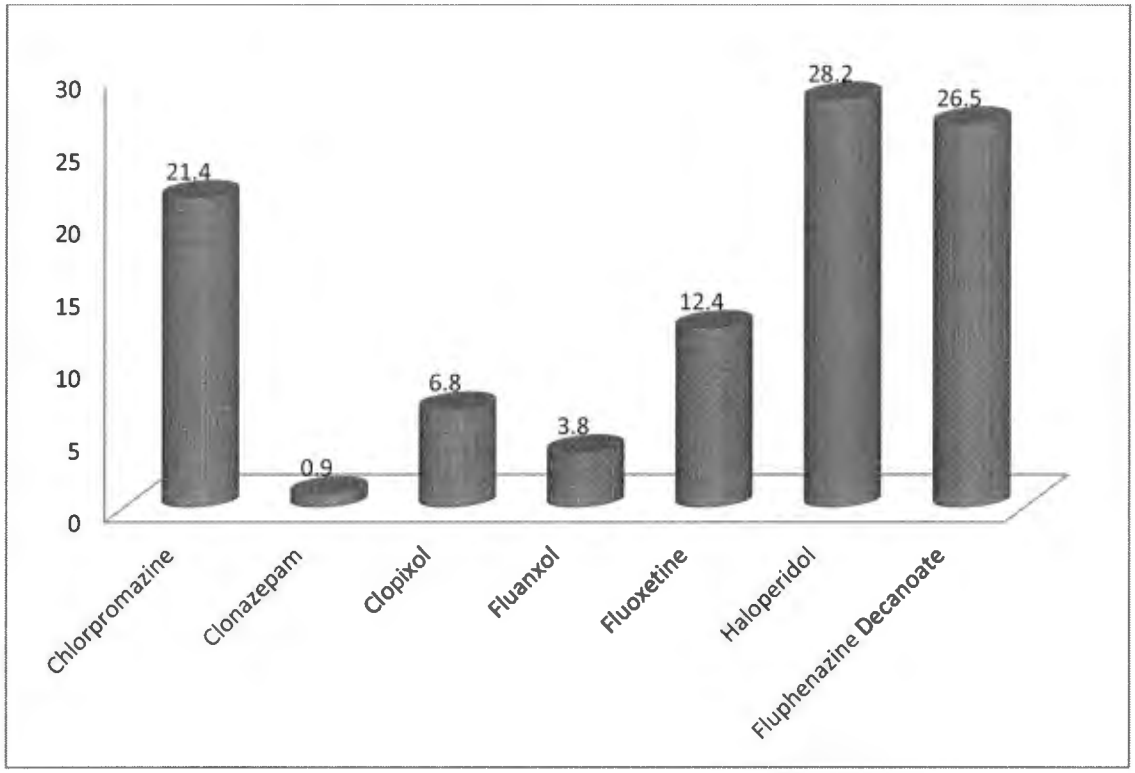
Figure 4.1: Level of adherence of the MHCU categorized by the minimum optimal adherence of 80%



4.4.2 Prescribed antipsychotic drugs among MHCU

Figure 4.2 shows the common prescribed antipsychotic drugs which the MHCU were taking. The MHCU were on seven different types of antipsychotic drugs namely Chlorpromazine, Clonazepam, Clopixol, Fluanxol, Fluoxetime, Haloperidol and Fluphenazine decanoate. The most commonly prescribed antipsychotic drugs were Haloperidol (28.2), Fluphenazine decanoate (26.5%) and Chlorpromazine (21.4%), and then Fluoxetine (12.4%), Clopixol (6.8%), Fluanxol (3.8%) and the least prescribed antipsychotic drug was Clonazepam (0.9).

Figure 4.2: Proportions of the MHCU on different antipsychotic drug



4.4.3 Average patient reported adherence on the visual analogue scale (VAS)

Table 4.2 shows the MHCU average adherence level across prescribed antipsychotic drugs. Adherence levels reported in this study are all based on VAS. The level of adherence in all the prescribed antipsychotic drugs was all below the desired 80%. However the highest average level of adherence was noted among the MHCU on Clonazepam 60% followed by those on Fluanxol 47%, Haloperidol 45%, Chlorpromazine 37% and Fluphenazine decanoate 39%. The least average level of adherence was reported among the MHCU on Clopixol 2% and Fluoxetine 32%. For more information on the average reported levels of adherence by prescribed antipsychotics and their standard deviations see Table 4.2.

