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Knowledge, attitude and practice of substance use among Debre Tabor University health science students, South Gonder Zone, Amhara, Ethiopia 2025

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Abstract

Substance use among university students has emerged as a key public health concern, especially among health science students who are expected to be future healthcare providers and role models. Despite their expected role in health promotion and counseling, they may also be exposed to substance use due to academic pressure, social influences, and easy accessibility. However, recent and comprehensive evidence on their Knowledge, Attitude, and Practice (KAP) toward substance use in Ethiopian universities remains limited. An institution based cross sectional study was conducted among 300 health science students from September 10 to October 20, 2025. Participants were selected through stratified random sampling with proportional allocation by department. Data were collected using a pretested self-administered questionnaire and analyzed using SPSS version 27. Binary logistic regression identified factors associated with substance use, with statistical significance set at $p \leq 0.05$. Among 300 students, 84.7% had good knowledge of substance use and 72.0% had positive attitudes toward its prevention, while 32.3% reported engaging in substance use practice. Female students were less likely to practice substance use than males (Adjusted Odds Ratio, AOR = 0.51). Pharmacy (AOR=0.34) and midwifery students (AOR=0.30) had lower odds of substance use than medicine students. Fourth year (AOR=0.22) and sixth year students (AOR=0.03) were less likely to engage in substance use than second-year students. Good knowledge (AOR=0.44) and positive attitudes toward prevention (AOR=0.53) were reduce substance use practice. Male, early years of study, poorer knowledge, and negative attitudes were associated with increased substance use practice. Strengthening university-based health education programs that improve knowledge and foster positive attitudes, particularly targeting male and junior students, may help reduce substance use among future healthcare professionals.

Introduction

Substance use refers to taking or administering psychoactive agents such as alcohol, tobacco, prescription medications, illicit drugs, inhalants, solvents, or glues that can influence cognitive functions. The outcomes of using these substances can vary from harmless to harmful, depending on the type of substance, dosage, frequency of use, and method of intake, personal characteristics, and the surrounding social environment.¹ Substance use is inappropriate use of drugs or psychoactive substances in which the user consumes the substance with amount or methods which are harmful to them or others.² Substance use is a multifactorial behavior shaped by interacting biological, psychological, and social determinants rather than a singular event. While experimentation with substances often begins during adolescence and young adulthood, progression to harmful use is influenced by multiple biological, psychological, and environmental factors, including peer influence, stress, mental health conditions, and substance availability.³ Substance use can contribute towards or trigger reactions and outcomes that can be harmful or negative in respect to mental and/or physical health.⁴ Psychoactive substance use remains a major public health challenge worldwide because of its substantial contribution to morbidity, mortality, and social harm. According to the United Nations Office on Drugs and Crime, hundreds of millions of people use psychoactive substances globally, with cannabis remaining the most commonly used illicit drug.⁵ The health burden from alcohol and drugs spans injuries, non-communicable diseases (liver disease), infectious disease risks, mental-health disorders, and premature mortality contributing materially to global disability adjusted life years.⁶ The World Health Organization estimates that alcohol consumption accounts for approximately 2.6 million deaths annually, while psychoactive drug use contributes to an additional 0.6 million deaths worldwide.⁷ Several factors contribute to drug use, including genetic predisposition, family background, psychological problems, social norms, recreational motives, peer pressure, anxiety relief, and association with substance using peers, lack of school connectedness, low academic achievement, and mental health issues. Collectively, these factors may increase the perceived value of drug use despite its potential harm to an individual's long term wellbeing.⁸ Harmful effects of substance use may result from intoxication, regular use, and dependence. Substance dependence is characterized not only by tolerance and withdrawal but also by the negative impact of substance use on an individual's functioning. Moreover, substance use can harm not only the user but also families, workplaces, and communities through accidents, violence, and crime.⁹

University students are particularly vulnerable to initiating and maintaining substance use due to developmental transitions, increased independence, academic pressures, and social influences. Health science students may be at even greater risk because of demanding academic workloads, stressful clinical experiences, and early exposure to healthcare environments. These factors can contribute to maladaptive coping behaviors, including substance use. As future healthcare professionals, their substance use behaviors may also affect their professional conduct, credibility, and ability to provide effective patient education and counseling. In Ethiopia, substance use among students remains a significant concern. A national systematic review and meta-analysis reported that approximately 37.6% of students currently use at least one substance, including alcohol, khat, or cigarettes, although considerable regional variation exists.¹⁰ Ethiopian studies have also identified several factors associated with substance use among students, including male sex, peer and family substance use, poor social support, and coexisting mental health problems.¹¹ Existing evidence among Ethiopian university students can generally be grouped into two areas. First, prevalence studies have reported considerable use of alcohol, khat, tobacco, and other

substances among university students, with variations across institutions and regions. Second, only a limited number of studies have assessed students' Knowledge, Attitudes, and Practices (KAP) regarding substance use. KAP studies are essential for identifying misconceptions about substances, perceptions of risk and social acceptability, and behavioral practices that may contribute to substance use. Despite increasing evidence on the prevalence and determinants of substance use in Ethiopia, there is a lack of recent, institution specific, and comprehensive assessments of KAP related to substance use among health science students. Most existing studies focus primarily on prevalence and associated factors, with limited attention to how health science students perceive substance use and how these perceptions influence their behaviors. In addition, few studies have examined KAP toward commonly used substances, including khat, using a single standardized framework among Ethiopian health science students.^{12,13}

