Prevalence of Alcohol Use Disorders and Associated Factors among Ambo Town Community, Central Ethiopia: A Community Based Cross-Sectional Study

Adamu Birhanu[*] **and Mulugeta Mekuria**

Department of Public Health, Ambo University, Ethiopia

[*]**Corresponding author:** Adamu Birhanu, Department of Public Health, Ambo University, Ethiopia, Tel: +25194751301815; E-mail: adamubirhanu@gmail.com

Abstract

Background: Around two billion people consume alcoholic beverages regularly and over 76 million people suffer from Alcohol use disorders globally. Worldwide, alcohol caused 3.8 percent of all deaths (2.5 million) and 4.5 percent of the total burden of disease in 2004.

Methodology: A community based cross-sectional quantitative study was conducted among people living in Ambo town using a pretested standardized tool. A representative sample of 422 people aged 18 and above were involved into the study. Simple random sampling technique was applied to select the study participants.

Result: Twenty seven per cent of the study participants had developed alcohol use disorder (13.1% were categorized as hazardous drinkers, 6.5% were harmful drinker and 7.4% were alcohol dependent).

The study revealed that the prevalence of alcohol use disorder among study participants were high when compared to previous study. Religion, education status and age of the study participants were the socio-demographic characteristics that found to show significant association with AUDs.

Conclusion: This study revealed that the prevalence of alcohol use disorder were high when compared to previous study. Religion, education status and age of the study participants were the socio-demographic characteristics that found to show significant association with AUDs. Unlike the finding of the other studies done in different part of the world; in this study sex and marital status did not show association with alcohol used disorder.

Keywords: Alcohol use disorders; Ethiopia; Drinkers

Background

Alcohol is defined as product known as ethyl product, rectified either once or more often, whatever the origin, and shall include synthetic ethyl alcohol, but shall not include methyl alcohol and alcohol completely denatured in accordance with the prescribed formulas. Even though Alcohol is legal and socially acceptable in most countries in the world and is also the most used drug worldwide; 320, 000 young people aged 15-29 years die annually, from alcohol-related causes, resulting in 9% of all deaths in that age group globally. 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 [1-5].

Even though majority of people drink alcohol in moderate amounts which can actually lead to positive health outcomes [6], global burden of disease related to alcohol consumption is higher than that of cigarette smoking. It is mainly because unwise alcohol consumption is not associated only with long-term health effects but rather with acute consequences such as car crashes, drowning or freezing. Such negative outcomes lead to premature deaths and disability especially among young people [7]. Excess drinking is also associated with reduced productivity, crime, violence or personality deterioration. In general, benefits from production and sale of alcoholic beverages cannot

outweigh the costs associated with negative health-related outcomes and socioeconomic consequences. Prevalence estimates range from 4% to 29% for hazardous drinking and from less than 1% to 10% for harmful drinking globally. Lifetime prevalence of alcohol dependence is more than 40% among those who initiated drinking at the age of 14 years or earlier but decreases rapidly with increasing age of initiation [6,8]. Individuals who started drinking after the age of twenty, have only 10% probability to become alcoholics or abuse alcohol later in their life. At the same time, there is observable pattern of early start with drinking as well as increase in frequency of binge drinking among adolescents [6-10].

Around two billion people worldwide consume alcoholic beverages regularly and over 76 million people suffer from AUD. According to the World Health Organization, alcohol emerges as the third largest risk factor for premature mortality, disability and loss of health and 3.8% all death as well as 4.5% total burden of disease in 2004. 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 Alcohol use and alcoholism are also high risk factors for suicide which associated with 50% of suicide and increase the suicidal behavior for both alcoholic and non-alcoholic populations [11-13].

A large number of traffic and work-related accidents and violence, including child abuse and domestic violence, are attributed to excessive

alcohol intake. It is estimated 6% to 15% of the population seeking primary health care have alcohol abuse or dependence. This prevalence increases up to 61% among patients seeking specialized clinics or hospitals. However, physicians only detect alcohol abuse in one third of the patients with this condition [14-16].

