PSYCHOACTIVE SUBSTANCE USE AMONG PSYCHIATRIC OUTPATIENTS OF A TERTIARY HOSPITAL IN NIGERIA

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DECLARATION

I declare that the work in the thesis entitled 'Psychoactive Substance Use among Psychiatric Outpatients of a Tertiary Hospital in Nigeria' has been performed by me under the supervision of Prof. (Mrs.) H. O. Kwanashie and Dr J. I. Ejiofor.

The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for the award of another degree or diploma at any university.

OKPATAKU, Izehinosen Christopher ______________________ ___________

Signature Date

CERTIFICATION

This thesis entitled ''**PSYCHOATIVE SUBSTANCE USE AMONG PSYCHIATRIC OUT PATIENTS OF A TERTIARY HOSPITAL IN NIGERIA**'' by Okpataku, Izehinosen Christopher meets the regulations governing the award of the degree of Master of Science in Pharmacology of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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Prof. (Mrs.) H. O. Kwanashie Date_______________
Chairman, Supervisory Committee

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DEDICATION

This study is dedicated to the Almighty God and to all mentally ill patients suffering as a result of substance use disorders.

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ABSTRACT

Psychoactive substances and mental illness is a common comorbidity with poor treatment outcome on patients in some parts of the world. In Nigeria, there is dearth of information on the use of psychoactive substance in mentally-ill patients and their effects. This study investigated the influence of socio-demographic factors, prevalence and types of psychoactive substance use and the effect of these substances on adherence to prescribed medication among psychiatric out-patients of the Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, Nigeria. For this descriptive cross-sectional study, all adult patients (18 years and above) who had previously attended the clinic at least1 year prior to the data collection period of 4 months were used. A sample size of 207 obtained from an estimated population of 450 regular attendees expected to visit the clinic was calculated. From the routine clinic follow-up, each consecutive 4th patient eligible for the study was interviewed until the sample size was attained. The selected respondents were made to complete a socio-demographic and drug use questionnaires and were then administered the Schedule for Clinical Assessment in Neuropsychiatry (SCAN). The data generated from these instruments was analysed by means of descriptive statistics using the statistical package for social sciences (SPSS), version 16. Chi square and t-tests were used to test for differences in proportion for categorical and continuous variables respectively. A total of 208 respondents were interviewed (52.9% males and 47.1% females). Although respondents in the age bracket of 21 to 40 used the substances more, this difference was not statistically significant (p=0.83). The sex, marital status, highest level of education and occupation of the respondents were found to be significant predictors of substance use. From this study, males, those who were married, those with higher level of education and the unemployed were found to use psychoactive substances more. The prevalence for the use of at least one psychoactive substance was 29.3%, while that for the use of multiple substances was 17.7%.

The most commonly used substances were alcohol, cannabis and tobacco and they were also the ones used in combination with one or the other. Other substances used to a lesser extent included anxiolytics, solvents and opioids. The SCAN identified 10.1% of the respondents with psychoactive substance use disorder of one type or the other. No statistically significant relationship between substance use and adherence. This use of psychoactive substance is common among psychiatric outpatients of the ABUTH and adherence behaviour is influenced by substance use. Further studies using larger sample size are therefore needed to evaluate the relationship between substance use and medication adherence and other effects such as poor response to medication in mentally-ill patients.

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ABBREVIATIONS, DEFINITIONS AND GLOSSARIES

ABUTH	Ahmadu Bello University Teaching Hospital
CB	Cannabinoid Receptor
DSM	Diagnostic and Statistical Manual
DRA	Dopamine Receptor Antagonist
GABA	Gamma Amino Butyric Acid
GBD	Global Burden of Disease
ICD-10	International Classification of Diseases 10^{th} edition
LSD	Lysergic Acid Diethylamide
Nac	Nucleus Accumbens
NCS	National Comorbidity Survey
NHS	National Health Survey
NMDA	N-Methyl D- Aspartarte
NPC	National Population Commission
NSDUH	National Survey on Drug Use and Health
PCP	Phencyclidine
UN	United Nations
UNODC	United Nations Office on Drug and Crime
VTA	Ventral Tegmental Area
WHO	World Health Organization

Affect	the tone of emotion
Comorbidity	medical conditions existing simultaneously
Co-occurrence	used interchangeably with comorbidity
Primary Mental Disorder	mental disorder other than psychoactive substance use

Psychoactive substance	chemical substances which cross the blood brain barrier and acts primarily upon the central nervous system resulting in alterations in thought, perception, mood, consciousness, cognition, and behaviour.
Relapse	the reoccurrence of mental or other disorders after a period of normal health
Substance	used interchangeably with psychoactive substance

CHAPTER ONE

INTRODUCTION

1.1 Statement of the Problem

Mental disorders includes a heterogeneous group of conditions which have been traditionally put into groups as organic brain disorders, psychotic disorders, affective disorders, neurotic disorders, behavioral disorder, childhood disorders etc. These conditions essentially affect thought, emotional, behavioral and perceptual processes, often resulting in an enduring pattern of deviation from what is considered normal. Mental disorders are known to afflict humans from childhood to adulthood. However, some of these disorders are more common to some age group and sex. In addition, some mental illnesses show some sub-culturally based modification and expression of symptoms. The psychotic disorder which is one of the most severe and dramatic form of the mental disorders can often be a persistent illness. A common type is schizophrenia which according to current thinking arises from a hypothetical hyperdopaminergic activity in the limbic system. Schizophrenia exerts a great deal of loss and damage to the sufferer and has the capacity to interfere with his or her life expectations. It can result in deterioration of the individual's overall life achievements and performance especially if it goes untreated or coexist with psychoactive substance use.

The use of psychoactive substances dates back as far as 10, 000 years ago (Merlin, 2003) and indeed have become popular such that the symbolic attachment on them in the socio-cultural lives of people will most likely continue. Psychoactive substances affect mental processes (WHO, 2011), similar to those affected by mental illness. Mentally-ill patients may resort to the use of substances to relieve symptoms, but these substances also tend to bring about changes in consciousness (such as increased alertness) and mood (such as euphoria) to warrant their continuous use despite risks and consequences. The use of alcohol and other psychoactive substances (cannabis, tobacco etc) is increasing in most parts of the world and there is a growing concern about this trend and its consequences (Jamison, *et al.*, 2006; WHO, 2011). When taken, these substances directly or indirectly cause the increased release and activity of dopamine in the limbic system and this has been implicated in psychosis. Increased dopamine release in the limbic system is also the common path for reward (stimuli that provide positive motivation for behavior) after substance use. Psychoactive substance use tends to increase dopaminergic activity in the brain, thereby increasing the risk of psychiatric symptom exacerbation and relapse and compromising the efficacy of neuroleptics (Drake and Wallach, 1989). Dopamine and its receptor-based interaction during mental illness and or psychoactive substance use are critical for the understanding of the negative events that occur in patients with both conditions as well as the development and formulation of pharmacological interventions.

The coocurrence of psychoactive substance use and other mental illness have driven several interest largely due to observations in clinical samples that patients with both disorders suffer more persistent and severe course of illness and more likely to be treatment-resistant than patients with 'single' disorders (Brady *et al.*, 2004; Margolese *et al.*, 2004). Comorbidity of mental illness and psychoactive substance use is a major challenge to management of both disorders in several parts of the world (Rachbiesel, *et al*., 1999). It has been found to be associated with increased psychiatric admission, poor treatment outcome in both psychiatric and substance use treatment population,

disabilities and medication non-adherence (Owen *et al.*, 1996; Compton *et al*., 2007; Hunt *et al*., 2002). Some investigators have further suggested that conventional antipsychotics used in the treatment of psychiatric disorders may actually induce or worsen the use of psychoactive substances (McEvoy, *et al.*, 1995; Voruganti, *et al*., 1997), especially in patients with schizophrenia. In hospital situation, patients with both conditions are known to have more exacerbations of acute psychiatric symptoms, persistent symptoms of illness despite use of medications, and evasive attitude towards health care. They also have high relapse rate and high utilization of health and social facilities, physical disorders, high rate of abandonment of hospital care, attenuation of social achievements and poor treatment adherence behavior.

Medication adherence has been defined as the "active, voluntary, and collaborative involvement of the patient in a mutually acceptable course of behavior to produce a therapeutic result (*Cramer et al., 2008;* Delamater, 2006*).* Patients with psychiatric disorders who use psychoactive substances often have a tendency not to adhere to their prescription medications and such comorbid cases have been found to be associated with an increased rate and length of hospitalization, increased risk for hospitalization in the future and poorer illness outcome for such conditions (Linn *et al.*, 1982; Baby *et al.*, 2009; Mahmood, 2010).

After thorough search of the available literature by the researcher, there was paucity of information on comorbidity and it is necessary to know clearly the burden in this environment. How common is the coexistence of psychoactive substance use and mental illness, what substances are used, its socio-demographic correlates and its relationship with medication adherence in patients attending the out-patient clinic of a semi-urban tertiary teaching hospital? This is what this study seeks to clearly evaluate.

1.2 Significance of the study

Studies done in psychiatric treatment groups have indicated that at least one-half of patients in psychiatric and substance use treatment settings are of the comorbid cases (Carroll *et al.*, 1993; Halikas *et al.*, 1994; Hien and Scheier, 1996; Callaly *et al.*, 2001). The lifetime prevalence rate of substance use among persons with schizophrenia was close to 50% (Regier *et al.*, 1990; Mueser, *et al.*, 1995) as recorded in other parts of the world, but no data is available for Nigeria and the local community. In Zaria, patients with this comorbidity, if detected basically receive treatment for the primary psychotic disorder, while the substance use problems sometimes go untreated or undetected. Attempts are made in some psychiatric centres to give low dose antipsychotics to 'block' the supposed 'high' that is expected to arise from dopamine release in the brain. However, after these medical trials, the patients return to substance use almost immediately after leaving hospital confinement.

The patients at the outpatient psychiatric clinic of the Ahmadu Bello University Teaching Hospital Zaria (ABUTH) were known to have a spectrum of socio-demographic variables such as age, sex, gender, and occupation, one or more of which could be associated with psychiatric illness, substance use and health care seeking behavior. It is also not known to what extent these factor influence patients with mental illness and substance use in Zaria.

To date, measurement of patient's medication adherence and use of interventions to improve adherence are rare in routine clinical practice. Medication adherence has been called the "next frontier in quality improvement" and is an important part of outcomes research (*Heidenreich, 2004).* Medication adherence is a growing concern especially to clinicians and healthcare systems, because of mounting evidence that non-adherence is prevalent and associated with adverse outcomes and higher costs of care (Osterberg and Blaschke, 2005), especially in patients with mental illness who are expected to remain on medications for a long time, failure of which lead to relapse of the mental illness, progressive worsening of symptoms and subsequent poor response to medication.

In Nigeria, there is relative dearth of information on the co-occurrence of psychoactive substance use and mental illness. The study documents this comorbidity and evaluates the socio-demographic factors associated with this condition and its relationship with psychotropic medication adherence behavior and also serves as a preliminary investigation toward the future evaluation and formulation of favorable pharmacological interventions and other management strategies for psychiatric patients.

1.3 Aim of the study

The aim of the study was to document psychoactive substance use among psychiatric out-patients in Ahmadu Bello University Teaching Hospital (ABUTH), Nigeria.

1.7 Specific objectives of the study

i. To establish the socio-demographic factors associated with psychoactive substance use in patients with mental illness.

ii. To identify the types and estimate the prevalence of psychoactive substance use among mentally-ill patients in the psychiatric out-patient unit of ABUTH.

iii. To determine psychotropic medication adherence in patients with co-occurring mental illness and psychoactive substance use

1.8 Research Questions

- Is psychoactive substance use common among mentally-ill patients of ABUTH and what are the types and prevalence?

- Is there a relationship between psychoactive substance use and medication adherence?

1.6 Hypothesis

- Age is not a risk factor for the use of PS
- Sex is not a risk factor for the use of PS
- Religion is not a risk factor for the use of PS
- Marital status is not a risk factor for the use of PS
- Level of education is not a risk factor for the use of PS
- Occupation is not a risk factor for the use of PS
- There is no difference in medication adherence in substance and non-substance users

CHAPTER TWO

LITERATURE REVIEW

2.1 History of Psychoactive Substances

There is historical evidence of the production of alcoholic beverages as early as 10,000 BC (Neolithic Period) (McGovern, 2004). The wine jars from Jiahu China which date back to centuries BC, is an evidence of the long standing existence of alcoholic beverages made from fermenting rice, honey, and fruit. A variety of alcoholic beverages were used in China since Paleolithic times. Alcohol, known in Chinese as Jiu was considered a spiritual food rather than a material (physical) food, and extensive documentary evidence attests to the important role it played in their religious life (McGovern, 2004). Alcohol gained prominence as a product to boost the economic power of several nations in the past and as a means of showing hospitality. It has religious significance as it is used in religious worship, being offered to gods, in ceremonies, marriages, celebration of victories in wars and other combats, and as a drug to induce anaesthesia. In Sub-Saharan Africa, other alcoholic beverages like palmwine played important role in many African societies, and other alcoholic beverages produced through fermentation of sorghum, millet, and more recently maize or cassava was common in most parts of Africa.

Tobacco is a plant that grows natively in North and South America. As early as 1 B.C., American Indians began using tobacco in many different ways, such as in religious and medicinal practices and was believed to be a cure-all medicine (Randall, 1999). During the 1600's, tobacco was so popular that it was frequently used as money and was literally "as good as gold" (Randall, 1999). This was also a time when some of the dangerous effects of smoking tobacco were being realized by some individuals (Randall, 1999; James, 2012). European sailors were heavy smokers at the time and their trans-border activities were partly responsible for the spread of tobacco use to most parts of the world (Randall, 1999). Despite campaign against it, tobacco is one of the leading preventable causes of death all over the world (James, 2012).