Aim of the study

Substance use among health science students has important implications for both individual and public health outcomes. Adequate knowledge and appropriate attitudes toward substance use prevention are fundamental competencies for future healthcare professionals, who are expected to educate patients, identify substance-related problems, and provide evidence-based interventions. Conversely, engagement in risky substance use behaviors may adversely affect students' academic performance, clinical judgment, professional integrity, and the quality of future patient care. Moreover, the extreme academic pressure, heavy workloads, and emotionally demanding clinical experiences encountered by health science students may contribute to burnout and encourage the use of substances as a maladaptive coping mechanism. Despite the increasing recognition of substance use as a public health priority, up-to-date evidence regarding the KAP of health science students remains limited in Ethiopia. Institution specific data are necessary to identify educational gaps, guide student support services, and design contextually appropriate prevention programs within universities. Therefore, this study aims to assess the current knowledge, attitudes, and practices related to substance use among health science students and provide evidence to inform policymakers, university administrators, and health educators in developing targeted interventions.

Methods and Materials

Study area

The study was conducted at Debre Tabor University which is found in Debre Tabor metropolitan city, Amhara, Northwest Ethiopia. The city is located 104 km from Bahir Dar the seat of Amhara and 665 km from Addis Ababa the capital of Ethiopia. Debre Tabor University was established as a third-generation university in Ethiopia. The university has five colleges (College of Health Sciences, College of Social Sciences and Humanities, College of Natural Sciences, College of Business and Economics, and College of Agriculture and Environmental Sciences), one faculty (Technology Faculty), and two schools (medical school and law school). It is now expanding its enrollment capacity to educate more than 18,000 students in first, second, and third degrees through 75 regular and extension education programs.¹⁴

Study design and period

An institution based cross sectional study design was conducted among 300 health science students from September 10 to October 20, 2025. A cross-sectional design was chosen because it allows the assessment of KAP and associated factors related to substance use at a single point in time, making it appropriate for determining the current status and distribution of these factors among students.

Source population and study population

All health science students in Debre Tabor University. All health science students in DTU who were enrolled during data collection and meet inclusion criteria for the study.

The study population comprised all second through sixth year health science students at DTU who were present during the data collection period.

First year students and students who did not provide written informed consent were excluded. In Ethiopian universities, first year students complete common courses before departmental assignment, so they were not yet eligible. No sampled eligible students declined participation.

Sample size determination

The sample size was calculated using the single population proportion formula. In the absence of prior evidence on the prevalence of the comprehensive KAP variable among health science students in the study area, a conservative prevalence (P) of 50% was assumed to maximize variance and ensure an adequate sample size. A 95% confidence level ($Z = 1.96$) and a 5% margin of error ($d = 0.05$) were applied, in line with standard practice for cross-sectional studies.¹⁵

$$n = \frac{Z^2 * P * (1-P)}{d^2} = \frac{(1.96)^2 * 0.5 * (1-0.5)}{(0.05)^2} = 384$$

This yielded an initial sample size of 384. Since the source population is less than 10,000 so, by using population reduction formula the required minimum sample was obtained from the above estimate by using this formula $n_f = \frac{n_0}{1 + \frac{n_0}{N}} = 384 / (1 + 384/967) = 275$, then add 10% (non-response rate) of 275, it gives approximately 300 final sample size.

Sampling technique and procedure

A stratified simple random sampling technique was used to select 300 students from six department for this study. Health science students were first divided into strata based on their departments, and complete student lists for each class were obtained from class representatives. The sample size was then allocated proportionally to each department, and participants were selected using the lottery method, where students were listed, assigned numbers, and randomly drawn until the required number from each department was reached.

The number of study participants to be sampled from each was determined using proportional to size allocation formula. $n_j = \frac{N_j}{N} * n$, where j = the number of strata, n_j = the sample size of the j^{th} stratum, N_j = population size of the j^{th} stratum, n = the total sample size and N = the total population size.

Study Variables

The study variables were knowledge, attitude, and practice (KAP) of health science students toward substance use. The study also considered socio demographic variables, including age, sex, religion, and year of study.

Operational definition

Substance use: substance use is the ingestion or administration of psychoactive substances such as alcohol, tobacco, caffeine, medications, illegal drugs, solvents, or glues measured by self-reported frequency, quantity, and context within defined period.

