MMED DISSERTATION

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Title:

The prevalence of psychoactive substance use amongst undergraduate students at a medical school in South Africa.

Submitted to the University of Cape Town

In partial fulfilment of the MMed Psychiatry degree

UCT STUDENT NUMBER: NRXDEV002

DECLARATION

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

Signed by candidate

25th_____ day of _____June_____ 2025

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I, Dr Devina Nair, as a postgraduate student registered for a MMed at the University of Cape Town declare the following:

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Signature: 

DEDICATIONS

To my loving husband & parents, whose unwavering support has made this all possible.

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ABBREVIATION LIST

ASSIST - Alcohol, Smoking and Substance Involvement Screening Test

DSM - Diagnostic and Statistical Manual of Mental Disorders

HREC - Human Research Ethics Committee

LSD - D-lysergic acid diethylamide

MDMA - 3, 4-Methylenedioxymethamphetamine

SACENDU - South African Community Epidemiology Network on Drug Use

SAMHSA - Substance Abuse and Mental Health Services Administration

SASH - South African Stress and Health study

UCT – University of Cape Town

USA – United States of America

WHO - World Health Organization

CHAPTER 1: INTRODUCTION & LITERATURE REVIEW

The World Health Organization (WHO) defines a psychoactive substance as a substance that affects mental processes when taken into one's system (WHO, 2021). These psychoactive substances can be grouped into categories based on the behavioral and psychological effects that they elicit (McLellan, 2017, WHO, 2021). These groups include stimulants (e.g., nicotine, cocaine, amphetamines, methamphetamine, and methylphenidate), depressants (e.g., alcohol, barbiturates, and benzodiazepines), narcotics (e.g., heroin, morphine, codeine), hallucinogens (e.g., D-lysergic acid diethylamide (LSD), 3, 4-Methylenedioxymethamphetamine (MDMA), ketamine) and cannabis. Psychoactive substances can result in negative health and socio-economic consequences as their misuse presents the possibility of progression to a substance use disorder (Kleber et al., 2007, McLellan, 2017).

Substance use can be described as the non-medical self-administration of a substance to produce mood-changing effects, intoxication, or altered self-image, despite the knowledge of its potential side effects (American Psychiatric Association, 2015). Substance use occurs on a continuum ranging from once off experimentation progressing through hazardous use, and harmful use to dependence. Substance misuse, or hazardous use, as defined by the Substance Abuse and Mental Health Services Administration (SAMHSA) is the use of any substance that is outside its prescribed or intended use, such as off label usage of prescription drugs (Daniel and Han, 2020). Harmful substance use, previously referred to as abuse, is defined as the recurrent use of alcohol and/or drugs which causes clinically significant impairment, including health problems, disability and failure to meet major responsibilities at work, home or school. Substance dependence refers to the abuse of drugs or alcohol that continues even when significant problems related to their use have developed (Daniel and Han, 2020). Signs of dependence include tolerance;, withdrawal;, spending a lot of time to get, use, and recover from the effects of the drug;, withdrawal from social and recreational activities; and continued use of the drug even though there is awareness of the physical, psychological, and family or social problems that are caused by the ongoing drug abuse (University, 2022).

The Diagnostic and Statistical Manual of Mental Disorders (DSM) is used to classify and provide criteria for the diagnosis of mental health conditions. The introduction of the 5th edition of this manual (DSM-V) brought about the integration of the substance abuse and substance

dependence diagnoses into a single substance use disorder diagnosis (Rockville, 2016). The DSM-V substance use disorder criteria are nearly identical to the DSM-IV substance abuse and dependence criteria combined into a single list, with two exceptions (American Psychiatric Association, 2013). The first exception is that the DSM-IV recurrent legal problems criterion for substance abuse has been deleted from DSM-V, and a new criterion, craving or a strong desire or urge to use a substance has been added (American Psychiatric Association, 2013). Secondly, the threshold for substance use disorder diagnosis in DSM-V is set at two or more criteria, in contrast to a threshold of one or more criteria for a diagnosis of DSM-IV substance abuse and three or more for DSM-IV substance dependence (American Psychiatric Association, 2013). Severity of the DSM-V substance use disorders is based on the number of criteria endorsed within a twelve month period: 2–3 criteria indicate a mild disorder; 4–5 criteria, a moderate disorder; and 6 or more, a severe disorder (American Psychiatric Association, 2013, Rockville, 2016).

As substance use disorders develop over time, It is possible to identify emerging substance use disorders while they are mild or moderate, and to stop the addiction process before the disorder worsens and becomes difficult to treat (McLellan, 2017).

Substance use in South Africa

Substance use and its associated problems are a global public health concern (UNODC, 2024). According to the latest World Drug Report there are an estimated 292 million people within the age group of 15-64 years who used substances at least once during 2022 (UNODC, 2024). Furthermore, of these 292 million people 64 million (22%) are reported to suffer from a substance use disorder (UNODC, 2024).

It is projected that by 2030 the number of people using substances will rise globally with low and middle income countries being the most affected (UNODC, 2024, Osman et al., 2016, Ohale et al., 2017). Africa is likely to be particularly vulnerable to an increase in the number of people who use drugs by 2030 with a projected increase of up to 40% (UNODC, 2024). This increase can be attributed to projected population growth, a relatively young population as well as rapid economic, social and cultural evolution that create a favourable environment for drug use (Ohale et al., 2017, UNODC, 2024, Tesfaye et al., 2014).

Cannabis is the most commonly used drug worldwide (UNODC, 2024). In 2022 there were an estimated 228 million users of cannabis, corresponding to 7.6% per cent of the global

population aged 15–64 (UNODC, 2024). This was followed by opioid use (60 million users or 2%) , amphetamine type stimulant use (30 million users or 1%) and cocaine use (28 million users or 0.8%) (UNODC, 2024).

The 2009 The South African Stress and Health (SASH) study showed a lifetime prevalence of 13.3% for substance use disorders with alcohol abuse and dependence being the most common of the substance use disorders (Herman et al., 2009). This placed substance use disorder as the second most common mental disorder following anxiety disorders (Herman et al., 2009). More recent data regarding the prevalence of substance use disorders within South Africa is not available. The SASH study showed that alcohol was the most commonly used substance in the country (38.7%) followed by tobacco (30%), cannabis (8.4%) and other drugs including methamphetamine (2%) (van Heerden et al., 2009). Specific features that placed people at increased risk for substance use include being of the male gender, living in an urban area and having post matric educational exposure (van Heerden et al., 2009). The use of all substances has increased amongst young adults (van Heerden et al., 2009). The SASH study showed that the age of onset of substance use is earlier for the younger cohort (18 -29 years) ; they were more likely to start substance use in childhood and in early to mid-adolescence (van Heerden et al., 2009).

The South African Community Epidemiology Network on Drug Use (SACENDU) is a six-monthly sentinel surveillance system for all nine provinces in the country which obtains treatment demand data from admissions to specialist substance use treatment centres (van Heerden et al., 2009, SACENDU, 2023). The 2023 SACENDU full report lists alcohol, cannabis, opiates and methamphetamine as the most commonly used substances for which South Africans present for treatment (SACENDU, 2023). The Western Cape has the highest rates of substance use in population-based surveys (SACENDU, 2023). Unlike the other provinces which favor alcohol, in the Western Cape methamphetamine remains the most common substance for which individuals present to substance use treatment centres (SACENDU, 2023).

Substance use in young adults

The Society for Adolescent Health and Medicine defines a ‘young adult’ as those within the 18-25 years age group (Walker-Harding et al., 2017).

There are a multitude of factors that can determine substance use (McLellan, 2017, Zinberg, 1984). These factors are related to individual and environmental characteristics, the substance itself as well as the impact of national and local policy and service delivery (McLellan, 2017).

Individual characteristics:

Adolescents and young adults are at higher risk for development of a substance use disorder (McLellan, 2017). This can be attributed to the fact that substance use has a particularly potent effect on the undeveloped brain (Casey and Jones, 2010, Mbandlwa and Dorasamy, 2020, McLellan, 2017). Recent scientific data indicates that brain development is not complete until approximately 21 to 23 years of age in women and 23 to 25 years of age in men (Giedd et al., 1999, Hanson et al., 2011, Squeglia et al., 2015). Among the last of the areas of the brain to reach maturity is the prefrontal cortex; this is the area responsible for abilities such as delay of reward, extended reasoning, and inhibition (McLellan, 2017, Casey and Jones, 2010).

Due to this delayed maturation of the prefrontal cortex there is an imbalance between the prefrontal cortex and limbic system-based reward pathways (Casey and Jones, 2010). This imbalance may lead to heightened vulnerability to risk-taking behaviours and an increased susceptibility to the motivational properties of substances of abuse (Casey and Jones, 2010).

