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An audit of the integrated treatment unit at Sterkfontein Psychiatric Hospital

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An Audit of the Integrated Treatment Unit at Sterkfontein Psychiatric Hospital

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, in partial fulfilment of the requirements for the degree

of

Master of Medicine in the branch of Psychiatry

Johannesburg, 2018

I, Fiona Olivia Maynard, declare that this research report is my own, unaided work. It is being submitted for the Degree of Master of Medicine in the branch of Psychiatry at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

…….

31 day of January 2018

Abstract

An Integrated Treatment Unit was opened at Sterkfontein Psychiatric Hospital in 2008.

Aim: To conduct an audit of this unit with a view to: 1) describe the demographic characteristics of users, 2) describe the clinical profile of users, and 3) determine, if any, differences between the psychotic and mood disorder groups with respect to demographic and clinical characteristics.

Hypothesis: Patients with psychotic disorders are more likely to be younger, have recurrent admissions and abuse cannabis more often than other substances, when compared to people diagnosed with mood disorders.

Method: The study is a descriptive, retrospective record review of all patients admitted to the Integrated Treatment Unit at Sterkfontein Psychiatric Hospital for a period of one year from inception. Data was analysed using statistical principles and computations.

Results: There were 74 participants with a mean age of 29 years. The majority were Black (69%) males (92%). 65% completed at least a grade 10 level of education, of which 75% were unemployed but 19% were supported financially by their families. 91% were single but had a support structure in 68% of cases. 36% had a positive family history of mental illness and 36% a positive family history of substance abuse. 57% presented with a previous criminal history. Cannabis (92%) and alcohol (83.8%) were the most common substances abused. Participants presented with mood disorders predominantly (40,5%) and 29.7% with psychotic disorders. 31,1% were on a combination of an antipsychotic and anticonvulsant medication. 68.9% of patients fulfilled criteria for substance dependence.

Conclusion: More young people with mood disorders present with dual diagnoses. The majority used cannabis and alcohol as their main substance of abuse whilst more than half of participants fulfilled criteria for substance dependence. It is hoped that further local research into this topic will improve outcomes for vulnerable patients with complex and often difficult to diagnose and treat dual diagnoses.

Dedication

To my parents, Michael and Soebayga Maynard, for your tireless support.

To my husband Ozayr van der Fort, and children Thaaniyah and Zariya van der Fort, for always believing in me.

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Sterkfontein Hospital and the Dual Diagnosis Unit staff and patients

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Co-Supervisor: Adjunct Professor MYH Moosa (Department of Psychiatry, Wits)

Statistician: Dr S Olorunju (Medical Research Council, Pretoria)

Declaration

This Research Report and no part of it has ever been presented at any conference or presentations before and neither has it been published through any journals.

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Nomenclature / glossary of terms

For the purpose of this study and clarification I have compiled the following glossary of terms:

- Substance use: to take or consume; partake of.
- Substance abuse: implies improper or excessive use, to use wrongly or misuse. This term usually refers to substance use disorders that range along a continuum from abuse, dependence, tolerance or addiction.
- Substance misuse: a synonym for substance abuse but stresses improper, unlawful or incorrect use or misapplication.
- Addiction: the compulsive need to use a habit-forming substance.
- Tolerance: the increasing need for more of the substance to obtain the same effect.
- Substance dependence: the continued use of a substance even after the user has experienced serious substance-related problems, a compulsive or chronic need; an addiction.

Terms were used in accordance with the American Psychiatric Association Diagnostic and Statistical Manual DSM-IV-TR.

Abbreviations

ADHD:	Attention-deficit hyperactivity disorder
CODs:	Co-occurring disorders
DSM-IV-TR:	American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision
ECA:	Epidemiological Catchment Area
ESEMeD:	European Study of the Epidemiology of Mental Disorders
H-CUP:	Healthcare Cost and Utilisation Project
HREC:	Human Research Ethics Committee
ILU:	Independent Living Unit
ITU:	Integrated Treatment Unit
MHCU:	Mental Health Care Users
NASMHPD:	National Association of State Mental Health Program Directors in the USA
NCS:	National Comorbidity Survey
NIAAA:	National Institute on Alcohol Abuse and Alcoholism
SACENDU:	The South African Community Epidemiology Network on Drug Use
SAMHSA:	Substance Abuse and Mental Health Services Administration
SES:	Socioeconomic status
SMI:	Severe mental illness
Stats SA:	Statistics South Africa
SUDs:	Substance use disorders
WHO:	World Health Organization

Chapter 1: Introduction

1.1 Background information

Dual diagnosis is a term used to describe a person who suffers from both a severe mental illness (SMI) such as major depressive disorder, bipolar disorder or schizophrenia in conjunction with a co-existing/co-morbid alcohol or drug abuse problem (1). Other more recent terminologies for this phenomenon have been labelled co-occurring disorders (CODs), co-morbidity, concurrent disorders, dual disorder and 'double trouble' (2, 3, 4). The term co-occurring disorders, which is not formally recognised by either DSM-IV-TR or the more recent DSM 5, comprises substance use disorders (SUDs) and encompasses the use and abuse of substances, as well as co-occurring or co-morbid psychiatric disorders. It was felt that the terms 'dual disorder' or 'dual diagnosis' did not adequately describe the phenomenon of co-occurring disorders. Dual diagnosis is deemed to be an old-fashioned or outdated term because it makes the assumption that the person only suffers from two disorders, hence dual, which is often inaccurate. Co-occurring disorders, whilst being a newer but as yet clinically unrecognised term, aims to better describe the possibility that the person may suffer simultaneously from more than one substance-related disorder, as well as, and very possibly, more than one co-occurring psychiatric disorder. These disorders, whilst co-occurring, may be independent of each other or may have a complex interaction with each other (4).

For the purposes of this research report, however, the term dual diagnosis will be adhered to as it is currently the recognised term for co-occurring substance use disorders and psychiatric illness within the same individual.

Also, for the purposes of this report, criteria according to DSM-IV-TR were employed instead of criteria from DSM 5. As this report was started before the release of DSM 5, it was felt that criteria should remain and be adhered to, according to DSM-IV-TR, so as to maintain consistency with both the timeline of the report as well as references and terminology used, if any, to ICD 10, also used at the time when this research was first looked into.

Individuals presenting with co-occurring substance abuse and SMI were previously managed in separate, parallel, treatment systems. Until the late 1970's/beginning of the 1980's, patients presenting with dual diagnoses would receive treatment from two different sets of clinicians working in parallel settings (5). Increasing dissatisfaction with this method of treatment arose from a recognition of the implications that co-occurring psychiatric disorders can have on both substance use disorders as well as treatment outcomes for the co-occurring disorder. This led to the establishment of integrated treatment programmes (4). The first such unit was established in 1984 in a New York State outpatient psychiatric facility and since then, multiple such sites have been established across the United States of America (2).

Combined or integrated treatment systems unite both substance use and mental health care interventions in one clinical programme, where two or more chronic disorders are simultaneously addressed. Being treated by the same clinician or team of clinicians in the integrated programme ensures that the patient receives a consistent explanation and work up of their illness and a logical prescription for their treatment (5).

Chapter 2: Literature review

2.1 Epidemiology of dual diagnosis: world-wide and South African trends

2.1.1 Prevalence of dual diagnosis internationally

International studies such as the Epidemiological Catchment Area Survey and the National Co-morbidity Survey, as well as studies by Graham *et al* have found that there is a high correlation between comorbid psychiatric illness and substance abuse (6-8). The Epidemiological Catchment Area Survey found that 27.5% of patients with schizophrenia had a co-morbid substance abuse disorder while 44.8% of individuals with non-mood psychosis were classified as dually diagnosed in the National Co-mobidity Survey (6,7). The study by Graham *et al* found similar values, where there was a 47% prevalence rate of substance abuse in people with schizophrenia and a 60.7% co-morbidity rate in individuals diagnosed with bipolar disorder (8).

2.1.2 Prevalence of dual diagnosis in South Africa

Studies done in the South African setting have been limited. The reported prevalence of co-occurring mental illness and substance use disorders world-wide range between 8-86% (9). In one of the few studies conducted in South Africa, Weich and Pienaar found that 51% of patients admitted to their psychiatric unit at Stikland Hospital in the Western Cape of South Africa, over a 3-month period, were found to have co-morbid substance use disorders (10). Of these, 1% were diagnosed with a substance-induced mood disorder and 7% a substance-induced psychotic disorder.

2.1.3 Prevalence of specific substance abused

Alcohol and cannabis appear to be the most frequently abused substances among mentally ill patients with dual diagnoses, both nationally and internationally (9). Alcohol is the most common licit substance used/abused in the Western Cape, Durban and Gauteng provinces (11, 12), whilst cannabis is the most frequently used/abused drug in all nine provinces of South Africa (13-15).

2.1.4 Demographic profile of mental health care users with dual diagnosis

The correlation between mental illness and substance use/abuse tends to be higher in younger males with a lower level of education, potentially also those who have had more contact with police services or who have had a history of time spent in prison. These individuals tended to have a higher incidence of conduct disorder features that could lead to a diagnosis of antisocial personality disorder, or symptoms thereof, later in life. Furthermore, they were often more likely to be diagnosed within the schizophrenic cluster (16, 17).

In a study done by the Beckley Foundation on the effects of cannabis and mental health on the African continent, it was found that the ratio of reported drug use in many African countries, especially among the youth, appeared to be lower than most industrialised countries. However, there were signs that the use of cannabis was beginning to increase (18). Emsley *et al*'s study, done at the University of Stellenbosch in the Western Cape, also reported a high association between the co-morbidity of substance abuse and psychotic disorders, especially first-onset psychosis (19).

2.2 Theories around the relationship and possible aetiology between substance use/abuse and co-occurring psychiatric illness

2.2.1 Causality

Trends in South Africa, as well as internationally, show that cannabis is the most common drug either used or abused (13). In South Africa, cities such as Cape Town, Durban and provinces like Gauteng, show high prevalence rates for cannabis use especially among the adolescent population (12). Moore *et al*'s article asks the question whether cannabis causes psychosis, or mood symptoms, that would persist beyond an intoxication phase (20). It was found that there was a definite increased risk of a psychotic outcome in individuals who had ever used cannabis and an even greater risk with a dose-response effect, that is greater risk in those who used more frequently and in larger amounts. However, findings for mood symptoms were less consistent. Thus, it was felt that there was enough evidence, in light of the high proportion of young adults and adolescents using cannabis, to warn them of the increased risk of cannabis

use leading to a psychotic illness later in life.

2.2.2 Self-medication theory

The Self-Medication Theory/Hypothesis, as proposed by Khantzian *et al*, states that people with severe mental illness (SMI) use psychoactive substances to relieve a range of symptoms that they may be experiencing; this could be either from the specific mental illness itself, or from any painful emotional states (21). Khantzian further suggests that people with SMI have a preferred drug to relieve a specific symptom or set of symptoms, e.g., schizophrenic patients may use illicit drugs to alleviate the negative symptoms, cognitive deficits or social ineptitudes that are common among such a population (22, 23). Certain neuroleptics may induce side-effects that patients with mental illness try to counter with the use of either illicit substances, e.g., stimulants such as cocaine to counter negative effects; or licit substances, e.g., nicotine administration that helps to decrease the bradykinesia/ rigidity, tremor and tardive dyskinesia commonly caused by typical neuroleptic antipsychotics (24, 25).

2.2.3 Alleviation of dysphoria theory

Dysphoria is defined as a profound state of unease or generalized dissatisfaction and can be associated with or accompany a number of psychiatric disorders: depression, bipolar mania, anxiety or borderline personality disorder, to name but a few. The word dysphoria originates from the classical Greek "*dusphoros*" or "*hard to bear*" (26, 27) and can result from either the symptoms of the psychiatric illness itself or from the side-effects caused by the medication used to treat the disorder (28, 29).

