PREVALENCE OF SUBSTANCE USE AMONG UNDERGRADUATE MEDICAL STUDENTS AT THE UNIVERSITY OF NAIROBI

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University of Nairobi

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STUDENT'S DECLARATION

I declare that this dissertation is my original work and it has not been submitted to any other institution or higher leaning for award of a degree or for any other purpose(s) except where due references have been made in the text.

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DEDICATION

I would like to dedicate this book to my family who supported me and encouraged me even when I would have got lost in the process to remember the goal and motivation behind this study. Thank you.

ACKNOWLEDGEMENT

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ASSIST: Alcohol, smoking and substance involvement screening test

AUDIT: Alcohol use disorder identification test

DSM 5: Diagnostic and statistical manual of mental disorders, 5th edition

LSD: Lysergic acid diethylamide

PCP: Phencyclidine

WHO: World health Organisation

ABSTRACT

Introduction: There is a growing and worrying trend in the prevalence of substance use disorders among medical students globally. This substance use not only interferes with learning, which is a major concern considering the cognitive and psychological impact on the student, it also impacts on the medical students' future careers as practicing physicians this has longstanding implications that could have on patients. There is paucity of local studies done and published from this particular demographic in Kenya to assess the trend among medical students.

Objective: The broad objective. To determine the prevalence of substance use among undergraduate medical students in the University of Nairobi.

Methods: This was a cross-sectional study of 387 undergraduate medical students in the University of Nairobi using proportional sampling. Data was collected via self-administered The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) and researcher designed socio-demographic questionnaire. SPSS for windows version 25 was used for data analysis. Frequencies, proportions and Fishers' exact test was used.

Results: A total of 387 students participated recruited. Prevalence of substance use was 43.7% [95% CI: 38.7%-48.7%], the substance with highest use were Alcohol 39.6%, cannabis 24.7%, cigarette 17%. Cannabis was associated with the most frequent use and the substance with the highest risk of harmful use. The greatest influencing factor to start substance use was curiosity and peer pressure 78.4%.

1.0 CHAPTER ONE: INTRODUCTION

1.1 Background Information

Substance use disorder is a condition where substance use is excessive leading to clinically significant distress which affects the individuals' social and occupational functioning (APA, 2013). According to the DSM V, there are six types of substance use disorders; alcohol, tobacco, cannabis, stimulant, hallucinogens and opioid use disorders (APA, 2013). The occurrence of substance use disorders has been attributed to the brain's reward circuitry. The underlying mechanism behind continued use is that once an individual uses the substance, the increase of stimulating neurotransmitters for example dopamine, activate the brain reward circuitry (Koob, Karde, Baler, & Volkow, 2015).

A review of published studies over a period of 10years on substance use among the youth in 2016 concluded that it was a growing global problem (Somani & Meghani, 2016). The reviewed studies didn't focus on particular groups of youths but generally focused on statistics from studies published globally on substance use. Degenhardt, Stockings, Patton, Hall, & Lynskey (2016), reported that substance use in young people could interfere with the key stages in transition especially related to the cognitive and emotional development where significant psychosocial milestones or changes are achieved. Their study focused on substance use among 10-24 year olds and part of their findings was that first engagement of substance usually occurred during adolescence and progressed into adulthood with progressive use peaking in young adulthood (Degenhardt et al.,2016), the global Burden of disease (2013) study also confirmed these findings. The GBD study reported that alcohol and substance use was more prevalent among males between age 20 and 24yrs and actually accounted for 14% of total health burden.

According the WHO, developing countries have been noted to be most affected with regards to an increase in substance use disorders among the youths (WHO, 2014). Rapid economic changes, insecurity, poverty and socio-cultural changes among others being cited as major contributing factors to this growing problem (WHO, 2014). This current study however looks at a substance use among University undergraduate medical students in particular.

University students commence studies from the age of 19yrs whereby according to Eric Erickson's, developmental stages, an individual goes through self-identity or role confusion. At this stage, fidelity to peers and discovering the self with regards to individual identity becomes the primary focus of the youth (Erikson, 1968). Fidelity is achieved by associating with peers and socializing with others where acquisition of roles and identity with groups also occur. According to Schwartz, Sheeber, Dudgeon, & Allen(2012), this stage comes with behavioral and emotional problems which impact the youth tremendously as they learn to regulate their stress responses either adaptively or in maladaptive ways (Quas, 2014). It is therefore correct to assume that for undergraduate medical students who find themselves dealing with an intense course with considerable consequences, they could have immense difficulty regulating their stress responses and hence resort to maladaptive ways of coping such as substance abuse. This could be heightened by the fact that, during the university period, parental supervision is minimal and they experience independence where they rely on the self or friends for decision making, in most instances for the first time autonomy is no longer a theoretical concept but their new reality.

Global studies that have looked into substance use among medical students in various Universities have established that there is are increased incidences of substance use. (Boland, et al., 2006; Shah, Bazargan-Hejazi, & Lindstrom, 2009; BeyondBlue, 2014, Trostler, Li, & Plankey, 2014). These studies generally found that alcohol use was rampant among medical students (Khanal, et al., 2010, Arora, et al., 2016 ;Mason, Winseman, Roseman, & Ayala, 2017). This was especially notable among the male medical students. Alcohol use was followed by tobacco use. The same results were noted from African studies that generally reported that alcohol use was more prevalent among university medical students (Babalola, Akinhanmi, & Ogunwale, 2014; Desta, Soboka, Workneh, & Gashaw, 2018). In Kenya, no studies on substance use disorder among medical students and particularly undergraduate medical students have not been done. This study therefore seeks to determine the prevalence of substance use disorder among these students and factors that influence this maladaptive behavior.

1.2 Problem Statement

Medical students are unique in that they tend to have heavier workloads, study for longer periods than most other courses and have high expectations as well as progressive societal pressure from the period of life before, during and after medical students. Medical students are exposed to increasing degree of course difficulty, frequent contact with sick people and death and they also deal with exposure to the conflict between the rational and emotional experience (Boni R Paiva C de Oliveira M Lucchetti G Fregnani J et. al. 2018).

It is clear that substance use has been notably high among young adults globally and medical students have not been exempted from the problem. Globally the available literature points to increased and worrying trend of high levels of alcohol use, illicit drug use and misuse of prescription psychoactive drugs among this group of individuals. This has been attributed to a number of factors which include stress management and recreational purposes. Researchers have suggested that not only does this substance use interfere with learning as medical students, but it also impacts on the medical students' future careers as practicing physicians which is a major concern (Shah, Bazargan-Hejazi, & Lindstrom, 2009; Desta, Soboka, Workneh, & Gashaw, 2018). This is in part because of the cognitive and psychological impact substance use can have on an individual. It is also a concern because of the direct negative impact substance use can have on the safety of patients, and not to mention the conduct and efficiency of the future doctor.

It is therefore important to establish the patterns of substance use among medical students which could in turn help in mitigating or inhibiting use of the drugs; an area of research that has not been delved into in Kenya. This study seeks to address this gap in literature.

2.0 CHAPTER TWO LITERATURE REVIEW

2.1 Undergraduate Medical Students as an at Risk Population

Life as an undergraduate medical student entails full time commitment and responsibilities towards academic tasks both clinical and non-clinical, as a result they must put in long working and clinical hours with poor built in support resources such as time, psychological or social support to promote quality of life. This leads to persistent stress that negatively impacts physical, mental and emotional health of students. Studies have shown that emotional disorders in undergraduate students, depression and suicidal ideation and anxiety rates among medical students are as high as 30% Europe (Haldorsen, et al, 2014) and 20-50% Brazilian (de Rezende, et al 2008) students which are higher than the general population (Dyrbye, et al, 2006). The age of the undergraduate medical student is a transitional period in development, from childhood and adolescents to adulthood, marked by new freedoms from parental and adult supervision and adult responsibilities and expectations. Choices and decisions have far reaching longstanding implications which add to the societal pressure that these students have. Taking into consideration the increased stress both academic, societal and peer pressure related, developmental age and opportunities for drug and substance use becomes one of the major copying mechanisms and self-medication options whether legal or illicit. This in itself presents a substantial challenge to the current training of physicians, there future health and practice in the larger society away from medical school (Dyrbye, et al, 2005).

