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Substance Use in Patients Presenting with Mental Illness at Chris Hani Baragwanath Academic Hospital Emergency Psychiatric Unit – A Descriptive Study

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SUBSTANCE USE IN PATIENTS PRESENTING WITH MENTAL ILLNESS AT CHRIS HANI BARAGWANATH ACADEMIC HOSPITAL EMERGENCY PSYCHIATRIC UNIT- A DESCRIPTIVE STUDY

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, in partial fulfilment for the degree of Master of Medicine in the division of Psychiatry

Johannesburg 2024



DECLARATION

I, Ntombizakithi Zamokuhle Mayisela, do herby declare that this research is my own unaided work. It is being submitted for the degree of Master of Medicine in the division Psychiatry, University of the Witwatersrand, Johannesburg. This research is submitted in the submissible format as recognised by the Faculty of Health Sciences. I further declare that this work has not been submitted for any other examination or degree at this or any other University.



……

Date: 29/10/2024

DEDICATION

To my mother and sisters, Khetho and Phumula, for your unwavering support and encouragement.

To my husband, Atang for believing in me at all times.

ETHICAL CONSIDERATIONS

Approval of this study was granted by the University of the Witwatersrand Postgraduate Assessor Committee. Full ethical clearance was obtained from the University of the Witwatersrand Human Research Ethics Committee (clearance number M210615). Institutional approval was granted by the Chief Executive officer of CHBAH.

ABSTRACT

Background: Substance use is known to be increased among psychiatric patients. It impacts the clinical and social outcomes of patients. Substance use is also a contributing factor to psychiatric admissions and presentations to emergency units.

Aims: To describe the substance use pattern and demographic profile of patients presenting to Chris Hani Baragwanath Academic Hospital (CHBAH) psychiatric emergency unit.

Setting*:* The study was conducted in the psychiatry emergency department at CHBAH, a tertiary hospital in Johannesburg, South Africa.

Methods: The study is a cross-sectional descriptive study. Data regarding substance use and demographic profile of the patients was collected using a structured data sheet. Statistical analysis was conducted to compare the substance use and non-substance use groups.

Results: Data was collected from all adult patients presenting to the CHBAH emergency psychiatry department over the 3-month period of 1 October 2019 to 31 December 2019. Data was collected from 210 patients of which males represented the majority (84%). 154 (73%) patients had a history of substance use. Cannabis was the most used (66%) substance. Patients in both groups were mostly unemployed and there was no significant difference in the employment rate between the two groups. Non-adherence was significantly greater in non-substance users. Violence was the leading presenting complaint in both groups however a significantly greater proportion of substance use patients were admitted because of violence.

Conclusion: Substance use is highly prevalent in this study population. It is likely a contributing factor to presentation to a psychiatric emergency unit. Preventative measures and specialised treatment for dual diagnosis is important to ease the burden on psychiatric services and to produce better outcomes

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NOMENCLATURE

CHBAH	Chris Hani Baragwanath Academic Hospital
DSM 5	Diagnostic and Statistical Manual of Mental Disorders 5
SACENDU	South African Community Epidemiology Network on Drug Use
SASH	South African Stress and Health
SIPD	Substance Induced Psychotic Disorder
NMHPF	National Mental Health Policy Framework and Strategic Plan

SUBSTANCE USE IN PATIENTS PRESENTING WITH MENTAL ILLNESS AT CHRIS HANI BARAGWANATH ACADEMIC HOSPITAL EMERGENCY PSYCHIATRIC UNIT- A DESCRIPTIVE STUDY

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Introduction

Substance use is increasing globally. The world drug report estimates that in 2020, 5.6% of the global population aged 15 to 64 years had used substances in the last 12 months, compared to 5.5% in 2019. The report also estimated that in 2019, 17% of the population that had used substances in the last year had a substance use disorder.[1] A South African nationally representative study, the South African Stress and Health (SASH) study, showed that the lifetime prevalence of substance use disorders in South Africa is 13.3%.[2]

The World Drug Report states that the most used illicit substance in the world is cannabis and that use has been showing an increasing trend from 2010 to 2020.[1] The South African Community Epidemiological Network on Drug Use (SACENDU) report of 2019 showed similar results in South Africa, reporting that cannabis was the most used illicit substance used by individuals in drug treatment centres across South Africa and continues to be the most used illicit substance in their most recent report published in December 2022.[3]

Substance use is particularly a concern for individuals with psychiatric illness as studies have shown that there is a higher prevalence of substance use in individuals who have a psychiatric illness.[4-8] Prevalence rates vary among studies done in different geographical populations. A large American epidemiological study found that lifetime prevalence of any substance use disorder in their general population is 6.1% and is as high as 29% in individuals with mental illness.[9] In two South African studies, one conducted in the Western Cape Province and the other in Gauteng Province, the prevalence of a substance use disorder in in-patient psychiatric patients was found to be 51% and 67%, respectively.[6,8] A study done in Norway revealed that substance use in psychiatric in-patients was 32.4% and 13.9% in outpatients.[10]

The relationship between mental illness and the increased incidence of substance use is complex and bidirectional. Substance use may give rise to mental illness and it may exacerbate already existing mental illness.[11] Research has shown that individuals with mental illness are predisposed to use substances for a variety of reasons including genetic predisposition, self-medicating to alleviate symptoms, impulsivity and impaired

judgement.[12,13] Studies have shown increased substance use across a range of psychiatric disorders. In a Danish nation-wide study, Toftdahl et al found that substance use is prevalent among a range of psychiatric disorders. Personality disorders had the highest substance use lifetime prevalence at 47%, followed by schizophrenia, bipolar disorders, psychotic disorders other than schizophrenia, depression, anxiety, post-traumatic stress disorder and obsessive compulsive disorder with lifetime prevalence of 37%,32%, 28%, 25%, 17% and 11% respectively.[7] In their Norwegian study, Andersson et al found substance use to be highest among patients with schizophrenia, personality disorders and anxiety disorders in their in-patient sample.[10]