As described in the article by Pristach and Smith, alcohol is used for the relief of depression, problems or worries (28). However, Addington and Duchak emphasized that even if alcohol relieved dysphoria, it eased the dysphoria related to the psychosis, but did not cause any relief in the psychosis itself (30). But alcohol, cannabis and cocaine use, all did appear to help relieve the negative symptoms associated with the illness. Quite a high percentage of patients in this particular study cited the use of alcohol (71%) and cannabis (81%) to relieve depressive symptoms. In order to relieve that 'slowed-down' feeling caused by prescription medication, 24% used alcohol and

38% used cannabis (30). Similarly, Volkow looked at the co-morbidity of depression and drug abuse and speculated that, along with nicotine and other psychoactive substances (alcohol, sedative-hypnotics, opioids, etc.), cannabis was used in an attempt to self-medicate dysphoric symptoms of depression (31).

Volkow also looked at the fact that drugs of abuse (as well as natural stimuli, albeit not to the same extent) cause increases of dopamine in the limbic region, particularly increases in the striatum and nucleus accumbens. This increase in dopamine, in particular, leads to improvement in mood: causing mood elevation, euphoria and what patients perceive as the 'high'. These conditioned responses bring about the temporary amelioration of symptoms of anhedonia and amotivation often associated with depression. An association is then created for patients between drug use and depression and in turn, due to deranged dopamine brain function during withdrawal of substances, patients may, and often do, relapse in order to try and avoid the accompanying depression, anhedonia and feelings of dysphoria. Fowler *et al* looked at the patterns of current and lifetime substance use in schizophrenia and found that 47% of users abusing amphetamines ascribed this use to the relief of dysphoric feelings, while 41% used cannabis, and 58% used alcohol for the same reason (32).

2.2.4 Multiple risk factor theory

Mueser *et al* looked at 4 possible models of co-morbidity (33):

i. Common Factor Models, which include examples such as genetic loading and socioeconomic status. Such factors on their own and combined, increase the likely occurence of both SMI and substance use disorders.
ii. Secondary Substance Use Disorder Models, which propose that SMI increases the chances of developing a substance use disorder. Examples, as mentioned above, include factors such as self-medication and alleviation of dysphoria.
iii. Secondary Psychiatric Disorder Models propose the opposite, where substance use disorders increase the likelihood of and/or even cause the development of SMIs. Examples that may be relevant here include the catecholamine hypothesis of schizophrenia and also the kindling effect that substances exert on the brain.

iv. Bidirectional Models, where either of the disorders can increase the likelihood of the other disorder developing. Some factors may be ongoing and continue to exert interactional effects between the two disorders. This may account for the increased rates of co-morbidity seen.

The Rethink National Schizophrenia Fellowship, which is based in the United Kingdom and offers national information and advice services, Berman and Noble, and the Royal College of Psychiatrists, all share similar ideas about the co-morbidity involved with dual diagnosis (34-36). These include the influence of personality factors, sociocultural risk factors such as family dynamics, cognitive risk factors, self-medication, social vulnerability, and the use of substances as a coping strategy. Essentially, there may be shared or overlapping genetic and environmental risk factors for the development of both mental disorders and substance misuse. The Royal College research also found a high prevalence of previous sexual trauma as an aetiological factor for dual diagnosis.

2.2.5 The supersensitivity theory

Work has previously been done on the Stress-Vulnerability model within the Schizophrenic population. Elaborating on this model, Mueser *et al* state that people with inherent genetic vulnerabilities who become exposed to early environmental events, e.g., perinatally, may in addition be exposed to, or interact with, environmental stressors later in life (33). This translates into either precipitating the onset of a mental illness or triggering a relapse of an existing psychiatric disorder.

Vulnerable individuals (with vulnerability being defined as a compromised biological sensitivity to stress) could also be sensitive to the effects of substances. This sensitivity may cause patients with severe psychiatric illnesses to be more likely to experience negative consequences from using even relatively small amounts of substances.

2.3 The South African perspective

International statistics for dual diagnoses are typically found with prevalence rates ranging anywhere between 8-86% (7, 9, 37-39). However, South African prevalence statistics are not as easily accessible, restricting the volume of information necessary

for this study. To my knowledge, this study is the first of its kind focusing on an integrated treatment unit within a governmental institution (in this instance Sterkfontein Psychiatric Hospital) in South Africa.

Fabricius *et al* looked at co-occurring substance-related and psychiatric disorders (40). Their study was performed at a privately-run rehabilitation unit in South Africa and found that, of the 419 patients admitted, more than half (57%) had a dual diagnosis. The majority of those diagnosed with a dual diagnosis were found to suffer from a mood disorder with a co-occurring substance use disorder (65%), while only 2% were diagnosed with schizophrenia and a substance use disorder.

A study, conducted by Weich and Pienaar, looked at substance use disorders in an acute inpatient psychiatric population. (10) This study occurred at Stikland Hospital in the Western Cape of South Africa. This is a state-run facility, which does not have an existing dual diagnosis or integrated unit. In their study, of the 298 users admitted and hospitalized in the acute psychiatric ward, 51% qualified for a comorbid substance use disorder or dual diagnosis. In this study, as opposed to the study conducted by Fabricius *et al*, psychotic disorders appeared to have been more prominent than were mood disorders, in relation to substance use disorders (40).

The few South African studies that could be obtained, along with the vast quantity of international studies, point towards a preponderance of younger people with dual diagnoses presenting with more psychotic symptomatology rather than mood symptoms (41-45), and this being associated more often with the abuse of cannabis rather than other substances (42-45). These findings have shaped my hypothesis and a similar outcome was expected from this study.

SACENDU states that across all regions of South Africa, only 13% of users presented with a dual diagnosis at the time of substance treatment admission and of those, 36% reported mental health problems (46). This seems to be an under-estimation of a growing trend in substance use disorders in South Africa.

Due to the dearth of South African dual diagnosis studies, this study is an important contribution in this area of research. Increasing the knowledge of the South African

scenario could help to:

a) Determine the extent of the problem in the South African context.
b) Help to develop strategies, both towards screening and treatment, which could assist in the management of this susceptible population.

Chapter 3: Methods and materials

3.1 Aims, objectives and hypothesis

3.1.1 Study aim

The aim of this study was to perform an audit of the Integrated Treatment Unit at Sterkfontein Psychiatric Hospital in order to describe the demographic and clinical characteristics of the users, and to determine if any differences existed between users with psychotic disorders and those with mood disorders. The results of this audit may assist the managers of such services to design appropriate programmes for these two groups of users and improve long-term outcomes.

3.1.2 Study objectives

1. To describe the demographic characteristics of users admitted to the Integrated Treatment Unit at Sterkfontein.
2. To describe the clinical characteristics of users admitted to the Integrated Treatment Unit at Sterkfontein.
3. To determine if any differences existed between users with psychotic and those with mood disorders in relation to their demographic and clinical characteristics.

3.1.3 Study hypothesis

The hypothesis was that users with comorbid substance abuse and psychotic disorders were more likely to be younger, have recurrent admissions, and to abuse cannabis more often than users with comorbid substance abuse and mood disorders.

3.2 Methodology

3.2.1 Study design

The study was a descriptive, retrospective case record review of all users admitted to the Integrated Treatment Unit at Sterkfontein Hospital. The study included all users admitted to the ITU from it's inception in 2008, for a one-year period.

3.2.2 Study site: Sterkfontein Psychiatric Hospital Integrated Treatment Unit

Sterkfontein Psychiatric Hospital, situated on the outskirts of Krugersdorp, is a tertiary level psychiatric institution that attends to referrals from the Southern Gauteng region. It is governed under the auspices of both the Gauteng Department of Health and the University of the Witwatersrand, Department of Psychiatry. The hospital runs both a forensic section as well as a general section. The forensic section caters for mentally unwell users who have committed acts of crime, while the general side caters for acute referrals from district or provincial hospitals within the referral area. The acute referrals are usually classified as involuntary mental health care users, as set out in the provisions of the Mental Health Care Act No 17 of 2002 (47). Specialist units on the general side include the Integrated Treatment Unit (ITU) and the Independent Living Unit (ILU).

The ITU at Sterkfontein currently provides an inpatient service for adult assisted and voluntary users. The unit accepts referrals from acute male and female wards on the general side within the hospital as well as from other district-level, regional and academic hospitals within the referral area, for users with a diagnosis of co-morbid substance abuse and mental illness. Users would already have undergone a detoxification process at the hospital they were referred from.

Users are accepted as part of the programme after an initial screening interview with a comprehensive multidisciplinary team, which consists of a qualified psychiatrist, a psychiatric registrar-in-training, a social worker, psychologists, an occupational therapist and the nursing staff assigned to the ward. The programme runs over 8 weeks and consists of various therapeutic programmes namely, individual and family therapy, cognitive behavioural therapy, process groups, Narcotics Anonymous discussions, psychoeducational groups and insight-improvement groups. Psychiatric services include reviewing the patient's progress as well as their use of medication. The psychiatrists liaise with other team members and with the families of users within the unit, and co-ordinate some of the programmes running in the ward. The psychologists are engaged in individual, group and family therapy as well as process groups. The occupational therapist runs skills development, career guidance, substance rehabilitation, and compliance programmes. The nursing staff is responsible for the

day-to-day nursing of users as well as the running of psych-education groups for the inpatients. They run re-enforcement groups, help users in performing activities of daily living, supervise group games, and individual activities. The social worker consults with families regarding disability grants and identity documents and co-ordinates group work (e.g., art therapy and relaxation therapy). This unit also liaises with users' families, local social work services, and non-governmental organisations within the community to prepare users for discharge.

Users admitted to the unit must meet certain criteria before they can be admitted into the ITU. The criteria assessed at the initial screening interview include that users must be apsychotic, euthymic, not have an organic brain injury, not suffer from intellectual disabilities (as both the latter conditions would hinder insight), have some level of insight into their substance abuse problem, be independent in terms of their self-care (personal hygiene, duties, etc.), and must be able to live and function independently in a semi-structured environment. Users with disruptive and recurrent hypersexual behaviours must have been stable for at least seven days prior to admission. Users with serious medical conditions (epilepsy, diabetes and heart disease) are only admitted if their condition is well controlled on medication. Users are not accepted if it is for social reasons only: as in the case of the involuntary users on the general side, if they do not have a place to go to after being discharged from the hospital.

3.2.3 Study population

The study population included all mental health care users admitted to the unit since its inception in July 2008 for a period of one year. The sample population included 74 users who were admitted over the one year study period who met the ITU admission criteria.

3.2.4 Study procedure

All users' hospital notes and discharge summaries are filed in the hospital registry. Users admitted since inception of the unit were identified from the registry records. These users' notes were extracted and analysed by the investigator.

3.2.5 Materials

To assist with data collection, the demographic and clinical characteristics of users were obtained from the users' case records by the investigator and recorded on a data-collecting sheet (Appendix A).

The variables/categories were chosen based on the hypothesis, aims and objectives of the study

a) **Demographic data:** This study is a retrospective review of the Integrated Treatment Unit. As such, various categories under this heading were chosen to correspond to a history-taking data collection sheet. This helps us to see what interesting demographic variables emerged in this particular unit in the first year of it's inception e.g. age, race, gender, level of education, marital status, support structures, source of income, criminal history and family histories of mental illness and substance abuse. The demographic variables were chosen to provide us with a snapshot of the participants presenting to the unit at that time and would help us to determine if these particular individuals may be a representatitve sample for generalizable purposes when compared to other similar studies.