The biological vulnerability of this population is increased by the demands of the major psychological developmental tasks of adolescence (van Zyl et al., 2015). These tasks, as outlined by psychoanalyst Erik Erikson, are to establish an identity, to master independence and establish intimate relationships (van Zyl et al., 2015).

At the global level, the prevalence of drug use continues to be higher among men than among women, with an estimated two in three people who use drugs being men (UNODC, 2024). However, the gap between men and women in the prevalence of drug use has started to close, particularly in Western countries like the United States of America (UNODC, 2024).

Environmental factors:

Young adulthood is an age of experimentation, where young people have the opportunity to test the limits previously set by parents and schools (Kyei and Ramagoma, 2013). These young people experience independence and freedom from direct adult and family supervision (Ohale et al., 2017).

In adolescence there is a pronounced shift in influence from parents to peers (Borsari and Carey, 2001). The behaviours of young adults are heavily tied to the peer culture (Johnson et al., 2017). Young adults seek to establish a peer network that can be a source of support and assist with the transition to tertiary education centres by providing role models and social opportunities (Hays and Oxley, 1986) . If some members of a peer group use substances, there is a high probability that an individual in that group will be negatively influenced to experiment and ultimately become a user (Johnson et al., 2017, Kyei and Ramagoma, 2013).

Combined with peer influence, many young adults minimise the risks associated with substance use, specifically alcohol use, and often view excessive alcohol consumption as culturally appropriate in their age range (Reavley et al., 2011, Welsh et al., 2019). Young adults who perceive substance use by their peers to be normative are more likely to be at risk themselves of developing a substance use disorder (Welsh et al., 2019, Borsari and Carey, 2001).

Substance factors:

Substance factors include the accessibility of the substance, the amount and frequency the substance is used, the legal status of the substance as well as the pharmacological effects.

In South Africa the most common psychoactive substances used are alcohol, tobacco and cannabis (van Heerden et al., 2009). These findings were also elicited in a local study looking at psychoactive substance use in medical students (Vorster et al., 2019).

The fact that alcohol, tobacco and cannabis are the most commonly used substances in South Africa is likely due their accessibility; alcohol and tobacco are not illicit drugs and are easily available in our setting (van Heerden et al., 2009). The use of cannabis is no longer criminalised after the Constitutional Court of South Africa ruled in favour of the legalisation of recreational cannabis in September 2018 (Mokwena, 2019). In May 2024 a new bill entitled the Cannabis for Private Purposes Act went into effect in South Africa. This act establishes a legal framework for the use, possession and cultivation of cannabis in South Africa (South African Government, 2024). The legalisation of recreational cannabis has increased both the amount of use amongst current users and the number of new users because of increased availability, greater social acceptance and lower prices (Hopfer, 2014, Mokwena, 2019).

Substance use among students in tertiary education

Students entering a tertiary education facility show marked increases in substance use, compared to those that live at home or seek employment following graduation from high school (Borsari and Carey, 2001). Several risk factors for substance use are specific to this population, including an affiliation with 'Greek' fraternity or sorority life, perception of high academic pressure, and peer pressure (Welsh et al., 2019).

The majority of studies that examined the prevalence of substance use in tertiary education settings come from the United States of America (USA). These studies have all found that alcohol remains the most commonly abused substance in tertiary education settings closely followed by cannabis (Serowoky and Kwasky, 2017, Skidmore et al., 2016, Welsh et al., 2019).

The high prevalence of alcohol use disorders is likely related to the integration of alcohol use into the normative tradition and fabric of the tertiary education experience with alcohol being present at most social gatherings and part of many peer interactions (Borsari and Carey, 2001)

Further studies from the USA have shown that students in medical school use more alcohol, benzodiazepines and psychedelics than similar, age-matched cohorts (Baldwin et al., 1991, Frank et al., 2008, Shah et al., 2009). This could be attributed to the high demands of medical school training, with students developing unhealthy coping behaviors (Choi et al., 2013). Furthermore, another study conducted amongst medical students in the USA found a higher prevalence of substance use disorders (specifically alcohol use disorder) in students with burnout and depression (Jackson et al., 2016). These students were also found to be younger, single and have considerable tuition debt (Jackson et al., 2016) . In India a study conducted amongst a group of 230 undergraduate and postgraduate students found that psychological stress was the most common reason for using substances, followed by the need to reduce tiredness and peer pressure (Arora et al., 2015). A study done in Ethiopia also found peer pressure to be an important factor in substance use amongst medical students (Deressa and Azazh, 2011).

In South Africa there have been a handful of studies completed that examined substance use in students at a tertiary education setting; most of these studies focus specifically on alcohol use and abuse and not substance use behaviours as a whole. Whilst there is a considerable amount of data on substance use in young adults in tertiary education settings internationally,

there is limited local data. The local studies that have been done on substance use in students have focussed mainly on alcohol use and not included other psychoactive substances.

Young and de Klerk investigated the patterns of alcohol use at Rhodes University in Grahamstown, Eastern Cape. They found that of the two thousand and forty nine students that participated (approximately one third of the total registered students at the university) about one third fell into the hazardous drinking category, while the remainder were drinking harmfully or were dependent on alcohol (Young and Klerk, 2009). Of note, the study found that male students were at greater risk of alcohol abuse and that Caucasian students were more likely to occupy the hazardous, harmful and dependent categories than Black students (Young and Klerk, 2009).

Much like the above mentioned Rhodes University study, in 2015 Van Zyl et al assessed hazardous, harmful and dependent alcohol use in hostel dwelling students at the University of the Free State, Bloemfontein. They found that of the 339 participants, 15.6% exhibited hazardous drinking, 4.1% harmful drinking and 5.6% alcohol dependence. Like the earlier study done by Young and de Klerk, male students had a statistically significant higher prevalence (32.8%) of hazardous, harmful or dependent drinking than female students (18.9%).

A study conducted at the University of Venda in Limpopo Province examined the prevalence and factors affecting alcohol consumption at their university (Kyei and Ramagoma, 2013). Findings showed that of the 209 students interviewed, over 65% used alcohol of which 49% abused it. Chi-square tests done showed that sex, age, religion, staying on campus, family monthly income and peer pressure were the factors affecting alcohol use, but the logistic regression identified only peer pressure and religion as the main precipitating and protective factors respectively (Kyei and Ramagoma, 2013).

The most recent study looking at knowledge, attitudes and practices regarding alcohol use was conducted in 2024 at the University of Cape Town. This study looked at undergraduate students across all faculties however the majority (57%) of the 405 responders were from the faculty of Health Sciences. Results from this study found a concerning burden of alcohol use amongst undergraduate students. The study found that most students lacked awareness regarding the safe limit for alcohol consumption and that male students, as in previously conducted studies, were more likely to engage in binge drinking than female students. Relationship stress and increased workload were the most cited triggers for consuming alcohol (Mbuqa et al., 2024).

At study examining overall substance use was completed in 2019 by Vorster et al at the University of the Free State. They looked at second and third year medical students' self-reported alcohol and substance use, smoking habits and academic performance. The study found that alcohol followed by tobacco and cannabis were the most common substances used amongst undergraduate students (Vorster et al., 2019) . Much like their Indian counterparts these medical students reported stress, such as stress associated with dealing with patients, as one of the important factors influencing their use of alcohol and other substances (Vorster et al., 2019).

Additionally, a 2022 study done by Blows et al at a university in the Western Cape revealed a substance use prevalence rate of 62.7%. The most prominent substances used by students were alcohol (80.6%), cannabis (46%), and ecstasy (5.3%). The study further revealed clear associations between students' substance use and mental health. Students who reported substance use at university reported higher depression and anxiety scores than those who did not.

Potential Sequelae of Substance Use

The adverse impacts of psychoactive substances on students are far reaching, and diverse (Johnson et al., 2017). These include disruption of interpersonal relationships, criminal behaviour, academic failure, occupational failure and a lack of commensurate achievement (Johnson et al., 2017, Skidmore et al., 2016). Psychoactive substance use is also a major cause of preventable general medical and psychiatric mortality and morbidity (Johnson et al., 2017, Welsh et al., 2019). Psychoactive substance use has been found to be a precipitating cause of violence and aggression among individuals (Stoddard et al., 2015, Bucher et al., 2013, Mbandlwa and Dorasamy, 2020, Kyei and Ramagoma, 2013, Ward et al., 2008, Serowoky and Kwasky, 2017, Welsh et al., 2019). A study conducted in Nigeria found that the frequent use of substances resulted in increased numbers of delinquent acts such as rape, robbery, cultism, violent disorders and vandalism among the youth (Fareo, 2012). Students who use substances show problems with academic performance in the form of declining grades due to fewer hours studying and high truancy rates (Johnson et al., 2017, Arria et al., 2015, Wolaver, 2002). There is also increased potential for tertiary education drop out, failure to graduate or unemployment post-graduation with students who use substances (Arria et al., 2013).