Apart from being a drug of dependence, alcohol is a cause of some 30 different types of diseases and conditions, including injuries, mental and behavioral disorders, gastrointestinal conditions, cancers, cardiovascular diseases, immunological disorders, lung diseases, skeletal and muscular diseases, reproductive disorders and pre-natal harm, including an increased risk of prematurity and low birth weight. AUD was the third leading risk factor for premature deaths and disabilities in the world. It is estimated that about 76.3 million people have a diagnosable alcohol use disorders worldwide. 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. Studies of adolescent psychiatric patients and suicide attempters have found alcohol and drug abuse to be one of the major risk factors for suicide. 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. 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 [17-22].

This study is focused on alcohol related disorders because it is regarded as "gateway substance" as its use often leads to the use of more addictive drugs such as marijuana, cocaine and heroin which can cause several physical, psychological and social problems. In addition, there is no similar study conducted among Ambo town community. Very limited studies were done in Ethiopia and no study in Ambo.

Therefore, finding of this study will enable the concerned body to reduce the likelihood of the Community in advancing to use more addictive substances and physical and socioeconomic problems occurs due to alcohol related disorders.

Materials and Methods

A community based cross-sectional study quantitative was conducted in Ambo town, which is located in the western direction far 114 km from Addis Ababa capital of Ethiopia from January to February 2017. The town is administratively divided into 3 kebeles and 10 zones with the total population of 67,514 among which 33,238 are females. Kebele by meaning is an administrative structure which at least comprise of 200 household.

Sampling and sampling technique

The 442-sample size was calculated using single population proportion formula with the assumption of 95% confidence level, 5% marginal error, 10% nonresponsive rate and 50% proportion of AUD since there is no published community-based study addressing alcohol use disorder in Ethiopia particularly at the study area. The sample size was allocated to each kebele proportionally based on the number of households in each kebele and list of households in each kebele was obtained from health extension workers, and simple random sampling technique (lottery method) was applied to get the household included in the study.

Data collection

A10-item Alcohol Disorder Identification Test (AUDIT) tool which was developed by the World Health Organization as an effective screening instrument for alcohol use problems was used (11). 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. AUDIT comprises ten questions addressing four areas: 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 which were summed to give overall scores ranging from 0-40 points. " 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. AUDIT score of eight or more was used as a cut of point to define probable alcohol use disorder.

Data analysis

The collected data were entered, checked, cleaned and statistical analyzed using SPSS version 20. Descriptive analysis: proportions, means and standard deviations were performed in order to obtain descriptive statistics.

The results were presented in form of tables and charts. Bi-variate and multi-variate analysis was also performed in order to examine associations between the independent variables and alcohol use disorder. Measures of association were considered statistically significant at P- value less than or equal to 0.05 as cut off point and odds ratios (OR) were obtained using logistic regression. In both Bi-variate and multi-variate analysis the first variable with largest frequency was taken as the constant. Adjusted OR and CI were calculated for multiple logistic regression models and the likelihood ratio test was used for assessing statistical significance between Socio-demographic characteristics and alcohol use disorder.

Results

Socio-demographic characteristics

Out of the total 442 study participants 382 respondents were complete the questionnaire and considered for analysis making the response rate 90.5%. From the total 382 respondents who completed the questionnaire, 271 (70.9%) aged from 18 to 34 years with a mean age of 31.50 (SD = 9.79 years). The majority of the respondents 282 (73.8%) were male while 179(46.9%) were protestant and 199 (52.1%) were married. Two hundred thirty seven (62.0%) had certificate and above, and 112 (29.3%) get a monthly income of 3500-5999 Ethiopian birr (Table 1).

