

## Article

# Patterns of Psychoactive Substance Misuse in Undergraduate University Students: The Case of Mekelle University, Ethiopia

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**Abstract:** Background: Substance misuse is a public health concern among University students. Understanding the critical times and places for substance misuse among University students helps to inform effective preventive strategies. However, there is a dearth of studies in Ethiopian Universities on this topic. Here, we aimed to explore the patterns of psychoactive substance misuse, specifically about time and places, among undergraduate students at Mekelle University. Subject and Methods: An explorative qualitative study design was conducted in 2017. Five focus-group discussions among substance user students followed by eleven in-depth interviews with the user and non-user students, proctors, and a bar owners were conducted. In addition, four key informant researchers were involved. Participants were purposefully selected. The data were audio taped, transcribed verbatim and imported into Atlas.ti qualitative data analysis software version 7.5 for coding and analysis. Data were analyzed inductively to capture the emerging themes. Results: Our study showed that students consume alcohol in the evenings, on weekend days, holidays, after exams and at celebrations; smoke cigarettes after waking in the morning and after eating lunch. Concurrent substance use like smoking cigarettes, chewing Khat and drinking alcohol was evident. Khat chewing was reported mainly around noon, in the afternoon and on weekends. Substance use generally peaks at weekends, at the start and end of academic semesters, and when graduation approaches. However, students who become addicted may continue using substances. Students easily accessed and used substances around and inside the gates of the campuses. Conclusion: Event-specific celebrations are linked with substance misuse among University students. The ease with which students can access substances around the campuses increases the likelihood of substance misuse. Proactive interventions that include the provision of alcohol-free recreational alternatives to events on campus, high-risk substance misuse surveillance, tobacco cessation interventions, and promoting plain packaging are recommended.

**Keywords:** substance misuse; event specific drinking; Mekelle University; Ethiopia

**Citation:** Kahsay, Z.H.; Tesema, A.G.; Tesfa, F.H.; Gebretsadkan, B.T.; Hagos Gebretsadik, W.; Hackett, M.L. Patterns of Psychoactive Substance Misuse in Undergraduate University Students: The Case of Mekelle University, Ethiopia. *Challenges* **2022**, *13*, 54. <https://doi.org/10.3390/challe13020054>

Academic Editor: Susan Prescott

Received: 19 July 2022

Accepted: 19 October 2022

Published: 25 October 2022

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## 1. Background

Mental health disorders are the leading global health burden of the day affecting 25% of the population of the world [1]. Psychoactive substance misuse is recognized as a stronger predictor of mental disorders, with increasing prevalence and its negative consequences along the changing global situations including the COVID-19 outbreak [2]. Youth attending colleges and Universities are among sub-groups of the youth with a special form of risk factors for psychoactive substance misuse. During the transition to University/College, young students face new sources of stress, including but not limited to intense academic pressure, separation from parental supervision, sharing close living quarters with new people, formation of new social groups, social isolation, peer pressure

and balancing academic and other responsibilities [3–5]. This coincides with opportunities to experiment with psychoactive substances, including alcohol, Khat, and increases in smoking cigarettes [4–6].

Literature shows that the prevalence of psychoactive substance misuse including Khat, alcohol, cigarette, and other illicit drugs is high among University students around the globe [7–9]. For example, the prevalence of chewing Khat ranged from 23% at Ethiopian Universities [9,10]. Previously published findings from a similar study project at Mekelle University, in which the current evidence is generated, also reported a 49% current prevalence for psychoactive substance misuse [10] while helplessness, prior experience, socialization reasons, academic performance, easy access to the substances, poor organizational support drove the students to the misuse [11].

While understanding the pattern of psychoactive substance misuse among University students is crucial for designing interventions, little is known about the patterns. Some studies associated Khat chewing among University students with exam preparation, and enjoyment after exams are often concurrent with alcohol consumption [11,12]. In addition, psychoactive misuse is commonly associated with celebrations [13–15], with many University students using multiple substances [7,12]. Psychoactive substance misuse can lead to dependency [16], early sexual encounters, mental health problems, decreased academic performance, increased risk of contracting HIV/AIDS and other sexually transmitted diseases, absenteeism, committing violent crime and theft, and other social, cognitive and financial problems [17,18].

