Burden of Drugs and Substance Use among University Students in Kenya

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ABSTRACT

Drugs and substance use among university students has been recognized as a global public health issue. Adolescents are particularly vulnerable to drugs and substance use (DSU) including addiction. This study sought to determine the burden of DSU among university students in Kenya. The study utilized a cross-sectional study design covering a representative sample of 17 public and private universities in Kenya. A total of 15,678 respondents were covered by the study. Data showed that 54.2% of the students were male and 45.2% were female while 0.6% did not state their sex. Accordingly, alcohol, tobacco, cannabis, and *khat* were the most available and accessible substances within the university environment and in the neighbourhood. Cannabis was the most commonly accessible narcotic drug with an emerging trend in the availability of cannabis edibles. The findings also showed a new trend in the availability of emerging psychoactive substances within the university environment particularly methamphetamine, prescription drugs, codeine syrup, ecstasy/ gamma-hydroxybutyrate (GHB)/lysergic acid diethylamide (LSD)/ psychedelics, ketamine, and morphine. The findings also showed that 45.6% of university students in Kenya had used at least one drug or substance of abuse in their lifetime. Analysis on past-month use showed that 26.6% of university students were currently using at least one drug or substance of abuse. Findings on individual drugs showed that alcohol was the most widely used substance with a past month prevalence of 18.6% followed by tobacco (12.0%), cannabis (10.7%), *khat* (10.2%), inhalants (4.3%), prescription drugs (2.2%), heroin (1.7%), cocaine (1.6%), codeine (1.4%), methamphetamine (1.4%), ecstasy/ GHB/ LSD/ psychedelics (1.3%) and ketamine (0.1%). Findings also showed a high burden for severe alcohol use disorders (8.7%) among university students. The study therefore concluded that universities in Kenya were not drug free environments and a three-pronged intervention strategy focusing on the university management, parents and students was recommended.

Key words: *Drugs and Substance Use, Drugs and Substances of Abuse and University Students*

INTRODUCTION

Drugs and substance use (DSU) among university students has been recognized as a global public health issue (Degenhardt and Hall, 2012). Adolescents are particularly vulnerable to DSU including addiction (Luikinga *et al*., 2018). The critical age of initiation of drug use begins during the adolescent period and the peak usage of drugs occurs among young people aged 18–25 years old (UNODC, 2018). This coincides with the period most students go through their university education. During this period, adolescents have a strong inclination towards experimentation, curiosity, susceptibility to peer pressure, rebellion against authority, and poor self-worth, which makes such individuals vulnerable to DSU (Degenhardt *et al*., 2016). Studies have also shown that students aged between 20 and 22 years use drugs and substances at a higher rate than their non-student peers, indicating that a combination of this age and student status is a risk factor for increased substance use (Bennett, 2014; Ham and Hope, 2003).

Globally, researchers have attempted to understand the existing problem of DSU among university students. For example, a study focusing on university students in the United States revealed that the past-year prevalence of illicit drug use ranged from 11% to 17%, and the prevalence of past-month use ranged from 6% to 8% (Degenhardt and Hall, 2012). Another study in the United Kingdom reported that 5% of the study sample from seven universities reported regular use of illicit drugs, while 25% reported occasional use (El Ansari and Vallentin-Holbech, 2015). The situation in the Asian continent depicts a similar trend with an Indian study reporting that 7% of the students use cannabis (Gupta *et al*., 2013). In the Middle East, a study from Kuwait reported a lifetime prevalence of 14% for illicit drug use among university students (Bajwa *et al*., 2013). A study in Iran reported a current prevalence of 8% for cannabis use (Mohammadpoorasl *et al*., 2014).

