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A retrospective review of substance use disorders amongst psychiatric inpatients at Chris Hani Baragwanath academic Hospital.

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TITLE

A Retrospective Review of Substance Use Disorders Amongst Psychiatric Inpatients at Chris Hani Baragwanath Academic Hospital.

NAME

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfillment of the requirements for the degree of Master of Medicine in the branch of Psychiatry.

Johannesburg, September 2013

DECLARATION

I, Dr Zaahir Ahmad Ebrahim Motala, declare that this research report is my own work. It is being submitted in partial fulfillment of the requirements for the degree of Master of Medicine in the branch of Psychiatry. It has not been submitted before for any degree or examination at this or any other University



September 2013

ABSTRACT

Objective:

Anecdotal evidence suggests that substance use is a significant problem among psychiatric patients admitted to Chris Hani Baragwanath Academic Hospital. The purpose of this study was to investigate the prevalence of substance use, the type of substance used and the socio-demographic and clinical factors associated with substance use among a group of psychiatric inpatients.

Method:

This study was a retrospective record review of all patients admitted to the psychiatric wards at Chris Hani Baragwanath Academic Hospital between the periods of July and December 2008.

Results:

Substance use was 4.8 (95% CI:2.7-8.4) times more likely among male subjects ($p<0.001$), 4.1 times (95%CI: 1.8-9.3) more likely in subjects aged 18-30 years compared to older patients ($p=0.001$), 3 times (95% CI: 1.2-7.4) more likely in subjects who were single ($p=0.001$), 1.9 (95% CI:1.4-2.7) times more likely in subjects who did not have children ($p<0.001$), and 1.5 (95% CI:1.2-2.1) times more likely in subjects with a psychotic disorder ($p=0.004$) compared to those with a mood disorder. Mood and psychotic disorders were compared and only the past psychiatric history was found to be significantly associated with psychotic disorders.

Conclusion:

Male gender was found to be significantly associated with substance use. Alcohol and cannabis were the most common substances used and polysubstance use also was a common occurrence. These findings have implications for preventative measures, psychiatric practice and specialized care for dual diagnosis patients.

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The one who lights the way and selflessly invites others to follow,

Who never lets one out of sight so that they never feel lost,

Who helps one make sense of the dark,

And whence that one emerges they are forever inspired and in gratitude.

TABLE OF CONTENTS

	Page
1. List of figures	5
2. List of tables	5
3. Definition of terms	7
4. Introduction	10
4.1 Background	10
4.2 Literature review	10
4.2.1. Prevalence of substance use disorders in mentally ill patients	10
4.2.2. Type of substances used by mentally ill patients	15
4.2.3. Factors associated with substance use among the mentally ill	18
4.2.4. Barriers to adequate treatment and associated consequences of comorbid substance use and mental illness	27
5. Problem statement	32
6. Statement of hypothesis	32
7. Aim	33
8. Objectives	33
9. Method	34
10. Data analysis	37
11. Ethical considerations	37
12. Results	38
12.1. Demographic and clinical characteristics of the study population	38
12.1.1. Demographic characteristics	38
12.1.2. Clinical characteristics	40
12.2. Demographic and clinical characteristics of substance users and non users	41
12.2.1. Demographic characteristics	42
12.2.2. Clinical characteristics	44
12.3. Comparisons between substance users and non substance users	46
12.4. Relationship between substance use and the psychiatric diagnosis (mood or psychotic disorder)	49
12.5. Substance use	52
12.5.1. Type of substance used	52
12.5.2. Comparisons between type of substance used and psychiatric diagnoses	53
13. Discussion	55
14. Conclusion	67
15. Addendum	69
16. References	76

1. LIST OF FIGURES

No	Title	Page
12.1	Gender distribution of study population	38
12.2	Types of substance used	52

2. LIST OF TABLES

No	Title	Page
12.1	Demographic characteristics of the study population	39
12.2	Clinical characteristics of the study population	41
12.3	Demographic characteristics of substance users and non users	43
12.4	Clinical characteristics of substance users and non users	45
12.5	Results of the multivariate analysis: Dependent variable: substance use	47
12.6	Results of the multivariate analysis: Dependent variable: substance use; Independent variables: demographic characteristics	47
12.7	Results of the multivariate analysis: Dependent variable: co-morbidities; Independent variables: demographic characteristics	48
12.8	Results of the multivariate analysis: Dependent variable: diagnostic group; Independent variables: demographic characteristics	48
12.9	Demographic and clinical characteristics of substance users by diagnostic groups.	50/51
12.10	Type of substance used in relation to psychiatric diagnosis	54

3. DEFINITION OF TERMS

Psychoactive substances: The World Health Organization (WHO) defines psychoactive substances, as substances that when taken in or administered into one's system, affect mental processes, e.g. cognition or affect (WHO, 2012).

Polysubstance abuse: The concurrent (taken at the same time) or sequential (one drug taken followed by another) use of more than one drug or type of drug, with dependence upon at least one substance over a period of 12 months (WHO, 2012).

Substance misuse: Use of a substance for a purpose not consistent with legal or medical guidelines, as in the non-medical use of prescription medications. The term is preferred by some to abuse in the belief that it is less judgemental (WHO, 2012).

Substance abuse: Substance abuse is defined as a maladaptive pattern of substance use leading to clinically significant impairment or distress as manifested by one (or more) of the following, occurring within a 12-month period: Recurrent substance use resulting in a failure to fulfil major role obligations at work, school, or home; recurrent substance use in situations in which it is physically hazardous; recurrent substance-related legal problems; continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (American Psychiatric Association, 2000).

Mental and behavioural disorders: Are clinically significant conditions associated with alterations in thinking, mood (emotions) or behaviour associated with personal distress and/or impaired functioning (WHO, 2001).

Serious mental illness: The definition as defined by the Substance Abuse and Mental Health Administration requires the person to have at least one 12-month disorder, other than a substance use disorder, that met the DSM-IV criteria of a "serious impairment" (American Psychiatric Association, 1994). "Serious impairment" is defined as an impairment that is equivalent to a Global Assessment of Functioning (GAF) score of less than 60 (Substance Abuse and Mental Health Services Administration , 2012).

Substance use disorder: It is a mental and behavioural disorder resulting from psychoactive substances. It includes substance abuse and substance dependence and contains a wide variety of disorders of different severity and clinical form, all having in common the use of one or more psychoactive substances, which may or may not have been medically prescribed. The substances specified are alcohol, opioids, cannabinoids, sedatives or hypnotics, cocaine, other stimulants including caffeine, hallucinogens, tobacco, and volatile solvents. The clinical states that may occur, though not necessarily with *all* psychoactive substances, include acute intoxication, harmful use, dependence syndrome, withdrawal syndrome (state), withdrawal state with delirium, psychotic disorder, late-onset psychotic disorder, and amnesic syndrome (WHO, 2012).

Substance dependence: As applied to alcohol and other drugs, the term implies a need for repeated doses of the drug to feel good or to avoid feeling bad (WHO, 2012).

Dependence syndrome: involves a strong desire to take the substance, difficulty in controlling use, a physiological withdrawal state, tolerance, neglect of alternative pleasures and interests, and persistence of use despite harm to oneself and others (WHO, 2012).

4. INTRODUCTION

4.1. BACKGROUND

According to the World Health Organization, "substance use poses a significant threat to health, social and economic fabric of families, communities and nations" (WHO, 2007). Substance use disorders are more prevalent among individuals with mental illness compared to the general population (Regier et al, 1990). This has been extensively documented in both clinical and epidemiological samples (Quimette, 2003). Mental illness and comorbid substance use is associated with a poorer course and treatment outcomes as well as detrimental socio-economic consequences (Evans-Lacko et al, 2010; Drake et al, 1996). Taking the above into account, specialized and integrated care of both the substance and mental illness can enhance outcomes (Quimette, 2003).

4.2. LITERATURE REVIEW

4.2.1. PREVALENCE OF SUBSTANCE USE DISORDERS IN MENTALLY ILL PERSONS

Worldwide, the extent of substance use is estimated at two billion alcohol users and 230 million drug users (WHO, 2007; United Nations Office on Drugs and Crime, 2012). Whilst substance use disorders are common in the general population, there is also evidence that suggests that there is a significantly greater incidence of these disorders among mentally ill individuals.

Reliable data on the prevalence of co-occurring disorders have been derived from two major US surveys: the Epidemiologic Catchment Area (ECA) Survey (Regier et al, 1990) and the National Comorbidity Survey (NCS) (Kessler et al, 1994). The ECA Survey was conducted between 1980 and 1984, in five catchment areas in the USA. It involved face-to face interviews with 20,291 Americans aged 18 years and over. The ECA Survey found that individuals with severe mental disorders were at significant risk for developing a substance use disorder during their lifetime. The study found that 22.5% of the general population had a lifetime prevalence rate for any mental disorder other than a substance use disorder. For alcohol dependence or abuse the lifetime prevalence was 13.5% and for drug dependence or abuse it was 6.1%. Of the 22.5% with a mental disorder, 29% also had a co-existing substance use disorder (i.e. a dual diagnosis) and 37% of those with an alcohol disorder had another mental disorder. Seventy per cent of those with drug disorders also had an alcohol or other mental disorder. Further, 47% of individuals with schizophrenia also had a substance abuse disorder (more than four times as likely as the general population) and 61 % of individuals with bipolar disorder also had a substance abuse disorder (more than five times as likely as the general population).

The NCS (Kessler et al, 1994) is another population based survey of 8,098 individuals between the ages 15-54 years old that was undertaken between 1990 and 1992 to examine the extent of comorbidity between substance use and non-substance use disorders in the United States. The rate of comorbidity between substance use disorders and mental illness was generally found to be higher in this study than in the ECA survey. The study found that 42.7% of individuals, with a 12-month addictive disorder, had at least one 12-month mental disorder and 14.7% of individuals with a 12-month mental disorder had at least one 12-

month addictive disorder. Results of the NCS and the ECA Survey indicate high prevalence rates for co-occurring substance abuse disorders and mental disorders, as well as the increased risk for people with either a substance abuse disorder or mental disorder for developing a co-occurring disorder.

The National Institute on Alcohol Abuse and Alcoholism (NIAAA), which is a division of The United States Department of Health and Human Sciences, also conducted a longitudinal face-to-face survey referred to as the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). The first survey was conducted for the years 2001-2002 and more than 43000 adults were interviewed. One of the objectives of the study was to understand the relationship between substance use and psychiatric disorders (NIAAA, 2004). Hasin et al (2005) analyzed the NESARC data and reported the following among those with major depressive disorder: alcohol use disorder (12 month prevalence of 14.1%; lifetime prevalence of 40.3%); drug use disorder (12 month prevalence of 4.6%; lifetime prevalence of 17.2%); alcohol abuse and dependence (12 month prevalence rates of 5.9% and 8.2% respectively; lifetime prevalence rates of 19.4% and 21.0% respectively); and drug abuse and dependence (12 month prevalence rates of 2.2% and 2.4% respectively; lifetime prevalence rates of 11.8% and 5.5% respectively). Grant et al (2005) also analysed the NESARC data and reported that bipolar I disorder was found to be significantly associated with substance use: 58% had a lifetime prevalence of alcohol abuse or dependence and 37.5% had a lifetime prevalence of any drug use disorder.