2.2 Prevalence of Substance Abuse among Medical Students

Substance use has been reported to be high among youths or young adults globally (WHO, 2014) and medical students being in this age group, are not exempted. Globally, studies done on prevalence rates of substance use among medical students had indicated that there are quite a number of students that engage in the maladaptive behavior. In a study that was done in Subharti medical College in Meerut India, reported that 20.43 percent were substance abusers. The study focused on both undergraduate and post graduate medical students in the college and used a sample size of 230 students (Arora, et al., 2016). Commonly used substance by the students was alcohol, the study reported that 44 percent of the students were abusing alcohol. This was followed by cigarettes and tobacco chewing at 10.17 percent and smoking cannabis at almost 8 percent (Arora, et al., 2016). 2.17 percent of the respondents also indicated that they used hallucinogens and other drugs.

A study done in the United States that sought to assess the prevalence of increased substance use among medical students reported an estimated 60 percent of medical students across the country engaged in drinking sprees every month (Trostler, Li, & Plankey, 2014). Another study that was also done in the United states that looked at the prevalence of illicit drug use among medical students also found that 1 in 3 medical students was using an illicit drug (Shah, Bazargan-Hejazi, & Lindstrom, 2009). Another study that was undertaken in the US among medical students found that 9.3 percent of students consumed alcohol. Amongst this group of students, it was further established that 33.8 percent took 5 or more drinks in one sitting over a fortnight (Mason, Winseman, Roseman, & Ayala, 2017). The study also reported that 26.2 percent of the students also smoked cannabis. The study included 855 medical students that were selected across 49 medical colleges. The study objective was assessing the prevalence and consequences of alcohol and drug use among medical students and their perceptions of the policies their schools had regarding substance-use (Mason, et al., 2017). Over 40 percent of substance users indicated that they had no idea that their school had any policies on substance use but they were aware of the consequences that the substance use had on their mental and physical health (Mason, et al., 2017)

In an earlier study that was done to determine the prevalence of substance use among medical students in Nepal, it was established that the rate was at 60.3 percent which was high (Khanal, et al., 2010). The study was cross-sectional and it included 446 medical students in their first year and fourth year of study across four medical colleges in Nepal. The researchers found that almost 58 percent of the respondents used alcohol while 27.58 percent used tobacco. 12.8 percent of the respondents reportedly used cannabis (Khanal, et al., 2010). Similar to the Indian study, this study used a researcher designed questionnaire to determine the level of use, preferred substance of use as reported by the students.

Alcohol Use Disorders Identification Test (AUDIT) screening tool was used in Australia to determine the level of Alcohol use among medical students and doctors and it was established that 21 percent were classed under moderate risk alcohol consumers and 4 percent were found to be of high risk of developing Alcohol Use Disorders (BeyondBlue, 2014). It was however concluded that in comparison to the general population in Australia, these group of respondents drunk considerably less. This was in comparison to the 8. 1 percent harmful drinking rate that the general population has (BeyondBlue, 2014). Studies done in Turkey and Ireland among medical students and more importantly adopted the CAGE questionnaire to

assess for the level of use, found that 22.4 percent and 52.5 percent of Turkish and Irish students respectively to be positively screened for alcohol use disorder (Akvardar, Demiral, Ergor, & Ergor, 2004; Boland, et al., 2006).

The findings from the global studies mentioned don't vary much from those that have been published regionally. In Africa, the substance use among medical students has also been found to quite prevalent. Similar to the high rates published from the developed countries studies done in Nigeria and Ethiopia reported prevalence rates of over 50percent among medical students (Babalola, Akinhanmi, & Ogunwale, 2014; Desta, Soboka, Workneh, & Gashaw, 2018).

In Nigeria, a study that was done among medical students in the University of Ilorin, established that the most commonly used substances were 33% mild stimulants, 13.6% alcohol, 7.3% sedatives and 3.2% tobacco (Makanjuola, Daramola, & Obembe, 2007). Most of the students that used alcohol, mild stimulants and sedatives, indicated that it was for neuro-enhancement (Makanjuola, et al., 2007). In a more recent study that was done in Nigeria seeking to determine the prevalence and pattern of substance use among medical students in of Olabisi Onabanjo University, Ogun State, it was reported that 65 percent of the students who participated in the study engaged in substance use. Similar to most studies reviewed in this literature, alcohol was the most used substance amongst the respondents with 63.4 percent indicating that they used alcohol, 15.6 percent used mild stimulants while 15 percent used tobacco and 6.1 percent of the respondents used sedatives (Babalola, Akinhanmi, & Ogunwale, 2014). The study participants were 246 medical students from the University.

A cross-sectional study that was undertaken in Ethiopia to determine the prevalence of Substance Use among medical students on internship at the Jimma University, South West Ethiopia established that nearly 50 percent of the students were using substance. This was based on the students self-reporting on their use (Desta, Soboka, Workneh, & Gashaw, 2018). The study included all the students that were on internship whose total number was 186; both male and female. Over 90 percent of the students had earlier exposure to substance use and the preferred substances was alcohol, followed by khat and tobacco (Desta, et al., 2018).

With regards to Kenya, no published study has particularly focused on medical students and in fact, the closest study that looked at health worker students was done at the Kenya Medical Training college, Nairobi Campus. The objective of the study was to determine alcohol and

substance use risk among those students. The study found that Majority of the respondents had low risk for alcohol use (98.1%), while a small percentage had moderate (1.7%) and high (0.25%) risk of alcohol use. Low risk of alcohol use was higher in females (99.15%) compared to males (97%) (Muriungi, Ndetei, Karanja, & Matheka, 2014). Other studies that have looked into substance abuse among university students in Kenya, have assessed it among all university students in general (pursing different courses). They have found that most of the students are using at least one substance. For instance, Ndegwa, Munene, & Oladipo (2017), looked at factors influencing alcohol use among university students in a kenyan university where they found that male students were engaging more in alcohol use at 52.1 percent prevelance rate. Another study that was done in Moi University in Eldoret Campus, that sought to determine the prevalence of substance use among the students at the University also reported a high rate at 69.8 percent (Atwoli, Mungla, Ndungu, Kinoti, & Ogot, 2011), with alcohol being the most common substance used. The study engaged students undertaking various courses at the University.

Therefore, this study looks at prevalence of substance use disorder and factors associated with substance use disorder among undergraduate medical students in the University of Nairobi.

2.3 Factors Influencing Substance use among Medical Students

In Pakistan, a similar medical school system to ours here in Kenya, where the training of medical students is a progressively challenging and evolving process that ensures adequate skills training and exposure, this may not always be the easisest course with resulting negative impact on the students leading to stress 65percent, burnout and even depression. Some of the drivers of stress are workload 47.4 percent, poor relationship balances 13.5 percent, pressure to achieve good results and perfom in the constant tests as well as cope with scope of clinical work (Yousafzai, Ahmer, Syed, Bhutto, Iqbal, Siddiqi, Zaman, 2009). This same study found that the students were aware of the use of alcohol and other drugs as copying mechanisms, and upto 90 percent of the repondents pointed to academic stress as a driver of drug use (Yousafzai, et al 2009).

Arora, et al., (2016), in their study found that most of the respondents had multiple reasons for engaging in substance use. For instance, 72.4 percent indicated stress relief as a motivator to substance use. The same percentage also indicated that they used while in a celebratory mood, while 46.8 percent indicated that using their substance of choice relieved their tiredness. Peer

pressure, easy availability, experimental use and acceptance from community were also mentioned as contributory factors to substance use. Kenyan studies that have looked into substance use among youths in general also indicate the same factors as predictors of use (Ndengwa, Munene, & Oladipo, 2017).

Other factors have been noted to influence substance use among medical students, in the study that was done in Nepal, it was found that there was a difference in the level of use among the 1st years and the 4th year students. This was especially noted among cannabis and tobacco users (Khanal, et al., 2010). Gender was also found to influence the level and type of substance used. For instance, it was found that the number of male students that were using alcohol was higher than female students. This observation was also reported in the Beyond Blue National survey that was conducted in Australia. It was reported that not only were more male students engaged in alcohol use among medical students, they were also found to consume high levels of alcohol putting them in the hazardous use category. This was noted among medical students who had indicated that they were dealing with psychological distress (BeyondBlue, 2014). The Nigerian study also associated being male with substance use (Makanjuola, et al., 2007). However, in the Nepalese study gender was notably insignificant when it came to benzodiazepam where roughly equal number of females and males were found to engage in using the drugs. In the Kenyan context, there are more male medical students than female medical students enrolled in the University of Nairobi and these results might probably be reflected in this study.