The most valuable asset for sustainable social development in any society is young adults. However, most young adults lack awareness of substance use disorders which would empower

them to escape substance abuse (Jatau et al., 2021). Both health education as well as early identification of maladaptive health behaviors in young adults is important as it is during this transition period between adolescence and adulthood that these unhealthy behaviors may be malleable or consolidated into lifetime patterns (Emmons et al., 1998).

Purpose of this Study

The Faculty of Health Sciences at UCT has identified substance use as an area of concern within their student body. In 2021 the Division of Addiction Psychiatry at UCT hosted an online webinar for the health science faculty. This webinar discussed substance use in students together with international approaches as well as proposed local approaches aimed at mitigating this problem. However, for a focussed approach to be implemented, the extent of the problem needs to be understood and documented. There is currently no data on the prevalence of substance use and extent of risky use in undergraduate students in the Faculty of Health Sciences at UCT. With this study we aim to address that information gap and shed some light on the nature substance use amongst undergraduate the medical student population within the faculty.

Study Aims & Objectives

Aim: To determine the prevalence of substance use in a sample of undergraduate students at a medical school in South Africa.

Objectives:

1. To determine which substances are most used amongst undergraduate medical students.
2. To ascertain the extent of substance use and extent of risky substance use amongst undergraduate medical students.
3. To determine which substances are most used as well as the variability in substance use based on year of study, gender and race.
4. To provide a foundation upon which further substance use disorder prevention and intervention studies, targeting tertiary education centres, can be conducted.

CHAPTER 2: METHODOLOGY

Design and participants

We conducted a descriptive cross-sectional study at the University of Cape Town's (UCT) medical campus. The study population included all undergraduate medical students in years one through to six who consented to participate. There were no outlined exclusion criteria, and all undergraduate medical students were invited to participate in the study. No students were coerced to participate. As this was a descriptive study no set recommendations were given regarding appropriate sample size.

Data Collection

From July to September 2023 medical students in years one through to six were visited in lectures and informed of the study via a short oral presentation (Appendix 5). They were able to participate in the study by either scanning a QR code or following an email link that was sent to them at the end of the presentation. An online consent form required electronic signature before participants were directed to the screening tool (Appendix 6) via either QR code or email link mentioned above. To account for students who were at offsite venues or those that had missed in-person lectures a follow up email was sent to all undergraduate medical students in years one through to six; this email included a link to the consent form and ASSIST questionnaire.

Screening Tool

Data was collected using an online version of the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) (Appendix 3). This tool was developed as a Web App version for this study by the UCT Department of Psychiatry and Mental Health and allowed for completion of an auto-scoring version of the ASSIST.

The ASSIST was developed for the World Health Organization (WHO) by an international group of researchers and clinicians as a technical tool to assist with early identification of substance use related health risks and substance use disorders in primary health care, general medical care and other settings. The ASSIST consists of eight questions or items, covering ten substances: tobacco, alcohol, cannabis, cocaine, amphetamine type stimulants, inhalants, sedatives, hallucinogens, opioids and other drugs. The ASSIST investigates frequency of use

and associated problems for each substance and has been found to adequately screen for low, moderate and high risk use for any substance.

Some non-identifying demographic data like gender, race, age and year of study were also collected as part of the screening tool (Appendix 4). To maintain anonymity the system assigned a random identity token which was not linked to any identifying data. Screening risk scores and brief intervention outcomes, including information for inward referral for assessment and care, were shared with the participant onscreen at the end of the screening process. Students were able to opt in to receive a copy of the outcome via an email address of their choosing, which was not stored on the system.

Source of bias

Whilst all data was anonymised there is the potential for bias. Sampling bias could have occurred as my sample might not be representative of the undergraduate medical population as a whole since some responses were gained via in-person sessions whereas with the older years of study, who were predominantly based off site, we relied on online answering via email links only. Additionally, those students with moderate to severe substance use disorders might have diminished engagement with their university tasks and may not have attended in-person lectures where I addressed the students or cared to look at their student emails to engage with the online questionnaire. There was potentially also room for response bias as, despite the questionnaire being anonymous, students might have answered questions inaccurately due to social desirability which can often occur with self-reporting tools.

Data Analysis

The anonymized data was analysed using the R statistical software package. Descriptive statistics was used to summarize the data. Frequency tables, including counts and percentages, were produced and reported for all categorical variables like gender, race and year of study. Statistics such as means, minimum and maximum values were reported for numerical variables such as age.

Ethical Considerations

This study only commenced once ethical approval had been granted by the UCT Faculty of Health Sciences Human Research Ethics Committee (HREC) as well as the Department of Student Affairs (Appendix 1 & 2).

The anonymity of the study was emphasized and students were reassured that their participation or lack thereof would have no implication on their ongoing studies. A consent sheet explaining the purpose, risk and voluntary nature of the study had to be completed by all participants before they could proceed to the screening tool (Appendix 6). Students were allowed to cease completion of the screening tool if so desired.

As this is a vulnerable group, we arranged for a variety of accessible support services to be documented, for the participants' perusal, at the end of the WebApp questionnaire as well as attached to the invitational email (Appendix 7). These support services took the form of existing counselling, medical and substance care services.

CHAPTER 3: RESULTS

Demographics

A total of 576 students responded to the study screening tool link however only 444 tools were completed with signed consent and therefore appropriate for the data analysis. This equated to a response rate of 32.2% as the total number of medical students for 2023 were 1378 individuals. As seen in Table 1, 289 of the participants (65.1%) were female, 148 (33.3%) male, 2 (0.5%) transgender and 5 (1.1%) preferred not to comment. The higher number of female participants is in keeping with demographics at medical school in 2023 with 847 (61,5%) students being female and 531 (38.5%) being male. The two main race groups seen amongst our participants were African and Caucasian at 170 (38.3%) and 152 (34.2%) respectively. Our largest response group were the first year medical students (136 respondents, 30.6%) whereas the smallest response group were the second year medical students (48 respondents, 10.8%). The mean age of respondents was 21 years.

Table 1: Overall substance use by socio-demographic characteristics

Variable	Use (n & %)	Do not use (n & %)	Total
Gender			
Male	119 (80.4)	29 (16.6)	148
Female	243 (84.1)	46 (15.9)	289
Transgender	2 (100.0)	0 (0.0)	2
Prefer not to say	5 (100.0)	0 (0.0)	5
Race			
African	128 (75.5)	42 (24.7)	170
Coloured	35 (76.1)	11 (23.9)	46
Indian/Asian	64 (84.2)	12 (15.8)	76
White	142 (93.4)	10 (6.6)	152
Year of study			
First year	98 (72.1)	38 (27.9)	136
Second year	39 (81.2)	9 (18.8)	48
Third year	63 (71.6)	25 (28.4)	88
Fourth year	66 (95.7)	3 (4.3)	69
Fifth year	50 (100.0)	0 (0.0)	50
Sixth year	53 (100.0)	0 (0.0)	53
Overall use	369 (83.1)	75 (16.9)	444

Substance Use

Across all demographics, 83.1% (369 respondents) reported substance use, while 16.9% (75 respondents) reported no use. Of the 369 individuals that reported substance use, 243 (65.9%) were female, 119 (32.2%) were male, 5 (1.4%) preferred not to specify gender and 2 (0.5%) were transgender.

Alcohol (88.1%) followed by cannabis (53.8%) and tobacco (43.1%) were the most commonly used substances by our student population.

Among male students, alcohol (89.9%) and cannabis (51.3%) were the most used substances, followed by tobacco (47.1%) and sedatives (15.1%). Female students showed similarly high rates of alcohol (87.2%) and tobacco use (41.6%) however reported slightly higher use of cannabis (53.9%) and sedatives (20.3%) when compared to their male counterparts. The transgender students reported 100% alcohol use, 50% sedative and cannabis use but no use of any other substances. The students who preferred not to disclose their gender reported 80% alcohol use and 40% cannabis use, with lower usage of other substances.