Table: 4.2: Average reported adherence level by MHCU

Name of treatment	Mean	Standard deviation
Chlorpromazine	0.37	0.24
Clonazepam	0.60	0.28
Clopixol	0.32	0.13
Fluanxol	0.47	0.16
Fluoxetine	0.32	0.20
Haloperidol	0.45	0.26
Fluphenazine decanoate	0.39	0.20

4.4 .4 Patient, treatment and health system related determinants of adherence

Table 4.3 contains Patient adherence questionnaire which comprises first 10 questions and the last 3 questions was PIT. All these 13 questions were structured according to the commonly known patient, treatment and health service provider related factors that impact on level of adherence. The responses to the structured questions where yes will mean that the MHCU agree with the question/statement and no to show that MHCU disagree with the question/statement. The patient level factors' discussion follows below.

4.4.4.1 Patient factors

The majority of the MHCU (72.2%) used drugs or alcohol when compared to the 27.8% that did not use drugs or alcohol. Almost two-in-three (71.4%) MHCU forgot to take medications. A similar proportion 70.1% of the MHCU reported that they stopped taking treatment when they are weak/not feeling well while the remaining 29.9% reported that they did not stop to take their medications when they were not feeling well/weak.

About half (50.4%) of the MHCU use the correct time to take medications while the remaining half (49.6%) of the MHCU reported that they did not always take their medication at the correct time. About 65.0% MHCU stopped taking medication when they feel better while compared to 35.0% who do not stop to take medications when feeling better. The next level factors to be discussed fall under health services.

4.4.4.2 Health service provider factors

About 45.7% of MHCU reported that they had a good relationship with the nurses compared to 54.3% who reported that they did not have a good relationship with the nurses where they collect medications. About 88.0% of MHCU reported that they waited a long time in queues when they went to collect their medications while 12.0% reported that they do not wait for a long time in the queues when they go for medications collection. Over 68.8% of the MHCU reported that they live far from the clinic/ hospital where they collect treatment (this distance was subjectively assessed by the MHCU) compared to 31.2% of the MHCU who reported that they are not staying far from the clinics/hospitals where they collect medications. The MHCU were questioned on whether they receive their medication every time they go for treatment collection, 76.1% of MHCU responded that they do not always get their medication when they go for medications collection while 23.9% reported that they got medications when they go for medication collection. The last level factor falls under treatment

4.4.4.3 Treatment factors

About 79.1% of the MHCU had experienced side effects from the prescribed antipsychotics while 20.9% reported that they did not experience side effects from the prescribed antipsychotics. About 43.2% of the MHCU demonstrated that they knew how many pills they are taking compared to 56.8% who reported that they did not know how many pills they are taking. Over 38.9% of the MHCU reported that they knew when to take pills compared to 61.1% of the MHCU who reported that they do not know when to take pills. A similar proportion 33.8% of the MHCU responded with "yes "to the question: 'Do you know any additional instructions needed for your medication while 66.2% reported that they do not know any additional instructions see Table 4.3.

Table 4.3: Patient' perceptions, treatment and health service provider related factors that impact on level of adherence (N =234)

Characteristics	Response Yes (%)	Response No (%)
Do you ever forget to take your medications?	71.4	28.6
Do you ever use the correct time to take your medications?	50.4	49.6
When you feel better, do you stop taking your medications?	65.0	35.0
When you are weak, do you stop taking your medications?	70.1	29.9
Do you stay far from the clinic/hospital where you collect medications?	68.8	31.2
Do you have side effects from the medications that you are taking?	79.1	20.9
Do you have good relationship with the health care professionals where you are collecting medications?	45.7	54.3
Do you use drugs/alcohol?	72.2	27.8
Do you wait for a long time in the queue when you go for medication collection?	88.0	12.0
Do you get your medications every time when you go for collection?	23.9	76.1
Do you know how many pills are you taking?	43.2	56.8

Do you know when to take your pills?	38.9	61.1
Do you know any additional instructions?	33.8	66.2

4.5: Level of adherence by socio-demographic characteristic

Table 4.4 shows the MHCU level of adherence across different socio-demographic groups. The demographic characteristics included in this result are age, gender, educational level and marital status. The majority (90.2%) of the MHCU between 21 to 30 years did not meet the optimum adherence level of 80% while 9.8% of the MHCU managed to meet the optimum adherence level. About 89.6% of the MHCU between 31 to 40 years did not met the optimum a while 10.4% of the MHCU managed to meet the optimum adherence. A higher proportion (90.0%) of the MHCU between 41 to 50 years did not meet the optimum adherence while (10.0%) of the MHCU did meet the optimum adherence level. A higher proportion (93.3%) of MHCU in the 51 years old range and above did not reach 80% optimum adherence level while 6.7% of the MHCU managed to meet the optimum adherence level (See Table 4.5).