The co-occurrence of substance use in individuals with mental illness has shown to be associated with poorer clinical outcomes. These include treatment non-adherence, increased rate of readmissions and longer hospital admissions, increased aggression and violent behaviour and increased rates of suicide.[14-19] Dual diagnosis has also been shown to have poor social outcomes such as unemployment, homelessness and increased levels of incarceration.[20,21] Studies have also shown increased use of emergency psychiatric services in dual diagnosis.[22]

The demographic profile of dual diagnosis patients tends to show that male patients are overrepresented in this group and that dual diagnosis patients tend to be younger in age and have a lower socioeconomic background compared to patients that do not use substances.[6,10,18,23,24] Unemployment rates among individuals with mental illness are increased. Some American studies have reported unemployment rates of up to 95% in patients with mental illness.[25,26] There are also high rates of substance use in unemployed individuals and this may potentially increase the risk of psychiatric disorders in these individuals.[27] Knowledge of the demographic profile of dual diagnosis patients is important to assist with identifying risk factors and can help guide the implementation of preventative measures that are targeted towards vulnerable populations allowing resources to be allocated appropriately.

The prevalence of substance use is high in individuals with mental illness, however treatment facilities are few. The world drug report also highlights this as a concern.[1] Studies have shown that there are better treatment outcomes for psychiatric

symptomology when patients are treated in a specialised dual diagnosis setting.[15,16,28] This emphasizes the need for specialized and integrated care for this group of patients. In Johannesburg, only two specialised dual diagnosis state sector clinics exist for this population.

There is a paucity of literature regarding substance abuse among psychiatric patients in the South African context and Gauteng specifically. Little is known about the demographics of these patients and their pattern of substance use and impact on the health care system. This study aims to describe the patterns of substance use and demographic profiles of adult patients presenting to Chris Hani Baragwanath Academic Hospital (CHBAH). It aims to highlight the burden of substance use among psychiatric patients presenting to an emergency department and may aid in future planning for appropriate care of this group of patients at perhaps a different level of care. The National Mental Health Policy Framework and Strategic Plan (NMHPF) for 2023 to 2030 acknowledges the need for an integrated approach to address mental health and substance use as there is an overlap between the two. The Department of Social Welfare is mandated to address preventative measures and rehabilitation and the Department of Health has committed to addressing dual diagnosis.[29]

Aims and objectives

The study aims to document the prevalence of substance use of adult patients presenting to CHBAH emergency psychiatric unit and to document the types of substances used. Additionally, the sociodemographic profile of all adult patients presenting to the emergency psychiatric unit including gender, age, employment, and education level will be determined and differences between patients that use substances and patients that do not, identified. Lastly, the presenting symptoms requiring admission to the emergency psychiatric unit will be described and a history of prior negative clinical outcomes such as history of readmissions and history of non-adherence of patients that have a previous psychiatric history noted.

Research Methods and Design

Study Design

The study is a retrospective record review of all adult patients admitted to the emergency psychiatry unit at CHBAH.

Study Setting

This study was conducted at CHBAH which is the largest hospital in South Africa. It is a tertiary academic hospital affiliated with the University of the Witwatersrand. It is situated in Soweto, Johannesburg and has a large catchment area servicing southern Gauteng. The hospital has 155 adult inpatient psychiatric beds and at the time of the study, an additional 8 beds in the psychiatry short stay ward in the emergency psychiatry department.

Study Population

Participants included in the study were all patients who were 18 years of age and older who were admitted to the psychiatry emergency department at CHBAH during the three-month period between 01 October 2019 to 31 December 2019. Thirteen patients were excluded due to incomplete data. The patients admitted in the psychiatry emergency department were patients referred from other emergency departments within the hospital or as referrals from other inpatient or outpatient departments at CHBAH. A sample of 210 patients were included in the study.

Data Collection

Data was collected using a structured data collection sheet. Data was collected from the patients' hospital records anonymously. No identifying data was recorded. Data collected regarding the clinical profile and substance use history of all referred patients included demographic information (gender, age, level of education, employment status) and psychiatric history (provisional clinical diagnosis, number of previous admissions, history of non-adherence, presenting symptoms requiring admission and current and past substance use). The data regarding current substance use at time of admission was made either by self-reporting, collateral history, clinical features of

substance use or multi-drug urine analysis tests. The provisional clinical diagnosis was made according to the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, (DSM 5)*, criteria. In all patients, the provisional clinical diagnosis was made by either a psychiatrist or a psychiatric registrar or medical officer under the supervision of a psychiatrist. The data was collected from clinical notes made by the admitting psychiatrist, psychiatric registrar or medical officer.

Statistical Analysis

Statistical analyses were conducted in R software (version 4.00; www.R-project.org). The data set comprised of categorical data that were analysed using Pearson's chi-squared contingency table tests for 2 x n data and Fisher's exact tests for 2 x 2 tests to detect specific differences for statistically significant contingency table analyses. Tests were two-tailed and model significance was set at 0.05. Data are reported as counts and percentages and presented descriptively in tables, text or in a chart.

Ethical Considerations

This study was a retrospective review of patient records and data was collected anonymously. Patients did not actively partake in the data collection. All patient identifying data was removed during the data collection process. Approval of this study was granted by the University of the Witwatersrand Postgraduate Assessor Committee. Full ethical clearance was obtained from the University of the Witwatersrand Human Research Ethics Committee (clearance number M210615). Institutional approval was granted by the Chief Executive officer of CHBAH.

Results

Data for this study was obtained from 210 patients. Of these, 154 (73.3%) patients had a history of substance use and 56 (27.7%) patients had no history of substance use. There were significantly more patients that were substance users in the study population ($p<0.001$).

Male patients represented the majority (84.3%) of the study population. In the substance use group, a significantly greater proportion of patients were male (n=146, 94.8%), compared to the non-substance use group where there was a similar proportion of males and females, 31(55.4%) and 25 (44.6%) respectively (Table 1).

