

# Alcohol Use Disorders and Its Associated Factors among Psychiatric Outpatients in Jimma University Specialized Hospital, Southwest Ethiopia

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## Abstract

**Background:** Worldwide, alcohol consumption caused 3.8 percent of all deaths and 4.5 percent of the total burden of disease in 2004. Alcohol use disorders (AUDs) are also a burden for individuals and society in Ethiopia. It is important to identify problematic alcohol use at an early stage, as this provides professionals with the opportunity to take preventive measures and, hence, reduce the problems caused by this consumption. The high prevalence of substance abuse problems among persons with psychiatric disorders calls for more effective alcohol and drug use assessment in psychiatric settings.

**Objectives:** To assess prevalence of alcohol use disorders and its associated factors among psychiatric outpatients in Jimma University specialized hospital (JUSH) Methods: A university hospital based cross-sectional study of 365 psychiatric outpatients was conducted from 1st to 15th August 2013 in Jimma zone, south-west Ethiopia. The data were collected by interviewing all psychiatric outpatients coming for treatment at JUSH by using structured questionnaire. An alcohol use disorder was assessed using Alcohol Use Disorders Identification Test (AUDIT). All variables associated with AUDs with a p value  $\leq 0.25$  were included in the final multivariable model.

**Results:** The estimated prevalence rate of AUD was 38.9%, with 23.3% hazardous drinking, 5.8% alcohol abuse and 9.8% alcohol dependence. In the final multiple logistic regression model AUD was significantly associated with Gender, Religion, Frequency of going to worship places and Cigarette smoking. Being female gender was less likely to develop AUD. Those who were orthodox religion followers, those who never went to the worship places and those who smoke cigarettes were more likely to have AUD.

**Conclusions:** The high prevalence of AUDs detected in our facility-based survey of psychiatric outpatients in Ethiopia implies the need to design effective screening tools and feasible interventions for AUDs.

**Abbreviations:** AOR: Adjusted Odds Ratios; AUDS: Alcohol Use Disorders; AUDIT: Alcohol Use Disorders Identification Test; CAGE: Cut-Down Annoyed Guilty Eye-Opener; COR: Crude Odds Ratios; JUSH: Jimma University Specialized Hospital; OPD: Outpatient Department; SPSS: Statistical Package for Social Sciences; USA: United States of America

## Introduction

Alcohol has followed mankind throughout the ages, ever since our ancient ancestors first began to evolve and continues to up to current times [1]. Alcohol is consumed by large proportions of adults in most countries around the world. Moderate use of alcohol is believed to be useful for some health aspects [2]. Alcohol abuse has harmful consequences to health and the social fabric and is responsible for a large number of avoidable deaths [3].

The high prevalence of substance abuse among persons with psychiatric disorders calls for more effective alcohol and drug use assessment in psychiatric settings. Twenty nine percent of persons with mental disorders have substance use disorders. This population figure is exceeded by prevalence estimates of substance abuse in mental health treatment settings, which range from one-third to one-half of all patients. These findings suggest that substance use assessment should be a critical component of an overall psychiatric evaluation [4-9]. It is important to identify problematic alcohol use at an early stage, as this provides professionals with the opportunity to take preventive measures and, hence, reduce the problems caused by this consumption [10]. Worldwide, alcohol caused 3.8 percent of all deaths (2.5 million) and 4.5 percent of the total burden of disease in 2004 [11]. Alcohol use disorders (AUDs) have a major impact on public health [12]. AUD was the third leading risk factor for premature deaths and disabilities

in the world [11]. It is estimated that about 76.3 million people have a diagnosable alcohol use disorders worldwide [13]. Alcohol is by definition causally related to more than 30 diseases where alcohol is included in the name and more than 200 diseases in which alcohol is part of a component cause [14].

Alcohol use and alcoholism are also high risk factors for suicide. Alcohol use has been found to be associated with 50% of suicides and to increase the risk of suicidal behavior for both alcoholic and non-alcoholic populations. [15, 16]. Studies of adolescent psychiatric patients and suicide attempters have found alcohol and drug abuse to be one of the major risk factors for suicide [17]. Drinking alcohol has been associated with risk of injury in many settings, including vehicle and cycling accidents, falls, fires, sports and recreational injuries, and violence [18].