The Substance Abuse and Mental Health Services Administration (SAMHSA) also compiled yearly reports on the prevalence and treatment of substance use in the United States. The 2011 survey reported that among 45.6 million adults with any mental illness in the past year, 17.5% met the criteria for substance abuse or dependence (SAMHSA, 2012). Additionally, out of 18.9 million adults with a past year history of substance use disorders, 42.3% (8.9 million adults) had a serious mental illness in 2011. By comparison, only 5.8 % of adults without a mental illness had a substance use disorder (SAMHSA, 2012).

Similar large epidemiological studies have been conducted in other countries. The Netherlands Mental Health Survey and Incidence Study found, over a 12 month period, that 45% of people who met criteria for one disorder also met criteria for one or more additional disorders (Bijl et al, 1998). The Australian National Survey of Mental Health and Wellbeing in 1997 was a national epidemiological survey of mental disorders that used similar methodology to the NCS to provide representative information on the mental health of Australian adults aged 18 years and over using ICD-10 and DSM-IV (Andrews, et al, 2001). Data from this study indicated that among people with psychotic illnesses, the prevalence of alcohol use disorders was 36% among men and 17% among women.

Aside from the large scale surveys, two meta-analysis are worthy of noting. Green et al (2005) conducted a meta-analysis of 53 studies of individuals with psychosis and cannabis use and 5 epidemiological studies. The results of this study revealed that the 12-month prevalence estimates of use and misuse of cannabis were 29% and 19%, respectively, and lifetime use and misuse estimates were 42% and 23%, respectively. Davis et al (2008) in their meta-analysis of studies investigating the relationship between major depressive

disorder and comorbid substance use disorders, found that the prevalence of a current substance use disorder in the general population with major depressive disorder ranged from 8.5 to 21.4%, and a lifetime prevalence of comorbid substance use disorders ranged from 27 to 40%. They concluded that approximately one-third of patient with major depressive disorder presented for treatment for some type of recent substance use disorder.

There is a poverty of research on prevalence rates of substance abuse in the mentally ill in South Africa. Weich et al (2009) examined the prevalence of substance use disorder among 298 acute adult psychiatric inpatients at Stikland Hospital, one of three state acute psychiatric hospitals in the Western Cape. It was reported that a co-morbid substance use disorder (abuse or dependence) was diagnosed in 51% of patients. In addition, a diagnosis of a substance-induced psychiatric disorder was made in 8% of these patients (1% of who was diagnosed with a substance-induced mood disorder; while 7% were diagnosed with a substance-induced psychotic disorder). Koen et al (2009) investigated cannabis use and abuse in a homogeneous South African schizophrenic population of 547 subjects. The participants were recruited from inpatient units and outpatient community clinics in the larger Cape Town metropolis. The overall lifetime prevalence of cannabis use/abuse in this study was 49.5%.

The large-scale epidemiological surveys and other studies discussed in this review have presented data on co-occurrence of disorders within a one, six or 12 month period, and others have included lifetime prevalence rates. The reliance on self-reports and patient interviews in these surveys may have led to under reporting, as patients may not have

disclosed through fear of criminal prosecution, embarrassment, or failure to recognize or acknowledge the extent and impact of their substance use. Despite the methodological differences and limitations, published studies both internationally and locally confirm that the prevalence of substance use amongst mentally ill persons is higher than that of the general population.

4.2.2. TYPE OF SUBSTANCES USED BY MENTALLY ILL PATIENTS

The United Nations Office on Drugs and Crime reported that globally, the most widely abused drugs in the general population are cannabis (between 199 and 224 million people) and amphetamine-type stimulants (14.3 and 52.5 million people) (UNODC, 2012). In 2010, seven out of the fifty four African States reported increase trends in the use of cannabis and opioids (Nigeria, Mozambique, South Africa and Swaziland); with relatively stable trends in the use of cocaine and amphetamine-type stimulants. 64% of all persons treated for drug use were related to cannabis use. Within West and Central Africa cannabis was also the most commonly used drug (annual prevalence of 5.2-13.5%; higher than the global average of 2.6-5.0%). Cocaine use was reportedly high in West, Central and Southern Africa. The estimated prevalence of amphetamine-type stimulants and opioids in all African sub regions remained comparable to the global average (0.3-0.4% of population aged between 15 and 64 years).

The South African Community Epidemiology Network on Drug Use (SACENDU) monitors alcohol and drug abuse trends. Data is obtained from participating treatment centres throughout the country and published on a six monthly basis. Plüddemann et al (2012)

compiled a report based on the 2012 SACENDU survey and found that alcohol was the most commonly abused substance in South Africa (47.2%), followed by cannabis (22.0%). Further, they reported that alcohol abuse was especially problematic in Kwa-Zulu Natal (67%) and the combined provinces of the Northern Cape and Northwest (59%). Cannabis abuse was most common in Limpopo and Mpumalanga (36%), followed by Gauteng (28%) and the combined provinces of Northern Cape and Northwest Province (21%). Cannabis as the primary substance of abuse accounted for 53.67% of admission countrywide followed by alcohol (16.3%), methamphetamine (10.18%), heroin (7.5%), methaqualone (3.34%) and cocaine (1.34%). Methaqualone was commonly associated with cannabis.

Surveys similar to those in the general population have been conducted amongst the mentally ill population. The ECA Survey (Regier et al, 1990) reported that alcohol was the most common substance misused by individuals with severe mental illness, especially bipolar and schizophrenia disorders. After alcohol, the next most common substance misused was cocaine, followed by cannabis. Higher rates of cannabis and cocaine use were found among individuals with anxiety, mood, antisocial personality and schizophrenia disorders. No other significant association could be established between specific mental disorders and the type of substances used.

Dixon (1999), in her meta-analysis, reported that alcohol tended to be the most frequent substance of abuse or dependence, followed by cocaine and cannabis among individuals with schizophrenia. Stimulants, hallucinogens, opiates, sedative-hypnotics, and other substances were less common. Little evidence was found to suggest that individuals with schizophrenia used specific drugs to aid specific negative states. Instead it appeared that

patients with schizophrenia used substances for similar reasons to those without schizophrenia. The type of substance was significantly influenced by the ambient patterns of drug use in the community. Drake et al (2002), in their meta-analysis, concluded that alcohol was the most common substance of abuse. They proposed that the availability and the fact that it was legal, contributed to widespread abuse among people with schizophrenia. They also described the biological, psychological and socio-environmental factors that contributed to substance abuse. They suggested that the underlying neuropathological abnormality and the psychological and socio-environmental factors (stigma, discrimination, boredom, and dysphoria) in schizophrenic patients facilitated the positive reinforcing effects of substance use. Green et al (2005) found that that cannabis was the most commonly used illicit drug amongst schizophrenic patients in the United States as it was more easily available compared to other illicit substances. Green et al (2007) supported the findings of both Dixon et al (1999) and Drake et al (2002) with regards to the increased use of cannabis.

Very few studies examining the type of substance use among psychiatric populations have been conducted in South Africa. The studies of Koen et al (2009) and Weich et al (2009), which have already been reported on earlier, concluded that the primary (preferred) drug of abuse was cannabis; followed by alcohol and methamphetamine. Further, cannabis use was significantly associated with the diagnoses of schizophrenia and schizoaffective disorders; alcohol use with major depressive and adjustment disorders; and methamphetamine use with substance-induced disorders.

From the available literature it could be concluded that individuals with mental illness tend to use the same type of substances as do the general population. The most probable explanation for this is that choice of substance in general is dictated by availability, accessibility, affordability and ambient use of substance in the community (Drake et al, 2002; Dixon, 1999).

4.2.3. FACTORS ASSOCIATED WITH SUBSTANCE USE AMONG THE MENTALLY ILL

4.2.3.1. SOCIODEMOGRAPHIC FACTORS

The United Nations Office on Drugs and Crime (UNODC) studies and reports on the annual global use of illicit substances including the characteristics and patterns of substance use. In 2012 it was reported that illicit substance use was more common among certain groups and in certain environments (UNODC, 2012). Male gender, younger age and living in a city were associated with an increased risk of illicit substance use and this pattern was observed in most countries globally (UNODC, 2012).

Plüddemann et al (2012) analyzed the results obtained from the 2011 National Survey on Drug Use and Health and reported that illicit substance use was found to be more prevalent among individuals with the following characteristics: younger age, male gender, lower levels of education and unemployment. Illicit substance use was more prevalent among the youth (18 to 20 years - 23.8% and 21-25 years old - 19.9%); among males (11.1%) compared to females (6.5%); among those that had not graduated from high school (11.1%) compared to

college graduates (5.4%); and among unemployed individuals (17.2%) compared to those with full time employment (8.0%) (Plüddemann et al, 2012).

Stein et al (2008) examined the sociodemographic profile of individuals in the general population of South Africa and found that male gender and early age of onset (21 years) was significantly associated with substance use disorders and particularly within the coloured ethnic group. The increase prevalence of substance use among the coloured ethnic group was attributed to the 'dop' system of paying coloured workers for labour on wine farms with alcohol during the apartheid era. However, no association with very low income and substance use disorders was found and this was possibly due to the lack of disposable income required to purchase substances.

Epstein et al (2004) compiled a special report on the prevalence and treatment of serious mental illness and comorbid substance use disorders which was commissioned by SAMHSA, wherein adults with serious mental illness and a substance use disorder were compared to those with a serious mental illness and no substance use disorder. The study showed that individuals with a severe mental illness and substance use disorders were more likely to be younger (36.3 % were aged between 18 to 25 years of age compared to 19.5% without comorbid substance use disorder) and more likely to be male (52.1% compared to 29.3% without a comorbid substance use disorder).

Mueser et al (1990), in their meta-analysis examining the demographic and clinical characteristics of substance abuse among patients with schizophrenia, reported a number of demographic correlates to be significantly related to substance abuse namely: gender,

age and race. Male gender, younger age and living in an urban area increased the risk of drug abuse. Substance abuse was equally common between whites and blacks however the type of substance differed, in that white patients were more likely to abuse alcohol or hallucinogens, and less likely to abuse cannabis than black patients. Socioeconomic status was also marginally related to drug abuse, whereas marital status, legal status at admission (voluntary/involuntary) and living arrangements were not.

Dixon (1999), in her meta-analysis of substance abuse in schizophrenia, reported that the diversity of studies led to some inconsistencies in characterizing persons with schizophrenia with substance abuse. Nevertheless, she showed that the most consistent findings with regard to demographic characteristics were that younger persons and males were more likely to abuse drugs and/or alcohol compared to older persons or women. Lower educational levels were also common among persons with a substance abuse disorder and severe mental illness. It was also noted that substance abuse in persons with schizophrenia tended to remit with age.

