




Alcohol Use Disorder and Associated Factors Among Jimma University Undergraduate Students

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Purpose: Harmful alcohol use among University students is a problem throughout the world. However, little is known about alcohol use disorders among JFD university students in Ethiopia. Therefore, this study aimed to assess the prevalence and associated factors of alcohol use disorder (AUD) among Jimma University undergraduate students.

Methods: Institution-based cross-sectional study was conducted among Jimma university students. Data were collected from 741 sampled students who were selected through a multi-stage stratified sampling technique. Alcohol Use Disorder Identification Test (AUDIT), Oslo 3 items social support scale (OSS-3), and Kessler-6 (K6) tools were used to assess alcohol use disorders, social support, and psychological distress, respectively. Data were analyzed through SPSS version 20.0. Bivariate and multivariate logistic regression analyses were conducted and adjusted odds ratio (AOR) at a 95% confidence interval (CI) was used to determine the independently associated factors of AUD.

Results: The overall prevalence of AUD among Jimma University undergraduate students was 26.5%. There was a positive and independent association between AUDs and being single AOR= 1.98, 95% CI [1.21, 3.22], having a history of mental illness AOR= 1.98, 95% CI [1.04, 3.75], having a history of suicidal attempt AOR= 3.63, 95% CI [1.18, 11.11], smoking cigarette AOR= 5.04, 95% CI [2.02, 12.57], having peer pressure to drink alcohol AOR= 2.72, 95% CI [1.76, 4.19] and presence of mental distress AOR= 2.81, 95% CI [1.83, 4.32].

Conclusion: The findings of this study showed that the prevalence of AUD was high in the sampled undergraduate students of Jimma University. AUD was positively associated with mental, substance, and behavioral risk factors. Therefore, concerted actions needed to be implemented to increase the student's awareness of the effect of harmful alcohol use. Moreover, it is recommended that further studies need to be conducted to develop strategies for evidence-based interventions.

Keywords: substance use disorder, alcohol use disorders, mental distress, risky sexual behavior, Jimma, Ethiopia

Introduction

Alcohol use disorder is a problem among university students worldwide.^{1,2} Across the world, it has been reported that university students' alcohol consumption is higher than their non-university peers.^{3,4} Alcohol misuse was also reported as a strong predictor of students' mental health in which, it was attributable to increased depressive symptoms and attempted suicide.^{5,6} Tobacco and alcohol use were in the 2nd and 6th place in a 2013 ranking of the top 25 leading health risk factors in the world, respectively.^{6,7} More than 27 million, which is 0.6% of the world adult population currently believed to have alcohol and other drugs such as

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Khat (amphetamine-like local stimulant abused drug) and tobacco-related health problems.^{8,9}

The use of substances such as alcohol, chewing khat leaves, and smoking cigarettes have become one of the rising major public health and socio-economic problems worldwide.^{10,11} Alcohol use disorder was attributed to about 3.8% of all deaths (2.5 million) and about 4.5% of disability-adjusted life years lost (DALYs) (69.4 million).^{12,13}

A study done in the US and Canadian showed a prevalence of lifetime and past-year alcohol use among university students to be 87% versus 81%, and 92% versus 86%, respectively.¹⁴ The prevalence of hazardous use of alcohol among undergraduate students at a public university in Brazil was 24%.¹⁵ Patterns of alcohol use on a South African university campus showed 8.5% of the undergraduate students have harmful alcohol consumption.¹⁶

The relationship between alcohol consumption and perceived social support (PSS) is complex; perhaps even more so among those with AUD. Epidemiological data suggest that social network size and diversity are smaller among those with alcohol dependence.¹⁷ Moreover, lower levels of perceived social support can influence drinking rates. PSS has been also shown to be associated with reduced rates of alcohol use and alcohol-related problems in non-treatment seeking adolescents and adults.^{17,18}

Excessive alcohol intake among college and University students found to be associated with a variety of adverse consequences like poor academic achievement, drop out, violence, rape, assault, increased level of mental distress, and sexually transmitted diseases including Acquired Immunodeficiency Syndrome (AIDS).^{19–22}

However, information is scarce regarding the prevalence of alcohol use disorders and its associated factors among Ethiopian University students. Thus, this study was attempted to generate information that helps for evidence-based intervention and further assists interested researchers in the topic area as baseline data for future studies.