Variables	Frequency (N)	Percentage (%)
Sex		
Male	282	73.8
Female	100	26.2
Age		
18-34	271	70.9

35-49	83	21.7
>=50	28	7.3
Religion		
Protestant	179	46.9
Orthodox	139	36.4
Musilim	32	8.4
Others	32	8.4
Marital status		
Married	199	52.1
Single	165	43.2
Divorced	12	3.1
Widowed	6	1.6
Monthly income		
1500-3499	112	29.3
500-1499	107	28
< 500	79	20.7
3500-5999	71	18.6
≥ 600	13	3.4
Educational level		
Certificate and above	237	62
Grade 9-12	62	16.2
Grade 1-8	38	9.9
can read and write	23	6
cannot read and write	22	5.8
Pattern of alcohol use among family members		
Others (aunt, uncle, etc)	142	37.2
More than one family member	67	17.5
None of the family members	54	14.1
Husband	42	11
Brother	33	8.6
Wife	26	6.8
Sister	18	4.7
Total	382	100

Table 1: Socio-demographic characteristics of Ambo town community, Central Ethiopia, 2016.

Pattern of substance use and reason to start to drink alcohol

In this study the overall prevalence of alcohol use was 170(45.5%). Among those who reported to drink alcohol, the majority 188(49.2%) used more than one type of alcohol followed by only beer 80 (20.9. %) and 15 (3.9%) used wine. The reason mentioned by the study participants to start drinking alcohol were 83(21.7%) due to peer pressure, 77(20.2%) due to family history of substance use, 12(3.1%) due to more than one reason and 9(2.4%) were influence of the media.

Regarding others psychoactive substance utilization, 31(8.1%) consumed cigarette, 17(4.5%) used khat and 160 (41.9%) used other substance (Table 2).

Variables	Frequency	Percentage
Ever use of alcohol		
Yes	170	44.5
No	212	55.5
Types of alcohol used		
Beer	80	20.9
Wine	15	3.9
Whisky	3	0.8
More than one drink	188	49.2
Others (Areke, tela etc)	29	7.6
None	67	17.5
Other psychoactive substance		
Cigarette	31	8.1
Khat	17	4.5
Marjuawana	5	1.3
More than one substance	17	4.5
Others	160	41.9
None	152	39.8
Reason of to start alcohol		
Peer pressure	83	21.7
Family history of sub use	77	20.2
Influence of media	9	2.4
More than one reason	12	3.1
No reason	201	52.6
Total	382	100

Table 2: Patterns of substance use and reason to start drinking alcohol among Ambo town community, West Shoa Zone, Central Ethiopia, 2016.

Prevalence of alcohol use disorders

From the total study participants 212(55.5%) were non- drinkers, 67(17.5%) were social drinker and 103 (27%) had AUD. Among the study participants who had AUD, 50(13.1%) were hazardous drinkers, 25(6.5%) were harmful drinker and 28(7.4%) were alcohol dependent. AUDs were present in 20(5.2%) of females and 83(21.7 %) of males.

Those who were Orthodox Christianity followers showed high prevalence of hazardous 32(8.4%), harm full drinking 13 (3.4%) and alcohol dependency 16 (4.2%) compared to other religion followers. Those who earned monthly income of 500-1499 birr had high percentage in hazardous drinking 16(4.2%), harmful drinking 9(2.4%) and Alcohol dependency 12(3.1%). Regarding educational status, study participants who had certificate and above showed high prevalence of both hazardous and harmful drinking while those who attended grad 9-12 showed high prevalence of alcohol dependency (Figure 1).