In the African arena, studies conducted in Nigeria, Uganda, Ethiopia, and South Africa have established that the prevalence of alcohol use among university students ranged between 27.5% and 62% (Kassa *et al*., 2014; Nwanna *et al*., 2018). In Kenya, a study targeting undergraduate students established that alcohol was the most widely used substance among university students with a lifetime prevalence of 48.6% (Ngure *et al*., 2019). Another Kenyan study reported comparable findings where alcohol was the most commonly used substance among undergraduate students with a past month prevalence of 22.0% followed by cannabis 8.0%, and tobacco 7.0% (Musyoka *et al*., 2020). As well, substance use dependence among university students is a growing public health concern (Musyoka *et al*., 2020; Mbuthia *et al*., 2020; Ngure *et al*., 2019; Mehonen, 2017; Aertgeerts and Buntinx, 2002).

Other Kenyan studies have revealed that there was a gradual increase in the prevalence of DSU through the different transition levels of education. Primary school data

showed that 7.2% of pupils had ever used alcohol followed by tobacco (6.0%) and cannabis (1.2%) (NACADA, 2018). Data on lifetime use of drugs and substances of abuse (DSA) among secondary school students showed that 23.4% were using alcohol, 14.5% tobacco, 7.5% cannabis, 1.2% heroin and 1.1% cocaine (NACADA, 2016). This evidence therefore suggests that there was a risk factor for DSU associated with the transition of students from one stage of education to the next (NACADA, 2018; NACADA, 2016).

This inferred that some of the primary school pupils joining schools had already initiated DSU. Therefore, a similar pattern was expected as well for students transitioning to university. Although previous studies show evidence of DSU among university students in Kenya, there are several outstanding knowledge gaps that require further research. First, there is limited data in terms of scope that may inform programming at the national level. Secondly, the country needs to collect baseline indicators that would be used to evaluate the outcomes of DSU prevention programmes targeting university students. Thirdly, with the challenges of emerging new psychoactive substances especially among the young people, there is a need for data to understand the extent of this problem among university students. Lastly, there is limited data on the trend of substance use disorders (SUDs) among university students to inform effective and tailored student-specific interventions.

METHODOLOGY

The study utilized a cross-sectional study design adopting a mixed methods approach where both quantitative and qualitative data were collected. The study was conducted from November 2023 to September 2024 and covered both public and private universities across the 8 administrative regions of Kenya namely; Nairobi, Coast, Nyanza, Western, Central, Eastern (upper and lower), North Eastern, and Rift Valley (North and South). A total of 17 universities were included in the study.

The study population comprised undergraduate students from both public and private universities in Kenya. The study based to undergraduate students and covered students undertaking at least a bachelor's degree programme; from a chartered university; aged at least 18 years of age and those who consented to participate in the study. However, students in diploma or certificate programmes were excluded from the study.

A stratified multi-stage random sampling technique was used to identify the universities to be sampled. The universities were stratified into two: public and private universities. After the first stratification, a purposive sample of 17 universities (30% of chartered universities) was selected to participate in the study. Proportionate sampling was then adopted to determine the number of public and private universities to be included in the sample (11 public universities and 6 private universities made it to the sample, totalling to 17 universities).

A simple random sampling method was then applied at the regional level to identify the universities to be selected from each category (public and private).

After identifying individual universities, a representative sample was established based on the overall student population. This sample was distributed proportionately by Schools or Faculties. At the School or Faculty level, the sample was stratified further by the year of study. The sample was then distributed proportionately according to the year of study. The sample was also distributed proportionately across the male and female gender. Finally, systematic random sampling was used to select the students to be included in the sample from a sampling frame of the total student population in each sampled university. The sample size was informed by Kothari (2003). A total of 15,678 respondents were interviewed translating to a response rate of 99.7%.

A structured questionnaire with open and closed-ended questions was used to collect both quantitative and qualitative data. Qualitative data was captured from the open-ended questions (OEQs) and Focus Group Discussions (FGDs). The use of OEQs and FGDs elicited rich qualitative data that facilitated deeper insights and understanding of the DSU problem among university students in Kenya.