Participants and Methods

Participants

The study was conducted at Jimma University, which is located 352 km southwest of the capital city of Ethiopia, Addis Ababa. Jimma University's main campus has four colleges ("College of Natural and Computational Science," "College of Medicine and Health Science," "College of Social Science and Humanity" and "College of Law and Governance"). A total of 31 departments and

6155 regular undergraduate students were enrolled on the main campus. Sampled regular undergraduate main campus students who were enrolled in the 2016/17 academic calendar were the study population. The study was conducted from April 1–20, 2016.

Materials

Measures

The questionnaire consists of five sections; demographic, alcohol use disorder, social support, mental distress, and risky sexual behaviors.

Demographics include gender, age, marital status, ethnicity, religion, academic year, colleges, and current living status.

Alcohol use disorder was measured by the alcohol use disorder identification test (AUDIT). The AUDIT was developed by the World Health Organization (WHO) as a simple method of screening for the excessive or pathological pattern of alcohol drinking and to assist in brief assessment, AUDIT is a screening instrument and not diagnostic interview.²³ The AUDIT has proven to be accurate in detecting pathological alcohol use in the University students.²⁴ The measurements of local alcoholic beverages were converted to milliliters based on previous studies.²⁵ Then, the measured amount of alcohol was converted to a standard drink after calculating the mass and volume of the alcohol. Beer, "draft" and wine (bottle/big/small) were converted to standard drinks based on their alcoholic content. Local drinks such as "Tella" (one of the Ethiopian traditional beverages, brewed from various grains and different cereals which includes; barely, corn, wheat, sorghum, maize, and Gesho (Rhamnus prinoid))^{26,27} "Areke" (a local colorless, traditional alcoholic beverage that is distilled from the fermentation of different grains)²⁶ and "Tej" (A local home processed, fermented alcoholic beverage, prepared from honey, sugar, water, and leaves of Gesho (Rhamnus prepoides)²⁶ were also considered as alcohol drinks in the study. A total AUDIT score of eight or more was used to define alcohol use disorders.^{25,28}

Oslo 3 items social support scale (OSS-3) was used to measure the level of social support, the scale has good psychometric properties. A score ranging between 3 and 8 is classified as poor social support, a score between 9 and 11 as intermediate (moderate) social support, and a score between 12 and 14 indicates strong social support.²⁹

Mental distress was measured by the Kessler-6 mental distress scale, cut-off points 5 or more was used to screen mental distress.³⁰

Substance use was measured by current alcohol use (when the respondents used alcohol in the last 3 months) and lifetime alcohol use (when the respondents used alcohol even once in their lifetime) additionally, family history of drinking alcohol considered if any of the respondent's family members (father, mother, brother or sister) drinks alcohol. History of mental illness assessed through a question, have you ever diagnosed with mental health problems?

Risky sexual behaviors (RSB) questions were developed by reviewing different literature in the topic area. RSB was considered if the respondents engaged in behaviors that include engaging in sexual activity from an early age, inconsistent use of condoms during sexual intercourse, having sex with commercial sex workers, and the tendency to have multiple sexual partners. An individual with at least one of these behaviors was considered to have risky sexual behavior.^{19,22,31}

Design

A quantitative cross-sectional study was conducted.

Procedures

Sampling

The sample size was calculated using the single population proportion formula. Cochran (1977) developed a formula to calculate a representative sample for proportions as $n_0 = \frac{Z^2 pq}{e^2}$ where n_0 is the sample size, z is the selected critical value of desired confidence level, p is the estimated proportion of alcohol use disorder 50%; to get the maximum sample size, $q = 1 - p$ and e is the desired level of precision $p = 0.5$. Hence, $q = 1 - 0.5 = 0.5$; $e = 0.05$; $z = 1.96$,³² therefore $n = \frac{(1.96)^2 * 0.5 (1 - 0.5)}{(0.05)^2} = 384$. Since the study design was a multistage sampling technique, the design effect of 2 was taken to multiply the calculated sample size. Finally, with the addition of 5% of contingency for non-response, the final sample size becomes 806.