   It was hoped that important variables that emerged could highlight potential changes that could be made or tailored specifically to this particular population which present to the unit at Sterkfontein Psychiatric Hospital. It was also hoped that further comparative research could be conducted in the future, by replicating the study, to see if any of the demographics or clinical variables change over time, and if so, the reasons for this change.

b) **Past history of family mental illness and family substance abuse:** These categories were chosen as it is known that there is a genetic component and heritability toward developing mental illness and substance use disorders within families. It was hoped, that by including these demographic variables, and depending on the outcome results, that treatment providers could psychoeducate family members and support systems. If it is known that family

support structures have substance use difficulties or mental illnesses, it may be more difficult for our users to return to such unstable/unfavourable environments, in fear of possible increased risk of relapse. Hence, alternative arrangements via half-way houses may have to be sought and therefore the need for disability grant applications.

c) **Clinical diagnosis:** In terms of clinical variables, clinical diagnosis was an important outcome variable in this study. Mood versus psychotic disorders were chosen as they seem to be the most commonly occurring diagnoses in the patient population presenting to Sterkfontein Hospital. This, in the context of substance use and how the latter may influence possible diagnostic formulations was a topic of interest. The outcomes, thus, could be used to assist in deciding upon the most appropriate medication and treatment regimes both behaviourally and socially for the patient population in the unit.

d) **Characteristics of substance use:** DSM-IV-TR makes use of the terms “abuse” and “dependence” to delineate between degree of severity of substance use (74). Substance abuse is generally considered the less severe form while dependence is almost synonymously or interchangeably used with the term “addiction”, indicating a more severe form. It was important to establish, in the population presenting to the unit, how severe their substance use actually was. Users with substance abuse had the opportunity of rehabilitating at an early stage before their abuse progressed to dependence. While users with dependence may need more intensive assistance and perhaps, if conditions allowed, for users to have a longer stay in rehabilitation, in the form of half-way houses and outpatient programs. Thus, the program could be tailored to such, offering each of the categories of users the appropriate management deemed necessary for their particular needs.

3.2.6 Statistical analysis

Quantitative analyses of all variables in the data set were made, in consultation with a statistician, according to acceptable statistical principles and calculations. The data was entered into an excel data spreadsheet. Continuous data was computed as means and standard deviations, and categorical data as frequencies and percentages. The study population was then divided into two groups based on their psychiatric diagnosis (namely psychotic and mood disorders) and comparisons between the groups were examined by the use of contingency tables. Chi-squared test with Yates correction was used as well as Fischer's exact test, where criteria for the chi-squared test could not be met. Odds Ratios were included with 95% confidence intervals. The significance level was set at $p<0.05$ in the bivariate analysis. All analyses were done using the statistical package STATA version 13.1.

3.3 Ethical considerations

As this was a retrospective case record review, no user contact was entered into. At the time that data collection was done, all study participants were already discharged and thus no actual interviews were conducted. As such, no informed consent was obtained. Confidentiality was maintained at all times. The users' names and hospital numbers were recorded on a separate sheet, known only to the investigator so as to ensure that a user was not enrolled more than once. This confidential information will not be mentioned in any subsequent reports, conference briefings/presentations, or any publications.

The study was submitted to the University of the Witwatersrand's Human Research Ethics Committee (HREC), whereby approval was obtained to conduct the research (Appendix B). Authorisation to conduct the study was also obtained from the Gauteng Department of Health, Sterkfontein Hospital board of directors and the Sterkfontein Research Committee (Appendix C).

Chapter 4: Results

4.1 Demographic profile

Table 4.1: Baseline demographic data

DEMOGRAPHIC INFORMATION		n = 74	%	MEAN	SD	RANGE
AGE (YEARS)				29.0	8.3	18-55
	15-20	12	16.2			
	21-40	**57**	**77.0**			
	41-60	5	6.7			
GENDER	**MALE**	**68**	**91.9**			
	FEMALE	6	8.1			
RACE	**BLACK**	**51**	**68.9**			
	WHITE	12	16.2			
	COLOURED	10	13.5			
	INDIAN	1	1.4			
LEVEL OF	UNKNOWN	4	5.4			
EDUCATION	0-GR 9	22	29.7			
	GR10-TERTIARY	**48**	**65.0**			
EMPLOYMENT	UNKNOWN	6	8.1			
STATUS	YES	14	18.9			
	NO	**54**	**72.9**			
SOURCE OF	**UNKNOWN**	**24**	**44.4**			
INCOME IF NOT	YES	20	37.0			
EMPLOYED	NO	10	18.5			
MARITAL	UNKNOWN	4	5.4			
STATUS	**SINGLE**	67	**90.5**			
	MARRIED	3	4.0			
IF SINGLE, ANY	UNKNOWN	0	0			
SUPPORT	**YES**	**50**	**74.6**			
STRUCTURE	NO	17	25.4			
PREVIOUSLY	UNKNOWN	3	4.0			
ADMITTED	YES	34	45.9			
	NO	**37**	**50.0**			
FAMILY	UNKNOWN	21	28.4			
PSYCHIATRIC	**YES**	**27**	**36.5**			
HISTORY	NO	26	35.1			
FAMILY HISTORY	UNKNOWN	35	47.3			
OF SUBSTANCE	**YES**	**27**	**36.5**			
USE	NO	12	16.2			
CRIMINAL	UNKNOWN	18	24.3			
HISTORY	**YES**	**42**	**56.8**			
	NO	14	18.9			
CONDUCT	UNKNOWN	39	52.7			
DISORDER	**YES**	**21**	**28.3**			
FEATURES	NO	14	18.9			

As seen from Table 4.1, the age of participants ranged between 18 and 55 years, with a mean age of 29 years for the group. Of the 74 participants the majority were male (92%, n=68), fell within the Black ethnic group (69%, n=51), and were in the 21-40 year age group (77%, n=57). 65% of the population (n=48) completed at least a grade 10 level of education. 73% (n=54) were found to be unemployed whilst 19% (n=14) were being supported by their families financially. The majority of the sample were not married (91%, n=67), but did have some sort of support structure available to them (75%, n=50). Less than half of the population had a positive family history of mental illness (36%, n=27), while approximately the same amount had a positive family history of substance use or abuse (36%, n=27). 57% of the participants (n=42) presented with a previous criminal history while 28% (n=21) had a childhood history of conduct disorder features.

Table 4.2: Number of previous admissions

NUMBER OF PREVIOUS ADMISSIONS	n	%
0	**37**	**50.0**
Unknown number of actual admissions	3	4.1
1	4	11.8
2	5	14.7
3	9	26.5
4	5	14.7
5	4	11.8
6	1	2.9
7	1	2.9
8	1	2.9
9	0	0
10	0	0
11	1	2.9
12	1	2.9

Table 4.2 indicates the number of previous admissions users had to Sterkfontein Hospital. It was not clear from the records whether having been previously admitted to

Sterkfontein Hospital was substance related or not.

4.2 Clinical profile

Table 4.3: Baseline clinical data

CLINICAL INFORMATION		N	%
TYPE OF SUBSTANCE ABUSED	**Cannabis**	**68**	**91.9**
	Alcohol	**62**	**83.8**
	Cocaine	25	33.8
	Heroin	11	14.9
	Methaqualone	23	29.7
	Other	34	45.9
REASON FOR ABUSING SUBSTANCE	Experimentation	14	18.9
	Coping mechanism	**32**	**43.2**
	Enjoys Effects	**32**	**43.2**
	"Other" reason	24	32.4
TYPE OF DISORDER	**Mood disorders**	**30**	**40.5**
	Psychotic disorders	22	29.7
	Both Mood and Psychotic Disorders	18	24.3
TYPE OF MEDICATION USED	Antipsychotic	13	17.6
	Anticonvulsant/mood stabilizer	4	5.4
	Antipsychotic+Anticonvulsant	**23**	**31.1**
	Antidepressant	2	2.7
	Benzodiazepine	4	5.4
	Polymedication (combination of above meds)	22	29.7
SUBSTANCE ABUSE /DEPENDENCE	Abuse	21	28.4
	Dependence	**51**	**68.9**

A large proportion of the study population admitted to the use of cannabis (92% [n=68]) and alcohol (83,8% [n=62]). ‘Other substances’ included illicit drugs like combinations of cannabis, heroin and antiretroviral medications, methamphetamines, methcathinone, methaqualone, cocaine and inhalants.

43% of participants (n=32) sited using substances as a coping mechanism and enjoying the effects of said substances, these then being the most frequent reasons

given for substance abuse. “Other reasons” given by users for the use/abuse included reasons such as bereavement of a close relative or friend, poor social support systems, financial worries and boredom.

More users were diagnosed with mood disorders rather than psychotic disorders (40,5% [n=30] vs 29,7% [n=22] respectively). ‘Mood disorders’ are a combined category encompassing disorders such as bipolar disorder and major depressive disorder while ‘psychotic disorders’ included disorders with primary psychotic features such as schizophrenia and schizophreniform disorder. n=18 (24,3%) of the patients had both mood as well as psychotic symptomatology in their presentation, e.g., mood disorders secondary to substance use disorders, as well as psychotic disorders secondary to substance use or schizoaffective disorders. In addition, 4 users had psychiatric illnesses unrelated to mood or psychosis, but had co-morbid substance use in their presentation, e.g., posttraumatic stress disorder, borderline personality disorder, and antisocial personality disorder.

31,1% (n=23) of the sample were on a combination of an antipsychotic and an anticonvulsant medication. This was closely followed by polymedication prescription in 29,7% (n=22) of cases, which included a combination of the above medications. Antipsychotic monotherapy occurred in 17,6% (n=13) of the sample. More than half of the study population, 68,9% (n=51), fulfilled criteria for substance dependence rather than just abuse of substances, which accounted for 28,4% (n=21) of cases (Table 4.3).

4.3 Differences between mental health care users with psychotic and mood disorders with respect to their demographic and clinical characteristics

4.3.1 Demographic variables versus type of disorder

As seen in Table 4.4, the following demographic variables were found to show statistical significance against the type of disorder: race (p=0,036), level of education (p=0,039), employment (p=0,007), marital status (p=0,05) and having been previously admitted to Sterkfontein Hospital (p=0,012).

Table 4.4: Demographic variables versus type of disorder

DEMOGRAPHIC VARIABLE	MOOD DISORDERS	PSYCHOTIC DISORDERS	MOOD+ PSYCHOTIC DISORDERS	95% CI	P-VALUE
	n(%)	n(%)	n(%)		
Gender					0.509
Male	27(41.5)	21(32.3)	17(26.2)	0.83-0.96	
Female	3(60)	1(20)	1(20)	0.04-0.17	
Race					0.036
Black	21(42)	15(30)	14(28)	0.57-0.79	
White	5(55.6)	1(11.1)	3(33.3)	0.09-0.27	
Coloured	3(30)	6(60)	1(10)	0.07-0.24	
Indian	1(100)	0	0(0)	0.00-0.09	
Age					0.576
15-20	4(33.3)	3(25)	5(41.7)	0.09-0.26	
21-40	24(42.1)	18(31.6)	12(21.1)	0.66-0.85	
41-60	2(40)	1(20.0)	1(20)	0.03-0.16	
Level of education					0.039
Gr1-Gr9	6(28.5)	8(38.1)	7(33.3)	0.20-0.41	
Gr10-Tertiary	23(48.9)	14(29.8)	10(21.3)	0.53-0.75	
Employment					0.007
Yes	10(76.9)	1(7.7)	2(15.4)	0.11-0.29	
No	19(35.8)	20(37.7)	14(25.4)	0.61-0.82	

DEMOGRAPHIC VARIABLE	MOOD DISORDERS	PSYCHOTIC DISORDERS	MOOD+ PSYCHOTIC DISORDERS	95% CI	P-VALUE
Source of Income					0.123
Yes	6(30)	7(35)	7(35)	0.19-0.39	
No	3(27.3)	7(63.6)	1(9.1)	0.08-0.25	
Marital status					0.050
Single	28(41.7)	20(29.8)	19(28.3)	0.81-0.96	
Married	2(66.7)	1(33.3)	0(0)	0.01-0.12	
Support structure					0.063
Yes	20(40)	17(34)	13(26)	0.60-0.80	
No	9(52.9)	4(23.5)	4(23.5)	0.15-0.34	
Previous admission					0.012
Yes	18(52.9)	8(23.5)	8(23.5)	0.35-0.58	
No	12(34.3)	13(37.1)	10(28.6)	0.39-0.61	
Family psychiatric history					0.83
Yes	12(46.2)	6(23.1)	8(30.8)	0.19-0.39	
No	9(36)	10(40)	6(24)	0.26-0.48	
Family substance use history					0.941
Yes	9(36)	8(32)	8(32)	0.26-0.48	
No	6(50.0)	3(25.0)	3(25.0)	0.09-0.27	
Criminal history					0.185
Yes	14(33.3)	13(30.9)	15(35.7)	0.45-0.68	
No	7(53.8)	3(23.1)	3(23.1)	0.11-0.29	
Conduct disorder					0.087
Yes	6(30)	6(30)	8(40)	0.19-0.48	
No	4(30.8)	3(23.1)	6(46.2)	0.11-0.29	