Figure 1: Prevalence of alcohol use disorder among the Ambo town community, central Ethiopia, 2016.
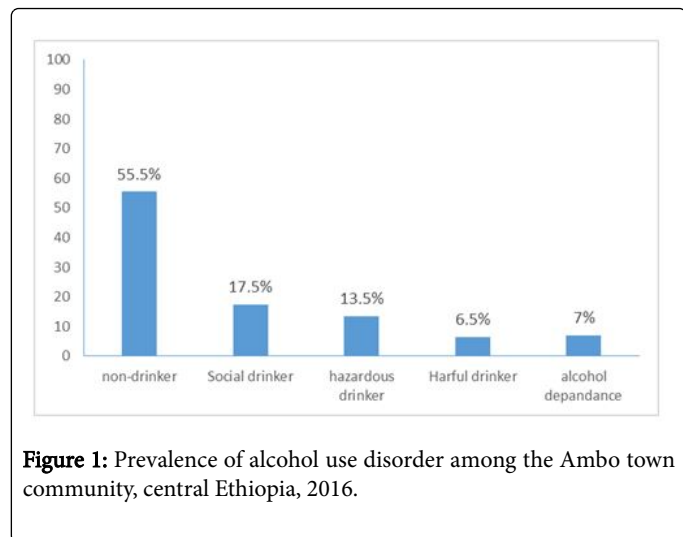
Factors associated with alcohol use disorders

All socio demographic variables that showed significant association (value=0.05) with alcohol use disorder in binary logistic regression entered into multiple logistic regression models to control potential confounders. The socio demographic variables: age, religion and educational status were showed statistically significant association with alcohol use disorder Accordingly, being in the age of 50 and above years 5 times more likely to developed alcohol use disorder when compared to those found between age of 18-34 years (AOR=5.281, 95%CI= 1.924-4.494). This shows as the age increase the probability of developing alcohol use disorder will increase. The odds of study participant who were Orthodox Christian(AOR=4.608,95% of CI =2.516-8.439), Muslim (AOR=2.652, 95% of CI =1.41-6.704), others religion followers(AOR=3.999,95% of CI =1.589-10.064) were 4.608, 2.652 and 3.999 times more likely to develop alcohol use disorders when compared to protestant Religion followers. Regarding to the association between educational status and AUD, those who attended from grade 9-12 are 2 times risky to develop AUD when compared to those who had certificate and above with AOR=2.189,95% of CI=1.093-4.388). However, there was no association between AUDs and, monthly income in the final model (Tables 3 and 4).

Variables	Not drinking (No)%	Social drinking (No)%	Hazardous drinking (N)%	Harm full drinking (No)%	Alcohol dependency (No)%
Age					
18-34	168 (44.0)	41(10.7)	27(7.1)	21(5.5)	143.70%
35-49	37(9.7)	23(6.0)	14(3.7)	3(0.8)	6(1.6)
≥ 50	7(1.8)	3(0.8)	9(2.4)	1 (0.3)	8(2.1)
Sex					
Male	148 (38.7)	51 (13.4)	37 (9.7)	23 (6.0)	23 (6.0)
Female	64(16.8)	16 (4.2)	13 (3.4)	2 (0.5)	5 (1.3)
Religion					
Orthodox	36 (9.4)	42 (11.0)	32 (8.4)	13 (3.4)	16 (4.2)
Muslim	20 (5.2)	3(0.8)	2(0.5)	5(1.3)	2 (0.5)
Protestant	147(38.5)	9 (2.4)	11 (2.9)	4 (1.0)	8 (2.1)
Others	9 (2.4)	13(3.4)	5 (1.3)	3 (0.8)	2(0.5)
Marital status					
Single	103(27.0)	16(4.2)	18(4.7)	18(4.7)	10(2.6)
Married	99(25.9)	48(12.6)	29(7.6)	5(1.3)	18(4.7)
Divorced	6(1.6)	2(0.5)	3(0.8)	1(0.3)	-
Widowed	4(1.0)	1(0.3)	-	1(0.3)	-
Monthly income					