Evidence-based preventive strategies are needed if the frequency of psychoactive substance misuse is to be reduced. Regular collection, analysis, interpretation, and dissemination of data on psychoactive substance misuse among young people are important first steps to informing public health policy and facilitating the planning, implementation and evaluation of public health interventions. Proceeding to the exploration of the drivers of psychoactive substance misuse among university students, which is published elsewhere [11], the current study was specifically designed to explore the patterns of psychoactive substance misuse among undergraduate students at Mekelle University.

## **2. Methods and Participants**

### **2.1. Study Settings**

The study was conducted among undergraduate students attending Mekelle University from 1 April to 29 May 2017 and with participants assumed able to provide rich information about students' psychoactive substance misuse behavior (key informant researchers, proctors, and bar owners around the campus). Mekelle University is located in Mekelle town, the capital of Tigray regional state, Ethiopia. In 2018, the University had 26,371 undergraduate students on six campuses [19]. Mekelle University established a substance-users rehabilitation center in 2014 to respond to increasing substance misuse behavior amongst its students and the community.

#### **2.1.1. Study Design**

Qualitative, group and individual audio recorded semi-structured interviews with students of Mekelle University as well as a male and a female proctor, a bar owner, a shop owner and four key informant researchers (KIRs).

#### **2.1.2. Sample Size and Sampling Procedure**

Focus group and interview participants were purposively selected by using students' sex, substance misuse status and year of study at university. The criteria were assumed to identify potential participants with rich information on university students' substance misuse. Investigators visited the University campus, conducted informal discussions with students, and primarily with student representatives as an entry gate to identify potential

participants. Further identification and enrollment were followed through snowball techniques. Based on the informal discussions with the entry gates, we listed out potential participant groups with wealth of information regarding Psychoactive substance misuse in the respective campuses of the University. Hence, substance using students, non-using students, substance vendors and bars at the gate of the colleges were found quite relevant to be approached for discussions and interviews. Thus, five focus groups (four with substance using students and one with non-users) of 8–10 participants, eleven one-on-one in-depth interviews (IDIs) were conducted; seven with students (three substance users and four non-users), two with proctors and one with a bar owner, one with shop owner. Following the discussions and interviews, we adopted a KIR approach to better capture drivers for psychoactive substance use. Four KIRs, (two substance using students and two non-users) were included in the study (it is also available in a previously published manuscript of the same project [11]). They had the role of providing information, introductions, and interpretation as well as access to observations that an outsider would not normally have. They were oriented to explicitly observe and search out salient views and the complex factors driving substance use using the semi-structured guide. As data collection and analysis were done concurrently, saturation of information was used to indicate when to terminate recruitment and interviews.

## 2.2. Data Collection Procedure

Two health behavior specialists (ZH and AG) conducted the focus group discussions with male and female research assistants respectively. The two authors developed the discussion and interview guides together with a sociologist, a clinical psychologist, and a public health professional. The investigators approached the potential participants for the focused grouped discussions and in-depth interviews one day before interview to select a convenient place. Then, the investigators invited the selected participants to take part in the discussions and interviews in person. Hence, the all the focus groups discussants and the interviewees underwent face-to-face discussions and interviews respectively. Following the focus groups, eleven one-on-one In-depth Interviews (IDIs) were conducted in person. All discussions and interviews were conducted in a private setting where recording was possible with minimum noise.

The four KIRs used informal discussions and non-participant observations with substance user students, drug vendors, proctors, security/guards and looked for evidence of substance use such as discarded cigarette butts, and empty alcohol containers in university compound to make their understanding extensive. Each KIR was interviewed three times within a two-week interval for new insights and understanding.