Cannabis is an indigenous plant to Central and South Asian people and the cannabis plant has been used in China, India, and the Middle East for approximately 8000 years for its fiber and as a medicinal agent (Sadock and Sadock, 2007). However, a chinese treatise on pharmacology attributed to the emperor Shen Nung, and alleged to date from 2737 B.C. contains probably the earliest reference to cannabis and its potential as a medicine (UKCIA, 2014). Cannabis occupies fourth place in worldwide popularity among the mind-affecting drugs - preceded only by caffeine, nicotine and alcohol (UKCIA, 2014). This drug was criminalized in various countries beginning in the early 20th century and is one of the illicit drugs in most parts of the world. Its legal status has been a crucial matter for debate in several jurisdictions of the world at present including some states in the USA where the use of the drug has been recently legalized.

The remains of coca leaves have been found with ancient Peruvian mummies, and pottery from the time period depicts humans with bulged cheeks, indicating the presence of something on which they are chewing (Altman *et al.*, 1985). The coca leaves are indigenous to the Peruvian communities and it has been suggested that the content of the bulged cheeks could have been coca leaves (Altman *et al.*, 1985). The South American peoples have chewed the leaves of Erythroxylon coca for over ten centuries, a plant that contains vital nutrients as well as numerous alkaloids, including cocaine (Altman *et al.*, 1985). The coca leaf was, and still is, chewed almost universally by some indigenous communities. Coca has been used as a medicinal plant, a ritual agent, a local anesthetic and as content in beverages in the past (Karch, 1999). It is a major illicit drug of abuse involved in trans-border trafficking and drug-related criminal activities worldwide.

There is general agreement that the Sumerians, who inhabited what is today’s Iraq, cultivated poppies and isolated opium from their seed capsules at the end of the third millennium B.C. They called opium "*gil*," (joy) (Brownstein, 1993). Most authors agree that, as early as the eighth century A.D., Arab traders brought opium to India and China and that between the tenth and thirteenth centuries opium made its way from Asia Minor to all parts of Europe (Brownstein, 1993) It appears that opium spread from Sumeria to the remainder of the old world and with the drug, came addiction. Starting in the sixteenth century, manuscripts can be found describing drug abuse and tolerance in Turkey, Egypt, Germany, and England. Nowhere was the problem of addiction greater than in China where the practice of smoking opium began in the mid-seventeenth century (Brownstein, 1993).

Some Psychoactive substances which are indigenous to Africa include Khat, a stimulant drug derived from a shrub (*Catha edulis*). It is commonly chewed by people in the horn of Africa (Gebissa, 2010). Khat-chewing is a practice usually found among locals in countries where the plant is indigenous. Khat has not been placed under international control because the scientific evidence of harm is unlikely to rise to a critical mass that would justify its illegalization. However, in the west, it is increasingly considered as a highly potent controlled substance rendering its possession, cultivation and trade illegal (Gebissa, 2010). Similarly, Kola nut which is indigenous to tropical Africa, has its centre of greatest diversity in West Africa and is an important economic cash crop to a significant proportion of Nigerian population who are involved in kola farming, trading and industrial utilization. (Asogwa *et al.*, 2006). Kola nut is widely consumed in Nigeria. After consuming the kola nut, one can go for hours without food or sleep, thus postponing the onset of fatigue (Asogwa, 1978). Other drugs of abuse have similar long standing history of use as they have been related to the culture, ancient tradition, religion and medical uses.

2.2 Global Psychoactive Substance Use Statistics

Globally, it is estimated by the United Nations Office on Drug and Crime (UNODC) survey that between 149 and 272 million people, i.e., 3.3% to 6.1% of the population aged 15-64 has used illicit substances at least once in the previous year, and about half this number is estimated to have been current drug users, that is, having used illicit drugs at least once during the past month prior to the UNODC annual survey (UNODC, 2011). About a decade ago, the World Health Organization (WHO) estimated the extent of worldwide psychoactive substance use to be 2 billion alcohol users, 1.3 billion smokers and 185 million drug users (WHO, 2002). However, the use of psychoactive substances for which there is global effort at their control continues to be substantially lower than the use of a legal psychoactive substance such as tobacco (WHO, 2004a).

The overall number of drug users appears to have increased over the last decade, from 180 to some 210 million people (range: 149-272 million). In terms of prevalence, the proportion of drug users among the population aged 15-64, however, remained almost unchanged at around 5% (range: 3.4%-6.2%) in 2009/2010 (UNODC, 2011). Although about a third of the world’s population is said to be users of alcohol in various forms, (WHO, 2002), caffeine is found to be the most used psychoactive substance globally (Sadock and Sadock, 2007). In terms of legality, cannabis remains by far the most widely used illicit substance (UNODC, 2011). The number of cannabis users was estimated between 125 and 203 million in 2009, equivalent to a prevalence of 2.8%-4.5% of the population aged 15-64. Other illicit drugs of abuse in decreasing frequency of use are amphetamine and amphetamine-like substances, opiates, and cocaine (UNODC, 2011).

In the African region, Alcohol remains the most commonly abused drug in South Africa, followed by dagga (cannabis) and the dagga/Mandrax (white pipe) combination (Parry, 1998). South Africans consume well over 5 billion litres of alcoholic beverage per year (Parry, 1998). The overall prevalence of alcohol misuse is likely to be as much as 30% among certain groups and as low as about 5% in others, and is dependent on factors such as age, gender, socio-economic status and degree of urbanization (Parry, 1998). An unprecedented international attention is drawn to West Africa’s role as an intermediary in the cocaine trade between Latin America and Europe. According to the UNODC’s estimate, about a quarter of Europe’s annual consumption of 135 to 145 tonnes of cocaine currently transits via West Africa (Stephen, 2009). In addition to the cocaine trade, West Africa is also a transit point for much smaller quantities of heroin exported from Asia to North America, as well as being a producer and exporter of cannabis products and perhaps amphetamines (Stephen, 2009).

A recent world mental health survey, in Nigeria and other Sub Sahara African states reported a relatively lesserz proportion of the population consuming drugs of abuse, however, Nigeria accounted for 17% of the cumulative lifetime incidence of psychoactive substance use in that study (Degenhardt *et al.*, 2008). A WHO global report on alcohol, ranked Nigeria among the top nations of adult per capita consumption of alcohol (WHO, 2004b). Other studies have also described the prevalence and pattern of drug use in Nigeria (Pela, 1989; Morakinyo and Odejide, 2003; Omibodun and Babalola, 2004; Igwe *et al.*, 2009). Psychoactive substance use has been found to be commoner in young people worldwide including Nigeria (Omibodun and Babalola, 2004; WHO, 2004b; Igwe *et al*., 2009). Males tend to use the substances more than females (WHO, 2004b), and this accounts partly for their higher proportion with drug dependence and other problems, including being overrepresented in treatment settings for substance use disorders.

There are regional variations in drug use across the world. These differences are related to factors such as income, but not necessarily drug policy, since countries with more stringent policies towards illegal drug use were not found to have lower levels of such drug use than countries with more liberal policies (UNODC, 2011). To the extent that it applies, the economic viability of a nation and the ability of drug users to sustain funding their substance of choice which is related to their income as well as the local availability of the substance are important determinants of drug use.

2.3 Burden of Disease and Prevalence

In an initial estimate of factors responsible for the global burden of disease (GBD), tobacco, alcohol and illicit drugs contributed together 12.4% of all deaths worldwide in the year 2000 (WHO, 2002). GBD is defined by the World Health Organization (WHO) as a comprehensive regional and global assessment of mortality and disability from 136 diseases and injuries and 19 risk factors; it accounts for the morbidity and mortality to an individual that is caused by a specific disease (Jamison *et al.*, 2006). The percentage of total years of life lost due to these substances has been estimated to account for 8.9% (WHO, 2002). A study found the rate of current illicit drug use among Americans aged 12 and older to be 8.7% higher than it was in the preceding year (NSDUH, 2010). Similarly, in England and Wales, 10.1% of adults (16-59years) had used one or more illicit drug within the past year, compared with 9.6% in the previous year of the study (NHS, 2006). Drug use is also prevalent in most parts of Asia and the practice has involved virtually all classes of psychoactive substances known today (Suwanela and Poshyachinda, 2011). The epidemic of substance abuse has assumed alarming dimensions in India (Nadeem *et al.*, 2009). Cannabis, heroin, and Indian-produced pharmaceutical drugs are the most frequently abused drugs (Nadeem *et al.*, 2009). A review on the recent trend on drug abuse in china shows that drug abuse has spread quickly since it re-emerged as a national problem in the late 1980s with the accompanying spread of Human immunodeficiency virus (HIV) which has caused major social and economic damage (Wang *et al.*, 2006).

According to Asuni, apart from cannabis abuse in northern and southern Africa and khat chewing in north-eastern Africa, the history of drug abuse in Africa is relatively short but that the abuse of drugs in Africa is escalating rapidly from cannabis abuse to the more dangerous drugs and from limited groups of drug users to a wider range of people abusing drugs (Asuni and Pele 1986). Odejide (2006) opined that the introduction of prescription drugs to Africa drastically increased the availability and use of psychoactive substances. This notwithstanding, alcohol, cannabis and khat was noted as to remain the most common substances of abuse in Africa (Odejide, 2006). There has been a surge in its use in recent past partly due to the availability of and trafficking activities of narcotics and other stimulants across the continent.

In Nigeria, reports of high use have been studied and documented especially among young people in secondary and tertiary institutions, with reports of lower age at initiation and the trend is said to be rising in some part of the sub region (Abiodun *et al*., 1994; Anochie *et al.*, 1999). A large scale study in Nigeria also shows that drug use and dependence is common in this environment with alcohol reported as the most prevalent (Gureje *et al.*, 2002). This is not surprising as alcohol is used as a substance for recreation, it has wide social acceptability and as a ‘licit’ drug it is readily in circulation and plays a significant role in ethno-religious practices of some groups in this environment. A report on the Socio-Demographic Correlates of Psychoactive Substance Abuse among Secondary School Students in Enugu, Nigeria found about 75.2% of the respondents using more than one substance simultaneously (multiple substance abusers) (Igwe *et al.*, 2009). Drug use is prevalent among all age groups and an increasing cause of concern particularly in young people who constitute a huge proportion of drug users globally (UNODC, 2011).

2.4 Classification of Psychoactive Substances

Attempts have been made to classify the psychoactive substances. Previous methods employed include classifying them according to their effects such as depressants, stimulants etc. Problems with this system of classification is that most drugs of abuse have multiple actions, a drug such as alcohol causes euphoria at low dose and then with increasing intake may ‘depress’ the brain. Under this system, some drugs do not have a predominant effect to allow them fit into the common rubrics. However, this system of classification is conventional and is adopted in this work. The most common psychoactive substances can be divided into depressants (e.g. Alcohol, Sedatives/hypnotics, volatile solvents), Stimulants (e.g. Nicotine, Cocaine, Amphetamines, Ecstasy, Khat, and Caffeine), Opioids (e.g. Morphine and Heroin), and hallucinogens (e.g. PCP, LSD, Cannabis) (WHO, 2004c).

2.5 The Mechanistic Classification of Psychoactive Substance

The various psychoactive substances have different ways of acting in the brain to produce their effects. They share similarities in the way they affect important regions of the brain involved in motivation, and this is a significant feature with regard to the theories of the development of substance dependence. However, there are mechanisms which are common to some of them as briefly described: they act through binding to receptors for which there are endogenous ligand. They can competitively bind to these receptor sites thereby causing an agonistic action identical to the effects that are recognized for the endogenous molecule, a potentiated or antagonistic action, e.g. Cannabis bind to endocannabinoid receptors in the brain and other parts of the body for which there is anandamide, a naturally occurring ligand; Nicotine binds and activates nicotinic acetylcholine receptors; the opiates bind to the opioid receptors to which naturally occurring peptides, endorphins and enkephalins, bind to, and alcohol, benzodiazepines and barbiturates interacts with gamma amino butyric acid (GABA) causing an inhibitory effect. Secondly, psychoactive substances affect the process of neurotransmission by inhibiting reuptake causing the accumulation of neurotransmitters in the synapse or cause the release of neurotransmitters for example; cocaine and amphetamine-type stimulants cause the release or prevent the uptake of the biogenic amines at the synaptic area. Thirdly the psychoactive substances as a group, to various degrees cause the release of dopamine in the nucleus accumbens of the brain. The nucleus accumbens is a very important brain area involved in motivation and learning, and signalling the motivational value of stimuli (Robbins and Everitt, 1996; Cardinal, 2002). This mechanism partly accounts for the positive reinforcement of the drug use experience, the persistent substance-seeking and maladaptive behavior associated with drug use (Robbins and Everitt, 1996).

2.6 Psychoactive Substance Use Disorders

No universal classification of what constitutes unhealthy use exists at present. Many classifications ignore the fact that alcohol and drug use is an accepted part of many social sets, and what is seen as risky behavior by one group is accepted as normal by another. The WHO defines use of psychoactive substance as the self administration of psychoactive substance (WHO, 2004c). There are a wide variety of disorders that differ in severity and clinical form but are all attributable to the use of one or more psychoactive substance which may or may not be prescribed. The international classification of diseases (ICD-10) developed by the World Health Organization (1993), has a diagnostic criteria for mental and behavioral disorders due to psychoactive substance use as follows:

Acute intoxication is a condition that follows the administration of the substance resulting in disturbances in level of consciousness, cognition, perception, affect, or behavior, or other psycho-physiological functions and responses. Harmful use occurs in which the pattern of drug use has caused damage to physical or mental health. Dependence syndrome when there is a cluster of behavioral, cognitive, and physiological phenomena that develops after repeated drug use. It typically includes a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than other activities and obligations, increased tolerance and a withdrawal state. The dependence syndrome is one of the substance use disorders that have been extensively researched with sufferers being unable to function effectively in the socio-cultural context in the absence of the substance. Withdrawal syndrome is the occurrence of a group of symptoms of variable clustering and severity following an absolute or relative withdrawal of the substance. It may occur with or without delirium. Others are the occurrence of a Psychotic disorder, an Amnesic syndrome and a Residual and late-onset psychotic disorder judged to have been caused by the psychoactive substance.