The majority of patients in both groups fell into the 26–40-year-old category, but in the substance use group, a significantly larger proportion was younger (18-25 years old) compared to non-substance users for this age group, and significantly more patients were greater than 40 years old in the non-substance group compared to the proportion in the substance use group (Table 1).

The differences in the level of education between the two groups were not statistically significant ($p = 0.324$). However, notable trends were observed: a higher proportion of non-substance users had completed only primary education, while a greater proportion of substance users had attained tertiary education (Table 1). Similarly, there was no statistically significant difference in employment rates between the groups ($p = 0.755$). Both the substance use and non-substance use groups exhibited high unemployment rates, at 93.5% and 91.1%, respectively (Table 1)

Table 1: Socio-demographic characteristics of patients with or without substance use presenting to CHBAH- significant outcomes are shown in bold

Variable	Substance use group n (%)	Non- substance use group n (%)	p-value
Gender			**p < 0.001**
Male	146 (94.8)	31 (55.4)	
Female	8 (5.2)	25 (44.6)	
Age			**p = 0.002**
18-25 years	55 (35.7)	7 (12.5)	
26-40 years	64 (41.6)	26 (46.4)	
> 40 years	35 (22.7)	23 (41.1)	
Highest level of education			p = 0.324
Primary	15 (9.7)	9 (16.1)	
Secondary	129 (83.8)	45 (80.3)	
Tertiary	9 (5.8)	1 (1.8)	
Unknown	1 (0.7)	1 (1.8)	
Employment status			p = 0.755
Employed	7 (4.5)	4 (7.1)	
Unemployed	144 (93.5)	51 (91.1)	
Unknown	3 (2.0)	1 (1.8)	

In both the substance and non-substance use groups, most patients had 2 or more previous psychiatric admissions (Table 2). However, substance users had a significantly greater proportion of no past psychiatric admissions, whereas a significantly greater proportion of non-substance users had 5 or more past psychiatric admissions (Table 2).

There was a significant difference in proportion of substance users and non-substance users for treatment non-adherence (Table 2): 44.2% of patients in the substance group had a history of non-adherence and 55.3% of patients in the non-substance group had

a history of non-adherence (p=0.001). There was also a greater proportion of substance users that were index presentations compared to the non-substance use group.

Regarding psychiatric diagnoses, the largest proportion of the substance use group had a diagnosis of substance induced psychotic disorder (44.2%). In the non-substance use group, the greatest proportion had a psychotic disorder (53.5%). (Table 2). With regards to patients that were referred for psychiatric management that did not have a primary psychiatric disorder, 14 (60.9%) substance use patients presented with acute intoxication and 9 (39.1%) were disorders due to another medical condition compared to the non-substance use group, where all (n=3; 100%) non-psychiatric diagnoses were due to another medical condition.

For the presenting symptoms of the current admission, a significantly greater proportion of substance use patients were admitted because of violence compared to the non-substance use group (70.1%, compared to 50%, p=0.036). However, violence was the leading presenting complaint in both groups (Table 2).

Table 2: Clinical characteristics of patients with or without substance use at CHBAH hospital-all significant			
Variables	**Substance use group n (%)**	**Non- substance use group n (%)**	**p-value**
Past Psychiatric History (number of previous admissions)			**p = 0.004**
0	52 (33.8)	9 (16.1)	
1	6 (3.9)	4 (7.1)	
2-4	67 (43.5)	27 (46.4)	
5+	24 (15.6)	15 (26.8)	
Unknown	5 (3.2)	1 (1.8)	
History of non-adherence			**p = 0.001**
Yes	68 (44.2)	31 (55.3)	
No	19 (12.3)	16 (28.6)	
Index	49 (31.8)	7 (12.5)	
Unknown	18 (11.7)	2 (3.6)	
Psychiatric Diagnosis:			**p < 0.001**
Psychotic	28 (18.2)	30 (53.5)	
Mood	24 (15.6)	19 (33.9)	
Anxiety	0 (0)	0 (0)	
Personality	7 (4.5)	1 (1.8)	
Other	4 (2.6)	3 (5.4)	
SIPD	68 (44.2)	0 (0)	
None	23 (14.9)	3 (5.4)	
Presenting Symptoms of Current Admission			**p =0.036**
Violence	108 (70.1)	28 (50.0)	
Psychosis	34 (22.1)	17 (30.3)	
Mood	8 (5.2)	9 (16.1)	
Suicidal	1 (0.6)	1 (1.8)	

The types of substances used are summarised in Table 3. Cannabis was found to be the most used (66.0%) substance in the study population, followed by stimulants, alcohol opioids, inhalants or hypnotics and then cocaine. No benzodiazepine use was recorded.

Table 3: Count (percentage) of substances used by patients at CHBAH	
Substance	**n (%)***
Cannabis	136 (66.0)
Alcohol	25 (12.1)
Stimulants	29 (14.1)
Opioid	9 (4.4)
Benzodiazepines	0 (0)
Cocaine	3 (1.5)
Other (inhalant, hypnotic)	4 (1.9)

*Some patients use more than one substance

There was no significant difference between the proportion of patients using substances and those that did not use substances that were referred to a social worker ($p = 0.284$). In both groups, the majority of patients were not referred to a social worker in the emergency department (Figure 1).