Knowledge: health science student's knowledge about substance use was assessed using 12 questions. For each question, the correct answer (yes) was coded by "1" and the incorrect answer (no response) was "0," with the sum ranging from 0 to 12. The mean score was calculated to determine their level of knowledge, and participants who scored the mean and above was considered to have good knowledge, while those scored below the mean score was regarded as having poor knowledge.¹⁶

Attitude: a total of ten attitude related questions was used to assess attitude on substance use among health science students. Each question has four alternatives (strongly agree, agree, disagree and strongly disagree) and coded by "1", "2", "3" and "4" with the sum ranging from 10 to 40. The mean score was calculated to determine their level of attitude, and participants who scored the mean and above was considered to have good attitude, while those scored below the mean score was regarded as having poor attitude.¹⁶

Practice: is defined as the students' actual engagement in psychoactive substance use. A total of eight practice related questions was used to assess participants' practice of substance use. Each question has yes/no answer which was coded "1" for yes (correct answer) response and "0" for no response (incorrect answer), with the sum ranging from 0 to 8. The mean score was calculated to determine their level of practice, and participants who scored the mean and above was considered to have practice, while those scored below the mean score was regarded as not having practice.¹⁶

Data collection procedure

Data were collected using a self-administered, semi structured questionnaire covering socio demographic characteristics and KAP variables. The instrument was adapted from previously published studies conducted outside Ethiopia^{17,18} and was reviewed and refined by experts in public health, epidemiology, and psychiatry to ensure content and face validity within the Ethiopian context. It was prepared in English, pretested prior to data collection, and revised accordingly based on the pretest findings. Reliability was assessed using internal consistency. The final questionnaire was administered under strict confidentiality.

Data quality control

The questionnaire was written in English language. The quality of data was evaluated by advisers, regular supervision, immediate feedback and reviewing each of the completed questionnaires daily by the principal investigator. Pretest was done one week before the actual data collection at Debre Tabor University, health science college students (5% of the sample size). Based on the finding from the pretest,

the questionnaire was confirmed because it was accepted by the participants and there is no confusion with the questions, indicating that they understood what was being asked of them.

Data processing and analysis

The collected data were cleaned, coded, and entered into SPSS version 27 for analysis. Continuous variables were summarized using means, while categorical variables were expressed using frequencies, percentages and diagram. Binary logistic regression analyses were performed to examine the association between substance use (practice) and independent socio demographic variables, academic profiles, knowledge, and attitudes. Variables of interest were entered into the regression models to estimate adjusted Odds Ratios (ORs) with 95% Confidence Intervals (CIs). Statistical significance was set at $p \leq 0.05$. Missing data were negligible due to strict daily quality checks and were handled using pairwise deletion.

Result

Social demographic characteristics

A total of 300 students were participated in the study. The students were predominantly young adults (mean age = 23.99 ± 1.71 years) with little age variation. Participants demonstrated high knowledge levels (mean = 11.31 ± 0.87) and generally favorable attitudes (mean = 27.56 ± 2.52). However, practice scores were relatively low (mean = 2.12 ± 1.19).

More than half of the respondents were male (57.0%), while females constituted 43.0% of the participants. The majority of the students were Orthodox Christians (92.0%) and most participants were Amhara (93.0%). In terms of academic level, the largest proportion of respondents were third year students (44.7%), closely followed by fourth-year students (42.7%). With respect to academic departments, Medicine students constituted the largest group (31.0%), followed by Nursing students (23.3%) and Pharmacy students (15.0%). Participants from Medical Laboratory (11.3%), Midwifery (10.0%), and Anesthesia (9.3%) represented smaller proportions of the study sample (Table 1).

Knowledge level of health science students about substance use

Table 2 shows the distribution of respondents' knowledge regarding substance use according to selected socio-demographic characteristics. Overall, 254 participants (84.7%) demonstrated good knowledge on substance use, indicating that the majority of students had an adequate level of knowledge. With respect to gender, a higher proportion of respondents with good knowledge were male students (49%) compared with female students (35.7%). Across departments, medicine students accounted for the largest proportion of respondents with good knowledge (27%), followed by nursing students (19.3%) and pharmacy students (12.3%). Regarding academic year, students in the third year (38.3%) and fourth year (35.0%) contributed the largest number of students with good knowledge. In terms of ethnicity, 236 (78.7%) participants of Amhara ethnicity and 18 (6%) Oromo participants had good knowledge.