Data on alcohol use disorders (AUDs) was captured using the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM–5) (American Psychiatric Association, 2013). It was applied to identify university students with AUDs among those who had used alcohol in the last year prior to the study. The DSM-5 was also used to categorize the severity of AUDs depending on how many symptoms were identified. Two (2) or three (3) symptoms indicated a mild AUD; four (4) or five (5) symptoms indicated a moderate AUD; and six (6) or more symptoms indicated a severe AUD (American Psychiatric Association, 2013).

Pre-testing of the research instruments was conducted before the actual data collection to enhance the validity and reliability of the responses. Pre-testing was undertaken using a purposive sample of 30 students from a university not included in the list of the 17 sampled institutions. The study questionnaire was administered to 30 students to determine whether the questions were clear, understandable, and flowing in a logical order. Vague questions were rephrased to convey the same meaning to all participants. Any other comments made by the respondents were also incorporated into the final questionnaire. Moreover, 3 technical professionals were engaged to review the questions for readability, relevance, clarity, and comprehensiveness.

The test-retest method was used to measure the reliability of the study questionnaire. The tool was administered two times to the same student participating in the pilot. During piloting, the telephone contact of the students was recorded. After a one-day window, the same students were contacted again for the second follow-up interview.

The two measurements were correlated to get the Pearson r correlation coefficient. An interclass correlation of 0.7 and above was considered appropriate. Further, the study employed standard screening tools i.e. *DSM-5* AUD Diagnostic Assessment with a proven high Cronbach's α reliability coefficient of 0.92 (Campbell and Strickland, 2019).

Quantitative data was coded, sorted, entered and analysed using the Statistical Package for Social Sciences (SPSS) software version 28. Descriptive statistics namely frequencies, pie charts, bar graphs and percentages were used to describe, organize and summarize the collected data. Cross tabulations were used to assess the relationship between variables. Responses from OEQs and FGDs were analysed qualitatively through content analysis. Qualitative data was broken down into broad thematic areas within which emerging themes and quotes were generated through carefully designed criteria. This information was used to supplement, explain and interpret the quantitative data. Ethical clearance was sought from the Chuka University Ethics Review Committee *(CUIERC/ (NACOSTI/ 416*) and the research license was sought from the National Commission for Science, Technology and Innovation *(NACOSTI)* - *(NACOSTI/ P/ 23/ 29940).* Written informed consent was also sought from the study respondents and participation was strictly voluntary.

RESULTS

Background characteristics

Analysis of background characteristics showed that over half (54.2%) of the student population were male and 45.2% were females while 0.6% did not state their gender. Also, the students were evenly distributed across the years of study where 26.9% were first years, 24.3% second years, 23.8% third years and 24.2% in their fourth year and above.

Availability of alcohol, tobacco products and *khat*

The respondents were asked to state the DSA commonly used by students in their respective universities. The results showed that alcohol was the most (87.3%) available substance followed by tobacco products specifically cigarettes (64.4%), *shisha* (41.2%), vape/ e-cigarettes (31.0%), nicotine pouches (30.7%), *kuber* (23.0%) and snuff/ chewed tobacco (22.1%). The study also showed increased availability of the two *khat* variants specifically *muguka* (39.0%) and *miraa* (35.7%) (Table 1).

Availability of narcotic drugs

Findings revealed that smoked cannabis was the most (61.7%) available narcotic drug followed by cannabis edibles (47.6%), cocaine (15.1%) and heroin (14.3%) (Table 1). Results from the FGDs targeting university students identified multiple cannabis edibles ranging from *weed cookies*, *weed mabuyu*, *weed lollipops* and *weed juice.*

Availability of other psychoactive substances

The study showed that prescription drugs (13.9%) were the most available psychoactive substances followed by inhalants (13.1%), codeine (11.5%), methamphetamine (8.5%), ecstasy/ GHB/ LSD/ psychedelics (8.1%) and ketamine (7.0%) (Table 1). *Morphine, a potent opioid used for management of severe pain, was reported as an emerging substance of abuse in the student's FGD.*