Jimma University has three campuses ("Main campus", "Jimma Institute of Technology", "Business and economics campus"). The main campus was selected by the lottery method. Out of the total 31 departments in the four colleges, 18 departments were selected by using the lottery method. Then, the samples were further stratified proportionally by the number students in each department and year of study, finally, a total of 806 students were selected through a simple random sampling technique, taking the student registry list as a frame. [Figure 1](#)

Data

Data were collected through a structured, pretested, and self-administered questionnaire. The data collection process was supervised by three professionals with a bachelor of science degree in psychiatry nursing after 1 day of training on administration of the study instruments, consent form, and maintaining confidentiality. The questionnaire was developed in English and then translated into local languages Amharic and Afan Oromo then back-translation into the English language was undertaken by blinded experts of the languages, respectively. The pretest was conducted on 5% of the sample size in the college of Agriculture and veterinary medicine campus students 1 week before the actual data collection period. Based on the pretest, unclear and ambiguous questions were revised, edited, and those found to be unclear or confusing were modified. In this study, the AUDIT tool has 0.81 Cronbach's alpha scores. Moreover, the data collection process was closely followed by data collection supervisors.

Statistical Analysis

Data were entered into Epi data version 3.1 data entry software and exported to statistical package for social science (SPSS) version 20.0 for analysis. Bivariate and multivariate logistic regression analyses were done to determine the associated factors of AUD. First, each independent variable was entered into bivariate regression analysis; then, variables associated with the outcome variable were entered into a multivariable logistic regression to control the confounders. The degree of association between dependent and independent variables was assessed using the adjusted odds ratio with 95% CI. Moreover, the effect size was measured to determine the relationship between the outcome and explanatory variables.

Ethical Considerations

The study protocol was approved by the Institutional Review Board of Jimma University, Institute of Health (reference number IHRP/64/2016). The ethical review board of Jimma University also approved participants under the age of 18 years to be able to provide informed consent on their behalf. The letter of Permission was obtained from all relevant authorities of the colleges and sampled departments. The involvement of the study participants was voluntarily and participants were informed of the right to withdraw anytime from the study, moreover written informed consent was obtained