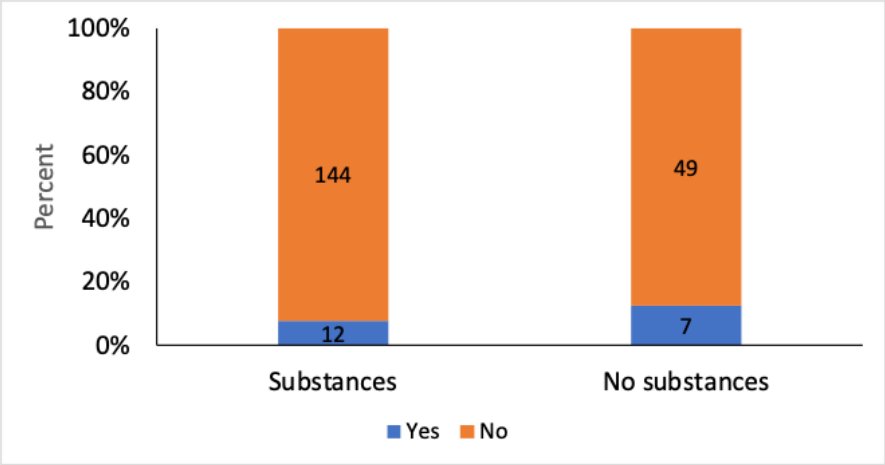


Figure 1: The percentage of patients at CHBAH with and without substance use that were referred to social worker. Values within bars are counts.

Discussion

The aim of this study was to describe the substance use pattern, the socio-demographic profile and clinical characteristics of patients presenting to the emergency psychiatric department in a Johannesburg tertiary hospital, CHBAH. To the authors' knowledge there is one other study by Anic et al conducted in Southern Gauteng focused on describing the substance use pattern and clinical profile of patients presenting to a Gauteng Hospital.[8]

The results of this study are in keeping with other local and international studies that have found a high incidence of substance use in psychiatric patients. This study found that 73% of the study population had a substance use history. Similarly, Anic et al found that the study participants had a high incidence of substance use, with 67% of participants having a substance use disorder.[8] Another study, 13 years prior, describing the clinical profile of patients admitted to Helen Joseph Hospital found that 40% of study participants were active substance users.[30] The findings may indicate a rising trend in substance use in psychiatric patients presenting to hospitals in Johannesburg.

The most used substance in the study was found to be cannabis, with 66% of the patients using cannabis. This is in keeping with the World Drug Report of 2022 that showed cannabis is the most used illicit substance in South Africa.[1] Substance

categories were not mutually exclusive, and patients may have used more than one substance but cannabis was used by most patients in the substance use group. The high usage of cannabis could be a result of its availability and affordability. It is readily available and is a more affordable substance compared to other substances used in South Africa.[31] In 2018 the South African Constitutional Court decriminalised the household use of cannabis.[32] It is expected that this could potentially increase the use of cannabis among people already using cannabis and also increase use among new users. This potential increase has been suggested to be caused by increased acceptance of use of cannabis and greater availability of cannabis.[31,33,34] This could be a contributing factor to the rising number of patients presenting with a history of substance use in psychiatric hospitals.

The demographic profile of patients in this study shows that a larger proportion of substance users were young, unemployed males who presented with a history of violence. Notably, 70% of the substance use group presented with a history of violence, compared to 50% in the non-substance use group. This increase in violent behaviour seen in psychiatric patients who use substances has been seen in other studies as well. In a large American study, the Epidemiological Catchment Area study, the lifetime prevalence of violence in their non-psychiatric participants was 7.3%, compared to the population with schizophrenia or other major mood disorders which had a rate of 16.1%. In participants who had a substance-use disorder only, the lifetime prevalence of violence rose to 35%, and participants with a substance-use disorder and comorbid psychiatric illness, the lifetime prevalence of violence was 43.6%.[9]. In a European meta-analysis, rates of violence were found to be similar in populations with psychotic disorders and a comorbid substance use disorder compared to populations with only substance use.[35] The findings in these two studies suggest that substance use increases violence in populations with or without mental illness. However, the combination of psychiatric illness and substance use may increase the risk of violence. This study is based exclusively on psychiatric patients therefore an increase in violence as a result of substances in the general population cannot be commented on. However, the findings of this study do suggest that substances may be a contributing factor to increased violence in psychiatric patients as there was a higher incidence of violence among the substance use group. It should also be considered that violent

behaviour is often the symptom that prompts the admission of a patient as other features of relapse are more tolerable in the community.

The presence of aggressive behaviour in patients in a hospital setting has been found to result in more costly psychiatric admissions. Studies have shown that violent behaviour on admission has been associated with longer hospital admissions, higher number of re-admissions and that higher doses of medications are used for containment.[36] Due to the high incidence of violence in this study population, the emergency department at CHBAH needs to be well equipped to manage such patients. Evidence based management of an aggressive patient requires that a facility managing these patients would require a setting where there is sufficient security personnel, staff trained to manage aggressive patients and the appropriate medication required to manage the aggressive patient.[37] This likely translates into higher costs required to equip the emergency department in an already resource limited health care system in South Africa.

"The high unemployment rates of 93.5% in the substance use group and 91.1% in the non-substance use group are concerning. This study found no significant difference in employment rates between the two groups (Table 1). Previous research has reported that 90–95% of patients with severe mental illness are unemployed, consistent with the findings of this study. This underscores the need for enhanced occupational support for mental health care users, regardless of substance use. This support could be in the form of opportunities for learnerships and sheltered employment as well as the need for disability grants for those that are unable to work at all. Bush et al found that employment for patients with mental illness reduced costs to psychiatric services.[26] They suggested that this is because employment contributes to recovery in mental health and therefore less psychiatric care is needed. The lack of a significant difference in the employment rates between the two groups could be that unemployment rates are high in the psychiatric population in general.

There was no significant difference in the education levels between the two groups (p=0.324). This is surprising as substance use has been shown to have a negative effect on an individual's level of education and the expectation would be that substance users would be less educated.[34,40] The low level of education in psychiatric

patients may be explained by the typical onset of major psychiatric disorders (such as schizophrenia) being in late adolescence that will affect the education level of psychiatric patients with or without substance use.

Interestingly, the non-substance use group had a significantly higher proportion of patients who had a history of non-adherence compared to the substance use group ($p=0.001$). This is surprising as substance use in psychiatric patients has been shown to produce poorer outcomes for patients such as non-adherence and relapses.[4] This finding could be accounted for by the fact that patients who are non-substance users have primary psychiatric disorders with a more chronic history whereas a large proportion of the substance use group are presenting to psychiatry for the first time. However, a majority of patients in both groups had a history of non-adherence and this highlights that non-adherence is a concern that needs to be addressed in both groups.