Table 1: Availability of DSA among university students in Kenya

Substance	Percent (%)
Alcohol	**87.3**
Cigarettes	64.4
Shisha	41.2
Vape/ e- cigarettes	31.0
Nicotine pouches	30.7
Kuber	23.0
Snuff/ chewed tobacco	22.1
Muguka	39.0
Miraa	35.7
Cannabis smoked	61.7
Cannabis edibles	47.6
Cocaine	15.1
Heroin	14.3
Prescription drugs	13.9
Inhalants	13.1
Codeine	11.5
Methamphetamine	8.5
Ecstasy/ GHB/ LSD/ Psychedelics	8.1
Ketamine	7.0

Source: NACADA, 2024

Sources of DSA

The study showed friends were the main (66.4%) sources of drugs followed by canteen/ bar/ premises within the neighbourhood (59.3%); fellow students within the institution (56.0%); online purchasing over websites or social media (39.4%); canteen/ bar/ premises within the institution (28.0%); support/non-teaching staff (11.4%); and lecturers/ teaching staff (7.0%).

Table 2: Sources of DSA

Sources	Percent (%)
Friends	66.4
Canteen/ bar/ premises within the neighbourhood	59.3
Fellow students within the institution	56.0
Online purchasing over websites or social media	39.4
Canteen/ bar/ premises within the institution	28.0
Support/ non-teaching staff	11.4
Lecturers/ teaching staff	7.0

Source: NACADA, 2024

Periods when drugs are mostly used by university students

Analysis revealed that the majority of the university students were using drugs during weekends (79.2%) and holidays/ semester breaks (64.5%) followed by periods after evening lectures (56.3%), during university trips (49.5%), during inter-university competitions (45.6%), anytime (42.2%) and during lecture breaks (30.8%).

Table 3: Periods when drugs are mostly used by university students

Periods	Percent (%)
During weekends	79.2
Holiday/ semester breaks	64.5
After evening lectures	56.3
During university trips	49.5
During inter-university competitions	45.6
Anytime	42.2
During lecture breaks	30.8

Source: NACADA, 2024

Prevalence of lifetime use of DSU among university students in Kenya;

Lifetime use referred to a student who had ever used a drug or substance of abuse in their lifetime. Results revealed that 45.6% of university students had ever used a drug or substance of abuse in their lifetime.

Prevalence of lifetime use of alcohol, tobacco products and khat

The study showed that alcohol was the most widely used substance with a lifetime prevalence of 40.5% followed by tobacco (20.4%) and *khat* (20.1%). Data on individual tobacco products showed that cigarettes was the most commonly used with a lifetime prevalence of 13.4% followed by shisha (10.9%), vape/ e-cigarettes (8.6%), nicotine pouches (4.6%),

snuff/ chewed tobacco (4.1%) and kuber (3.5%). For khat, the lifetime prevalence of its two variants *miraa* (10.1%) and *muguka* (10.1%) was not different (Table 4).

Prevalence of lifetime use of narcotic drugs

Analysis showed that cannabis was the most widely used narcotic drug by university students with a lifetime prevalence of 18.0% followed by heroin (1.8%) and cocaine (1.6%). Findings also showed that the lifetime use of smoked cannabis (14.9%) was slightly higher than the lifetime use of cannabis edibles (11.9%) (Table 4).

Prevalence of lifetime use of other psychoactive substances

Findings on analysis of other psychoactive substances by university students showed that the lifetime use of inhalants was 5.5% followed by prescription drugs (3.0%), codeine (2.1%), ecstasy/ GHB/ LSD/ psychedelics (1.5%), methamphetamine (1.2%) and ketamine (1.0%). Data from students' FGD also revealed the emerging use of morphine, a potent opioid used for management of severe pain (Table 4).