Family history was also noted as a contributor in substance use among the medical students in Nepal (Khanal, et al., 2010). With regards to age, though these studies indicate that substance use is initiated even before joining medical college, they also note that it intensifies after commencing medical school (Arora, et al., 2016; Khanal etal., 2010). The beyond blue study done in Australia found that as the students continued to mature while in medical college, so did the levels of alcohol consumed (BeyondBlue, 2014). However, other studies suggest quite the opposite, in that, as the students' progress further into the clinical years, the level of use increases (Newbury-Birch, Walshaw, & Kamali, 2001; Akvardar, et al., 2004). Similarly, Makanjuola, et al., (2007), in their study in Nigeria found that students that were 25 years and more were enaging more in sunstance use. Other factors were also mentioned including, the fact that these students were living alone and having stress due to difficulties in studying. Babalola et al.,(2014) reported that substance use among the medical students at the

Nigerian University was associated with how frequently the respondents participated in their religious activities and their General Health Questionnaires Scores.

Desta, et al., (2018), in the study they undertook in Ethiopia reported a number of factor that they found contributed to substance use among the medical students. Peer pressure was indicated as a major predictor of substance use. Another factor that the students mentioned was tension relief. The findings of the study also found that ethnicity, religion and having friends who use substance, availability of substance and area that one is living were significantly associated with lifetime use (Desta, et al., 2018).

This current study also seeks to determine predictors of substance use disorder among undergraduate medical student at the University of Nairobi.

2.4 Rationale of the Study

Owing to the fact that substance use has significant consequences on the student's cognitive abilities and psychological well-being, it is important to raise awareness on the prevalence and associated factors among medical students. Unlike most undergraduate courses undertaken in university, an undergraduate medical degree happens to be a very intense course, the time requirement, length of the program, course content and practical skills acquired make it a long standing high pressure experience. It is therefore expected that the students will be dealing with pro-longed extreme stressors as they continue with their education. One of the established coping mechanisms is substance use, by determining the severity of the situation at the undergraduate level and the associated factors, the information will hopefully guide the stakeholders on the appropriate actions to take as substance use is preventable. It will also add to the available literature that has been published on the same from African Universities.

2.5 Justification

As indicated, most studies focusing on medical students in other countries have found a considerable high prevalence of substance use among the students due to various factors such as high workload, low amount of sleep and high stress as well as other psychosocial or socio-demographic. From the review of literature above particularly from Kenya, clearly there is a serious gap in published research that focuses on substance use disorders among medical students in Kenya. This study therefore addresses this gap by assessing the disorder among

undergraduate medical students at the University of Nairobi. It also looks into factors that contribute to substance used disorders among these students. This is a baseline study that seeks to highlight whether the high workload unique to medical students among other challenges is leading to substance use. This is information will be informing the policies towards medical students, specifically prevention and care of medical students facing substance use, the second policies will be targeting coping management and skills training in regards to coping with high workloads, work-life balance, copying with high academic challenges as well as dealing with sickness and death.

2.6 Research Questions

a) What is the prevalence of substance use among undergraduate medical students in the University of Nairobi?

b) What is the association between social demographic factors with substance use among undergraduate medical students in the University of Nairobi?

2.7 Study Objectives

2.7.1 Broad Objective

To assess the prevalence of substance use among undergraduate medical students in the University of Nairobi.

2.7.2 Specific Objectives

a) To determine the pattern, prevalence of substance use among undergraduate medical students in the University of Nairobi

b) To determine other driving factors associated with substance use among undergraduate medical students in the University of Nairobi

2.8   Conceptual Framework

Figure 2.1*:   Conceptual Framework Showing the Variables*
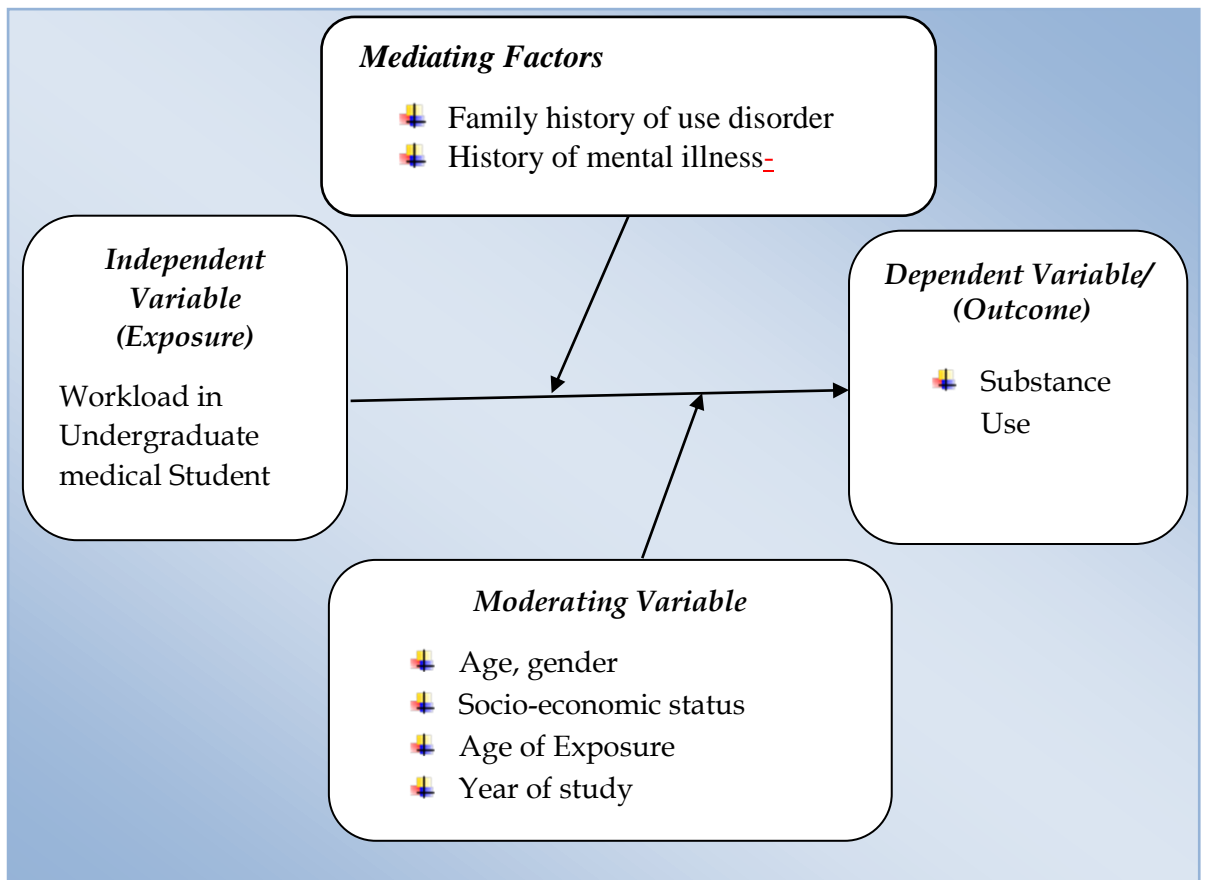
Author: (Dr. Mumbi_ 2019)

The independent variable is the workload experienced by undergraduate medical students, the dependent variable is the resulting substance use, its prevalence, specific drug distribution and severity will be assessed as a response to the exposure, mediating and moderating factors that are present in the study population of medical students in University of Nairobi.

3.0 CHAPTER THREE: METHODOLOGY

3.1 Study Design

The study was a cross-sectional descriptive study.

3.2 Study Site

The study was done at the University of Nairobi, School of Medicine. The school of medicine at the University of Nairobi was started in 1967. The school started by admitting 30 students but currently, it admits over three thousand students pursuing both undergraduate and post graduate courses. The school of Medicine, which is a constituent school of the College of Health Sciences is located at the Kenyatta National Hospital Campus and Chiromo Campus.

3.3 Study Population

The sample population was students pursuing a Bachelor of medicine and Surgery at the University of Nairobi and was 2430. Their admission age ranged from 19 to 26 yrs. These students were normally based at the Chiromo and Kenyatta National Hospital campus.

3.4 Inclusion and Exclusion criteria

3.4.1 The Inclusion Criteria
   a) Students pursuing Bachelor of Medicine & Surgery
   b) Students aged 18yrs and above
   c) Students who gave consent

3.4.2 The Exclusion Criteria
   a) Students pursuing different courses at the school of Medicine
   b) Students whose age was below 18yrs

3.5 Sampling Method & Sample Size Determination

The study population was the estimated total number of students who were admitted to pursue a bachelor in medicine at the University of Nairobi was 2430. There are 6 years of medical school in university of Nairobi, these served as the strata of the population.