This study found that only 19 of the 210 patients presenting to the emergency psychiatric unit were referred to social services in the emergency unit. Only 7.7% of the patients in the substance use group were referred to social services in the emergency unit. This was a missed opportunity to involve social workers for possible referral to rehabilitation programs, especially for the patients who were solely admitted for substance intoxication. It is also possible that the low number of referrals to social services in the emergency department may be deemed inappropriate in the acute setting as patients are still likely too unwell to engage with a social worker. Also, this research took place in an emergency department setting which does not lend itself to multi-disciplinary team involvement. However, involving the department of social welfare in the long run is important. Patients with dual diagnosis would benefit from specialised treatment facilities.

In the substance use group the largest proportion (44.2%) of patients were diagnosed with a substance induced psychotic disorder. In the absence of substances these patients would not be presenting to psychiatric services. This emphasizes the burden of substance use on psychiatric services at CHBAH.

This study was a cross-sectional study limited to patients presenting in the emergency department therefore no data on long term outcomes such as length of hospital stay,

referral to other specialised psychiatric units or referral to rehabilitation services upon discharge can be deduced from this study. The data was collected over a short period of time (a three-month period) as the Covid-19 pandemic started in South Africa in 2020 and this may have had an effect on the number of patients presenting for psychiatric reasons to emergency rooms during the pandemic and post-pandemic period. However, even with this short time period, there were enough study participants to achieve statistically significant results.

Another limitation of the study is that substance use was at times self-reported or reported by the family of the patient. This may result in under or over reporting of substance use. The time frame of the substance use was also not included in the data collected. Any history of substance use was used as inclusion in the substance use group.

As patients below the age of 18 years were not included in the study, the youth were not considered. Both their risk and specific features of substance should be determined as they are likely a population that is also at risk.

Conclusion

The data collected in this study gives a picture of the substance use prevalence in this community and the population that is at risk of substance use. This population is that of young, unemployed males. Substance use was demonstrated to be a major contributing factor to admission to the psychiatric unit. The study also demonstrated some of the negative outcomes associated with substance use in psychiatric patients seen in previous literature. Integrating preventative measures, dual-diagnosis treatment and rehabilitation services in the community is important in achieving better treatment and social outcomes. It is crucial for healthcare workers to assess and address both substance use and the primary psychiatric conditions to improve outcomes.

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Competing interests

The authors declare that they have no financial or personal conflicting interests that may have influenced them in the writing of this article.

Author contributions

N.M. and S.M. conceived the idea for this study. All authors contributed to the study design and drafting the final draft of this article.

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Data availability

Data that supports the finding of this study are available from the corresponding author, NM, upon reasonable request.

Disclaimer

The views expressed in this article are those of the authors and not an official view of the University of the Witwatersrand.

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APPENDICES

APPENDIX A: Data Collection Sheet

Data Collection Sheet

1. Demographic data

a. Gender

Female	Male	Unknown

b. Age

18-25	26-40	40+

c. Highest Level of Education

Primary	Secondary	Tertiary	Unknown

d. Employment Status

Employed	Unemployed	Unknown

e. Forensic History

Yes	No

2. Past Psychiatric History

a. Number of previous admissions

0	1-2	2-4	>5	Unknown

b. Known psychiatric diagnosis (if any)

	Yes	Specify

Psychotic disorder		
Mood disorder		
Anxiety disorder		
Personality disorder		
Other		

c. History of treatment non-adherence

Yes	**No**

3. Circumstances of current admission

a. Reason for hospital presentation

Violence	**Psychosis**	**Mood Symptoms**	**Suicidal**	**Disorganised behaviour**

4. Substance Use History

a. Type of Substance Used:

Cannabis	
Alcohol	
Methamphetamine	
Amphetamine	
Opioid	
Benzodiazepine	
Cocaine	
Other	

b. When substance was last used

Current use (within last month)	Past use

5. Referral to social worker for social problems

Yes	No	Unknown/ Not documented

APPENDIX B: Approved Research Protocol

Title:

Substance use in patients presenting with mental illness at Chris Hani Baragwanath Academic Hospital Emergency Psychiatric Unit- A descriptive study

Introduction and background

The World Drug Report estimates that, in 2017, 5.5% of the global population aged 15 years and older had used substances. Additionally, 5 million of the world's population are suffering from a substance use disorder. It also reports that even though substance use creates a large burden, there is a global shortage of substance use treatment facilities.(1)

Studies have shown that substance abuse is more prevalent in individuals with psychiatric illness than in the general population. (2) An American study revealed lifetime prevalence of any substance disorder to be 12% in the general population and as high as 56% in individuals with mental illness, with Bipolar Disorder having the highest incidence of comorbid substance use. (2) The Epidemiological Catchment Area study showed similar results. In the general population the prevalence of substance use is 17% compared to 48% in people with schizophrenia and 56% in people with bipolar disorder. (3) Substance abuse is also common in patients with personality disorders, particularly in patients with Borderline Personality Disorder and Antisocial Personality Disorder. (4) In a review article based in India, the prevalence of personality disorders in the general population ranges from 10% to 14.8% compared to 34.8% to 73% in patients that are being treated for substance abuse. (4)

Substance use disorder, as described in the DSM 5, is a cluster of cognitive, behavioural and physiological symptoms indicating that an individual continues to use the substance despite significant substance- related problems. (5) Dual diagnosis is the co-occurrence of a severe mental illness and a substance use disorder. (2)

In South Africa, illicit drug use is a growing public health concern. The South African Stress and Health Study revealed that the lifetime prevalence of substance use disorders is 13.3% in the general South African population. (6) This was found to be

the group of disorders with the second largest life-time prevalence rate with anxiety disorders being the group of disorders with the largest life-time prevalence. (6)