Attitude status of health science students about substance use

Among the 300 students, about, 216 students (72%) showed a positive attitude toward preventing substance use. This finding suggests that nearly three quarters of the study participants held favorable attitudes toward substance use prevention. Regarding gender, 128 male students (42.7%) and 88 female

students (29.3%) had positive attitudes toward preventing substance use. Negative attitudes were reported by 43 males (14.3%) and 41 females (13.7%). Among departments, medicine students contributed the largest proportion of respondents with positive attitudes (23.0%), followed by nursing students (15.3%) and pharmacy students (12.0%), partly reflecting their larger representation in the study population. With respect to the year of study, the largest numbers of students with positive attitudes were observed among fourth-year students (31.0%) and third-year students (30.3%), corresponding to the greater proportion of students in these academic years (Table 3).

Practice status of health science students about substance use

Table 4 presents the distribution of substance use practice according to socio-demographic characteristics, knowledge, and attitudes among the students. The overall distribution of substance use practice among the students. The majority (67.7%) of students reported that they did not use substances, while approximately one third (32.3%) of the students engaged in substance use. Regarding gender, male students accounted for a higher proportion of substance users (19.7%). Across the departments, medicine students contributed the largest number of substance users (11.3%), followed by nursing students (8.7%). Regarding the year of study, the largest numbers of students reporting substance use were found among third year (14.7%) and fourth year students (13%), largely reflecting their greater representation in the study population. In general, the findings indicate that substance use was reported by nearly one third of the study participants and appeared to be more common among males, students with poorer knowledge, and those with negative attitudes toward substance use prevention.

Multivariable logistic regression analysis

A multivariable logistic regression analysis was conducted to identify significant factors of substance use among the students. The findings revealed that, sex, department of study, year of study, knowledge, and attitude were significantly associated with substance use practice, while age, religion, and ethnicity were not significantly associated with substance use practice ($p > 0.05$).

Female students had significantly lower odds of practicing substance use compared with male students (AOR = 0.508, 95% CI: 0.288-0.895, $p = 0.019$). Specifically, female students were 49.2% less likely to practice substance use than male students. Among departments, pharmacy students were 66.1% less likely to substance use practice (AOR = 0.339, 95% CI: 0.131-0.875, $p = 0.025$), and midwifery students were 69.9% less likely to substance practice (AOR = 0.31, 95% CI: 0.101-0.896, $p = 0.031$) compared with medicine students. Compared with second year students, fourth year students had 77.9% lower odds of substance use practice (AOR = 0.221, 95% CI: 0.070-0.693, $p = 0.010$), while sixth year students had 97.1% lower odds (AOR = 0.029, 95% CI: 0.002-0.326, $p = 0.004$). However, there is no significant difference among third- and second-year students. Moreover, students with good knowledge and those with a positive attitude were 55.9% (AOR = 0.441, 95% CI: 0.227-0.856, $p = 0.016$) and 46.7% (AOR = 0.533, 95% CI: 0.298-0.952, $p = 0.034$) less likely to substance use practice, respectively, compared with their counterparts (Table 5).

Discussion

This study assessed the KAP toward substance use and identified factors associated with substance use practice among health science students. The findings revealed that although most students had good knowledge and positive attitudes toward substance use prevention, nearly one-third of the respondents reported engaging in substance use practices. In addition, sex, department of study, year of study, knowledge status, and attitude status were significantly associated with substance use. The study revealed that 84.7% of participants had good knowledge regarding substance use, which aligns with the study conducted in India where 84.6% of urban respondents knew about the harmful effects of tobacco.¹⁹ However, it was higher compared to study conducted at the University of Venda reported 64.1% of students had high knowledge regarding mood altering substances.¹⁷ This finding suggests that health science students generally have adequate awareness about the harmful effects and consequences of psychoactive substance use. However, despite this high level of knowledge, a considerable proportion of students still practiced substance use, indicating that knowledge alone may not be sufficient to influence behavior. This supports behavioral theories suggesting that awareness does not necessarily translate into behavioral change unless reinforced by favorable attitudes, supportive environments, and effective preventive interventions. Regarding attitudes, 72% of students had positive attitudes toward preventing substance use. This finding indicates that most students recognized the importance of avoiding substance use, it was higher compared to study conducted in Southeast Nigeria, where 56% of students believed that drug use makes people feel powerful showing a more permissive attitude than this finding.²⁰ However, it was lower compared to study conducted in Egypt, 82.5% of students believed smoking is harmful.²¹ In an Ethiopian study, over 40% of students had favorable or neutral attitudes toward substance use, especially khat and alcohol, believing they could enhance concentration and relieve stress.²² These differences in attitudes observed across studies are likely influenced by the interaction of cultural beliefs, social acceptability of substances, exposure to health education interventions, and methodological differences in measuring attitudes.

