Alcohol Use Disorder and Associated Factors Among Medicaland Surgical Outpatients of University of Gondar Specialized Hospital: A Cross-sectional Study

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Research

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Abstract

Background: Alcohol use disorders increase the risk for physical harm, mental or social consequences for patients and others in the communities. Studies on alcohol use disorder and associated factors among medical and surgical outpatients in Ethiopia are limited. Therefore, this study is meant to provide essential data alcohol use disorder and associated factors among medical and surgical outpatients for future interventions.

Methods: An institution-based cross-sectional study was conducted using the systematic random sampling technique. Alcohol use disorder was assessed using the World Health Organization's 10-item Alcohol Use Disorder Identification Test (AUDIT) questionnaire. Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20. Bivariate and multivariate logistic regression analyses were performed, P-values less than 0.05 were considered statistically significant in the multivariate analysisand the strength of association was measured using AOR at a 95% confidence interval.

Results: The prevalence of alcohol use and use disorder were 322(68.50%) and 111(34.5%), respectively. In the multivariate analysis, male sex (AOR=3.33, 95%CI: 1.40, 7.93), history of mental illness (AOR=2.68, 95%CI: 1.12, 6.38), drinking for relaxation (AOR=1.88, 95%CI: 1.02, 3.48) and history of lifetime tobacco use (AOR=5.64, 95%CI: 1.95, 16.29) were significantly associated with the disorders.

Conclusions: The prevalence of alcohol use disorders among medical and surgical outpatients was found to be high. Male sex, history of mental illness, use of alcohol for relaxation and tobacco smoking need further attention in the assessment of the disorder.

Background

Alcohol use disorders (AUDs) can be classified as hazardous, harmful and/ or dependence causing[1]. The disorders affect the whole body system and has been implicated on liver disease, hypertension, myocardial disorders, immune dysfunction, neurological and psychiatric disorders, and other conditions [2]. Patients with AUDs are at increased risk for infections, wound, pulmonary complications, prolonged hospital stay and admissions into the intensive care unit after surgery. The problems lead many patients to poor surgical outcomes [3]. Alcohol causes cognitive impairment to the central nervous system with permanent structural damage to the brain, making people vulnerable to different psychiatric disorders and medical conditions[4]. AUDs are potentially fatal that mimic and make worse a wide range of medical and psychiatric conditions, thereby shortening the life spans of affected people by more than a decade[5].

Despite its harsh and multifaceted effects, alcohol is the most widely consumed substance in the world. The 2004 World Health Organization (WHO) reports estimated that about two billion people worldwide were drinking alcoholic beverages, 76.3 million of whom had AUDs [6]. Globally, AUDs cause 2.5 million deaths each year, 80% of which occurred in the poorest regions of the world. The effects of the disorders

accounted only for many of the deaths although it posed complications in various medical and surgical conditions [6, 7].

Alcohol use disorders were reported to be 20–40% in general medical hospital settings [8, 9]. The prevalence of patients with AUDs identified in general hospitals was higher than that in community surveys. The reason is that people with AUDs often seek help only when they become medically ill. However, in overcrowded clinical settings, medical staff often fail to recognize AUDs unless there are obvious physical or psychosocial effects relating to alcohol abuse[4]. Studies involving hospitalized patients showed that up to one-third of patients admitted to medical and surgical wards had alcohol related conditions. In some studies, nearly 40% of patients hospitalized for medical and surgical illnesses had AUDs [2, 10]. Despite this high prevalence of AUDs in clinical settings, many studies revealed that less than a third of such individuals were identified and that only 5%-10% of the patients were referred to psychiatric services for further evaluation and management [11, 12]. The undetected alcohol problems led to unpleasant consequences, and it is for this reason that AUDs are the major causes of morbidity and mortality among medical and surgical patients.

Previous studies have indicated that younger groups, the less-educated, cases with history of smoking, drinking fathers, male sex and patients getting treatment in internal medicine wards were factors significantly affecting AUDs [4, 13–15].