4.3.1.1 Demographic variables showing statistical significance when compared to the type of disorder

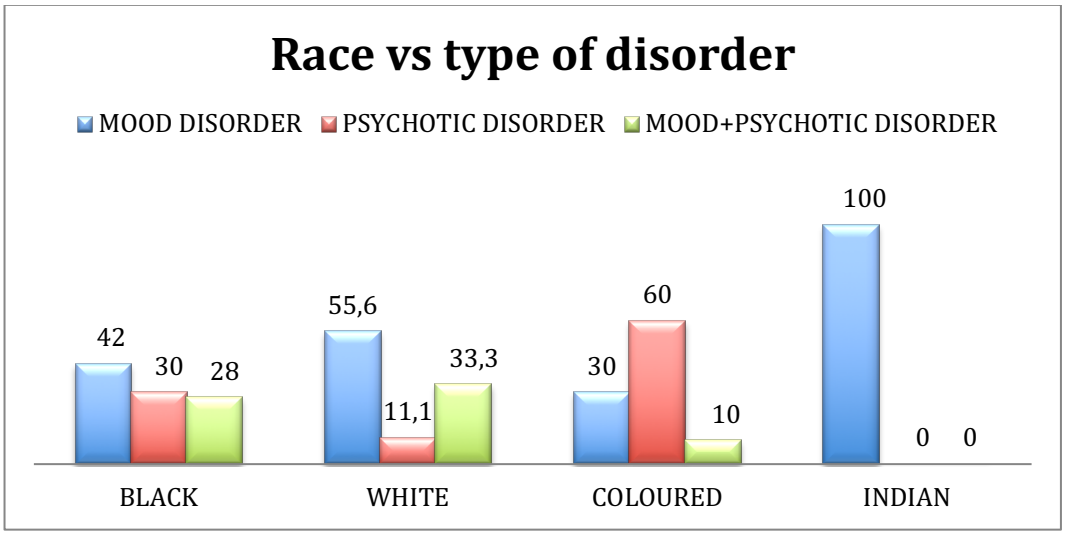


Figure 4.1: Race versus type of disorder (p=0.036)

Both the Black (42%) and White (55,6%) population groups presented more often with mood disorders. There was only one Indian person in the sample (100%) who presented with a mood disorder. The Coloured population tended toward developing psychotic disorders (60%) more than mood disorders (30%) (Figure 4.1).

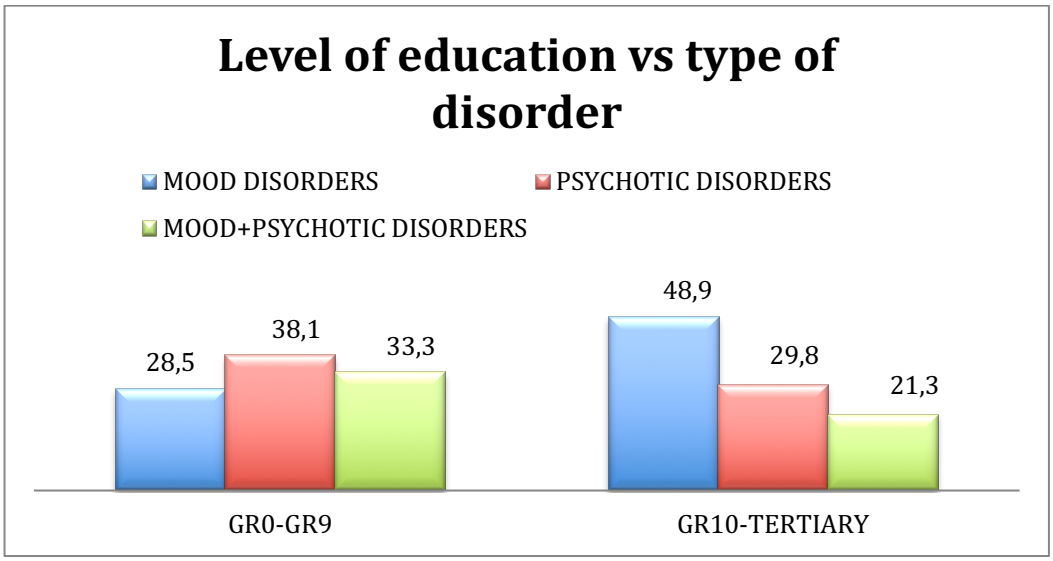


Figure 4.2: Level of education versus type of disorder (p=0.039)

The analysis shows that people with a higher level of education, i.e., grade 10 to tertiary level of education, were more likely to present with mood disorders (48,9%); whilst those with a lower level of education, i.e., grade 0 to grade 9 presented more commonly with a psychotic disorder (38,1%) (Figure 4.2).

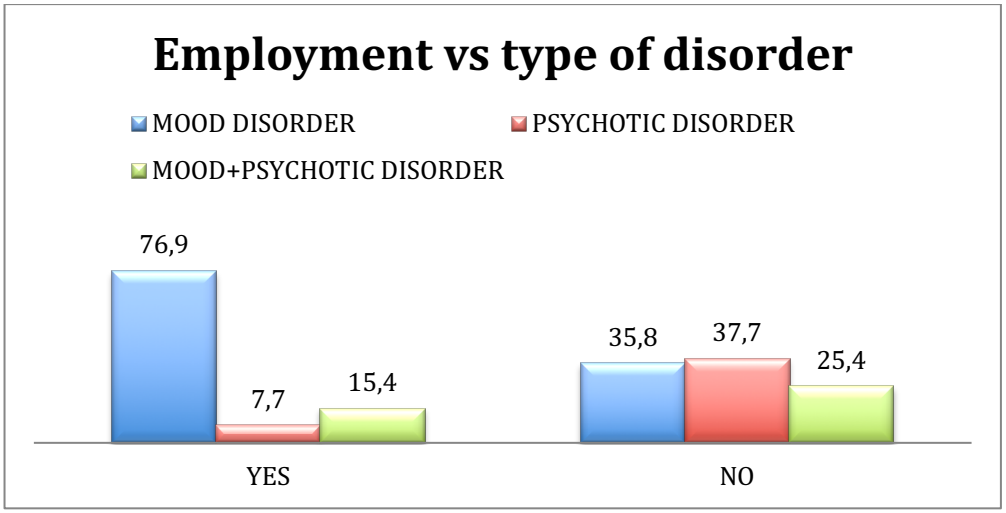


Figure 4.3: Employment versus type of disorder (p=0.007)

Figure 4.3 shows that 76,9% (n=10) of employed participants presented with a mood disorder while there was an almost equal distribution of mood (35,8%) and psychotic disorders (37,7%) in those who were unemployed.

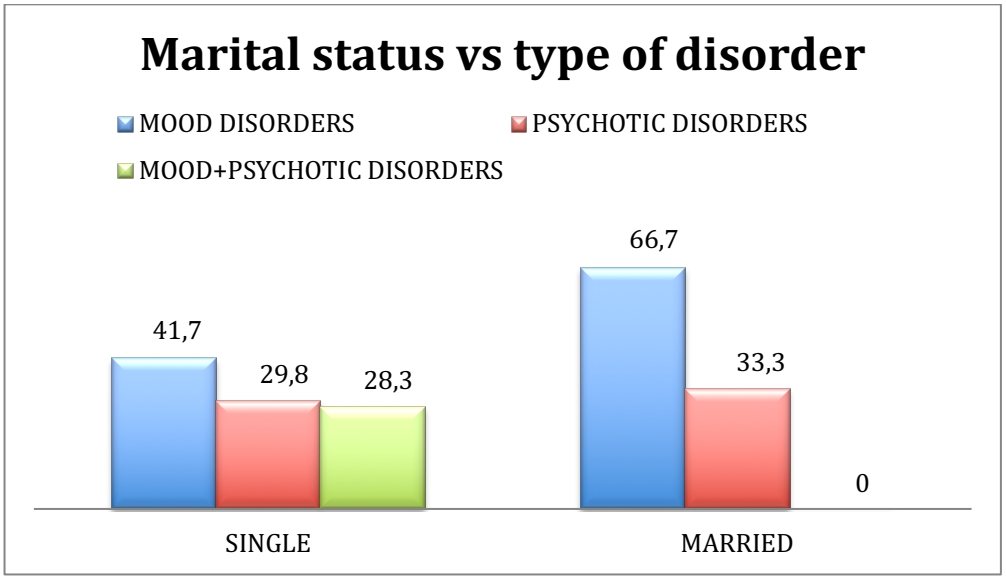


Figure 4.4: Marital status versus type of disorder (p=0.052)

In both the married (66,7%) and the single (41,7%) groups, mood disorders presented as the most common type of mental illness. Being “single” comprised of not currently being in a relationship or having been divorced, separated or widowed. Being “married” comprised of being in a committed relationship, currently married or co-habiting (Figure 4.4).

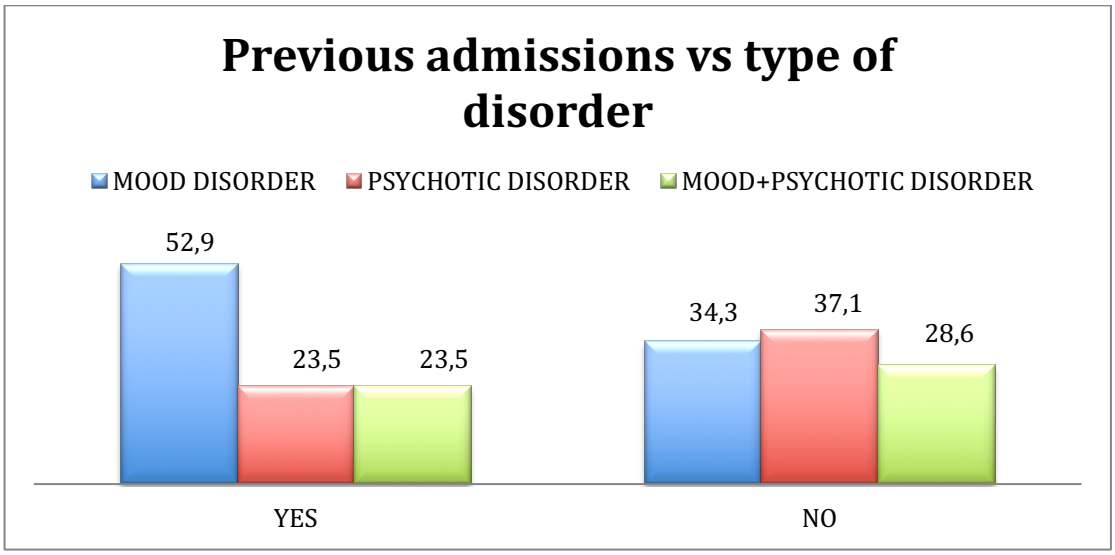


Figure 4.5: Previous admissions versus type of disorder (p=0.012)

The majority of participants who had previous admissions to Sterkfontein Hospital presented with mood disorders (52,9% n=18). In the group who had not been admitted before, there was an almost equal distribution between mood disorders (34,3% n=12) and psychotic disorders (37,1% n=13) (Figure 4.5).

4.3.2 Clinical variables versus type of disorder

The clinical variables “type of substance” (p=0,011), “substance abuse/dependence” (p=0,039) and “type of medication” (p=0,02), all proved to be statistically significant when compared to the type of disorder as seen in Table 4.5.