Table 4: Prevalence of lifetime use of DSA among university students in Kenya

Substance	Prevalence (%)
Alcohol	**40.5**
Cigarettes	13.4
Shisha	10.9
Vape/ e- cigarettes	8.6
Nicotine pouches	4.6
Snuff/ chewed tobacco	4.1
Kuber	3.5
At least one tobacco product	**20.4**
Miraa	10.1
Muguka	9.9
At least one type of *khat*	20.1
Cannabis smoked	14.9
Cannabis edibles	11.9
At least one type of cannabis	**18.0**
Heroin	1.8
Cocaine	1.6
Inhalants	5.5
Prescription drugs	3.0
Codeine	2.1
Ecstasy/ GHB/ LSD/ Psychedelics	1.5
Methamphetamine	1.2

Substance	Prevalence (%)
Ketamine	1.0
At least one drug or substance of abuse	**45.6**

Source: NACADA, 2024

Prevalence of past-month prevalence of DSU among university students in Kenya;

Past-month use referred to a student who had ever used a drug or substance of abuse within the last 30 days prior to the interview. Results revealed that 26.6% of university students had ever used a drug or substance of abuse in the past-month where 28.2% were male and 23.9% were female.

Prevalence of past-month use of alcohol, tobacco products and khat

The study showed that alcohol was the most widely used substance with a past-month prevalence of 18.6% followed by tobacco (12.0%) and *khat* (10.2%). In terms of gender, male students had a higher past-month prevalence of alcohol (21.0%) compared for females (15.7%); males had a higher past-month use of tobacco (13.0%) compared to females (10.9%); and males had a higher past-month prevalence of *khat* (13.0%) compared to females (6.7%) (Table 5).

Data on individual tobacco products showed that cigarettes was the most commonly used with a past-month prevalence of 7.2% followed by vape/ e-cigarettes (5.8%), shisha (4.6%), nicotine pouches (4.2%), *kuber* (2.8%) and snuff/ chewed tobacco (2.6%). For *khat*, past-month prevalence of its two variants *muguka* (8.4%) *miraa* (8.1%) were comparable (Table 5).

Prevalence of past-month use of narcotic drugs

Results showed that cannabis was the most widely used narcotic drug by university students with a past-month prevalence of 10.7% followed by heroin (1.7%) and cocaine (1.6%). Findings also showed that the past-month use of smoked cannabis (8.4%) was comparable to cannabis edibles (8.2%). Data comparing gender and past-month use of cannabis showed that male students had a slightly higher prevalence (11.7%) compared to female students (9.6%) (Table 5).

Prevalence of past-month use of other psychoactive substances

Findings on analysis of the usage of other psychoactive substances by university students showed that the past-month use of inhalants was 4.3% followed by prescription drugs (2.2%), codeine (1.4%), methamphetamine (1.4%), ecstasy/ GHB/ LSD/ psychedelics (1.3%) and ketamine (0.1%) (Table 5).

Table 5: Prevalence of past-month use of DSA among university students in Kenya

Substance	Prevalence (%)	Prevalence (%) by sex	
		Male	Female
Alcohol	**18.6**	**21.0**	**15.7**
Cigarettes	7.2	8.6	5.5
Vape/ e- cigarettes	5.8	5.8	5.7
Shisha	4.6	4.5	4.7
Nicotine pouches	4.2	4.7	3.7
Kuber	2.8	3.3	2.1
Snuff/ chewed tobacco	2.6	3.3	1.7
At least one tobacco product	**12.0**	**13.0**	**10.9**
Miraa	8.4	10.5	5.1
Muguka	8.2	10.7	5.6
At least one type of *khat*	**10.2**	**13.0**	**6.7**
Cannabis smoked	9.1	10.3	7.7
Cannabis edibles	6.4	6.6	6.2
At least one type of cannabis	**10.7**	**11.7**	**9.6**
Heroin	1.7	2.0	1.2
Cocaine	1.6	1.8	1.3
Inhalants	4.3	4.5	4.1
Prescription drugs	2.2	2.4	2.0
Codeine	1.4	1.5	1.2
Methamphetamine	1.4	1.5	1.2
Ecstasy/ GHB/ LSD/ Psychedelics	1.3	1.4	1.1
Ketamine	0.1	-	0.1
At least one drug or substance of abuse	**26.6**	**28.8**	**23.9**

Source: NACADA, 2024

Extent of Alcohol Use Disorders (AUDs) among university students in Kenya

The study results showed that 8.7% of university students had severe AUDs and therefore in need of treatment and rehabilitation services. Analysis of severe AUDs by gender showed that male students had a higher prevalence (10.5%) compared to females (6.5%) (Table 6).