The prevalence of substance use practice in this study was 32.3%, indicating that nearly one in every three health science students had engaged in substance use. International studies report even higher figures for example, 32% of medical students at Tabriz University had tried addictive substances,²³ and 42.8% of Nepalese health science students reported substance use.²⁴ This study prevalence is similar with findings from studies conducted in Ethiopia, where substance use among university students often exceeds 20-30%.^{12,25} The relatively low prevalence in this study might be due to sociocultural norms, strict campus rules, or possible underreporting due to stigma or the sensitive nature of the topic. This finding is comparable with a national systematic review and meta-analysis conducted in Ethiopia, which reported that 37.63% of students used at least one substance, including alcohol, khat, or cigarettes.¹¹ The slight difference may be explained by variations in study populations, operational definitions of substance use, sociocultural contexts, and data collection periods. However, the prevalence observed in the current study remains a public health concern because health science students are expected to serve as future healthcare providers and role models in promoting healthy behaviors. Female students were significantly less likely to practice substance use compared with male students. This finding is consistent with previous Ethiopian studies that reported higher substance use among male students.¹¹ Cultural expectations and gender norms in Ethiopia often discourage substance use among females while being relatively permissive toward males. Differences in substance use practices were also observed across

academic departments. Pharmacy and midwifery students were less likely to engage in substance use compared with medicine students. The reason for this variation may be medicine students often face demanding schedules, and prolonged academic pressure. This result is consistent with findings from previous studies where exposure, academic stress, peer influences, and discipline specific pressures contributed to varied substance use behaviors.^{22,23} The study further demonstrated that senior students, particularly fourth and sixth year students, were significantly less likely to practice substance use. This finding may suggest that junior students may experience transitional stress, adaptation challenges, and stronger peer influences that increase vulnerability to substance use. Similar findings have been documented in studies indicating that early years of university life constitute a critical period for initiating substance use behaviors.²⁶ Students with good knowledge and those with positive attitudes toward substance use prevention were less likely to practice substance use compared with their counterparts. This finding suggest that improving students' understanding of substance related harms and increase positive attitudes toward prevention may play an important role in reducing substance use. In conclusion, despite high knowledge and positive attitudes, substance use remains prevalent, indicating a clear knowledge behavior gap likely influenced by broader contextual and psychosocial factors. This highlights the need for comprehensive, context sensitive interventions beyond awareness alone.

Strength of the study

The study employed a stratified random sampling technique to ensure representation across departments, and standardized measures were used to assess KAP. This procedure improves the accuracy and generalizability of the findings.

Limitations

In this study limitations should be acknowledged. The cross-sectional nature of the study limits the ability to establish causal relationships between associated factors and substance use practices. In addition, the reliance on self-reported data may have introduced recall bias and social desirability bias, potentially leading to underreporting of substance use behaviors. Since the study was conducted in a single university, the findings may not be generalizable to all Ethiopian university students.

Conclusions

This study revealed that the majority of health science students had good knowledge and positive attitudes toward the prevention of substance use. However, despite this level of awareness, approximately one third of the students reported engaging in substance use practices. This indicates that adequate knowledge and positive attitudes alone are not sufficient to ensure healthy behavioral outcomes. The findings also showed that being female, having good knowledge, and maintaining positive attitudes toward substance use prevention were significant protective factors against substance use.

Recommendations

Universities should strengthen substance use prevention strategies by enhancing awareness programs, fostering positive behavioral attitudes, and expanding access to mental health support services. Special attention should be given to high-risk groups, particularly male and junior students, through targeted

interventions. Future research should employ longitudinal study designs and include multiple institutions to improve the generalizability of findings and to better establish causal relationships between knowledge, attitudes, and substance use behaviors.

References

1. Ghodse H. *Drugs and addictive behaviour: a guide to treatment*. 2002: Cambridge University Press.
2. Belay HG. Prevalence and associated factors of substance use among regular students in Debre Tabor University, Amhara region, Ethiopia in 2019. 2020. <https://doi.org/10.21203/rs.3.rs-57925/v1>
3. Belfiore CI, Galofaro V, Cotroneo D, et al. A multi-level analysis of biological, social, and psychological determinants of substance use disorder and co-occurring mental health outcomes. *Psychoactives* 2024;3:194-214.
4. Lijffijt M, Hu K, Swann AC. Stress modulates illness-course of substance use disorders: a translational review. *Front Psychiat* 2014;5:83.
5. Canton H. United Nations Office on drugs and crime, UNODC. *The Europa directory of international organizations* 2021: Routledge; 2021. p. 240-4.
6. Organization WH. *Global status report on alcohol and health 2018*: World Health Organization; 2018.
7. Organization WH. *Global status report on alcohol and health and treatment of substance use disorders*: World Health Organization; 2024.
8. Gorsuch RL, Butler MC. Initial drug abuse: a review of predisposing social psychological factors. *Psychological Bulletin* 1976;83:120.
9. Daley J, Elliott FJ, Gibbs TM, Kitteringham G. *Substance abuse. The Professional Protection Officer*: Elsevier; 2020. p. 233-52.
10. Teferre S. Substance use among university students in Ethiopia: a systematic review and meta-analysis. *Ethiopian J Health Develop* 2018;32:2229.
11. Alebachew W, Semahegn A, Ali T, Mekonnen H. Prevalence, associated factors and consequences of substance use among health and medical science students of Haramaya University, eastern Ethiopia, 2018: a cross-sectional study. *BMC Psychiat* 2019;19:343.
12. Gebrie A, Alebel A, Zegeye A, Tesfaye B. Prevalence and predictors of khat chewing among Ethiopian university students: A systematic review and meta-analysis. *PLoS One* 2018;13:e0195718.
13. Shegute T, Wasihun Y. Prevalence of substance use in university students, Ethiopia. *Subst Abuse* 2021;15:11782218211003558.
14. Mehret G, Molla A, Tesfaw A. Knowledge on risk factors and practice of early detection methods of breast cancer among graduating students of Debre Tabor University, Northcentral Ethiopia. *BMC Women's Health* 2022;22:183.
15. Watson G. William Gemmell Cochran 1909-1980. *Ann Statistics* 1982;10:1-10.
16. Tarafdar SA, Gupta S. Knowledge of and attitude on assessment of substance use disorders of nurses working in general wards. *Indian J Psychiatric Nurs* 2018;15:33-8.