2.7 Neurobiology, Neuropharmacological and Bio-behavioural Basis of Psychoactive Substance Use

Although addictive drugs have diverse molecular targets in the brain, they share the common initial effect of increasing the concentration of dopamine released from mesocorticolimbic projections (Luscher and Ungless, 2006). An important goal of current neurobiological research therefore is to understand the neuropharmacological and neuroadaptive mechanisms within specific neurocircuits that mediate the transition from occasional, controlled drug use and the loss of behavioral control over drug-seeking and drug-taking that defines chronic addiction (Koob, 2011). Addiction has been conceptualized as a chronic relapsing disorder with roots both in impulsivity and compulsivity and neurobiological mechanisms that change as an individual moves from one domain to the other (Koob, 2009). In addiction, drug-taking behavior progresses from impulsivity to compulsivity in a three-stage cycle: binge/intoxication, withdrawal/negative affect, and preoccupation/anticipation. As individuals move from an impulsive to a compulsive disorder, the drive for the drug-taking behavior shifts from positive to negative reinforcement (Koob, 2011). A long-hypothesized key element of drug addiction is that drugs of abuse activate brain reward systems, and understanding the neurobiological bases for acute drug reward has been a key to how these systems change with the development of addiction (Koob and Le Moal, 1997; Koob, 2004).

According to a research by the WHO (2004c), drugs of abuse, despite diverse initial actions, produce some common effects on the ventral tegmental area (VTA) and nucleus accumbens (NAc). Stimulants directly increase dopaminergic transmission in the NAc. Opiates do the same indirectly: they inhibit GABA-ergic interneurons in the VTA, which disinhibits VTA dopamine neurons. Opiates also directly act on opioid receptors on NAc neurons, and opioid receptors, such as D2 dopamine (DA) receptors, signal via Gi; hence, the two mechanisms converge within some NAc neurons. Nicotine appears to activate VTA dopamine neurons directly via stimulation of nicotinic cholinergic receptors on those neurons and indirectly via stimulation of its receptors on glutamatergic nerve terminals that innervate the dopamine cells. Alcohol, by promoting GABA receptor function, may inhibit GABA-ergic terminals in the VTA and disinhibit VTA dopamine neurons. It may similarly inhibit glutamatergic terminals that innervate NAc neurons. Many additional mechanisms (not shown) are proposed for alcohol. Cannabinoid mechanisms are complex and involve the activation of cannabinoid CB1 receptors (which, similar to D2 and opioid receptors, are Gi-linked) on glutamatergic and GABA-ergic nerve terminals in the NAc and on NAc neurons themselves. Phencyclidine (PCP) may act by inhibiting postsynaptic NMDA glutamate receptors in the NAc. Finally, evidence shows that nicotine and alcohol may activate endogenous opioid pathways and that these and other drugs of abuse (such as opiates) may activate endogenous cannabinoid pathways.

Communication in the brain takes place between the individual cells or neurons. The neurons communicate with one another through chemical messengers which are released at synapses. Some of the more well-studied neurotransmitters that are relevant to psychoactive substances are dopamine, serotonin, norepinephrine, GABA, glutamate and the endogenous opioids. Two areas that are very important in substance dependence are the ventral tegmental area (VTA), and a region that it communicates with, known as the nucleus accumbens. The ventral tegmental area is an area that is rich in neurons containing the neurotransmitter dopamine (Wise, 1998). The cell bodies of these neurons send projections to regions of the brain involved in emotions, thoughts, memories, and planning and executing behaviours. The mesolimbic dopamine pathway resides in the midbrain, and is the system that is most strongly implicated in the dependence-producing potential of psychoactive substances (Wise, 1998). This pathway which is dopaminegic, originates from the VTA and terminates in the regions of the Nucleus accumbens and cortex. Psychoactive substances increase the release of dopamine in the nucleus accumbens, which is thought to be an important event in reinforcement (Wise, 1998).

The brain is highly organized into a number of different regions with specialized functions. A region of the brain known as the hindbrain contains structures that are vital to the maintenance of life, such as centres that control breathing and wakefulness, and the midbrain which is a region that contains many areas that are important to the pathophysiology of substance dependence. These regions are involved in motivation and learning about important environmental stimuli and reinforcing behaviours that lead to pleasurable and life-sustaining consequences, such as eating and drinking (WHO, 2004c). The brain also has systems that have evolved to guide and direct behavior toward stimuli that are critical to survival (WHO, 2004c). For example, stimuli associated with food, water, and a mate all activate specific pathways, and reinforce the behaviors that lead to the obtaining of corresponding goals. Psychoactive substances artificially activate these same pathways, but very strongly, leading to enhanced motivation to continue the substance use behavior (WHO, 2004c).

In substance dependence, psychoactive substances repeatedly activate the motivational systems of the brain that are normally activated by such important stimuli as food, water, danger, and mates. The brain is ‘‘tricked’’ by the substances into responding as if the substances and their associated stimuli are biologically needed. Subsequently, through associative learning processes, the motivation to use is developed (WHO, 2004c; Sadock and Sadock, 2007). Psychoactive substance use can be strongly activated by stimuli (environments, people, objects) associated with substance use, causing the desire or craving that can overwhelm people and cause relapse to substance use, even after long periods of abstinence (WHO, 2004c).

The main problems and adverse effects due to substance use can be divided into four categories (WHO, 2004c). Chronic health effects such as liver cirrhosis resulting from alcohol use, lung cancer resulting from tobacco use and other chronic illnesses, injecting drug users and infectious diseases with HIV/AIDS and hepatitis. Acute or short-term biological health effects of the substance. Notably, for drugs such as opioids and alcohol, these include overdose, also included are the casualties due to the substance's effects on physical coordination, concentration and judgment, in circumstances where these qualities are demanded. Casualties resulting from driving after drinking alcohol or after other drug use feature prominently in this category. Acute social problems include adverse social circumstance such as a sudden break in a relationship or an arrest.

Chronic social problems such as defaults in working life or in family roles and interpersonal difficulties are common consequences of drug dependence syndrome.

2.8 Psychoactive Substance Use and Mental Illness

Studies of diagnostic patterns in general population samples carried out in recent years both in the United States (Regier, *et al.*, 1990; Grant and Harford, 1995; Warner *et al.*, 1995; Kessler *et al*., 1996; Kessler *et al.*, 1997) and other parts of the world (Chen *et al.*, 1992; Lehman *et al*., 1994; Merikangas and Stephens, 1998; Wittchen *et al*., 1998; Kessler, *et al*., 2001) consistently find that mental disorders and substance use disorders co-occur at much higher than chance levels. International prevalence studies have revealed that persons with severe mental illness have significantly higher rates of substance use—particularly of alcohol, cannabis, and amphetamines—than the general population (Scott, 1993; Menezes *et al.*, 1996). Menezes *et al* (2006) evaluated all patients with psychotic illnesses who had any contact with the mental health services in a geographically defined sector in the UK. Individuals with problems related to alcohol or drugs were identified using standardised interviews and found that the one-year prevalence rate for any substance problem was 36.3%

(95% CI = 29.1-43.5). Fowler and associates also found higher rates of alcohol, cannabis, and amphetamine use among patients with schizophrenia relative to the general population in Australia (Fowler *et al.*, 1998). Margolese *et al* (2004) in a cross-sectional survey conducted to document abuse in 207 successive outpatients presenting to a psychiatric continuing care facility in a large Canadian city, found that Patients with schizophrenia and related psychoses frequently use, abuse and become dependent on psychoactive substances and nicotine, alcohol and cannabis were identified as the most frequently abused substances. In addition, patients with current dual diagnosis were more likely to smoke cigarettes (88.9%) compared to those with single diagnosis (49.6%) and they had significantly longer histories of cigarette smoking (19.1 for Dual Diagnosis vs. 11.5 years for Single Diagnosis). Most of these studies are based on clinical samples which is associated with health-seeking behavior of the respondents. Less is known, about patterns and correlates of dual diagnosis in the general population. There are advantages to community samples, because treatment samples are biased by the fact that comorbidity is associated with professional help seeking (Regier *et al*., 1990).

In a large scale study, the prevalence of comorbid alcohol, other drug, and mental disorders in the US total community and institutional population was determined from 20,291 persons interviewed in the National Institute of Mental Health Epidemiologic Catchment Area Program. Estimated US population lifetime prevalence rates were 22.5% for any non substance abuse mental disorder, 13.5% for alcohol dependence-abuse, and 6.1% for other drug dependence-abuse. Among those with a mental disorder, the odds ratio of having some addictive disorder was 2.7, with a lifetime prevalence of about 29% (including an overlapping 22% with an alcohol and 15% with another drug disorder). For those with either an alcohol or other drug disorder, the odds of having the other addictive disorder were seven times greater than in the rest of the population. Among those with an alcohol disorder, 37% had a comorbid mental disorder. The highest mental-addictive disorder comorbidity rate was found for those with drug (other than alcohol) disorders, among whom more than half (53%) were found to have a mental disorder with an odds ratio of 4.5 (Regier *et al*., 1990). A population based study by the US National Comorbidity Survey (NCS) found an odds ratio (OR) of 2.4 for comorbidity between any of the lifetime DSMIII-R mental disorders assessed in that survey and any lifetime alcohol or drug use disorder (Kessler *et al.*, 1996). In this NCS study, about half (51.4%) of the NCS respondents with a lifetime alcohol or drug use disorder also met criteria for at least one lifetime mental disorder, while 50.9% of the NCS respondents with a lifetime mental disorder also had a history of alcohol or drug abuse or dependence. Comparable results for 12-month comorbidity in the NCS were 42.7% of respondents with an alcohol-drug disorder also having a mental disorder and 14.7% of respondents with a mental disorder also having an alcohol or drug disorder (OR= 2.6).

The increase rate in the co-occurrence of substance use and other mental illness indicates either a shared neurobiological basis for both, or an interaction of effects at some level.

There are several hypotheses as to why mental illness and substance dependence may co-occur:

1. There may be a similar neurobiological basis to both;
2. Substance use may help to alleviate some of the symptoms of the mental illness or the side effects of medication;
3. Substance use may precipitate mental illnesses or lead to biological changes that have common elements with mental illnesses (WHO, 2004c).

2.8.1 Psychoactive substance use and mental illness sharing similar neurobiological basis

The simplest formulation of the dopamine hypothesis of schizophrenia posits that schizophrenia results from too much dopaminergic activity. The theory evolved from two observations. First, the efficacy and the potency of many antipsychotic drugs (i.e., the dopamine receptor antagonists [DRAs]) are correlated with their ability to act as antagonists of the dopamine type 2(D_2) receptor. Second, drugs that increase dopaminergic activity, notably cocaine and amphetamine, are psychotomimetic. The basic theory does not elaborate on whether the dopaminergic hyperactivity is due to too much release of dopamine, too many dopamine receptors, hypersensitivity of the dopamine receptors to dopamine, or a combination of these mechanisms. Which dopamine tracts in the brain are involved is also not specified in the theory, although the mesocortical and mesolimbic tracts are most often implicated. The dopaminergic neurons in these tracts project from their cell bodies in the midbrain to dopaminoceptive neurons in the limbic system and the cerebral cortex (Sadock and Sadock, 2007). This hypothesis provides a working understanding for the aetiopathogenesis of schizophrenia- a prototype of the psychotic disorders, and is the basis and target for pharmacotherapeutic intervention for psychotic disorders at present. As elaborated above, most psychoactive substance bring about their effect by increasing the availability of dopamine in the nucleus accumbens- a part of the limbic system where increased activity of dopamine is also said to cause psychosis. However, unlike psychotic disorders where drugs that block dopamine are effective in the control of psychotic symptoms, the use of antipsychotics have yet to be found useful in the treatment of drug dependence. In addition, pharmacologic interventions contribute only minimally to the management for drug dependence. This implies that extra-dopaminergic mechanisms may largely accounts for the neuropathologic basis for drug addiction.

2.8.2 Psychoactive substance use and mental illness: Self medication hypothesis

The notion of “self-medication” is one of the most intuitively appealing theories about drug abuse. According to this hypothesis,’ drug abuse begins as a partially successful attempt to assuage painful feelings. This does not mean seeking “pleasure” from the use of drugs. Rather, individuals predisposed by biological or psychological vulnerabilities find that drug effects corresponding to their particular problems are powerfully reinforcing (Glass, 1990). The self-medication hypothesis of addictive disorders derives primarily from clinical observations of patients with substance use disorders. Individuals discover that the specific actions or effects of each class of drugs relieve or change a range of painful affect states. Self-medication factors occur in a context of self-regulation vulnerabilities- primarily difficulties in regulating affects, self-esteem, relationships, and self-care. Persons with substance use disorders suffer in the extreme with their feelings, either being overwhelmed with painful affects or seeming not to feel their emotions at all (Khantzian, 1997). Substances of abuse help such Individuals to relieve painful affects or to experience or control emotions when they are absent or confusing (Khantzian, 1997).