The prevalence of AUDs is 2 to 3 times higher in psychiatric clinics than in the general population. AUDs can also impair treatment adherence, interact with medication effects, worsens the prognosis of mental illness and increases the frequency of admissions. Thus there

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is a great need for identifying comorbid AUDs in our psychiatric outpatient unit [4,19-22]. A study done in US found that 19.9% of the general population had one or more psychiatric disorders, but in those with alcohol abuse or dependence the figure rose to 36.6% [4]. The average alcohol-dependent person decreases his or her life span by 10 to 15 years [23].

The huge economic cost of Alcohol-related difficulties to developed societies (for example 150 billion dollars in the USA in 1995) has also been well described. Although the magnitude of the harmful and beneficial effects of alcohol has been well studied in the developed world; there are several reports that indicate that alcoholism is a major public health problem in developing countries. Alcohol imports and consumption have been on the rise in the countries of Africa, Asia and Latin America [24-28]. Although a number of traditionally brewed and modern alcoholic drinks are known to be consumed widely in Ethiopia, very few studies have attempted to describe the magnitude of alcohol consumption or dependence in the country [29,30].

Millions of people worldwide are affected by mental disorders in 2004, mental disorders accounted for 13% of the global burden of disease. The treatment gap for mental disorders is high all over the world. Between 76% and 85% of people in low and middle-income countries with severe mental disorders receive no treatment for their mental health conditions as well as for their comorbid substance abuse in general. Secondary prevention in earlier stages of drinking problems is virtually nonexistent in these countries [31-41]. There is a shortage of information related to AUDs and its associated factors among psychiatric outpatients. So, the current study is aimed to determine the prevalence of AUDs and to identify factors associated with AUDs among psychiatric outpatients in Jimma/ Ethiopia using the Alcohol Use Disorders Identification Test (AUDIT) as Screening instrument.

The objective of this study was to assess prevalence of alcohol use disorders and its associated factors among psychiatric outpatients in Jimma University specialized hospital. The results of this study may be used to design interventions based on the study findings with the aim of reducing the incidence of AUDs in psychiatric patients. It will also contribute data for policymakers, program planners, and healthcare providers to improve the quality of life of patients with mental illnesses.

## Methods and Study Subjects

### Settings

This cross-sectional study was conducted in Jimma University specialized hospital (JUSH) Psychiatry outpatient department (OPD) which is located in the south-western part of Ethiopia which is 355 km far from Addis Ababa. The study was conducted in August, 2013.

### Study design and sampling

A university hospital based cross-sectional study was conducted. As far as the knowledge of the researcher is concerned, there is no published study addressing alcohol use disorder in psychiatric outpatient treatment settings in Ethiopia. So, the sample size was determined using single population proportion formula with the assumption of 95% confidence level, 5% marginal error, 10% non-response rate and the proportion of AUDs to be 50%. The weekly patient load in the outpatient department of psychiatry clinic was 250. Therefore, to get the sample size of 385; we needed to collect the data for the duration of two weeks consecutively. All patients who met the inclusion criteria coming to JUSH psychiatry clinic during the data collection were included. All eligible adult attendees of the psychiatric

clinic at JUSH during the study period were invited consecutively to participate in the study.

### Instruments

Although the AUDIT was originally designed as an instrument for use in primary care settings, several recent studies have validated it in other health care and community contexts. A large number of alcohol screening instruments have been tested and validated in clinical settings over the years. Among these, Alcohol Use Disorders Identification Test (AUDIT) is a 10-item alcohol screening instrument and emphasizes the identification of alcohol use disorders in the last 12 months. It is developed by the World Health Organization that has been found most effective in identifying subjects with less severe drinking problem such as hazardous drinking, harmful drinking and alcohol dependence (sensitivity, 94.1%; specificity, 91.7%). AUDIT is very important to identify problematic alcohol use at an early stage as well as AUDs, as this provides professionals with the opportunity to take preventive measures and, hence, reduce the problems caused by this consumption. But CAGE is more effective in identifying AUDs. These 2 formal screening instruments consistently performed better than other methods, including quantity- frequency questions.

The AUDIT first three questions (1-3) explore quantity and frequency of alcohol consumption (Hazardous Alcohol Use), the second three questions (4-6) explore signs of alcohol dependency and the last four questions (7-10) explore Alcohol-related problems (harmful alcohol use). Each question has a response category that ranges from 0 to 4, with the first response for each question scoring 0 (never), the second scoring 1 (less than monthly), the third scoring 2 (monthly), the fourth scoring 3 (weekly), and the last response scoring 4 (daily or almost daily). For questions 9 and 10, which only have three responses, the scoring is 0, 2 and 4 (from left to right). To determine how many standard drinks of alcohol the patients took, question number two is modified to "Type of alcohol" and "Its amount". The response was converted to standard drinks.