The sample size of the students that would be willing to participate was calculated by adopting Yamane Taro's sample size determination formula below (Yamane, 1967): $n = \frac{N}{1+N(e)2}$

Where n is the sample size of target population needed for the study

N is the entire population size of target population

e is the level of precision (error estimate) which is 0.05

$$n = \frac{N}{1+N(e)^2} \quad = \quad n = \frac{2430}{1+2430\,(.05)^2} \quad = 343 \text{ respondents}$$

Therefore, the number of participants that were approached to participate in the study were 343. However, some questionnaires were not filled due to respondents abandoning the study prematurely, therefore the attrition rate was:

10% for Non-response = 34.3

Therefore: 377 respondents

To determine the sample size of each stratum, the following equation was used:

$n_h = (N_h / N) * n$

where n_h is the sample size for the stratum h

N_h is the population size

N is total population size

n is the total sample size (calculated above)

The number of students per year is:

Year/ Class	(N_h) Total Number of Students/ year	$n_{h =} (N_h / N) * n$ (total number of sample size per strata/ year)
6	289	(289/2430) 377= 44.9= 45
5	302	(302/2430) 377= 46.8= 47
4	650	(650/2430) 377= 100.8= 101
3	350	(350/2430) 377= 54.3= 54
2	389	(389/2430) 377= 60.35= 60
1	450	(450/2430) 377= 69.8= 70

3.6 Recruitment and Consenting Procedure

In the University of Nairobi, the medical school consists of 6 years of study, which were used as the strata for this study. Within each year of study, the students have a busy schedule that entails attending classes and practicum every day which are grouped into rotations. The researcher randomly chooses rotations within each year and after classes ask for 15 minutes to recruit the study participants who met the inclusion criteria. They were then explained to the consent form which entailed the purpose and objectives of the study and their rights and roles as participants. Once the informed consent forms were signed and collected the researcher distributed questionnaires and collected them after they were filled.

NB: this process was repeated until the minimum desired number within each year was met.

3.7 Study Instruments

The ASSIST (Alcohol, Smoking and Substance Involvement Screening Test)

ASSIST is a standardized screening Test that was created by the World Health Organization. It assesses for levels of use of multiple substance use. The tool is self-administered to adults. The ASSIST (V3.1 or V3.0) consists of eight questions covering tobacco, alcohol, cannabis, cocaine, amphetamine-type stimulants (including ecstasy) inhalants, sedatives, hallucinogens, opioids and 'other drugs'. A risk score is provided for each substance, and scores are grouped into 'low risk', 'moderate risk' or 'high risk'. Four recommendations interventions can be made after assessments based on the levels of risk scores, ('treatment as usual', 'brief intervention' or

'brief intervention plus referral to specialist treatment'). The ASSIST questionnaire was self-administered. A socio-demographic questionnaire was also used in the study.

3.8 Data Collection Procedure

Approval from the KNH/ERC was obtained before starting data collection. Permission from the University of Nairobi College of Health sciences was also obtained to allow the researcher to collect data at the Kenyatta National Hospital campuses. The researcher requested the class representative to allow a few minutes after class ends to do data collection. The role of the class representative was to help in co-ordination. Once the respondents were selected, the researcher explained the consent form which was signed, issued the questionnaires to the respondents. The respondents were assured of their anonymity since they were requested not to indicate their names on the questionnaires. Completed questionnaires were collected and stored carefully by the researcher in a lockable drawer for data analysis.

3.9 Ethical Consideration

The researcher sought approval from the Hospital and University of Nairobi ethics and research committee. The college of Health Science administration was also informed and hence needed to grant permission before the study commenced. Written and signed consent were sought from the study participants once they following had been clarified:

- The study, instructions, study objectives, risks and their rights
- Participation was voluntary and that they could withdraw from the study whenever they want without being subjected to penalties or victimization
- Respondents were assured of their anonymity as no names were to be included on the tools
- There was no possibility of being harmed either physically or psychologically from the study
- Participation will commence once a respondent signs a consent form

3.10 Data Management

A lockable drawer/ box was used to store the completed questionnaires. Then they were transported to the researcher's office where they were stored in a lockable drawer awaiting data entry and analysis.

3.11 Data Analysis, Results Presentation & Dissemination

Data entry and analysis was done using Statistical Package for Social Sciences (SPSS) version 25. Association between the variables was presented using Chi-squares, co-relation between variables was determined by Pearson's co-relation. Frequency tables were used to present the socio-demographic factors while bar graphs and pie charts.

The study will be published in a peer reviewe journal and presented in a recognized conference to disseminate the findings.

The researcher also intends to share results and recommendations with the university of Nairobi school of health sciences management to inform welfare policy for the medical students.

3.12   Study Limitation

The anticipated limitation of the study was the fact that self-reported assessment tools authenticity was sometimes marred with participant minimization and false report on use.

4.0 CHAPTER FOUR: RESULTS

4.1. Prevalence of Substance Use among Undergraduate Medical Students

We enrolled 382 students distributed as follows; 1st year 69 (18.1%), 2nd year 60 (15.7%), 3rd year, 64 (16.8%), 4th year 127 (33.2%), 5th year 45 (11.8%) and 17 (4.5%), with 100% response rate. **(Figure 1)**
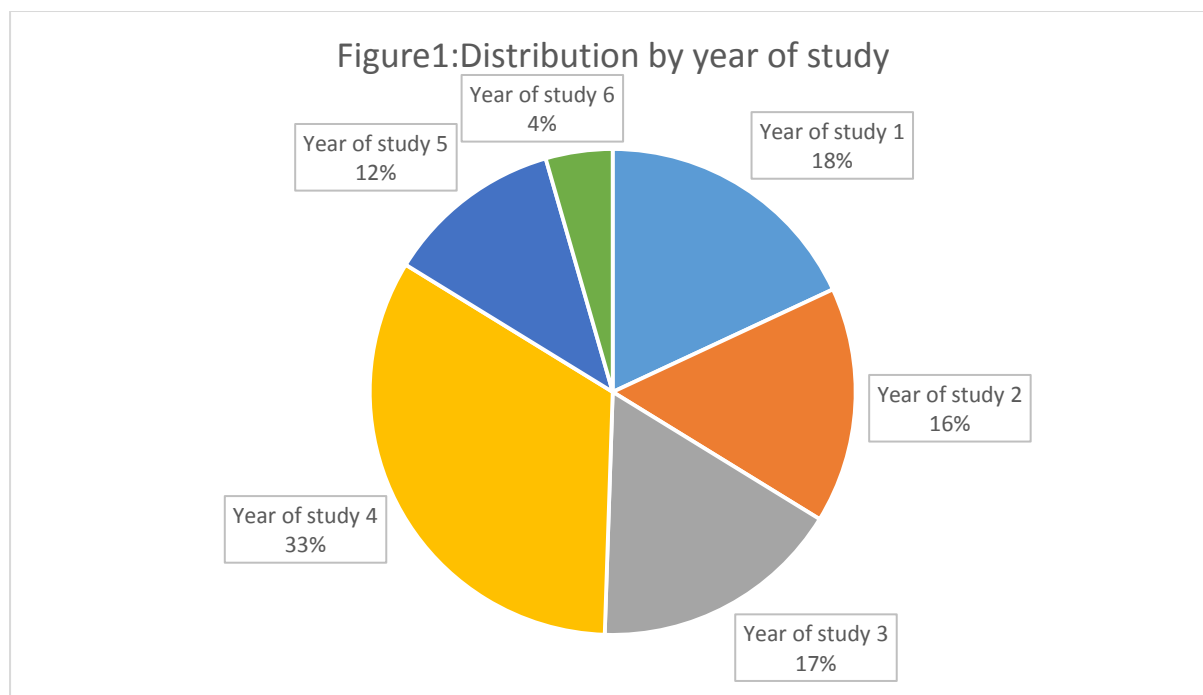
Figure 1: Distribution by year of study

