



**SUBSTANCE USE AND ASSOCIATED FACTORS AMONG
UNDERGRADUATE MEDICAL STUDENTS AT SPHMMC IN
ADDIS ABABA, ETHIOPIA**

BY: HAMID OMER, MEDICAL INTERN

**ADVISORS: TAKELE MENNA, PhD, ASSOCIATE
PROFESSOR OF PUBLIC HEALTH**

**SILENNAT GEBRU, MD, MPH, ASSISTANT
PROFESSOR OF PSYCHIATRY**

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Substance use and associated factors among undergraduate medical students at SPHMMC in Addis Ababa, Ethiopia

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By: Hamid Omer, Medical Intern

Advisors: Takele Menna, PhD, Associate Professor of Public Health

Silennat Gebru, MD, MPH, Assistant Professor of Psychiatry

Addis Ababa

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Abstract

Background: Substance use among college students, particularly in developing countries like Ethiopia, poses a significant public health concern. Academic stress, peer pressure, and newfound independence contribute to student vulnerability. Despite this, comprehensive data on substance use and its associated factors among undergraduate medical students at St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa remains limited, highlighting a critical research gap.

Objective: To assess the prevalence of substance use and associated factors among undergraduate medical students at St. Paul's Hospital Millennium Medical College in Addis Ababa, Ethiopia.

Methods: This cross-sectional study involved 397 St. Paul's Hospital Millennium Medical College undergraduate medical students. Data were collected using a pretested self-administered questionnaire. Data analysis was done using SPSS version 26.0. Descriptive statistics and bivariable logistic regression models were employed. The statistical significance of any observed associations between the dependent and independent variables was declared at $P \leq 0.05$.

Results: Of the 397 participants, 226 (56.9%) were females. The self-reported lifetime prevalence of any substance use was 13.1% (95% CI: 9.8%–16.4%), while the current prevalence (past 3 months) was 9.1% (95% CI: 6.3%–11.9%). Alcohol was the most common current substance (7.1%), followed by khat (3.5%). As the multivariable logistic regression analysis showed that having depressive symptoms (AOR = 8.10; 95% CI: 1.46–44.97), having friends who use substances (AOR = 4.77; 95% CI: 1.70–13.42), and having a positive (risk) attitude towards substance use (AOR = 2.56; 95% CI: 1.10–6.25) were significant predictors of substance use among the undergraduate medical students.

Conclusion: The prevalence of substances use among undergraduate medical students at St. Paul's Hospital Millennium Medical College is significant if not high. Having depressive symptoms, friends who use substances and a positive (risk) attitude towards substance use were found to be predictors of substance use among the study participants.

Consequently, Interventions should prioritize the integration of mental health support services with peer-led prevention programs, focusing on students across all academic years to address active use and prevent the progression to high-risk behaviors.

Keywords: Substance use, Under graduate, Medical Students, Predictors, Ethiopia

Acronyms and Abbreviations

AOR – Adjusted Odds Ratio

CI – Confidence Interval

COR - Crude Odds Ratio

ETB - Ethiopian Birr

GAD - Generalized Anxiety Disorder

KAP - Knowledge, Attitude, and Practice

N/A – question not applicable to respondent

PHQ – patient Health Questionnaire

SD – Standard Deviation

SPHMMC – Saint Paul’s Hospital Millennium Medical College

SPSS – Statistical Package for the Social Sciences

SSA - Sub-Saharan Africa

TVET - Technical and Vocational Education and Training

WHO – World Health Organization

WHO ASSIST – World Health Organization Alcohol, Smoking and Substance Involvement Screening Test

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1. Introduction

1.1. Background

Substance use among university and college students has become a worldwide health problem, creating significant challenges to individuals, academic institutions, and communities (1). Increased autonomy, unfamiliar social settings, and academic pressures are all factors that can make a person more susceptible to substance use during the crucial time between adolescence and early adulthood, which frequently corresponds with starting college and university (1). Studies conducted worldwide show that a high prevalence of psychoactive substance use among university and college students, with alcohol, tobacco, and cannabis being among the most commonly abused substances (2,3). This problem affects student populations in a variety of cultural and socioeconomic contexts and is not limited to specific regions or areas. (1).

In sub-Saharan Africa (SSA), substance use among young people has become a serious issue, with recent data showing an upward trend (1). A systematic review and metanalysis centered on SSA found that more than 25% of young people use at least one substance during their lifetime, with alcohol khat, and stimulants being common choices (4). Students turn to substances for many reasons, including peer influence, curiosity about new experiences, school-related stress, and the search for enjoyment (5,6). This behavior leads to wide-ranging effects affecting academic results, mental well-being, and making it more likely for students to engage in other dangerous activities such as having unprotected sex and getting into violence (1,7)

Ethiopia, like many developing nations, struggles with substance use. People have used traditional substances such as khat (*Catha edulis*) and alcohol for hundreds of years, but the drug scene is changing as other illegal drugs become more available (8). Researches at different Ethiopian universities and colleges shows a concerning prevalence of substance use among students. A study at Jimma University found that 48.4% of medical interns had used substances at some point, with alcohol khat, and cigarettes being the most commonly used

substances (6). A study at Mizan-Tepi University reported a lifetime prevalence of psychoactive substance use of 62.5% among undergraduate students (7). Another research at Debre Markos Poly Technique College in 2013 found the overall prevalence of substance abuse was 14.1%, with the most commonly abused substances being alcohol, khat and cigarettes (9). These figures show the urgent need for targeted interventions within Ethiopian higher education institutions.

In particular, university and college students in Addis Ababa are especially vulnerable due to a number of socioeconomic and environmental factors. Substance use among this group may begin and worsen as a result of rapid urbanization, shifting lifestyles, and increased exposure to various influences (1). Although there are general studies on substance use among Ethiopian university students, there is a significant lack of thorough research on college students and the prevalence, trends, and contributing factors. Because it offers insights into their awareness, beliefs, and behaviors related to substance use, an understanding of the prevalence, patterns, and associated factors is essential for creating effective prevention and intervention strategies.

St. Paul's Hospital Millennium Medical College (SPHMMC) is a well-known medical school in Addis Ababa, attracting students from all over Ethiopia. Medical students are particularly susceptible to substance use, because they tend to face unique stressors like rigorous academic programs, long study sessions, and high expectations, which can make them vulnerable to substance use as a coping mechanism (1,6). Despite this vulnerability, little precise information is available regarding the KAP of substance use and related variables among SPHMMC undergraduate students. This research aims to address this gap by providing a detailed assessment of the current situation, and inform evidence-based interventions and policies that will support a more productive and healthy learning environment at SPHMMC and other similar institutions in Ethiopia.

1.2. Statement of the problem

Substance use among college students is a major global issue that has an impact on academic achievement, personal health, and the general well-being of society (2,3). Students are frequently exposed to new social situations, more academic pressure, and increased independence when they move to college, all of which can lead to the beginning or worsening of substance use (4). This problem is especially relevant in developing nations like Ethiopia, where insufficient funding and poor preventative initiatives make matters worse (1). Although general studies on substance use are available in Ethiopia, information on college levels and institution-specific data is lacking, particularly when it comes to medical students who deal with unique stressors (6,8).

Previous researches in Ethiopia have shown that substance use is concerningly common among university and college students (6,7,9). However, these studies tend to focus on larger college and university populations, so they might not show the specific patterns and reasons behind substance use within institutions like medical colleges. Medical students tend to face intense academic pressure long hours of studying, and tough exams. These challenges often bring stress, which may lead them to use substances as a way to cope. Their future as healthcare workers highlights how crucial it is to understand their personal health habits, like substance use, because it has an impact on how they practice and care for patients (6).

1.3. Justification of the study

Substance use is becoming more common among students in universities worldwide, and in Ethiopia in particular (1). This rise shows the importance of targeted research to create better ways to prevent and address the issue (9). This research is extremely pertinent and timely because it helps close gaps in what we know and adds useful understandings to both education and public health.

Firstly, while there are general studies on substance use among Ethiopian university students, there are noticeably few studies conducted at college levels and specific institutions, particularly medical colleges (6,8). Medical students may have different substance use

patterns and determinants than other students because of the particular demands and expectations of their academic and professional education (1,6). The creation of interventions that will best meet the need of College students, particularly in medical colleges like St. Paul's Hospital Millennium Medical College's (SPHMMC) depends on an understanding of these particular dynamics. Given the unique learning environment, peer pressure, and resource availability at medical colleges, an institution-specific approach enables a deeper understanding of the problem.