In accordance with the recommended scoring, a total AUDIT score of eight or more was used to define probable „alcohol use disorder . A total AUDIT score of 1-7 indicated social drinking, a score of 8-15 indicated "hazardous drinking" a score of 16-19 indicated "harmful drinking" and a score of 20 or above indicated probable alcohol dependence. The total AUDIT score, alcohol consumption level, signs of dependence, and markers of present harm should all play a role in determining how to manage a patient with AUD [42].

The following variables were assessed as potential explanatory variables for AUDs

1. Demographic Factors: age, sex, religion, marital status
2. Socioeconomic factors: Income, Educational attainment, Employment status, Living arrangement
3. Family history of alcoholism
4. History of using substance other than alcohol: Cigarette smoking, Khat chewing, use of illicit drugs
5. Psychological factors: Stress, Decreased attendance at treatment, financial problems, fear to socialize
6. Psychiatric diagnosis
7. Family history of mental illness
8. Reasons for starting drinking alcohol: people who reported

drinking alcohol were asked about the main reasons for starting drinking. The following response categories were recorded: to perceive it as food/beverage, to enjoy its taste, to attract women, cultural reasons, to be happy, long standing life stressors, decreased attendance at treatment and to forget financial problems.

### Data collection

A structured questionnaire was prepared for data collection and data were collected by interviewing all psychiatric outpatients coming for treatment at JUSH and the patients' diagnosis was extracted from the chart. Five diploma level psychiatric nurses and five masters' level postgraduate students in mental health were the data collectors. Two supervisors who had bachelor degree in public health and the principal investigator participated in the supervision. Before the data collection, a two days training was given for the data collectors and one day training for the supervisors. The structured questionnaire was discussed in detail going through every question.

### Data quality assurance

In order to ensure quality of the data, data collectors and supervisors were trained. Data collection was carried out after the questionnaires were pretested on 5% of the total sample of psychiatric outpatients at Mizan Hospital which is 298 km away from Jimma town. The supervisor monitored data quality and checked all questionnaires for completeness. Incomplete and unclear questionnaires were returned to the data collectors for correction.

### Data Analysis

The collected data were cleaned, coded and fed to statistical package for social science (SPSS version 20). The outcome and explanatory variables were entered into a bivariate logistic regression analysis, one at a time, in order to estimate the strength of association using Odds Ratios (OR). All variables associated with AUDs in the bivariate logistic regression with a p-value  $\leq 0.25$  were entered together into a multivariate logistic regression by using forward stepwise selection in order to control for potential confounders. Only variables with p-value lower than 0.05 in the multivariate analysis remained in the final model.

### Ethical considerations

Ethical clearance was obtained from the Ethical Review Committee of Jimma University, College of Public Health and Medical Sciences. The study participants were free to enroll in the study and withdraw from it at any time. All the interviews with participants were made with strict privacy after getting informed consent from the participants and assuring confidentiality. Every information accessed in due course was confidentially kept. Patients with AUD were referred to mental health professional specialists and psychologists for further evaluation and management.

## Results

### Characteristics of study participants

A total of 385 psychiatric outpatients were approached for enrolment in the study. Of the total Study sample 365 agreed to participate resulting in a response rate of 94.8%. The majority 267 (73.2%) of the respondents were males, Oromo 214 (58.6%) by ethnicity and followers of Muslim religion 196 (53.7%) followed by Coptic Church followers 137(37.5%). The age of the respondents was mainly between 25-34 years 139 (38.1%). With regards to educational status majority 143 (39.2%) had one or more grades at primary school

and 211 (57.8%) reported mean family income of less than 1201 birr per month. At the time of the study, 180 (49.3%) of the respondents were married followed by singles 166 (45.5%) and 201 (55.1%) of the overall respondents were unemployed. The vast majority 315 (86.3%) of them were living with their family (Table 1).