According to Khantzian's view of addiction, drug users compensate for deficient ego function by using a drug as an "ego solvent", which acts on parts of the self that are cut off from consciousness by defense mechanisms. Drug dependent individuals generally experience more psychiatric distress than non-drug dependent individuals, and the development of drug dependence involves the gradual incorporation of the drug effects and the need to sustain these effects into the defensive structure-building activity of the ego itself. The addict's choice of drug is a result of the interaction between the psychopharmacologic properties of the drug and the affective states from which the addict was seeking relief. The drug's effects substitute for defective or non-existent ego mechanisms of defense. The addict's drug of choice, therefore, is not random (Khantzian, 1997). Some mental illness sufferers attempt to correct their illnesses by use of certain drugs. Depression is often self-medicated with alcohol, tobacco, cannabis, or other mind-altering drug use. While this may provide immediate relief of some symptoms such as anxiety, it may evoke and/or exacerbate some symptoms of several kinds of mental illnesses that are already latently present, and may lead to addiction/dependence, among other side effects of long-term use of the drug.

2.9 Medication adherence

In the United States, Owen and his colleagues examined the effect of medication non-adherence among patients with schizophrenia who were receiving care in an out-patient care and found that substance use is strongly associated with self-reporting medication non-adherence (odds ratio [OR]=8.1, P< .001), They also experienced significant symptom severity of schizophrenia (Owen *et al.,* 1996). In a related large scale study in the UK non-adherence with oral neuroleptics among patients with schizophrenia recently readmitted to the hospital was estimated at 67 %. However self –report is not a reliable method of measuring adherence. In a developing country such as India, medication adherence is one of the most difficult challenges in the management of schizophrenia.

It is estimated that the rate of non-adherence is about 50% during first year and 75% during second year, after the patients are discharged from inpatient care unit (Wieden *et al*., 1990). A study among patients with schizophrenia in Nigeria found that the attitude towards antipsychotic medication is significantly affected by factors such as insight into the illness and side effects of medications (Adewuya *et al.,* 2006). Both subjective response to medication and attitudes toward treatment are recognized to influence adherence (Fenton *et al.*, 1997). Poor drug adherence is associated with an increase in the rate of relapse, rate and length of hospitalization, increased risk for hospitalization in the future and poorer illness outcome for both disorders (Linn *et al*., 1982; Baby *et al*., 2009; Mahmood, 2010).

2.10 Under-diagnosis of psychoactive substance use

There are some suggestions from empirical report of underdiagnosis of substance use in some psychiatric settings. Some studies done a few years ago have found that patients with drug use problem are not identified by their attending physicians (Roehrich and Gold, 1986; Ananth *et al*., 1989; Gogek, 1991). This becomes more of concern because of the impact of co-morbid psychoactive substance use and mental illness where patients have more severe symptoms and poorer outcome of treatment. These groups of patients are less compliant to treatment and have a higher rate of admissions (Safer, 1987; Drake and Wallach, 1989). Although there is a huge demand on the care of these kinds of patients, the poor identification of this group of patients may reflect a deficiency in the knowledge of the attending physicians to the presence of co-morbid disorders.

It is well known that substance use patients frequently attempt to deny their use (Safer, 1987) they may also consider it not relevant to their physician. This, combined with a lack of observation time, due to generally shorter admissions among patients with substance use disorders than among other psychiatric patients, may be an important cause of under-diagnosis (Ananth *et al*., 1989; Woodward, *et al.*, 1991). Time is a key factor, as it may be difficult to separate other psychiatric disorders from substance use disorders if the patient is observed for a short time only. Disorders induced by substance use may imitate nearly any psychiatric disorder and may be perceived as other disorders (Brady and Sonne, 1995).

2.11 Treatment of Psychoactive Substance Use Disorders

Drug use disorders can be chronic sometimes a lifelong problem with characteristic relapses and an enduring course of disruption to the sufferer's health, family, social and occupational functioning. It is often a disorder of an individual, family, community and nation singly or in combination and consumes a great deal of resources in its management. Successful treatment of substance use disorders may involve multiple treatment strategies, the choice of which may vary for any one individual over time and may involve specialists from a variety of background. The American psychiatric association work group on substance use disorders developed the following practice guidelines for the treatment of substance use disorders and encompasses the essential elements of drug use management in current literature globally (Kebler and Weiss, 2006). Goals of treatment are initially defined with the aim of achieving total abstinence or control use. Assessment to determine the extent of drug use problems and co-morbidities Decision on the treatment setting is made guided by several factors, and could be on an outpatient basis, in a hospital, residential setting, or in the community. Psychiatric management is instituted with the aim of motivating a change, establishing and maintaining a therapeutic framework and alliance, assessing safety and clinical status of the patient, managing intoxication and withdrawal states, reducing the morbidity and sequelae of substance use disorders, facilitating adherence to a treatment plan and preventing relapse, providing education about substance use disorders and their treatment, and facilitating access to services and coordinating resources among mental health , general medical, and other service systems to support the patient. Somatic treatments deal with the treatment of intoxication states, withdrawal syndromes, co-morbid psychiatric conditions and giving maintenance therapies. Psychosocial treatments provide cognitive behavioral therapies, other behavioral therapies such as contingency management, community reinforcement, Psychodynamic and interpersonal therapies, Group therapy, Family therapy, and Self help group approaches as may be required.

CHAPTER THREE

METHODS

3.1 Description of the study area

The study was carried out at the psychiatric out-patient clinic of the Ahmadu Bello University Teaching Hospital, Zaria in Northern Nigeria. Zaria is a major city in Kaduna State, Nigeria. Also known as Zazzau, it was one of the original seven Hausa -city-states. The 2006 National Census puts the population of Zaria at 408,198 (NPC, 2006). The town is mostly populated by the indigenous Hausa-Fulanis. However due to the strong presence of several institutions established by the federal government of Nigeria such as the Ahmadu Bello University and Ahmadu Bello University Teaching Hospital, several academic and other training institutions, business activities and interests, Zaria had experienced the influx of people, and establishment of settlements largely dominated by people from other parts of the country making Zaria a cosmopolitan town.

The Ahmadu Bello University Teaching Hospital is the major health facility serving the community in Zaria. The psychiatric out-patient unit of this Hospital receives referral cases from the general filter clinics and the clinical units of the hospital, neighboring peripheral health centres, patients from neighboring states and other hospitals around the country. The psychiatric out-patient unit has 2 clinic days in a week and has general adult, child and adolescent, substance use and old age sub-specialty clinics on each clinic day.

3.2 Study population

The study consists of patients seen at the out-patient clinic of the psychiatric department. The patients had heterogeneous demographic characteristics and various psychiatric conditions. Patients were usually received from the Emergency unit of the Hospital in acute presentation and were also seen as consults and referrals from within and outside the Hospital. All patients who had been seen in acute presentation and stabilized usually as in-patient cases were subsequently transferred to the out-patient clinics where they received continuous medical care and were followed-up on treatment for long periods of time.

3.3 Study design

The study was a descriptive cross-sectional survey conducted at the psychiatric out-patient department of the Ahmadu Bello University Teaching Hospital, Zaria, Nigeria.

3.4 Sample size estimation

The sample frame included all patients (as from 18 years of age) attending the psychiatric out-patient clinics within the study period (July to October 2011). A sample size of 207 patients used for the study was obtained with the formula for calculating sample size in cross-sectional studies (Araoye, 2003).

Sample Size $n = \frac{Z^2 Pq}{d^2}$

Where:

n= the desired sample size (when population is greater than 10,000)

z= the standard normal deviate, usually set at 1.96 to the 95 percent confidence level.

p= the proportion in the target population estimated to have a particular characteristic, in this case =0.5

q= 1.0-p

d= degree of precision desired, set at 0.05

After a thorough search of the available literature on the topic, a study on the prevalence of comorbidity in psychiatric out-patients in Nigeria was not found. Hence, 50% was taken as an estimate of the proportion of patients with mental illness and co-occurring substance use in the population.

Using this prevalence rate to determine the sample size when studying proportion, with population > 10,000,

$$n = \frac{(1.96)^2 * 0.5 * 0.5}{(0.05)^2}$$

$$= \frac{0.9604}{0.0025} \qquad =384.16$$

Since the study population size was less than 10,000, the final sample size (nf) was obtained after applying the following correction factor:

$$nf = \frac{n}{1 + \frac{n}{N}}$$

nf = final sample size

n = Sample size in a cross-sectional study as was obtained above

N = estimate of study population

From records at the out-patient clinics, the patient population was estimated at 450, and then nf was calculated as follows:

$$nf = \frac{n}{1 + \frac{n}{N}}$$

nf = final sample size

n = the desired sample size when the population is more than 10,000

N = estimate of study population

The population size was estimated at 450, and then nf was calculated as follows:

$$nf = \frac{384}{1 + \frac{384}{450}}$$

$$= \frac{384}{1.853} = 207,$$

Estimated Sample size =207

3.5 Respondents

The respondents were made up of a heterogeneous group of patients who were attending the psychiatric out-patient department of the Ahmadu Bello University Teaching Hospital, Zaria Nigeria.

3.6 Eligibility

3.6.1 Inclusion Criteria

1. Patients who were at least 18 years of age
2. Patients who had been attending the out-patient clinic for at least 1 year.

3.6.2 Exclusion Criteria

1. Patients who had memory deficits or other severe cognitive problems, or were too acutely ill to get into meaningful clinical engagement.

3.7 Instruments

3.7.1 Socio-Demographic and Drug Use Questionnaire

The questionnaire was designed by the author and has 3 sections. Section (A) had information on the socio-demographic characteristics including age, sex, marital status, religion and highest level of education attained by the respondents. Section (B) sought information on the patient's substance and non-substance use diagnosis, their records and date, and the use of psychoactive substance and ICD-10 Diagnosis. The Section (C) requested information on the drug use behavior and medication adherence. Appendix II.

3.7.2 Schedule for Clinical Assessment in Neuropsychiatry (SCAN)

Schedule for Clinical Assessment in Neuropsychiatry (SCAN) is a set of instruments aimed at assessing, measuring and classifying the psychopathology and behavior associated with the major psychiatric disorders of adult life. It has four components; the tenth edition of the Present State Examination (PSE 10), the Glossary of differential definitions, the Item Group Check list (IGC), and the Clinical History Schedule (CHS). The PSE 10 which is the most relevant to this study has two parts. Part one covers somatoform, dissociative, anxiety, depressive and bipolar disorders, and problems associated with alcohol, and other psychoactive substance use. There is a screen for Part two conditions. SCAN represents the latest stage in a thirty-year line of development that began in the 1950's. PSE 9 was the first of the series to be published, following fifteen years of work on earlier versions. The PSE has been widely used and has been translated into about 35 or more languages (WHO, 1999).

Data from the schedules can be recorded in a variety of ways: in the SCAN schedules themselves, in coding booklets, or by the computer program. A set of computer algorithms will process data entered from SCAN schedules and generates diagnosis in ICD-10 and DSM-IV. A WHO study done earlier in Nigeria on the Reliability and Validity of the

Alcohol and Drug sections of the SCAN prove this instrument to be Reliable for the diagnosis of Alcohol and Drug dependence in this environment (Unstun *et al*; 1997). The SCAN was used to identify patients with specific substance use disorders.

3.7.3 Translation of the instruments

The questionnaire was translated to Hausa language and the interviews were conducted in English and Hausa as these were the major languages of communication of the study population. This was facilitated by the interviewer, who is fluent in the Hausa language.

3.8 Research assistants

Three research assistants who were psychiatric resident specialists rendered assistance in the administration of the questionnaires. They received a training on the administration of the questionnaires prior to the commencement of the study.

3.9 Training

The author had been trained on the application of the Schedule for Clinical Assessment in Neuropsychiatry (SCAN) at the World Health Organization Reference Centre, in 2011.

3.10 Approval

A proposal for this study was initially presented at a seminar and approved by the Department of Pharmacology and Therapeutics of the Ahmadu Bello University, Zaria, Nigeria.

3.11 Ethical Consideration

Ethical clearance was obtained from the Ethical and Epidemiological Research Committee of the Ahmadu Bello University Teaching Hospital, Zaria, Nigeria. In addition, informed consents of the respondents were obtained before the interview.

3.12 Pilot Test of Instruments

A pilot test of all the Instruments (including the socio-demographic questionnaire) was carried out on 10 respondents to determine their acceptability, the clarity or ambiguity of the question items and to identify logistic problems. After the test, the contents of the instruments were found satisfactory for the full scale study to proceed.

3.13 Selection of Respondents

3.13.1 Procedure

Patients were identified for interview on each day as the clinic begins. After the routine consultation was over, a brief assessment was then conducted to determine the eligibility of the patient for the study. Informed consents (Appendix I) for participation in the study were obtained from respondents after the details of the study had been carefully explained to them. The information given to the respondents included the aim and objectives of the study, and that their responses shall be treated as confidential. On each clinic day, patients' clinical records in the form of files were put in the order in which they had arrived for the clinic. A file was then randomly selected from the first set of four patients who had arrived the clinic, and the patient whose file it was, was identified for interview. After this, each consecutive 4th patient attending clinic for the day was identified by their record files and interviewed.

The patient's interview took place immediately after they had consulted their doctors for the day. Three psychiatric doctors assisted in this regard, and were made to see the potential respondents for the clinic consultation. Consenting participants responded to a socio-demographic and drug use questionnaire and the SCAN. It took 15-30 minutes interview per patient, depending on whether or not they had a psychoactive substance use disorder. Each questionnaire completed had the patients' hospital number written on them corresponding to the instruments they had completed. This was to prevent duplication of response. This process was repeated until the sample size was attained.