Table 2: Demographic characteristics of the respondents who use substances (n = 369)

	Frequency and Percent distribution	
Variable	**Count (n)**	**Percentage (%)**
Gender		
Male	119	32.2
Female	243	65.8
Transgender	2	0.5
Prefer not to say	5	1.5
Race		
African	128	34.7
Coloured	35	9.5
Indian/Asian	64	17.3
White	142	38.5
Year of study		
First year	98	26.5
Second year	39	10.6
Third year	63	17.1
Fourth year	66	17.9
Fifth year	50	13.5
Sixth year	53	14.4
Age (in years)		
Minimum	18	
Maximum	31	
Mean	21	

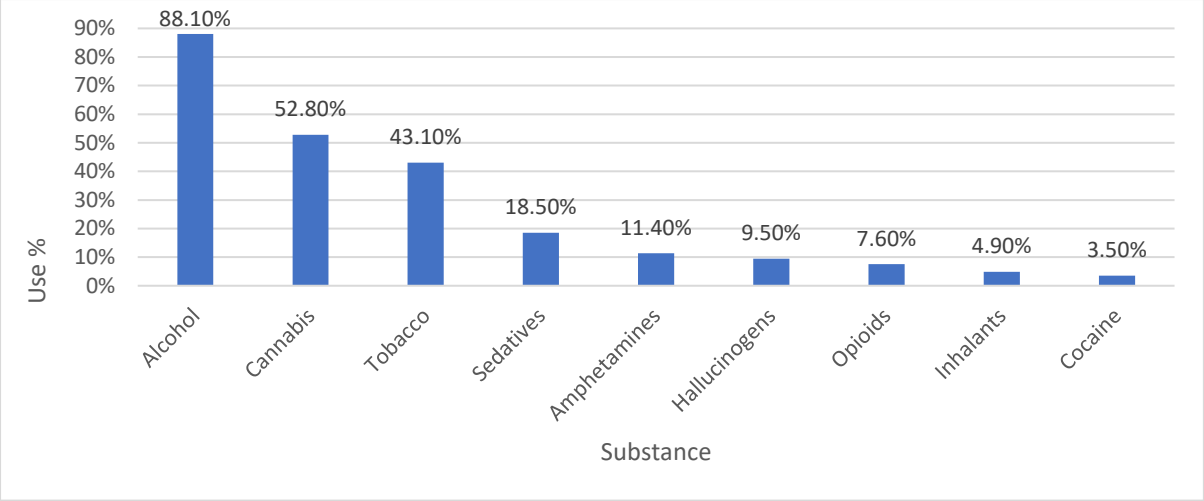

Figure 1: A bar graph showing the distribution of substances used

With regard to the most commonly used substances: Caucasian students had the highest rates of alcohol use (95.8%) followed by African students (89.8%), Indian/Asian students (78.1%) and Coloured students (68.6%). Cannabis use was reported by 62.9% of Coloured students, 52.8% of Caucasian students, 51.6% of African students and 50% of Indian/Asian students. The highest rates of tobacco use were also seen in Coloured students (60%) followed by Indian/Asian students (48.4%), Caucasian students (47.9%) and African students (30.5%).

Indian/Asian students reported the highest rate of amphetamine (20.3%), cocaine (7.8%) and hallucinogen (17.2%) use.

African students reported the highest rate of inhalant use (6.7%) but the lowest rate of tobacco (30.5%), sedative (14.1%), amphetamine (3.9%), opioid (4.7%), cocaine (0%) and hallucinogen (4.7%) use.

There was high alcohol use noted across the six years of study however first year students report highest use (92.9%) with fifth year students reporting lowest use (78%). There was a clear increase in cannabis use seen from pre-clinical (years one to three) to clinical (years four to six) with 75.5% of sixth year students reporting cannabis use. A similar pattern was seen with amphetamine use, 22.6% of sixth year students reported use compared to 2% of first year students. Tobacco use was relatively evenly distributed across the years with the highest rate (58%) reported by fifth year students and the lowest rate (38.1%) reported by first year students. Sedatives, after alcohol, cannabis and tobacco, also had a high rate of use with fifth years reporting the highest usage at 28.6% followed by second and first years at 20.5% and 20.4% respectively.

Overall, our study found that the prevalence of substance use at UCT medical school is higher in females, Caucasian individuals and students in the later years of study. The universal substance use reported by transgender students, those who prefer not to say their gender and students in the fifth and sixth years of study is particularly noteworthy with 100% of these respondents reporting use.

Table 3: Distribution of types of substances used by demographic characteristics of the respondents (n & %)

	Substance use (n & %)								
Demographics	**Tobacco**	**Alcohol**	**Sedatives**	**Cannabis**	**Amphetamine**	**Opioids**	**Cocaine**	**Inhalant**	**Hallucinogens**
Gender									
Male	56 (47.1)	107 (89.9)	18 (15.1)	61 (51.3)	15 (12.6)	7 (5.9)	6 (5.0)	8 (6.7)	13 (10.9)
Female	101 (41.6)	212 (87.2)	49 (20.3)	131 (53.9)	26 (10.7)	21 (8.7)	6 (2.5)	10 (4.1)	21 (8.6)
Transgender	1 (50.0)	2 (100.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Prefer not to say	1 (20.0)	4 (80.0)	0 (0.0)	2 (40.0)	1 (20.0)	0 (0.0)	1 (20.0)	0 (0.0)	1 (20.0)
Race									
African	39 (30.5)	115 (89.8)	18 (14.1)	66 (51.6)	5 (3.9)	6 (4.7)	0 (0.0)	9 (7.0)	6 (4.7)
Coloured	21 (60.0)	24 (68.6)	9 (25.7)	22 (62.9)	6 (17.1)	5 (14.3)	2 (5.7)	1 (2.9)	3 (8.6)
Indian/Asian	31 (48.4)	50 (78.1)	13 (21.0)	32 (50.0)	13 (20.3)	5 (7.9)	5 (7.8)	2 (3.1)	11 (17.2)
White	68 (47.9)	136 (95.8)	28 (19.7)	75 (52.8)	18 (12.7)	12 (8.5)	6 (4.2)	6 (4.2)	15 (10.6)
Year of study									
First year	39 (39.8)	91 (92.9)	20 (20.4)	43 (43.9)	2 (2.0)	4 (4.1)	0 (0.0)	2 (2.2)	1 (1.0)
Second year	16 (41.0)	34 (87.2)	8 (20.5)	18 (46.2)	7 (17.9)	1 (2.6)	0 (0.0)	1 (2.6)	3 (7.7)
Third year	24 (38.1)	58 (92.1)	8 (12.7)	26 (41.3)	4 (6.3)	5 (8.1)	1 (1.6)	5 (7.9)	2 (3.2)
Fourth year	31 (47.0)	56 (84.8)	9 (13.6)	39 (59.1)	7 (10.6)	4 (6.1)	2 (3.0)	4 (6.1)	9 (13.6)
Fifth year	27 (54.0)	39 (78.0)	14 (28.6)	29 (58.0)	10 (20.0)	10 (20.0)	5 (10.0)	3 (6.0)	9 (18.0)
Sixth year	22 (41.5)	47 (88.7)	9 (17.3)	40 (75.5)	12 (22.6)	4 (7.5)	5 (9.4)	3 (5.7)	11 (20.8)

Risk

The vast majority of the students, 359 out of 369 (97.3%), fall into the low-risk category for substance use. This indicates that most students use substances in a manner that is considered low risk. A small portion of the students, 10 out of 369 (2.7%), fall into the moderate-risk category for substance use. This suggests that a few students might be engaging in substance use patterns that could pose a moderate risk to their health or well-being.

The highest proportion of moderate risk was found in hallucinogen and amphetamine users at 5.7% and 4.8% respectively.

Of the most commonly used substances, alcohol only had one user in the moderate risk category (0.3%) whereas cannabis had only 2.6% of users falling into the moderate risk category.

Table 4: Type of substances used with associated risk level

	Risk level (n & %)		
Substance name	Low	Moderate	Total
Alcohol	324 (99.7)	1 (0.3)	325 (100.0)
Amphetamines	40 (95.2)	2 (4.8)	42 (100.0)
Cannabis	190 (97.4)	5 (2.6)	195 (100.0)
Inhalants	18 (100.0)	0 (0.0)	18 (100.0)
Opioids	27 (96.4)	1 (3.6)	28 (100.0)
Sedatives or Sleeping Pills	66 (97.1)	2 (2.9)	68 (100.0)
Hallucinogens	33 (94.3)	2 (5.7)	35 (100.0)
Tobacco products	153 (96.2)	6 (3.8)	159 (100.0)
Overall risk level	359 (97.3)	10 (2.7)	369 (100.0)

CHAPTER 4: DISCUSSION & CONCLUSIONS

Discussion

Our study had a response rate of 32.2%. 83.1% of students reported substance use; of these students 65.9% were female. Most students who use substances at UCT fall into the low-risk category (97.3%). Following both international and national literature, our study found alcohol followed by cannabis to be the most used substances. First year students reported increased alcohol use whilst increased cannabis use was seen as students go from pre-clinical (years 1-3) to clinical (years 4-6) years.

A substance use prevalence rate of 83,1% across all demographic variables was found for the students who completed the study. This is higher than 62.7% who reported substance use in a 2022 study also done at a university in the Western Cape (Blows et al., 2022). A reason for this increase seen might be since our sample size was smaller and only looked at medical students versus students across different faculties. International studies have shown that students in medical school use more substances than similar, age-matched cohorts (Baldwin et al., 1991, Frank et al., 2008, Shah et al., 2009).