Evidences from previous studies showed that alcohol related problems among patient with general medical conditions posed greater consequences including the worsening of the prognosis of the illness. The investigators, through their liaison services, observed a high number of patients with medical and surgical illnesses were consulted for psychiatry intervention due to alcohol withdrawal related problems. But, the magnitudes of alcohol use and use disorders among these groups of people have not been well explored in Ethiopia, particularly in the study area. These conditions led the investigators to assess alcohol use disorders and associated factors among patients treated for medical and surgical health problems. Therefore, the results of this study could be vital input for health care providers to be vigilant of alcohol related problem and institute early interventions.

Methods And Materials

Study design, period and setting

An institution based cross-sectional study was carried out from May 01 to 30, 2016. The study was conducted at the University of Gondar specialized hospital northwest Ethiopia. It is found in Gondar town, 727 Km from Addis Ababa, the capital of Ethiopia. The hospital had 550 beds with around six medical and two surgical outpatient departments (OPDs). In the last twelve months, the average adult outpatient flow to the medical and surgical outpatients was 2034 and 718 respectively.

Population

All medical and surgical outpatients aged 18 years and above and visited the hospitals during data collection were the source population, whereas patients with medical and surgical problems included into the sample and from whom information was collected were the study population.

Sample size determination and technique

The sample size was determined using the single population proportion formula. So far there has been no study on AUDs among surgical and medical outpatients in Ethiopia. Therefore, the initially the sample size was calculated by taking a 50% proportion at 95% level of confidence and a 5% margin of error. Assuming a 10% nonresponse rate, a total sample of 423 was obtained. To determine the maximum sample size, alternative sample size determination was done using the risk factors of alcohol use disorder. Previous studies indicate that male sex, use of cigarettes and khat are significantly associated with alcohol use disorder[16]. Based on these factors, sample size was determined with the following assumptions (Table 1).

Table 1
Sample size determination using predictors of alcohol use disorder.

Factors associated with AUDs	Assumption used	Sample size with 10% non-respondent rate
Male sex	Odd Ratio (OR) = 2, 95%CI, Power = 80, P = 16	475
Cigarette smoking	OR = 2, 95%CI, Power = 80, P = 29.5	339
khat chewing	OR = 2, 95%CI, Power = 80, P = 28.72	343

Thus, using a proportional allocation, 351 and 124 patients from the medical and surgical OPDs, respectively, were included in the total sample of 475. The systematic random sampling technique was used to recruit participants. Sampling interval was determined by dividing the number of the average monthly outpatients by the proportionally allocated outpatients to each department (k = 2034/351 = 6 to medical and k = 718/124 = 6 to surgical patients). Therefore, the participants were interviewed at every sixth regular interval, and the first participant was selected by the lottery method.

Measurements

Data were collected by face to face interviews and chart reviews conducted to know the types of diagnoses. The socio-demographic and related parts of the questionnaire were developed by reviews of literature. Alcohol use disorder was assessed by the WHO Alcohol Use Disorders Identification Test (AUDIT) screening tool[1]. It is a primary and most effective tool to identify problematic alcohol use at an early stage with sensitivity 94.1% and specificity 91.7%. The AUDIT first three questions (1–3) were concerned with the quantity and frequency of alcohol consumption (Hazardous Alcohol Use); the second three questions (4–6) assessed signs of alcohol dependency while the last four (7–10) investigated

UDIT score of eight or more was used to define

AUDs. This alcohol screening tool has been validated across different African countries [1, 6, 17]. The local ethanol beverages were converted into standard drinking units based on their local measurement with an equivalent standard drinking measurement[16]. The data were collected by four trained BSc degree nurses graduate supervised by one MSC in psychiatry health professional.

Data quality control

The English version questionnaire was translated to Amharic and back to English by two different native language experts. A pre-test was conducted on 5% of the sample one week before the data collection at Felegehiwot referral hospital, Bahidar, Ethiopia, to check understandability and reliability of the questionnaire. The supervisor and data collectors were trained for one day before the data collection on the objective of the study, and on how to handle ethical issues and the confidentiality of information.