Of these, about half 187 (49%) were female while the rest were male. Almost half of the students 165 (43.4%) were between the age of 21-23 years, almost a quarter 91 (23.9%) were between 18-20 years and about a third 115 (30.2%) were between 24-26 years. Only 10 (2.6%) of the students were older than 26 years. Majority of the students were Christians 312 (86.7%), followed by Muslims 40 (11.1%), Hindu 6 (1.7%) with Atheists and Other religions accounting for 1 student each**. (Figure 2)** The median hours work per week was 50 while the median hours of sleep per day were 6 with a median monthly income of Kshs 120,000.
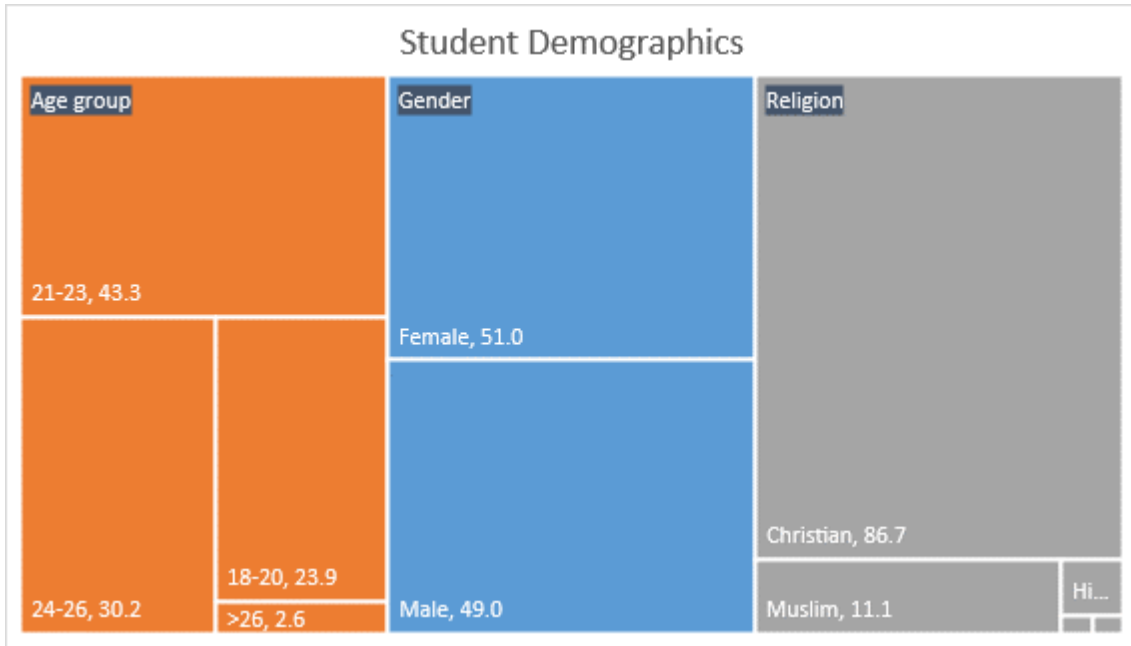
Figure 2 : Student Demographics: Age, Gender and Religion

While only 22 (7%) of the students had a history of mental illness, over a third 132 (38.7%) of the students had a family history of substance abuse.
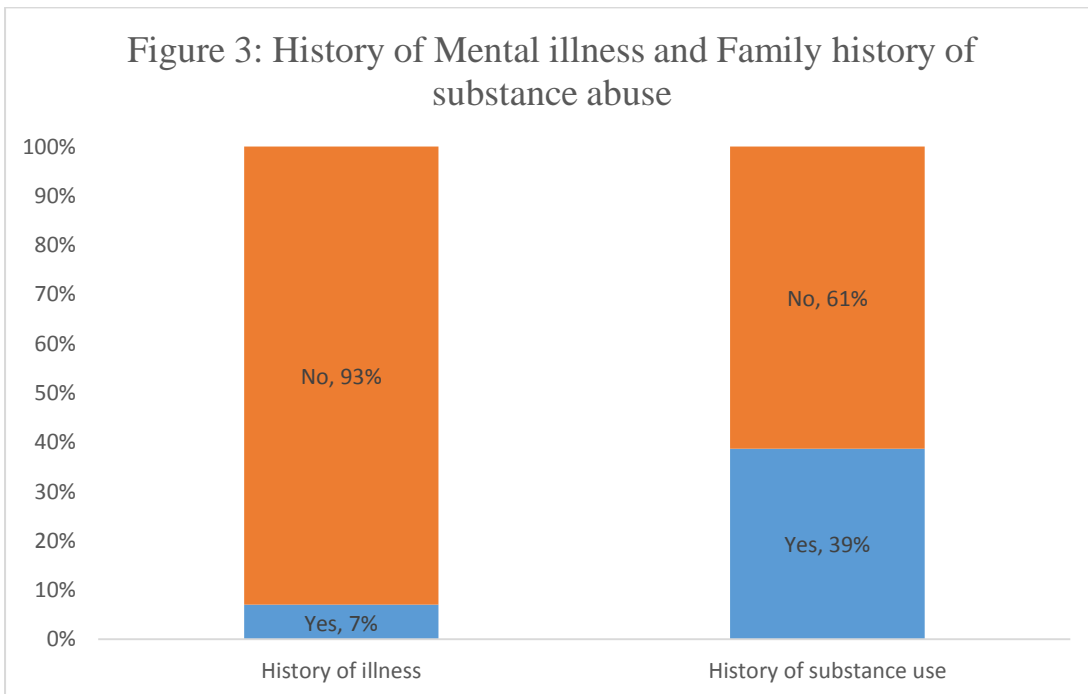
Figure 3 :History of Mental illness and Family history of substance abuse

The lifetime prevalence most commonly used substance was alcohol 151 (40.2%) followed by Marijuana 93 (25.0%) and tobacco 63 (17.2%), sedatives 20 (5.6%), amphetamine 13 (3.6%) and opioids 12 (3.4%). **(Figure 4)**

Figure 4: Lifetime Prevalence of Substances Used

Other substances — 0.9%
Opioids — 3.4%
Hallucinogens — 2.2%
Sedatives or Sleeping Pills — 5.6%
Inhalants — 1.9%
Amphetamine type stimulants — 3.6%
Cocaine — 0.8%
Cannabis — 25.0%
Alcoholic beverages — 40.2%
Tobacco products — 17.2%
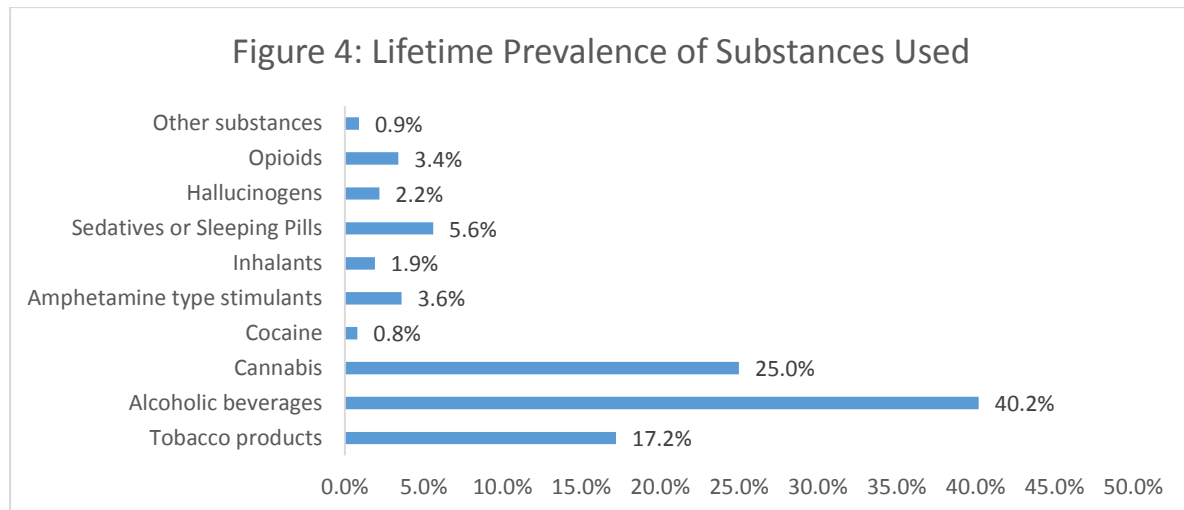
Figure 4: Lifetime Prevalence of Substances Used

In the last 3 months, these three substances were the most frequently used; Alcohol 46.4%, Tobacco 16.6% and cannabis 22.5%. These substances were also the only ones that a few students reported using daily **(Table 1)**. The desire to stop, problems from use, barrier to function and concerns from close family or friends were also commonly reported in students using these three substances.