Weiss et al (2005) examined the potential impact of recovery from substance use disorder on the course of bipolar disorder. The first 1000 individuals that entered the Systematic Treatment Enhancement Program for Bipolar Disorder (STEP-BD) were examined. The majority of the sample met the DSM-IV criteria for bipolar I disorder (71%). 11.5% had a current substance use disorder, 26.2% had a lifetime history of a substance use disorder and 52% did not have any substance use disorder diagnosis. The bipolar status (recovering versus recovered), role functioning and quality of life were compared between those with no history of substance use disorder, a current history and a past history. Age, gender,

marital status and education attainment were found to be significantly associated with substance use disorders. Patients with current substance use disorder were significantly younger (34.3 ± 12.3 years old) compared to those with a past history of substance use disorder (41.3 ± 11.5 years old) or those without a history of substance use disorder (41.5 ± 13.5 years old). Male gender was also found to be significantly associated with current substance use disorder (53.3%), compared to males with a past history of substance use disorder (41.9%) or males without a history of a substance use disorder (38.7%). Lower educational attainment was associated with a current history of substance use disorder (28.8%) compared to those with a past history of substance use disorder (55.1%) and to those with a college graduation without any substance use disorder (62.7%). A current substance use disorder was associated with a lower probability of marriage (24.3%) compared to those with a past history of a substance use disorder (43.7%) or to those without a history of a substance use disorder (40.9%).

Frye el al (2003) studied gender differences of alcoholism in patients with bipolar disorder in 267 outpatients. Alcoholism for the purposes of this study was defined as DSM-IV alcohol abuse or dependence. 101 (38%) met the criteria for a lifelong history of alcoholism and 166 (62%) did not. Alcoholism occurred more frequently among males (49.1%) than in females (29.1%) with bipolar disorder. Compared to the general population females were 7.35 times more likely and males 2.77 times more likely to suffer from alcoholism. Davis et al (2008) conducted a meta-analysis which examined the relationship between major depression and comorbid substance use disorders. Their study found that individuals with major depressive disorder and concurrent substance use disorders were more likely to be younger, male, either divorced or never married. Almost 40% of males had concurrent substance use

disorder symptoms as compared with 23.2% of females. No significant associations for race, employment status or years of education were found.

A few South African studies looked at the sociodemographic profile of patients with mental illness and substance abuse. Weich et al (2009) found that the majority of subjects acutely admitted with mental illness and comorbid substance use disorders were male (72% compared to 27% females) and were significantly younger (30.7±9.98 compared to 38.9±10.8 years old). Koen et al (2009) found that the majority of subjects with schizophrenia and comorbid cannabis use were male (98.8%) but was unable to identify other demographic variables of significance. Roos et al (2006) looked at cannabis use and abuse among other variables affecting the age of onset in the schizophrenia founder population. A total of 341 subjects were examined in the study, of whom 75% (156) where diagnosed with schizophrenia. He found that males (43.54%) used cannabis more than females (20.45%) and that the estimated mean age of all users was 22.7 years compared to non-users at 24.4 years. Additionally, the mean age of onset of schizophrenia in male users of cannabis (22.7 years) was significantly younger than that of both female users (25.0 years) and female non-users (24.3 years old).

In summary, the sociodemographic features commonly associated with mental illness and comorbid substance use disorders that were consistently reported in both international and local studies (described above) was that patients were likely to be male and younger. However, male gender and a younger age were also associated with substance use in the general population (SAMHSA, 2012; UNODC, 2012; Weich et al, 2009; Davis et al, 2008; Roos et al, 2006; Weiss et al, 2005; Epstein et al, 2004; Frye et al, 2003; Dixon, 1999; Mueser et al,

1990). Further, a higher prevalence of drug problems in males is typically found among treatment samples (Mueser et al, 2000; Dixon et al, 1998) but population-based studies often do not detect this association (Hernandez-Avila et al, 2004; Van Etten et al, 1999).

4.2.3.2. CLINICAL FACTORS

Dixon (1999) reported that comorbid substance abuse among individuals with schizophrenia was associated with a greater number of psychotic symptoms and psychotic relapses when compared to those without. Comorbid substance use disorders were found to be associated with adverse compliance to treatment and medication, violent behavior and suicide. The study also indicated that schizophrenia was associated with increased mortality compared to the general population, and that comorbid substance use contributed significantly to the mortality by increasing the risk for medical illnesses, especially HIV.

Compton et al (2009), in their meta-analysis investigating the effect of cannabis use on the age of onset of psychotic symptoms, reviewed eight studies which examined the potential impact of cannabis use on the age at onset of psychosis. The studies in this meta-analysis collected retrospective or cross-sectional information from individuals with recent onset of psychosis. Many of the studies demonstrated that drug abuse or cannabis use was associated with an earlier age at onset of psychosis and schizophrenia compared to those without. It was also noted that cannabis use was associated with earlier age at onset of negative symptoms in schizophrenia, and social and occupational dysfunction among individuals with first episode psychosis.

McElroy et al (2001) studied the relationship of comorbid axis I psychiatric disorders in 288 bipolar patients using structured clinical interviews to obtaining information on demographic characteristics, comorbid diagnosis, illness characteristics and history of the illness. The results showed that substance use disorders were associated with an earlier age at onset of first affective symptoms (20.3 ± 9.7 years old compared to 26.0 ±10.6 years old), development of more severe episodes over time(72% compared to 50% without comorbidity) and cycle acceleration (52% compared to 38% without comorbidity) .

Salloum et al (2002) investigated the impact of alcohol on the presentation of acute mania. A total of 256 subjects with acute bipolar mania were studied, of whom 60 (23.5%) had concurrent alcohol misuse and 196 (76.5%) did not. The study showed that patients with acute mania complicated by current alcohol misuse presented with higher levels of psychopathology compared to those without, which included higher number of manic symptoms (7.08 ± 2.08 compared to 6.13 ± 2.63), increased high risk behaviours such as mood lability (28.3% compared to 13.8%), impulsivity (76.7% compared to 51.0%), violence (40% compared to 23.5%), and other drug use (35% compared to 4.6%). Dalton et al (2003), reporting on the influence of comorbid substance use disorders on the risk of suicide in 336 bipolar patients, found that bipolar patients with comorbid substance use disorders were two times more likely to attempt suicide compared to those without comorbid substance use disorders. Goldberg (2001) in his metanalysis suggested that psychoactive substances may emerge or worsen neurocognitive symptoms and that remission from acute mania was delayed during hospitalization as well as recovery after discharge.

Verdiun et al (2005) investigated the effects of comorbid substance use in bipolar disorder on health service utilization. The study was a retrospective review of 106 psychiatric records consisting of subjects with bipolar disorder only (17% or 18 subjects), substance use disorders only (37% or 29 subjects) and comorbid bipolar and substance use disorders (46% or 49 patients). Additionally the study found that comorbid substance use was associated with increased health service utilization, including more emergency department visits (2.86±2.7 for comorbid bipolar and substance use disorders compared to 1.94±2.41 for bipolar disorder only) and hospitalizations (2.2±1.6 for comorbid bipolar and substance use disorders compared to 2.1±1.2 for bipolar alone).

Davis et al (2008) reviewed existing research in order to establish demographic, clinical and treatment of patients with major depressive disorder and comorbid substance use disorders. The study showed that approximately one-third of patients with major depressive disorder also have a concurrent substance use disorder, and the comorbidity yields higher risk of suicide, greater social and personal impairment, and an increased number of comorbid psychiatric conditions, particularly anxiety disorders. Additionally an earlier onset of major depressive disorder, greater length of illness, more major depressive episodes or relapses and hospitalizations, more prior suicide attempts, more concurrent psychiatric disorders, more previous suicide attempts and a greater family history of suicide. The study concluded that in many depressed patients with comorbid substance use disorders, the clinical features were more severe in nature.

In South Africa, Koen et al (2009) investigated the difference in clinical characteristics between schizophrenic patients with cannabis use disorders and those without. Participants were subjected to rating scales that measured positive and negative symptoms i.e. Scales for the Assessment of Positive (SAPS) and Negative Symptoms (SANS). Comorbid cannabis use was shown to be associated with more positive symptoms i.e. hallucinations, delusions, bizarre behaviour and formal thought disorder, compared to those without comorbid cannabis use disorders. The only significant negative symptom among schizophrenic patients with comorbid cannabis use disorders was that of avolition / apathy. Weich et al (2009) found that individuals with substance use disorders did not have more prior admissions (2.1 ± 0.2 admissions) compared to those without substance use disorders (2.2 ± 0.2 admissions). Patients with substance use disorders, particularly cannabis and methamphetamine users, were more likely to have associated violent behaviour (59%) compared to those without a substance use disorder (26%).

Both international and local studies, have demonstrated that substance use in the serious mental illness is associated with factors such as anxiety and depression related symptoms and loss of functional abilities. Substance abuse amongst the mentally ill may result in poorer prognosis, increased morbidity and mortality (more severe symptoms that are less responsive to treatment and take longer to resolve resulting in longer hospital admissions). Substance use can also result in earlier onset of mental illness, increased risk of comorbid medical conditions (such as HIV) and an increased risks of violence and suicide (Compton et al, 2009; Koen et al, 2009; Weich et al, 2009; Davis et al, 2008; Verdiun et al, 2005; Dalton et al, 2003; Salloum et al, 2002; McElroy et al, 2001; Goldberg, 2001; Dixon, 1999).

4.2.4. BARRIERS TO ADEQUATE TREATMENT AND CONSEQUENCES OF COMORBID SUBSTANCE USE AND MENTAL ILLNESS

Stigma is a significant issue that results in social detriments and reduced quality of life for individuals with psychiatric disorders. Many individuals with psychiatric disorders experience themselves as stigmatized, are targets of rejection and discrimination, and have expectations of rejection from society. Related to the stigma of mental illness are the negative societal perceptions of individuals who have developed substance-related disorders. Although substance-related disorders are categorized as psychiatric disorders, society tends to view these problems more harshly than other forms of mental illness and higher degrees of shame are experienced by individuals with substance-related disorders in comparison to individuals with other forms of mental illness.

Wahl (1996) examined the subjective experiences of stigma and discrimination in mentally ill patients. A questionnaire aimed at investigating the experience of mental health consumer's experiences was developed. 1,301 individuals completed the questionnaire and 100 of these individuals were interviewed. The results showed that one in four individuals' experienced painful and demeaning events. Many respondents felt that they were shunned or avoided (26%) and treated as less competent (36%). The most commonly cited source of stigma was the general community (46%). Other sources of stigma included relationships with friends (22%) and relatives (39%) as well as structural settings such as work environments (36%) and mental health care providers (28%). The reactions to stigma were the experiences of disappointment or discouragement (17%) and lower self esteem or self-confidence (57%). Consequently, patients with mental illness concealed their psychiatric

histories from others (39%). Fears of stigma also appeared to result in reluctance to apply for jobs or educational opportunities (21%), or seek treatment (18%) and result in social isolation (31%). The study also suggested that health care professionals failed to engage patients in an empathic and non-judgemental manner.