3.14 Data Analysis

The data collected were individually coded into the computer and double checked for accuracy. The sixteenth edition of Statistical Package for Social Sciences (SPSS-16) Software was used for the data analysis. Data was analysed by means of descriptive statistics. These included frequencies, percentages, means, standard deviation and cross tabulation. Chi-square tests were used to test differences between categorical variables and association. The level of statistical significance was set at $p<0.05$.

The prevalence for the use of at least one psychoactive substance was generated, while the socio-demographic factors were re-ordered into a dichotomous variable to enable computations of the odds ratios. Under-diagnosis was determined by comparing the difference between those patients who had substance use problems that were identified at the first presentation to hospital and those who had substance use problems that were missed at presentation.

3.15 Data presentation

The data was presented in the form of tables, simultaneously with their narrative text. Figures were also generated for the relevant data.

CHAPTER FOUR

RESULTS

4.1 Socio-demographic characteristics of respondents

The socio-demographic characteristics of the respondents are shown in table 4.1. Two hundred and eight respondents were interviewed, out of which one hundred and ten were males (52.9%) and ninety eight were females (47.1%). The mean age of the respondents was 36.72 ±12.69. Thirteen (6.2%) of the respondents were below twenty years, sixty seven (32.2%) of the respondents were 21 to 30 years, sixty three (30.3%) of them between the age group of 31 to 40 years, thirty three (15.8%) of them belong to the age group of 41 to 50 years, twenty two (10.5%) of them were in the age group of 51 to 60 years, while ten (4.8%) of them were above 60 years. One hundred and fifty seven (75.5%) of the respondents were Moslems while fifty one (24.5%) of them were Christians. Ninety four (45.2%) of the respondents were single, ninety two (44.2%) of them were married, three (1.4%) of them were separated while twelve (5.8%) and seven (3.4%) of them were divorced and widowed respectively. Thirty (14.4%) of the respondents were government employees, fourteen (6.7%) of the respondents were employees of other private organizations, thirty four (16.3%) of them were self-employed, twenty four (11.5%) of them were students, thirty four (16.3%) of them were housewives, sixty six (31.7%) of them were unemployed while six (2.9%) of them were retirees. Twenty four (11.5%) of the respondents had no formal education, twenty six (12.5%) of them had Islamic education, twenty five (12%) of them had completed primary education, sixty seven (32.2%) of them had completed secondary education, while sixty six (31.7%) of them had had tertiary education.

Table 4.1 Socio-demographic characteristics of the respondents

Variables	Frequency	%	*N=208*
Sex			
Male	110	52.9	
Female	98	47.1	
Age			
≤20	13	6.2	
21-30	67	32.2	
31-40	63	30.3	
41-50	33	15.8	
51-60	22	10.5	
61≥	10	4.8	
Marital Status			
Single	94	45.2	
Married	92	44.2	
Separated	3	1.4	
Divorcee	12	5.8	
Widowed	7	3.4	
Education			
No formal education	24	11.5	
Islamic	26	12.5	
Primary	25	12.0	
Secondary	67	32.2	
Tertiary	66	31.7	
Occupation			
Gov. establishment employee	30	14.4	
Priv. establishment employee	14	6.7	
Self employed	34	16.3	
Student	24	11.5	
Housewife	34	16.3	
Unemployed	66	31.7	
Retiree	6	2.9	
Religion			
Christianity	51	24.5	
Islam	157	75.5	
Home living arrangement			
Homeless	3	14	
Living alone	17	8.2	
Living with parents/siblings	188	90.4	

Three (1.4%) of the respondents were homeless, seventeen (8.2%) of them were living alone, one hundred and eighty eight (90.4%) of them were living with parents, spouses, siblings and other relatives.

4.2 Socio-demographic profile of respondents with and without substance use

4.2.1 Age

The mean age of the respondents using psychoactive substance was 38.50±13.0 which was higher than the mean age for non substance users; 35.98±12.5, but there was no statistically significant difference between the mean ages; t= 1.310, p=0.83. For substance users, the largest proportion of respondents were within the age group of 31 to 40 years (32.8%) with twenty respondents, while the least was the age group of twenty and below (3.3%) with two respondents. Eighteen (29.5%) of the respondents were within the age group of 21 to 30, nine (14.8%) of them between the age group of 41 to 50 years, seven (11.5%) of them between the age group of 51 to 60 years while five (8.2%) of them were above sixty one years of age (table 4.5). For non substance users, the largest proportion of respondents were within the age group of 21 to 30 years (33.3%) with forty nine respondents, while the least was the age group of sixty and above years (3.4%) with five respondents. Eleven (7.5%) of the respondents were within the age group of twenty and below years, forty three (29.3%) within the age group of 31 to 40 years, twenty four respondents (16.3%) were within the age group between 41 to 50 years and fifteen (10.2%) were within the age group of 51 to 60 years (table 4.2).

Table 4.2 Age group distribution of respondents

Age group(years)	Substance users		Non-substance users	
	Frequency	Percentage	Frequency	Percentage
≤20	2	3.3	11	7.5
21-30	18	29.5	49	33.3
31-40	20	32.8	43	29.3
41-50	9	14.8	24	16.3
51-60	7	11.5	15	10.2
61≥	5	8.2	5	3.4
Total	61	100	147	100

4.2.2 Sex

Forty nine (80.3%) of the respondents using psychoactive substances were males while twelve (19.7%) of them were females. On the other hand, sixty one (41.5%) of the respondents who were not using psychoactive substances were males while eighty six (58.5%) were females (table 4.3).

Table 4.3 Sex distribution of the respondents

Sex	Substance users		Non-substance users	
	Frequency	Percentage	Frequency	Percentage
Male	49	80.3	61	41.5
Female	12	19.7	86	58.5
Total	61	100	147	100

4.2.3 Marital status

The largest proportion of respondents using psychoactive substance (62.3%) were single. Only one subject was widowed. Four (6.6%) were divorcees, while sixteen (26.2%) and two (3.3%) were married and separated respectively.

For those respondents who reported not using psychoactive substance, seventy six (51.7%) of them were married, fifty six (38.1%) of them were single, one (0.7%) of them separated, eight (5.4%) of them were divorcees while six (4.1%) of them were widowed (table 4.4).

Table 4.4 Marital status distribution of the respondents

Marital Status	Substance users		Non-substance users	
	Frequency	Percentage	Frequency	Percentage
Single	38	62.3	56	38.1
Married	16	26.2	76	51.7
Separated	2	3.3	1	0.7
Divorced	4	6.6	8	5.4
Widowed	1	1.6	6	4.1
Total	61	100	147	100

4.2.4 Religion

Forty three (70.5%) of substance users were followers of Islam while one hundred and fourteen (77.6%) reported not using substance. On the other hand, eighteen (29.5%) of the substance users were adherents of Christianity while thirty three (22.4%) of them reported no substance use (table 4.5).

4.2.5 Highest level of formal education attained

For psychoactive substance users, four (6.6%) had no formal education, four (6.6%) had Islamic education, six (9.8%) had received primary education, twenty three (37.7%) had received secondary education, while twenty four (39.3%) had received tertiary education.

Table 4.5 Religion of the respondents

Religion	Substance users		Non-substance users	
	Frequency	Percentage	Frequency	Percentage
Christianity	18	29.5	33	22.4
Islam	43	70.5	114	77.6
Total	61	100	147	100

For non psychoactive substance users, twenty (13.6%) had no formal education, twenty two (15.0%) had only Islamic education, nineteen (12.9%) had primary education, forty four (29.9%) had received secondary education, forty two (28.6%) had received tertiary education (Table 4.6).

Table 4.6 Educational status of the respondents

Level of education	Substance users		Non-substance users	
	Frequency	Percentage	Frequency	Percentage
No formal education	4	6.6	20	13.6
Primary	6	9.8	19	12.9

Secondary	23	37.7	44	29.9
Tertiary	24	39.3	42	28.6
Islamic	4	6.6	22	15.0
Total	61	100	147	100

4.2.6 Occupational status

For the users of psychoactive substance, 39.3% of them (the highest proportion) were unemployed. Eight (13.9%) of them were government establishment employees, seven (11.5%) of them were private establishment employees, twelve (19.7%) of them were self-employed, five (8.2%) of them were students and apprentices while five (8.2%) were retirees. No housewife reported psychoactive substance use. For non users of psychoactive substance, there were twenty two (15%) government employees, seven (4.8%) were private employees, twenty two (15%) were self-employed, nineteen (12.9%) were students, thirty four (23.1%) of them house wives. Forty two (28.6%) were unemployed while one subject was a retiree (Table 4.7).

Table 4.7 Occupational status of the respondents

Occupation	Substance users		Non-substance users	
	Frequency	Percentage	Frequency	Percentage
Gov’t employee	8	13.9	22	15
Private employee	7	11.5	7	4.8
Self-employed	12	19.7	22	15
Student/Apprentice	5	8.2	19	12.9
House wife	0	0	34	23.1
Unemployed	24	39.3	42	28.6

Retiree	5	8.2	1	0.7
Total	61	100	147	100

4.3 Socio-demographic risk factors for psychoactive substance use

Socio-demographic risk factors for psychoactive substance use were determined using odds ratio. Sex, marital status, level of education and occupation were found to be significant predictors of psychoactive substance use (Table 4.8).

4.4 Non substance use psychiatric diagnoses of the respondents

The respondents undergoing treatment for schizophrenia were one hundred and twenty seven (61.1%) forming the largest group of the respondents while eleven (5.3%) of them had other heterogenous forms of acute psychotic disorders. Respondents with mania and bipolar affective disorders were twenty (9.6%), twenty three (11.9%) of them had depressive disorders, eleven (5.3%) of them had anxiety disorders, while nine (4.3%) of them had one or more of the other neurotic disorders.

Table 4.8 Socio-demographic predictors of psychoactive substance use

Variable	OR(95% CI)	Statistic
Age		p =.436
<45	0.9 (0.7-1.1)	
45≥	1.2 (0.7-1.9)	
Sex		p=.0001*
Male	1.9 (1.5-2.4)	
Female	0.3 (0.2-0.5)	
Marital status		p=.001 *

Had a spouse	0.5 (0.3-0.7)	
No spouse	1.5 (1.2-1.9)	
Religion		p=.281
Christianity	1.3 (0.8-2.1)	
Islam	0.9 (0.7-1.1)	
Educational status		p=.018*
No formal education	0.4 (0.2-0.9)	
Formal education	1.2 (1.0-1.4)	
Occupational status		p=.012*
Employed	0.7 (0.5-0.9)	
Unemployed	1.6 (1.1-2.3)	

OR=Odds Ratio, CI= Confidence Interval, *=Significant values

Six (2.9%) of them had an organic mental disorder while one (0.5%) subject was being seen primarily for a substance use disorder (Figure 4.1).

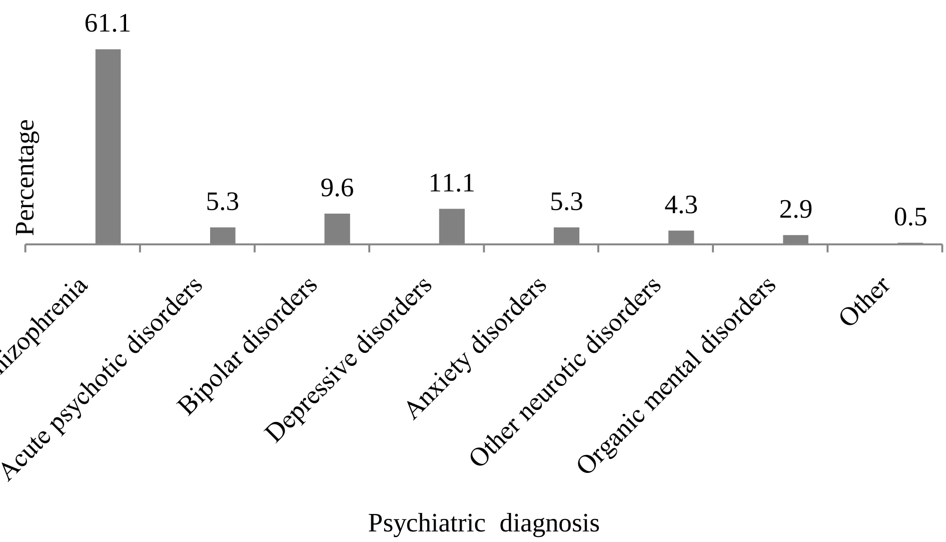

Figure 4.1 Non substance use psychiatric diagnoses of the respondents

Most of the respondents (84.1%) had attended at least 50% of their clinic appointments in the preceding six months, while 15.9% had less than 50% attendance at the out-patients' clinic.

4.5 Psychoactive substance use and the psychotropic drugs respondents were receiving

Thirty two (15.4%) of the respondents were using alcohol, twenty seven (13.0%) were using cannabis, and four (1.9%) of them using opioids. Tobacco smokers were fourteen (6.7%) while solvent (volatile agents) takers were nine (4.3%) (table 4.9).

Table 4.9 Psychoactive substance use distribution

Psychoactive substance	Frequency	Percentage
Alcohol	32	15.4
Cannabis	27	13.0
Opioids	4	1.9
Tobacco	14	6.7
Solvents	9	4.3

The respondents were using the substances in multiple combinations and the lifetime prevalence of the use of at least one substance was 29.3%, while for the use of multiple substances was 17.3%. The most commonly used substances were alcohol, cannabis and tobacco (27%). Substances were mostly used in combination, with alcohol, cannabis and tobacco being the most common combination, followed by alcohol and tobacco (18.9%). The use of heroin, cocaine, the amphetamines and other 'high profile' drugs were not reported in this study (table 4.10).