### Prevalence of alcohol use disorders

Those who were drinking any of the available types of alcoholic beverage or any combination of them in the past year were 235 (64.4%) of the sample. Among the study participants (n=365) the estimated prevalence rate of AUDs was 38.9% (n=142), with 85 (23.3%) hazardous drinking, 21(5.8%) alcohol abuse and 36(9.8%) alcohol dependence. AUDs were reported by 45.3% males whereas only 21.4% of the females report AUDs. There were Study participants that were found in different Stages of drinking alcohol. These include, Non drinkers 130 (35.6%), Social drinkers 93(25.5%), hazardous drinkers 85(23.3 %), Alcohol abuse 21 (5.8%) and alcohol dependence 36 (9.8%) as shown in Figure 1.

### Illness related characteristics of study participants

From the total Study sample 249 (68.2%) were using substances other than alcohol. Those who were chewing Khat 235 (64.4%), smoking cigarettes 75 (20.5%) and using Shisha 5 (1.4%). Participants who had family history of Alcohol Dependence 68 (18.6%), family history of mental illness 60 (16.4%) (Table 2).

### Alcohol use disorder and comorbidities

Based on Jimma University hospital administration's patient records, the most common primary psychiatric diagnosis was schizophrenia 131 (35.9%), followed by major depressive disorder 104 (28.5%), other Psychiatric disorders mentioned were brief psychotic disorder, Postpartum psychosis, schizoaffective disorder, depressive disorder not otherwise specified\_ totally accounting for 77 (21.1%), bipolar I disorder 45 (12.3%), and anxiety disorders 30 (8.2%). From those having schizophrenia the prevalence was 56 (42.7%), Among those having other

Psychiatric disorders the prevalence of AUD was 31 (40.3%), From those having Anxiety disorders the prevalence of AUD was 12 (40.0%), From those having major depressive disorder the prevalence was 41(39.4 %). Among those having bipolar I disorder the prevalence of AUD was 16 (35.6%).

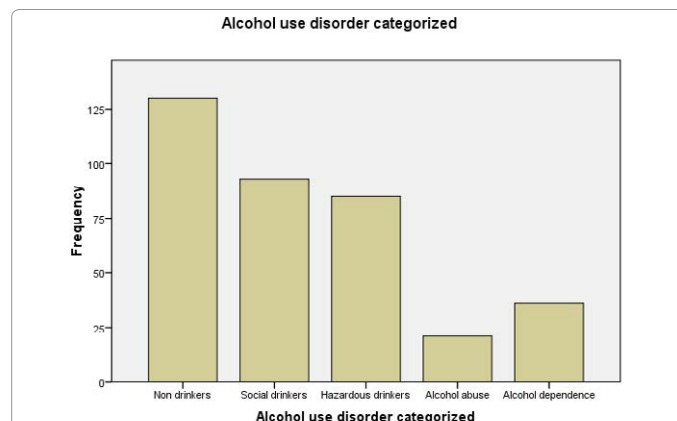


Figure 1: Alcohol use disorders according to their degree (level) of severity based on AUDIT scores, Jimma University specialized hospital, Jimma town, Southwest Ethiopia, 2013.

Variables	Category	N (%)
Gender	Male	267(73.2)
	Female	98(26.8)
Age in years	18-24	85(23.3)
	25-34	139(38.1)
	35-44	89(24.4)
	45-70	52(14.2)
Ethnicity	Oromo	214(58.6)
	Amhara	67(18.4)
	Guragie	32(8.8)
	Others	52(14.2)
Religion	Orthodox	137(37.5)
	Muslim	196(53.7)
	Others	32(8.8)
Frequency of going To worship place	Never	37(10.1)
	Sometimes	220(60.3)
	Frequently	107(29.3)
Educational status	Illiterate	56(15.3)
	Primary	143(39.2)
	Secondary	103(28.2)
	College/University	63(17.3)
Occupation	Unemployed	201(55.1)
	Gov't Employed	74(20.3)
	Others	90(24.7)
Mean Family monthly income	≤1201 Birr	211(63.6)
	>1201 Birr	121(36.4)
Marital status	Single	166(45.5)
	Married	180(49.3)
	Others	19(5.2)
Living arrangement	Alone	34(9.3)
	With family	315(86.3)
	With relatives	16(4.4)

**Table 1:** Socio Demographic Characteristics of psychiatric outpatients of Jimma University Specialized Hospital in August 2013 (n = 365).