Table 4.5: Clinical variables versus type of disorder

CLINICAL VARIABLE	MOOD DISORDERS	PSYCHOTIC DISORDERS	MOOD + PSYCHOTIC DISORDERS	95% CI	P-VALUE
	n(%)	n(%)	n(%)		
Type of Substance					0.011
Cannabis+Alcohol	13(44.8)	11(37.9)	5(17.2)	0.29-0.51	
Polysubstances	17(41.4)	11(26.8)	13(31.7	0.46-0.69	
Overall Reason of Abuse					0.54
Experimentation	0(0)	1(25)	3(75)	0.02-0.14	
Coping mechanism	6(10)	5(8.3)	49(81.7	0.12-0.31	
Enjoys effects	3(33.3)	4(44.4)	2(22.2)	0.06-0.22	
Other reason	5(62.5)	2(25)	1(12.5)	0.05-0.20	
Multiple reasons	14(51.9)	7(25.9)	6(22.2)	0.29-0.51	
Substance Abuse/Dependence					0.039
Abuse	9(42.9)	6(28.6)	6(28.6)	0.19-0.39	
Dependence	21(42.9)	16(32.7)	12(24.5)	0.57-0.79	
Type of Medication					0.02
Antipsychotic	2(15.4)	7(53.8)	4(30.8)	0.10-0.28	
Anticonvulsant	3(75)	0(0)	1(25)	0.02-0.14	
Antipsychotic+ Anticonvulsant	11(47.8)	6(26.1)	6(26.1)	0.21-0.43	
Antidepressant	1(100)	0(0)	0(0)	0.01-0.10	
Polymedication	9(40.9)	6(27.3)	7(31.8)	0.20-0.41	
Previous Rehabilitation					0.211
Yes	4(44.4)	1(11.1)	4(44.4)	0.07-0.24	
No	22(42.3)	18(34.6)	12(23.1	0.60-0.81	

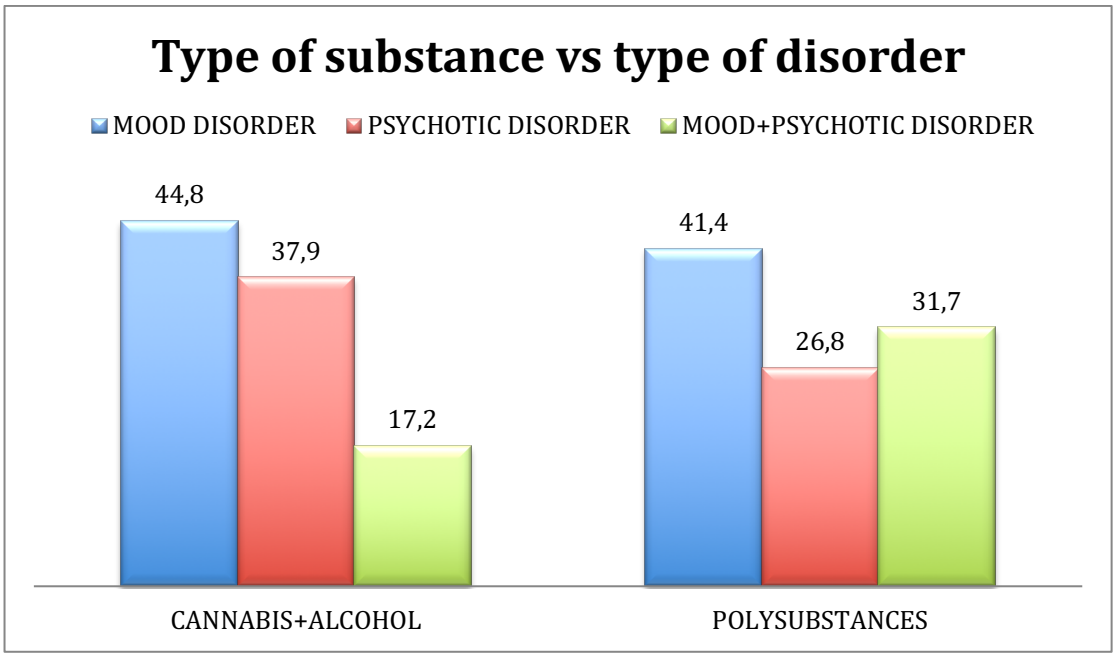


Figure 4.6: Type of substance versus type of disorder (p=0.011)

44,8% (n=13) of users abusing cannabis and alcohol and 41,4% (n=17) of users abusing polysubstances presented with mood disorders (Figure 4.6).

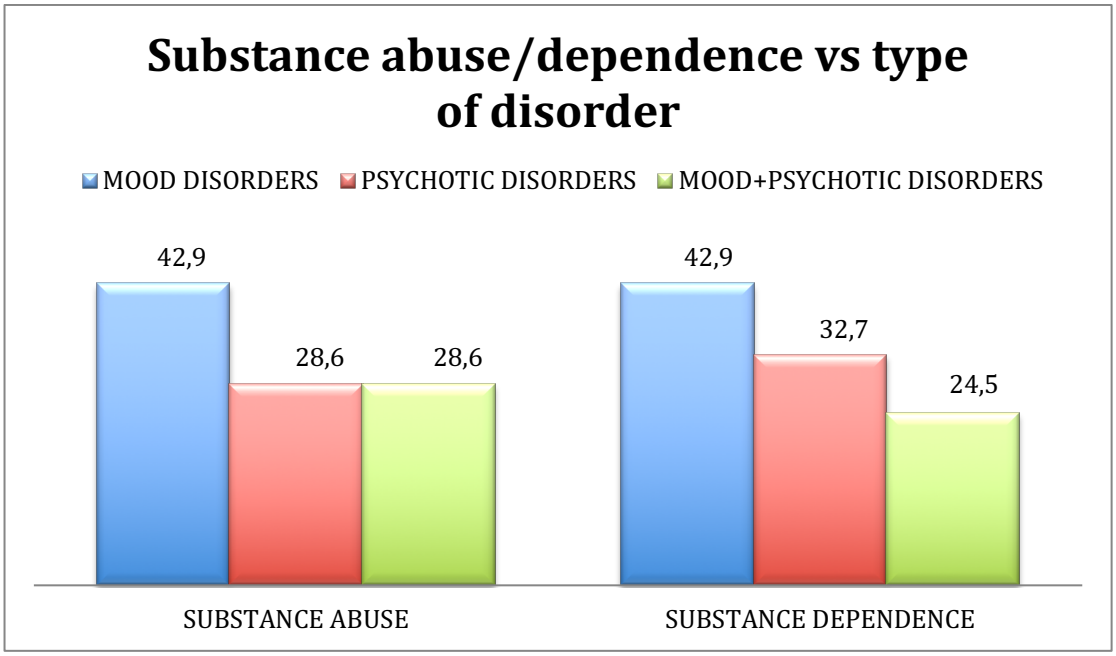


Figure 4.7: Substance abuse/dependence versus type of disorder (p=0.039)

Users presenting with substance abuse (42,9% n=9) as well as users dependent on

substances (42,9% n=21 presented more commonly with mood disorders (Figure 4.7).

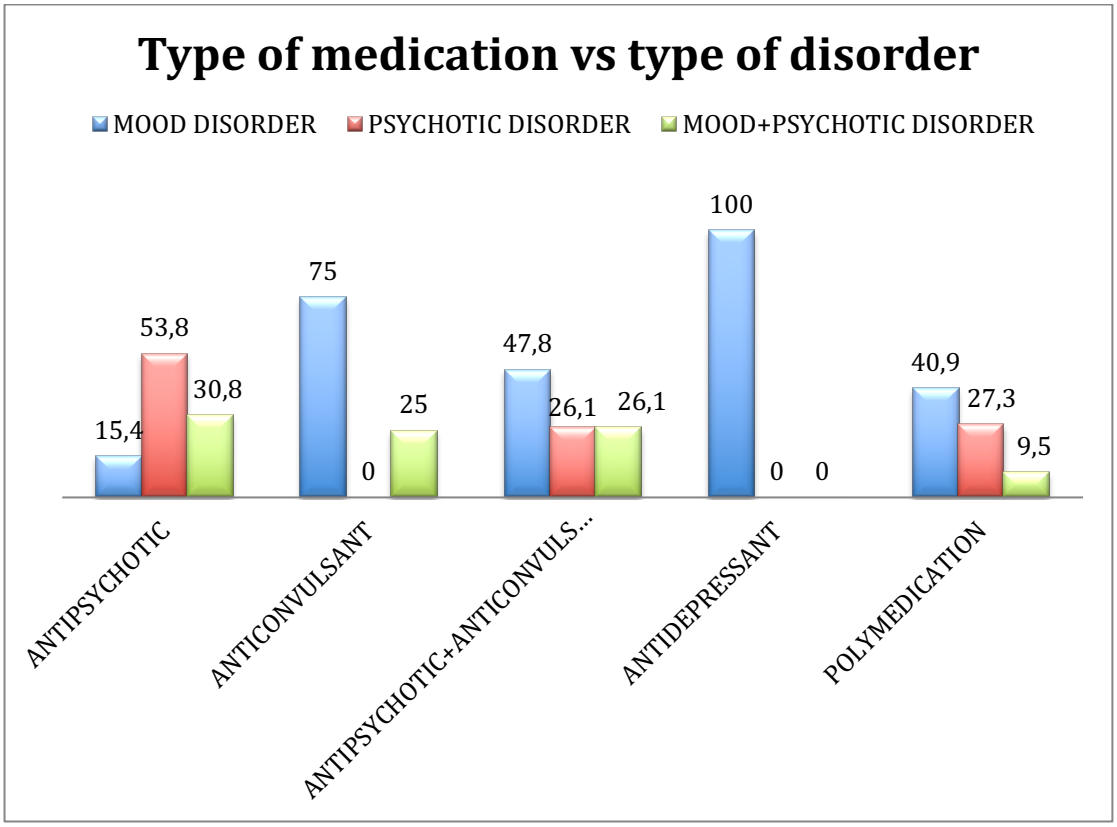


Figure 4.8: Type of medication versus type of disorder (0.02)

In almost all medication groupings, i.e., anticonvulsants 75% (n=3); antipsychotic + anticonvulsant 47,8% (n=11); antidepressant 100% (n=1) and polymedication 40,9% (n=9), mood disorders were the most likely presentation. The exception was the antipsychotic group, where psychotic disorders predominated (53,8% n=7) (Figure 4.8).

Chapter 5: Discussion

5.1 Demographic data

5.1.1 Age

The age range for the sample population in the Unit was 18-55 years, with a mean age of 29 years (Table 4.1). This is similar to studies conducted internationally (8, 9), as well as those conducted in the South African setting in similar dual diagnosis units (19, 40).

It was hypothesised that many of the participants in relation to dual diagnoses would be of a younger age (15-20 years), who present with psychotic disorders and abuse cannabis more frequently than any other substance of abuse. Both international studies and studies conducted in South Africa would concur with such a finding (48-50). Age of onset of a primary psychiatric disorder and a comorbid substance use disorder is proposed to begin in adolescence, usually with the psychiatric disorder occurring first (onset typically around the age of 11 years), followed by the substance use disorder (with onset, on average, around the age of 21 years). Cannabis and alcohol use disorders seem to be frequent among adolescents. This is associated with adolescents who also present with primary psychiatric disorders such as major depressive disorder, bipolar disorder, social anxiety disorder, attention-deficit hyperactivity disorder (ADHD) and conduct disorder (51). A German-based study, conducted by Gouzoulis-Mayfrank in 2008, found that cannabis use disorders were the most prevalent substance disorder type among dual diagnosis patients, particularly in adolescent and young adult populations. Dual diagnosis patients with psychosis and substance use disorders are a large proportion of patients presenting to acute psychiatric units. Cannabis use is offered as the best explanation for the high rates of comorbidity among dual diagnosis patients, especially among adolescents and young adults with psychotic disorders and substance use disorders (52).

However, the current study has found that a slightly older population, i.e., 21-40 year old age group had greater prevalence and that they presented with more mood disorders than psychotic disorders (Table 4.4). A possible reason for this could be the

grouping or categorisation of the study population. Another possibility could be the admission criteria set out by Sterkfontein Hospital. Only adults 18 years and older are admitted to this particular facility, as they are unable to cater to a population younger than 18 years of age. This restricted the volume of younger aged individuals for the study. Further restrictions, as set out by the admission criteria of the IntegrativeTreatment Unit could also possibly hinder a younger aged group of individuals from using the unit, i.e., the unit comprises an 8 week programme, following a detoxification and then stabilisation admission, which may be regarded as too lengthy for younger individuals.