Evans-Lacko et al (2010) in a meta-analysis argued that despite the high prevalence and particular needs of comorbid mental illness and substance use disorders there was a lack of formal treatment for many (72%). Furthermore, it was also demonstrated that even when care was accessed, the chances of receiving appropriate assessment and diagnosis was low (13%). The study showed that the mental illness was often addressed and the substance abuse problem often ignored. It was also noted that such patients were less likely to receive appropriate physical health care as well.

Botha et al (2006) conducted a survey examining the experience of internalized stigma in South African schizophrenia population. A total of 1000 subjects with schizophrenic illness were included in the study. The study revealed that patients with schizophrenia were often subjected to verbal and physical abuse. Patients receiving disability grants were particularly vulnerable which may have been associated with their low socio-economic status. Cultural interpretation of schizophrenia as some form of bewitchment may have contributed to the higher incidence of stigma found in the Xhosa-speaking population. Hugo et al (2003) conducted a survey on 667 individuals attempting to establish the attitudes and beliefs of the general public towards mental illness in South Africa. They reported that stigma and misinformation existed and negatively influenced treatment modalities and help-seeking behaviour. Seedat et al (2002) investigated barriers to treatment among 596 members of

the South African depression and anxiety support group who participated in a survey examining their concerns regarding diagnosis and treatment. Common reasons cited for the delay in seeking treatment were as follows: not knowing where to go, trying to handle ones problem by themselves, receiving a wrong diagnosis, not finding an understanding professional and embarrassment.

Lund et al (2010) conducted a survey of the public sector mental service resources and utilization in 2005. The primary service platform for mental health was mental hospitals with outpatient attendance figures indicating a treated prevalence of just 1.7% of the total population. The estimated annual prevalence of chronic mental diseases was 16.5% for adults alone indicating there was a large unmet need for mental health services. Furthermore, the median proportion of mental health beds in or near the largest city in a province was 1.46 per 100,000 population (provincial range 0.63 to 4.78 per 100,000 population) indicating difficulty for those in rural areas accessing inpatient care. High transport costs represent economic barriers to access of mental health services. It was also noted that bed/population ratios had declined since 1997 from 48 per 100,000 to 28 per 100,000 in 2005. Additionally, there had been a decline in the total staff numbers with a total mental health staff of 19.5 in 1997 compared to 11.95 in 2005. These findings indicate an overall decline in mental health resources over this period. The study found that the reduction in bed numbers was not accompanied by a substantial increase in community-based services.

Weich et al (2009) studied 298 acute psychiatric inpatients with comorbid substance use disorders. She found that there was a significant comorbidity of mental illness and

substance use with as much as 79% (169) patients with a history of substance use. This was associated with an increased risk of violent behaviour (59% of patients with comorbid substance use disorder compared to 26% without). Only 7% of patients were diagnosed with a substance-induced psychosis which was interpreted as possible underestimation. She suggested that one explanation for the underestimation may have been that methamphetamine-induced psychosis may have been misinterpreted as schizophrenia. There was a low rate of documented interventions for substance use disorders. Only eight (3%) had received previous psycho-education, two (0.7%) received detoxification, two (0.7%) outpatient rehabilitation, and nine (3%) had attended one inpatient rehabilitation program, while six (2%) attended more than one rehabilitation program. It was suggested that substance disorders may have been under reported because it may not have been viewed as part of the psychiatric evaluation. Based on these findings it was recommended that additional training to improve recognition and management of substance use disorders among medical professionals and especially staff working within the mental health field, including medical students and psychiatric registrars, was needed. Furthermore, it was also recommended that due to the high levels of comorbidity that substance use disorders be incorporated into mainstream psychiatry.

According to the WHO (2001), there are significant economic implications of co-morbid mental illness and substance use disorders. The measurable components of economic burden include health and social service needs, lost employment and reduced productivity, impact on families and caregivers, levels of crime and public safety, and the negative impact of premature mortality. Direct costs will depend on the availability and coverage of mental health care and perhaps specialized care for substance comorbidities. Indirect costs can be

considered to be the hidden costs which occur as a result of loss of productivity. These costs are much higher than the direct costs.

Both the international and local studies described indicate that mentally ill individuals are subjected to stigma and discrimination. Stigma and discrimination can manifest as a barrier to appropriate and adequate mental health services and this likely to be worse if there is associated substance comorbidity. Furthermore, the lack of mental health services is associated with a significant economic burden (Evans-Lacko et al, 2010; Lund et al, 2010; Weich et al, 2009; WHO, 2001; Botha et al, 2006; Hugo et al, 2003; Seedat et al, 2002; Wahl, 1999).

5. PROBLEM STATEMENT

Anecdotal evidence suggests that substance use is a significant problem among mentally ill patients admitted to Chris Hani Baragwanath Academic Hospital. The literature has demonstrated that substance use among the mentally ill is associated with significant biological, psychological and social consequences. Only a few South African studies have examined this subject. In addition to expanding on the existing local literature, the purpose of this study was to investigate within the population being serviced the extent of the problem and to identify the sociodemographical and clinical characteristics, common types of substances used, association with particular psychiatric diagnoses and the impact on mentally ill individuals and mental health resources. Significant findings could create awareness and also warrant an attempt to understand the causes and explore possible solutions (instituting appropriate management such as prevention, motivational interviewing, and higher indices of suspicion, early identification, regular substance screening, dual diagnosis interventions and training of staff).

6. STATEMENT OF HYPOTHESIS

This study hypothesises that the prevalence rates and socio-clinical characteristics of mentally ill patients with comorbid substance use differ among those with psychotic disorders compared to those with mood disorders.

7. AIM

The aim of the study was to determine the prevalence of substance use and the factors associated with substance abuse among a group of psychiatric patients admitted to CHB hospital. It was intended that this information would help the health service managers and providers to develop targeted interventions such as preventative measures and appropriate management.

8. OBJECTIVES

1) To describe in a group of psychiatric patients admitted to Chris Hani Baragwanath Academic Hospital the:

a) demographic characteristics of the study population
b) clinical characteristics of the study population
c) rate of co-morbid substance use and abuse
d) common substances of use and abuse

2) To determine in the subgroup of substance users the factors associated with substance use.

3) To determine if a relationship exists between substance use and the specific psychiatric diagnoses of mood and psychotic disorders.

9. METHOD

The study was a retrospective record review of all patients admitted to Chris Hani Baragwanath Hospital Psychiatric wards between the periods of July and December 2008.

Setting

Chris Hani Baragwanath Academic Hospital is situated in Soweto which is a suburb of Johannesburg and services over a million people living in the southern areas, the majority of whom are black. The Department of Psychiatry provides both in and outpatient services for adults, adolescents and children. The inpatient facilities has a total of 165 beds of which 75 are allocated to males, 60 to females, 20 admission beds and 10 beds for children. Approximately 10 000 patients are admitted yearly and 14 000 patients are seen in the outpatient department.

Subjects

The subjects included all patients consecutively admitted to the Chris Hani Baragwanath Academic Hospital psychiatric wards between the periods of 1st July to the 31st of December 2008. The study was conducted over a six month period to establish an adequate sample size and due to time constraints. All the patients were 18 years and older. There were no exclusion criteria.

Data Collection

The Department register was accessed to obtain the names and hospital number of all patients admitted during the study period. The hospital notes were accessed from the files that were stored in the psychiatric outpatient department with the assistance of the administrative staff.

The sample size of the population was obtained from the total number of patients that were admitted during the study period. These patients were further evaluated for the following information which was recorded on a data capturing sheet (addendum A):

a)Demographic characteristics:

i. Age
ii. Gender,
iii. Highest level of education,
iv. Marital status,
v. Number of children,
vi. Employment status,
vii. Religion,
viii. Social support

b)Clinical characteristics:

i. Family history of mental illness or substance abuse,
ii. Past history of mental illness,
iii. Previous psychiatric admissions,
iv. Current psychiatric diagnosis (according to the DSM IV TR criteria)

v. Medical co-morbidities,

vi. Duration of current stay in hospital (in days),

c) Type of substance used

10. DATA ANALYSIS

Data was analysed using Stata version 11 (StataCorp, Texas, USA). Descriptive stats included counts, percentages and means. Categorical variables were reported as percentages and numerical variables as medians and ranges.

Since this was a cross-sectional study, prevalence ratios (PR) with 95% confidence intervals (CI) were calculated. For bivariate analysis the Pearson chi-square test was used for categorical variables and the non-parametric Wilcoxon-sum rank test for numerical variables. The Shapiro-Wilk test was used to determine normal distribution.

For multivariate analysis the prevalence ratios were estimated using generalized linear models. The variables that showed significant associations (p value less than 0.05) in the bivariate analysis were entered in the generalized linear model.

11. ETHICAL CONSIDERATIONS

Confidentiality was maintained at all times. The patients' names and hospital numbers were recorded on a separate sheet, to ensure that patients were not enrolled more than once and that only the investigator was aware of the participant's actual identity. The identity of the participants will not be mentioned in any subsequent reports, conference briefings/presentations, or any publications. The study was approved by the University of the Witwatersrand's Human Research Ethics Committee: Ethics No. M10710 (Addendum B). Authorisation to conduct the study was obtained from the Gauteng Department of Health (Addendum C).

12. RESULTS

12.1. Demographic and clinical characteristics of the study population

12.1.1. Demographic characteristics

The study population comprised 232 subjects, of which 154 (66.4%) were males and 78 (33.6%) were females (Fig 12.1). The mean age was 36.4 years (SD= 13.5 years).

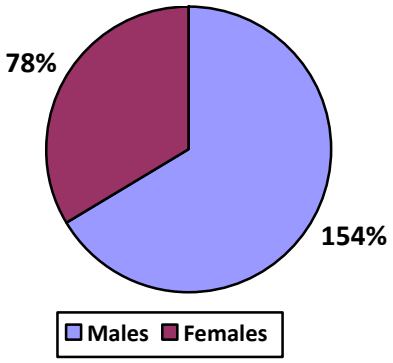

Figure 12.1: Gender distribution of study population

172 (74.1%) of the patients were single, 36 (15.5%) were married and 22 (9.5%) were divorced, separated or widowed (Table 12.1). 110 (47.4%) of the participants had children compared to 96 (41.4%) who had no children. The majority (85.3%) were unemployed (Table 12.1). Only 69 (29.74%) of the subjects had completed their matriculation examinations and 14 (6.03%) had pursued tertiary studies. The majority (56%) of the patients were of Christian faith, 4.74% of Muslim faith and 9.91% did not belong to any faith.