<500	42(11.0)	10(2.6)	13(3.4)	5(1.3)	9(2.4)
500-1499	53(13.9)	17(4.5)	16(4.2)	9(2.4)	12(3.1)
1500-3499	65(17.0)	25(6.5)	14(3.7)	5(1.3)	3(0.8)
3500-5999	45(11.8)	13(3.4)	5(1.3)	4(1.0)	4(1.0)
>=6000	7(1.8)	2(0.5)	2(0.5)	2(0.5)	-
Educational status					
Cannot read and write	6(1.6)	5(1.3)	4(1.0)	1(0.3)	6(1.6)
Can read and write	10(2.6)	3(0.8)	4(1.0)	4(1.0)	2(0.5)
Grade 1-8	16(4.2)	9(2.4)	5(1.3)	3(0.8)	5(1.3)
Grade 9-12	33(8.6)	7(1.8)	10(2.6)	4(1.0)	8(2.1)
Certificate and above	147(38.5)	43(11.3)	27(7.1)	13(3.4)	7(1.8)
Total	212 (55.5)	67 (17.5)	50 (13.1)	25(6.5)	28 (7.3)

Table 3: Prevalence of alcohol use disorders with respect to socio-demographic characteristics of Ambo community town Central Ethiopia, 2016.

Variables	Alcohol Use Disorders				
	No AUDs (No)%	AUDs (No)%	COR, 95%CI	AOR,95% CI	P-value
Age					
18-34	209(54.7)	62(16.2)	1		
35-49	60(15.7)	23(6.0)	1.292 (0.740-2.258)	1.014(.532-1.932)	0.966
≥ 50	10(2.6)	18(4.7)	6.068 (2.663-13.823)	5.281(1.924-4.494)	0.001
Religion					
Protestant	156(40.8)	23(6.0)	1	1	
Orthodox	78(20.4)	61(16.0)	5.304 (3.057-9.205)	4.608 (2.516-8.439)	0
Muslim	23(6.0)	9(2.4)	2.654(1.094-6.439)	2.642(1.041-6.704)	0.041
Others	22(5.8)	10(2.6)	3.083(1.296-7.331)	3.999(1.589-10.064)	0.003
Monthly income					
1500-3499	90(23.6)	22(5.8)	1		
500-1499	70(18.3)	37(9.7)	2.162 (1.171-0.992)	1.888(0.936-3.811)	0.076
<500	52(13.6)	27(7.1)	2.124 (1.100-4.103)	1.862(0.876-3.958)	0.106
3500-5999	58(15.2)	13(3.4)	.917(.428-1.962)	0.890(0.371-2.135)	0.794
≥ 6000	9(2.4)	4(1.0)	1.818 (0.512- 6.453)	2.142(0.550-8.346)	0.272
Educational status					
Certificate and above	190(49.7)	47(12.3)	1		
Grade 9-12	40(10.5)	22(5.8)	2.223(1.208-4.094)	2.189(1.093-4.388)	0.027
Grade 1-8	25(6.5)	13(3.40)	2.102(1.001-4.416)	1.140(.494-2.630)	0.759

| Can read and write | 13(3.4) | 10(2.6) | 3.110(1.285-7.528) | 1.606(.586-4.401) | 0.357 |
| Cannot read and write | 11(2.9) | 11(2.90 | 4.043(1.652-9.890) | 1.935(.630-5.940) | 0.249 |

Table 4: Multiple Logistic regression analyze socio demographic variables and alcohol use disorder among Ambo town community, Central Ethiopia, 2016.

Discussion

In this study the overall prevalence of current alcohol use was 44.5% (170) and 103 (27%) study participants had developed alcohol use disorder, with 83(21.7 %) males and 20(5.3%) females. From those who are current using alcohol at the time of data collection 60.6% had developed alcohol use disorder. The finding of this result showed higher prevalence of alcohol use compared to the study done in Brazil on population of 515 which revealed that the prevalence of alcohol use was 43%. Similarly, current study showed higher prevalence of alcohol use disorder than South Brazil study which was 7.9%, with 14.5% prevalence among men and 2.4% among women [18]. The probable differences might be due to cultural and drinking patterns difference of the two study population. But the Study done at Amanuel specialized mental Hospital, Ethiopia among epileptic patient showed that the prevalence Alcohol use disorder was 17.4% which less than the present study finding. The difference might be due to study subject difference and AUDIT cut off point. In the current study the study participants were from the community and, a cut off point for the AUDIT was ≥ 8, whereas the Amnuel specialized Mental Hospital study's participant were the patient and a cut off point for AUDIT was ≥ 16 [19].