Statistical analysis

Data were checked for completeness, cleaned manually, pre-coded, entered into EPI info version 7 and exported to SPSS version 20 for further analysis. For descriptive variables, frequencies, percentages, graphs, and tables were used. In the binary logistic regression analysis, variables found to have a p-value of less than 0.2 were candidates for the multivariable logistic regression analysis. In the multivariable logistic regression analysis, variables with less than 0.05 p-values were considered as significantly associated with the outcome variable. The strength of associations was explained with OR at 95% confidence interval (CI).

Results

Socio-demographic characteristics

A total of 470 patients participated in the study with a response rate of 98.95%; 5 (1.05%) with incomplete data were discarded. More than half of the participants, 255(54.3%) were male and 256 (54.5%) urban residents. Their mean age was 36.64 (SD ± 13.24) years; the majority, 260 (55.3%), were married; 402(85.5%) were Amhara, 436(92.8%) Orthodox Christian followers 387(82.3%) were lived with their families and 147(31.3%) were unable to read and write (Table 2).

Table 2
Distribution of socio demographic characteristics of medical and surgical outpatients of University of Gondar specialized hospital, 2016 (n = 470).

Variables	Categories	Frequency	Percentage
Sex	Male	255	54.30
	Female	215	45.70
Age	18–24	106	22.60
	25–34	128	27.20
	35–44	90	19.10
	45–54	75	16.00
	55+	71	15.10
Religion	Orthodox	436	92.80
	Muslim	27	5.70
	Protestant	4	0.90
	Others^{R}	3	0.60
Ethnicity	Amhara	402	85.50
	Kimant	44	9.40
	Tigre	17	3.6
	Oromo	1	0.2
	Others^{E}	6	1.3
Educational status	Unable to read and write	147	31.3
	Read and write only	60	12.8
	Primary school (grade 1–8)	110	23.4
	Secondary school (grade 9–12)	76	16.2
	Tertiary(TVET/college/university)	77	16.4
Marital status	Single	135	28.7
	Married/in union	260	55.3

NB: *Others^{R} includes (catholic, johba witness, and adventist)*
Others ^{E} includes (Agew, benshangul)

r)

Variables	Categories	Frequency	Percentage
	Divorced	34	7.2
	Separated	11	2.3
	Widowed/ widower	30	6.4
Occupation	Government employee	59	12.6
	House wife	102	21.7
	Merchant	57	12.1
	Daily laborer	20	4.3
	Student	57	12.1
	Farmer	122	26.0
	Others^{O}	53	11.28
Residency	Urban	256	54.5
	Rural	214	45.5
Living condition	With family	387	82.3
	Alone	83	17.7
Monthly income	< 735	229	48.7
	735–1176	95	20.2
	> 1176	146	31.1

NB: *Others^{R} includes (catholic, johba witness, and adventist)*
Others ^{E} includes (Agew, benshangul)

Others ^{O} includes (jobless, retired and carpenter)

Clinical, and substance use characteristics

Of the participants, 156 (33.2%) had history of hospital admission; 210 (44.7%) had more than two years of illness; some 54(11.5%), were diagnosed with extra pulmonary tuberculosis; 55(11.7%) were diagnosed with diabetes mellitus and 73(15.5%) with cardiovascular diseases. More than half of the participants, 244 (51.9%), had family history of alcohol use; 29 (6.2%) were lifetime cigarette smokers and 11(2.3%) current users (Table 3).

Table 3

Distribution of clinical, and substance use characteristics of medical and surgical outpatients at University of Gondar specialized hospital, 2016 (470).