Table 12.1: Demographic characteristics of the study population

Variables	Study population	
	n =232	%
Age-group		
18 – 30	90	38.8%
31 – 50	109	46.9%
50+	31	13.4%
#Unknown	2	0.9%
Marital status		
Single	172	74.1%
Married	36	15.5%
Divorced/Separated/widowed	22	9.5%
#Unknown	2	0.9%
Children		
Yes	96	41.4%
No	110	47.4%
#Unknown	26	11.2%
Employment status		
No	198	85.3%
Yes	34	14.7%
Educational level		
#Special	2	0.9%
Grade 1-6	27	11.6%
Grade 7-9	43	18.5%
Grade 10-12	120	51.7%
Tertiary	14	6.0%
#Unknown	26	11.2%
Religion		
Christian	130	56.0%
Muslim	11	4.7%
#Others	2	0.9%
None	23	10.0%
#Unknown	66	28.4%

12.1.2. Clinical characteristics

162 (69.8%) subjects had a past psychiatric history and only 47 (20.3%) subjects reported a positive family psychiatric history (Table 12.2). 78 (33.6%) subjects suffered mood disorder; 97 (41.8%) subjects a psychotic disorder; and 56 (24.1%) had neither a pure mood nor a psychotic disorder. It was only possible to establish the average length of stay for 197 (85.9%) patients due to missing information which was 22.11 (SD=18.07) days. 106 (45.7%) were discharged after 21 days, 91 (39.22%) patients were discharged within 20 days of admission and 12 (5.2%) were transferred to other hospitals after a short stay for further management. The majority of subjects (75.4%) did not have a medical comorbidity.

Table 12.2: Clinical characteristics of the study population

Variables	Study population	
	n =232	%
Family history		
No	176	75.9%
Yes	47	20.3%
#Unknown	9	3.9%
Medical Co-morbidities		
No	175	75.4%
Yes	54	23.3%
#Unknown	3	1.3%
Past psychiatric history		
No	69	29.7%
Yes	162	69.9%
#Unknown	1	0.4%
Diagnostic groups		
Mood	78	33.6%
Psychotic	97	41.8%
Other	56	24.1%
#Unknown	1	0.4%
Length of stay (days)		
21 day or more	106	45.7%
20 days of less	91	39.2%
#Unknown	35	15.1%

12.2. Demographic and clinical characteristics of substances users versus non users

The study population was then divided into two groups namely those using substances (n= 117) and those not using substances (n=115). Due to insufficient information it was not possible to determine whether the patients met the DSM-IV-TR criteria for substance abuse or dependence. The data only provided adequate information as to whether subjects used substances or not.

12.2.1. Demographic characteristics

Fifty (42.7%) of the 117 patients who did not engage in substance use were males (Table 12.3). The average age was 40.47 years (SD=14.82) years. The majority of subjects were single 77 (65.8%), while 21 (17.9%) were married and 18 (15.4%) were either divorced, single or widowed. 66 (56.4%) of the subjects had children and 101(86.3%) were unemployed, 28 (23.9%) subjects had achieved a matriculation pass and 14 (12%) had pursued tertiary studies.

104 (90.4%) of the 115 subjects who used substances were males (Table 12.3). The mean age for this group of subjects was 31.73 (SD=9.98) years. 95 (82.6%) subjects were single; 15 (13 %) were married and 4 (3.5%) were either divorced, separated or widowed. 67 (58.3%) subjects did not have any children. The majority (84.3%) of subjects in this group were unemployed. 36 (31.3%) subjects achieved matriculation pass and 9 (7.8%) subjects had pursued tertiary studies.

Table 12.3: Demographic characteristics of substance users and non users

Variables	Total population (n =232)	Population not using substance (n=117)	Population using substances (n=115)	Prevalence Ratio (95% CI)	P-value
Gender					
Female	78	67 (85.9%)	11 (14.1%)		
Male	154	50 (32.5%)	104 (67.5%)	4.8 (2.7-8.4)	<0.001
Age-group					
18 – 30	90	30 (33.3%)	60 (66.7%)	4.1 (1.8-9.3)	0.001
31 – 50	109	61 (56%)	48 (44%)	2.7 (1.2-6.3)	0.005
50+	31	26 (83.9%)	5 (16.1%)	-	
#Unknown	2	0	2 (100%)		
Marital status					
Single	172	77 (44.8%)	95 (55.2%)	3.0 (1.2-7.4)	0.001
Married	36	21 (58.3%)	15 (41.7%)	2.3 (0.9-6.0)	0.064
Divorced/Separated/widowed	22	18 (81.8%)	4 (18.2%)	-	
#Unknown	2	1 (50%)	1 (50%)		
Children					
Yes	96	66 (68.8%)	30 (31.2%)		
No	110	43 (39.1%)	67 (60.9%)	1.9 (1.4-2.7)	<0.001
#Unknown	26	8 (30.8%)	18 (69.2%)		
Employment status					
No	198	101 (51%)	97 (49%)	1.1 (0.8-1.5)	0.670
Yes	34	16 (47.1%)	18 (52.9%)		
Educational level					
#Special	2	1 (50%)	1 (50%)		
Grade 1-6	27	13 (48.2%)	14 (51.8%)	-	
Grade 7-9	43	25 (58.1%)	18 (41.9%)	0.8 (0.5-1.3)	0.414
Grade 10-12	120	58 (48.3%)	62 (51.7%)	1.0 (0.7-1.5)	0.881
Tertiary	14	5 (35.7%)	9 (64.3%)	1.2 (0.7-2.1)	0.447
#Unknown	26	15 (57.7%)	11 (42.3%)		
Religion					
Christian	130	71 (54.6%)	59 (45.4%)	-	
Muslim	11	5 (45.4%)	6 (54.6%)	1.2 (0.7-2.1)	0.558
#Others	2	2 (100%)	0		
None	23	7 (30.4%)	16 (69.6%)	1.5 (1.1-2.1)	0.032
#Unknown	66	32 (48.5%)	34 (51.5%)		

12.2.2. Clinical characteristics

Forty four (37.6%) of the patients who did not use substances suffered from a mood disorder, 32 (27.3%) from a psychotic disorder and 41 (35%) did not have a pure mood or psychotic disorder (Table 12.4). Eighty (68.4%) subjects had a previous psychiatric history and 23 (19.7%) has a positive family history of psychiatric illness. 35 (29.9%) subjects suffered from a medical comorbidity. Of the 102 (87.2%) subjects that were discharged, the mean length of stay was 21 (SD=13.93) days. 50 (49.02%) of those subjects that used substances had a mean length of stay 21 days of more whereas 52 (50.98%) had a mean length of stay of 20 days of less.

Thirty four (29.6%) of the subjects that used substances suffered from a mood disorder, 65 (56.5%) from a psychotic disorder and 15(13.04%) did not have a pure mood or psychotic disorder (Table 12.4). 82 (71.3%) subjects had a previous psychiatric history and 88 (76.5%) had a positive family history of mental illness. Of the 95 (82.6%) subjects that were discharged the mean length of stay (days) was 18 (SD= 13.93). 56 (58.95%) patients had a mean length of stay of less than 21 days and 39 (41.05%) patient had a mean length of stay of 21 days and more. . The majority (83.4%) of subjects did not suffer a medical comorbidity.

Table 12.4: Clinical characteristics of substance users and non users

		Substance Use			
Variables	**Total population (n =232)**	**Population not using Substance (n=117)**	**Population using substances (n=115)**	**Prevalence Ratio (95% CI)**	**P-value**
Family history					
No	176	88 (50%)	88 (50%)	1.0 (0.7-1.4)	0.897
Yes	47	23 (48.9%)	24 (51.1%)		
#Unknown	9	6 (66.7%)	3 (33.3%)		
Medical Co-morbidities					
No	175	79 (45.1%)	96 (54.9%)	0.6 (0.4-0.9)	0.011
Yes	54	35 (64.8%)	19 (35.2%)		
#Unknown	3	3 (100%)	0		
Past psychiatric history					
No	69	36 (52.1%)	33 (47.8%)	1.1 (0.8-1.4)	0.698
Yes	162	80 (49.4%)	82 (50.6%)		
#Unknown	1	1 (100%)			
Diagnostic groups					
Mood	78	44 (54.4%)	34 (43.6%)	-	
Psychotic	97	32 (33%)	65 (67%)	1.5 (1.2-2.3)	0.0034
Other	56	41 (72.2%)	15(26.8%)	0.6 (0.4-1.0)	0.057
#Unknown	1	0	1 (100%)		
Length of stay (days)					
21 days or more	106	50 (47.2%)	56 (52.8%)	0.8 (0.6-1.1)	0.163
20 days of less	91	52 (57.1%)	39 (42.9%		
#Unknown	35	15(42.9%)	20(57.1%)		

12.3. Comparisons between substance users and non users

Bivariate analysis of the demographic and clinical characteristics of the substance users versus the non users revealed that only the following variables: *gender, age, marital status, children, medical comorbidities and diagnostic group* were significantly associated with substance use (P<0.05).

Substance use was 4.8 (95% CI:2.7-8.4) times more likely among male patients (p<0.001); 4.1 times (95%CI: 1.8-9.3) more likely in patients aged 18-30 years compared to older patients (p=0.001); 3 times (95% CI: 1.2-7.4) more likely in single patients (p=0.001); 1,9 (95% CI:1.4-2.7) times more likely in patients who did not have children (p<0.001); and 1.5 (95% CI:1.2-2.1) times more likely if the patients has a psychotic illness (p=0.004).

The variables that showed significant associations in bivariate analyses were included for multivariate analysis using generalized linear models to estimate the prevalence ratios and the 95% confidence intervals. Four models were generated which are as follows:

1) Table 12.5. the dependent variable was substance use;
2) Table 12.6. the dependent variable was substance use and the independent variables were the demographic characteristics,
3) Table 12.7. the dependent variable were the comorbidities and the independent variables were the demographic characteristics,
4) Table 12.8. the dependent variable was the diagnostic group (mood versus psychotic) and the independent variables were the demographic characteristics.

Table 12.5: Results of the multivariate analysis: Dependent variable: substance use

Substance use	PR	P-value	95% CI
Gender	3.7	<0.001	1.9 - 7.1
Age-group			
31-50	1.7	0.24	0.7 -4.6
18-30	2.3	0.1	0.9 – 6.0
Marital status			
Married	2.2	0.207	0.6 – 7.8
Single	2.0	0.252	0.6 – 6.5
Co-morbidities	1.1	0.750	0.6 – 1.8
Diagnostic group			
Psychotic	1.0	0.978	0.6 – 1.6
Mood	0.6	0.096	0.3-1.1

Table 12.6: Results of the multivariate analysis: Dependent variable: substance use; Independent variables: demographic characteristics

Substance use	PR	P-value	95% CI
Gender	3.9	<0.001	2.1 – 7.4
Age-group			
31-50	1.8	0.210	0.7 – 4.6
18-30	2.3	0.079	0.9 – 5.9
Marital status			
Married	1.8	0.318	0.6 - 5.3
Single	1.7	0.311	0.6 – 4.7

Table 12.7: Results of the multivariate analysis: Dependent variable: co-morbidities; Independent variables: demographic characteristics

Co-morbidities	PR	P-value	95% CI
Substance Use	1.1	0.742	0.5 – 2.3
Gender	0.4	0.005	0.2 – 0.8
Age-group			
31-50	0.5	0.098	0.3 – 1.1
18-30	0.4	0.048	0.2 – 1.0
Marital status			
Married	0.8	0.544	0.3 – 1.9
Single	0.9	0.731	0.4 – 2.0

Table 12.8: Results of the multivariate analysis: Dependent variable: diagnostic group; Independent variables: demographic characteristics

Diagnostic group	PR	P-value	95% CI
Substance Use	1.0	0.852	0.7 – 1.7
Gender	2.3	0.011	1.2 – 4.2
Age-group			
31-50	1.1	0.752	0.5 – 2.8
18-30	1.0	0.976	0.4 – 2.4
Marital status			
Married	3.7	0.221	0.5 – 30.4
Single	7.0	0.055	1.0-51.2

The results of the multivariate analysis concluded that gender was the only variable that was associated with substance use. Note: The variable *children,* was not included in the model because a high proportion of the category was unknown.