Table 4.4: Level of adherence by socio demographic characteristic (N =234)

Demographic characteristics	< 80%	>80%	p-value
Age			
21 to 30 years old	90.2	9.8	0.97
31 to 40 years old	89.6	10.4	
41 to 50 years old	90.0	10.0	
51 years and above	93.3	6.7	
Gender			
Male	93.1	6.9	0.03
Female	84.1	15.9	
Level of education			
No education	96.2	3.8	0.00
Primary	89.6	10.4	
Secondary and above	76.6	23.4	
Marital status			
Single	90.5	9.5	0.66
Married	85.2	14.8	
Widowed/divorced	92.3	7.7	

CHAPTER FIVE

DISCUSSIONS, LIMITATIONS, RECOMMENDATIONS AND CONCLUSIONS OF THE STUDY

5.1 Introduction

This chapter discusses the findings of the study according to its objectives which are, describe the level of adherence to antipsychotics among MHCU, describe MHCU' perceptions of factors affecting their level of adherence and describe the relationship between level of adherence and MHCU' socio-demographic characteristics. A descriptive and cross sectional study was conducted in Tswaing Sub-district. The adherence questionnaire and VAS instrument were used to collect data. This chapter also includes the discussion of, limitations, recommendations and conclusions of the study.

5.2 Discussion of the findings

The findings that will be discussed in the first objective are the level of adherence to prescribed antipsychotics and prescribed antipsychotics among MHCU.

5.2.1 Level of adherence to prescribed antipsychotics

The findings of this study has revealed that 90% of the MHCU did not meet the minimum optimum adherence level of 80% as required for antipsychotic drugs to achieve their desired effect. In this regard, only 10% of the MHCU were able to achieve the 80%. The level of adherence reported in this study may be viewed to be unusually low since it has been reported than less than 90% of MHCU in Tswaing Sub-district had low level of adherence. Although this study supports the view of low level of adherence among MHCU, the overall level of adherence differs with the one that has been reported in the previous studies. This was supported by findings of the study that was conducted by Gilmer, Dolder, Jonathan, Folson, Lindarner, Garcia and Jeste (2004:692) in San Diego which varied different levels of adherence. The results were as follows: 41% of MHCU who had a Medical aid were found to be adherent to their prescribed medications, 24%

were non-adherent and 16% were partially adherent. The overall level of adherence was low. In a cross sectional study that was conducted in France, 30% of MHCU were found to have low level of adherence towards their prescribed medications (Dassa, Boyer, Benoit & Bouriet, 2010:921). Conversely, the findings of the study that was conducted in New York revealed complete adherence of 80, 8% whilst 19, 2% were non-adherent. The reason for the high level of adherence might be that New York is a big city and that they are well resourced with their systems that are up to date. These may be an advantage for them in terms of maintaining optimum adherence level because they have advanced resources as described previously.

5.2.1.1 Prescribed antipsychotic drugs among MHCU

The most commonly prescribed antipsyphotics in this study were Haloperidol (28.25%), Fluphenazine decanoate (26.5%), Chlopromazine (21.4%), Fluoxetine (12.4%), Clopixol (6.8%), Fluanxol (3.8%) and Clonazepam (0.9%). Moreover, the most prescribed antipsychotics in this study were typical (conventional) drugs. They were reported to be characterized with severe side effects (Woods, 2003:630). The side effects experienced from the typical antipsychotics has been reported to be associated with the low level of adherence (Wang, 2005:2335).