17. Ajao B, Anyanwu F, Akinsola H, Tshitangano T. Knowledge, attitude and practices of substance use among university students. *Afr J Physical Health Educ Recreation Dance* 2014;20:214-24.
18. Sood P, Tanwar K. Assessment of knowledge, attitudes and practices of medical students regarding the drug addiction in Punjab, India. *Int J Acad Med Pharm* 2023;5:130-3.
19. Tsering D, Pal R, Dasgupta A. Substance use among adolescent high school students in India: A survey of knowledge, attitude, and opinion. *J Pharm Bioallied Sci* 2010;2:137-40.
20. Odinka JI, Urama SI, Nduanya UC, et al. Knowledge, Attitude, Perception, and Practice of Drug Abuse Among Undergraduate University Students in Enugu, Southeast Nigeria. <https://www.ajhssr.com/wp-content/uploads/2019/12/H193126069.pdf>
21. Shalaby SF, Soliman MA. Knowledge, attitude, and practice of medical students regarding smoking and substance abuse, Cairo University, Egypt. *J Egyptian Public Health Assoc* 2019;94:11.
22. Measho Gebreslassie, Amsalu Feleke, Tesfahun Melese. Psychoactive substances use and associated factors among Axum university students, Axum Town, North Ethiopia. 2013. *BMC Public Health* 2013, 13:693, <https://link.springer.com/article/10.1186/1471-2458-13-693>
23. R Jodati A, K Shakurie S, Nazari M, Raufie M. Students' attitudes and practices towards drug and alcohol use at Tabriz University of Medical Sciences. 2007. <http://eastern.mediterranean.scielo.org/pdf/emhj/v13n4/v13n4a27.pdf>
24. Panthee B, Panthee S, Gyawali S, Kawakami N. Prevalence and correlates of substance use among health care students in Nepal: a cross sectional study. *BMC Public Health* 2017;17:950.
25. Shegute T, Wasihun Y. Prevalence of substance use in university students, Ethiopia. *Subst Abuse* 2021;15:11782218211003558.
26. Tesfaye G, Derese A, Hambisa MT. Substance use and associated factors among university students in Ethiopia: A cross-sectional study. *J Addiction* 2014;2014:969837.