To improve data rigor, the investigators asked follow up questions (probed) for opinions and answers raised in the discussions and interviews that needed elaboration, confirmation or clarification. Data from FGDs, in-depth interviews, and Key Informant Researchers (KIRs) interviews were assessed for similarities and variations. The investigators withheld their preconceptions, expectations, and experiences to reduce introducing potential bias during data collection, transcription, coding and analyses. The investigators also ensured that no relationship existed with participants to prevent possible bias. Finally, few participants (a male and a female substance user and two substance user KIRs) were approached to ensure that the data capture was a true representation of what was discussed during the interviews.

## 2.3. Data Analysis

The authors used an inductive approach and conducted the analysis as soon as possible after each interview to identify emerging issues that could be incorporated in the succeeding discussions/interviews. Investigators conducted debriefing sessions on a daily based. All audiotaped Focused Group Discussions (FGDs), In-depth Interviews (IDIs) and Key Informant Researchers (KIRs) were reviewed multiple times, transcribed verbatim and imported into ATLAS.ti qualitative data analysis software version 7.5 (ATLAS.ti

Scientific Software Development GmbH, Berlin, Germany, 2015) for coding and analysis. Filed notes and investigator's memos were also linked to respective files in the software to assist analysis. Independently, two investigators (ZH and AG) openly coded and analyzed the data. Both are familiar with qualitative research methods and have received training. ZH and AG met to assess and discuss for the consistency in coding. Similar codes were systematically categorized and non-repetitive themes generated. Codes were reviewed and the transcripts were coded a second time against the generated codes to ensure that some salient opinions were adequately captured. The second time coding also enabled the investigators to ensure whether the emerged themes were grounded well to the transcripts.

### 3. Results

#### 3.1. Socio-Demographic Status of Participants

The students were aged between 20–27 years and all were in their second year of study or above. As for the majority of students in Ethiopian Universities, all students interviewed in the current study live in the campus. The table that summarized the socio-demographic characteristics of the participants is published elsewhere [11].

#### 3.2. Psychoactive Substance Misuse

Students attending higher education at Mekelle University reported drinking alcohol, smoking cigarettes, chewing Khat, using cannabis and other illicit drugs, mainly hashish. Students also frequently reported the use of more than one substance simultaneously or in quick succession (poly-substance use). They frequently mentioned that they smoke cigarettes and cannabis after chewing Khat; drink alcohol after using Khat and cannabis; smoke cigarettes while drinking; or smoke cigarettes and take illicit drugs while drinking. Mostly, alcohol use comes after all other substances. A KIR said:

*"Students who are addicted to Khat chewing also succeed to smoke cigarette. There is also a tendency to drink after all."* (21-years-old, male-KIR 1)

Another male user stated:

*"Alcohol comes after all of the substances I have told you."* (Khat, Cigarette) (21-years-old, male)

In situations where money and distress are not a concern, students often chew Khat and drink alcohol in small groups. In contrast, they tend to smoke alone if they do have limited amount of money and when they suffer from distress. Students actively scope out places around campus to use substances, either in groups or alone.

*"Smokers want to be alone while they smoke. I don't know how they do feel then; they prefer to be alone when they smoke."* (23-years-old, Male-nonuser)

#### 3.3. Timing of Substance Misuse

Students drink alcohol mainly in the evenings, with poly substance using students drinking alcohol after chewing Khat, smoking hashish, and cannabis. They referred to it "መስከረ/ Mesberya" to indicate that alcohol 'cools down' the effects of the substance preceding it.

Participants mentioned that "Over" (refers to drinking the whole night) is common among students, particularly on Saturdays. Most students drink excessive alcohol whilst they start smoking.

*"Alcohol [use] is common among students on Saturday. The day [Saturday] is believed as a preferred day for alcohol drinking. If you visit the nightclubs on these days [Saturday], you would doubt there is a student left at the campus. Most spent their night in the bars. They call it 'over'."* (27-years-old, Male-user)

Participants also indicated that freshmen and senior students visit bars located in the town surrounding the campuses, to get alcohol. A male proctor also reflected,

*“What I am seeing is that the students move out from the campus starting at 9:00 p.m. in the evening. Previously, only senior students were involving in drinking alcohol, but now both the freshmen and senior students do this [Over].”* (A male Proctor).