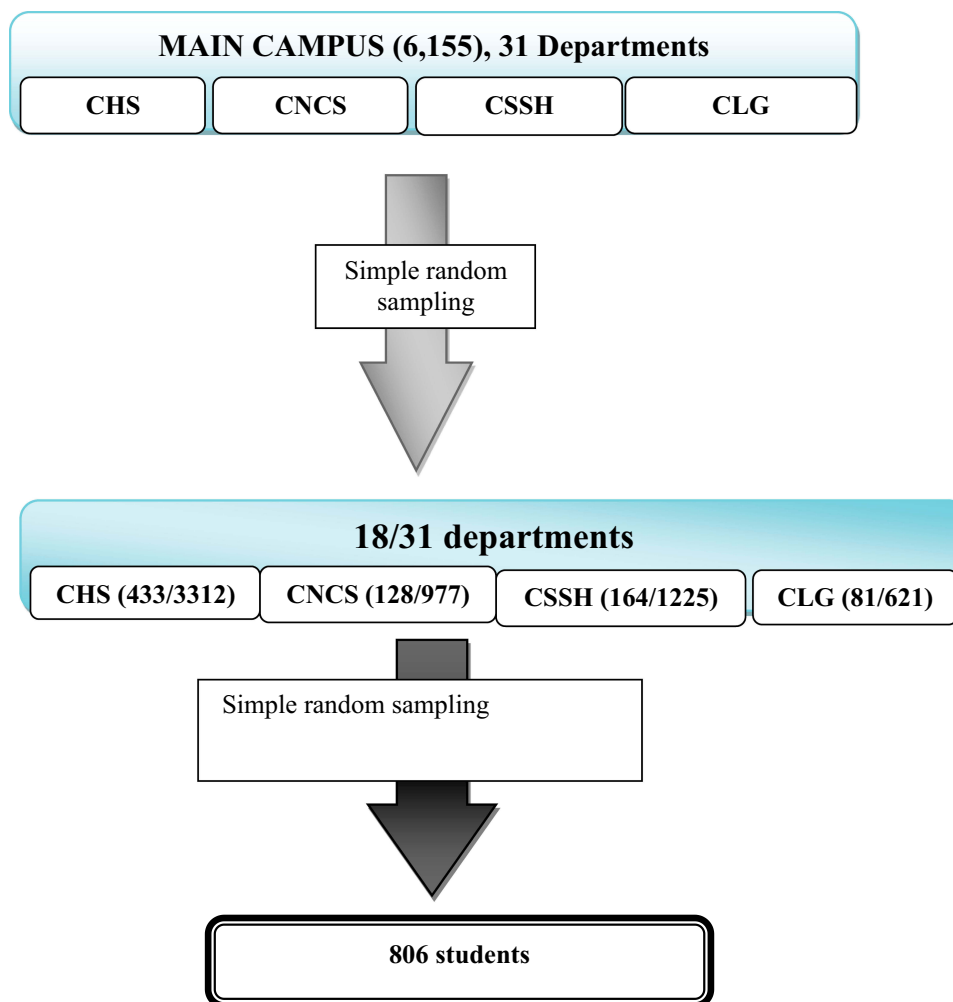


Figure 1 Schematic presentation of the sampling procedure, Jimma University's main campus students, May 2016. A total of 6155 regular undergraduate students were in the main campus. The main campus comprised, College of health science (CHS), college of natural and computational science (CNCS), college of social science and Humanities (CSSH) and the college of law and governance (CLG). Out of the total of 31 departments in four colleges in the campus, 18 departments were selected by using simple random sampling lottery method, accordingly 433 respondents from a total of 3312 students in CHS, 128 from 977 in CNCS, 164 from 1225 in CSSH and 81 from 621 in CLG included considering proportional allocation to the number of student in the college. Finally, simple random sampling method was used to get the final sample size of 806.

Abbreviations: CNCS, College of Natural and Computational Science; CMHS, College of Medicine and Health Science; CSSH, College of Social Science and Humanity; CLG, College of Law and Governance.

from every study participant before data collection. The students were not paid or received any credit for participating in the survey. The data collection was undertaken confidentially and responses were kept private and anonymous. The study was conducted as per the Helsinki declaration.

Result

Socio-Demographic Characteristics of the Participants

Out of 806 sampled participants, 741 of them returned the properly filled questionnaires, making a response rate of 91.93%.

Of the total participants (62.1%, $n = 460$) were male. The mean age of the respondents was 22.68. Most (56%, $n = 415$) of the study participants were orthodox Christian religion followers and belong to the Oromo ethnic groups (42.2%, $n = 313$). Almost all (91.9%, $n = 681$) of the study participants were living in a University dormitory. Out of the total participants, the majority (28.6%, $n = 212$) were first-year students and from the college of health science (55.2%, $n = 409$). See [Table 1](#) for more detail.

Reasons for Starting Alcohol Use

Out of the total participants with AUDs, the majority started drinking alcohol due to peer pressure (54.6%, $n = 107$), followed by to enhance social interaction/social

Table 1 Socio-Demographic, Economic and Family Alcohol Use Characteristics of Jimma University Main Campus Undergraduate Students, April 2016

Variables		n	%
Gender	Male	460	62.1
	Female	281	37.9
Age group	≤ 18	21	2.8
	19–24	550	74.2
	>24	170	22.9
Year	Year I	212	28.6
	Year II	209	28.2
	Year III	168	22.7
	Year IV	77	10.4
	Year V	54	7.3
	Year VI	21	2.8
Ethnicity	Oromo	313	42.2
	Amhara	211	28.5
	Gurage	95	12.8
	Tigre	87	11.7
	Others	35	4.7
Current living condition	In dormitory	681	91.9
	Out of dormitory	60	8.1
Religion	Orthodox	415	56.0
	Islam	125	16.9
	Protestant	161	21.7
	Catholic	31	4.2
	Others	9	1.2
Marital status	Single	538	72.6
	In relationship	170	22.9
	Married	33	4.5
Colleges	College of health science	409	55.2
	College of natural and computational science	118	15.9
	College of social science and humanity	150	20.2
	College of law and governance	64	8.6
Family alcohol use	Family history of drinking alcohol	186	25.1