Variables	Category	N (%)
Use of substances other than alcohol	No	116 (31.8)
	Yes	249 (68.2)
Khat chewing	No	130 (35.6)
	Yes	235 (64.4)
Cigarette Smoking	No	290 (79.5)
	Yes	75 (20.5)
Using Shisha	No	360 (98.6)
	Yes	5 (1.4)
Family history of Alcoholism	No	297 (81.4)
	Yes	68 (18.6)
Family history of mental illness	No	305 (83.6)
	Yes	60 (16.4)

**Table 2:** Illness related characteristics of Study participants, Jimma University specialized hospital, Jimma town, Southwest Ethiopia, 2013.



## Reasons for starting drinking alcohol

In the current study among patients aged 18 and above 164 (69.8%) of the drinkers stated that they drank because of cultural reasons. other reasons mentioned were peer pressure, to be happy, spending of time totally accounting for 83 (35.3%). 73 (31.1%) of them reported that they drank to forget financial problems (Table 3).

## Factors associated with alcohol use disorder

AUDs were present in 21.4% (n = 21) of females and 45.3 % (n = 121) of males (crude odds ratio (COR) 0.329, 95% CI =0.192 to 0.564). Females were less often identified as hazardous drinkers compared to males (17.3% (n = 17) vs. 25.5% (n = 68), p = 0.001). Females were also less likely to be dependent on alcohol than males (1.02% (n = 1) vs. 13.1% (n = 35), p = 0.001).Orthodox Christians had five times increased odds of having AUDs compared to Muslims (COR = 4.726, 95% CI =2.944-7.589). Patients who were living alone were more than three times increased odds of AUD compared to those patients who were living with their family (COR 3.232, 95% CI = 1.542, 6.775). Patients who had family history of alcoholism were three times increased odds of AUD compared to those patients who did not have family history of alcoholism (COR 2.947, 95% CI = 1.714, 5.066). There was no association between AUDs and shisha use, living arrangement, ethnicity, educational status, occupation, marital status, family monthly income and family history of alcoholism (Table 4).

After adjusting for potential confounders using forward stepwise multiple logistic regression, being female sex was negatively associated with AUDs when compared to male sex (Adjusted OR (AOR) 0.4, 95%CI= 0.208, 0.721). The odds of individuals who were Orthodox Christians to have AUD was 6.2 times higher when compared to Muslim religion followers (AOR 6.2, 95%CI= 3.574, 10.738) .Ethnicity was not associated with AUDs in the final model. The odds of having an AUD among smokers was more than six times higher when compared to non-smokers (AOR 6.0, 95% CI= 3.128, 11.545). The odds of having AUDs among individuals who did not go to the worship places was 2.9 times higher as compared to those sometimes going to worship places (AOR 2.9, 95%CI= 1.198, 7.167) (Table 5).

## Discussions

### Prevalence of alcohol use disorders

In our current study the overall prevalence of AUDs (38.9%), defined by an AUDIT score  $\geq 8$ , was substantially higher than that found in community-based studies carried out in Addis Ababa and Butajira, Ethiopia (2.7% and 3.7%, respectively) [39,40]. A South African study conducted in primary care clinic showed an AUDs prevalence of 17.6 % [37]. A population based study conducted in Thailand and Singapore the prevalence of AUDs was 10.9% and 3.6% respectively [34,35]. This may be due to the difference between tools used in this study (AUDIT vs. CAGE), as the CAGE is designed to detect more severe AUDs and the difference in the study community. However, the prevalence of AUDs found in this study was almost similar to estimates from the study conducted in a psychiatric hospital in Switzerland, using AUDIT score cut off of 8, showed that the frequency of alcohol use disorder was 35.1% [33] and a cross sectional study done on alcohol use disorders and associated factors among people living with HIV who are attending services in southwest Ethiopia the prevalence of alcohol use disorders was 32.6% [43].

The prevalence of alcohol dependence found in our study was higher than the result from a review of problem drinking in Ethiopia

(1.0%) [39] and a population based study conducted in Singapore (0.5%) [35] and lower than a study done in male sex workers in Kenya (21%) [44].The prevalence was in agreement with a study done on patients attending primary health care units in Uganda (9.5%) [38] and a population based study done in Thailand (6.6%) [34]. The reason for this difference may be due to the difference in the tools used to screen AUDs (AUDIT vs. CAGE) and the differences in culture of the study community.

The prevalence of alcohol abuse in our study was lower than a review of measures of drinking Frequency in Kenya (15%) [44]. However, in our current study, alcohol abuse (harmful alcohol use) was found in 5.8% of the total participants, which is almost consistent with a population based study carried out in Thailand and Singapore in which the prevalence was 4.2% and 3.1% respectively [34,35]. This discrepancy might have arisen due to the difference between study populations.