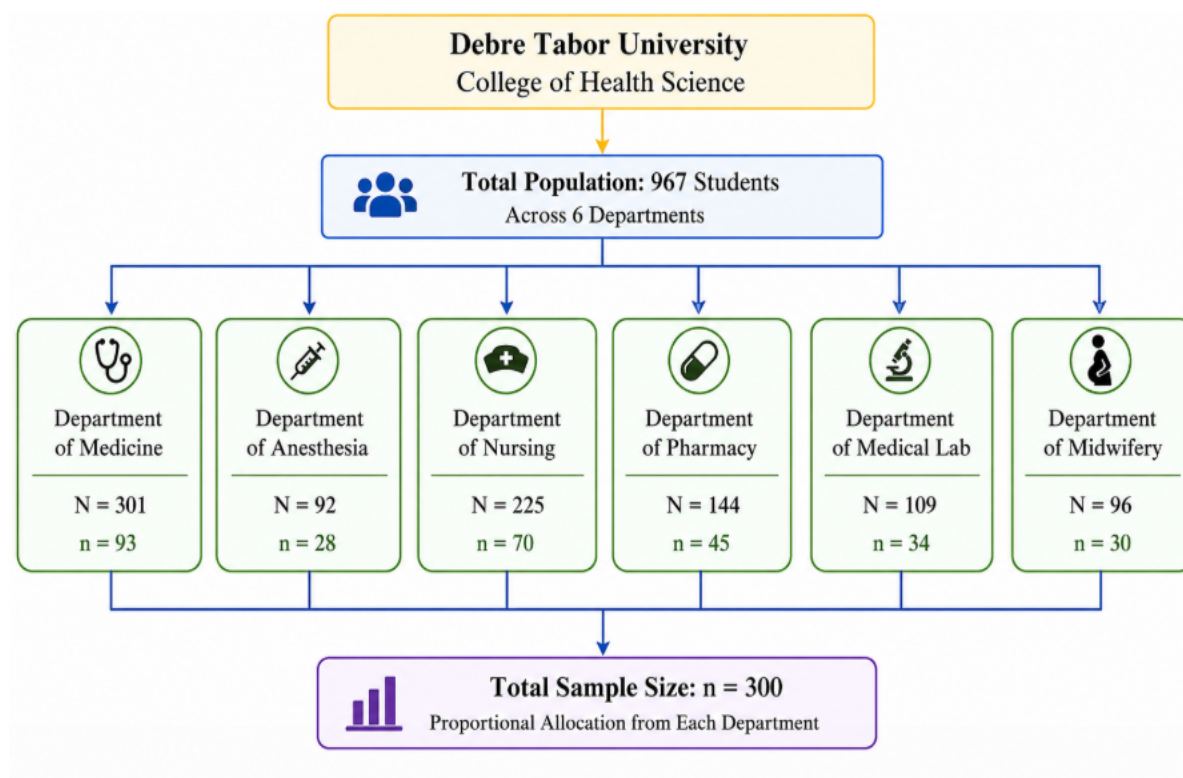


Figure 1. Schematic presentation of sampling procedure, DTU, health science students.

Table 1. Socio-demographic characteristics of the students (n = 300).

Variables	Category	Frequency	Proportion (%)
Gender of students	Male	171	57
	Female	129	43
Religion of the respondents	Orthodox	276	92
	Muslim	12	4
	Protestant	12	4
Ethnicity of respondents	Oromo	21	7
	Amhara	279	93
Year of study	2nd year	19	6.3
	3rd year	134	44.7
	4th year	128	42.7
	5th year	8	2.7
	6th year	11	3.7
Department of participants	Medicine	93	31
	Pharmacy	45	15
	Anesthesia	28	9.3
	Nursing	70	23.3
	Midwife	30	10

	Laboratory	34	11.3
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Table 2. Distribution of knowledge on substance use across socio demographic characteristics of students.

Variables	Categories	Good knowledge n (%)	Poor knowledge n (%)
Gender	Male	147 (49.0)	24 (8.0)
	Female	107 (35.7)	22 (7.3)
Department	Medicine	81 (27.0)	12 (4.0)
	Anesthesia	25 (8.3)	3 (1.0)
	Pharmacy	37 (12.3)	8 (2.7)
	Nursing	58 (19.3)	12 (4.0)
	Laboratory	29 (9.7)	5 (1.7)
	Midwifery	24 (8.0)	6 (2.0)
Year of study	Second year	16 (5.3)	3 (1.0)
	Third year	115 (38.3)	19 (6.3)
	Fourth year	105 (35.0)	23 (7.7)
	Fifth year	8 (2.7)	0 (0.0)
	Sixth year	10 (3.3)	1 (0.3)
Ethnicity	Oromo	18 (6.0)	3 (1.0)
	Amhara	236 (78.7)	43 (14.3)
Religion	Orthodox	233 (77.7)	43 (14.3)
	Muslim	11 (3.7)	1 (0.3)
	Protestant	10 (3.3)	2 (0.7)
Overall knowledge status		254 (84.7)	46 (15.3)

Table 3. Distribution of attitudes toward preventing substance use according to socio demographic variables of the study students (n = 300).

Variables	Categories	Positive attitude to preventing substance use n (%)	Negative attitude to preventing substance use n (%)
Gender	Male	128 (42.7)	43 (14.3)
	Female	88 (29.3)	41 (13.7)
Department	Medicine	69 (23.0)	24 (8.0)
	Anesthesia	14 (4.7)	14 (4.7)
	Pharmacy	36 (12.0)	9 (3.0)
	Nursing	46 (15.3)	24 (8.0)

Year of study	Laboratory	27 (9.0)	7 (2.3)
	Midwifery	24 (8.0)	6 (2.0)
	Second year	16 (5.3)	3 (1.0)
	Third year	91 (30.3)	43 (14.3)
	Fourth year	93 (31.0)	35 (11.7)
	Fifth year	7 (2.3)	1 (0.3)
	Sixth year	9 (3.0)	2 (0.7)
Ethnicity	Oromo	12 (4.0)	9 (3.0)
	Amhara	204 (68.0)	75 (25.0)
Religion	Orthodox	200 (66.7)	76 (25.3)
	Muslim	8 (2.7)	4 (1.3)
	Protestant	8 (2.7)	4 (1.3)
Overall attitude status		216 (72)	84 (28)

Table 4. Distribution of substance use practice according to socio demographic characteristics, knowledge, and attitudes among study participants (n = 300).