Secondly, the long-term impacts of substance use among future healthcare professionals are important. Medical students will be in charge of future healthcare delivery, and their health behaviors, including drug use, can affect their professional competence, ethical practice, and the quality of care they provide to patients (6). Reducing substance consumption among them is crucial for both their own health and the protection of public health. By determining the prevalence and determinants of substance use among SPHMMC students, this study provides baseline data that can guide early intervention programs to encourage healthier lifestyles and professional integrity among future medical professionals.

Finally, the findings of this study will have significant real-world implications for SPHMMC and other similar institutions in Ethiopia. The information generated will serve as a basis for evidence-based policymaking, university administration, and public health practice to plan and conduct efficient programs and policies. These include developing health education campaigns, instituting counseling programs, and integrating substance use prevention into curricula. By its contribution to a cleaner and more secure learning environment, the final contribution of the research is towards enhanced wellbeing and academic achievement of SPHMMC undergraduate students, ultimately towards a healthier future for individuals and society at large.

2. Literature Review

Substance use among university and college students is a multifactorial global problem with significant public health implications. This literature review incorporates findings from various studies, focusing on the prevalence, contributing factors, and effects of substance use among college and university students, with a focus on the Ethiopian context and medical student populations. The review also incorporates recent researches to provide a comprehensive overview of the current situation.

2.1. Global and Regional Prevalence of Substance Use Among University And College Students

Worldwide, substance use among college and university students continues to be a major issue. Studies consistently show that alcohol is the most commonly used substance, followed by tobacco and cannabis (2,5). according to a systematic review of studies conducted between 2019 and 2020, alcohol was the most used drug among university students worldwide (10). The transition to university life, which is marked by increased independence and new social environments, generally contributes to higher rates of substance experimentation and use compared to the general population (1,5).

In sub-Saharan Africa (SSA), the issue is more concerning. A recent systematic review and meta-analysis (2024) reported that more than a quarter of youth in SSA use at least one substance in their lifetime, with alcohol (40%), khat (25%), and stimulants (20%) being the most common (4). Additionally, this review found that substance use was more common among men and in community-based studies as opposed to institution-based studies, suggesting that the region's use patterns and contexts differ (4). Another study in Cameroon (2024) shows high rates of alcohol (66%), smoking (33.5%), and drug use (26.7%) among university students, with a significant proportion (35.1%) being polysubstance users (5).

These regional patterns show the need for localized research to identify the specific dynamics of substance use.

2.2. Substance Use Among University and College Students in Ethiopia

Ethiopia faces a substantial challenge with substance use, particularly among its youth and college student population. Traditional substances like khat and alcohol have a long history of use, but the problem is exacerbated by the emergence of new psychoactive substances (8). studies across Ethiopian universities and colleges reveal a concerning prevalence of substance use. For instance, a study at Jimma University (2018) found that the lifetime, 12-month, and current prevalence of substance use among medical interns was 48.4%, 47.8%, and 43.0%, respectively (6). This study identified personal pleasure, peer pressure, and tension relief as major reasons for use (6). Another research at Mizan-Tepi University (2023) reported a lifetime prevalence of 62.5% and a current prevalence of 27.9% for psychoactive substance use among undergraduate students (7).

Other studies corroborate these findings. A study among health science students in Mekelle Town found an overall prevalence of "ever used substance" of 45.5%, with alcohol, cigarettes, and khat being the most common (1). Research among Addis Ababa University medical students (2011) indicated that 72.6% of participants had used substances, with alcohol (55.9%), khat (51%), and cigarette smoking (25.9%) being prevalent (8). These studies consistently highlight that male students, those from urban areas, and those with peer or family substance use are at higher risk (1,7,8). The Debre Berhan University study (2018) also suggested that substance use levels might be lower in some Ethiopian universities compared to others in Africa, but still remain a concern (11).

2.3. Knowledge, Attitude, and Practice (KAP) Regarding Substance use

The knowledge, attitude, and practice (KAP) framework is essential for understanding the complexities of substance use and for formulating effective interventions. Knowledge refers to an individual's understanding of substance use, its causes, effects, and prevention

strategies. Attitudes reflect an individual's beliefs, feelings, and predispositions towards substance use, while practices refer to their actual behaviors related to substance use (6).

Studies on KAP about substance use among university students reveal varying levels of awareness and often problematic attitudes. Although students might have general knowledge about the harmful effects of substances, there can be significant gaps in their understanding of specific risks, legal consequences, and available support services (1). For example, research on medical students in Punjab found that despite general awareness, specific knowledge about substance use was often lacking (1). This knowledge deficit can lead to underestimation of risks and a greater likelihood of engaging in substance use.

Attitudes play a central role in determining behavior. Permissive attitudes toward substance use, often influenced by peer norms or social acceptability desires, can increase vulnerability (5). The belief that drugs can improve school performance or alleviate stress is another risky attitude observed among students (6). Such attitudes have the effect of normalizing drug use and reduce the perceived need for change. On the other hand, positive attitudes towards healthy lifestyles and strong self-efficacy in resisting peer pressure are protective factors.

Practices involve the actual patterns of substance use, including the types of substances used, their frequency, amount, and contextual determinants. Polysubstance use is a common practice among college and university students, thus making prevention and treatment more complex (1,5). The reasons for starting substance use are diverse and include factors such as curiosity, thrill-seeking, and the desire to manage academic pressure, isolation, or family problems (5,6). The college environment itself, with its new-found freedom and social pressures, may create an enabling environment for substance use (1,5).

2.4. Associated Factors

A number of factors are repeatedly linked with substance use among university and college students. Socio-demographic factors such as male gender, urban residence, and higher disposable income are commonly identified risk factors (1,7). Peer influence is a strong predictor, with students who have friends or family members who use substances being more

likely to use substances themselves (6,8,11). Academic dissatisfaction and stress are also significant contributors, as students may turn to substances as a coping mechanism (1,6).

In conclusion, the existing literature shows a high rate of substance use among university and college students worldwide and in Ethiopia, driven by a complex interplay of individual, social, and environmental factors. Although some studies on prevalence and determinants are available, there is an evident gap in college based and institution-specific studies, especially in specialized professional fields like medicine. Such studies are crucial for developing targeted, evidence-based interventions that address the unique challenges faced by students and help create a healthier learning environment and a more competent future healthcare professionals. This research aims to bridge this specific gap by investigating substance use and associated factors among undergraduate medical students at SPHMMC, thereby guiding effective prevention and intervention measures.

2.5. Conceptual Framework

The conceptual framework for this study was developed by the researcher based on a review of relevant literatures and existing guidelines, including the World Health Organization Alcohol, Smoking and Substance Involvement Screening Test (WHO ASSIST). It illustrates the hypothesized relationships between the independent variables (sociodemographic characteristics, socioeconomic factors, and psychosocial and behavioral factors), mediating/moderating variables (knowledge and attitudes), and the dependent variable (substance use practices) among undergraduate medical students. The framework proposes that these factors collectively influence students' knowledge, attitudes, and practices related to substance use. Understanding these relationships is essential for informing effective and targeted prevention and intervention strategies aimed at reducing substance use within this student population.