Similar to both national and international literature on substance use in tertiary level students, alcohol, cannabis and tobacco were the most commonly used substances (Blows et al.,2022, Serowoky and Kwasky, 2017, Skidmore et al., 2016, Welsh et al., 2019). This mirrors what is also being seen amongst the general public in South Africa (Herman et al., 2009). The fact that these are our most commonly used substances is likely due their accessibility, social acceptability and affordability (van Heerden et al., 2009, Hopfer, 2014, Mokwena, 2019).

Most studies, both national and international, looking at substance use in medical students focus on alcohol use. Our study found that 88,1% of students use alcohol. A study also conducted in 2023 at the Faculty of Health Sciences at UCT looked at knowledge, attitudes and practices regarding alcohol use amongst undergraduate students (Mbuqa et al., 2024). Their study found similar results with 78,9% of students reporting alcohol use. Voster et al looked at alcohol use amongst second and third year medical students at the University of the Free State and found equally high rates of alcohol use at 78,4% and 82,8% respectively (Vorster et al., 2019). International studies show findings alone the same line; two studies done in USA showed alcohol use rates of 78% and 86% respectively amongst medical students (Frank et al.,

2008, Shah et al., 2009). The most commonly reported triggers that lead to alcohol consumption amongst university students include relationship stress, peer pressure, increased work load and perceived academic pressure (Deressa and Azazh, 2011, Welsh et al., 2019, Mbuqa et al., 2024).

Interestingly, our study did not find male students to be the main users of substances which was the case in both national and international studies looking at substance use in university students. We found similar levels of use between the sexes with women actually displaying slightly higher use at 84,1% compared to 80,4% of males. A contributing factor could be that the make-up of our study participants were predominantly female (65,1%) which is a reflection of the demographics of medical school at the time our study was conducted – 61,5% female students and 38,5% male students. Our findings are, however, in keeping with international literature; data collected from the 2024 World Drug Report confirms that the gender gap with regard to substance use is narrowing (UNODC, 2024). Alcohol or drug initiation in women results from the need to cope with feelings of anxiety, depression, isolation and often the trauma of sexual abuse and violence (Motyka et al., 2022). One then wonders whether the academic and social pressure of medical school combined with the increasing epidemic of violence against women in Sub Saharan Africa (WHO, 2018) has correlation to the findings in our study. Further studies looking at antecedence of substance use in medical students will need to be done to seek these answers.

One hundred percent of students that identified as transgender or preferred not to reveal gender use substances. The sample size of these groups was very small, accounting for 2% of the total population (n=7), however these results are in keeping with international literature that found higher rates of substance use amongst transgender individuals (Rupert et al., 2021). An analysis of the prevalence of substance and behavioural addictions across different transgender and gender diverse subgroups found that the main reasons for the increase in substance use is minority stress and stigmatization (Ruppert et al., 2021). Further study is however required to ascertain if these reasons are mirrored locally.

Overall substance use seems to increase as students progress through their years of study with one hundred percent of students using substances in fifth and sixth year (Figure 2). Fifth and sixth year of medical school are considered clinical years, with students spending more time in hospitals working under supervision as part of their learning. As part of their clinical rotations, students in higher years of study may also be expected to be present for part of their clinical

teams overtime thus increasing their working hours. The increase in substance use may be indicative of substances being used as a coping mechanism for an increase in work load and responsibility in the clinical years of training (Choi et al., 2013, Arora et al., 2015, Vorster et al., 2019). Hypothetically, there might also be increased exposure, access and normalization of substance use as students progress through the years of study.

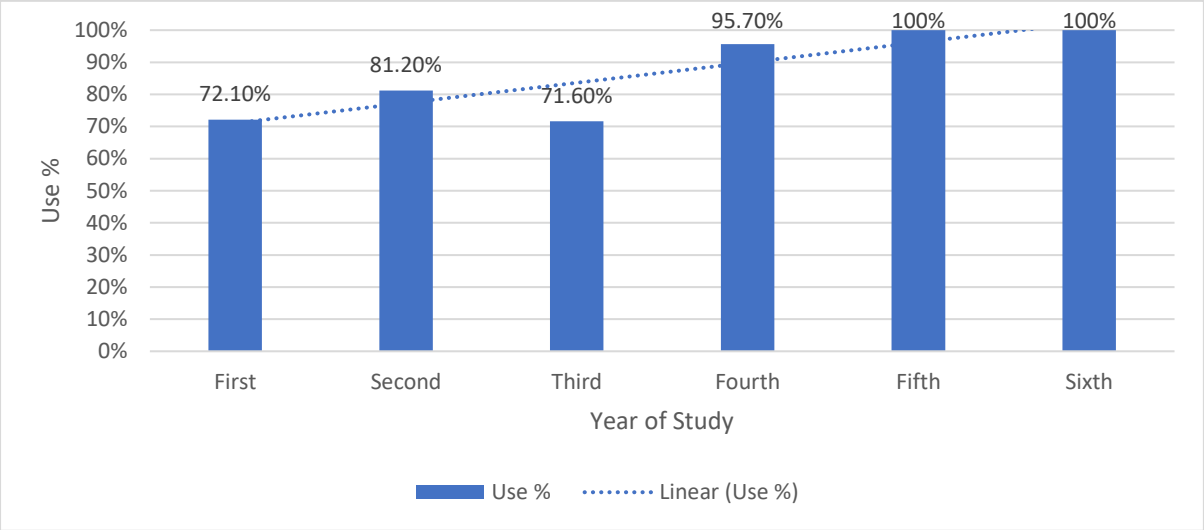

Figure 2: A bar graph showing overall substance use by year of study

Alcohol use, however, shows a different trend with first year medical students displaying the highest prevalence of alcohol use (92,9%) when compared to their peers. This could be explained by the fact that for many of these young people this is their first experience of independence and freedom from direct supervision and they are likely ready to test the boundaries previously set by parents and schools (Kyei and Ramagoma, 2013, Ohale et al., 2017). In first year students seek to establish a peer network that can be a source of support and assist with the transition to tertiary education centres (Hays and Oxley, 1986) . If some members of a peer network use alcohol, there is a high probability that an individual in that group will be influenced to do the same (Johnson et al., 2017, Kyei and Ramagoma, 2013). Advertising and marketing around alcohol, together with ease of procurement contribute to increased rate of use (Van Heerden et al., Mbuqa et al., 2024). Additionally, there is integration of alcohol use into the normative tradition and fabric of the tertiary education experience with alcohol being present at most social gatherings and part of many peer interactions (Borsari and Carey, 2001). First year students are exposed to a plethora of social activity during their

orientation weeks and one wonders whether that might contribute to the increased use that we see.

Overall ASSIST calculated risk related to substance use was low. Despite being the most used substances, alcohol, cannabis and tobacco had low proportions of moderate risk with no severe risk being found. The highest proportion of moderate risk was seen in hallucinogen and amphetamine use. As we made use of a self-reporting screening tool there is always the concern that use and therefore risk has been under reported. One does also wonder about severe substance risk and ability to cope with studies; might there be a possibility that we are not encountering any severe substance risk amongst these students because those within that category have either dropped out or been excluded from university.

Limitations

This was a foundational study where we sought to primarily address the undergraduate medical faculty's concern about the prevalence of substance use. For this reason, this study was aimed at undergraduate medical students. It may be useful to conduct this study across other faculties at the university to get a sense of overall substance use at UCT. Duplicating this study at other universities across South Africa would be useful in getting a national overview of substance use in tertiary level educational facilities.

We were only able to access 32,2% of the total number of medical students at UCT. Despite sending out an email link to all students we were only able to conduct in-person sessions with select groups from each year. This was largely due to scheduling conflicts between lectures and clinical years being predominantly off site.

This was a descriptive study therefore no analysis of samples to make predictions about larger populations was conducted. There is a place for a follow-up study using inferential statistics to be done. Our study made use of a self-reporting questionnaire. Despite reassurance regarding anonymity students might have been mistrusting that and feared perceived scrutiny thus downplaying their substance use. Self-reporting tools have their limitations; social desirability bias comes into play with self-reporting as there is the tendency to report what is thought to be socially acceptable. For this reason, perceived 'good behaviors or decreased substance use may be over reported and 'bad behaviors or increased substance use may be under reported.

Additionally, there were limitations with regard to the ASSIST tool itself as we used the international WHO version which was not modified to include the South African street names of certain drugs.

Students were informed to use the 'other drugs' category for drugs either not on the list or where they were uncertain of specific category. They were also informed that any doctor prescribed stimulants (e.g. Ritalin) for ADHD should not be included. This was, however, only emphasized in the in-person sessions and not attached to the follow up emails; this meant that this was not standardized information given to all the study participants.