Alcohol use disorder was noted to have the highest prevalence among the substance use disorders at 38,7%, 30,0% for tobacco, 8,4% for cannabis, 2,0% for other drug use and 19,3% of extra-medical drug use of the substance use disorders.(7) More recent information on substance use from SACENDU (South African Community Epidemiology Network on Drug Use) report updated in 2018 shows similar results with alcohol being the substance abused the most and cannabis being the second.(8) In a 2018 South African population-based study, the authors revealed that cannabis was the most used illicit drug among people aged 15 years and over.(9) Cannabis was used by 4.0% of the study population, followed by sedatives, amphetamines-type stimulants, cocaine, opiates, inhalants and hallucinogens at 0.3%, 0.3%, 0.3%, 02% and 0.1% respectively. Additionally, the Western Cape was the province with the highest incidence of substance use. This is still the case as seen with the 2018 SACENDU report. With cannabis now being a decriminalised for home use in South Africa, use is likely to increase. (10)

The relationship between psychiatric disorders and the increased incidence of substance use is poorly understood. There are many theories such as the “self-medication hypothesis” and the “tension reduction” theory but these theories are not strongly supported by research. After reviewing multiple studies about the relationship between substance abuse and schizophrenia, an American study proposed the “unifying hypothesis”. (11) The authors suggested that genetic factors that are risk factors for developing schizophrenia make individuals susceptible to substance use. Because this risk factor is present before psychotic symptoms develop, a patient may use substances that further predispose them to developing psychotic symptoms. (11) Studies have also shown that the population with psychiatric disorders use less quantities of substances but have more severe consequences than the population without mental illness. This is possibly due to already pre-existing vulnerability due to their psychiatric illness. (2). With this relationship between psychiatric illness and substance abuse, the increasing use of substances may increase the need for psychiatric care and further burden the South African health care system.

Patients with dual diagnosis have an increased rate of negative treatment outcomes than patients with single psychiatric disorders. (2, 3, 10, 11,12) They also have worse social and health outcomes. (12) These poorer outcomes include non-compliance, relapse and hospitalization, homelessness, violence, incarceration and suicide therefore emphasizing the need for specialized/ integrated care for these patients. (3) Morisano et al advocate for integrated treatment for patients with dual diagnosis. (12) Their research showed patients had better outcomes when treatment addressed both the psychiatric disorder as well as the substance use disorder. This study was, however, done in higher income countries where more resources are available. There is a shortage of literature on middle and low-income countries regarding treatment outcomes of patients with dual diagnosis.

It is well known that substances are a significant risk factor for developing psychosis. (12,13) An Italian study found that a third of patients included in their study of patients with first episode psychosis, were substance users. Cannabis was the most used substance with 74% of the substance users, followed by alcohol at 32% and stimulants at 12%. It was also found that substance users were younger and were more frequently male in the study and that they were more likely to be hospitalized than non-substance users at first episode psychosis. (13) Approximately half of first episode psychosis patients had a history of cannabis use or dependence and that a third had a current cannabis use disorder. A smaller proportion but also significant number had substance use disorders related to other substances. (13)

Substance use has a negative effect on the course and prognosis of patients with psychiatric disorders. Wisdom et al found that the continued use of substances was associated with poorer outcomes such as increased symptoms, relapses and hospital admissions. (14) Additionally, these patients were found to have more adverse events such as violence, incarceration, homelessness and medical problems such as HIV and hepatitis. (14) One Italian study found that substance use is an independent risk factor for poor clinical outcomes in patients with first episode psychosis. These patients had a higher rate of hospitalization and these hospitalizations were also more likely to be involuntary hospitalizations. (13) In a four year follow up study conducted in Germany, Ruppelt et al found that patients with severe psychotic disorders as well as a history of substance use had worse outcomes than the cohort without a substance use

history. These patients had worse symptomology, cognitive functioning and quality of life at the end of the follow up. (15) Studies have also shown that patients with comorbid personality disorders and substance use also show poor treatment outcomes. They have higher incidence of non-adherence, poor social functioning, increased risk of suicide and problems with the law. (4). A Brazilian study also reported poor treatment outcomes in patients with comorbid personality disorders and substance abuse. The study advocated for an integrated approach when treating these patients as the patient's personality traits, such as impulsivity, likely perpetuate their substance use. (16)

Patients using substances represent a large number of patients presenting to hospital for psychiatric emergency service. Richard et al found that 32% of patients seen in their psychiatric emergency services were patients with acute intoxications and an additional 17% were patients with a primary substance use disorder. (15) The article further states that the patients presenting with acute intoxication to psychiatric emergency services require a lot of resources in the emergency room. These patients usually present with violent, disruptive behaviour, may be suicidal and therefore require a lot of behaviour management in terms of restraints and sedation.(15) Young et al found that across 18 different studies reviewed, the proportion of patients presenting to psychiatry emergency services with a history of substance abuse was between 20% and 50%.(17) In their own Florida based study, Young et al found that 23.5% of patients seen in psychiatry emergency service were documented to have substance involvement as their presenting problem.(17) In another American study conducted over a 4 year period, Geoffrey et al described that patients with a primary psychiatric disorder that have comorbid substance use disorders use the emergency room at a higher rate than psychiatric patients who do not use substances. This was at almost double the rate. They also tend to spend more time in the emergency unit as they need behaviour management before having a psychiatric evaluation. (18) The above-mentioned studies show that substance use among psychiatric patients is a big reason for their presentation to psychiatric emergency services. The studies also show that this group of patients can be more costly than the psychiatric patient without a substance use disorder. This is problematic in a resource limited country such as South Africa.