Notes: Other ethnicities: Wolayta, Sidama, Kafa, Hadiya, and Silte. Other religions = Giova, Adventist, and Waqefata.

gathering (24.5%, n= 48) and easy availability of alcohol (11.7%, n= 23). A quarter of the study participants (25.1%, n= 186) had a family history of drinking alcohol. See [Table 2](#) for more detail.

Prevalence of Alcohol Uses Disorders

The prevalence of alcohol use disorder among Jimma University undergraduate students was (26.5%, n= 196).

Table 2 Reasons for Drinking Alcohol Among Participants Who Had AUDs, Jimma University Main Campus Undergraduate Students, April 2016

Reasons for Starting Alcohol Use	n	%
Easily available	23	11.7
Peer pressure	107	54.6
To enhance social interaction	48	24.5
To relief from tension	12	6.1
Other reasons	6	3.1

Notes: Other reasons: To increase confidence in front of others, for personal pleasure.

The prevalence of AUDs among males and females' students was (32.6%, n= 150), and (16.4%, n= 46) respectively. A total of (28.1%, n = 75) study participants who earned higher monthly pocket money (\geq 500 Ethiopian birr) had AUD. The prevalence of AUDs among the study participants who lived in the University dormitory and outside the campus was (25.4%, n = 173), and (38.3%, n = 23) respectively. Out of (32.5%, n= 242) study participants who had poor social support, (41.3%, n= 81) had AUDs. A total of (40.75%, n= 302) respondents were reported to have risky sexual behavior, of this (64.6%, n= 195) had AUD. See [Table 3](#) for more detail.

Associated Factors of Alcohol Use Disorder

In bivariate logistic regression analysis, gender, marital status, religion, living condition, social support, history of suicide attempt, history of mental illness, family history of alcohol drinking, presence of peer pressure to drink alcohol, frequency of chewing khat, cigarette smoking level of mental distress and risk of sexual behavior were found to be associated with alcohol use disorder. See [Table 3](#) for more detail.

After adjusting for the potential confounders, multivariate logistic regression analysis showed, being male was approximately two time more likely to have AUD than female counterpart AOR = 2.27, 95% CI [0.37, 3.76], likewise being in relationship was nearly twice increased having AUD than single counterpart AOR= 1.98, 95% CI [1.21, 3.22], similarly being married was nearly three time increased the risk of AUD than single counterpart AOR= 2.88, 95% CI [1.17, 7.09]. Additionally having history of mental illness nearly two times increased the risk of AUD than its counterpart AOR= 1.98, 95% CI [1.04, 3.75], likewise history of attempting suicide increased the odd of having AUD more than three and half times AOR= 3.63, 95% CI

Table 3 Bivariate Analysis of Factors Associated with AUDs Among Jimma University Main Campus Undergraduate Students, April 2016