Conclusion & Recommendations

From this study we see that the prevalence of substance use amongst undergraduate medical students at UCT is high (83,1%). However, in this study calculated risk was shown to be low. Whilst risk might be low, we know that substance use disorders develop over time with repeated episodes of misuse (McLellan, 2017). Given the devastating sequelae of substance use disorders, early identification, primary prevention and intervention is needed.

This foundational study has given us some insight into prevalence of substance use amongst undergraduate medical students at UCT. Alcohol is the most commonly used substance, particularly amongst first year medical students at UCT. We know that young adults minimize risk associated with alcohol consumption (Reavley et al., 2011, Welsh et al., 2019, Mbuqa et al., 2024). This combined with ease of access, affordability and exposure to every day advertising is likely what contributes to increased use. One then wonders whether, at a university level, increased psychoeducation and decreased advertising of alcohol at university hosted events together with, at national level, talks around increasing the unit price of alcohol might have an effect on use.

Further studies building on this one would be useful particularly in exploring cause and effect of substance use. A larger cross-sectional study with rigorous sampling methods to address prevalence or a longitudinal study design to assess risk and protective factors as well as substance use over time would offer further insight. It would be interesting to see whether, as seen in international literature, difficulty in social integration as well as academic pressure from increased work load could be contributing to the high prevalence of substance use that we have seen in this population(Choi et al., 2013) (Vorster et al., 2019)(Mbuqa et al., 2024). These

findings might assist in streamlining and optimising the support services that the university is able to offer this student group.

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APPENDICES
CONTENT:

1. Human Research Ethics Committee (HREC) Approval Letter
2. Research Access to Students (DSA100) Approval Letter
3. Alcohol Smoking Substance Involvement Screening Tool (ASSIST)
4. Demographic Data Sheet
5. Information Session for Students
6. Informed Consent
7. Support Services Resource List

APPENDIX 1: HREC APPROVAL LETTER

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room 45 E-52-E-Floor- Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6492
Email: hrec-submissions@uct.ac.za
Website: www.health.uct.ac.za/home/human-research-ethics

27 January 2023

HREC REF: 720/2022

Dr L Dannatt
UCT Department of Addiction Psychiatry
Office 27, Neuroscience Institute GSH
Email: lisa.dannatt@uct.ac.za
Student: devina.mair9@gmail.com

Dear Dr Dannatt

PROJECT TITLE: THE PREVALENCE OF PSYCHOACTIVE SUBSTANCE USE AMONGST UNDERGRADUATE STUDENTS AT A MEDICAL SCHOOL IN SOUTH AFRICA.- MASTER'S DEGREE-DR DEVINA NAIR

Thank you for your response letter, addressing the issues raised by the Faculty of Health Sciences Human Research Ethics Committee (HREC).

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30 January 2024.

Please submit a progress form, using the standardised Annual Report Form (FHS016) if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

The HREC acknowledge that the student: Dr Devina Nair will also be involved in this study.

Please quote the HREC REF 720/2022 in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE

Federal Wide Assurance Number: FWA00001637. Institutional Review Board (IRB) number: IRB00001938 NHREC-registration number: REC-210208-007

APPENDIX 2 : DSA 100 APPROVAL LETTER

	RESEARCH ACCESS TO STUDENTS	DSA100

NOTES

1. This form must be **FULLY** completed by all applicants who want to access UCT students for the purpose of research or surveys.
2. Return the fully completed **(a) DSA 100** application form **by email**, in **the same word format**, together with **your: (b) research proposal inclusive of your survey, (c) copy of your ethics approval letter / proof (d) informed consent letter** to: Nadierah.Pienaar@uct.ac.za. You application will be attended to by the Executive Director, Department of Student Affairs (DSA), UCT.
3. The turnaround time for a reply is **approximately 10 working days**.
4. NB: It is the responsibility of the researcher/s to apply for and to obtain **ethics approval and to comply with amendments that may be requested**; as well as to **obtain** approval to access UCT staff and/or UCT students, from the following, at UCT, respectively:
   (a) **Ethics**: Chairperson, Faculty Research Ethics Committee' (FREC) for ethics approval, (b) **Staff access**: Executive Director: HR for approval to access UCT staff, and (c) **Student access**: Executive Director: Student Affairs for approval to access UCT students.
5. **Note:** UCT Senate Research Protocols requires compliance to the above, **even if prior approval has been obtained from any other institution/agency. UCT's research protocol requirements applies to *all* persons, institutions and agencies from UCT and external to UCT who want to conduct research on human subjects for academic, marketing or service related reasons at UCT.**
6. **Should approval be granted to access UCT students for this research study, such approval is effective for a period of one year from the date of approval (as stated in Section D of this form), and the approval expires automatically on the last day.**
7. **The approving authority reserves the right to revoke an approval based on reasonable grounds and/or new information.**

SECTION A: RESEARCH APPLICANT/S DETAILS

Position	Staff / Student No	Title and Full Name	Contact Details (Email & Cell / Land line)
A.1 Student Number	NRXDEV002	Dr Devina Nair	NRXDEV002@myuct.ac.za / 082 402 8962
A.2 Academic / PASS Staff No.			
A.3 Visitor/ Researcher ID No.			
A.4 University at which a student or employee	University of Cape Town	Address if *not* UCT:	
A.5 Faculty & Department/School	Department of Psychiatry, Faculty of Health Sciences		
A.6 APPLICANTS DETAILS if different from above	Title and Name	Tel.	Email

SECTION B: RESEARCHER/S SUPERVISOR/S DETAILS

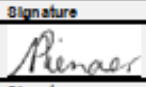
Position	Title and Name	Tel.	Email
B.1 Supervisor	Dr Lisa Dannatt	021 4042174	Lisa.dannatt@uct.ac.za
B.2 Co-Supervisor/s	Prof. Goodman Sibeko	021 4042174	Goodman.sibeko@uct.ac.za

SECTION C: APPLICANT'S RESEARCH STUDY FIELD AND APPROVAL STATUS

C.1 Degree – if applicable	MMed Psychiatry
C.2 Research Project Title	The prevalence of psychoactive substance use amongst undergraduate students at a medical school in South Africa.
C.3 Research Proposal	Attached: Yes ☒ No ☐
C.4 Target population	UCT undergraduate medical students
C.5 Lead Researcher details	If different from applicant: 01450835, Dr Lisa Dannatt
C6. Will use research assistant/s	Yes ☐ No ☒ If yes provide a list of names, contact details :
C.7 Research Methodology and Informed consent	Research methodology: Quantitative online questionnaire Informed consent: Advised for participation consent
C.8 Ethics clearance status from UCT's Faculty Ethics In Research Committee /Chair (EIRC)	Approved by the UCT EIRC: Yes ☒ With amendments: Yes ☐ No ☒ (a) Attach copy of your UCT ethics approval. Attached: Yes ☒ No ☐ (b) State date / Ref. No / Faculty of your UCT ethics approval: 27/01/2023 Ref. / Faculty: 720/2022

SECTION D: APPLICANT/S APPROVAL STATUS FOR ACCESS TO STUDENTS FOR RESEARCH PURPOSE

(To be completed by the ED, DSA or NOMINEE)

D.1 APPROVAL STATUS	Approved / With Terms / Not	* Conditional approval with terms		Applicant/s Ref. No.:
	(I) Approved ☒ ~~(II) With terms~~ ~~(III) Not approved~~	a) Access to students for this research study must only be undertaken after written ethics approval has been obtained. b) In event any ethics conditions are attached, these must be complied with before access to students.		NRXDEV002 / Dr Devina Nair
D.2 PREPARED BY:	Designation	Name	Signature	Date of Approval
	Personal Assistant	*Nadierah Pienaar*		15/02/2023
D.3 APPROVED BY:	Designation	Name	Signature	Date of Approval
	Executive Director / Nominee Department of Student Affairs	*Mr Pura Mgolombane*		15/02/2023

APPENDIX 3: ALCOHOL SMOKING SUBSTANCE INVOLVEMENT SCREENING TOOL

A. WHO - ASSIST V3.0

INTERVIEWER ID		COUNTRY		CLINIC	
PATIENT ID			DATE		

INTRODUCTION ***(Please read to patient)***

Thank you for agreeing to take part in this brief interview about alcohol, tobacco products and other drugs. I am going to ask you some questions about your experience of using these substances across your lifetime and in the past three months. These substances can be smoked, swallowed, snorted, inhaled, injected or taken in the form of pills (show drug card).

Some of the substances listed may be prescribed by a doctor (like amphetamines, sedatives, pain medications). For this interview, we will not record medications that are used as prescribed by your doctor. However, if you have taken such medications for reasons other than prescription, or taken them more frequently or at higher doses than prescribed, please let me know. While we are also interested in knowing about your use of various illicit drugs, please be assured that information on such use will be treated as strictly confidential.