Table 6: Prevalence of severe AUDs among university students in Kenya

Background characteristic	Prevalence (%) of severe AUDs (addiction)
Sex	
Male	10.5
Female	6.5
National	8.7

Source: NACADA, 2024

DISCUSSION

Availability and accessibility of DSA

The study endeavoured to understand the availability and accessibility of DSA among university students in Kenya. The findings showed that alcohol, tobacco, cannabis, and *khat* (*miraa* and *muguka*) were the most available and accessible substances of abuse within the university environment and its neighbourhood. For tobacco products, the study identified an increase in the availability and accessibility of shisha and novel tobacco products such as vape/ e-cigarettes and nicotine pouches. Cannabis was the most commonly accessible narcotic drug with an emerging trend in the availability of cannabis edibles. The availability and accessibility of other narcotic drugs, especially heroin and cocaine was relatively low. The findings also revealed a new trend in the availability of emerging psychoactive substances within the university environment, specifically methamphetamine, prescription drugs, codeine, ecstasy/ GHB/ LSD/ psychedelics and ketamine.

Towards supporting supply reduction interventions in our universities, there was a need to understand the primary sources of DSA. According to the findings, the main sources of drugs were canteen/ bar/ premise within the neighbourhood, fellow students within the institution and online purchasing over websites or social media. The study also revealed that students were involved in the drug supply chain. Studies have demonstrated that availability and accessibility of DSA is a key predisposing factor for use, especially among young people (Mbuthia *et al*., 2020; Onya *et al*., 2012). Further, it has been shown that residing in neighbourhoods associated with a higher level of sales and consumption of DSA is a risk factor for abuse compared to neighbourhoods with ease of access to places of worship, libraries, and after school programmes (Mennis *et al*., 2016). Also, visual and social media exposure to these drugs and other psychoactive substances either through advertisements, promotions, or marketing leads to a craving for these substances resulting in potential use and abuse (Mennis *et al*., 2016).

Prevalence of lifetime use of DSA among university students in Kenya

The study showed that almost 1 in every 2 of the university students in Kenya had used at least one drug or substance of abuse in their lifetime. Further analysis of lifetime prevalence showed that alcohol was the most

widely used substance followed by tobacco, *khat* (*miraa* and *muguka*), cannabis and prescription drugs. The study also revealed that cigarettes were the most commonly used tobacco product followed by shisha, vape/ e-cigarettes, nicotine pouches, snuff/ chewed tobacco, and lastly *kuber*. The study also showed a high lifetime use of smoked cannabis and cannabis edibles. However, of concern is the lifetime use of emerging psychoactive substances among university students that were synthetic in nature especially methamphetamine, ecstasy/ GHB/ LSD/ psychedelics and ketamine. A comparable study targeting university students in Kenya reported alcohol as the most widely used substance with a lifetime prevalence of 48.6% followed by cannabis (14.2%), tobacco (13.0%), *miraa* (11.5%), *muguka* (8.1%) and cocaine (2.7%) (Ngure *et al*., 2019). Generally, evidence shows that university education presents the students with the opportunity to experiment with DSA where DSU is considered to be normal by many students and they tend to overlook the negative consequences associated with the use (Larimer *et al*., 2005).

Prevalence of past-month use of DSA among university students in Kenya

The study showed that alcohol was the most commonly used substance among university students in the past-month. Similar findings have been reported by previous studies targeting Kenyan university students (Musyoka *et al*., 2020; Mbuthia *et al*., 2020; Ngure *et al*., 2019). Tobacco was the second most widely used substance and the most commonly used products were cigarettes, vape/ e-cigarettes, shisha, nicotine pouches, *kuber* and lastly snuff/ chewed tobacco. The analysis therefore revealed an emerging trend in the past-month use of novel tobacco products such as vape/ e-cigarettes and nicotine pouches. In addition, students were using shisha despite this tobacco product being a banned substance in Kenya.