Quello *et al* found that mood disorders were the most common comorbid psychiatric disorder in adult users with substance use disorders (53). They looked at possible theories to explain the high co-occurrence of mood and substance use disorders and proposed the following:

a. that users self-medicated their mood symptoms with substances so as to alleviate the pathological effects associated with the mood disorder they were experiencing;
b. the “kindling effect” where, in vulnerable persons, there is an underlying neurobiological tendency to sensitization of neurons, which promotes and increases both mood disorders and drug dependency;
c. underlying shared genetic risk factors and some genetic variants, which occur for both substance use and mood disorders in at-risk individuals.

A South African study conducted by Roos *et al*, a collaboration between the University of Pretoria and the Human Neurogenetic Laboratory affiliated to the Rockerfeller University in New York, looked at cannabis and other variables affecting age at onset in a schizophrenia founder population and found that people diagnosed with psychotic illnesses were more likely to consume cannabis than the general population would (15). In that study, there were males who were of a younger age at the time of onset of symptoms. They tended to have been hospitilised more than three times and were also found to have a statistically significant association with heavy cannabis use/abuse. The above finding is in keeping with my stated hypothesis. However, my study findings were not able to prove my hypothesis. Results of the current study

showed that users tended to be in the middle age group (21-40 years).

5.1.2 Gender and race

Male gender and being from a Black ethnic background were found to be in the majority in this, as well as other, conducted studies (8, 9, 40, 54, 55). The fact that more male users were found in this study could be accounted for in that there are more male acute general wards catered for at Sterkfontein Hospital and less female wards in the general section. More male inpatients are referred to the ITU as a result. A large proportion of the population referred to Sterkfontein Hospital come from poor socioeconomic, underprivilaged, non-White communities. These are typically communities who lack private medical funding and usually end up getting referred to the government district hospitals. These users, in turn and if appropriate, are sent to Sterkfontein Hospital as involuntary mental health care users who may then further be referred to the ITU.

The South African Community Epidemiology Network on Drug Use, better known as SACENDU, is a group of researchers and practitioners from across all nine provinces in South Africa (55). This unit was established by the South African Medical Research Council and is funded by the World Health Organization (WHO). The members of SACENDU meet bi-annually to provide public health surveillance of cannabis, tobacco, alcohol and other drug-use trends and associated consequences through presentation of research data on the topic from across all nine provinces.

Data presented from SACENDU's surveillance studies highlight that Black African males tend to be in the majority of users in both the Western Cape as well as the Gauteng province (55, 56).

5.1.3 Employment status

A correlation exists between international and national studies, which shows that people presenting with dual diagnoses are more likely to be single and unemployed but have attained at least a secondary level of education (9, 40, 54-58). Similar results were obtained in the current study.

Employment, or the lack thereof, is another factor showing statistical significance in

the current study (p=0,007) (Figure 4.3). As mentioned before, many of the mental health care users ending up at Sterkfontein Hospital are those who are underprivilaged and generally come from poor socioeconomic backgrounds. This is unsurprising, as Stats SA and Fin SA have confirmed the ever-increasing levels of unemployment in South Africa. Rates have reached a 15-year high, with an increase in the unemployment rate of 27,6% (82, 83). These users also find it very difficult to find employment due to their mental illness. Invariably, due to non-adherence to medication and possibly co-morbid substance abuse, these users tend to have numerous admissions to psychiatric facilities. It is thus very difficult, if caught in such a cycle, to sustain any permanent form of employment.

A study by Hudson in 2005, looking at socioeconomic status (SES) and mental illness, showed a positive correlation between low SES, being unemployed, poor support structures, and mental illness (59). This may well be due to the phenomenon of socioeconomic or geographic drift, which suggests that mentally ill users gravitate towards low-income communities because of the disabilities they have. The majority of users (n=54 73%) were unemployed at the time that this study was conducted (Table 4.1), but only n=39 are accounted for in Table 4.4 and Figure 4.3. Only these 39 users are referenced in relation to unemployment, as they present with mood and psychotic disorders, which is the focus of this study.

Of the 39 unemployed participants, 27% (n=20) presented with psychotic disorders. Being employed was more strongly associated with having a mood disorder than a psychotic disorder. The reason for this could be the fact that patients with mood disorders are more likely to have a better prognosis and may tend to be more functional than their psychotic disorder counterparts. In a Canadian study conducted by Heather Stuart, that looked at mental illness and employment discrimination, it was found that employment rates varied between 40-60%, depending on the diagnostic group (60). Unemployment rates were the highest in people with psychotic disorders such as schizophrenia (80-90%), when compared to people with mood disorders like major depressive disorder (40-60%) and anxiety disorders (20-35%).

An Australian study examined the impact of psychotic illness on various aspects of the lives of people who are so diagnosed (61). It focused on people living with psychotic

illness, as the name implies, and did not look at any other category of mental illness, e.g., mood or anxiety disorders. The study found that the employment rate for the general population was 72,4%, but only 21,5% for people with a psychotic illness. Most of this latter groups' main source of income was a government pension. Whilst the Australian study focuses mostly on how substance use influences employment rates in the general population, there is a dearth of studies highlighting the effect that substances have on a dual diagnosis population and the employment differences between mood and psychotic disorders, such as looked at in the current study. However, in spite of not looking at a dual diagnosis population, both the Canadian and Australian studies would still be applicable in the dual diagnosis setting, as one would expect a replication of those trends in the current study.

5.1.4 Support structure and criminal history

While not being statistically significant in the current study (p=0,185), 56,8% of responders answered "yes" to having a previous criminal history (Table 4.1, Table 4.4). Unstable support systems correlate with and may be a contributing factor to problematic behaviours like substance abuse and criminal behaviour (9,58), a finding echoed in the current study. There seemed to be support structures available for only some of the users (27% for users presenting with mood disorders, and 22,9% for users presenting with psychotic disorders) (Table 4.4). These support structures may, or may not, be of a good quality. However, this was not explored in the current study and could be a possible topic for future research.

5.1.5 Marital status

Marital status was statistically significant (p=0,052) when compared to the type of disorder studied. In the current study, both the single participants (41,7%) and the married participants (66,7%) presented with a higher incidence of mood disorders. This could merely be a reflection that, overall, more subjects presented with mood disorders rather than psychotic disorders. However, in relation to Figure 4.4, it appears that those presenting with a mood disorder were more likely to be married.

It is possible that married individuals have a better support structure and are better

socialised. The study by Wu *et al*, whilst not looking at a dual diagnosis population, looked at the impact of marital status on the duration of treatment for mental illness (62). They found that married individuals not only presented with a lower incidence of psychological and psychotic disorders, but also have more optimistic attitudes in comparison to their single/never married/previously married counterparts.

This study revealed that the highest proportion of participants were married (42,6%) and the highest incidence of psychiatric disorders were mood disorders (23%). Studies focusing purely on marital status, substance abuse and specific psychiatric diagnosis were difficult to source. However, the study by Wu *et al* may also be applicable to a dual diagnosis population.

Of further relevance is the European Study of the Epidemiology of Mental Disorders (ESEMeD), that studied the prevalence of mental disorders across six European countries: Belgium, France, Germany, Italy, Netherlands and Spain (63). This study revealed a higher incidence of married participants (68%). 14% presented with any type of mood disorder and of those, specifically, 13% presented with a major depressive disorder. Psychotic disorders were not compared in this study but disorders such as varieties of anxiety disorders (13,6%) or any alcohol disorders (5,2%) were compared. Persons who were previously married and/or never married tended to have a higher incidence of mood disorders (11,8%).

The American Psychiatric Publishing Textbook of Mood Disorders noted a strong relationship between marital status and the risk for mood disorders, in particular, the risk to develop depression (64). Divorced, widowed, separated individuals as well as never-married single individuals were found to have a higher risk of developing mood disorders, in particular depression and bipolar disorder. Both the ESEMeD study and the American Psychiatric Publishing textbook's research were not conducted in dual diagnosis settings. While it may be difficult to find evidence to highlight the relationship between mood and psychotic disorders in a dual diagnosis population among married and single individuals, it is theorised that these studies' findings may be similar in a dual diagnosis setting and would then support the trend seen in the current study's dual diagnosis unit.

According to Saani *et al*,,a higher proportion of married or co-habiting individuals present with mood disorders (55,1%), such as bipolar 1 disorder (61,1%) and major depressive disorder with psychotic features (51,8%) (65). Fewer married individuals presented with primary psychotic disorders: schizophrenia (20,3%), other non-mood psychoses (39,5%), schizoaffective disorder (45,1%), delusional disorder (36,8%) and psychotic disorder not otherwise specified (34,5%). Again, a dual diagnosis population did not shape this study's findings. However, these findings should be applicable to dual diagnosis users as well.

In the current study, the majority of users were not married (91%, n=67). Comparatively, in a study conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA) in 2005, looking at marital status and substance abuse treatment admissions, 80% of their sample population studied were not married: 52% having never been married, while 28% were formerly married (separated, divorced or widowed) (66). Those who were never married, were more likely to have used substances on a daily basis, especially their primary substance of abuse. In contrast, married individuals were found to have fewer substance abuse problems. They had lower rates of substance abuse or dependence and also better positive predictors, e.g., entering rehabilitation programmes, spending more hours in treatment, and actually staying in the treatment programmes.

Unmarried individuals were found to have higher rates of relapse back into substance abuse. This study found that 44% of those currently married were abusing alcohol as their primary substance of abuse, while 11% of those never being married used cannabis. The SAMHSA study's findings differ significantly from the current study where an overwhelming percentage of the users are both single (91%) and tend to abuse cannabis (92%) and alcohol (83%), predominantly in combination. Another difference in the studies is that the current study population contains a group specifically selected to be substance abusers also suffering from severe mental illness.

5.1.6 Previous admissions

Previous admissions to Sterkfontein Hospital showed statistical significance in relation to the type of disorder studied (p=0,012). The majority of participants who have had previous admissions to Sterkfontein Hospital presented with mood disorders (52,9% n=18). In the group who had not been admitted before, there was an almost equal distribution between mood disorders (34,3% n=12) and psychotic disorders (37,1% n=13) (Figure 4.5).

Addiction relapse is common post discharge. Even the best rehabilitation programmes cannot prevent relapse. Relapse may form part of an addict's ongoing reality. The environment from which the user hails is also important. Often, the patient population treated at Sterkfontein Hospital comes from very poor, deprived, drug-riddled communities. Due to a lack of available resources, e.g., placement facilities, users are forced to re-enter these very same communities once discharged. The re-exposure to triggers and stressors, especially in a vulnerable psychiatric population that may already have poor coping skills, makes relapsing common, resulting in repeated admissions. Environmental exposure to substances, poor family and social support, and easy accessibility to substances, all contribute to relapse and increased admission rates at Sterkfontein Hospital.

A study by Okpalaku *et al*, which was conducted at university teaching hospitals in Nigeria (54), found that having a dual diagnosis led to an increased association with multiple psychiatric admissions and non-adherence to medication.

Mee Young Oh Min focused on factors relating to psychiatric hospitalisations and repeated crisis service use by dually-diagnosed persons (57). This study found that people who were so diagnosed were more likely to be hospitalised, made use of crisis services repeatedly, and that for each hospital admission the risk of further repeated hospitalisation increased by 8,2%. The current study showed a similar association, in that there were a high number of users in the unit who have had previous admissions to Sterkfontein Hospital. One user reported 12 previous admissions while another had 11. The chances that this was related to substance use are fairly high, extrapolating from the Oh Min findings. Whether these admissions were predominantly associated

with substance abuse relapse is not known and was not explored in the current study, but may be interesting to establish in future studies.

However, the current study did consider the previous number of admissions related to the type of disorder that users presented with, and showed people with previous admissions or readmissions presented with a higher incidence of mood disorders (52,9%). Those not having been previously admitted, i.e., first admission to Sterkfontein Hospital, presented more with psychotic disorders (37,1%). This is in line with the document posted by the National Association of State Mental Health Program Directors in the USA (NASMHPD) in 2015, looking at the care transition interventions to reduce psychiatric re-hospitalisations (67). It was found that of the 10 most common "Medicaid" readmissions, mood disorders were the most common. This was followed by schizophrenia and other psychotic disorders. "Medicaid" is a jointly funded federal and state health insurance program in the United States, covering medical costs for people with limited income and resources.