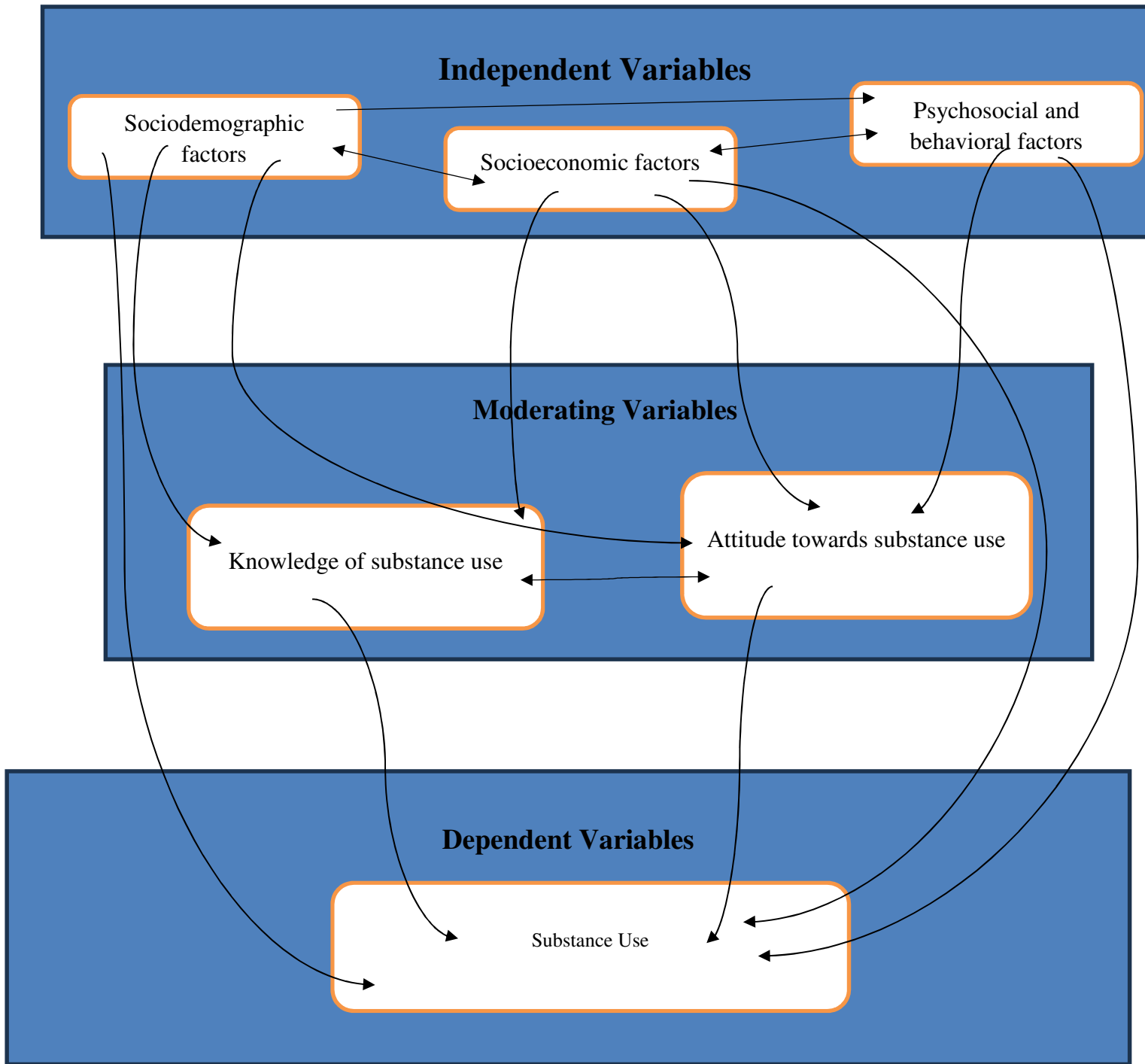


Figure 1: Conceptual Framework

3. Objectives of the study

3.1. General Objective

To assess the prevalence of substance use and its associated factors among undergraduate medical students at St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia.

3.2. Specific Objectives

- To assess the prevalence of substance use among undergraduate medical students at SPHMMC.
- To identify factors associated with substance use among undergraduate medical students in SPHMMC.

4. Methods

4.1. Study Area and Period

The study was conducted at St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. It is located in Gullele Sub-City, Addis Ababa, the capital city of Ethiopia; it was established by Emperor Haile Selassie as a public hospital in 1947. It is currently one of the few tertiary referral hospitals and the only renal transplant center in Ethiopia that serves a catchment population of more than five million. In 2008, St. Paul's Hospital has opened medical college. The Medical College has implemented the first integrated modular and hybrid problem-based curriculum for undergraduate medical students in Ethiopia. its core services including the provision of medical care, teaching and research (12). The study was conducted from September 2025 to January 2026.

4.2. Study Design

An institutional-based cross-sectional study design was conducted using a structured, self-administered questionnaire.

4.3. Population

- **Source Population:** All undergraduate medical students enrolled at SPHMMC during the study period.
- **Study Population:** Randomly selected undergraduate medical students from all years of study at SPHMMC who meet the study's inclusion criteria.

4.4. Eligibility criteria

4.4.1. Inclusion Criteria

All undergraduate medical students at St. Paul's Millennium Medical College, who are available during the data collection period and willing to participate in the research.

4.4.2. Exclusion Criteria

Those Students who are seriously ill or unwilling to complete the questionnaire.

4.5. Sample Size Determination

The Sample size for the first objective was calculated using a single population proportion formula. The calculation is based on the prevalence of substance use among university and college students as identified in previous literature.

To ensure a sufficiently large and representative sample, we used the highest relevant prevalence rate from a comparable study. A study conducted at Haramaya University, which has a similar context to our study population, reported a lifetime substance use of 62.4% among university students (1). Using this higher prevalence rate yielded a larger sample size, that believed to increase the statistical power and generalizability of our findings.

The following parameters were used for the calculation:

- **Prevalence (p):** 62.4% (or 0.624), based on the lifetime prevalence of substance use among Haramaya University students (1).
- **Confidence Interval (CI):** 95%, which corresponds to a Z-score (Z) of 1.96.

- **Margin of Error (d):** 5% (or 0.05).
- **Non-response Rate:** 10% was added to the calculated sample size to account for potential non-participation.
- The sample size was determined using a single population proportion formula:

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

Where:

- $Z = 1.96$ (for 95% confidence level)
- $p = 0.624$ (based on literature)
- $d = 0.05$ (margin of error)

$$n = \frac{(1.96)^2 \cdot 0.624 (1 - 0.624)}{(0.05)^2} \approx 361$$

Adjustment for Non-Response: Adding 10% for non-response: $361 \cdot 0.10 = 36.1$

Adjusted sample size = $361 + 36.1 = 397.1$

The sample size for the second objective (to identify factors associated with substance use) was calculated using a two-population proportion formula with a 95% confidence level and 80% power. This calculation was based on a study conducted among interns at Jimma University, where 65.0% of students who had friends who used substances reported lifetime substance use compared with 15.9% among those without such friends (6). Based on this difference, the calculated sample size was **15 participants per group (30 total)**. After adding a 10% non-response rate, the required sample size became **33 participants**. Because the prevalence-based calculation ($n \approx 397$) is larger than this factor-based calculation, we used **$n = 397$** as the final sample size to ensure adequate power for both objectives.

Therefore, the calculated sample size required for this study was **397** undergraduate medical students. This sample size is considered adequate to assess the prevalence and predictors of substance use including key factors such as students' knowledge levels and attitudes towards it.

4.6. Sampling Technique

A stratified random sampling technique was used to select a representative sample of undergraduate students. Stratification was performed based on the year of study to ensure adequate representation of students from all academic years.

First, the undergraduate student population was stratified into distinct strata according to their year of study (e.g., first year, second year, third year, and above). Second, proportional allocation was applied to determine the number of participants selected from each stratum based on the relative size of each academic year within the total student population. Accordingly, larger strata contributed a greater number of participants to the study.

Finally, simple random sampling was employed within each stratum to select individual participants. A sampling frame consisting of a complete list of registered undergraduate students was obtained from the college registrar's office for each stratum. The required number of students from each stratum was then selected using a random number generation method.

This stratified random sampling approach enhanced the representativeness of the sample and improved the accuracy of generalizing the study findings to the overall undergraduate student population of the college.