Cannabis was the most commonly used narcotic drug and the third most widely used substance by university students. Of concern was the emerging use of cannabis edibles with the findings showing no significant difference in the past-month use between male and female students. The study also revealed a high prevalence of the two variants of *khat* namely *miraa* and *muguka*. Other narcotic drugs identified in the study were heroin and cocaine although their use was relatively low. A comparable study undertaken in Kenya reported a past-month prevalence of 22.0% for alcohol followed by cannabis (8.0%) and tobacco (7.0%) (Musyoka *et al*., 2020).

Data analysis on past-month use also showed a new trend in the use of emerging psychoactive substances among university students in Kenya. These drugs were in the class of synthetic drugs and included methamphetamine, ecstasy/ GHB/ LSD/ psychedelics, and ketamine. This was an indicator that universities were emerging markets for the consumption of new psychoactive substances. Overall, DSU among university students is emerging as a global public health issue (Degenhardt

and Hall, 2012). It has also been shown that transition to university is characterized by intense academic pressures, as well as, independence and separation from parental supervision (Sommet *et al*., 2012). Further, for many students attending university, this stage coincides with the transition into adulthood and the development of new social networks and may represent the first period in their lives where they live independently without immediate parental supervision (Skidmore *et al*., 2016). During this period, there is increased vulnerability to experiment with drugs and other psychoactive substances (Locke *et al*., 2015). Other commonly reported predisposing factors for DSU among university students are peer pressure, excess freedom, stress, not being active in religious activities, poor parenting, and high family income (Mbuthia *et al*., 2020; Bajwa *et al*., 2013; Silva *et al*., 2006).

Extent of severe AUDs among university students in Kenya

The study showed increased vulnerability and high burden of severe AUDs among university students. This was a worrying trend with potential negative consequences related to poor academic performance and failure to complete university studies despite the heavy parental and Government investment in their education. The findings of this study are comparable to previous studies targeting university students in Ethiopia (Mehonen, 2017) and Belgium (Aertgeerts and Buntinx, 2002). On the centrally, a similar study in Turkey reported a prevalence of AUDs of 2.0%. However, this observation could be attributed to the fact that Turkey is a predominantly Muslim country where alcohol use is prohibited.

CONCLUSION

The environment within the universities and the neighbourhoods were not drug-free spaces with evidence showing an increased availability and accessibility for DSA, especially alcohol, tobacco, *khat,* and cannabis. The study also revealed an emerging trend in the use of synthetic drugs especially methamphetamine, ecstasy/ GHB/ LSD/ psychedelics and ketamine. The study also showed that despite the involvement of students in the drug supply chain, there was increased vulnerability of exposure of university students to online platforms and websites for promoting the sale and use of DSA.

Also, the high burden of DSU and the extent of AUDs among university students was a worrying concern given the outcome of the well-known negative consequences related to declining academic performance and delay or failure to complete university education. The study also showed the increased vulnerability of DSU among female students with the consumption gaps between male and female students getting narrower for most of the substances reported. This observation is equally disturbing and negates the assumption that DSU is a problem of the male gender.

Therefore, towards reversing the growing trend of DSU among university students, this study recommends a three-pronged strategy focusing on the students, parents and the university management. First, the university management needs to invest on prevention, early identification and brief intervention programs for students including the strengthening of co-curricular activities and the guidance and counselling departments. Secondly, parents should enhance parental monitoring of their children pursuing university education and being physically present throughout their academic journey. Lastly, there is need for strengthening the student peer to peer support programs where they assist each other to cope with academic, social, emotional or personal challenges.

Limitations of the study

The results of this study, although valuable, were susceptible to the inherent challenges of recall bias on past drug use experiences and the limitation of cross-sectional studies whose strength is limited towards determining the association between variables but cannot predict causation.

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