Table 4.10 Multiple psychoactive substance use distribution of the respondents

Pattern of multiple substance use	Frequency (%)	
Alcohol Cannabis Opioids Tobacco Anxiolytics Solvents	1	(2.7)
Alcohol Cannabis Tobacco Anxiolytics Solvents	2	(5.4)
Alcohol Cannabis Tobacco Solvents	2	(5.4)
Alcohol Cannabis Tobacco Anxiolytics	2	(5.4)
Alcohol Cannabis Tobacco	10	(27)
Alcohol Tobacco	7	(18.9)
Alcohol Anxiolytics	4	(10.8)
Cannabis Opioids Tobacco Solvents	1	(2.7)
Cannabis Opioids Tobacco	2	(5.4)
Cannabis Tobacco	3	(8.1)
Cannabis Solvents	1	(2.7)
Tobacco Solvents	2	(5.4)
Total	37	(100)

A total of 21 respondents were diagnosed to have a psychoactive substance use disorder. The specific types were alcohol harmful use and dependence syndrome, nicotine harmful use and dependence syndrome, volatile substance harmful use and multiple substance harmful use and dependence syndrome. Majority (81%) of those with substance disorder were suffering from schizophrenia and one respondent was being seen primarily for a psychoactive substance use disorder (table 4.11).

Table 4.11 Respondents with psychoactive substance use disorders and their psychiatric diagnosis

Psychoactive substance use disorders(ICD-10)	Schizophrenia	Mania	Anxiety	Substance
Alcohol harmful use	1			
Alcohol dependence syndrome	2			1

Nicotine harmful use	2	2		
Nicotine dependence syndrome	3			
Volatile substance harmful use	1		1	
Multiple substance harmful use	4			
Multiple substance dependence syndrome	4			
Total (%)	17 (81%)	2(9.5)	1 (4.7)	1 (4.5)

Table 4.12 Percentage distribution of the types of psychotropic agent the respondents were receiving at the clinic

Psychotropic agents	%
Antipsychotic (oral)+Anticholinergic (oral)	31
Antipsychotic (oral+ parenteral)+Anticholinergic (oral)	20.7
Antipsychotic (oral+parenteral)	3.4
Antipsychotic (oral)	3.4
Antipsychotic (oral)+Antidepressant (oral)+ Anticholinergic(oral)	10.3
Antipsychotic (oral)+Antidepressant (oral)	6.7
Antipsychotic (oral)+Mood stabilizer(oral)+Anticholinergic(oral)	10.3
Antidepressant (oral)	13.8

4.6 Medication adherence

Patients who were attending the out-patient psychiatric clinic were on prescribed medications usually for the non-substance use disorder. The prescriptions were written by the physicians they consulted for the day. Of the sixty one psychoactive substance users, 59% reported never missing their medications in the last six months prior to the interview.

Table 4.13 Level of medication adherence in substance and non substance users

Medication Adherence	Substance users (%)	Non-substance users (%)
Never missed	59	56.5
Missed a few	13.1	26.5
Took at least 50%	9.8	8.2

Took less than 50%	6.6	2
Stopped medications	11.5	6.8

For reasons documented below, about 11.5% of them had discontinued their medications, 13.1% had missed it a couple of times, and 9.8% took at least half while 6.6% took less than half their prescribed doses (table 4.13).

One hundred and forty seven respondents were found not to have used psychoactive substance, of which 56.5% claimed not to have missed their medications in the last six months prior to the interview. About 6.8% stopped their medications altogether, 2% of them took less than half their medications, 8.2% took at least half their doses while 26.5% missed a couple of times during the period (table 4.13).

Although there was higher proportion of substance users with poor medication adherence, no statistically significant relationship was found between substance use and medication adherence (table 4.14)

A statistically significant proportion of the respondents who were using psychoactive substance were compliant with use of their prescribed medications when the drugs were in their possession, that is, when the medication remains in the custody of the patient (table 4.15).

Table 4.14 Level of medication adherence in substance and non-substance users

Medication Adherence	Substance users	Non-substance users	Total
Good	50	134	184
Poor	11	13	24
Total	61	147	208

χ^2= 3.566, df= 1, p= .059

Medication supervision, that is, when patients use their medication strictly under the watchful eyes of another person (usually a parent, spouse, caregiver or a suitable older adult) was also analysed. No statistically significant relationship was found between medication supervision and adherence behavior (table 4.16).

Table 4.15 Medication adherence of the respondents and in whose possession the medications were kept

Medication Adherence	In patient's possession	In caregiver' possesion	Total
Good	41	9	50
Poor	3	8	11
Total	44	17	61

χ^2=13.43, df=1, p=.001

The respondents gave reasons for their medication adherence behavior. For users of psychoactive substance whose medication use was unsupervised, 46.4% which is the largest proportion gave the reason for their partial adherence to be the unavailability of their medications at the time they were expected to use them. About 14.3% reported being tired of the drugs, 7.1% noted side effects as their reason, 3.6% reported high cost of the drugs while 28.6% indicated other reasons such as failure of physicians to educate them adequately about adherence, and pregnancy state (Figure 4.2).

Table 4.16 Level of medication adherence by respondents whose medication use was supervised and unsupervised

Medication Adherence	Taken under supervision	Taken without supervision	Total
Good	10	40	50
Poor	3	8	11
Total	13	48	61

χ^2= 0.284, df=1, p=.687

About 37.5% of respondents whose medication use was supervised also largely reported unavailability of the drug as the reason for partial drug adherence. Side effects was not recorded as a reason, however, 12.5% reported being tired with the drugs. 25% reported high cost while another 25% reported other reasons such as pregnancy, and forgetfulness as reasons for poor adherence (Figure 4.2).

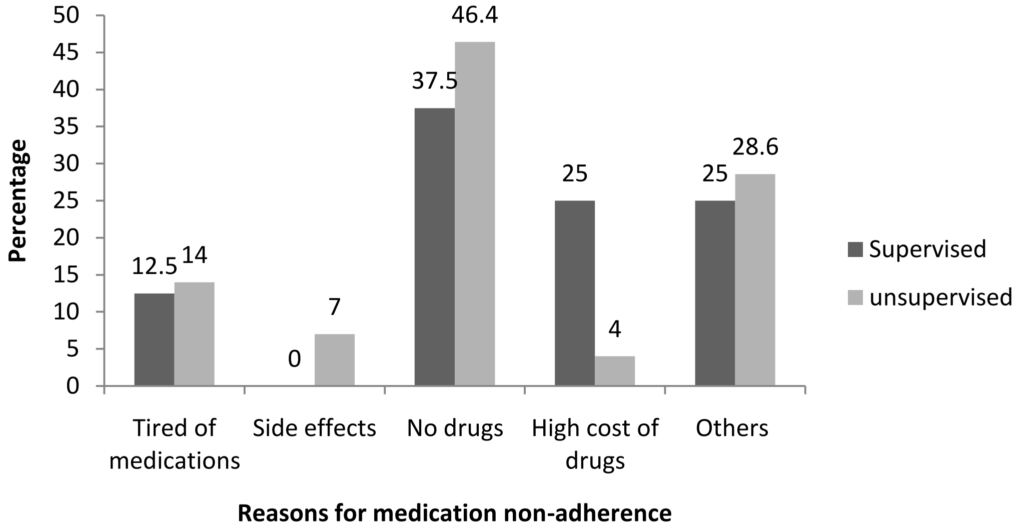

Figure 4.2 Reasons for medication non-adherence in supervised and unsupervised psychoactive substance users

Respondents who were not using psychoactive substance and have been unsupervised during medication use reported unavailability of their prescribed drugs with 45.6% of the respondents indicating this reason. 5.3% of them reported being tired of the drugs, 12.3% of them reported side effects, while 1.8% and 35.1% noted high cost and other reasons respectively (Figure 4.3).

Supervised medication users had 42.9% of them who complained about being tired with of the drugs, no report for side effects and high cost, 23.8% complained about unavailability of drugs while 33.9% reported other reasons (Figure 4.3).

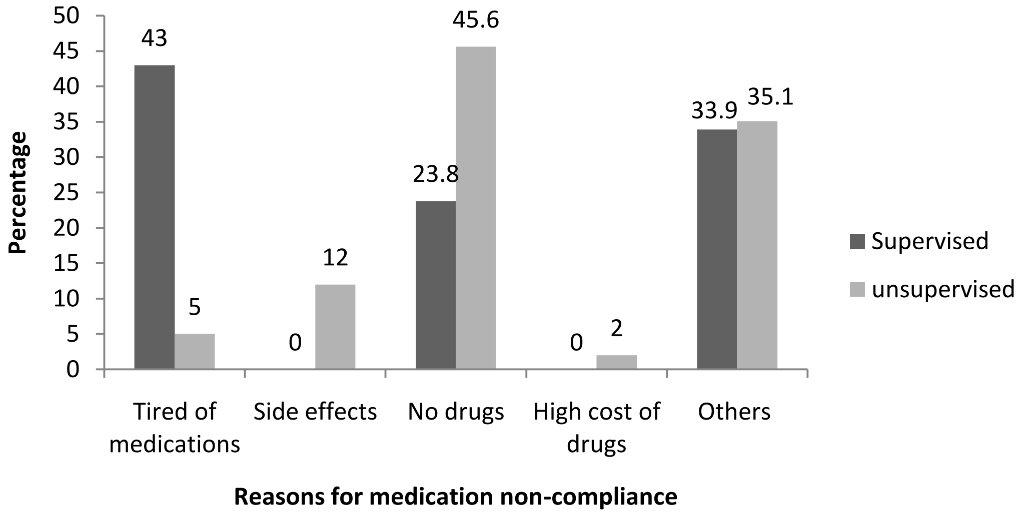

Figure 4.3 Reasons for medication non-adherence in supervised and unsupervised non psychoactive substance users

4.7 Underdiagnosis of substance use in the respondents

About 60% of the 61 respondents who were using substances were not identified as substance users during their routine clinic visits. The patients hospital record shows that during and after their first visit, they were using substances that went undetected by their physicians.

CHAPTER FIVE

DISCUSSION

5.1 Socio-demographic profile of the respondents

5.1.1 Age

The study shows that the mean age of the respondents was 36.72 years, with 62% of the respondents falling between the ages of 21 to 40 years. This young population of respondents also depicts what was observed in patients with psychiatric symptoms, where most mental disorders have their onset at a young age. In addition, the mental illnesses were severe and disabling necessitating hospital presentation, consequently, most patients who attend the clinic were young. Similar finding was reported from another study done among psychiatric patients in other parts of Nigeria (Karuri *et al.*, 2012). Ineme *et al* (2012) found that over 75% of psychiatric patients using psychoactive substances in a tertiary hospital in Nigeria were between the ages of 20 to 39 years. There may also be an age dependent preference for some type of substances. In a study done in the USA, a greater percentage of younger adults used cannabis and Opioids, while greater percentage of middle aged adults, used cocaine (Kalapatapu *et al.*, 2013). The mean age of the respondents using psychoactive substance was slightly higher than that of those not using these substances. Age distribution had shown that the respondents were mostly in the third and fourth decade of life. Mental illness of the kind that keeps patients in the out-patient clinic for a long time often begins in their second decade of life (Gogtay *et al*., 2011). This is also the period when substance use begins (Aguiyi *et al*., 2012). By the time patients have had ten to twenty years of illness, which is usually what is observed in patients with severe mental illness in this setting, patients would have settled to a stable pattern of substance use as they get to their third and fourth decade of life. This is likely the situation in this hospital as patients often default at follow-up and it is not unusual to see patients leaving and returning to treatment several times over the years. With each episode of this unfavourable hospital care behavior, patients experience exacerbation of symptoms, deterioration in health and increase substance use. This is more likely to occur after years of treatment, giving rise to the observed age as documented in this study.

5.1.2 Sex

There was an almost equal proportion of male and female patients attending the out-patient clinic, with the males being slightly higher in number than the females. This is similar to what obtains in every day clinical practice in psychiatry (Gureje *et al*., 2002). As mentioned earlier, mental illness is fairly distributed among both sexes, although there is a slight preponderance of some disorders in people of a particular sex (WHO, 2014a). This is more commonly found in children (Bella *et al.*, 2010), who were not part of this study group. More males were found to be using substances. A similar preponderance of male substance users among psychiatric population had been reported in a multicentre study in Nigeria (Karuri, *et al*., 2012). Sex has an influence on the type of psychiatric disorder an individual develops. It determines differential power and control that men and women have over the socioeconomic determinants of their mental health and lives, their social position, status and treatment in society and their susceptibility and exposure to specific mental health risks (WHO, 2014a). This is likely a reflection of the pattern that is seen in the general population as males are more at risk to use substances than females. Several biological and non-biological factors account for this; such as genetic and psychosocial predisposition. The males are more likely to experiment with drugs, they associate early in life with peers who use substances and to explore environments where substances are present (Omigbodun and Babalola, 2004). A recent study had also shown that males were more inherently susceptible to substance abuse than females (Eaton *et al*., 2012).

5.1.3 Marital Status

A higher percentage of the respondents were either married or single. This was similar to what Gureje *et al* (2002) found in an epidemiological survey of adult Nigerians, where most respondents in that study were married or single. Our finding may be a reflection of the broad age range of the respondents included in the study. It was expected that young patients who were still single, and other young and middle age patients as well as the elderly who were married would be included in this hospital study. This pattern was also reported from other studies within and outside Nigeria (Khuwaya *et al*., 2007; Adegunloye *et al*., 2009). A higher proportion of respondents who used substances were single. Looking at the mean age of respondents, majority should have been married, going by the determinants of marriage in our study population. Patients with severe mental illness however, often do not see the need to be married largely due to loss of drive and motivation (Sadock and Sadock, 2007). They often lack the motivation to engage in a sustained relationship usually requisite for marriage. Sometimes the social skills necessary to start and maintain a premarital union is deficient in schizophrenia which was the main disorder our respondents had. The use of substances sometimes complicates the social impairments the patients have. As the substance consumption advances, there is progressive narrowing of the drug use repertoire, life style and the priority becomes the sourcing, use and recovery from substances, to the neglect of other aspect of life. This is not to say however, that patients who were single will invariably use substances, but when considering the added risks of their comorbidity, the use becomes very likely. In contrast to this, a study in the USA had documented a higher proportion of married respondents reporting drug use especially cigarette smoking (Vanable *et al*., 2003). The use of substance is influenced by factors such as sociocultural acceptability, prohibition and availability. Where in some culture some substances are permissible even for the married woman it is unacceptable or frowned at in some others like ours. This behavior could have partly accounted for the differences reported.