Participants also identified specific occasions when psychoactive substance misuse becomes more frequent. Celebrations before and after exams, at the end of the academic year, graduation, their own or a peer’s birthday and holidays were reported as common occasions. Students also chew Khat before presentations (thesis and assignment) to develop their confidence. Birthday celebrations can be the catalyst for alcohol use. A KIR stated her experience,

*“When I taste it during my friend’s birthday celebration on campus, I can’t tell you how I feel happy. It was special feeling for me. Then the event was a break-through for me and I like it. [...] Afterwards, I continued drinking.”* (21-years-old, female-KIR1)

Students use Khat before exams because they assume it will help them to concentrate and read for longer. They may continue using it all night as it gives them energy and enables them review many of their reading materials. Students also chew Khat and drink alcohol when exams are finished. A student in the male users’ FGD stated,

*“Normally, substance use increases when the exam comes over. We have no other option to spend the time after the exam; we will be free then [post-exam] and get time to chew Khat.”* (23-years-old)

Students also misuse Khat to combat boredom created by excess free time in the afternoons. A female FGD participant explained:

*“... Here [in University] we may have a class from 8:30–10:30 a.m. in the morning. It might be a two hours class per day. We are free for the rest of the day. Therefore, you need to spend the whole day sitting in the dorm. You know there is no other entertainment in the compound where the students could spend their time.”* (21-years-old, 3rd-year)

Participants indicated that substance misuse peaks in May, the end of each academic year. At year end, even first-time use of Khat rises as students celebrate the completion of another academic year. Peer pressure is also stronger then. A male key informant researcher reflected his observation,

*“[...] senior students and those who have used substances before, use them more frequently. First time as well as infrequent users also get addicted in this month [May]; just before they leave for an academic break.”* (21-years-old-KIR1)

Participants specified substance misuse tends to be more common among final-year graduating class students; Students’ substance misuse increases as the year progresses and peaks in the last months of the academic year. A KIR asked:

*“Do you know what they call the month of May? They called it «የቀርጫ ወር/A month of ‘kercha’» Do you know why? It is to indicate a month, which all students should chew Khat.”* (22-years-old- Male KIR)

While there are particular times of the day, week, and year when students misuse substances more frequently, those who smoke seem to do so continually throughout the day, with increases at meal times and on weekends.

*“If the student is already addicted, he may also smoke in the morning and in the evening. Particularly, they must smoke in the morning; just before a class begins. [...] these are the critical times to smoke.”* (23-years-old, male non-user)

A female substance user reported that she always craves a cigarette after lunch and she may be in tears if she does not smoke. Students also use proverbs to justify smoking after a meal. They reported proverbs like “ከምሳ በኋላ ረጂሙ ንያላ”/A Niyala after lunch/ “ሆኖ

ከሞላ ሳንባ ይሻፍዳል/If abdomen fills up, lung urges to smoke". "በልቶ የማያጨስ አሳማ ብቻ ነው/It is a pig which eats but does not smoke".

With the increase in the number of students using Khat and alcohol, there have been corresponding increases in cigarette smoking. They called it "መስበርያ" to refer to the "complementing" effect of smoking with chewing and drinking.

Participants in substance user FGDs disclosed that those who are dependent on substances will use them regardless of the cost. However, it was also uncovered that if a student becomes dependent on the substance they use, they crave it and want to use it constantly regardless of the time, day or occasion.

*"I personally do not believe that the timing matters. Whatever you're busy, you would get time to use it [smoking]. Whatever you have an assignment or a class or any; you will go out, just smoke and come back. It is also true for drinking alcohol."* (24-years-old, 3rd year student)

A female users FGD participant stated it:

*"Initially, it is on weekends that mostly we use such kind of use [substance use]. The reason is that it is on Saturday and Sunday that we have free days. However, after being addicted to it, there would not be a time preference to use."* (21-years-old, 4th-years-student)

However, Saturday is referred as a "Pretty day" to use substances. For most students who started chewing, it becomes difficult to abstain on Saturday.