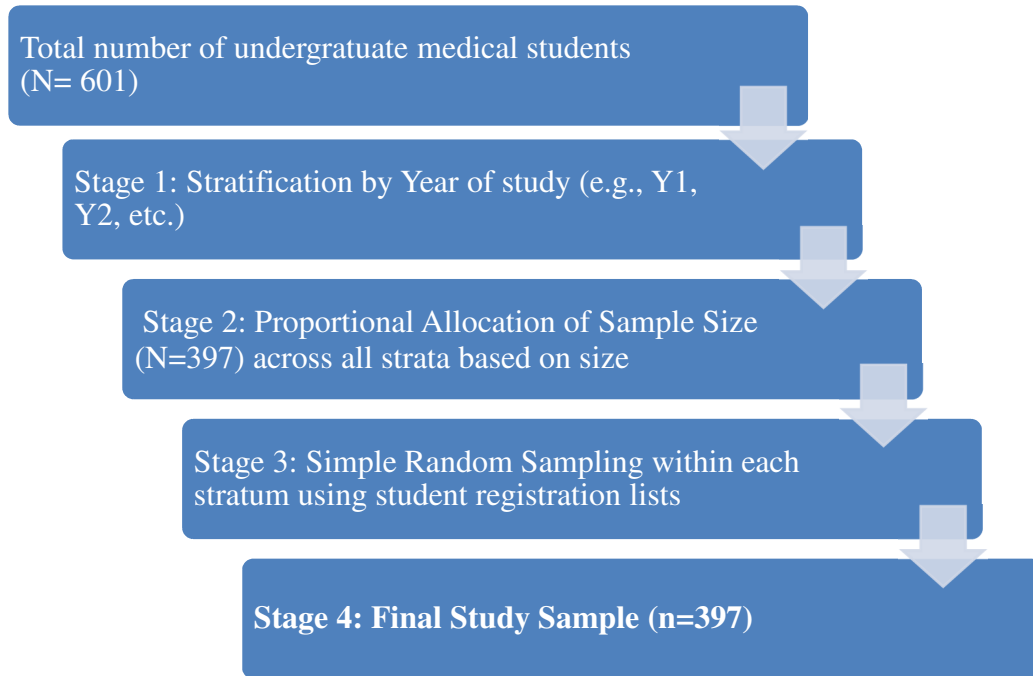


Figure 2: Sampling technique

4.7. Variables of the Study

4.7.1. Dependent Variable

Current substance use (in the past 3 months) among undergraduate medical students.

4.7.2. Independent Variables

The independent variables are the factors that will be assessed to determine their association with the dependent variable. These includes:

- **Sociodemographic Factors:**
 - Age
 - Sex
 - Religion
 - Year of Study
 - Region of Origin
- **Socioeconomic Factors:**

- Family Educational Status
- Family Income Status
- Student's Pocket Money
- **Psychosocial and Behavioral Factors:**
 - Knowledge of Substance Use
 - Attitude Towards Substance Use
 - Friends' Substance Use
 - Family History of Substance Use

4.8. Operational Definitions

- **Substance Use:** Refers to the self-reported consumption by a student of any psychoactive substance, including alcohol, khat, tobacco (cigarettes, shisha), or illicit drugs (e.g., cannabis, heroin, cocaine), to alter their mood or behavior (1). This will be assessed as a binary variable (yes/no) based on whether the student reports any consumption in their lifetime.
- **Current Substance Use:** Self-reported use of one or more psychoactive substances (alcohol, khat, tobacco, or illicit drugs) on at least one occasion during the past three months preceding the survey administration (3). This definition follows the time frame recommended by the WHO Alcohol, Smoking and Substance Involvement Screening Test (ASSIST).
- **Ever Substance Use (Lifetime Prevalence):** Defined as a student reporting the use of any psychoactive substance (alcohol, khat, tobacco, or illicit drugs) at least once in their lifetime. This follows the standard definition used in large-scale substance use surveys to establish lifetime exposure (1,13).
- **Khat Chewing:** The act of chewing the fresh leaves of the *Catha edulis* plant for their stimulant effect. For this study, it will be measured as both ever use (lifetime) and current use (within the past 3 months) (14).
- **Alcohol Consumption:** The act of drinking any alcoholic beverage, such as beer, wine, or spirits. It will be measured as both ever use (lifetime) and current use (within the past 3 months) (14).

- **Attitude Towards Substance Use:** Refers to beliefs and feelings regarding substance use. This was measured using **15 items** on a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree). Negatively worded statements were reverse-scored so that higher scores consistently indicated a **negative attitude towards substance abuse** (i.e., a healthy/protective attitude) (9). The total score ranged from 15 to 75. The mean score was used as a cut-off point to categorize attitude:
 - **Negative Attitude (Protective):** Scored above the mean.
 - **Positive Attitude (Risk):** Scored below the mean.
- **Knowledge of Substance Use:** Refers to an individual's understanding regarding psychoactive substances. This was measured using **22 items** (True/False/Don't Know questions) assessing types of substances, health risks, and legal consequences. Each correct answer was given a score of 1, and incorrect/don't know answers were given 0. The total score ranged from 0 to 22 and was used to categorize knowledge as "poor," "moderate," or "good" (9).
 - **Good Knowledge:** Participants scoring $\geq 80\%$ (18–22 points).
 - **Moderate Knowledge:** Participants scoring 60–79% (14–17 points).
 - **Poor Knowledge:** Participants scoring $< 60\%$ (0–13 points).
- **Substance Abuse:** Substance abuse refers to the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs (15). For the purpose of this study, Substance Abuse will be operationally defined as self-reported use of any psychoactive substance (e.g., alcohol, khat, tobacco, cannabis, heroin, cocaine, amphetamines, sedatives, inhalants) in a manner that causes health problems, social problems, legal problems, or problems at school/university within the past 12 months. This will be assessed through a structured questionnaire adapted from WHO ASSIST that inquire about the frequency, quantity, and consequences of substance use (16).
- **Associated Factors:** Refers to a set of demographics, socio-economic, academic, psychosocial, and environmental variables that are statistically analyzed to determine their correlation with or influence on substance use among undergraduate students.

The selection of these factors is based on evidence from previous studies that have identified them as significant predictors or correlates of substance use in similar populations (1,9,13).

4.9. Data Collection Tools and Procedures

Data were collected using a pretested self-administered questionnaire via google form. The questionnaire was developed after reviewing literatures and similar study tools used previously by adapting to the purpose of the study. Since all students at St. Paul are assumed to be able to read and understand English and to be inclusive for students who can't read and understand Amharic; a questionnaire created in English was used to gather the data. The questionnaire had seven sections; Socio-demographic Information, Socioeconomic factors, Academic Factors, Knowledge of Substance use, Attitude Toward Substance use, Practice of Substance Use and Factors Influencing Substance Use.

4.10. Data Quality Control

A pretest was done on 20 (~5% of the study population) undergraduate medical students at Tikur Anbessa Hospital, College of Health Sciences, in order to avoid information contamination. The investigator checked for completeness, accuracy and clarity of the collected data. Eventually, coding, data entry, data cleaning and cross checking was done before data analysis.

4.11. Data Processing and Analysis

Data was collected via google form and exported to SPSS (version 26) for analysis. Descriptive statistics (frequencies, percentages, means) were used. Frequencies and percentages were used for categorical variables, while means and standard deviations were used for continuous variables.

Bivariable logistic regression analysis was conducted to assess the association between each independent variable and the dependent variable. Variables with a p-value <0.2 in the

bivariable analysis were entered into the multivariable logistic regression model to control for potential confounding factors.

Multivariable logistic regression analysis was performed to identify independent factors associated with the outcome variable. The strength of associations was reported using Adjusted Odds Ratios (AORs) with 95% Confidence Intervals (CI). A p-value <0.05 was considered statistically significant.

4.12. Ethical Considerations

Ethical clearance was obtained from the St. Paul's Millennium Medical College Institutional Research Ethics Review Committee (IRERC). An official support letter was also secured from the School of Public Health of the college prior to data collection.

Informed consent was obtained electronically from each participant through a Google Form before participation. The purpose, procedures, potential risks, and benefits of the study were clearly explained, and participation was entirely voluntary. Participants were informed of their right to refuse or withdraw from the study at any time without any academic or personal consequences.

The information collected from the students was kept confidential and used solely for research purposes. No personal identifiers were recorded, and the data were not used as a student evaluation method. All data were stored securely, and the identity of the participants was not disclosed.

5. Dissemination of Results

The result of the research will be submitted to Saint Paul's Hospital Millennium Medical College, in partial fulfillment of the requirements for the degree of doctor of medicine. Efforts will be done to publish the findings of the study in a peer reviewed national or international journal.

6. Results

6.1. Socio-demographic characteristics

A total of 397 undergraduate medical students participated in this study. More than half of the participants were females (n = 226, 56.9%). The majority of the participants were in the age group of 21–23 years (n = 231, 58.2%), were Orthodox by religion (n = 241, 60.7%), and were single (n = 394, 99.2%). Most of the students lived in dormitories (n = 362, 91.2%) (Table 1).

Table 1: Socio-demographic characteristics of undergraduate medical students at SPHMMC, Addis Ababa, Ethiopia 2026 (n=397).