12.4. Relationship between substance abuse and the psychiatric diagnosis (mood or psychotic disorder)

The group of subjects that used substances were then further divided into according to their diagnoses, namely psychotic disorder (n=65) and mood disorder (n=34).

The mean age of the 34 subjects with a mood disorder and co-morbid substance abuse was 32.82 (SD=11.69) years. The majority were males (28); single (25); did not have children (19); and unemployed (29). 13 subjects matriculated and only 3 pursued a tertiary level of education. 25 subjects had no family history of mental illness; 23 did not have a medical comorbidity and 29 subjects did not have a previous psychiatric history (Table 12.9). The median length of stay was 19 (SD=14) days.

The mean age of the 65 patients with a psychotic disorder and co-morbid substance abuse was 30.92 (SD=9.27) years. 60 subjects were male; 60 were single; 43 did not have children and 58 were unemployed. 26 of subjects achieved a matriculation pass and only 4 pursued a tertiary level of education. 50 subjects did not have a family history; 59 did not have a medical comorbidity and 43 did not have a previous psychiatric history (Table 12.9). The median length of stay was 17 (12.93) days.

Bivariate analysis showed that having a previous psychiatric history was significantly associated with a psychotic disorder ($P<0.05$).

Table 12.9: Demographic and clinical characteristics of substance users by diagnostic groups

Variables	Mood	Psychotic	PR (95% CI)	P-value
Gender				
Female	6 (54.55%)	5 (45.45%)	1.5 (0.8-2.9)	0.1345
Male	28 (31.82%)	60 (68.18%)		
Age-group				
18 – 30	19 (35.85%)	34 (64.15%)	2.6 (0.5-14.0)	0.280
31 – 50	12 (29.27%)	29 (70.73%)	2.8 (0.5-14.2)	0.233
50+	3 (75%)	1 (25%)		
#Unknown	0	1 (100%)		
Marital status				
Single	25 (29.4%)	60 (70.59%)	1.8 (0.8-3.8)	0.0510
Married	6 (60.0%)	4 (40.0%)		
Divorced/Separated/widowed	3 (100%)	0		
#Unknown	0	1 (100%)		
Children				
Yes	10 (45.45%)	12 (54.55%)	1.3 (0.8-1.9)	0.274
No	19 (31.5%)	42 (68.85%)		
#Unknown	5 (31.3%)	11 (68.7%)		
Employment status				
No	29 (33.3%)	58 (66.67%)	0.9 (0.5-1.4)	0.601
Yes	5 (41.67%)	7 (58.33%)		
Educational level				
[#]Special	0	1 (100%)		
Grade 1-6	6 (50.0%)	6 (50.0%)	-	
Grade 7-9	3 (18.75%)	13 (81.25%)	1.6 (0.6-4.3)	0.325
Grade 10-12	21 (38.89%)	33 (61.11%)	1.2 (0.5-2.9)	0.651
Tertiary	3 (42.9%)	4 (57.1%)	1.1 (0.3-4.0)	0.943
#Unknown	1 (11.1%)	8 (88.9%)		

Note: Table continued on next page

Table 12.9: Demographic and clinical characteristics of substance users by diagnostic groups （continued from previous page)

Variables	Mood	Psychotic	PR (95% CI)	P-value
Religion				
Christian	18 (34.62%)	34 (65.38%)	-	
Muslim	1 (16.7%)	5 (83.3%)	1.2 (0.8-1.9)	0.245
None	6 (42.86%)	8 (57.1%)	0.9 (0.5-1.4)	0.594
#Unknown	9 (33.3%)	18 (66.6%)		
Family history				
No	25 (33.33%)	50 (66.67%)	0.9 (0.6-1.3)	0.454
Yes	9 (42.9%)	12 (57.1%)		
#Unknown	0	3 (100%)		
Co-morbidities				
No	23 (28.05%)	59 (71.95%)	0.5 (0.3-1.0)	0.034
Yes	11 (64.71%)	6 (35.9%)		
Previous psychiatric history				
No	5 (18.52%)	22 (81.48%)	0.7 (0.6-1.0)	0.0423
Yes	29 (40.28%)	43 (59.72%)		

12.5. Substance use

Of the 115 (49.5%) subjects that used substances, 69 (61.06%) engaged in single substance use whilst 44(38.04%) engaged in polyssubstance use.

12.5.1. Type of substance used

The most common single substance used was cannabis and was used by 45 (39.82%) subjects (Fig 12.2). This was followed by alcohol which was used by 18 (15.93%) subjects and heroin by 6 (5.31%) subjects.

The most common polysubstance combination was that of alcohol and cannabis which was used by 35 (30.97%) subjects.

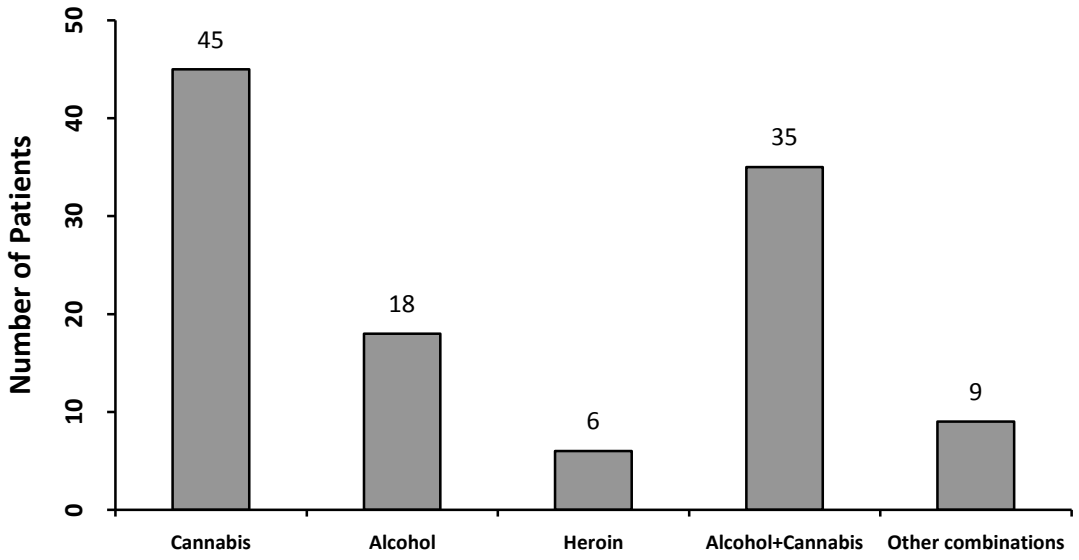

Figure 12.2: Types of substance used

12.5.2. Comparisons between type of substances used and psychiatric diagnoses.

The psychiatric diagnoses of the participants with comorbid substance use disorders were as follows: mood disorder (34%) {*bipolar disorder (33%) and major depressive disorder (1%)*}; and psychotic disorder (65%) {*schizophrenia (24%) and substance-induced psychosis (41%)*}.

23 (67.64%) subjects with mood disorders used single substances (alcohol - 5; cannabis- 14; heroin- 4) whilst 11 (32.35%) engaged in the polysubstance combination use of alcohol and cannabis (Table 12.10 below). Within this group, 22 (66.67%) of the subjects with a bipolar disorder used single substances (alcohol - 4; cannabis - 14; heroin - 4) whilst 11 (33.33%) engaged in the use of a polysubstance combination of alcohol and cannabis. The one subject diagnosed with major depressive disorder used alcohol.

37 (55.38%) subjects with psychotic disorders used single substances (alcohol - 4; cannabis - 31; heroin - 2) whilst 20 (30.77%) engaged in the polysubstance combination use of alcohol and cannabis. Within this group of psychotic disorder subjects, of those diagnosed with schizophrenia; 17 (70.83%) used single substances (alcohol - 2; cannabis -13; heroin -2) whilst 7 (21.17%) engaged in the polysubstance combination use of alcohol and cannabis. In the subjects diagnosed with substance-induced psychosis, 20 (48.78%) used single substances (alcohol -2 ; cannabis - 18) whilst 13 (31.71%) engaged in the polysubstance combination use of alcohol and cannabis and 6 (14.63%) subjects engaged in other polysubstance combinations.

Table 12.10: Type of substance used in relation to psychiatric diagnosis

Type of substance	Major depressive disorder (n=1)	Bipolar (n=33)	Mood Disorder Totals (n=34)	Schizophrenia (n=24)	Substance-induced Psychosis (n=41)	Psychotic Disorder Totals (n=65)
Single substance	**1**	**22**	**23**	**17**	**20**	**37**
Alcohol	*1 (100%)*	*4 (12.12%)*	*5(14.71%)*	*2(8.34%)*	*2 (4.88%)*	*4(6.15%)*
Cannabis	*0*	*14(42.4%)*	*14(41.2%)*	*13(54.17%)*	*18 (43.9%)*	*31 (47.69%)*
Heroin	*0*	*4 (12.12%)*	*4(11.76%)*	*2 (8.33%)*	*0*	*2 (3.08%)*
Poly-substance		11	11	7	21	28
Alcohol & Cannabis	*0*	*11(33.33%)*	*11(32.35%)*	*7 (21.17%)*	*13 (31.71%)*	*20 (30.77%)*
Others	*0*	*0*	*0*	*0*	*6(14.63%)*	*6 (9.2%)*
Unknown	*0*	*0*	*0*	*0*	*2 (5.71%)*	*2(5.71%)*

13. DISCUSSION

The lifetime prevalence of substance use in the general population according to South African Stress and Health Survey, a nationally representative household survey that was conducted between 2002 and 2004, is estimated to be around 13.3 percent (Herman et al, 2009). However, substance use among individuals with mental illness is reported in several international large scale epidemiological studies and meta-analyses to be much higher at around 50 percent (SAMHSA, 2012; Davis et al, 2008; Hasin et al, 2005; Green et al, 2005; Bijl et al, 1998; Kessler et al, 1994). This study also found that about 49 percent of the subjects used substances. Similar results were reported in other South African studies (Weich et al, 2009; Koen et al, 2009). It must be noted that whilst the prevalence rates are similar to other studies, this study focused only on inpatients (generally with a severe mental illness); was conducted over a 6 month period; and with participants from a particular area i.e. Soweto, compared to the large scale international studies which included both in and outpatients, over longer periods of time and with no race bias. Nonetheless, the prevalence rate of substance use among mentally ill patients admitted to Chris Hani Baragwanath Academic Hospital is high. Various factors contribute to substance use, which are similar for those with or without mental illness, such as peer pressure (particularly among younger people); recreational purposes; alleviation of mood states (self-medication); coping with personal, social or interpersonal situations; unemployment and poverty; societal attitudes towards substance use; ease of accessibility (readily available and inexpensive) and inadequate preventative measures (Parry, 2005; Dixon, 1999; Parry, 1998). However, mentally ill individuals may use substances to alleviate symptoms associated with their illness or to counteract the side effects of medication (Bolton et al, 2009; Gregg et al,

2009; Salyers et al, 2001). Interventions such as better law enforcement to reduce the supply of substances; education and awareness to prevent substance abuse; and improving services to allow for screening and early detection, brief interventions, integrated mental health and substance use management etc.) will be beneficial in reducing this problem.