There is a paucity of literature regarding substance abuse among psychiatric patients in the South African context. Little is known about the demographics of these patients and their pattern of substance use and impact on the health care system. A South African study based in a Western Cape hospital found that 49% of patients admitted to the hospital had a history of substance use. Of these patients more males than females abused substances, cannabis and methamphetamine were the most used substances and that incidence of violence was higher in males with history of illicit drug use although the study did mention that this may not be a causal link. (19) A similar study based in the same psychiatric hospital in the Western Cape showed a worsening picture 3 years later. 62% of patients admitted during the study period had used substances in the period leading to admission, cannabis was the most popular substance followed by methamphetamine and that more patients using substances presented with violent behaviour than patients without substance use. (20)

In another South African study, also based in the same Western Cape Hospital, 51% of admissions to an acute psychiatric hospital were diagnosed as having a co-morbid substance use disorder and an additional 8% of the admissions were diagnosed has having a substance induced psychiatric disorder. The finding of this study also found cannabis to be the most popular drug. The patients with a substance use disorder were also more likely to have involuntary admissions and to have had a history of violence that contributed to their admission to hospital. Also, of importance is that even though the proportion of patients with substance use disorders is large in their study population, very few had documented prior interventions for their substance use. (21)

It would be helpful to know more about these patients to address the health concerns they present with and to aim to have unique treatment facilities for these patients. Research has shown better treatment outcomes when this group of patients have specialized care for their unique needs. The World Drug Report highlights a shortage of substance treatment centres globally. (1) This is true for South Africa as well. There are few facilities that provide facilities for patients with dual diagnosis in South Africa. Such treatment facilities in Gauteng include Zamani Dual Diagnosis Clinic at Chris Hani Baragwanath Academic Hospital (CHBAH) and the Dual Diagnosis Unit at Sterkfontein Hospital. There is an increased need for facilities specifically for patients with co-morbid substance use in South Africa. Knowing the demographics, social

circumstances and their substance use histories and the treatment outcomes of dual diagnosis psychiatric patients will assist in identifying the type of preventative and therapeutic treatment strategies required for these patients.

Hypothesis

The most widely used substances will be cannabis and alcohol. Patients with co-morbid substance use will present with specific clinical features and have more negative outcomes i.e., higher readmission/relapse rates, treatment non- adherence

Aims

1. To document the demographic picture and nature of substances used among adult patients admitted to the emergency psychiatric facility at CHBAH with a history of substance use
2. To determine the effect of substance use on the patient's presentation and outcome of treatment.

Study Objectives

1. To determine the prevalence and type of substance use in patients presenting to Psychiatry emergency services at Chris Hani Baragwanath Academic Hospital
2. To examine the demographic profile of patients using substances. The demographic factors examined will be:
    i. Age
    ii. Gender
    iii. Level of Education
    iv. Employment status
    v. Forensic history
3. To investigate the circumstances around their hospital admission by determining the:
    i. Presence of a primary/additional psychiatric diagnosis (if any)
    ii. Reason for the acute presentation to hospital
4. To document a history of prior negative outcomes (if the patient is a repeat admission) in terms of:

i. Treatment non-adherence
ii. Number of hospital admissions
iii. Social referral for domestic concerns

Methodology

Site of Study:
Chris Hani Baragwanath Hospital is a tertiary hospital in Diepkloof, Soweto Johannesburg that services a large catchment area for the south of Gauteng. The hospital offers acute in-patient adult, adolescent and child psychiatric services, as well as out-patients psychiatric services. It receives referrals from district hospitals and specialized psychiatric clinics in its catchment area.

Study Population:
Participants to be used in the study include patients seen in the psychiatry emergency department at Chris Hani Baragwanath Academic Hospital during the 3-month period of 1 October 2019 to 31 December 2019. The patients seen in the psychiatry department are seen as referrals from the emergency department or as referrals from other inpatient or outpatient departments at Chris Hani Baragwanath Hospital.

Inclusion criteria:

- All adult patients admitted to the emergency psychiatric unit over 18 years of age during the specified study period
- Patients using at least one psychoactive substance

Exclusion criteria:

- Patients under the age of 18 years

Study Design:
The study will be a retrospective study examining records of patients admitted to the emergency psychiatric unit in the emergency department at Chris Hani Baragwanath Academic Hospital during the specified time period. Upon referral to the psychiatry department, patients are assessed and their demographic data as well as a brief psychiatric history is recorded on a form that is kept in the psychiatric department

together with their detailed notes in the patients' file. This form together with the patients' hospital file will be used to gather all relevant information for the study. Information required will be collected and documented using a data sheet (see attached appendix). All data will be collected anonymously.

Sample Size:

Data for the study will be collected retrospectively. For the prevalence of substance use in the patients admitted to the emergency psychiatry department at Chris Hani Baragwanath Hospital from 1 October 2019- 31 December 2019, all available files will be used to generate a prevalence score.

In the literature, prevalence of substance use in psychiatric patients is approximately 56%. Using 5% precision and a 95% confidence level, a sample size of 81 would be needed to determine a statistically significant prevalence. The required sample size was calculated using the following equation:

$$n = \frac{Z^2 p(1-p)}{d^2}$$

n =sample size
Z = level of confidence
p =expected prevalence
d =precision

The psychiatry emergency department sees an average of 150 patients a month. Therefore approximately 450 patients are expected during the 3-month period. Therefore, the expected sample size will be sufficient to calculate a statistically significant prevalence as all files will be used to calculate the prevalence score. If insufficient data is collected in the specified 3-month period, the study period will be extended.

Data Analysis:

The study is descriptive in nature and all variables are categorical. The different variables will be quantified and summarised by frequency and percentage. Data will

be illustrated by means of bar charts.

Ethics:

Since it is a retrospective record review, patients' names and hospital numbers will be omitted from the data sheet to maintain anonymity, therefore, consent will not be required. Persons under the age of 18 years will not be used in the study as well.