Variable	Category	Frequency	Percent
Sex	Male	171	43.1
	Female	226	56.9
Age	18-20	91	22.9
	21-23	231	58.2
	24+	75	18.9
Religion	Orthodox	241	60.7
	Muslim	98	24.7
	Protestant	56	14.1
	Others	2	0.5
Marital Status	Single	394	99.2
	Married/Divorced	3	0.8
Living Arrangement	Dormitory	362	91.2
	With family/relatives	35	8.8

6.2. Socioeconomic and Academic Factors

6.2.1. Socioeconomic Factors

Students' monthly personal income (i.e., income earned by the student from personal sources such as employment or other activities) ranged from 0 to above 10,000 ETB, with the majority earning below 999 ETB (n = 213, 53.7%), followed by 3,000–4,999 ETB (n = 69, 17.4%) and above 10,000 ETB (n = 66, 16.6%). A value of 0 ETB indicates that the student had no personal income.

Monthly pocket money (i.e., financial support provided by the family for daily expenses) varied from below 499 ETB to above 3,000 ETB. Most students reported receiving above 3,000 ETB per month (255, 64.2%), followed by 1,500–2,999 ETB (n = 111, 28.0%), while very few received less than 499 ETB (n = 6, 1.5%).

Table 2: Socio-economic characteristics of undergraduate medical students at SPHMMC, Addis Ababa, Ethiopia 2026 (n=397).

Variable	Category	Frequency	Percent
Monthly income of Student	below 999	213	53.7
	1000-2999	29	7.3
	3000-4999	69	17.4
	5000-9999	20	5.0
	above 10000	66	16.6
Monthly Pocket Money	below 499	6	1.5
	500-1499	25	6.3
	1500-2999	111	28.0
	above 3000	255	64.2

Family Income (monthly)	More than 20,000 ETB	161	40.6
	10,001- 20,000ETB	217	54.7
	5001 – 10,000 ETB	16	4.0
	1000-5000 ETB	1	0.3
	Less than 1000 ETB	2	0.5
Father's Education Level	No formal education	34	8.6
	Primary school	72	18.1
	Secondary school	95	23.9
	Diploma/TVET	42	10.6
	Bachelor's degree	96	24.2
	Master's degree and above	58	14.6
Mother's Education Level	No formal education	39	9.8
	Primary school	79	19.9
	Secondary school	94	23.7
	Diploma/TVET	47	11.8
	Bachelor's degree	98	24.7
	Master's degree and above	40	10.1

6.2.2. Academic Factors

The academic characteristics of respondents is presented in Table 3. To ensure representative participation, the sample was stratified across each year of study, with the number of students from each year of study allocated proportionally to the total student population.

Regarding year of study, the largest proportion of participants were in their Pre-Med, accounting for (n = 70, 17.6%) of the sample. In terms of self-reported academic

performance, the majority of respondents described their standing as Very Good (3.0-3.49), representing (n = 277, 69.8%). Only a minority of students reported Excellent (n = 77, 19.4%) or Poor (n = 1, 0.3%) academic standing.

Table 3: Academic Characteristics of undergraduate medical students at SPHMMC, Addis Ababa, Ethiopia 2026 (n=397).

Variable	Category	Frequency	Percent
Academic Performance (GPA)	Excellent (3.5-4.0)	77	19.4
	Very Good (3.0-3.49)	277	69.8
	Good (GPA 2.5-2.9)	42	10.6
	Poor (GPA below 2.0)	1	0.3
Year of Study	Pre-Med	70	17.6%
	PC1	52	13.1%
	PC2	52	13.1%
	C1 Minor	40	10.1%
	C1 Major	35	8.8%
	C2 Minor	40	10.1%
	C2 Major	47	11.8%
	Internship	61	15.4%

6.3. Mental Health and Behavioral Characteristics

Regarding mental health, depressive symptoms were observed in (n = 104 (26.2%) of students (PHQ-2 $\geq$ 3), while anxiety symptoms were reported in (n = 102 (25.7%) (GAD-2 $\geq$ 3). About one-sixth of students had friends who use substances (n = 69, 17.4%), and a smaller proportion had a family history of substance use (n = 33, 8.3%) (see Table 4).

Table 4: Mental health and behavioral characteristics of undergraduate medical students at SPHMMC, Addis Ababa, Ethiopia 2026 (n=397).

Variables	Category	Frequency	Percent
Depressive Symptoms (PHQ-2)	Yes (≥ 3)	104	26.2
	No (< 3)	293	73.8
Anxiety Symptoms (GAD-2)	Yes (≥ 3)	102	25.7
	No (< 3)	295	74.3
Friends' Substance Use	Yes	69	17.4
	No	328	82.6
Family Substance Use	Yes	33	8.3
	No	360	90.7
Availability of Substances	Very Easy/Easy	148	37.3
	Difficult/Very Difficult	249	62.7

6.4. Knowledge and Attitude Towards Substance Use

The assessment of knowledge regarding substance use, based on 22 True/False items, revealed that the majority of medical students had a Good knowledge level (n = 396, 99.7%), while only (n = 1, 0.3%) had moderate knowledge.

Regarding attitudes, which were measured using a 15-item Likert scale and categorized using the mean score (50.8) as a cut-off, (n = 218, 54.9%) of respondents held a Negative (Protective) attitude toward substance use. Conversely, (n = 179, 45.1%) had a Positive (Permissive) attitude, suggesting a higher predisposition or more lenient view toward the use of psychoactive substances (see Table 5).

Table 5: Knowledge and Attitude levels of undergraduate medical students at SPHMMC, Addis Ababa, Ethiopia 2026 (n=397).

Variables	Category	Frequency	Percent
Knowledge Level	Good (Score 18-22)	396	99.7
	Moderate (Score 14-17)	1	0.3
	Poor (Score < 14)	0	0
Attitude Level	Negative/Protective	218	54.9
	Positive/Risk	179	45.1

6.5. Prevalence of Substance Use

Out of the 397 undergraduate medical students who participated in the study, (n = 52, 13.1%) reported lifetime use of at least one substance. Alcohol was the most commonly used substance, reported by (n = 38, 9.6%), followed by khat (n = 19, 4.8%) and tobacco (n = 9, 2.3%). Lifetime use of cannabis and sedatives was reported by (n = 4, 1.0%) and (n = 5, 1.3%), respectively (see Table 6).

Current substance use, assessed based on use within the past three months according to the WHO ASSIST definition, showed that (n = 36, 9.1%) of students reported current use of at least one substance, while (n = 361, 90.9%) reported no substance use during this period. Alcohol remained the most commonly used substance in the past three months (n = 28, 7.1%), followed by khat (n = 14, 3.5%), tobacco (n = 4, 1.0%), sedatives (n = 1, 0.3%), and cannabis (n = 2, 0.5%) (see Table 7).

Table 6: Prevalence of lifetime substance use among undergraduate medical students at SPHMMC, Addis Ababa, Ethiopia 2026 (n=397).

Substance	Frequency (n)	Percent (%)
Alcohol	38	9.6
Khat	19	4.8
Tobacco	9	2.3
Sedatives	5	1.3
Cannabis	4	1.0
Any Substance	52	13.1

Table 7: Prevalence of current (past three-month) substance use among undergraduate medical students at SPHMMC, Addis Ababa, Ethiopia, 2026 (n = 397).

Substance	Frequency (n)	Percent (%)
Alcohol	28	7.1
Khat	14	3.5
Tobacco	4	1.0
Sedatives	1	0.3
Cannabis	2	0.5
Any Substance	36	9.1

6.6. WHO ASSIST Substance Use Risk Levels

WHO ASSIST risk categorization was performed only among respondents who reported lifetime use of each substance; therefore, risk categories apply to valid users, not the full sample.

Out of the total participants, (n = 38, 9.6%) reported lifetime alcohol use and were eligible for ASSIST risk classification. Among these, (n = 24, 63.2%) were categorized as low-risk users, while (n = 14, 36.8%) fell into the moderate-risk category. No participants were classified as high-risk alcohol users.

Nineteen participants (n = 19, 4.8%) reported khat use and were assessed using the ASSIST. Among khat users, (n = 4, 21.1%) were categorized as low risk, (n = 12, 63.2%) as moderate risk, and (n = 3, 15.8%) as high risk, indicating a relatively higher proportion of problematic use among khat users compared to other substances.