The study finding of the rural Ethiopian Sodo district showed that the overall prevalence of hazardous alcohol drinking was 21%, with 31% male and 10.4% female. Similarly the study conducted in South Africa urban hospital outpatient showed that 41.2% of men and 18.3% of female were classified as hazardous drinkers, and 5.3% of men and 1.4% of women meet criteria for alcohol dependence which was much higher than the current study that revealed 13.1% hazardous alcohol drinking, with 9.7% male and 3.4% female and alcohol dependency 7.3% of which 6.0% in male and 1.3% in female. The difference might be due to assessment tool difference; CAGE was used by the rural Ethiopian Sodo district study and AUDIT was used in the current study and study participant difference for South Africa study [21]. The study done on Alcohol use disorders and its associated factors among psychiatric outpatients in Jimma University Specialized Hospital, Southwest Ethiopia indicated the prevalence of AUD was 38.9%, with 23.3% hazardous drinking, 5.8% harmful drinkers and 9.8% alcohol dependence. AUDs were reported by 45.3% males whereas only 21.4% of the females report AUDs the Jimma Sudy. This is very high when compared to the current study. This could be due to study subject difference.

In the current study the reason mentioned by the study participants to start drinking alcohol were peer pressure 83(21.7%), family history of substance use 77(20.2%) more than one reason 12(3.1%) and influence of the media 9(2.4%). While the reason stated in the study done on Psychiatric Outpatients in Jimma University Specialized Hospital were cultural reasons, peer pressure, to be happy, spending of time and to forget financial problems [22].

Individuals who followed Orthodox Christian religion were 4 times more likely to have AUDs when compared to protestant religion followers (AOR=4.6, 95%CI: 2.516, 8.439). This result is consistent with a population-based study done in Jima specialized hospital [22].

Those participants whose educational status range from grade 9-12 were 2 times more likely to have alcohol use disorder (AOR=2.198, 95%CI: 1.093, 4.388) compared with who studied above grade 12. This result is consistent with a study done among epileptic patient attending Amanuel specialized mental hospital [19].

Conclusion

The study revealed that the prevalence of alcohol use disorder among study participants were high when compared to previous study. Religion, education status and age of the study participants were the socio-demographic characteristics that found to show significant association with AUDs among the study participants in the study area. Unlike the finding of other the studies done in different part of the world in this study sex and marital status did not show association with alcohol used disorder.

Declaration of Interest

Ethical approval and consent to participate

Ethical clearance was obtained from Ambo University; College of Medicine and Health Sciences Ethical Committee before starting fieldwork. Official letter of co-operation was written to kebele administrative from Jeldu district Health office and verbal consent was obtained from study participants and Information was recorded anonymously and confidentiality was assured throughout the study period. Written consent is not necessary from participants because we interviewed the patient to collect data about alcohol but blood or another tissue is not taken which needs a written consent.

Consent publish: not applicable

Availability of data materials: We have used standardized assessment tool

Competing interests: The authors declare that they have no competing interests.

Authors' contributions

MM and AB contributed to the conception, design and conduct of the study, analyzed and interpreted the data, and prepared the manuscript. They also contributed to the design and conduct of the study, analyzed and interpreted the data, and prepared the manuscript. All authors read and approved the final manuscript.

Author details MM has Master of Public Health in Health Service Management and currently working in college of health and Medical science, department of Public health, Ambo University as lecturer.