Variables	Categories	Frequency(n = 470)	Percentage
Duration of illness	< 6 months	123	26.2
	6–24 months	137	29.1
	> 24 months	210	44.7
Previous hospital admission	Yes	156	33.2
	No	314	66.8
Type of OPD	Medical	350	74.5
	Surgical	120	25.5
History of mental illness	Yes	48	10.2
	No	422	89.8
Diagnosis	Tuberculosis	54	11.5
	Diabetes mellitus	56	11.9
	Cardiovascular	73	15.5
	Injury	29	6.2
	Tumor	38	8.1
	Gastritis	25	5.3
	Urinary tract infection	35	7.4
	Goiter	20	4.3
	Breast tumor	13	2.8
	Others[D]	127	27.0
Family history of alcohol use	Yes	244	51.9
	No	226	48.1
Life time use of cigarette smoking	Yes	29	6.2
	No	441	93.8

Notes: *Others[D] includes diagnosis (hypertension, leishmaniasis, dermatological cases, diarrhea cases, Pylonephritis, urolithiasis, typhus and typhoid, disc prolapsed, acute upper respiratory infection,*

Variables	Categories	Frequency(n = 470)	Percentage
Life time use of khat	Yes	23	4.9
	No	447	95.1
Current use of cigarette smoking	Yes	11	2.3
	No	459	97.7
Current use of khat	Yes	15	3.2
	No	455	96.8
Current use of other substances	Yes	1	0.2
	No	469	99.8
Most preferable type of alcohol she/he drunk	Tella	128	39.8
	Tej	4	1.2
	Araki	28	8.7
	Beer/draft	125	38.8
	Wine	12	3.7
	Whisky/Gin	25	7.8
Reason given for alcohol use	Socialization	244	75.8
	Peer pressure	56	17.4
	To relax	85	26.4
	To get relief from stress	13	4.0
	No specific reason	13	4.0

Notes: *Others[D] includes diagnosis (hypertension, leishmaniasis, dermatological cases, diarrhea cases, Pylonephritis, urolithiasis, typhus and typhoid, disc prolapsed, acute upper respiratory infection, parasitic infection, and other unspecified.*

Magnitude of alcohol use disorder

Of the majority, 322(68.50%) of the participants had history of alcohol use, 111(34.5%) of whom had alcohol use disorders with a 95% CI (29.20, 39.80); 86 (26.7%) of those were hazardous, 16 (5%) harmful, and 9 (2.8%) dependent users (Fig. 1).

Factors associated with alcohol use disorders

In the bivariate analysis, sex, educational status, diagnosis of injury, history of mental illness, occupation, lifetime tobacco use, peer pressure and drinking for relaxation were candidates for the multivariable logistic regression analysis at p-value < 0.2. In the multivariable logistic regression analysis, male sex, history of mental illness, drinking for relaxation and lifetime tobacco use were significantly associated with AUDs at p-value < 0.05.

The multivariable analysis suggested male sex was 3.33 times more likely to develop AUDs compared to female sex (adjust odd ratio (AOR) = 3.33, 95%CI = 1.40, 7.93). Participants who had history of mental illness were 2.68 times more likely to develop AUDs than those who had no such history (AOR = 2.68, 95%CI = 1.12, 6.38). Participants who drank for relaxation were 1.88 times more likely to develop AUDs compared to participants who didn't (AOR = 1.88, 95%CI = 1.02, 3.48), and lifetime tobacco smokers were 5.64 times more likely to develop the problem than nonsmokers (AOR = 5.64, 95%CI = 1.95, 16.29) (Table 4).

Table 4
Bivariate and multivariable analysis of alcohol use disorders and associated factors among people with medical and surgical problems at Gondar university hospital (n = 322), 2016