In this study, hazardous alcohol drinking was found in 23.3% of participants. This is lower than the prevalence of hazardous drinking found in study from Kenya (35%) [44].The reason for this difference may be due to the differences in culture of the study participants.

### Factors associated with alcohol use disorders

In the present study AUDs was reported by 45.3% males whereas only 21.4% of their female counterparts report AUDs. This is in line with a similar research done on outpatient psychiatric services of Adult Psychiatry Clinic in Langley Porter Hospital, USA; heavy episodic drinking in the past year was reported by 47.5% of men and 32.5% of women [32] and a similar study conducted in Switzerland, AUDs was reported by 48.9% of men and 25.6% of women [33]. In this study alcohol abuse was reported by 6.74% of males and 3.06% of females. However, a population-based study in the urban area of Campinas, Southeastern Brazil the estimated prevalence of alcohol abuse to be 13.1% in men and 4.1% in women respectively [36]. The difference in the results could be due partly to differences in culture of the study community. Being female gender was 0.4 times less likely having AUD as compared to males (AOR=0.4, 95% CI: 0.208, 0.721). This finding was similar with the Study conducted in Ethiopia, Kenya and USA [39&43, 41, 32]. Individuals who had orthodox Christian religion were the odds of developing AUDs is 6.2 times higher when compared to Muslim religion followers (AOR=6.2, 95%CI: 3.574, 10.738). This result is consistent with a population based study done in Butajira, Ethiopia [40].

Those participants who did not go to the worship places were the odds of having AUDs is 2.9 times higher when compared to those going sometimes to worship places (AOR=2.9, 95%CI: 1.198, 7.167). This result is in line with a study conducted in southeastern Brazil and

Reasons	N (%)
To perceive it as food/beverage	10 (4.3)
To enjoy its taste	36 (15.3)
To attract women	7 (3)
Cultural reasons	164 (69.8)
Decreased attendance at treatment	8 (3.4)
To alleviate fear to socialize	18 (7.7)
To forget Financial problems	73 (31.1)
Due to long standing life stressors	23 (9.8)
Others	83 (35.3)

**Table 3:** Reasons for Starting drinking alcohol, Jimma University specialized hospital, Jimma Town, Southwest Ethiopia, 2013.

Variables	No AUD N (%)	AUDs N (%)	P- value	Crude OR	95% CI
Sex					
Male	146(54.7)	121(45.3)		1.00	
Female	77(78.6)	21(21.4)	0.001*	0.329	0.192 ,0.564
Ethnicity					
Oromo	156(72.9)	58(27.1)		1.00	
Amhara	25(37.3)	42(62.7)	0.001*	4.519	2.531 , 8.067
Guragie	16(50)	16(50)	0.010*	2.690	1.263 ,5.726
Others	26(50)	26(50)	0.002*	2.690	1.445 , 5.008
Religion					
Orthodox	55(40.2)	82(59.8)	0.001*	4.726	2.944 , 7.589
Muslim	149(76.0)	47(24.0)		1.00	
Others	19(59.4)	13(40.6)	0.051*	2.169	0.996 , 4.722
Frequency of going to worship places					
Never	13(35.1)	24(64.9)	0.004*	2.932	1.417 , 6.069
Sometimes	135(61.4)	85(38.6)		1.00	
Frequently	75(70.1)	32(29.9)	0.123*	0.678	0.413 , 1.112
Educational status					
Illiterate	45(80.4)	11(19.6)	0.068*	0.499	0.237 , 1.053
Primary	96(67.1)	47(32.9)		1.00	
Secondary	53(51.5)	50(48.5)	0.014*	1.927	1.145 , 3.243
College/University	29(46.0)	34(54.0)	0.005*	2.395	1.306 , 4.390
Occupation					
Unemployed	131(65.2)	70(34.8)		1.00	
Gov't Employed	31(41.9)	43(58.1)	0.001*	2.596	1.505 , 4.479
Others	61(67.8)	29(32.2)	0.665	0.890	0.524 , 1.510
Family monthly income					
≤1201 Birr	135(64.0)	76(36.0)	0.034*	1.00	
>1201 Birr	63(52.1)	58(47.9)		1.635	1.038,2.575
Marital Status					
Single	96(57.8)	70(42.2)	0.249*	1.290	0.837,1.989
Married	115(63.9)	65(36.1)		1.00	
Others	12(63.2)	7(36.8)	0.950	1.032	0.387,2.751
Living arrangement					
Alone	12(35.3)	22(64.7)	0.002*	3.232	1.542 , 6.775
With family	201(63.8)	114(36.2)		1.00	
With relatives	10(62.5)	6(37.5)	0.915	1.058	0.375 , 2.987
Use of substances other than alcohol					
No	80(69.0)	36(31.0)	0.036*	0.607	0.381 , 0.968
Yes	143(57.4)	106(42.6)		1.00	
Cigarette Smoking					
No	204(70.3)	86(29.7)		1.00	
Yes	19(25.3)	56(74.7)	0.001*	6.991	3.992 , 12.464
Using Shisha					
No	222(61.7)	138(38.3)		1.00	
Yes	1(20.0)	4(80.0)	0.097*	6.435	0.712 , 58.166
Family history of Alcoholism					
No	196(66.0)	101(34.0)		1.00	
Yes	27(39.7)	41(60.3)	0.001*	2.947	1.714 , 5.066