NOTE: BEFORE ASKING QUESTIONS, GIVE ASSIST RESPONSE CARD TO PATIENT

Question 1
(if completing follow-up please cross check the patient's answers with the answers given for Q1 at baseline. Any differences on this question should be queried)

In your life, which of the following substances have you ever used? *(NON-MEDICAL USE ONLY)*	No	Yes
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	3
d. Cocaine (coke, crack, etc.)	0	3
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	3
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	3
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	3
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	3
j. Other - specify:	0	3

Probe if all answers are negative:
"Not even when you were in school?"

If "No" to all items, stop interview.

If "Yes" to any of these items, ask Question 2 for each substance ever used.

Question 2

In the past three months, how often have you used the substances you mentioned *(FIRST DRUG, SECOND DRUG, ETC)*?	Never	Once or Twice	Monthly	Weekly	Daily or Almost Daily
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	2	3	4	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	2	3	4	6
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	2	3	4	6
d. Cocaine (coke, crack, etc.)	0	2	3	4	6
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	2	3	4	6
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	2	3	4	6
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	2	3	4	6
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	2	3	4	6
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	2	3	4	6
j. Other - specify:	0	2	3	4	6

If "Never" to all items in Question 2, skip to Question 6.

If any substances in Question 2 were used in the previous three months, continue with Questions 3, 4 & 5 for each substance used.

Question 3

During the past three months, how often have you had a strong desire or urge to use *(FIRST DRUG, SECOND DRUG, ETC)*?	Never	Once or Twice	Monthly	Weekly	Daily or Almost Daily
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	3	4	5	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	3	4	5	6
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	3	4	5	6
d. Cocaine (coke, crack, etc.)	0	3	4	5	6
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	3	4	5	6
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	3	4	5	6
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	3	4	5	6
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	3	4	5	6
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	3	4	5	6
j. Other - specify:	0	3	4	5	6

Question 4

During the past three months, how often has your use of *(FIRST DRUG, SECOND DRUG, ETC)* led to health, social, legal or financial problems?	Never	Once or Twice	Monthly	Weekly	Daily or Almost Daily
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	4	5	6	7
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	4	5	6	7
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	4	5	6	7
d. Cocaine (coke, crack, etc.)	0	4	5	6	7
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	4	5	6	7
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	4	5	6	7
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	4	5	6	7
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	4	5	6	7
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	4	5	6	7
j. Other - specify:	0	4	5	6	7

Question 5

During the past three months, how often have you failed to do what was normally expected of you because of your use of *(FIRST DRUG, SECOND DRUG, ETC)*?	Never	Once or Twice	Monthly	Weekly	Daily or Almost Daily
a. Tobacco products					
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	5	6	7	8
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	5	6	7	8
d. Cocaine (coke, crack, etc.)	0	5	6	7	8
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	5	6	7	8
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	5	6	7	8
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	5	6	7	8
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	5	6	7	8
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	5	6	7	8
j. Other - specify:	0	5	6	7	8

Ask Questions 6 & 7 for all substances ever used (i.e. those endorsed in Question 1)

Question 6

Has a friend or relative or anyone else ever expressed concern about your use of *(FIRST DRUG, SECOND DRUG, ETC.)?*	**No, Never**	**Yes, in the past 3 months**	**Yes, but not in the past 3 months**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	6	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	6	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	6	3
d. Cocaine (coke, crack, etc.)	0	6	3
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	6	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	6	3
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	6	3
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	6	3
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	6	3
j. Other – specify:	0	6	3

Question 7

Have you ever tried and failed to control, cut down or stop using *(FIRST DRUG, SECOND DRUG, ETC.)?*	**No, Never**	**Yes, in the past 3 months**	**Yes, but not in the past 3 months**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	6	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	6	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	6	3
d. Cocaine (coke, crack, etc.)	0	6	3
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	6	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	6	3
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	6	3
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	6	3
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	6	3
j. Other – specify:	0	6	3

Question 8

	No, Never	Yes, in the past 3 months	Yes, but not in the past 3 months
Have you <u>ever</u> used any drug by injection? *(NON-MEDICAL USE ONLY)*	0	2	1

IMPORTANT NOTE:

Patients who have injected drugs in the last 3 months should be asked about their pattern of injecting during this period, to determine their risk levels and the best course of intervention.

PATTERN OF INJECTING		INTERVENTION GUIDELINES
Once weekly or less **Fewer than 3 days in a row**	or	→ **Brief Intervention including "risks associated with injecting" card**
More than once per week **3 or more days in a row**	or	→ **Further assessment and more intensive treatment***

HOW TO CALCULATE A SPECIFIC SUBSTANCE INVOLVEMENT SCORE.

For each substance (labelled a. to j.) add up the scores received for questions 2 through 7 inclusive. Do not include the results from either Q1 or Q8 in this score. For example, a score for cannabis would be calculated as: **Q2c + Q3c + Q4c + Q5c + Q6c + Q7c**

Note that Q5 for tobacco is not coded, and is calculated as: **Q2a + Q3a + Q4a + Q6a + Q7a**

THE TYPE OF INTERVENTION IS DETERMINED BY THE PATIENT'S SPECIFIC SUBSTANCE INVOLVEMENT SCORE

	Record specific substance score	no intervention	receive brief intervention	more intensive treatment *
a. tobacco		0 - 3	4 - 26	27+
b. alcohol		0 - 10	11 - 26	27+
c. cannabis		0 - 3	4 - 26	27+
d. cocaine		0 - 3	4 - 26	27+
e. amphetamine		0 - 3	4 - 26	27+
f. inhalants		0 - 3	4 - 26	27+
g. sedatives		0 - 3	4 - 26	27+
h. hallucinogens		0 - 3	4 - 26	27+
i. opioids		0 - 3	4 - 26	27+
j. other drugs		0 - 3	4 - 26	27+

NOTE: *FURTHER ASSESSMENT AND MORE INTENSIVE TREATMENT may be provided by the health professional(s) within your primary care setting, or, by a specialist drug and alcohol treatment service when available.

B. WHO ASSIST V3.0 RESPONSE CARD FOR PATIENTS

Response Card - substances

a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)
b. Alcoholic beverages (beer, wine, spirits, etc.)
c. Cannabis (marijuana, pot, grass, hash, etc.)
d. Cocaine (coke, crack, etc.)
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)
i. Opioids (heroin, morphine, methadone, codeine, etc.)
j. Other - specify:

Response Card (ASSIST Questions 2 – 5)

Never: not used in the last 3 months

Once or twice: 1 to 2 times in the last 3 months.

Monthly: 1 to 3 times in one month.

Weekly: 1 to 4 times per week.

Daily or almost daily: 5 to 7 days per week.

Response Card (ASSIST Questions 6 to 8)

No, Never

Yes, but not in the past 3 months

Yes, in the past 3 months

C. ALCOHOL, SMOKING AND SUBSTANCE INVOLVEMENT SCREENING TEST (WHO ASSIST V3.0) FEEDBACK REPORT CARD FOR PATIENTS

Name_____ **Test Date** _____

Specific Substance Involvement Scores

Substance	Score	Risk Level
a. Tobacco products		0-3 Low 4-26 Moderate 27+ High
b. Alcoholic Beverages		0-10 Low 11-26 Moderate 27+ High
c. Cannabis		0-3 Low 4-26 Moderate 27+ High
d. Cocaine		0-3 Low 4-26 Moderate 27+ High
e. Amphetamine type stimulants		0-3 Low 4-26 Moderate 27+ High
f. Inhalants		0-3 Low 4-26 Moderate 27+ High
g. Sedatives or Sleeping Pills		0-3 Low 4-26 Moderate 27+ High
h. Hallucinogens		0-3 Low 4-26 Moderate 27+ High
i. Opioids		0-3 Low 4-26 Moderate 27+ High
j. Other - specify		0-3 Low 4-26 Moderate 27+ High

What do your scores mean?

Low: You are at low risk of health and other problems from your current pattern of use.

Moderate: You are at risk of health and other problems from your current pattern of substance use.

High: You are at high risk of experiencing severe problems (health, social, financial, legal, relationship) as a result of your current pattern of use and are likely to be dependent

Are you concerned about your substance use?