Variables	Categories	Substance use practice n (%)	No substance use practice n (%)
Gender	Male	59 (19.7)	112 (37.3)
	Female	38 (12.7)	91 (30.3)
Department	Medicine	34 (11.3)	59 (19.7)
	Anesthesia	10 (3.3)	18 (6.0)
	Pharmacy	10 (3.3)	35 (11.7)
	Nursing	26 (8.7)	44 (14.7)
	Laboratory	10 (3.3)	24 (8.0)
	Midwifery	7 (2.3)	23 (7.7)
Year of study	Second year	9 (3.0)	10 (3.3)
	Third year	44 (14.7)	90 (30.0)
	Fourth year	39 (13.0)	89 (29.7)
	Fifth year	4 (1.3)	4 (1.3)
	Sixth year	1 (0.3)	10 (3.3)
Ethnicity	Oromo	10 (3.3)	11 (3.7)
	Amhara	87 (29.0)	192 (64.0)
Religion	Orthodox	90 (30.0)	186 (62.0)
	Muslim	4 (1.3)	8 (2.7)
	Protestant	3 (1.0)	9 (3.0)
Knowledge	Good knowledge	79 (26.3)	175 (58.3)
	Poor knowledge	18 (6.0)	28 (9.3)

Attitude	Positive attitude	61 (20.3)	155 (51.7)
	Negative attitude	36 (12.0)	48 (16.0)
Overall substance use practice		97 (32.3)	203 (67.7)

Table 5: Result of multivariable logistic regression analysis of factors associated with substance use (practice).

	Categories	B	SE	Wald	df	p-value	AOR	95% CI for AOR
Age	Continuous	0.052	0.080	0.420	1	0.517	1.053	0.900-1.232
Sex	Male (ref.)	-0.678	0.289	5.483	1	0.019*	0.508	0.288-0.895
Religion	Orthodox (ref.)			0.685	2	0.710		
	Muslim	0.190	0.717	0.070	1	0.792	1.209	0.296-4.931
	Protestant	-0.583	0.747	0.609	1	0.435	0.558	0.129-2.414
Ethnicity	(Oromo Ref.)	-0.671	0.538	1.555	1	0.212	0.511	0.178-1.467
Department	Medicine (ref.)			7.572	5	0.181		
	Anesthesia	-0.387	0.501	0.597	1	0.440	0.679	0.254-1.813
	Pharmacy	-1.082	0.484	5.004	1	0.025*	0.339	0.131-0.875
	Nursing	-0.503	0.382	1.726	1	0.189	0.605	0.286-1.280
	Laboratory	-0.814	0.499	2.663	1	0.103	0.443	0.167-1.178
	Midwifery	-1.199	0.556	4.652	1	0.031*	0.301	0.101-0.896
Year of students	Second year (ref.)			12.491	4	0.014		
	Third year	-1.030	0.538	3.672	1	0.055	0.357	0.124-1.024
	Fourth year	-1.510	0.583	6.699	1	0.010*	0.221	0.070-0.693
	Fifth year	-0.168	0.900	0.035	1	0.852	0.846	0.145-4.939
	Sixth year	-3.557	1.243	8.192	1	0.004*	0.029	0.002-0.326
Knowledge	Poor Know. (ref.)	-0.820	0.339	5.851	1	0.016*	0.441	0.227-0.856
Attitude	Negative Att. (ref.)	-0.629	0.296	4.520	1	0.034*	0.533	0.298-0.952
Constant		1.742	2.112	0.680	1	0.409	5.709	

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Conflict of interest: the authors declare that they have no competing interests.

Availability of data and materials: the primary data set collected from students and analyzed during the current study is available from the corresponding author.

Ethics approval and consent to participate: this study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from the Institutional Review Board of Debre Tabor University before data collection started. Official permission was also secured from the college of health science, and informed consent was obtained from all participants. Before any interviews began, each participant was informed about the purpose, procedures and benefits of the study. Then, they were asked to voluntarily sign a written a consent form confirming that they understood this information and agreed to take part in the study. All information obtained in the study was kept confidential.

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Online supplementary materials

Table 1. Descriptive statistics of continuous study variables among students (n = 300).

Table 2. Correct (yes) responses to knowledge questions by health science students at Debre Tabor Comprehensive Specialized Hospital, South Gonder Zone, North-west, Ethiopia, 2025 (300 respondents).

Table 3. Response to attitude questions by health science students at Debre Tabor Comprehensive Specialized Hospital, South Gonder Zone, North-west, Ethiopia, 2025 (300 respondents).

Table 4. Response to practice questions by health science students at Debre Tabor Comprehensive Specialized Hospital, South Gonder Zone, North-west, Ethiopia, 2025 (300 respondents).