Nine respondents (n = 9, 2.3%) reported tobacco use. Of these, (n = 2, 22.2%) were classified as low risk, while (n = 7, 77.8%) were categorized as moderate risk. No high-risk tobacco users were identified in the study.

Only four participants (n = 4, 1.0%) reported cannabis use. Among them, (n = 1, 25.0%) was categorized as low risk, (n = 2, 50.0%) as moderate risk, and (n = 1, 25.0%) as high risk, suggesting that a substantial proportion of cannabis users experienced harmful or dependent patterns of use.

Five participants (n = 5, 1.3%) reported non-medical use of sedatives. Among these users, (n = 3, 60.0%) were classified as low risk, while (n = 2, 40.0%) were categorized as moderate risk. No high-risk sedative users were observed.

Table 8: WHO ASSIST risk levels among students who reported lifetime substance use at SPHMMC, Addis Ababa, Ethiopia, 2026 (n = 397).

Variable	Category	Frequency	Percent
Alcohol ASSIST risk category	Low risk	24	63.2
	Moderate risk	14	36.8
	High risk	0	0
khat ASSIST risk category	Low risk	4	21.1
	Moderate risk	12	63.2
	High risk	3	15.8
Tobacco ASSIST risk category	Low risk	2	22.2
	Moderate risk	7	77.8
	High risk	0	0
cannabis ASSIST risk category	Low risk	1	25.0
	Moderate risk	2	50.0
	High risk	1	25.0
Sedatives ASSIST risk category	Low risk	3	60.0
	Moderate risk	2	40.0
	High risk	0	0

6.7. Factors Associated with Current Substance Use

Bivariable and multivariable logistic regression analyses were conducted to identify factors associated with current substance use among students (Table 9). Variables with P-value ≤ 0.2 in the bivariable analysis (sex, age ≥ 24 years, year of study, attitude level, depressive symptoms, anxiety symptoms and friends' substance use) were entered into the final multivariable logistic regression analysis.

In the multivariable analysis, three variables remained independently associated with current substance use. Students with a negative (protective) attitude toward substance use were **61% less likely** to report current substance use compared to those with a positive (risk) attitude (AOR = 0.39; 95% CI: 0.16–0.91). Students who screened positive for depressive symptoms (PHQ-2 ≥ 3) had **about eight times higher odds** of current substance use than those without depressive symptoms (AOR = 8.10; 95% CI: 1.46–44.97). In addition, students whose friends used substances had **nearly five times higher odds** of current substance use compared to those whose friends did not use substances (AOR = 4.77; 95% CI: 1.70–13.42).

Table 9: Bivariable and Multivariable Logistic Regression Analyses of Factors Associated with Current Substance Use among Students (n = 397).

Variable	Category	COR (95% CI)	p-value	AOR (95% CI)	p-value
Sex	Female	1.0		1.0	
	Male	2.91 (1.41–6.01)	0.004	2.28 (0.99–5.20)	0.051
Age (years)	18–20	1.0		1.0	
	21–23	1.95 (0.65–5.90)	0.237	0.92 (0.08– 10.44)	0.947
	≥ 24	4.56 (1.42–14.65)	0.011	1.34 (0.08– 22.06)	0.838
Year of Study	Pre-Med	1.0		1.0	
	PC1	1.37 (0.27–7.06)	0.709	1.55 (0.10– 25.00)	0.757
	PC2	0.89 (0.14–5.55)	0.904	0.86 (0.06– 13.36)	0.914
	C1 Minor	3.19 (0.72–14.14)	0.127	2.05 (0.12– 35.97)	0.624
	C1 Major	4.62 (1.08–19.75)	0.039	2.75 (0.18– 41.65)	0.465

	C2 Minor	1.81 (0.35–9.43)	0.481	0.94	(0.05– 0.967 18.67)
	C2 Major	2.66 (0.60–11.71)	0.196	1.15	(0.06– 0.928 22.84)
	Internship	3.87 (1.00–15.00)	0.051	2.24	(0.11– 0.602 46.25)
Attitude Level	Positive (Risk)	1.0		1.0	
	Negative (Protective)	0.38 (0.18–0.78)	0.008	0.39 (0.16–0.91)	0.030
Depressive Symptoms (PHQ-2)	No (<3)	1.0		1.0	
	Yes (≥3)	10.65 (3.61–31.45)	<0.001	8.10	(1.46– 0.017 44.97)
Anxiety Symptoms (GAD-2)	No (<3)	1.0		1.0	
	Yes (≥3)	7.40 (1.98–27.57)	0.003	1.50	(0.18– 0.706 12.47)
Friends’ Substance Use	No	1.0		1.0	
	Yes	7.10 (3.43–14.70)	<0.001	4.77	(1.70– 0.003 13.42)

7. Discussion

This study aimed to assess the prevalence and associated factors of substance use among undergraduate medical students at St. Paul’s Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia. A key focus of this study was to assess current

substance use (past 3 months), which provides more actionable data for institutional interventions compared to lifetime prevalence (1,2). The findings reveal a lifetime prevalence of any substance use at 13.1% (95% CI: 9.8% - 16.4%) and a current prevalence of 9.1% (95% CI: 6.3% - 11.9%).

The current prevalence of 9.1% is lower than findings from other Ethiopian university settings. For instance, studies at Mizan-Tepi University, Addis Ababa University, and Jimma University have reported significantly higher rates among medical students and interns (6,7,8). The lower prevalence at SPHMMC might be attributed to the specific institutional culture or the rigorous modular curriculum, which leaves limited leisure time for substance-related social activities (9, 20). Furthermore, potential underreporting may occur due to high medical literacy and social desirability bias among future healthcare professionals (21, 22).

Alcohol was the most commonly used substance currently (7.1%), followed by khat (3.5%) and tobacco (1.0%). This pattern is consistent with the socio-cultural landscape of Ethiopia, where alcohol and khat are the most accessible and socially tolerated substances (1,14,23). However, the WHO ASSIST risk categorization revealed a concerning trend: while alcohol had the highest prevalence, khat and cannabis users showed higher proportions of moderate to high-risk use. Specifically, 15.8% of khat users and 25.0% of cannabis users were in the high-risk category. This suggests that while fewer students use these substances, those who do are more likely to develop problematic or dependent patterns of use, necessitating targeted clinical interventions (16,19).

The study highlighted a significant "knowledge-practice gap." Despite a near-universal "Good" knowledge level (99.7%), students still engaged in substance use. This indicates that academic awareness of health risks is not a sufficient deterrent in the face of psychological and social drivers (24). This gap is well-documented in medical populations where students may use substances as a maladaptive coping mechanism for academic stress and burnout (6,17,25).

Multivariable analysis identified three independent predictors of current substance use: depressive symptoms, friends' substance use, and attitude towards substance use.

Students with depressive symptoms ($\text{PHQ-2} \geq 3$) were 8.1 times more likely to report current substance use ($\text{AOR} = 8.10$, 95% CI: 1.46–44.97). This strong association underscores the "self-medication" hypothesis, where students may use substances like alcohol or khat to alleviate symptoms of low mood or hopelessness (10,18,26). This finding is critical for SPHMMC, suggesting that substance use prevention must be integrated with mental health support services.

The social environment was a powerful determinant; students having friends who use substances were 4.77 times more likely to be current users ($\text{AOR} = 4.77$, 95% CI: 1.70–13.42). This aligns with social learning theory, where behaviors are modeled and reinforced within social circles (4,5,27). Furthermore, students with a negative (protective) attitude towards substance use were 61% less likely to use substances ($\text{AOR} = 0.39$), highlighting the importance of fostering healthy internal beliefs alongside social interventions.

Interestingly, while sex and year of study were significant in the bivariable analysis, they did not remain independent predictors in the multivariable model. This suggests that the influence of gender and academic year may be mediated through other factors like peer groups or mental health status. However, the bivariable trend showed that older students and those in clinical years (like C1 Major and Internship) had higher crude odds of use, likely reflecting the cumulative stress of medical training (6,8,28).