AB has Master of Science in integrated clinical and community mental health and currently working in college of health and medical

science, department of Psychiatric nursing, Ambo University as lecturer.

References

1. Barrett GF (2009) The Effects of Alcohol Consumption on Earnings. Economic Record 78: 79-96.

2. World Health Organization (2011) Global status report on alcohol and health.

3. Keller M (1979) A historical overview of alcohol and alcoholism. Cancer Res 39: 2822-2829.

4. Burger M, Mensink G, Brönstrup A, Thierfelder W, Pietrzik K (2004) Alcohol consumption and its relation to cardiovascular risk factors in Germany. Eur J Clin Nutr 58: 605-614.

5. Centers for Disease Control and Prevention (CDC) (2004) Alcohol use among adolescents and adults--New Hampshire, 1991-2003. MMWR Morb Mortal Wkly Rep 53: 174-175.

6. Keller M, Vaillant GE (2011) Alcohol consumption. Encyclopedia Britannica Online.

7. Jernigan DH (2001) Global Status Report: Alcohol and Young People.

8. Grant BF, Dawson DA (1997) Age at Onset of Alcohol Use and Its Association with DSM-IV Alcohol Abuse and Dependence: Results from the National Longitudinal Alcohol Epidemiologic Survey. J Subst Abuse 9: 103-110.

9. Cook PJ, Moore MJ (2000) Alcohol (prepared for the Handbook of Health Economics). Alcohol. Durham, NC.

10. Hibell B, Guttormsson U, Ahlström S, Balakir eva O, Bjarnason T, et al. (2007) The 2007 ESPAD Report.

11. WHO (2004) Global report status of Alcohol.

12. Reid MC, Fiellin DA, O'Connor PG (1999) Hazardous and harmful alcohol consumption in primary care. Arch Intern Med 159: 1681-1689.

13. World Health Organization (2009) Global health risks mortality and burden of disease attributable to selected major risks. Geneva.

14. Berglund M (1984) Suicide in alcoholism. A prospective study of 88 suicides: I. The multidimensional diagnosis at first admission. Arch Gen Psychiatry 41: 888-891.

15. Gianini RJ, Litivoc J, Eluf Neto J (1999) Agressão física eclasse social. Rev Saude Publica 33: 180-186.

16. Aertgeerts B, Buntinx F, Kester A (2004) The value of the CAGE in screening for alcohol abuse and alcohol dependence in general clinical populations: a diagnostic meta-analysis. J Clin Epidemiology 57: 30-39.

17. Centers for Disease Control and Prevention (CDC) (2004) Alcohol use among adolescents and adults - New Hampshire, 1991-2003. JAMA 53: 174-175.

18. Mendoza-Sassi RA, Beria JU (2003) Prevalence of alcohol use disorders and associated factors: a population-based study using AUDIT in southern Brazil. Addiction 98: 799-804.

19. Waja T, Ebrahim J, Yohannis Z, Bedaso A (2016) Prevalence of alcohol use disorders and associated factors among people with epilepsy ttending amanuel Mental specialized hospital, addis ababa, Ethiopia. Neuropsychiatr Dis Treat 12: 2989-2996.

20. Tefera S, Medhin G, Selamu M, Bhana A, Hanlon C, et al. (2016) Hazardous alcohol use and associated factors in a rural Ethiopian district: a cross-sectional community survey, BMC Public Health 16: 218.

21. Pengpid S, Peltzer K, Van der Heever H (2011) Prevalence of Alcohol Use and Associated Factors in Urban Hospital Outpatients in South Africa. Int J Environ Res Public Health 8: 2629-2639.

22. Zenebe Y, Negash A, Feyissa GT, Krahl W (2015) Alcohol Use Disorders and Its Associated Factors among Psychiatric Outpatients in Jimma University Specialized Hospital, Southwest Ethiopia. J Alcohol Drug Depend 3: 1-8.