The Healthcare Cost and Utilisation Project (H-CUP) differed from the current study in that it found 60,1% of patients for readmission presented with a mood disorder whilst a higher proportion (70,3%) presented with a schizophrenic or psychotic diagnosis on readmission (68). A South Korean study looking at psychiatric inpatients found that there was an inverse relationship of mood and psychotic disorders with readmission rates (69). 10,5% of people with psychotic disorders were readmitted while only 2,1% of users with mood disorders had been readmitted. However, for those with a first time admission, 89,5% had a psychotic disorder while a staggering 97,9% had a mood disorder diagnosis.

The literature review included in this study has varied in terms of my hypothesis, some supporting whilst others refuting my findings on this particular issue. This could possibly be due to differing methodologies and/or admission criteria across various facilities in those particular studies.

5.1.7 Level of education

This study revealed that 65% of the dual diagnosis population (n=48) completed at least a grade 10 level of education (Table 4.1). The level of education attained showed statistical significance when compared to the type of disorder (p=0,039) (Table 4.4). The analysis showed that people with a higher level of education, i.e., grade 10 to tertiary level of education, were more likely to present with mood disorders (48,9%), whilst those with a lower level of education, i.e., grade 0 to grade 9 presented more commonly with a psychotic disorder (38,1%) (Figure 4.2).

The Black population group was the majority of users presenting to Sterkfontein Hospital, and in subsequent referrals to the unit; again, the Black population was in the majority at 69% (Table 4.1). The Coloured and, even more so, the Black communities have been disadvantaged during the apartheid era, as compared to the Indian/Asian communities and more especially the White communities, due to legislative segregation. Equal access to education, employment, resources and services has always been denied or severely lacking in these particular groups. Post-apartheid, education has been made available to all population groups as it is deemed an important tool in the fight against illiteracy and poverty reduction. According to Stats SA, the divide in educational attainment is still very evident, with the Black and Coloured communities still lagging far behind their White and Indian/Asian counterparts (70). Lack of education, or achieving a lower level of education, is more likely to result in a decrease in employment competitiveness and attainment. This is further exacerbated by the fact that developing a mental illness, in particular a psychotic illness may prevent people reaching an adequate level of education. Mood disordered individuals tend to have a better prognosis, and thus appear to fare better in achieving higher levels of education.

The positive association with substance abuse and type of disorder is corroborated in other studies by Sareen *et al* and Patel and Kleinmann (71, 72). Sareen *et al*'s article focuses on the relationship between household income and mental disorders, and shows that low levels or decreasing income serves as a risk factor for developing mental disorders by way of the social causation theory. This theory posits that a reduced capacity to cope in relation to low income increases one's risk of developing

mental disorders such as depression, substance use, and antisocial personality disorder. Thus, lower socioeconomic status is associated with an increased incidence of anxiety, mood and substance use disorders.

The article by Patel and Kleinmann in 2003, which focuses on epidemiological data from countries in Africa, Asia and Latin America, found that there was a poverty-risk relationship (72). This relationship highlights an association between poverty and increased risk for developing mental disorders and substance use. Poverty stemmed from (and is defined as being due to) low socioeconomic status, unemployment and low education levels. In the current study, the level of education was that of at least grade 10 being attained, which is similar to the findings of that in the study by Patel and Kleinmann that found low levels of education contributing to poverty, which then in turn contributed to the development of mental disorders and possible substance abuse.

5.2 Clinical data

Variables showing statistical significance included: the type of substance that was being abused (p=0,011), substance abuse/dependence (p=0,039) and the type of medication used (p=0,02), in terms of the type of disorder diagnosed (Table 4.5).

5.2.1 Type of substance

Cannabis and alcohol were found to be the two substances abused in excess of any other substance (cannabis at 92% and alcohol at 83%) (Table 4.3).

Cannabis grows wild and is simply cultivated, making it easily accessible. It is cheaply sold, making it affordable to even the poorest communities. The recent legalisation of medicinal cannabis use as well as personally-grown and personal use of cannabis by the Western Cape High Court adds to the problem of how easily accessible the drug is (73). Whilst this pertains only to the Western Cape currently, it paves the road to legalisation of cannabis in other provinces of South Africa. The DSM-IV-TR does not recognise a cannabis-induced mood disorder, however, what is commonly seen in the unit is more of a maniform psychosis associated with cannabis use. Maniform psychosis is a type of mania which can be associated with either mood-congruent or

mood-incongruent psychotic symptoms, and which is not necessarily related to schizoaffective or bipolar disorders. It may be caused by substances or organic pathology, resulting in a manic-like picture, and is associated with psychotic features (84).

The sale of alcohol in South Africa is legal to anybody over the age of 18 years. This easy availability of alcohol probably adds to the regular use of alcohol seen in the psychiatric population who present at Sterkfontein Hospital. Furthermore, in South Africa, many home-brewed products as well as illicitly made and sold alcoholic beverages are quite popular. These products often contain low-quality raw materials and may also be contaminated with ingredients that could be damaging when consumed. Due to the lower quality of these products, they get sold at reduced rates and entice the poor and unemployed. These products are not regulated and are even sold to those under the legal drinking age. Younger people under the legal drinking age or people in poorer communities may thus be drawn into consuming these more dangerous, but cheaper products that are not commercially marketed or produced. This could be a contributing factor to the creation of the dual diagnosis population seen at Sterkfontein's integrative unit.

Regarding cannabis use and dual diagnosis, Nocon *et al* found that cannabis dependence was only associated with psychiatric co-morbidity (9). The high frequency of cannabis use in the current study, 92%, is confirmed by other studies (11-15). A definite association with cannabis has been shown; more so with the emergence of psychotic symptomatology, but also to a lesser extent with mood disorders (14, 15). In the current study, it was found that there were more patients presenting overall with mood disorders than with primary psychotic disorders. Whether this association can be related to the high frequency of cannabis use or related to the alcohol use has not been explored, but can be considered for future study.

5.2.2 Substance abuse/dependence

Most users in the Integrative Unit at the time of the study were found to be substance dependent. A smaller group of users were abusing substances. They were diagnosed according to DSM-IV-TR criteria for both mood (28,4% dependent vs. 12,2% abuse) and psychotic disorders (21,6% vs. 8,1%) (74).

Coping with a psychiatric illness, or life stressors, can be difficult. The perception may be that it becomes easier to cope by turning to substances. Living in environments where substances are easily available and affordable contributes to the fact that substances can be used as a coping mechanism, albeit a dysfunctional strategy. With continued use in a social setting, or from use as a coping mechanism, it becomes easier to develop substance dependence.

Nocon *et al* found a high proportion of patients (98%) in an inpatient drug-abuse detoxification unit in Spain to be substance dependent, especially to cannabis and sedatives (9). In conjunction, they found frequent axis I diagnoses of mood disorders, closely followed by psychotic disorders and then personality and anxiety disorders. However, cannabis dependence was only found to be present in users with psychiatric co-morbidity and the authors of this particular study concluded that this association warrants further study.

Research from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) looked at the co-morbidity of alcoholism and psychiatric disorders (75). Their evidence was based on 2 prominent studies done within the United States of America, namely: the National Comorbidity Survey (NCS) that was run between 1990-1991 (76), and the Epidemiological Catchment Area (ECA) study conducted between 1980-1984 (6). These studies found that both mood disorders and psychotic disorders, in particular schizophrenia, were much more prevalent in terms of co-occurrence with alcohol dependence than with alcohol abuse. However, both alcohol abuse and alcohol dependence were linked to an increased likelihood of comorbid mood and psychotic disorders. The NCS did find that people who were surveyed had alcohol dependence, but potentially with multiple causality factors: they were more likely to be divorced, widowed or separated, have a positive family history of mental illness, and were also

more likely to have had recent legal problems. This finding is further corroborated in the study by Nocon *et al* (9), which found that users in their dual diagnosis unit were more likely to be single or separated, unemployed and to have had a history of criminal involvement.

5.2.3 Type of medication

The other clinical variable in the current study that showed statistical significance against the type of disorder was the type of medication used (p=0,02). 75% of participants prescribed an anticonvulsant only presented with a mood disorder, while 47,8% of participants with a mood disorder were prescribed a combination of an antipsychotic medication and an anticonvulsant. 40,9% of users with a mood disorder were on polymedication. 53,8% of the sample with psychotic disorders were given an antipsychotic medication.

Anticonvulsants are often used for their mood-stabilising properties. Due to receptor mechanisms of action, antipsychotic neuroleptics, whilst having antipsychotic properties, also have mood-stabilising properties. The atypical or second-generation antipsychotics in particular, due to 5HT2 receptor mechanisms, have both antidepressant as well as antimanic properties. Other medications used as polypharmacy include medications such as benzodiazepines. Whilst not having mood-stabilising properties per se, benzodiazepines do have a sedating and calming effect, which helps with symptoms of mania and depression. Antipsychotic medications, as named, are used to treat psychotic disorders due to their D2 receptor antagonistic and 5HT2 receptor antagonistic properties (77).

Due to the increased amount of users diagnosed with mood disorders in the wards, who are subsequently referred to the integrative unit, most have already been started on medications before arrival. Many of these medications include both antipsychotics and mood stabilisers. The antipsychotics used are generally the novel or second-generation type, which, apart from their antipsychotic properties, also contain mood stabilising properties. Only a selective range of medications are available for use at Sterkfontein Hospital. Anticonvulsant/mood stabilising medication like sodium valproate and lithium are available for use at the hospital and as such, are often used

for users diagnosed with any mood disorder. Studies have found that using mood-stabilising anticonvulsants, such as Vaproate, in users with a combination of bipolar disorder and substance use disorders, is beneficial both in terms of stabilising the mood symptoms, and in reducing symptoms of substance craving (56, 78).

Zhornitsky *et al's* study focused on the use of antipsychotic treatment in users with dual diagnoses (particularly co-morbid psychosis) (79). In those without psychosis but with other psychiatric diagnoses, and who were diagnosed with substance dependence, it was found that atypical antipsychotics like clozapine were effective in decreasing substance use in individuals with alcohol as well as other drug use disorders (especially for cannabis use disorders). In patients with substance use alone, atypical antipsychotics were not as effective as in the dual diagnosis group. There may be some benefit for alcohol dependence, however, these medications tended to worsen stimulant dependence in particular.

A possible reason for the lack of response and potential worsening of stimulant dependence by the use of antipsychotics could be as a result of the following:

Stimulants and antipsychotic medication have opposing mechanisms of action – stimulants are dopamine agonists, so increase dopamine at D1 receptors specifically. They also have a lesser effect at D2 and the other three dopamine receptors. Antipsychotics, on the other hand, have an opposing mechanism of action, acting as dopamine antagonists. As such, they tend to decrease the amount of dopamine available at the D2 receptor specifically, whilst also having limited effects on the other four dopamine receptors. Both stimulants and antipsychotics affect different pathways in the brain: stimulants affect both the limbic system and the cortex, whilst antipsychotics affect the limbic system specifically. (85)

Research has shown that stimulants and antipsychotics block each other's effects. Further to this point, a study by Kishi *et al* looked at the use of antipsychotics for cocaine and psychostimulant dependence. It was shown that, in fact, antipsychotics not only showed no advantage over placebo, but in regard to cocaine and psychostimlulant use, abstinence and craving; that antipsychotic use caused more intolerability-related discontinuation effects. This could result in patients, who are

addicted to these substances, reverting to using their stimulant of choice, so as to avoid or lessen the unpleasant effects of discontinuation caused by antipsychotics. (85, 86)

5.3 Limitations

The current research was done as a retrospective study. While retrospective studies are quicker, inexpensive and easier to conduct because of the use of pre-existing data, there are inherent limitations to such studies versus prospective studies (80). Incomplete or insufficient data, as well as the reliance on others to record data accurately, pose limitations on this type of study. There were many “unknown” answers in this study’s data and as no formal interviews were being conducted, this information was unobtainable. Accurate diagnoses, and recording thereof, also pose a limitation. An example in my study was that diagnoses were recorded by the treating registrar but may not always have conformed to diagnoses in the DSM or ICD manuals. The reliance thus on the person recording the diagnosis, potentially from a different frame of reference, is another limitation.