Variables	Categories	AUDs		OR(95% CI)	AOR(95% CI)
		Yes	**No**		
Sex	Female	16	101	1.00	1.00
	Male	95	110	5.45(3.01,9.88)	**3.33(1.40,7.93)****
Educational status	Can't read and write	31	75	1.18(0.55, 2.51)	1.61(0.46, 5.68)
	Read and write only	25	21	**3.39(1.44, 7.99)**	2.94(0.79, 10.94)
	Primary school(1–8)	31	43	2.05(0.94, 4.49)	1.62(0.52, 5.00)
	Secondary (9–12)	11	35	0.9(0.35, 2.26)	0.93(0.28, 3.03)
	Above grade 12th	13	37	1.00	1.00
Mental illness history	No	94	198	1.00	1.00
	Yes	17	13	2.76(1.29, 5.91)	**2.68(1.12, 6.38)***
Diagnosis of injury	No	97	199	1.00	1.00
	Yes	14	12	**2.39(1.07, 5.37)**	2.06(0.82, 5.15)
Drinking for relaxation	No	70	167	1.00	1.00
	Yes	41	44	2.22(1.34, 3.70)	**1.88(1.02, 3.48)***
Life time use of tobacco	No	96	204	1.00	1.00
	Yes	15	7	4.56(1.80,11.53)	**5.64 (1.95, 16.3)****
Drinking due to peer pressure	No	86	180	1.00	1.00
	Yes	25	31	1.69(0.94, 3.03)	1.26(0.64, 2.50)
Occupation	Employed	11	28	1.00	1.00
	House wife	8	48	0.42(0.15, 1.18)	1.59(0.33, 7.56)
	Merchant	13	20	1.66(0.62, 4.44)	1.60(0.47, 5.54)
	Daily laborer	6	7	2.18(0.6, 7.96)	2.04(0.42, 10.01)
	Student	9	32	0.72(0.26, 1.98)	1.10(0.34, 3.52)

Note: *Significant association * (p-value < 0.05), and ** (p-value < 0.01)*

	Farmer	50	58	**2.19(1.00, 4.85)**	1.96(0.63, 6.07)
	Others[O]	14	18	1.98(0.74, 5.31)	2.37(0.71, 7.88)

Note: *Significant association * (p-value < 0.05), and ** (p-value < 0.01)*
Others [O] (retired, jobless and carpenter)

Discussion

In this study, alcohol use disorders and associated factors among medical and surgical outpatients were assessed. The result revealed that a remarkable proportion 34.5% of the participants had alcohol use disorders, at 95% CI (29.20, 39.80). Our finding was consistent with those of other studies for example, 32.6% in Ethiopia among HIV/AIDS outpatients[18], 34.8% in South Africa in urban primary hospital outpatients [19], and 32.9% in Brazil among hospitalized patients[2]. On the other hand, the current result is higher than those of two different studies in Ethiopia 21%[20], and 3%[16], 9.7% in Nigeria among patients attending family medicine[21], 25.1% and 10.8% in Kenya[22], 18.9% and 27.6% in two different institutional studies on hospital outpatients in South Africa [23, 24], 4.1% in a community-based survey and 5% in a facility study on men in Uganda[25], 9.5% in another institutional study on high risk sexual behavior outpatients in Uganda[26], 20.3% on tuberculosis patients[27], and 10.9% on primary health center male outpatients in south India[28], 15% in northern Ireland[29], 4.1% in Eastern Mediterranean region[30], and 7.3% in a study done at a primary health facility in Nepal[31]. The possible reasons for the discrepancy might be variations in study populations. For instance, a community survey was carried out in Ethiopia, while only TB patients, who had chances to abstain due to their illnesses, were sampled in India. Furthermore, general outpatients were dealt with in Nigeria and the medication respondents used were focused on in Kenya, while both in and outpatients were studied in Ireland. Besides, differences in findings also relate to the tools used. For example, the Fast Screening Test was put to use in Ethiopia, whereas the short Alcohol Dependence Data Questionnaire was utilized in Brazil. Research results could also vary owing to study designs. For example, the Randomized Control Trial with follow ups ranging from six to twelve months was employed in South Africa. Moreover, investigation outcomes might also differ due to the socio-cultural practices of participants.

On the other hand, the prevalence of alcohol use disorder in this work is lower than that of a study conducted on medical and surgical outpatients aged 45–64 years in Nigeria (41.4%) [32], 53.5% on America Veteran Affairs outpatients [33] and 40.5% in Nepal [34]. The possible reasons for the difference might be the tools. In Nigeria, for instance, a structured clinical interview Diagnostic Statistical Manual-IV was employed, while the International Classification of Disease-9 code for alcohol use disorder which has a high sensitivity for assessing such problems was used in America. When it comes to study populations; Veteran Affairs outpatients in America, while men in the 45–64 age group more prone to consume alcohol which is likely to increase prevalence were interviewed in Nigeria. In Nepal, only medical outpatients were considered. As a matter of fact, socio-cultural variations are also responsible for differences in study results

In our study, the prevalence of AUDs was 85.6% among men and 14.4% for women (male: female ratio 5.9:1). This showed that the prevalence rates were much narrower than was reported in China 66:1[35], and slightly higher than those same epidemiological surveys in the United states 5:1 [36].