8. Strength and Limitation of the Study

8.1. Strengths

- Being focused on Current Use (past 3 months) as the primary dependent variable, the study provides more relevant and timely data for designing immediate institutional interventions, as opposed to lifetime use which may reflect past behaviors.
- The use of validated instruments like the WHO ASSIST for risk categorization and the PHQ-2/GAD-2 for mental health screening enhances the reliability and comparability of the findings.
- The study employed stratified random sampling across all academic years (Year 1 to Internship), ensuring that the findings reflect the entire undergraduate medical student body at SPHMMC, not just a specific cohort.

8.2. Limitations

- The cross-sectional design limits the ability to establish causal relationships between the associated factors and substance use.
- Data were collected via self-administered questionnaires, which may be subject to social desirability bias and recall bias, potentially leading to underreporting of substance use.
- The study was conducted in a single institution, which may limit the generalizability of the findings to all medical students in Ethiopia.

9. Conclusion

The current prevalence of substance use among SPHMMC medical students was 9.1%, with alcohol and khat being the most common substances. While this prevalence is lower than in many other Ethiopian universities, the presence of high-risk use patterns among khat and cannabis users is a significant concern (7,8,16). The study clearly demonstrates that current substance use is not merely a result of lack of knowledge but is strongly driven by depressive symptoms, having friends who use substances, and permissive attitudes. The strong link between depression and substance use suggests that many students may be using these substances as a coping mechanism for underlying mental health challenges (10,18,26). Furthermore, having friends who use substances remains a dominant factor associated with substance use across all years of medical study.

10. Recommendations

For SPHMMC Administration and School of Public Health:

- **Integrated Mental Health Services:** Establish a dedicated student counseling and mental health center that provides confidential screening and support for depression and anxiety, as these are primary drivers of substance use.
- **Social-based Prevention Programs:** Develop social support networks where students are trained to provide positive social reinforcement and early intervention for friends and colleagues showing signs of problematic use.
- **Institutional Policy:** Implement a clear campus-wide substance use policy that focuses on "support and rehabilitation" rather than just "punishment," encouraging students to seek help without fear of academic consequences.

For Students:

- **Social Support:** Students should be encouraged to support their friends who may be showing signs of problematic substance use and refer them to available counseling services.

For Future Researchers:

- Longitudinal Research: Conduct prospective cohort studies to track the transition from "ever use" to "problematic use" as students progress through the medical curriculum.
- Qualitative Exploration: Perform in-depth interviews to better understand the specific academic and personal stressors that lead to the "self-medication" patterns observed in this study.

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12. Annexes

Annex I: Questionnaire

Section 1: Socio-demographic Information

Please provide the following information about yourself.

1. Age: _____ (18-20, 21-23, 24+)
2. Sex: ☐ Male ☐ Female
3. Religion: ☐ Orthodox ☐ Muslim ☐ Protestant ☐ Other (specify): ____.
4. Marital Status: ☐ Single ☐ Married ☐ Divorced ☐ Widowed
5. Living Arrangement: ☐ Dormitory ☐ Rented house (alone or with friends) ☐ With family/relatives ☐ Other (specify): ____.

Section 2: Socioeconomic factors

1. Monthly income (ETB): _____
2. Monthly Pocket Money: ____ ETB.
3. Family Income (monthly): ☐ Less than 1000 ETB ☐ 1000-5000 ETB ☐ 5001 – 10,000 ETB ☐ 10,001- 20,000ETB ☐ More than 20,000 ETB
4. Parental Education Level:
 - Father: ☐ No formal education ☐ Primary school ☐ Secondary school ☐ Diploma/TVET ☐ Bachelor's degree ☐ Master's degree and above
 - Mother: ☐ No formal education ☐ Primary school ☐ Secondary school ☐Diploma/TVET ☐ Bachelor's degree ☐ Master's degree and above.

Section 3: Academic Factors

1. Year of Study: _____

2. Academic Performance (self-reported GPA or academic standing): ☐ Excellent (GPA 3.5-4.0) ☐ Very Good (GPA 3.0-3.49) ☐ Good (GPA 2.5-2.9) ☐ Satisfactory (GPA 2.0 -2.49) ☐ Poor (GPA below 2.0)

Section 4: Knowledge of Substance use

Please answer the following questions to the best of your knowledge. Choose the best answer for multiple-choice questions or indicate True/False

1. Alcohol is considered a psychoactive substance. ☐ True ☐ False ☐ Don't Know
2. Khat is a stimulant commonly used in some parts of East Africa. ☐ True ☐ False ☐ Don't Know
3. Cannabis is primarily a stimulant drug. ☐ True ☐ False ☐ Don't Know
4. Tobacco products contain nicotine, which is a highly addictive substance. ☐ True ☐ False ☐ Don't Know
5. Short-term effects of alcohol consumption can include impaired judgment and coordination. ☐ True ☐ False ☐ Don't Know
6. Long-term heavy alcohol use can lead to liver damage. ☐ True ☐ False ☐ Don't Know
7. Regular use of cannabis can impair memory and concentration. ☐ True ☐ False ☐ Don't Know
8. Khat chewing can cause insomnia and loss of appetite. ☐ True ☐ False ☐ Don't Know
9. Opioids are known for their pain-relieving properties but also carry a high risk of dependence. ☐ True ☐ False ☐ Don't Know
10. Substance abuse leads to addiction. ☐ True ☐ False ☐ Don't Know
11. Substance use can lead to academic failure. ☐ True ☐ False ☐ Don't Know
12. Students who use substances regularly may have difficulty attending classes and completing assignments ☐ True ☐ False ☐ Don't Know

13. Peer influence is a factor for substance use. ☐ True ☐ False ☐ Don't Know
14. Substance use during pregnancy can harm the developing fetus. ☐ True ☐ False ☐ Don't Know
15. Injecting drugs carries a risk of transmitting blood-borne diseases like HIV and Hepatitis. ☐ True ☐ False ☐ Don't Know
16. Substance abuse can lead to legal problems and imprisonment. ☐ True ☐ False ☐ Don't Know
17. Possession of illicit drugs is illegal in most countries. ☐ True ☐ False ☐ Don't Know
18. Driving under the influence of alcohol or drugs is a criminal offense. ☐ True ☐ False ☐ Don't Know
19. Seeking help from a counselor or doctor is a valid prevention method for substance abuse. ☐ True ☐ False ☐ Don't Know
20. Substance use disorders are treatable conditions. ☐ True ☐ False ☐ Don't Know
21. Counseling and therapy are common components of substance use treatment programs. ☐ True ☐ False ☐ Don't Know
22. Peer support groups can be helpful for individuals recovering from substance use disorders. ☐ True ☐ False ☐ Don't Know

Section 5: Attitude Toward Substance use

Please indicate your level of agreement with the following statements using the scale below:

Scale: = Strongly Disagree = Disagree = Neutral = Agree = Strongly Agree

Table 10: Attitude Toward Substance use

Statement	1	2	3	4	5
Substance use helps students cope with academic stress					
Substance users are weak-willed individuals					
Substance use is a personal choice and does not affect others					
It is acceptable for students to use alcohol occasionally for recreation					
Chewing khat is a harmless cultural practice					
Students who use substances should be expelled from the university					
Substance abuse is a major problem among university students in Ethiopia					
Education about substance abuse is effective in preventing its use					
There are more benefits than harms associated with occasional substance use					
There are more benefits than harms associated with occasional substance use					
My friends' substance use influences my own decisions about substances					
Society is too lenient on individuals who abuse substances					
It is difficult for someone to stop using substances once they start.					
Substance abuse is a sign of moral weakness					
University authorities should implement stricter policies against substance use					
I feel uncomfortable being around people who are using substances					

Section 6: Practice of Substance Use (Adapted from WHO ASSIST)

This section asks about your use of various substances. Please answer honestly. Your responses are confidential. Instructions: For each substance listed below, please answer the questions that follow. If you have never used a substance, mark 'No' for question and move to the next substance.

1. Alcohol (e.g., Beer, Wine, Spirit)

1. Have you ever used alcohol in your lifetime? () Yes () No (If No, go to Khat section).
2. In the past three months, how often have you used alcohol? () Never () Once or twice () Monthly () Weekly () Daily or almost daily.
3. In the past three months, how often have you had or more standard drinks on one occasion? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.
4. In the past three months, how often have you felt a need to cut down on your use of alcohol? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.
5. In the past three months, how often have you had problems related to your alcohol use? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.
6. Have you ever injected alcohol? () Yes () No.
7. At what age did you first use alcohol? () Never used () 10 years or younger () 11-14 () 15-18 years () 19-22 years () 23 years or older

2. Khat (Chat)

1. Have you ever used Khat in your lifetime? () Yes () No (If No, go to Tobacco section).
2. In the past three months, how often have you used Khat? () Never () Once or twice () Monthly () Weekly () Daily or almost daily.
3. In the past three months, how often have you felt a need to cut down on your use of Khat? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.