Table 1:Substance use Frequency

	Never		Once/twice		Monthly		Weekly		Daily	
	n	%	n	%	n	%	n	%	N	%
Tobacco products	211	83.4	29	11.5	4	1.6	6	2.4	3	1.2
Alcohol	140	53.6	56	21.5	27	10.3	35	13.4	3	1.1
Cannabis	193	77.5	28	11.2	10	4.0	12	4.8	6	2.4
Cocaine	229	97.4	4	1.7	1	0.4	1	0.4	0	0.0
Amphetamine type stimulants	226	96.6	6	2.6	1	0.4	1	0.4	0	0.0
Inhalants	229	98.3	3	1.3	0	0.0	1	0.4	0	0.0
Sedatives or Sleeping Pills	224	95.3	6	2.6	4	1.7	1	0.4	0	0.0
Hallucinogens	230	98.7	1	0.4	1	0.4	1	0.4	0	0.0
Opioids	226	97.8	3	1.3	0	0.0	2	0.9	0	0.0
Other substances	224	98.7	1	0.4	1	0.4	0	0.0	1	0.4

In terms of severity of substance involvement, majority fall in the moderate abuse group requiring brief intervention as shown in **Table 2**. Among the few cases, needing intensive intervention, were those using alcohol (2.1%), tobacco (0.8%), cannabis (0.5%), amphetamine (0.3%), inhalants (0.3%), and opioids (0.3%)

Table 2:Intervention needs based on substance involvement score

Substance	No intervention n(%)	Brief intervention n(%)	Intensive intervention n(%)
Tobacco	361 (93.3)	23 (5.9)	3 (0.8)
Alcohol beverage	358 (92.5)	21 (5.4)	8 (2.1)
Cannabis	347 (89.7)	38 (9.8)	2 (0.5)
Cocaine	380 (98.2)	7 (1.8)	0
Amphetamine	377 (97.4)	9 (2.3)	1 (0.3)
Inhalants	385 (99.4)	1 (0.3)	1 (0.3)
Sedatives	379 (97.9)	8 (2.1)	0

Despite the few number of students that reported to have used amphetamine, a large proportion (7/10) of the users reported to have experienced health, social, legal or financial problems. These problems were also often experienced among alcohol and cannabis users (**Table 3**).

Table 3:Frequency of health, social, legal or financial problems due to substance use

Factor	Never n(%)	Once/twice n(%)	Monthly n(%)	Weekly n(%)	Daily/almost n(%)
How often have you had the urge to use the following substances in the past three months?					
Tobacco	207 (95.8)	4 (1.9)	4 (1.9)	1 (0.5)	-
Alcohol beverage	198 (87.6)	17 (7.5)	6 (2.7)	3 (1.3)	2 (0.9)
Cannabis	200 (94.3)	6 (2.8)	2 (0.9)	3 (1.4)	1 (0.5)
Cocaine	208 (99.5)	-	-	1 (0.5)	-
Amphetamine	205 (97.6)	1 (0.5)	3 (1.4)	-	7 (0.5)
Inhalants	205 (99.0)	2 (1.0)	-	-	-
Sedatives	201 (98.5)	2 (1.0)	1 (0.5)	-	-
Hallucinogens	201 (99.5)	-	-	1 (0.5)	-
Opioids	200 (99.0)	-	-	1 (0.5)	1 (0.5)
Other	200 (99.5)	1 (0.5)	-	-	-

There were few substance users reporting to have failed to attend to their responsibilities due to substance use. The frequency varied by type of substance; majority of those using tobacco and alcohol reported to have been affected once or twice. **(Table 4)**

Table 4:Frequency of failure to attend to responsibilities due to substance use

Factor	Never n(%)	Once/twice n(%)	Monthly n(%)	Weekly n(%)	Daily/almost n(%)
How often have you failed to do what was normally expected because of using any of the following substances in the past three months?					
Tobacco	195 (93.3)	7 (3.4)	5 (2.4)	1 (0.5)	1 (0.5)
Alcohol beverage	191 (91.8)	8 (3.9)	3 (1.4)	5 (2.4)	1 (0.5)
Cannabis	196 (97.5)	2 (1.0)	0	1 (0.5)	2 (1.0)
Cocaine	199 (99.0)	0	1 (0.5)	1 (0.5)	0
Amphetamine	200 (99.5)	0	1 (0.5)	0	0
Inhalants	201 (99.5)	0	0	1 (0.5)	0
Sedatives	200 (99.5)	1 (0.5)	0	0	0
Hallucinogens	199 (99.0)	0	0	2 (1.0)	0
Opioids	197 (99.0)	1 (0.5)	0	1 (0.5)	0
Other	199 (99.0)	0	2 (1.0)	0	0

A number of the substance users have had close people concerned about their substance use behavior; mostly in the past 3 months for tobacco, alcohol, cannabis, and amphetamine use. **(Table 5)**

Table 5 :Frequency of concern by close person about student's substance use

Factor	Never n(%)	Yes, past 3 months n(%)	Yes, but not in the past 3 months n(%)
Has a friend/relative ever expressed concern about your use of the following substance?			
Tobacco	196 (94.2)	8 (3.9)	4 (1.9)
Alcohol beverage	194 (91.1)	10 (4.7)	9 (4.2)
Cannabis	202 (95.7)	6 (2.8)	3 (1.4)
Cocaine	205 (99.0)	0	2 (1.0)
Amphetamine	201 (98.1)	3 (1.5)	1 (0.5)
Inhalants	208 (99.5)	1 (0.5)	0
Sedatives	203 (98.5)	1 (0.5)	2 (1.0)
Hallucinogens	204 (98.6)	1 (0.5)	2 (1.0)
Opioids	205 (99.0)	1 (0.5)	1 (0.5)
Other	201 (99.0)	2 (0.1)	0

Table 6 shows the frequency with which the students had tried to stop substance use in the past. There were more students that reported to have tried stopping substance use, especially tobacco and alcohol use, in the past 3 months compared to other periods.

Table 6:Frequency trying to control substance use and failed

Factor	Never n(%)	Yes, past 3 months n(%)	Yes, but not in the past 3 months n(%)
Ever tried and failed to control, cut down, or stop using any of the following substances?			
Tobacco	198 (94.7)	7 (3.4)	4 (1.9)
Alcohol beverage	199 (92.6)	12 (5.6)	4 (1.9)
Cannabis	205 (97.1)	2 (1.0)	4 (1.9)
Cocaine	204 (99.0)	2 (1.0)	
Amphetamine	204 (99.0)	1 (0.5)	1 (0.5)
Inhalants	205 (99.5)	1 (0.5)	0
Sedatives	205 (99.0)	0	2 (1.0)
Hallucinogens	207 (99.5)	1 (0.5)	0
Opioids	206 (99.5)	0	1 (0.5)
Other	205 (99.5)	1 (0.5)	0

4.2 Factors associated with Substance Use in Undergraduate students

On bivariate analysis to elicit factors associated with use of the most common substances, we found that use of tobacco, alcoholic beverages and cannabis differs across the academic years (p=0.04, p<0.0001, p<0.0001 respectively). **(Table 7)** The use of these substances starts high in the first year, declines in the middle years before rising again in the sixth year. Use of tobacco and cannabis does not seem to differ across the various age groups (p=0.359 and p=0.311 respectively). However, use of alcoholic beverages increases with age (p=0.006). Use of alcohol is more common in Christians than Muslims (p<0.0001). Students with history of mental illness were more likely to use alcoholic beverages (p<0.0001) and cannabis (p=0.043). Students with family history of substance abuse were significantly more likely to use all the three substances (p<0.0001 for each substance)

Table 7: Bivariate analysis of Socio-demographic factors

		Tobacco products		Alcoholic beverages		Cannabis	
		n	%	N	%	N	%
Year of study	1	16	23.9	35	50.7	21	30.9
	2	4	7.0	11	18.6	5	8.6
	3	14	22.6	21	33.3	16	25.4
	4	20	16.5	60	48.0	38	30.6
	5	4	9.3	13	29.5	6	14.0
	6	5	31.3	11	68.8	7	43.8
p-value		**0.040**		**<0.0001**		**0.004**	
Gender	Male	34	18.7	72	38.7	48	26.1
	Female	29	15.8	79	41.6	45	23.9
p-value		0.459		0.570		0.632	
Age group	18-20	17	19.8	34	37.8	21	23.9
	21-23	20	12.7	51	31.7	35	21.9
	24-16	0	0.0	1	100.0	0	0.0
	24-26	24	21.6	60	53.1	35	31.3
	>26	2	20.0	4	40.0	1	10.0
p-value		0.359		**0.006**		0.311	
Religion	Christian	52	17.6	134	43.8	79	26.2
	Muslim	5	12.5	4	10.0	5	12.5
	Hindu	1	16.7	0	0.0	0	0.0
	Atheist	0	0.0	1	100.0	1	100.0
	Other	0	0.0	0	0.0	0	0.0
p-value		0.902		**<0.0001**		0.062	
History of illness	Yes	5	22.7	16	72.7	10	45.5
	No	45	15.9	116	40.0	74	25.6
p-value		0.405		**0.003**		**0.043**	
History of substance use	Yes	33	26.8	79	60.3	55	42.6
	No	23	11.2	64	30.9	31	15.1
p-value		**<0.0001**		**<0.0001**		**<0.0001**	

On multivariate analysis **(Table 8)** while adjusting for the year of study, students with family history of substance abuse were 3 times more likely to use tobacco (OR 2.9 [1.6 – 5.2]), 3 times more likely to use alcohol (3.0 [1.9 – 4.9]) and 4 times more likely to use cannabis (4.2 [2.5 – 7.0]). Students in the Christian religion were 3 times more likely to use alcohol compared to Muslims (3.3 [1.5 – 7.2]).