5.1.4 Religion

Most of our respondents were Moslems that is, followers of Islam. This is the predominant religion practiced by the people of northern Nigeria and so too, by our patients as reported in this study. This can be considered a factor of proportion; the Moslems being more in number than people of other religion in our study population. In addition, this study found a high number of Moslems who do not use substances. It is however, important to note that Islam prohibits the use of alcohol, and that most of the female respondents in this study were Moslems too, who have cultural restrictions to access drugs as they are largely in the confines of their home for most of their daily lives. Religious beliefs about substances influence drug use and the type of drug used among followers of the two major religious groups in Nigeria. In an epidemiological survey on substance use among Nigerians, Moslems were reported much less likely to use alcohol than persons of other faiths, mainly Christians, but no such association was found for tobacco, non-prescription drug use, or illegal drug use (Gureje *et al*., 2007). However, their study population was made up of apparently healthy Nigerian household members. In the predictors of substance use in our respondents, religion was not found to be a significant factor.

5.1.5 Highest level of education

Majority (75.9%) of our respondents had received formal education as at the time of the interview but 24% of them had recieved only Islamic or no formal education. Since most of our respondents had completed primary education it was expected that their knowledge would make them better able to understand the nature of their illness, the need for treatment and the issues of adherence to the prescribed medication. Interestingly, most of the respondents who were using substances had received formal education. A good number of them had recieved secondary and tertiary education. Our patients were mostly in their third and fourth decade of life. At this age, it is expected that people in this environment (given the opportunity) would have completed at least secondary education. Zaria is semi-urban and as documented in the description of the study area, it has a high presence of institutions of learning from primary to tertiary. This does not invariably guarantee the education of its populace but it provides academic opportunities. Formal education and knowledge of psychoactive substances are related in some way, and what determines whether an educated or uneducated person do not take or take substances, (including the type taken) is complex. Khuwaya *et al* (2007) had also found that having formal education of up to 12 years was significantly associated with substance use among outpatients. In the analysis of prospectively gathered data, individuals who had dropped out of high school were 6.34 times more likely to develop alcohol abuse or dependence than were individuals with a college degree (Crum *et al*., 1993). For those who had entered college but failed to achieve a degree, the estimated relative risk was 3.01. In a study in rural America, education levels were not associated with differences in rates of alcohol abuse. That is, for both rural young adults and adults, alcohol abuse rates were comparable across low and high education levels. In contrast, among urban residents, lacking a high school degree seemed to increase alcohol abuse risk. Regarding illicit drug abuse, however, education did emerge as an important variable. Particularly among young adults, rates of drug abuse increased as level of education decreased (Gundy, 2006). That the ABUTH clinic had a lot of educated patients was judged to be vital when there is a need for psychotherapy, as part of the substance use disorder treatment. This form of treatment requires some knowledge and self awareness on the part of the client for effective engagement.

5.1.6 Occupation

The respondents were engaged in various occupations, however, a high proportion of them were unemployed. Patients with mental illness are known to often fail to achieve adequate skill acquisition requisite for gainful employment. Some are known to even lose their job or to change their job often to one requiring lower competence or skills. Some patients are unable to even work due to the cognitive, social and interpersonal deficits they suffer due to the illness. They may not also see the need to work especially those with negative symptoms and lack of motivation.

The unemployed in the respondents belong to the highest proportion of substances users. Unemployed youths and young adults in another study showed very high rates of illicit drug use (Gundy, 2006). People who were unemployed in rural America were about seven times more likely than those employed in urban areas to meet criteria for stimulant use. Together, these results reveal an important message: that unemployment status is related to illicit drug abuse (Gundy, 2006). Although in their investigation, they also found that rural adults and full-time workers and the unemployed were more likely to abuse illicit drugs than part time workers and the non-workforce group.

Employment is related to substance use and mental illness in several ways. Being unemployed can be a predisposition, a precipitating or a perpetuating factor for both disorders. Conversely, having a substance-related disorder and or psychiatric illness can lead to unemployment or loss of paid employment. It is common to find patients who had been out of job as a result of these two conditions. Patients typically may be unable to be productive at work, may voluntarily abandon his job or be relieved of it. Being employed on the other hand provides the means and funds to sustain the drug use. It is therefore not surprising to observe that young teenagers living in socioeconomic deprivation use cheap and affordable substances like the solvents while those who earn higher income use substances like heroin and cocaine. However, funding drug use is often not related to an individual's earning, as in most parts of the world it is driven by criminal behavior and activities. Employment is very important in the life of substance users with or without mental illness, and as part of the process of rehabilitation; patients are assisted to be gainfully employed.

Even for the employed, some occupational groups such as the military, health and industrial workers are at increased risk of, and often use and abuse psychoactive substances and studies have shown the adverse effects it portends (Allamani *et al*., 1988; Bray *et al*., 1988; Plant *et al*., 1991). These are part of the factors important for consideration in substance use management.

5.2 Socio-demographic predictors of psychoactive substance use

The significant factors identified to be predictive of substance use in this study were sex, marital status, level of education, and occupation. These factors demonstrate some attributes of patients that could expose them to substance use. It follows therefore, that the modification of these factors with the exception of sex can reduce the risk for a patient's substance use tendency. When such patients with these factors are identified early in the clinic, it is possible to predict conservatively the likelihood of substance use and its consequences and take appropriate measures at treatment and other forms of management.

5.3 Home living arrangement

When patients are living in the care of a parent, sibling or relatives or of other important persons in their life, it often offers a supportive and protective environment for them. This helps patients in innumerable ways as the psychiatric problems may interfere in their ability to seek care in the hospital. They may also need to be coaxed to do so by the relatives they live with who also share in the burden of the illness. About 90% of the respondents were living with a relative who assumes the role of a caregiver and in this case, considered a supportive environment. It may be necessary to determine how the environment influences their health-seeking behavior and their medication adherence. This is possible for other studies to determine

5.4 The non-substance use psychiatric diagnosis

The most common mental disorder found in the respondents was schizophrenia. This is similar to what Gureje and his colleagues found in a study of the psychiatric disorders among the Nigerian adult population some years ago (Gureje *et al*., 2002). Studies done in other parts of the world had also demonstrated schizophrenia a common disorder (Bhugra, 2005; McGrath and Susser, 2009; WHO, 2014b). Schizophrenia has a prevalence of 1% in the general population with patients experiencing an enduring pattern of psychotic and behavioral problems which demand the sufferer remain under out-patient clinic treatment for a long period of time. The other psychotic and neurotic disorders were not as common as schizophrenia, most likely because conditions of this kind are usually treated for a relatively short period of time. They are arguably not as incapacitating as schizophrenia. The length of time during follow-up for patients with these disorders is usually not as long as for schizophrenia. These disorders are also commonly found in the general clinics were they are addressed without necessarily referring to the psychiatric clinic.

5.5 Psychoactive substance use distribution

This study found alcohol, cannabis, and tobacco to be the most frequently used drug among the respondents. This is similar to what another Nigerian study had shown (Gureje *et al*., 2002). The findings from a WHO world mental health survey conducted globally a few years ago had a similar report, but these were studies done in the general population (Degenhardt *et* *al*., 2008), as against the current study which was hospital based. A study on the comparisons of patients with comorbid substance use disorders reported alcohol and cannabis as the important drugs of abuse, both in mental health and substance abuse treatment settings (Harvassy *et al*., 2004). It is important to note that alcohol, tobacco and cannabis are 'Gateway' drugs (Lynskey *et al*., 2003). Their use have been shown to predate the use of other drugs with more deleterious effects, in which case these initial substances are seen as primers of the brain for the more 'Harder' ones such as cocaine (Lynskey *et al*., 2003; Tarter *et al*., 2006; VanGundy and Rebellon, 2010). In partial keeping with the respondent's report on multiple substance use was the finding from the SCAN interview that 38% of them had multiple substance use disorders including harmful use and dependence. Other substance use disorders were that of alcohol, nicotine (tobacco) and volatile substances. A similar report had been documented among psychiatric patients with suggestions that these findings may further indicate an 'intimate' neurobiological relationship between substance use disorders and other psychiatric disorders (Strain *et al*., 1991; Busto *et al*., 1996; Pereiri *et al*., 2013).

Substances such as amphetamine and cocaine were not recorded as a drug of use currently. Similarly, a recent WHO global survey on psychoactive substances recorded low proportion of cocaine users in Africa, including Nigeria (Degenhardt *et al*., 2008). Drug use is influenced by factors such as availability, affordability, accessibility and acceptability. Cocaine, amphetamine and heroin are illicit drugs in Nigeria and important substances being hunted down by the drug law enforcement agents in the country. To sustain the use of cocaine and heroin considering the socioeconomic profile of the respondents, will be expensive. This may partly explain the absence of the use of these classes of drugs as reported by the respondents.

5.6 Prevalence of psychoactive substance use

The lifetime prevalence for the use of at least one psychoactive substance was 29.3%. This is similar to what was reported from the epidemiologic catchment area study in the United States which found a prevalence of 29% comorbidity between mental illness and substance use (Regier *et al*., 1990). However, this figure may be relatively low because their samples were drawn from community dwellers as against hospital patients in the present study. Patients with comorbidity may be more in the community than are seen in the hospital as not every patient will seek medical help in hospital. Some researchers who had investigated comorbidity in schizophrenia in some parts of the developed world found the lifetime prevalence of substance abuse to be as high as 50% (Regier *et al*., 1990; Mueser *et al*., 1995). The high rate found in these countries also reflects the prevalence of substance use in those communities. Patients who are part of the inhabitants of the places where substance use is high, are not 'immuned' from the use of substances as this behavior may be part of the social pressure and lifestyle. Mueser, Drake and their colleagues had conservatively put an estimate of the recent or current substance abuse to range from 20 to 65% (Drake *et al*., 1989; Mueser *et al*., 1995).

An important strength of Mueser et al and Drake et al' study was that they were prospective as against the one in the respondents of ABUTH which was cross-sectional, but their patients were drawn from community samples and not from those who visited hospitals. Hence, it will not be unlikely to find a high prevalence of substance use. As Rachbiesel (1999) reported in a review of the literature on comorbidity, estimates of the prevalence of substance use among psychiatric patients population vary widely, reflecting factors such as the use of samples with acute or non acute (clinic type) illnesses, the geographic site of study (for example urban versus rural or west versus east), and the availability of illicit drugs in the study location. What studies have confirmed is that the prevalence of substance use in major mental illness is higher than the general population (Regier *et al*., 1990; Kessler *et al*., 1994). The literature suggests that nearly 50% of patients with schizophrenia have a co-occurring substance use disorder, most frequently alcohol and/or cannabis (at a rate about three times as high as that of the general population (Dixon, 1999). Patients with dual diagnoses are highly prone to adverse outcomes in several domains: including non-adherence to medication; and poor overall response to pharmacologic treatment (Dixon, 1999).

Worldwide, psychiatric conditions are mostly treated by pharmacotherapy, involving the use of several medications. The respondents in this study were placed on various psychotropic agents (singly or in combination) to relief symptoms of the primary mental disorder (PMD) they had. There were patients who were receiving additional medications to treat substance use disorders. Interactions occur between the substance use, PMD and the psychotropic medications. Some investigators have suggested that conventional antipsychotics used in the treatment of psychiatric disorders may actually induce or worsen the use of psychoactive substances (McEvoy *et al*., 1995; Voruganti *et al*., 1997), especially in patients with schizophrenia (who were the major respondents in this study). One of such medications is Haloperidol, a conventional antipsychotic. Haloperidol is said to increase cigarette smoking in patients with schizophrenia (McEvoy *et al*., 1995) although the precise mechanism by which this occurs is not fully clear. Haloperidol is the most prescribed medication for patients with psychotic disorders in the outpatient clinic of ABUTH. Besides this, in patients who use substances, interactions occur between the substances used, the PMD and the psychotropic agents used to treat the PMDs. Tobacco (one of the most used substances in this study) have pharmacokinetic and pharmacodynamic interactions in patients with comorbidity. It induces liver enzymes leading to the faster metabolism and elimination of psychotropic medication, which results to an overall reduction of the therapeutic serum level of medications (Desai *et al*., 2001). Empirical evidence from the health workers treating patients in the ABUTH clinic suggests that it is common for patients who smoke to require higher doses of medications to remain well. Failure to adjust their doses is often followed by frequent relapse requiring more clinic visits, additional medications or inpatient admission. When patients then discontinue smoking, temporarily or permanently, normal liver enzymes levels are restored leading to relatively higher serum level of the medications. This consequently leads to patients experiencing more side effects with the medications, discontinuation of the medication due to intolerable side effects and further relapse. Furthermore, Nicotine in tobacco tends to increase dopaminergic activity in the brain; it compromises the efficacy of neuroleptics thereby increasing the risk of psychiatric symptom exacerbation and relapse (Drake and Wallach, 1989).

There are challenges to effective drug management in patients who have comorbid substance use and other psychiatric disorders. These are potential problems for further research to evaluate.