In this study, male sex was significantly associated with AUDs. The finding is supported by studies in Taiwan [14], the Republic of Ireland [3], Brazil[2], India [37], Tanzania[38], and Kenya. Alcohol drinking is more socially acceptable among males than females, predisposing men to AUDs.

In the current study, history of tobacco use was significantly associated with AUDs. The result is similar to findings in South Africa[23], Sri Lanka[39], and India[37]. The possible explanation might be that smokers used alcohol to stop the stimulation of the nicotine after they smoked.

History of mental illness was significantly associated with AUDs. The finding of our study was similar to those of Ethiopia [20], Nigeria [21], and in South Africa[23]. The possible explanation could be that patients were using alcohol as a self-treatment.

Participants who were using alcohol for relaxation were statistically significant predictors of AUDs. Psychological distress and stressful life events were risk factors for the use of alcohol a study reported in Sri Lanka[39]. Users of alcohol for relaxation have chances to increase the dose of alcohol to get the desired effect. Therefore, they are prone to develop alcohol use disorders.

Limitations

The study is, we hope, effective in that it has used a standard tool for assessing the disorders. Despite its capacity to provide valid evidence however it has some limitations in that it is subject to social desirability bias. Besides, since data were gathered by an interviewer administered questionnaire, respondents might have tended to reply in ways favorable to others by either under or over reporting. Moreover, the cross-sectional design we used has prevented us from reporting casual effect relationships. The other limitation is, the association of socio-demographic factors and the types of illnesses. That is the majority of the patients sought help for physical illness relating to AUDs rather than for the latter alone. Thus, further studies that include in-depth variables and other designs are needed.

Conclusion

The prevalence of alcohol use disorders among medical and surgical outpatients was found to be high. The habit of screening and managing the problems in medical and surgical departments is low. The comorbidity of alcohol use problems with physical illnesses may affect the prognosis by further complicating physical illnesses due to diminishing the immunity and withdrawal effects. Therefore, collaborative consultation-liaison works between psychiatrists and other health professionals need to be strengthened. Training of clinicians on how to detect, manage and refer patients with alcohol withdrawal and use disorders is required. Moreover, male sex, history of mental illness, use of alcohol for relaxation

sment of the disorder.

Abbreviations

AMSH: Amanuel Mental Specialized Hospital

ASSIST: Alcohol, Smoking and Substance Involvement Screening Test

AUDs: Alcohol Use Disorders

AUDIT: Alcohol Use Disorders Identification Test

DSM-IV: Diagnostic and Statistical Manual of Mental Disorder 4 Edition

CAGE: Cut-Annoyed-Guilty- Eye opener

OPD: Out Patient Department

SPSS: Statistical Package for the Social Sciences

WHO: World Health Organization

Declarations

Ethical Approval and consent

Ethical Approval was obtained from the Ethical Review Board of the University of Gondar. Letter of permission was obtained from the University of Gondar specialized hospital. The purpose of the study explained and informed written consent was received from study participants. Confidentiality was maintained by omitting personal identifiers.

Consent to publish

Not applicable

Availability of data and Material: The data and materials used in this study are available from the corresponding author on a reasonable request.

Competing interests:

Authors declare that there are no competing interests!

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Authors' contribution

DD- principal investigator of the study carried out the manuscript from its conception, analysis and interpretation of data and drafted the manuscript. **GT** - participated on reviewing the proposal, tool evaluation, interpretation and critical review of the draft manuscript. **HK** - participated on reviewing the proposal, tool evaluation, interpretation and critical review of the draft manuscript. **ES** - participated on reviewing the proposal, tool evaluation, interpretation and critical review of the draft manuscript. All authors read and approved the final draft of the manuscript.

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