Table 8 :Multivariate Analysis

Substance	Significantly associated Factors	Coefficient	Standard Error of coefficient	p-value	OR	95% C.I. for OR	
						Lower	Upper
Tobacco	-Year of study	0.003	0.104	0.978	1.003	0.818	1.229
	-Family history of substance use	1.065	0.301	**0.000**	2.900	1.608	5.231
Alcohol	-Religion	1.184	0.402	**0.003**	3.267	1.486	7.183
	-Family history of substance use	1.105	0.243	**0.000**	3.020	1.875	4.866
Cannabis	-Family history of substance use	1.428	0.264	**0.000**	4.172	2.487	6.999

5.0 CHAPTER FIVE: DISCUSSION

5.1 Prevalence of Substance Use among Undergraduate Medical Students

The study found that the prevalence of substance use among the medical students was 43.7% of the study population, this is comparable to the Ethiopian students who were found to have over 50% substance use among their medical students, (Desta et al. 2018), markedly lower than the 60.3% (Babalola et al., 2014) and higher than the (Nacada Report, 2017) which found the national average for substance use was at 37.5% for the population 15-65 years Kenyans. The individual distribution revealed some expected results with lifetime prevalence for alcohol 40.2%, cannabis 24.7%, tobacco 17.12%, sedatives 5.6%, amphetamines 3.6%, opioids 3.4%. As expected alcohol had the highest representation similar to 44% found in (Arora et al,2016), much lower than similar studies that found Alcohol prevalence of 58.1% and 91.3% in USA in (Trostler M. et al., 2014 and Ayala E. et al., 2017).

The high alcohol representation could be explained by the social and cultural acceptance within the Kenyan society and especially the youth. Alcohol is a legal substance and is widely available, actively advertised as a social tool for activities, events and this would account for the general high use found in the study. At 24.7%, Cannabis was the second most consumed substance as well as the substance with the highest rate of at risk use of 10.3%, the study findings were significantly higher than similar studies previously done 4.9% and 12.8% (Osman et al., 2016 and Khanal et al., 2010), but reflective of the recent trends worldwide Canada last year 31.5% (Papazisis et al, 2018) with reported daily use as high as 22.7% (NSDUH, 2017). This trend reflects the global changes in cannabis use, acceptability and legal status with change, legal or decriminalised. Where it still remains illegal in Kenya, due to the global changes and social media there is far more exposure and pressure where substance use is glorified and marketed targeting the youth portraying fellow ordinary youth and celebrities participating in the habit (Costello et al., 2017).

Tobacco was significantly lower as compared to 28.3% found in Iran (Heydari et al, 2015). Sedatives were comparable to 3.2% found by (Osman et al, 2016). This reflects the effect of strict legislation in advertising, multiple public health campaigns about the adverse effects and negative associations, however this may change again with increased social media marketing of the e-cigarette.

Cannabis was found to be the substance that was more likely to be used daily compared to tobacco and alcohol. Most alcohol and tobacco users, use either once or twice or weekly. This is lower than studies in (Trostler et al., 2014), however it was in keeping with the youth trends of binge drinking comparable to 33.8% binge drinking (Ayala et al., 2017). When severity of use and risk is considered, cannabis as the substance reported required some intervention at 10.3%, compared to the other substances which accounted for tobacco 6.7%, alcohol 7.5%. Cocaine, amphetamine, sedatives, and opioids are used on rare occasions-once/twice.

5.2 Socio-demographic Factors Associated with Substance use among Medical Students

In this study, we found the most significant factors associated were student's age group (p-value=0.003), Year of study (p-value<0.001), history of illness (p-value=0.005), family history of substance abuse (p-value<0.001), and hours of sleep (p-value=0.048).

The study found a positive association between students' personal history of mental illness and substance use in particular alcohol and cannabis use, this is well established in various studies such as (Yousafzai et al., 2009) where up to 30% of the students had Depression and 15% were on Antidepressant treatment. The study however did not establish that workload was a significant factor in driving substance use as the mean work hours per week in this study was 51hours and its association had a p-value of 0.866 compared to 47.4% heavy workload reported by Yousafzai et al., 2009. The study found that curiosity/peer pressure accounted for 78.5% of the reason for initiating substance use which is in keeping with the positive association substance use has from social media and cultural trends with curiosity being a great contributor to initiating use. (Osman et al., 2016)

The age group and year of study were significant factors with p-values of 0.003 and 0.001 respectively. The lifetime prevalence increased with age in particular with Alcohol use with a p-value of 0.006. The active use measured over the past 3 months showed a pattern of high use among the 1ˢᵗ year students with a decline and increase among the 5ᵗʰ and 6ᵗʰ years. This can be explained by the novelty factor, curiosity and different environment and new freedoms available to the first year students who tend to be the younger students moving away from established rigid high school and home environments to the looser rules found on campus.

(Schwartz et al., 2012, Quas et al., 2014). The older students' findings were in keeping with other studies such as 59% finding of alcohol use among final years (File et al., 1994).

Family history of substance use was a positive predictor of substance use students with family history of substance abuse were 3 times more likely to use tobacco (OR 2.9 [1.6 – 5.2]), 3 times more likely to use alcohol (3.0 [1.9 – 4.9]) and 4 times more likely to use cannabis (4.2 [2.5 – 7.0]). (Cotton et al., 1979), it's been established that having family members with history of alcoholism and other substance use disorders have genetic components and would thus reflect in higher rates of substance use.

The multivariate analysis showed that being a Muslim student was a positive protective factor a with 82.0% reduced odds (OR=0.18, p-value=0.005) of using substances, compared to a Christian student. This reflects the religious attitudes held, whereby the Christians it is (Nyamongo, NACADA Report, 2014) is not a prequalification to be a Christian and the Clergy looked upon substance use disorder as illness and failings of the community to support the affected individuals rather than individual failings, whereas in Islam abstinence from alcohol use is a pre-requisite for practice.

5.3 Conclusion

The student's age group (p-value=0.003), Year of study (p-value<0.001), history of mental illness (p-value=0.005), family history of substance abuse (p-value<0.001), and hours of sleep (p-value=0.048) were found to be significantly associated with substance use.

The prevalence of psychoactive substance use among medical students is high and more education and prevention strategies need to be engaged to prevent substance use disorder in these students now and as future practitioners

5.4 Recommendations
a) Students attending treatment should be screened for substance use.
b) There is a need to scale up the education on prevention of substance use disorders. The University management needs to provide adequate funds to those running the program to ensure more education is provided to the students and a larger number of students are reached.
c) There is need for follow up studies on this cohort as they proceed through medical school and into practice.

STUDY TIMELINE

Activities	January-March 2019	April – May 2019	June– July 2019	August 2019
Proposal Writing				
Presentation of the Proposal for Approval				
Ethics Approval				
Data collection				
Data Analysis				
Presentation of research project for approval				
Finalizing project for presentation				

BUDGET

The project is self-funded.

Activities	Total cost per Activity
Proposal Writing-Sourcing for Material & Books. This includes purchasing of stationery ,food and transport	5,000/=
KNH/ERC fees	2,000/=
Sampling of respondents and Piloting of Data Collection Instrument	10,000/=
Printing and Photocopying of tools (Questionnaires) 10,000/=	10,000/=
Data Collection	30,000/=
Data Entry and Analysis	30,000/=
Presentation of the research project for approval including Printing & Photocopying	4,000/=
Miscellaneous Expenses e.g. phone credits	3,000/=
Total	**84,000/=**

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APPENDICES

Appendix I: Informed Consent Explanation

TITLE OF STUDY: Prevalence of Substance Use among Undergraduate Medical Students in The University of Nairobi

PRINCIPAL INVESTIGATOR AND INSTITUTIONAL AFFILIATION: Dr. Mumbi Chege, MMED Psychiatry student from the University of Nairobi.