NB: - \* P value ≤ 0.25 was considered as candidates for the multivariate analysis

**Table 4:** Bivariate analysis of association of independent variables and AUDs, among psychiatric outpatients in Jimma University specialized hospital, Jimma Town, Southwest Ethiopia, 2013.

Variables	N	P- value	Adjusted or	95% CI
Gender				
Male	267		1.00	
Female	98	0.003*	0.387	0.208, 0.721
Religion				
Orthodox	137	0.001*	6.195	3.574, 10.738
Muslim	196		1.00	
Others	32	0.133	1.997	0.810, 4.923
Frequency of going to worship places				
Never	37	0.019*	2.930	1.198 , 7.167
Sometimes	220		1.00	
Frequently	107	0.387	0.779	0.442 , 1.372
Cigarette Smoking				
No	290		1.00	
Yes	75	0.001*	6.010	3.128 , 11.545

NB: - \* P value < 0.05 in the multivariate analysis is declared as significant.

**Table 5:** Association of independent variables and AUDs according to multivariate logistic regression Analysis, among psychiatric outpatients in Jimma University specialized hospital, Jimma Town, Southwest Ethiopia, 2013.

South Africa [36,37].

### Alcohol use disorders and comorbidities

In the current study the most common primary psychiatric diagnosis was schizophrenia 35.9% followed by major depressive disorder 28.5%. In this study schizophrenia was found to be the most common comorbid disorder with AUDs among primary psychiatric disorders whereas the least comorbid disorder was Bipolar I disorder. But in the study done in USA the most common primary psychiatric diagnosis was major depressive disorder 48.4% followed by bipolar I disorder 14.8% [32]. The difference in the results may be due to differences in knowledge of mental health professionals.

### Illness related characteristics of study participants

Those who were smoking cigarettes were the odds of developing AUDs is 6.0 times higher as compared to non-smokers (AOR=6.0, 95% CI: 3.128, 11.545). This result was in agreement with the studies done in different countries [32,40,43].

### Potential limitations

This study used AUDIT to determine the presence of probable AUD. AUDIT is a screening tool and may not give an accurate estimate of alcohol use disorders. The absence of a validated cut-off point for persons living with mental illness is a further limitation. The prevalence rates were subjected to recall biases. Social desirability bias could be an important limitation as persons who use alcohol and other substances tend to under-report or deny their use when questionnaires are administered by interviewers. Even-though we went to extensive efforts to adapt the concept of a „standard drink“ to the Ethiopian setting, the absence of a policy defining the standard alcohol drink in Ethiopia was a limitation.

### Based on the findings of this study, the following conclusions were made

The high prevalence of alcohol use disorders found in this study

of psychiatric outpatients in Ethiopia implies a need to improve detection and treatment of alcohol use disorders. Our study indicates that AUDs goes along with use of other substances, which are likely to have cumulative effects on prognosis and quality of life in persons with mental illness.

### Authors' contributions

YZ contributed to the design, conduct and analyses of the research and in the manuscript preparation. AN contributed to the design, conduct and analyses of the research and in the review of the manuscript. GTF contributed to the design, conduct and analyses of the research and in the review of the manuscript. WK contributed to the design, conduct and analyses of the research and in the review of the manuscript. All authors read and approved the manuscript.

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### Competing Interests

The authors declare that they have no competing interests.

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