Application for ethics approval will be submitted to Human Research Ethics Committee of the University of the Witwatersrand and to the CEO of Chris Hani Baragwanath Academic Hospital

Timing

Table 4. Gantt chart showing time of proposed study

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Literature Review																	
Protocol development																	
Protocol assessment																	
Ethics Application																	
Collecting Data																	
Data Analysis																	
Writing up Thesis																	
Writing up paper																	

Funding

Funding will be provided by myself

Table 5: Proposed funding

Item	**Estimated Cost**
Travel to CHBAH for data collection (Fuel)	R500
Printing Data Sheet	R400
Statistician	R0 (provided by university)
Total	**R900**

Limitations

Potential problems that may be encountered include:

1. Patients' records may have incomplete information therefore required data may be missing
2. Patients' records may be misplaced and not found in the psychiatry department records
3. Patients seen in and discharged directly from the emergency unit are unlikely to have records in the psychiatry department.
4. Diagnosis made by different clinicians with no means to verify that they are correct.
5. Unreliability of patients reporting of substance use.

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APPENDIX C: Ethics Clearance

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG	HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research and Innovation)

TO: Dr N Mayisela
School of Clinical Medicine
Department of Psychiatry
Medical School
University

E-mail: zakithi333@gmail.com

CC: Supervisor: Dr S Moodley
<sanushka86@gmail.com>
and <HREC-Medical Research Office@wits.ac.za>

FROM: Mr Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 2021/08/17

REF: R14/49

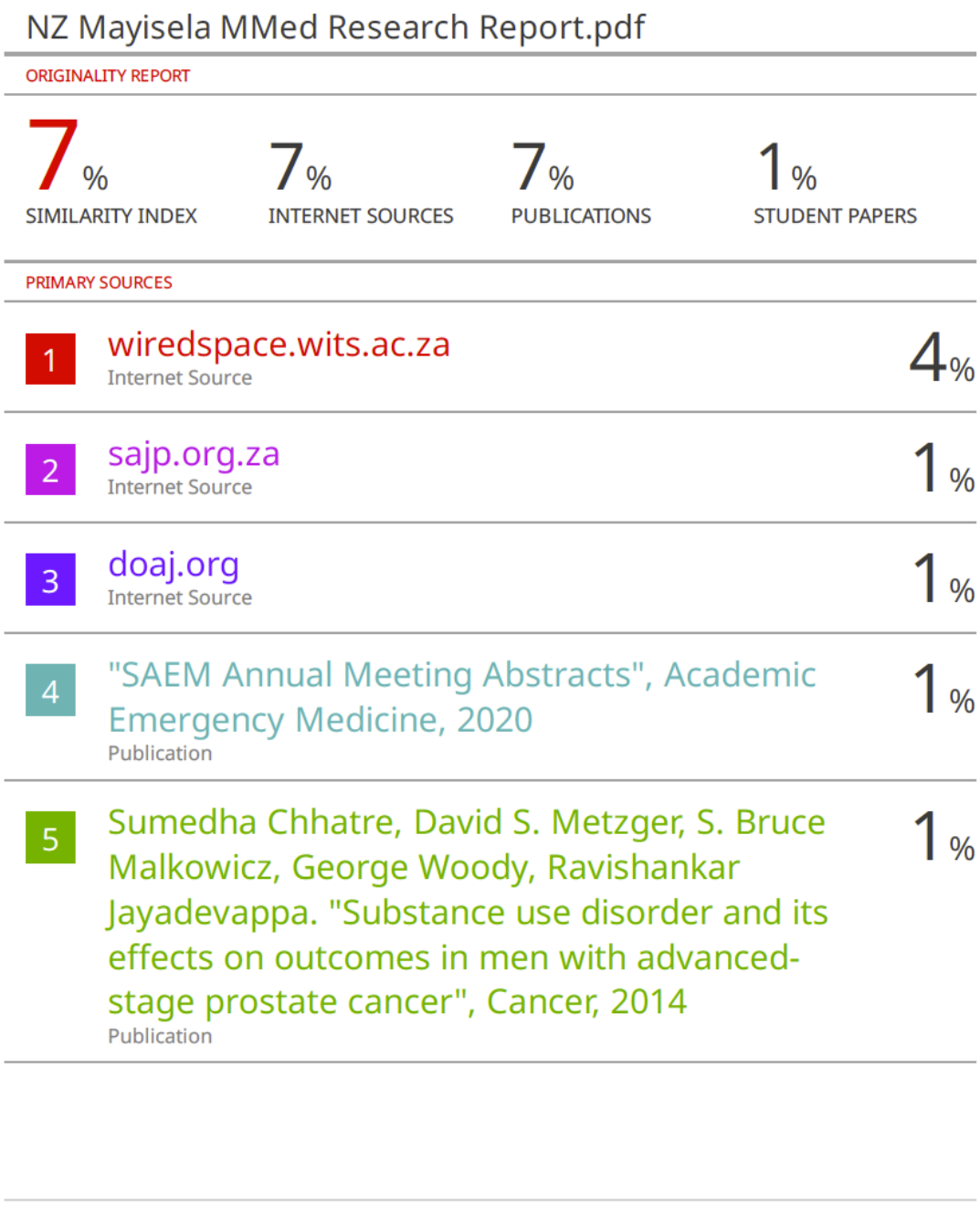
PROTOCOL NO: **M210615** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)

PROJECT TITLE: *Substance use in patients presenting with mental illness at Chris Hani Baragwanath Academic Hospital Emergency Psychiatric Unit - A Descriptive Study*

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to Government funding of the University.

MSWorks2000/Iain0007/Clearscan.wps

APPENDIX D: Turn-it-in report



NZ Mayisela MMed Research Report.pdf

ORIGINALITY REPORT

7%	7%	7%	1%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	wiredspace.wits.ac.za Internet Source	4%
2	sajp.org.za Internet Source	1%
3	doaj.org Internet Source	1%
4	"SAEM Annual Meeting Abstracts", Academic Emergency Medicine, 2020 Publication	1%
5	Sumedha Chhatre, David S. Metzger, S. Bruce Malkowicz, George Woody, Ravishankar Jayadevappa. "Substance use disorder and its effects on outcomes in men with advanced-stage prostate cancer", Cancer, 2014 Publication	1%