Studies investigating substance use report differences in the most common type of substance used. The World Drug Report (2012) found cannabis to be the most widely abused drug in the general population globally. This was followed by amphetamine-type stimulants (mainly methamphetamine, amphetamine and ecstasy), opioids (including opium, heroin and prescription opioids) and cocaine (UNODC, 2012). The South African Community Epidemiology Network on Drug Use (2012) found that within inpatient treatment centres in South Africa, alcohol was the most commonly abused substance followed by cannabis (Plüddemann et al, 2012). A similar situation exists for substance abuse amongst the mentally ill. Some studies have concluded that alcohol was the most common substance of use followed by cannabis (Drake et al, 2002; Dixon, 1999; Regier et al,1990); while others studies have concluded that cannabis was the most common substance of use (Compton et al, 2009; Green et al, 2007). These researchers have attributed the differences in the findings to: the ambient use of substance in the community, the availability and legality of substances (Compton et al, 2009; Green et al, 2007; Drake et al, 2002; Dixon et al, 1999). This study found that the most common substance used was cannabis, which was followed by alcohol and then heroin. Weich et al (2009) and Koen et al (2009) also reported cannabis as the most common illicit substance used by the mentally ill. This may be related to the following factors: it is produced locally in South Africa or in neighbouring countries such as Lesotho (UNODC, 2012); is easy to

purchase from places such as street corners or garages etc within the community; is inexpensive and modernization associated with the breakdown of traditional mechanisms of control (Leggett T, 2002). This study also found, as did the South African Community Epidemiology Network on Drug Abuse (Plüddemann et al, 2012), that heroin was the third highest substance of use after alcohol and cannabis Heroin was less commonly used among mentally ill individuals probably because of the lack of availability and legality of substances worldwide (Compton et al, 2009; Green et al, 2007; Drake et al, 2002; Dixon, 1999). In general there appears to be a similarity between the common substances of use locally and internationally. However, it is important to note that the profile of substance use differs within the different provinces in South Africa; heroin as a primary drug of abuse was most common in Limpopo and Mpumlanga, followed by the Western Cape and Gauteng. Methamphetamine as a primary drug of abuse was substantially more common in the Western Cape followed by the Eastern Cape with much less use in the other provinces (Plüddemann et al, 2012). The results of this study may be of relevance only within the province of Gauteng, rather than to generalise it within the context of South Africa as a whole.

There are benefits in knowing that alcohol and cannabis are the most common substances used among the mentally ill. In an acute situation and where it is difficult to obtain history from the patient or collateral from the family, psychiatrists should look to exclude possible use of these substances. Alcohol use may be determined through a physical examination (odor of alcohol on breath, enlarged tender liver, neurological signs of alcohol use etc) and special investigations (gamma-glutamyl transpeptidase and mean corpuscular volume) (Mercy et al, 2003). The use of cannabis, which is often considered as a “minor” drug, is not

readily disclosed and can be easily detected using urine cannabinoid dipsticks (Standridge et al, 2010). A further benefit would be that the risk of alcohol withdrawal (Delirium Tremens), which can be life-threatening if missed or inappropriately managed (Taylor et al, 2012) could be red-flagged in such patients.

The prevalence of polysubstance use disorders amongst the general population in substance treatment facilities has been examined in surveys conducted both internationally and nationally. The National Survey of Substance Abuse Treatment Services (N-SSATS) which found that as many as 42 to 46% of all admissions between 2007 and 2011 were managed for polysubstance use disorders (SAMSHA, 2012). Similarly, the SACENDU also found that polysubstance abuse was high, with between 25% (Eastern Cape) and 65% (Kwazulu-Natal) of patients in specialist treatment centres reporting more than one substance of abuse (Plüddemann et al, 2012). They also reported that in Gauteng cannabis, heroin and cocaine were fairly common secondary drugs of abuse (Plüddemann et al, 2012). Polysubstance abuse amongst the mentally ill is equally high. The Epidemiologic Catchment Area (ECA) Survey (Regier et al, 1990) found that comorbid alcohol and drug use disorders were more prevalent among individuals with mental illness (47.3%) compared to those without a mental illness (11.3%). The NCS found that the prevalence of polysubstance use disorders among the mentally ill was 37.6 % (Kessler et al, 1997). Stinson et al (2005) examined results from the NESARC (2001-2002) survey and found that approximately 39% of mentally ill participants engaged in polysubstance use, and reported that the prevalence alcohol use disorder was highest among those with cannabis (9.89%), cocaine (2.51%) and opioid (2.41%) use disorders. This study found a similarly high incidence of polysubstance use among mentally ill patients (approximately 38%).

The most common polysubstance combination was that of alcohol and cannabis which was in keeping with international and local trends. Polysubstance use has been associated with various sociodemographic characteristic, such as lower levels of education, lower income and unstable relationships, and the clinical manifestations include increased suicide attempts, fatal poisoning and increased relapses (Arnaout et al, 2008). Polysubstance use has also been associated with worse outcomes for bipolar disorder and schizophrenia (Dixon et al, 1991; Baethge et al, 2005). Taking into account that polysubstance use is common among mentally ill individuals and is associated with worse outcomes, it would be important to establish the presence of polysubstance use through a thorough history taking, multidrug urine tests and obtaining collateral information from families such that all of the substances used are simultaneously treated to improve outcomes.

In general, the increased risk of substance use in the general population and among the mentally ill has been associated with certain demographic characteristics. The United Nations Office on Drugs and Crime (UNODC, 2012) reported that globally illicit substance use was more common among individuals with the following characteristics: male gender, younger age and living in an urban setting. The findings from Substance Abuse and Mental Health Services Administration (SAMSHA, 2012) in the United States were similar in that illicit substance use was found to be higher among individuals of younger age and male gender. They also reported that individuals with lower levels of educational attainment and those unemployed were also found to be at higher risk of illicit substance use. Other international studies have also consistently found that a younger age and male gender were significantly associated with mental illness and substance use disorders (Davis et al, 2008; Weiss et al, 2005; Epstein et al, 2004; Frye el al, 2003; Dixon, 1999; Mueser et al, 1990).

Stein et al (2008) found that in the general population of South Africa, male gender and early age of onset (21 years) were significantly associated with substance use disorders and particularly within the coloured ethnic group. However, no association with very low income and substance use disorders were found. Other local studies have also found that a younger age and male gender were significantly associated with mental illness and substance use, albeit that the results were not generalizable (Koen et al,2009; Weich et al 2009; Roos et al,2006). In summary, both international and local studies examining the sociodemographic profile of individuals with either mental illnesses or in the general population with substance use, have found that a younger age and male gender were significantly associated with substance use. However, not all population-based studies have detected this association (Hernandez-Avila et al, 2004; Van Etten et al, 1999). This study also found a strong association between substance use and male gender (approximately 5 times more likely among male subjects), and a trend towards substance use and age (4 times more likely among subjects aged 18-30 years), marital status (3 times more likely in single individuals) and parental status (approximately 2 times more likely in patients who did not have children).

Both international and local studies that reported an increase in the prevalence of male with substance use, whether in the general population or the mentally ill population have not offered reasons for this finding. It is likely that the factors influencing an increased use of substance among males are the same in both populations (NAMI, 2003). Some author's have suggested that the increased prevalence of substance use among males can be attributed to it being socially acceptable for males to consume alcohol publically or to become intoxicated but not for women particularly within the black culture of South

Africa(Peacock et al, 2008; Pithey et al, 2002). Strong male stereotyping may influence the way males deal with their emotions i.e. expression of their feelings or emotions is considered a weakness and the substance use could be a means of coping with these emotions (Winerman, 2005; Phillips et al, 2001). Antisocial behaviour, which is more common among males, is associated with an increased prevalence of substance use (WHO, 2012; Compton et al, 2005; Kenneth et al, 2003; Menezes et al, 1996). Both antisocial behaviour and substance use occur more commonly among males with schizophrenia. (Mullen 2006; Rosen, et al, 2006; Swartz et al, 2006; Moran et al, 2004; Gut-Faynard et al, 2001). Mentally ill individuals may lack the capacity to develop social relationships and then find it easier to be accepted by other individuals whose social activity is based on substance use and males are more likely than females to lack this capacity (Peacock et al, 2008; NAMI, 2003; Pithey et al, 2002). In addition, substance misuse among the mentally ill is associated with an increased risk of violence and suicide (Compton et al, 2005; Kenneth et al, 2003; Swartz et al, 1998; Drake et al, 1989). On the other hand, females may have certain protective characteristics against excessive drinking in that they may be less likely to display aggressive or antisocial behaviour, and are more likely to have more desirable traits such as a nurturing personality (Nolen-Hoeksema, 2004). This increased prevalence of substance use among mentally ill male patients is of clinical relevance. Psychiatrists must exclude substance use amongst males as it may predict violent or suicidal behaviour especially if there is a history of antisocial behaviour. Further, changing the mindset of a nation that condones and even encourages substance use among males is necessary. Psychoeducation of society by addressing the perception by males that substance misuse is 'normal' and that 'men should not discuss or show their feelings' but rather 'drown their sorrows' and emphasizing the extent of the physical, mental and social consequences of substance

misuse could reduce this problem. Such interventions could take place in schools, universities, workplaces and via media forums like television, radio, newspaper and even magazines.