Characteristics		Alcohol Use Disorder		p-value	COR	95% CI	
		No n (%)	Yes n (%)			Lower	Upper
Age	Less than or equal to 18	18(85.7)	3(14.3)		Reference		
	19–24	407(74.0)	143(25.0)	0.237	2.11	0.61	7.26
	Greater than 24	120(70.6)	50(29.4)	0.156	2.50	0.71	8.86
Gender	Male	310(67.4)	150(32.6)	<0.001	2.47	1.71	3.58
	Female	235(83.6)	46(16.4)		Reference		
Marital status	Single	427(79.4)	111(20.6)		Reference		
	In relationship	101(59.4)	69(40.6)	<0.001	2.63	1.81	3.81
	Married	13(59.1)	9(40.9)	<0.001	3.62	1.88	7.39
Religion	Orthodox	285(68.7)	130(31.3)		Reference		
	Islam	106(84.8)	19(15.2)	<0.001	0.39	0.23	0.67
	Protestant	130(80.7)	31(19.3)	0.004	0.52	0.36	0.84
	Catholic	20(64.5)	11(35.5)	0.631	1.21	0.56	2.59
	Other	4(44.4)	5(55.6)	0.138	2.74	0.72	10.37
Pocket money	Less than 100	34(73.9)	12(26.1)	0.779	0.90	0.44	1.84
	100–299	163(72.8)	61(27.2)	0.832	0.96	0.64	1.43
	300–499	156(76.5)	48(23.5)	0.265	0.79	0.52	1.19
	Greater than or equal to 500	192(71.9)	75(28.1)		Reference		
Living condition	In dormitory	508(74.6)	173(25.4)		Reference		
	Outside of campus	37(61.7)	23(38.3)	0.031	1.83	1.06	3.16
Social support	Poor	161(29.5)	81(41.3)	<0.001	2.30	0.65	1.45
	Intermediate	233(42.8)	82(41.8)	0.039	1.65	1.02	2.53
	Strong	151(27.7)	33(16.8)		Reference		
History of mental illness	Yes	38(57.8)	34(47.2)	<0.001	2.80	1.71	4.59
	No	507(75.8)	162(24.2)		Reference		
History of suicide attempt	Yes	12(37.5)	20(62.5)	<0.001	5.05	2.42	10.53
	No	533(75.2)	176(24.8)		Reference		
Family history of alcohol drinking	Yes	101(54.3)	85(45.7)	<0.001	3.37	3.34	4.80
	No	444(80)	111(20)		Reference		
Peer pressure to drink alcohol	Yes	156(55.5)	125(44.5)	<0.001	4.39	3.12	6.20
	No	398(86.5)	71(13.5)		Reference		
Frequency of chewing khat	Never	418(80.1)	104(19.9)		Reference		
	Weekly	80(67.2)	39(32.8)	0.003	1.96	1.26	3.04
	1–3 times per month	17(47.2)	19(52.8)	<0.001	4.49	2.26	8.94
	1–3 times per week	13(37.1)	22(62.9)	<0.001	6.80	3.31	13.95
	Daily	17(58.6)	12(41.4)	0.008	2.84	1.31	6.13
Cigarette smoking	Yes	11(19.0)	47(81.0)	<0.001	15.31	7.75	30.26
	No	534(78.2)	149(21.8)		Reference		
Mental distress	Yes	193(60.3)	127(39.7)	<0.001	3.36	2.39	4.72
	No	352(83.6)	69(16.4)		Reference		
Risk of sexual behavior	Yes	180(59.5)	122(40.5)	<0.001	0.29	0.21	0.42
	No	364(83.3)	73(16.7)		Reference		

[1.18, 11.11], similarly having peer pressure to drink alcohol increased the risk of AUD by approximately three times than its counterpart AOR= 2.72, 95% CI [1.76, 4.19], moreover chewing khat 1–3 times per week increased the odds of having AUD by nearly three times compared to the never chewed counterpart AOR= 2.82, 95% CI [1.16, 6.83], likewise cigarette smoking increased acquiring AUD by five times compared to the non-smoker counterpart AOR= 5.04, 95% CI [2.02, 12.57] and finally presence of mental distress increased having AUD by approximately three times than its counterpart AOR= 2.81, 95% CI [1.83, 4.32]. Moreover, the effect size association analysis showed; sex, marital status, history of mental illness, peer pressure to drink alcohol, chewing Khat 1–3 times a week and mental distress had medium effect size association with AUD ($OR \geq 1.44$ and < 4.27), whereas cigarette smoking had strong effect size association with AUD ($OR \geq 4.27$). See Table 4 for more detail.