### 3.4. Place to Acquire and Misuse Substances

Participants stated that cigarettes, Khat, and alcohol are easily available to purchase in shops, Khat vendors (also available in legally registered houses and rent houses for Khat chewing), bars and grocers around the campus. Access to these substances is getting easier for the students. Hashish, shisha, "Angada" and "Med'a" (local names/terms for Cannabis) were not easily accessible in shops surrounding the campus. Sometimes, students must find a friend who knows where to find and use these substances. A female KIR complained:

*"A large number of bars have opened in this year while no entertainment centers or other types have opened in the same year around the campus."* (21 years-old, -KIR)

Students also smoke cigarettes, chew Khat, drink alcohol, and use hashish inside the campus in dorms, toilets, building corners, green areas, and around fences. Students hide cigarettes and hashish in their pocket and use soft drink containers to carry alcohol to the compound. Proctors (students' watchmen inside the dormitory) and the students repeatedly mentioned that they frequently found Khat remnants and alcoholic beverage containers inside the university compound.

A female key informant researcher explained:

*"Unexpectedly, nowadays, substance use in dormitories is common. Students bring it and everything [smoking, drinking, and chewing] is done even in the daytime."* (21 years-old, KIR)

Similarly, participants also mentioned they have observed there are places inside the campuses (the users called them "Spot" and sometimes "Jungle") where only users visit to smoke cigarette and use hashish.

*"There are bushes around the green areas with few stones to sit. [...]. We share cigarettes there with friends if there is a shortage."* (21-year-old, a male substance-user)

More quotes for each theme are also available in the Supplementary Materials (Supplementary File S1).

#### 4. Discussion

The current study explored the patterns of psychoactive substances in undergraduate University students. Alcohol drinking, cigarette smoking, chewing Khat and cannabis use were the most commonly reported. Time of misuse varied by type of substance while poly-substance use was also evident. The students constructed powerful proverbs in favor of their misuse and use them as defense mechanism. Shops, bars, and grocers were places where students got the substances. In addition, students also misuse substances inside the University compound.

College attendance places students at an increased risk for psychoactive substance use in general [7,8]. Moreover, the misuse tends to be frequent and heavy alongside exposure to new college environments including physical and social environments and friendship [11,20–22]. While students often consume Khat and alcohol in groups, mostly with their friends, college students in Belgium overestimated their friends' drinking habits, which meant they aligned their drinking to an inflated norm [23].

Students used psychoactive substances concurrently. This has been found with students in different countries [11,24,25]. This shows that students who may begin misusing one substance are at a high risk of trying other addictive psychoactive substances, which could lead to a higher risk of substance use disorder among college students [26].

As seen previously [26], students took advantage of free time when there is no academic requirements or classes to use substances. Providing a wide range of alcohol-free social and recreational activities might be worthwhile in getting the students to pass their free time safely.

Joining and leaving University, celebrating events, weekends and breaks are often celebrated with substance misuse [13,14,27,28]. The nexus of problematic substance misuse like heavy alcohol drinking and event celebrations are becoming a growing concern globally [13,14,28]. Event-specific celebrations with problematic substance use may provide an opportunity for students to experiment with substances for the first time or continue previous use. However, evidence in this regard is scarce in the Ethiopian context, which would benefit from more extensive research. Event-sensitive preventative interventions for predictable circumstances, aimed to reduce celebrations where problematic substance misuse occurs and shift the culture on campus in this regard may avert problematic use [13,27,28].

The current study also revealed a unique finding regarding early morning smoking among Cigarette-user students. Students smoke cigarettes immediately after waking from sleep in the morning. Early morning smoking leads to a greater risk of cancer and is an important indicator of nicotine dependence attributed to heavy, uninterrupted and automatic smoking habits [29]. Introducing university-based surveillance of high-risk substance use would be crucial to monitor the trend and implementing data-driven interventions [30,31]. The provision of tobacco cessation interventions, mobile, internet-based and institution-based free telephone Quitline are cost-effective ways to reduce problematic substance misuse [32,33]. Strengthening national efforts in reducing the appeal of tobacco products through plain packaging and increasing awareness of its adverse health effects through health warnings on the packaging are cost-effective means to reduce tobacco use [34,35]. In addition, brief interventions in secondary schools are also promising for preventing substance misuse, as the age at first exposure for students is becoming lower over time [10,36–38]. A previous study shows that the mean age of undergraduate University students at their first-time use of alcohol is 16 and while it is 17 for tobacco [10].