The findings that substance use is commoner in the younger age group (adolescent) may be attributed to developmental, psychosocial, psychiatric and educational reasons (Headspace, 2011; NIDA 2010). The developing brain of an adolescent is associated with various behaviours that can predispose them towards substance use, such as: difficulty controlling emotions, a preference for high excitement and low effort activities, poor planning and judgement and impulsivity (NIDA, 2012). Adolescents may also use substances for psychosocial reasons such a joining in with their peers during social engagements involving substances (e.g. parties), to cope with social situations (e.g. low socioeconomic status, poor family relationship) or psychological trauma (e.g. abuse) (NIDA, 2012; Headspace, 2011). Further, A number of mental health conditions have their onset during mid to late adolescence and early adulthood which includes mood, psychotic, anxiety, eating disorders and antisocial behaviours which may also make this group vulnerable to substance use (NIDA, 2010; Spears, 2002). Schizophrenia and bipolar disorder are commonly diagnosed in this age group (Roos et al, 2006; Leboyer et al 2005; Hafner et al, 1994). In the prodromal phase of schizophrenia, substance use may occur in an attempt to relieve symptoms (Rosen et al, 2006; Swartz et al, 2006; Moran et al, 2004; Gut-Faynard et al 2001). A similar situation may occur with bipolar disorder especially in the presence of prodromal symptoms and childhood behaviour disorders (Correl et al, 2007; Carlson et al, 1998; Fava et al, 1991). Substance use and in young mental ill patients is associated with a number negative consequences such Hepatitis from injection use; risky sexual behaviour, HIV, violence,

overdose, suicide, developmental problems (learning or problem solving), psychosocial problems (confidence, motivation, social isolation etc.) (Headspace, 2011; Spears, 2002). Hence prevention, early recognition and interventions of substance use in young mental ill patients are imperative. Prevention can be achieved through educating young individuals about the dangers of substance use, the manifestations of mental illness and the importance of seeking help soon which can be accomplished by incorporating these messages into the school curriculum or through media forums. Parents, caregivers and teachers would also benefit by helping them identify substance and/or mental health problems and how to deal with it. Health care providers should be made aware of the high prevalence, and trained to screen routinely and manage appropriately.

Marriage among the mentally ill appears to be a protective factor as it has been associated with a later onset of mental illnesses and the promotion of remission and prevention of relapses (De Vaus, 2002; Westermeyer, 1980). Partners and children play an important role in providing support in dealing with substance use (Clark, 2001). However, mentally ill individuals with comorbid substance use are less likely to marry or have children as was found in this study, which may be associated with the stigmatizing attitudes of society (Kakuma et al, 2010; Stein et al, 2010; Dixon, 1999; Westermeyer, 1980). Further, high rates of divorce are common among the mentally ill (Dixon, 1999; Westermeyer, 1980). Addressing the stigma through psychoeducation of society may improve the prospect of marriage among the mentally ill which could provide an important support structure and stability. Due to the high rates of divorce, couples counselling or family psychotherapy would also be beneficial.

This study hypothesises that the prevalence rates and socio-clinical characteristics of mentally ill patients with comorbid substance use differ among those with psychotic disorders compared to those with mood disorders. A higher prevalence of substance use among those with psychotic disorders compared to mood disorders was found in this study. Weich et al (2009) and Miller et al (1989) in their studies also reported that more subjects with substance use were diagnosed with psychotic disorders rather than mood disorders. However the Epidemiologic Catchment Area (ECA) Survey (Regier et al, 1990) found that substance use was more prevalent in mood disorders compared to psychotic disorders. This study did not find any significant differences in socio-clinical characteristics except for a trend that substance users with a past history of psychiatric illness were more like to suffer from a psychotic disorder. Direct comparisons of the differences in the socio-clinical characterises has not been well researched. However, one study by Verdoux et al (1996) also reported no significant socio-demographic and clinical differences between these two groups of patients.

It should be noted that this study examined the association of two broad diagnostic groups i.e. psychotic and mood disorders with substance use as the these were the most common categories of mental illness that were identified in the study population. The specific diagnosis however were not analysed in relation to substance use, which makes comparisons to other studies difficult and a limitation of this study. Notwithstanding this, most published studies have confirmed similarities in the adverse consequences associated with comorbid substance use among those with bipolar disorder and schizophrenia. These include poor compliance to treatment and medication; greater degrees of psychopathology; violent behavior and suicide; increased mortality; more relapses and hospitalizations and

impaired social and occupational functioning (Garcia-Portilla et al, 2010; Compton et al, 2009; Koen et al, 2009; Weich et al, 2009; Roos et al, 2006; Nolen et al, 2004; Salloum et al 2002; McElroy et al 2001; Strakowski et al, 1998; Dixon, 1990). Xie et al (2005) also reported that patients with schizophrenia and comorbid substance use were less likely to achieve remission or live independently and were more likely to be readmitted compared to patients with bipolar disorder. Further, it predisposed them to continued substance abuse and subsequent readmissions (Xie et al, 2005; Dixon, 1999; Mueser et al, 1998).

Because of the high prevalence of psychotic disorders amongst substance users, it is strongly recommended that this group of patients should also be targeted for dual rehabilitation. Patients with schizophrenia and other psychotic disorders however, may not be suitable for the 'standard' dual diagnosis management due to potential cognitive deficits and persistent positive and negative symptoms which may exclude them from 'typical' psychological approaches, but they may benefit from more practical interventions targeting social skills, constructive use of time, sheltered employment etc. These tailored and innovative techniques required in the management of comorbid substance use among severely mentally ill patients indicate the need for specialized dual diagnosis care. Within the acute hospital setting the dual management must be initiated but needs to continue at dedicated dual diagnosis units in the community or inpatient facilities. The lack of resources though does not allow for this kind of specialized treatment especially within the community setting (Lund et al, 2010). Additionally, the detection and management of substance related and comorbid psychiatric conditions should be incorporated into psychiatric training programs.

There are some limitations to this study that must be noted. This is a retrospective study and in all likelihood there would be missing data, lack of complete control over all clinical data sets, and questionable reliability and validity of the diagnoses made. Also, the study does not include all the factors that are associated with co-morbid substance abuse. It was originally intended to establish the response to treatment but this was not possible as information in this regard was inadequate or absent. For instance, the Global Assessment Functioning on admission and discharge and the improvement of specific signs and symptoms were vaguely documented. Furthermore, the history of substance use was sparse. It was thus not possible to distinguish Abuse or Dependence as per DSM-IV-TR, or establish reasons for substance use or history of any previous interventions (American Psychiatric Association, 2000). Finally, it is important to note that Chris Hani Baragwanath hospital is situated in Johannesburg (Gauteng) and services primarily the black population of lower socio-economic status. Thus the outcomes of this study may not be generalizable as it is representative of a densely populated urban area within a particular province and inadequately representative of other population groups or socio-economic conditions. Notwithstanding these limitations, the study provided valuable insights into the use of substances amongst the mentally ill, which has not been researched adequately in South Africa.

14. CONCLUSION

The prevalence of comorbid substance use among the mentally ill people is higher than that of the general population and is a worldwide phenomenon. It is associated with increased morbidity and mortality which contributes to an increased burden on state and society. Despite these consequences, in South Africa, it has been poorly managed due to various barriers such as stigma, the lack of resources and specialized treatment for comorbid substance use and mental illnesses.

This study found an equally high prevalence rate of substance use among the mentally ill patients attending the Chris Hani Baragwanath Academic Hospital. Although the literature reports numerous socio-clinical factors associated with substance use, this study only foundsubstance use to be significantly associated with male gender. Further, this study also found that the prevalence of polysubstance use is high and that the common substances of abuse are alcohol and cannabis. The results of this study are not generalisable and therefore more research must be encouraged and commissioned in other treatment facilities throughout the country.

In light of the above findings, it is recommended that health care providers and society develop targeted interventions against substance abuse in general and more specifically against the identified vulnerable group. Programs designed and delivered for the prevention, early recognition and early interventions among adolescents are imperative. This can include psychoeducation of the youth, parents, caregivers and school educators. Mental health professionals must be made aware of the high prevalence of substance abuse

amongst patients with schizophrenia and other psychotic disorders. Substance abuse must be excluded through careful history taking, examination and investigation. Such patients would benefit significantly from management in a specialized dual diagnosis unit. They should also take cognisance of and manage the higher risk of substance use associated with male gender as it may help prevent violent or suicidal behaviour.

15. ADDENDUM

A. Patient Information Sheet

Subject number:_____

Section 1: Demographic characteristics

Age:

Years	Unknown

Gender:

Male	Female	Unknown
1	2	3

Marital Status:

Single / Divorced / Widowed	Married / Living together	Unknown
1	2	3

Children:_____no. of children

Yes	No	Unknown
1	2	3

Employment:

Yes	No	Unknown
1	2	3

Education: _____years

Primary	Secondary	Tertiary	Unknown
1	2	3	4

Marital status:

Yes	No	Unknown
1	2	3

Social support:

Yes	No	Unknown
1	2	3

Religion:

Type	Unkown

Section 2: Clinical Characteristics

Family history of mental illness:

Yes	No	Unknown
1	2	3

Family history of substance abuse:

Yes	No	Unknown
1	2	3

Past history of medical illness:

Yes	No	Unknown
1	2	3

Previous psychiatric admissions:

Yes	No	Unknown
1	2	3

Current Psychiatric diagnosis_____specify diagnosis

Yes	No	Unknown
1	2	3

Length of stay in hospital:

Number of days.	Unknown

Response to treatment (psychiatric medication)

Poor	Good	Not applicable
1	2	3

Medical comorbidities_____:specify diagnosis

Yes	No	Unknown
1	2	3

Section 3: Substance Use Variables

Type of substance:

Alcohol	1
Cannabis	2
Heroin	3
Heroin/ cannabis combination `TAI-WHITE`	4
Methaqualone	5
Other substances *	6

** Includes cocaine, amphetamines, hallucinogens, benzodiazapines, solvents, Over the counter medication.*

Abuse vs Dependence:

Yes	No	Unknown
1	2	3

Reasons for starting substances

Reason	Unknown

Previous substance intervention

Yes	No	Unknown
1	2	3

B. HREC Approval

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr ZAE Motala

CLEARANCE CERTIFICATE	**M10710**
PROJECT	Substance Use Disorders amongst Psychiatric In-patients at CH Baragwanath Hospital
INVESTIGATORS	Dr ZAE Motala.
DEPARTMENT	Department of Psychiatry
DATE CONSIDERED	30/07/2010
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 02/08/2010 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Prof MYH Moosa

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

C: Authorization to conduct research:

Dr Z.A.E Motala

Specialist

C.H. Baragwanath Academic Hospital

Department of Psychiatry

(011) 933 9239

To:

Chief Executive Officer

C.H. Baragwanath Hospital

Re:

PERMISSION TO CONDUCT RESEARCH

I am currently employed as a consultant psychiatrist within the Department of Psychiatriy at C.H. Baragwanath Hospital since January 2009. I request your permission to conduct research in this institution. With your permission the protocol for the study will be submitted to the Ethics Committee for approval. It is retrospective in design and will require access to the psychiatric outpatient department and the patient records. Patient names will be kept confidential and will not be included in any way in the study. Furthermore, the study will not interfere with my clinical responsibilities.

Thank you

Dr Z.A.E. Motala



17 May 2010

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