APPENDIX 4: DEMOGRAPHIC DATA SHEET

1) Sex:

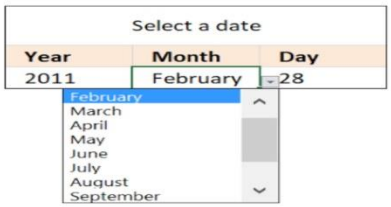
☐ Male

☐ Female

☐ Other : _____

2) Age:

Please enter your date of birth using the drop down calendar below



3) Current Year of Study:

☐ 1st Year

☐ 2nd Year

☐ 3rd Year

☐ 4th Year

☐ 5th Year

☐ 6th Year

APPENDIX 5: INFORMATION SESSION FOR STUDENTS

1) Introduction

My name is Devina Nair; I am a psychiatry registrar with a special interest in Addiction Psychiatry. As part of my training I need to complete a research project that I would like to speak to you about today. UCT is my alma mater and I know that substance use plays a big role in university culture especially in our setting. I would like to further understand the extent of this substance use which is why I am asking you to be a part of a study run by the University of Cape Town which looks at the prevalence of substance use in our medical school. By doing this study we not only aim to determine which substances are most commonly used amongst undergraduate students but to also find out the extent of substance use and extent of risky substance use amongst undergraduate medical students.

2) Importance of the study

Your participation will also help lay a foundation for further research geared towards helping university students with improved access to detection and early intervention for risky substance use, as well as potentially improve access to on-site campus campaigns and treatment modalities for those in need.

3) Privacy & Confidentiality

Taking part in this study is completely up to you. If you don't want to participate in the study, that is okay. Choosing not to participate will have no effect on your studies.

The only place that will contain your identity is the informed consent form. The data collected via the online tool will not be linked to this consent form so we will not know which form belongs to which participant. Your response will be given a random computer-generated number that is not connected to your identity. No one will know that this is your response. In research reports, your response will always be grouped with other responses and there is no risk of you being recognized.

4) What participating in the study will entail

We are asking you to answer an electronic version of the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). This should take approximately 15 minutes of your time. The ASSIST is a World Health Organization (WHO) tool designed to assist with evaluation of patterns of patterns of substance use and elicit whether there is any increased risk associated with any substance used. This is aimed at assisting with early identification of substance use related health risks and substance use disorders in primary health care, general medical care and other settings. The ASSIST consists of eight questions or items, covering ten substances: tobacco, alcohol, cannabis, cocaine, amphetamine type stimulants, inhalants, sedatives, hallucinogens, opioids and other drugs. If you are using a substance not on the list or you know the name of the drug (eg Tik) but not sure which heading it should fall under please add to 'other drugs'. If you are using doctor prescribed stimulants for ADHD please do not include this use under 'amphetamine type stimulants'.

Based on the answers given, this electronic ASSIST tool will generate an assessment of the presence and severity of any substance use. Based on the results you may receive a recommendation or feel the need to seek further help and intervention. At the termination of the screening process, a resource list of helpful resources and contacts will be provided to meet this need.

Should you wish to participate in this study a QR code will be made available on screen. You can scan the QR code with your smart phone and will be directed to a consent page, once you have consented to be a part of the study you will be re-directed to the screening tool. If you do not feel comfortable to complete the screening tool here we will send a follow up email after this information session with a link to the online screening tool.

APPENDIX 6: INFORMED CONSENT

Department of Psychiatry and Mental Health

J Block Groote Schuur Hospital

Observatory

Cape Town

devina.nair@westerncape.gov.za

Introduction:

We are asking you to be a part of a study run by the University of Cape Town which looks at the prevalence of substance use in your medical school. By doing this study we not only aim to determine which substances are most commonly used amongst undergraduate students but to also ascertain the extent of risky substance use amongst undergraduate medical students.

With the results from this study we hope to provide a foundation upon which further substance use prevention and intervention studies, targeting universities, can be conducted. This will hopefully better both the prevention and treatment services available at universities for students who are dealing with substance use problems.

What we're asking of you:

We are asking you to answer an electronic version of the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). This should take approximately 15 minutes of your time. The ASSIST is a World Health Organization (WHO) tool designed to assist with evaluation of patterns of patterns of substance use and elicit whether there is any increased risk

associated with any substance used. This is aimed at assisting with early identification of substance use related health risks and substance use disorders in primary health care, general medical care and other settings. The ASSIST consists of eight questions or items, covering ten substances: tobacco, alcohol, cannabis, cocaine, amphetamine type stimulants, inhalants, sedatives, hallucinogens, opioids and other drugs.

Intervention:

Based on the answers given, this electronic ASSIST tool will generate an assessment of the presence and severity of any substance use. Based on the results you may receive a recommendation or feel the need to seek further help and intervention. At the termination of the screening process, a resource list of helpful resources and contacts will be provided to meet this need.

Risks or Discomforts:

Answering some of the questions asked in the tool, followed by receiving your screening outcome may make you uncomfortable as this may be the first time that you become aware that you may have a risky relationship with substances. The resource list we will provide is designed to indicate where you can access services to support you. Your decision to take part or not take part in this study will not affect your studies in any way.

Benefits of Taking Part in the Study:

Your participation in this study may allow an opportunity for early detection and intervention of your potentially risky substance use. Your participation will also help lay a foundation for further research geared towards helping university students with improved access to detection and early intervention for risky substance use, as well as potentially improve access to on-site campus campaigns and treatment modalities for those in need.

Being In The Study Is Voluntary And Confidential:

Taking part in this study is completely up to you. Your information will be kept private as described below. If you don't want to participate in the study, that is okay. Choosing not to participate will have no effect on your studies.

Privacy:

The only place that will contain your identity is this informed consent form. The data collected via the online tool will not be linked to this consent form so we will not know which form belongs to which participant. Your response will be given a random computer-generated number that is not connected to your identity. No one will know that this is your response. In research reports, your response will always be grouped with other responses and there is no risk of you being recognized.

APPENDIX 7: SUPPORT SERVICES RESOURCE LIST

1) UCT Student Wellness

The Student Wellness Service (SWS) is part of the UCT Department of Student Affairs. They provide professional medical and counselling services to students at a primary health care level. The SWS is involved with the promotion of a balanced and healthy lifestyle as well as the prevention, early detection and treatment of all physical and mental health conditions. The centre provides both medical and counselling services; offering predominantly short-term counselling and psychotherapy, the service helps students deal with personal, emotional or psychological problems, to ensure they achieve their potential.

Street Address: 28 Rhodes Ave, Mowbray, Cape Town, 7700

Phone: 021 650 1020

Hours: Monday – Sunday 8am till 9pm

2) Cape Town Drug Counselling Centre

Established in 1985, the Cape Town Drug Counselling Centre is an outpatient centre that provides confidential assistance to individuals and families experiencing problems with drug abuse. Apart from in-person sessions, online and telephonic counselling is now also available with their team of professional counsellors.

Street Address: 1 Roman Road, Observatory

Hours: Monday – Friday 8am till 4.30pm

Enquiries:

Telephone: 021 447 8026, WhatsApp- 073 755 1913/ 063 087 2435

Fax: 021 447 8818

E-mail:grant@drugcentre.org.za

Social Media:

Facebook: https://web.facebook.com/drugcounsellingcentre/

Twitter: https://twitter.com/CTDCC_SA

Instagram: https://www.instagram.com/drug_counselling_centre/?hl=en

Youtube: https://www.youtube.com/channel/UCkXKEjpkY_ajYgjVLg8IYjA/videos?view_as=subscriber

3) The South African National Council on Alcoholism and Drug Dependence (SANCA)

SANCA is a non-governmental organisation, the major objectives of which are the prevention and treatment of alcohol and drug dependence. These objectives are achieved through the provision of highly effective primary and secondary prevention services, as well as comprehensive treatment programmes for chemically dependent people and their families.

Offices:

- Athlone: 021 638 5116/5181 athlone@sancawc. co.za Vuyiswa@sancawc.co.za tracey@sancawc.co.za
- Atlantis 021 572 7461 atlantis@sancawc.co.za
- Gugulethu 021 638 5116 gugulethu@ sancawc.co.za
- Khayelitsha 021 364 6131 kayelitsha@ sancawc.co.za ruth@sancawc.co.za
- Loeriesfontein 027 662 054
- Mitchells Plain 021 397 2196 mitchellsplain@sancawc.co.za

4) The South African Depression and Anxiety Group (SADAG)

In collaboration with Discovery Health, SADAG now offers a dedicated medical student free helpline. While most campus student support facilities are walk-in offices, this helpline offers

anonymous, all-hours private service to those in need. This will hopefully serve to remove student's fear of being discriminated against if they have a mental illness or suicidal ideation. Trained helpline counsellors will be able to provide follow-ups, educational material about mental illness plus referrals to other medical professionals if necessary.

Discovery Medical Students & Young Doctors Helpline
0800 323 323

UCT Helpline
0800 24 25 26

5) Community Support Groups

Narcotics Anonymous	0839006962 www.na.org.za
Alcoholics Anonymous	0861435722 www.aasouthafrica.org.za
NAR-ANON Family support	0881296791 www.naranon.org.za
ALANON Family support	0861252666 www.alanon.org.za
LIFELINE Emergency counselling	0214611111