INTRODUCTION:

I would like to tell you about a study being conducted by the above listed researcher. The purpose of this consent form is to give you the information you will need to help you decide whether or not to be a participant in the study. Feel free to ask any questions about the purpose of the research, what happens if you participate in the study, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions to your satisfaction, you may decide to be in the study or not. This process is called "informed consent". Once you understand and agree to be in the study, I will request you to sign your name on this form. You should understand the general principles which apply to all participants in a medical research:

i) Your decision to participate is entirely voluntary

ii) You may withdraw from the study at any time without necessarily giving a reason for your withdrawal

May I continue? YES/ NO

This study has approval by The Kenyatta National Hospital–University of Nairobi Ethics and Research Committee Protocol No. _____

What Is This Study About?

The researcher listed above is interviewing adult undergraduate medical students. Participants in this research study will be asked questions about

Substance use among other questions that will focus on the demographic factors and psychosocial factors.

There will be approximately 382 participants in this study conveniently chosen. We are asking for your consent to consider participating in this study.

What Will Happen If you decide to be in this Research Study?

If you agree to participate in this study, the following things will happen:

After giving signed informed consent, you will complete this questionnaire, which should take approximately 15 minutes.

Are There Any Risks, Harms, Discomfort Associated With This Study?

Medical research has the potential to introduce psychological, social, emotional and physical risks. Effort should always be put in place to minimize the risks. One potential risk of being in the study is loss of privacy. We will keep everything you tell us as confidential as possible. We will use a code number to identify you in a password-protected computer database and will keep all of our paper records in a locked file cabinet.

It may be embarrassing for you to have to give details of your personal life. We will do everything we can to ensure that this is done in private.

In case of any injury, illness or complications related to this study, contact the researcher right away at the number provided at the end of this document.

If requested be the respondent, referrals to available student support systems for psychological review and treatment (counselling) will be done for emotional distress.

Are There Any Benefits Being In This Study?

Determining and acknowledging your level of use will be helpful because you might decide to seek help, cut down or stop the use. Change in maladaptive behavior begins with self-awareness.

The information you will provide will be contribution to science and knowledge in understanding substance use among medical student in Universities.

It will also be used to inform student welfare policy specifically designed for medical students.

Will Being In This Study Cost You Anything?

There will be no financial cost to you as the data collection will be carried out while in session or internship.

Will You Get Refund For Any Money Spent As Part Of This Study?

As indicated above, you will not spend any money to take part in this study. Hence there will be no compensation.

What If You Have Questions In Future?

If you have further questions or concerns about participating in this study, please call or send a text message to the researcher at the number provided at the bottom of this page. For more information about your rights as a research participant you may contact the:

Kenyatta National Hospital-University Of Nairobi Ethics And Research Committee

SECRETARY/ CHAIRPERSON,
Telephone No. 2726300 Ext. 44102,
Email uonknh_erc@uonbi.ac.ke.

Principal Investigator (Researcher)

Dr. Mumbi Chege

University of Nairobi

Telephone No. 0722329795

Email: muchege22@gmail.com

Supervisors

Dr. Fredrick Owiti

Senior Lecturer, MBChB; M Med (Psych)

Department of Psychiatry

School of Medicine- College of Health Sciences

University of Nairobi

Telephone No. 0733610978

Dr. Muthoni Mathai

Senior Lecturer

Department of Psychiatry

School of Medicine-College of Health Sciences

University of Nairobi

Telephone No. 0727329904

What Are Your Other Choices?

Your decision to participate in research is voluntary. You are free to decline participation in the study and you can withdraw from the study at any time without repercussions or loss of any benefits.

Appendix II: Statement of Consent

Participant's statement

I have read this consent form or had the information read to me. I have had the chance to discuss this research study with the researcher. I have had my questions answered in a language that I understand. The risks and benefits have been explained to me. I understand that my participation in this study is voluntary and that I may choose to withdraw any time. I freely agree to participate in this research study.

I understand that all efforts will be made to keep information regarding my personal identity confidential.

By signing this consent form, I have not given up any of the legal rights that I have as a participant in a research study.

I agree to participate in this research study: Yes   No

I agree to have the questionnaire preserved for later study: Yes   No

I agree to provide contact information for follow up: Yes   No

Participant   printed   name:

_____

Participant signature: _____

Date: _____

Researcher's statement

I, the undersigned, have fully explained the relevant details of this research study to the participant named above and believe that the participant has understood and has willingly and freely given his/ her consent.

Researcher's Name: Dr. Mumbi Chege

Date: _____

Signature _____

Role in the study: Principle Investigator

Appendix III: Socio-demographic Questionnaire

Respondent code………………….
Date of questionnaire completion………………
Instructions: *Please Tick one answer*

1. What is your current year of study? ……………(year), When did you join medical school?............

2. Gender?
a. Male   b. Female

3. What is your age?
a. 18-20 years old
b. 21-23 years old
c. 24-26 years old
d. 27years and Above

4. Religion………………………………

5. On average, how many hours of school work do you estimate you have in a week?........

6. On average, how many hours of sleep do you estimate you get daily?...........................

7. Estimated Family income……………………………………. (kshs)

8. Any history of Mental Illness?.......................................

9. Any Family history of substance use?................................(yes/no)

10. What influenced you to begin using?..

14. Do you think your use has increased since joining campus……………….

Thank you

Appendix IV: WHO - ASSIST V 3. 0 Questionnaire

Thank you for agreeing to take part in this brief interview about alcohol, tobacco products and other drugs. These question asked are 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 <u>not</u> record medications that are used <u>as prescribed</u> by your doctor. However, if you have taken such medications for reasons <u>other</u> 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.

Question 1

In your life, which of the following substances have you <u>ever used</u>? *(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

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
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

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
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	4	5	6	7

	Never	Once or Twice	Monthly	Weekly	Daily or Almost Daily
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,	0	5	6	7	8

etc.)				
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 <u>ever</u> expressed concern about your use of *(FIRST DRUG, SECOND DRUG, ETC.)?*	No, Never	Yes, 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 <u>ever</u> tried and failed to control, cut down or stop using *(FIRST DRUG, SECOND DRUG, ETC.)?*	No, Never	Yes, in the past month 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
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   or
Fewer than 3 days in a row

More than once per week   **or**
3 or more days in a row   →

Brief Intervention including "risks
associated with injecting" card

→

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 + Q7cc

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.

WHO ASSIST V3 .0RESPONSE 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

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Yes, but not in the past 3 months

Yes, in the past 3 months

ALCOHOL, SMOKING AND SUBSTANCE

INVOLVEMENT SCREENING TEST (WHO ASSIST V3.0)
FEEDBACK REPORT CARD FOR PATIENTS

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:

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

Appendix V: KNH/UON-ERC Letter of Approval

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
Tel:(254-020) 2726300 Ext 44355

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/300

8th August, 2019

Dr. Diana Mumbi Chege
Reg. No.H58/88040/216
Dept.of Psychiatry
School of Medicine
College of Health Sciences
University of Nairobi

Dear Dr. Chege

RESEARCH PROPOSAL: PREVALENCE OF SUBSTANCE USE DISORDERS AMONG UNDERGRADUATE MEDICAL STUDENTS AT THE UNIVERSITY OF NAIROBI (P295/04/2019)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 8th August 2019 – 7th August 2020.
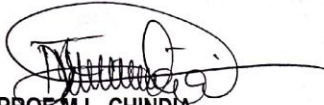
This approval is subject to compliance with the following requirements:

a. Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b. All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.
c. Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
d. Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
e. Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
f. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
g. Submission of an *executive summary* report within 90 days upon completion of the study.
   This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

Protect to discover

For more details consult the KNH- UoN ERC website**http://www.erc.uonbi.ac.ke**

Yours sincerely,

PROF.M.L. CHINDIA
SECRETARY, KNH-UoN ERC

c.c.   The Principal, College of Health Sciences, UoN
The Director, CS, KNH
The Chairperson, KNH- UoN ERC
The Assistant Director, Health Information, KNH
The Dean, School of Medicine, UoN
The Chair, Dept.of Human Psychiatry, UoN
Supervisors: Dr. Fredrick Owiti, Dr. Muthoni Mathai