5.7 Medication adherence

Most of the respondents reported never missing a dose of the medication at least during the period under examination. It is necessary to review this result in the context of the clinical situation under which this study was conducted. Several factors are known to affect or influence a patients’ adherence behavior, ranging from the insight a patient have or does not have about his or her mental illness (Owen *et al*., 1996). Insight is the total understanding an individual (in this case a patient) has about his or her illness that enables him or her to modify his or her behavior appropriately to his or her favor. When patients have major mental illness such as schizophrenia, their ability to form good insight is impaired and hence will not seek help or cooperate with any treatment when one is sought for them. This also means that patients have lost fully or partially, their ability for rational decision making about matters that concerns their wellbeing. Consequently, it is a routine practice for professional psychiatric care providers of the respondents to give insight-oriented counseling to patients and their relatives who are seen in the out-patient clinic of the hospital. Insight is also an important factor to consider in a patient who is to be discharged from admission in hospital prior to commencement of the out-patient clinic. This practice of passing these patients and their relatives through a process aimed at making them insightful about the patient's illness and the need to use medications may have contributed to their better treatment adherence as reported by the respondents in this study. It could have also accounted for why this study did not find a statistically significant proportion of substance users defaulting from medication use. This finding is in contrast to what was reported in studies in some other parts of the world where patients with comorbidity are poorly compliant (Linn *et al*., 1982; Baby *et al*., 2009). This insight counseling is not limited to any specific kinds of disorder, but selective attention is paid to those at risk of poor adherence such as those with substance use comorbidity. This study however, did not seek to determine the reason patients complied with their medication use the way they did; an information that will have clarified the basis for this medication use behavior.

The extent to which patients adhere voluntarily to the prescribed treatment is crucial in the management of any disease condition. Although a high proportion of the respondents who were using substances were less compliant to their medications, this did not reach the threshold to find any statistically significant relationship between substance use and medication adherence. Perhaps a larger sample would have been better for this and should be considered in the future. However, several studies have shown that for patients with mental disorders, substance use affect their adherence to prescribed medications (Keck *et al*., 1997; Olfson *et al*., 2000; Lambert *et al*., 2005; Mahmood *et al*., 2010). In this case, patients do not use the medications as prescribed or takes inadequate quantities. For a mental disorder such as schizophrenia, poor adherence is significantly associated with the use of substance (Olfson *et al*., 2000). In bipolar affective disorder, comorbid with substance use, patients were not only poorly compliant to the drugs but were more likely to take more medications than prescribed (Weiss *et al*., 1998).

It is also a routine practice to have doctors, pharmacists, and nurses insist that the patients' caregivers such as their mothers keep medications and have the patient take them under direct supervision. This is a system applicable to several hospital psychiatric settings. This study shows a significant association between respondents who kept their medications and adherence behavior, as a significant proportion of respondents were found to comply better when the medications were in their possession than when in the care of a relative. Medication supervision did not have any significant relationship with adherence. This ordinarily, meant that it may not matter so much whether a patient's medication use is supervised or not to achieve adequate adherence. It is partly understandable from the perspective of the reasons the respondents gave for defaulting from medication use. A major proportion of respondents who were supervised reported that medications were not available to them at the time of expected use. This response could be interpreted to be an attribution of blame to the relatives by the patient who perceives supervision as an infringement on their boundaries. However, a closer look at those whose medication use was unsupervised also show that they reported 'no drugs available' at the time of expected use. This is very relevant for the attention of the psychiatric team providing care to reappraise the value of insight counseling, medication possession and supervision as it relates to adherence behavior.

5.8 Underdiagnosis of substance use in the patients

This study found that about 60% of the patients who were using substance were not diagnosed to have substance use problems until the SCAN interview was conducted. This can arise from the consulting physician’s ignorance or a tendency to downplay substance use problems as been a social or behavioral issue and to focus on what he or she perceives as the major health issue confronting the patient. It may also result from lack of competence on the part of the physician to diagnose substance use problems as even the most experienced doctor may fail to identify a substance-using patient. Patients who use substances with or without other coexisting mental illness are known to be very evasive about their substance use and frequently attempt to deny their use (Safer, 1987) or may consider it not relevant to their physician. This, combined with a lack of observation time, due to generally relatively shorter hospital contact period among patients with substance use disorders than among other psychiatric patients, may be an important cause of under-diagnosis (Lieberman *et al*., 1985; Ananth *et al*., 1989; Woodward *et al*., 1991). Time is a key factor, as it may be difficult to separate other psychiatric disorders from substance use disorders if the patient is observed for a short time only. Furthermore, Disorders induced by substance use may imitate nearly any psychiatric disorder and may, therefore, be perceived as other disorders (Brady *et al*., 1995).

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary

Schizophrenia and indeed other major mental disorders, exert a great deal of damage and loss to the sufferer and his or her family such that he or she becomes functionally incapacitated in several ways. The use of psychoactive substances is worldwide and their use is increasing. When taken, these substances affect mental processes similar to those affected by mental illness leading to psychoactive substance use disorders. It is common to have people who suffer from both disorders. This comorbidity compromises the efficacy of neuroleptics and is a major challenge to the management of both disorders. They have higher rate of psychiatric admission and poor treatment outcome. They adhere poorly to their prescribed medication, and are known to have more exacerbations of acute psychiatric symptoms, persistent symptoms of illness despite use of medications. They often exhibit evasive attitude towards health care. They also have high utilization of health and social facilities, physical disorders, high rate of abandonment of hospital care, and attenuation of social achievements. In Nigeria, there is relative dearth of information on the co-occurrence of psychoactive substance use and mental illness.

This is a crossectional descriptive study including psychiatric out-patients of the Ahmadu Bello University Teaching Hospital, a major tertiary hospital in northern Nigeria. A sample of 207 patients obtained from an estimated population of 450, were studied. Adult patients (18 years and above) attending the out-patient clinic of the hospital within the study period (from 1st July to 31st October 2011) who met the inclusion criteria were included in the study. Consecutive consenting patients who visited the clinic for their routine psychiatric consultations were interviewed. They completed a sociodemographic and drug use questionnaire. The data obtained was analysed using statistical package for social sciences (SPSS), version 16.

The respondents were essentially young married Moslems most of whom had received formal education. The sex, marital status, the highest level of education and occupation of the respondents were found to be significant predictors of psychoactive substance use. The respondents were largely using multiple substances. The lifetime prevalence of psychoactive substance use at the outpatient psychiatric clinic of the Ahmadu Bello University Teaching Hospital Zaria was found to be 29.3% while for the use of multiple substances was 17.3%. This finding is comparable to what has been reported in some parts of the world. Alcohol, Cannabis and Tobacco were the most commonly used substances as well as the most common combination of substances used. No statistically significant association was found between medication adherence and psychoactive substance use.

6.2 Conclusion

Psychoactive substance use and mental illness is a common comorbidity among the psychiatric patients attending the outpatient clinic of ABUTH. Their socio-demographic profile influence this behavior but medication adherence is not significantly affected by this comorbidity. The Gate way drugs were the most commonly used substances in this study. These drugs are known to interact with mental disorders as well as psychotropic agents used to treat them. To what extent this interaction adversely affects the patients in this study is not clearly known until further studies in this subject explore these interactions.

6.3 Limitations

This is a cross-sectional descriptive study involving voluntary respondents which might not be applicable to the generality of patients in the psychiatric clinic of the hospital.

Findings relied on self report of psychoactive substance use which is liable to response and recall bias.

6.4 Recommendations

The psychiatric health care providers need to utilize every opportunity to educate patients about the problems of substance use about the full range of its risks and consequences including that to their health as the mentally ill.

As part of best clinical practice, physicians should identify patients who are at risk for substance use based on their socio-demographic variables and immediately institute measures aimed at mitigating the risk, such as referral to the social welfare for the unemployed patient.

During psycho-educational sessions for the purpose of giving patients and their relatives information about the patients need to adhere to his or psychotropic medications, emphasis should be placed more ensuring that medications were available for patients to use at home.

Further studies should assess comorbidity using serum samples for drug analysis, enquire the reason(s) for substance use and attempt to evaluate the effects of substances on the psychotropic medications and the patients' psychiatric symptoms.

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APPENDICES

APPENDIX I – INFORMED CONSENT FORM

Informed Consent

Takarbar Neman Amincewa

You are invited to participate in the study of psychoactive substance use among psychiatric outpatients of this hospital. The purpose of this study is to document the use of psychoactive substances by patients and you will be asked series of questions about this subject. All information will be treated with strict confidentiality and your name will not be requested for or used in any part of this study. Data to be obtained from this work may be shared with other researchers ONLY for Academic purposes and for promotion of medical knowledge.

Your participation in this study is voluntary and you may withdraw at any time. If you wish, findings of the study may be communicated to your physician for the purpose of giving you medical assistance.

Ina gayatarka shiga wani binciki game da amfani da abubuwar maye. Ginshikin wannan bincike shine a tabbatar da amfani da abubuwan maye, saboda haka za a ma tambayoyi.Duk wani bayani da ka bayar zai zama sirri ne kuma ba za a bukaci sunan ka ba a wannan bincike. Za a yi amfani da duka bayanan da za a tattara a wannan bincike wajen koyarwa da karin ilimi KAWAI.

Babu takurawa wajen bada bayani kuma za ka iya janye wa a kowani lokaci ka ga dama. Idan kana da bukata za mu iya bada bayanan binciken mu ga likitan ka don taimakama.

__________________________ ___________________________

Signature or thumbprint of respondent and Date Signature of Researcher and date

Sa hannu ko tambarin hannun mai bada bayani

Serial No. ____ File No._________

QUESTIONNAIRE

Date.___________

DEPARTMENT OF PSYCHIATRY AHMADU BELLO UNIVERSITY TEACHING HOSPITAL, ZARIA

Socio demographic data

1. Age: _____
2. Sex: Male [ ]1 Female [ ]2
3. Religion: Christian [ ]1 Islam [ ]2 Others [ ]3
4. Marital Status: Single [ ]1 Married [ ]2 Separated [ ] 3Divorcee[ ] 4Widowed [ ]5
5. Occupation: Government employee [ ]1 Private Sector employee[ ]2 self employed [ ]3 student / pupil [ ]4 housewife [ ] 5 unemployed [ ]6 Retiree [ ]7
6. Highest level of Education: No formal Education[ ]1 Primary[ ]2 Secondary[ ]3 Tertiary[ ]4 Islamic[ ]5
7. Home Living arrangements: homeless[ ]1 living alone [ ] 2 living with significant others [ ]3

Medical records

8. Non-substance use diagnosis (clinical record): ________________________________
9. Date of diagnosis___________________
10. Substances use diagnosis (clinical record): ____________________________________
11. Date of diagnosis____________________
12. Attendance at Outpatient Visits in the last 6months : attendance less than 50% [ ]1 attendance at least 50% [ ]2

This section concerns the use of psychoactive drugs. Have you ever used any of the following substances?

13. Alcohol Yes [ ]1 Go to Q14

    No[ ]2 Go to Q16
14. For how long? __________
15. When last did you take alcohol? _________

16. Marijuana(‘wewe’, ‘ganye’)   Yes [ ]1 Go to Q 17

No [ ] 2 Go to Q 19

17. For how long____________

18. When last did you take Marijuana? _________

19. Opioids   (e.g pentazocine, codeine)   Yes [ ]1 Go to Q 20

No [ ] 2 Go to Q22

20. For how long? _____________

21. When last did you take opioids? ___________

22. Cigarette   Yes [ ] 1 Go to Q23

No [ ] 2 Go to Q25

23. For how long? ________

24. When last did you take Cigarette? __________

25   Anxiolytics / sedatives (e.g valium)   Yes [ ]1 Go to Q26

No [ ] 2 Go to Q28

26 For how long? ___________

27 When last did you take Anxiolytics/ sedatives? ____________

28 Volatile agents (Solvents) Yes [ ] 1 Go to Q29

No [ ] 2 Go to Q31

29 For how long? ______________

30 When last did you take volatile agents? ____________

31 Cocaine   Yes [ ] 1 Go to Q32

No [ ] 2 Go to Q34

32 For how long? ________

33 When last did you take cocaine? ______________

34 Amphetamine Yes[ ] 1 Go to Q35

No [ ] 2 Go to Q37

35 For how long?_____________

36 When last did you take amphetamine? _____________

37 Others specify i_________ ii _________ iii__________ iv__________ if No, go to Q 40

38 For how long? i_________ ii__________ iii__________ iv__________

39 When last did you take the substance(s) specified above i_________ ii__________ iii__________ iv__________

40 Substance use clinical diagnosis(International Classification of Diseases ICD-10): ____

41 This section concerns your use of prescribed drugs in this clinic. Which of these statements best describes your drug use in the past 1 month?

I never missed my drugs [ ] 1

I missed a couple of times but essentially took all prescribed doses [ ] 2

I missed my drugs several times, but took at least half the doses [ ] 3

I took less than half of the drugs [ ] 4

I stopped taking the drugs [ ] 5

42 Have you ever missed a dose your drugs in the last 6 months Yes [ ]1 No[ ]2
If yes,

43 What are the reason(s) you missed them?
Tired of using drugs [ ] 1
Drug side effects [ ] 2
No drugs to use [ ] 3
Drug cost [ ] 4
Failure of physician to explain drug regimen (timing or dose) [ ] 5
Failure of physician to explain benefits of the drugs [ ] 5

Other________________________

____

Level of medication supervision

44 Patient keeps his /her medication [ ] 1

Caregiver keeps medication [ ] 2

45 Patient takes medication under caregiver's direct supervision [ ] 1

Patient takes medication without caregiver's direct supervision [ ] 2