Students' easy access to alcohol, cigarettes, Khat, and other substances increased substance misuse. Adolescents and young adults tend to initiate and continue to use substances easily accessible (physically and economically) to them [39]. Despite college rules and regulations prohibiting substance misuse within the university compound, the current study uniquely revealed students' flagrant disregard of the rules; the compound being the main place where students use substances. Another study also reported poor implementation of the rules and regulations in Ethiopian Universities [40]. This use in

communal spaces could not only harm the users but also puts non-user students at risk from second-hand smoke and the influence of peer pressure. Strategies that involve college students like University based clubs and peer-to-peer networking to restrict access may reduce psychoactive substance misuse [40,41]. Nonetheless, the ever-changing forms and types of psychoactive substances across time become a pressing challenge to effectively administer legal measures with the existing national and international rules and regulations, which demands the need to modify and extend the existing rules and regulations [42,43].

Community norms in favor of consuming the substances might also contribute to psychoactive substance misuse [14]. Ethiopia is among the countries with a high prevalence of alcohol consumption among the adult population and nearly half of the population is a lifetime user of alcohol [44,45].

#### *Implications of the Findings to COVID-19 Pandemic*

The global COVID-19 pandemic has increased both the risk and the negative mental health outcomes among psychoactive substance users in comparison to the general population [2,43,46]. Furthermore, it is especially so for younger adults [46,47]. Cognizant of this change, the current findings on the patterns of psychoactive substance misuse among undergraduate University students will be a leverage for decision-makers and implementing actors in designing strategies to address COVID-19 in University settings. Not only the non-negligible proportion of youths in the world are attending colleges and universities, but the prevention strategies in these settings also need to be sensitive to individual and collective behaviors of the students the patterns of psychoactive substance misuse.

## 5. Conclusions

Concurrent psychoactive substance misuse was frequently mentioned among User students. Post exam and event-specific celebrations including birthdays aggravates risk of psychoactive substance misuse among University students. Substances are easily available to the students around the University's compound. Proactive interventions that include the provision of alcohol-free recreational alternatives to events on campus, high-risk psychoactive substance misuse surveillance, tobacco cessation interventions, and promoting plain packaging are recommended as potential avenues to reduce psychoactive substance misuse among University students. The need to engage University community to survey and deconstruct proverbs as well as sayings that induce psychoactive substance misuse may also be helpful.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/challe13020054/s1>, File S1: Codes-quotations list.

**Author Contributions:** Z.H.K., A.G.T. and W.H.G. conceived and designed the study; led the data collection process. Z.H.K. and A.G.T. coded and analyzed the data, Z.H.K. wrote the first draft of the manuscript. A.G.T., M.L.H., F.H.T. and B.T.G. critically reviewed the manuscript. Finally, all authors reviewed and approved the final draft. All authors have read and agreed to the published version of the manuscript.

**Funding:** Office of Research and Community Service, Mekelle University funded the study.

**Institutional Review Board Statement:** Ethical approval to conduct the study was granted by the Ethical Review Board of the college of health science, Mekelle University (Expedited approval number 1048/2017).

**Informed Consent Statement:** Study participants were informed about the objectives of the study, assured for confidentiality. Then, written informed consent was obtained from each participant.

**Data Availability Statement:** The tools used for the study and the data that supports the findings in the study are fully available at the hand of the authors.



**Acknowledgments:** We would like to thank Mekelle University for financial support and study participants for their participation in the study.

**Conflicts of Interest:** The authors declare no conflict of interest.

### Abbreviations

IDI In-depth interview

FGD Focus Group Discussion

KIR Key informant researcher

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