4. In the past three months, how often have you had problems related to your Khat use? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.
5. Have you ever injected Khat? () Yes () No.
6. At what age did you first use Khat? () Never used () 10 years or younger () 11-14 () 15-18 years () 19-22 years () 23 years or older

3. Tobacco (e.g., Cigarettes, Shisha, Chewing Tobacco)

1. Have you ever used Tobacco in your lifetime? () Yes () No (If No, go to Cannabis section)
2. In the past three months, how often have you used Tobacco? () Never () Once or twice () Monthly () Weekly () Daily or almost daily .
3. In the past three months, how often have you felt a need to cut down on your use of Tobacco? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.
4. In the past three months, how often have you had problems related to your Tobacco use? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.
5. Have you ever injected Tobacco? () Yes () No.
6. At what age did you first use Tobacco? () Never used () 10 years or younger () 11-14 () 15-18 years () 19-22 years () 23 years or older

4. Cannabis (e.g., Marijuana, Hashish)

1. Have you ever used Cannabis in your lifetime? () Yes () No (If No, go to Heroin section).
2. In the past three months, how often have you used Cannabis? () Never () Once or twice () Monthly () Weekly () Daily or almost daily.
3. In the past three months, how often have you felt a need to cut down on your use of Cannabis? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.
4. In the past three months, how often have you had problems related to your Cannabis use? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.

5. Have you ever injected Cannabis? () Yes () No.
6. At what age did you first use Cannabis? () Never used () 10 years or younger () 11-14 () 15-18 years () 19-22 years () 23 years or older

5. Heroin (e.g., Smack, Brown Sugar).

1. Have you ever used Heroin in your lifetime? () Yes () No (If No, go to Cocaine section)
2. In the past three months, how often have you used Heroin? () Never () Once or twice () Monthly () Weekly () Daily or almost daily
3. In the past three months, how often have you felt a need to cut down on your use of Heroin? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.
4. In the past three months, how often have you had problems related to your Heroin use? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily.
5. Have you ever injected Heroin? () Yes () No .
6. At what age did you first use Heroin? () Never used () years or younger () years () - years () - years () years or older

6. Cocaine (e.g., Crack, Coke)

1. Have you ever used Cocaine in your lifetime? () Yes () No (If No, go to Amphetamines section).
2. In the past three months, how often have you used Cocaine? () Never () Once or twice () Monthly () Weekly () Daily or almost daily.
3. In the past three months, how often have you felt a need to cut down on your use of Cocaine? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily
4. In the past three months, how often have you had problems related to your Cocaine use? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily
5. Have you ever injected Cocaine? () Yes () No .
6. At what age did you first use Cocaine? () Never used () 10 years or younger () 11-14 () 15-18 years () 19-22 years () 23 years or older

7. Amphetamines (e.g., Speed, Meth, Ecstasy)

1. Have you ever used Amphetamines in your lifetime? () Yes () No (If No, go to Sedatives section)
2. In the past three months, how often have you used Amphetamines? () Never () Once or twice () Monthly () Weekly () Daily or almost daily
3. In the past three months, how often have you felt a need to cut down on your use of Amphetamines? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily
4. In the past three months, how often have you had problems related to your Amphetamines use? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily
5. Have you ever injected Amphetamines? () Yes () No
6. At what age did you first use Amphetamines? () Never used () 10 years or younger () 11-14 () 15-18 years () 19-22 years () 23 years or older

8. Sedatives (e.g., Benzodiazepines, Sleeping Pills without prescription)

1. Have you ever used Sedatives in your lifetime? () Yes () No (If No, go to Inhalants section)
2. In the past three months, how often have you used Sedatives? () Never () Once or twice () Monthly () Weekly () Daily or almost daily
3. In the past three months, how often have you felt a need to cut down on your use of Sedatives? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily
4. In the past three months, how often have you had problems related to your Sedatives use? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily
5. Have you ever injected Sedatives? () Yes () No
6. At what age did you first use Sedatives? () Never used () 10 years or younger () 11-14 () 15-18 years () 19-22 years () 23 years or older

9. Inhalants (e.g., Glue, Paint, Solvents)

1. Have you ever used Inhalants in your lifetime? () Yes () No (If No, go to Other Substances section)

2. In the past three months, how often have you used Inhalants? () Never () Once or twice () Monthly () Weekly () Daily or almost daily
3. In the past three months, how often have you felt a need to cut down on your use of Inhalants? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily
4. In the past three months, how often have you had problems related to your Inhalants use? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily
5. Have you ever injected Inhalants? () Yes () No
6. At what age did you first use Inhalants? () Never used () 10 years or younger () 11-14 () 15-18 years () 19-22 years () 23 years or older

10. Other Substances (e.g., Prescription drugs not listed above, other illicit drugs)

1. Have you ever used any other substances not listed above in your lifetime? () Yes () No (If No, end of this section)
2. Please specify the substance(s): _____
3. In the past three months, how often have you used these other substances? () Never () Once or twice () Monthly () Weekly () Daily or almost daily
4. In the past three months, how often have you felt a need to cut down on your use of these other substances? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily
5. In the past three months, how often have you had problems related to your use of these other substances? () Never () Less than monthly () Monthly () Weekly () Daily or almost daily
6. Have you ever injected any of these other substances? () Yes () No
7. At what age did you first use these other substances? () Never used () 10 years or younger () 11-14 () 15-18 years () 19-22 years () 23 years or older

Section 7: Factors Influencing Substance Use

Please answer the following questions regarding factors that may influence substance use.

I. Psychological Factors

1. Perceived Stress Levels: How often do you feel stressed? () Never () Rarely () Sometimes () Often () Always
2. Symptoms of Depression (PHQ- adapted): Over the last two weeks, how often have you been bothered by any of the following problems?
 - Little interest or pleasure in doing things? () Not at all () Several days () More than half the days () Nearly every day
 - Feeling down, depressed, or hopeless? () Not at all () Several days () More than half the days () Nearly every day
3. Symptoms of Anxiety (GAD- adapted): Over the last two weeks, how often have you been bothered by any of the following problems?
 - Feeling nervous, anxious, or on edge? () Not at all () Several days () More than half the days () Nearly every day
 - Not being able to stop or control worrying? () Not at all () Several days () More than half the days () Nearly every day

II. Peer and Environmental Factors

1. Perceived Peer Pressure: How much pressure do you feel from your friends to use substances? () No pressure at all () A little pressure () Moderate pressure () A lot of pressure () Extreme pressure
2. Friends' Substance Use: How many of your close friends use substances (e.g., alcohol, khat, tobacco, cannabis)? () None of them () A few of them () About half of them () Most of them () All of them
3. Availability of Substances: How easy or difficult is it for you to access substances (e.g., alcohol, khat, tobacco, cannabis) in your current living environment? () Very difficult () Difficult () Neutral () Easy () Very easy

III. Other Factors

1. Family History of Substance Use: Has any immediate family member (parents, siblings) ever had a problem with substance use? () Yes () No () Don't know
2. History of Mental Illness: Have you ever been diagnosed with a mental illness (e.g., depression, anxiety disorder, bipolar disorder)? () Yes () No () Prefer not to say
3. Exposure to Substance Use in Media: How often are you exposed to portrayals of substance use (e.g., in movies, TV shows, social media, music videos)? () Never () Rarely () Sometimes () Often () Very often

13. Declaration

I, the undersigned student, declare that this research project is my original work in partial fulfillment of the requirement for the **Degree of Doctor in Medicine, MD**. I also declare that it has never been presented in this or any other higher institution and that all resources and materials used in the research work have been duly acknowledged.

Name of the student: Hamid Omer

Signature:



Date: 17/04/26

Approval of Advisors

This research work has been submitted for examination with my approval.

Name of School of Public health advisor 1: Takele Menna, PhD

Signature:



Date: 17/04/26

Name of Clinical advisor 2: Dr. Silennat Gebru

Signature:



Date: 17/04/26