Furthermore, the highest average level of adherence was noted among the MHCU who were on Clonazepam (60%) followed by those on Fluanxol (47%), Haloperidol (45%) and Fluphenazine decanoate (39%). The least average level of adherence was reported among the MHCU on Fluoxetine (32%) and Clopixol (2%). The average level of adherence in all the prescribed antipsychotic drugs was all below the desired 80%. However, the highest average level of adherence was maintained by MHCU who were on atypical antipsychotics which are Clonazepam and Fluanxol. The Atypical antipsychotics are said to be usable and very responsive (Dolder, Lacro, Dunn & Jeste, 2003:103). This is supported by the findings of the study that was conducted by Dolder *et al.*, (2002:216) in California regarding adherence levels between Typical and Atypical antipsychotics. The study revealed that adherence level at 6 and 12 months were moderately higher in MHCU who were using atypical antipsychotics. Conversely, Cabeza, Amador, Lopez and

Chavez (2000:319) found no association between adherence and treatment type in a study which included 60 mental health care users.

Thus means the findings of the studies could be limited by the absence of an objective measure of actual adherence, design, demographic factors and the population for the study (Van Putten, Marder, Wirsling, Caber & Aravigiri, 1990:786). Furthermore, this study was conducted in Tswaing Sub-district and it is a rural area and most of the adherence studies were conducted in urban settlements thus making the difference.

5.2.2 Perceptions of MHCU about factors affecting their level of adherence

The findings that will be discussed in this objective are the patient related factors, health service related factors and treatment related factors.

5.2.2.1 Patient related factors

The findings of this study reported that majority (72,2%) of MHCU were abusing substances. These findings are supported by Osterberg *et al.,* (2005:487) who reported that substance abuse is the predictor of medication adherence among MHCU. The continous use of substances has been reported to be associated with negative results of cognitive decline (D'Souza, Abi-Saab, Madomik, Braley, Gueorgueiva, Cooper & Krsatal, 2005:594). When MHCU experience cognitive decline, they will start to display negative behaviours such as forgetting to take treatment (Lepage *et al.,* 2010:1213). In relating what has been discussed above, it is evident in this study that the high proportion (71,4%) of MHCU do forget to take treatment. Similar results were reported by Robinson, Woerner, Alvir, Bilder, Gregory, Hinrichssen and Lieberman (2002:209). The other findings reported by this study include (65,0%) of the MHCU who stop treatment when feeling better, and (70,1%) when feeling weak. This was supported by the findings of the study that was conducted by Taj *et al.,* (2008:432) which revealed that 28% of the MHCU stopped treatment when their conditions improved.

5.2.2.2 Health service related factors

This study found that 79.1% of the MHCU had poor relationship with the nurses. Failure to build rapport with MHCU in a health care setting can compromise the trust

amongst the two parties (Lacro *et al.,* 2002:892). Lack of trust between the nurses and the MHCU can affect the level of adherence (Velligan *et al.,* 2009:884). A trusting relationship between the nurses and the MHCU softens the alliance by giving the nurses chance of identifying early barriers to treatment (Velligan *et al.,* 2009:884). This was supported by the findings of the study that was conducted by Weiden (2007:14) about the impact of nurses relationship among the MHCU. The findings of the study revealed that the MHCU who formed good relationship with their nurses within the first 6 months of

treatment were adhering to their treatment. After 6 months, 74% of the MHCU with good doctor/nurse relationship versus 26% to 28% of those with fair to poor doctor/nurse relationships respectively were considered completely adherent. The study also found that the majority of the MHCU (76.1%) were not receiving their medications regularly when they go for treatment collection. Even though there is no empirical proof from the literature review of this study.

5.2.2.3 Treatment related factors

Furthermore, medication adherence has been shown to be affected by side effects that are experienced from the prescribed medications. This evidence is supported by the findings of this study which reported that 79,1% of MHCU where complaining of side effects from their prescribed medications. Similarly, Jonsdottir, Opjordsmoen, Berkenaes, Simonsen, Engh, Ringen, Vaskinn, Frills, Sundert and Andreassen (2013:23) conducted the study which confirmed relationship between non-adherence and side effects. In supporting this findings, Lacro *et al.,* (2002:892) reviewed 39 studies and 9 of the studies where purposely examining medication side effects experienced from the prescribed medications. Only one review revealed that medication side effects do affect adherence (Dibonaventura, Gabriel, Dupclay, Gupta & Kim, 2012:12). Conversely, several studies where conducted with the objective of measuring adherence and the findings revealed no relationship between non-adherence and side effects (Diaz *et al.,* 2004:354 & Nakonezny, Byerly & Rush, 2008:259).