As this study was conducted at Sterkfontein Hospital, where a select group of users were referred to under the South African Mental Health Care Act as Involuntary Mental Health Care Users (MHCU) and a further selection of users were admitted to the Integrated Unit from this particular pool of users, this would introduce a selection bias to the study. It is known that retrospective studies are prone to such leanings (80). Based on this limitation, results from the current study may not be directly generalisable to other psychiatric hospitals or even to other dual diagnosis/integrative units.

A further limitation is that this study did not look at all the factors that may have been co-morbid with, contributing to, or associated with substance abuse. Examples of these would be factors such as the quality of support structures to users within the unit; whether previous admissions to Sterkfontein Hospital were related to substance abuse; and whether the findings of a high prevalence of users with mood disorders were associated specifically to cannabis use, or alcohol use, or both.

Chapter 6: Conclusions and recommendations

6.1 Conclusions

Various points in the current study are particularly noteworthy.

The age range of users presenting to the ITU was relatively young to middle-aged (21-40 years). More black males presented to the unit, which again, unsurprisingly, due to a comprehensive explanation in the discussion section above, highlights the gender and race differences occurring in the unit at the time the study was conducted. Most of the users were unemployed, and in the majority of cases, it was not established whether they had a source of income. This is not unexpected in a country such as South Africa, where, ever-increasing levels of unemployment and poverty are on the rise. The highest level of education most users attained in the ITU was at least grade 10, which is not a high level attained, as backed up by studies sourced. This further exacerbates the poverty-risk relationship to developing psychiatric illnesses and comorbid substance use disorders. Due to the inequities originating from an apartheid South Africa and carrying through, despite a relatively new demographic government, we still find ourselves caught in a vicious cycle of poverty in our poorest communities, where low socioeconomic structures, unemployment and low education levels are rife. Hence the demographic found in the ITU, of patients who present to our state facilities.

Most users were single, which meant they were either never married, separated or divorced. Most of these single users did, however, have a support structure. There was a positive family history of mental illness in most participants in the unit as well as most users having a positive family history of substance use. The majority of users also had a positive criminal history and a history of childhood conduct disorder features.

50% (n=37) of users to the unit had never had a previous admission to Sterkfontein Psychiatric Hospital while 3 users had 9 previous admissions.

The main substances of abuse by users in the unit were cannabis predominantly, closely followed by alcohol. Both of these substances were used in a dependant fashion rather than just abused. The main reasons given for the substance use was as a coping mechanism and the users enjoying the effects of said substances. The

predominant diagnosis which emerged was mood disorders while the medications most used in the unit were a combination of an anti-psychotic and anti-convulsant. It is known that both anti-psychotics and anti-convulsants have mood-stabilising properties

6.2 Recommendations

Integrated programmes address disorders simultaneously, with the same team of clinicians ensuring that each user receives a consistent explanation of illness and a logical prescription of treatment. It is suggested that as part of being in the integrated programme, dually diagnosed individuals could be taught skills such as relapse prevention training; psychosocial interventions, like social skills training that are aimed at helping users to establish relationships with non-abusing peers; and also to receive, along with family members if possible, behavioural or psycho-educational family therapy (81).

Most of the users in the unit were single. Psychiatrically ill individuals may already be very socially isolated and may well lack the social supports and the stimuli to abstain from substances as would be provided under normal circumstances by a spouse, children, friends or being employed. Support structures for such users are vital. Fortunately, the majority of users in the unit do have some sort of support structure available to them. More should be done to get families involved and psycho-educated about the difficulties and ongoing support that is necessary for users to continue being abstinent once discharged from the unit.

The results of this study also highlight the fact that a higher percentage of younger people with mood disorders present with dual diagnoses. It is helpful to know what types of substances are mainly being abused, and also what types of medications are helpful in this regard. As more users present with mood disorders than psychotic disorders, albeit in this particular unit, the use of medication that can alleviate both the psychiatric symptomatology as well as control cravings and the subsequent further use of substances, based on the primary substance of abuse, can be tailored to the individual and motivated for.

As for substance-abusing individuals, there are social, economic, health and psychiatric consequences. This is compounded by the reality of an additional co-morbid psychiatric diagnosis. The combination of diagnoses adds to the burden of risk of relapse for either the psychiatric illness or the substance abuse, with subsequent hospital readmissions and further financial implications to the state. There may be a compromise of efficacy of neuroleptics, as well as increases in risk of non-adherence to medication, if these aspects are not addressed as part of the programme. Medication must thus be optimised, and extensive psychoeducation to both the user and his/her family regarding the value of compliance must be stressed. This could be addressed and re-inforced by all members of the MDT working in the unit. Only in this way can facilitation back into the community, with ongoing support from both family and out-patient substance-support groups, be established.

Finally, the hypothesis in the current study was, for various reasons, not proven:

- Rather than a younger age group (15-20) who abuse cannabis presenting to the unit, more of a middle-aged group of participants (21-40) presented to the Dual Diagnosis Unit. This could be due to the admission selection criteria of Sterkfontein Hospital who only accept adults 18 years and older to the facility. A further selection bias, due to admission criteria of the Integrative Treatment Unit itself, could also be contributing to an older population being admitted to the unit. All users are admitted to Sterkfontein Hospital as involuntary mental health care users and thus have no choice in their admission status or their length of stay. Younger users may not be as keen to complete a further 8 weeks in the unit once they have been psychiatrically stabilised. This stabilisation could take anything from weeks to months within the acute lock-up wards. Thus, a further stay in the unit may not be as appealing to younger participants.
- 50% of the study population had not had a previous admission. This does not necessarily mean that this is an index admission to psychiatry or that this is a first admission to a psychiatric facility or even a substance rehabilitation ward. It could mean that this is their first admission to Sterkfontein Psychiatric Hospital. It could also be that this data had not been recorded or captured as it is a retrospective study and users may very well have been admitted to this

particular facility before. Information is known to be lost with retrospective studies. The question of readmission has not been explored in the current study and may be a question for future study.

- Cannabis was the predominant substance of abuse in this particular unit (92%) albeit in combination with alcohol abuse (83,8%). As stated in the hypothesis, it was expected that cannabis would be abused more in the psychosis group rather than in the mood disorders group, but this could not be shown. This finding is in line with numerous other research conducted both nationally as well as internationally, as discussed in chapters above. Cannabis is easily sourced and quite affordable. Due to its ready accessibility, many young people tend to use the substance in a social setting. It may help to alleviate social anxiety, combat boredom or assist in a difficult situation where instant gratification and self-medication are needed to escape the difficulties that a person may be experiencing at that particular time.
- It was also hypothesised that psychotic disorders would more likely occur in a younger aged population within the unit. However, what has emerged is that there was a higher preponderance of people with mood disorders presenting to this particular Integrative Treatment Unit. Studies, such as those conducted by Quello *et al* as well as big dual diagnosis studies like the Epidemiological Catchment Area (ECA) Survey and National Comorbidity Survey (NCS) highlight the fact that mood disorders are the most common psychiatric illnesses co-occurring in people with substance use disorders (53, 6, 7). A recurring theme in the literature with regards to possible reasons between the link of mood disorders and substance use disorders are self-medication, the overlap of shared genetic vulnerability and neurobiological pathways as well as the very similar symptomology displayed by both the actual mood disorder and the intoxicated and withdrawal states from the substance being abused (53).
- It is hoped that results from this study will highlight some key findings regarding comorbidity of psychiatric illnesses and substance use disorders within our South African context. This should open the way for further communication and collaboration between mental health providers and substance abuse practitioners in improving outcomes for vulnerable users with these complex and often difficult to diagnose and treat dual diagnoses.

Appendix A: Data collection sheet

DEMOGRAPHIC DATA

Sample number ☐

Age
15-20 ☐
21-40 ☐
41-60 ☐
>60 ☐

Gender
Male ☐
Female ☐

Race (for statistical purposes only)
Black ☐
White ☐
Coloured ☐
Indian/Asian ☐

Highest level of education attained
None ☐
Grade1-5 ☐
Grade 6-9 ☐
Grade 10-12 ☐
Tertiary ☐
Unknown ☐

Employment status
Yes ☐
No ☐
Unknown ☐

If not employed, then source of income
None ☐
State grant ☐
Family support ☐
Unknown ☐

Marital status
Single
Married/Cohabiting
Divorced/Separated/Widowed
Unknown

If living alone, support structure available
Yes
No
Unknown

Previous psychiatric admissions
Yes
No
If yes - state how many

Family history of psychiatric illness
Yes
No
Unknown

Family history of substance abuse
Yes
No
Unknown

Criminal history (ever arrested/convicted/spent time in jail)
Yes
No
Unknown

Any conduct disorder symptoms present? (Stealing, setting fires, cruelty to humans, animals, etc.)
Yes
No
Unknown

CLINICAL DATA

Type of substance abused
Cannabis/Marijuana
Alcohol
Cocaine/Rock
Heroin
Methaquilone (Mandrax)
Other: (specify substance abused)
Current psychiatric diagnosis
Mood disorders:

- Depression
- Bipolar mood disorder
- Other (please specify)

Psychotic Disorders:

- Schizophrenia
- Other (please specify)

Other: State the disorder

Current treatment

Age at onset of psychiatric illness

Age at onset of Substance Abuse

Previously entered a rehab programme?
Yes
No
Unknown

If yes, type of programme
Inpatient
Outpatient

Duration of programme



Appendix B: University of the Witwatersrand Research Ethics Committee Approval

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Fiona Maynard

CLEARANCE CERTIFICATE	**M090473**
PROJECT	An audit of Integrated Treatment at Sterkfontein Hospital
INVESTIGATORS	Dr Fiona Maynard.
DEPARTMENT	Division of Psychiatry
DATE CONSIDERED	09.04.29
DECISION OF THE COMMITTEE*	Approved unconditionally

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

DATE 09.05.29 **CHAIRPERSON** .....
(Professor P E 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...

Appendix C: Sterkfontein Psychiatric Hospital Research Committee approval

health and social development
Department: Health and Social Development
GAUTENG PROVINCE

STERKFONTEIN HOSPITAL
CLINICAL DEPARTMENT
Enquiries: *Prof. Subramaney*
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Dr. U. Subramaney
Act. Chief Executive Officer
Sterkfontein Hospital
KRUGERSDORP

Dear Mrs. Makutulela

STUDY : AN AUDIT OF THE INTEGRATED TREATMENT UNIT AT STERKFONTEIN HOSITAL
RESEARCHER: DR. F. MAYNARD

The above study was discussed at the Research Committee meeting. We recommend that permission be granted that Sterkfontein Hospital be used as a site for the above research.

Upon completion of the study, a copy thereof should be submitted to Sterkfontein Hospital

Thank you.

.....
DR. D. HOFFMAN
ACT. CHAIRPERSON: RESEARCH COMMITTEE
03/04/2009

Approved.

.....
PROF. U. SUBRAMANEY
ACT. CHIEF EXECUTIVE OFFICER

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Appendix D: Plagiarism declaration

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FACULTY OF HEALTH SCIENCES

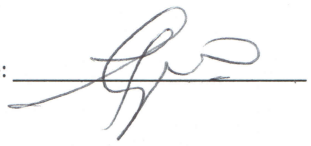
PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I FIONA MAYNARD (Student number: 9501135T) am a student registered for the degree of MASTER OF MEDICINE (PSYCHIATRY) in the academic year 2018.

I hereby declare the following:

- I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.
- I have included as an appendix a report from "Turnitin" (or other approved plagiarism detection) software indicating the level of plagiarism in my research document.

Signature:  Date: 31 JANUARY 2018

1

Appendix E: Turnitin report

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7	Textbook of Addiction Treatment International Perspectives, 2015. Publication	<1%
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9	Submitted to University of Witwatersrand	

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