Discussion

In this study, the prevalence of alcohol use disorder was 26.5%, the finding was supported by the study done in

Colombia university students, in which 20.5% of the respondents had harmful consumption and 14.9% were at risk of dependence,³³ likewise a study done in the USA showed 18% of US college students suffered from AUD.³⁴ Similar findings were also reported from the studies done in Wolaita University Students and Morocco high school students 8.5%,³⁵ however, the finding was by far lower than the studies done in Undergraduates at English Universities, in which 61% of the students had AUD³⁶ and Eldoret, western Kenya 51.9%.³⁷ The discrepancy could be due to the variation in the study tools to assess AUD and alcohol use regulation policy differences among the countries. Nevertheless, the study result was higher than the study done in Nigeria (4.3%).³⁸ Despite the similarity of the study population, the difference in the prevalence of AUDs between the studies may be due to the variation in the screening tools used in Nigeria (DSM-IV-TR) and for this study (AUDIT). AUDIT is a screening instrument and not a diagnostic interview. Moreover, the difference in alcohol drinking cultural perspective may also be the other reason for the discrepancy.

Table 4 Multivariate Logistic Regression Analysis of Factors Independently Associated Factors with AUDs Among, Jimma University Main Campus Undergraduate Students, April 2016

Characteristics		p-value	AOR	95% CI				
				Lower	Upper			
Gender	Male	0.001	2.27	1.37	3.76			
	Female		Reference					
	Single		Reference					
Marital status	In relationship	0.006	1.98	1.21	3.22			
	Married		2.88			1.17	7.09	
History of mental illness	Yes	0.038	1.98	1.04	3.75			
	No		Reference					
History of suicide attempt	Yes	0.024	3.63	1.18	11.11			
	No		Reference					
Peer pressure to drink alcohol	Yes	<0.001	2.72	1.76	4.19			
	No		Reference					
Frequency of chewing khat	Never	0.17	Reference	0.34	1.21			
	Weekly		0.64					
	1–3 times per month		0.022			2.82	1.16	6.83
	1–3 times per week		0.767			0.99	0.32	3.14
	Daily		0.249			1.80	0.66	4.91
Cigarette smoking	Yes	0.001	5.04	2.02	12.5			
	No		Reference					
Mental distress	Yes	<0.001	2.81	1.83	4.32			
	No		Reference					

The current research found that being male had a strong association with AUDs, which is in agreement with similar studies done in Nigeria,³⁸ South Africa,¹⁶ and general population surveys in 35 countries.³⁹ This could be because of the gender differences in drinking behavior linked with many aspects of biological differences, women's and men's differing needs, reasons and motivations about drinking, gender-specific roles in other areas of life and of ways in which societies regulate peoples' behavior, often giving women the role of warden or moderator of others' drinking.⁴⁰⁻⁴²

In this study, peer pressure to drink alcohol was found to be an independent predictor of an alcohol use disorder, which is similar to the study findings from Gondar University,⁴³ Nigeria University,³⁸ and Haramaya University.³¹ This might be due to the strongest influence of peer norms on students' drinking behavior, with the more socially integrated students typically drinking most heavily.⁴⁴ The other reason could be students tend to drink more alcohol during social gatherings in the virtue of social interaction.⁴⁵

In the current study, a high level of mental distress doubles the odds of having AUDs among university students, this is also in agreement with the studies done in Australia,² Amanuel mental specialized hospital,⁴⁶ and Haramaya University.³¹ This could be because alcohol use considered a coping mechanism against stress, anxiety, and depression, so it may take as a self-treatment to feel good.⁴⁷

In the present study, the finding revealed that having a history of diagnosed mental illness was an independent predictor for AUD. This is in agreement with the studies done in Debre Markos University,⁴⁸ Jimma University,⁴⁹ and Haramaya University.⁵⁰ The possible reason for these similarities could be because people with mental illnesses may indulge themselves in alcohol either to deal with their painful emotional disturbances or as a part of the psychopathology.⁵¹

This study revealed that students with khat chewing habit had nearly three times increased the odds of having AUDs compared to non-chewers, this is in line with the studies done in Jimma University²² Debre Markos University^{48,52} and Mekelle University.⁵³ This could be because of that most khat chewers drink alcohol after chewing to terminate the sustained stimulation effect of khat.

Conclusion

AUDs were high among Jimma University Student and positively associated with mental, behavioral, and substance-related factors. Therefore, concerted actions needed to emplace to increase the student's awareness of the effect

of harmful alcohol use. Moreover, it is recommended that further studies needed to be conducted to develop strategies for evidence-based interventions.

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Disclosure

The authors report no conflicts of interest in this work.

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