It is evident that the MHCU in this study did not have a good relationship with nurses as evident from the data. This is supported by the fact that the high proportion of MHCU did not know the number of pills they are taking, when to take pills and additional instructions to the medications. It is the responsibility of nurses to discuss medication side effects with the MHCU (Rungruangsirispan, Sittingmongkol, Maneersriwngul, Talley & Vorapongsathorn, 2011:269). This will assist MHCU in understanding their condition better and know what is expected from them because most of the MHCU has reported that their good relationship with nurses has contributed a lot in assisting them manage side effects (Gray, Rofail, Allen & Navey, 2005:31).

5.2.3 Relationship between level of adherence and patients socio-demographic characteristics

The literature has revealed that demographic factors do have an influence on adherence among MHCU (Valenstein, Ganoczy & Mc Carthy, 2006:1542). The demographic factors that were covered in this study include age, gender, level of education and marital status. The findings of this study revealed that the MHCU who obtained a minimum requirement for adherence from 21 to 30 years (6,7%), followed by 31 to 40 (10,4%), then 41 to 50 (10,0%) and 51 years and above (6.7%). Based on the above findings regarding age, Fleishhacker, Rabowitz, Kemmiter, Eeerdekens and Mehmert (2003:131) has reported age is one of the predictor of adherence. The elders are likely not to adhere to medication because of the brain degeneration which result in cognitive decline causing amnesty (Fleishhacker, Oehl & Hummer, 2003:10).

Hence this study revealed low level of adherence between both males (6,9%) and female (15,9%) MHCU, females were adhering better than the males. Moreover, the high rate of non-adherence was reported in males due to more psychopathologic symptoms (Koster, Lajer, Lindhardt & Rosenbaum, 2008:940). This study also found that the majority (96.2%) of the MHCU with no formal education had lower adherence levels. This is supported by the findings of the study that was conducted by Kazadi et al (2008:52) which revealed non-adherence to prescribed medications is more prevalent in the MHCU who had gone to school up to primary level. These finding suggest that the level of

adherence may be driven by a person's level of education as indicated by Almond *et al.,* (2004:346).

Furthermore, the MHCU who were single had the suboptimal adherence. Velligan *et al.,* (2009:14) has linked being single to be associated with the lack of support. They supported this statement by saying lack of social support among MHCU primarily result to non-adherence. Mohamed, Rosenheck, Mc Evoy, Swartz, Stroup & Liebermann (2009:336) reported that the supportive behaviour provided by the family/partners may reinforce medication usage (Mohamed *et al.,* 2009:336). Therefore, all these findings indicate that the is a relationship between the level of adherence and sociodemographic characteristics and variables.

5.3 Conclusions

Following the study findings, discussions and literature support, the following conclusions can be made by this study:

- The level of adherence among MHCU was generally very low.
- High level of adherence was noted on atypical antipsychotics compared to typical antipsychotics.
- Health service related factors, patient related factors and treatment related factors were described as contributory factors to low level of adherence, namely medication unavailability, long waiting times, negative attitudes towards medications and side effects.
- There was a relationship between level of adherence and participants' socio-demographic characteristics, namely low level of adherence was high on MHCU who were single, with no education and males.

5.4. Limitations of the study

The study was carried out successfully but it was not without some shortcomings. As indicated above, the study was cross-sectional and descriptive and this makes the findings of the study inconclusive. This necessitates undertaking a longitudinal study or a cohort

study with high number of MHCU. The study was also not funded that's why the researcher failed to access other health care facilities due to the bad conditions of the road

in Tswaing Sub District. The researcher also took time to collect data because study sampling were MHCU so it was more challenging to access them because the villages were scattered so the researcher ends up tracing them by utilizing Home Based Carers.

5.5 Recommendations

Despite the limitations discussed early in this chapter, numerous recommendations could be drawn from the conclusions and results of the study. These recommendations will be made based on the service provision, education as well as future research.

5.5.1 Recommendations for Health Care Provision

The potential findings of this study might help policy makers and mental health co-ordinators in the development of policies and programs that will enhance the level of adherence among MHCU.

- If nurses provide psycho-education and support services they would be in a better position to supervise the MHCU in taking their medication and hence improve the level of adherence.
- The communication between nurses, the MHCU and the families must be improved in order to enhance the level of adherence among the MHCU.
- If the nurses conduct mental health awareness campaigns it would be a good platform to educate the MHCU about their illness, medications (effects and side effects) and the importance of full adherence to prescribed antipsychotics.
- It is the responsibility of the nurses to initiate support groups in order to share ideas about how are the MHCU handling themselves regarding medication adherence and to advise each other on how to overcome the problems encountered.