

**ALCOHOL USE RELATED INJURY IN NORTHWEST ETHIOPIA:  
A CROSS-SECTIONAL STUDY**

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**ABSTRACT**

Alcohol-related violence resulting in injury is a global public health problem and Africa is no exception. In the country of Ethiopia, there is a lack of statistical evidence regarding this issue. The aim of this study was to investigate the incidence prevalence of alcohol-related violence and injury and its associative factors. Hospital based cross-sectional research method was employed from January to June 30, 2014. The source population and study population were all interpersonal violence injured patients in the emergency department of University of Gondar Hospital. Data were collected using injury surveillance guidelines developed by the World Health Organization. Bivariate and multivariate logistic regressions were performed to identify the presence and strength of association. Odds ratios with 95% confidence interval were computed to determine the level of significance. A total of 395 participants were involved in the study. The proportion of ARVI was found to be 119 (30.1%); gender, poor behavioral control and poor family functioning were found to be independently associated with alcohol-related interpersonal violence injury. The prevalence of alcohol-related violence and injury is high in Ethiopia. There is an urgent need to step up health advocacy with respect to reducing alcohol consumption in the country.

**Key words:** Alcohol, Emergency Department, injury, violence

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**INTRODUCTION**

Drinking of alcohol has been cited as risk factors for intentional or unintentional in-

jury (Shahzad, Tommi, Naihua, & Cheryl, 2007). Bars, nightclubs and other nightlife venues are frequently the scene of violence between inebriated young people.

The impact of frequent deviant behavior not only negatively affects the health of these young people but places continuing burdens on the wider society (Mark, Karen & Zara, 2007).

Globally, patterns of alcohol drinking and rates of alcohol-related violence and injury (ARVI) vary widely. Because alcohol use directly affects physical and cognitive functions and can reduce self-control and ability to process incoming information, drinkers are more likely to engage in violent acts. Their ability to recognize warning signs of potentially dangerous situations is reduced making them an easier target for criminals (WHO, 2009).

Globally, alcohol use is estimated to be responsible for 26% of male and 16% of female Disability Adjusted Life Year (DALYs) lost through homicide. Furthermore, alcohol consumption as a risk factor for violent victimization is increasingly being identified throughout the world (WHO, 2009).

When abused, alcohol poses a significant risk for violence (Morgan & Atamney, 2009). In 2005 in Australia, there were over 70,000 victims of alcohol-related assaults (Laslett, Catalano, Chikritzhs et al., 2010). Males were more likely than females to be victims of alcohol-related verbal and physical abuse. However, the proportion of female victims of alcohol-related physical abuse more than doubled (3.1% to 6.6%) between 2007 and 2010 (AIHW, 2011).

In 2011/12, 46.9% of all domestic assaults in western Australia and 37.2% of all non-domestic assaults were related to alcohol (Western Australian Police, 2013). In 2005, 59% of alcohol-related assaults resulted in injury. Victims of alcohol related assaults are more likely to suffer injuries such as cuts or broken bones, com-

pared to victims of non-alcohol-related assault (Laslett et al., 2010).

In 2006, it was estimated that alcohol was responsible for 24% of all injury-related health loss (27% male and 17% female). Alcohol-attributable injury was higher in Maori people, accounting for 35.5% of injury-related health loss in males and 24% in females (Ministry of Health, 2013).

Studies in South Africa reveal that 77% of patients admitted to Hospital Trauma Units with assault injuries had detectable blood alcohol levels. A multi-centre sentinel surveillance of alcohol and drug abuse in three cities in South Africa further highlights the prevalence and trends of alcohol-related injuries (Odero, 1995). In Ethiopia interpersonal violence related injury is a common problem of the population (Ayana & Ahmed, 2012) and the negative effects of excessive alcohol consumption are all too well known (Subir, Balakrishnan, & Vasudevan, 2006). Since the situation has a significant impact on the health of the society, there is clear justification for conducting research not only to better illuminate the issue for policymakers but to help direct resources toward reducing this ubiquitous problem. To date, we know of no such studies of this kind in Ethiopia.

## METHOD

Data collection for this cross-sectional study took place from January to the end of June 2014. The study was conducted at the University of Gondar Hospital, located 748 kilometers north of Addis Ababa, Ethiopia. The hospital is a 400-bed, tertiary care teaching facility serving approximately 5 million people. This hospital is also a teaching center for health science students.

### Source population and study population

The study population was all patients suffering from interpersonal violence injuries in the emergency department of University of Gondar Hospital. Patients who visited the emergency department of the University Hospital as a result of interpersonal injury were included in the study. Those who needed immediate transfer to the operation room who received analgesia or had repeated visits as a result of injury were excluded in this study.

A single population proportion formula was used to determine the sample and confidence level of 95%. The margin of error was 5%. The prevalence of ARVI is 42.7 % (Ayana B & Ahmed E, 2012). Considering a 5% non-response rate, the final sample size was 395. Systematic random sampling technique was used to select study participants.

### Data collection

Data were collected via face-to-face interviews. The data collectors were BSc trained nurses working in various hospital departments.

The data collection tool was adapted from injury surveillance guideline document of WHO developed in 2001 (WHO, 2001). In this study, the tool had internal consistency of Cranach's alpha of 0.890. Data collectors and supervisors were trained on the use of the tool. Supervision was carried out during the data collection time and the tool was pre-tested in the emergency department of Debarq Hospital before the actual data collection.

### Statistical analysis

Data was entered and cleaned using EPI INFO and analyzed using SPSS for Windows version 20. Frequency distribution, as well as percentage calculation,

was made to describe socio demographic characteristics. Percentages of admissions to hospital for treatment of injuries related to alcohol calculated. Binary logistic regression was used to check variables associated with the outcome variable. Those variables found to have p-values of  $\leq 0.2$  were further fitted to multivariable logistic regression. Odds ratios with 95% CI were computed and variables having p-values  $\leq 0.05$  in the multiple logistic regression models were considered significantly associated with the dependent variable. Model fitness was checked with the assumptions of Hosmer and Lemeshow goodness of a fit test ( $p = 0.82$ ).

### Ethical consideration

The study was initially approved by the ethical review board of the University of Gondar. A formal letter of permission was obtained from the hospital and submitted to the emergency department. The information about the study was given to the participants and written consent was sought for each participant who agreed to participate in the study and the data was collected in a separate room.

## RESULTS

A total of 395 injury cases participated in this study. The response rate was 100%. Among the respondents, 322 (81.5%) were males. The age group of 20-29 was represented by a high proportion 147(37.25%) from the total study population. The mean (SD) age of the respondents was 27.59 (+/-13.37 years). Of the respondents, 214(54.2%) were single, 140(35.4%) illiterate, and 200(50.6%) came from rural areas (Data presented in Table 1).

**Table 1.** Socio-demographic characteristics of respondents, University of Gondar Hospital, Northwest Ethiopia, 2014 (n=395)

Variables		Frequency (%)
Age in years	<20	101(25.6%)
	20-29	147(37.25%)
	30-39	72(18.2%)
	40-49	43(10.9%)
	50-59	20(5.1%)
	>60	12(3%)
Gender	Male	322(81.5%)
	Female	73(18.5%)
Marital status	Single	214(54.2%)
	Married	169(42.8%)
	Divorced / Separated	11(2.8%)
	Widowed	1(0.3%)
Educational status	Illiterate	140(35.4%)
	Read and write	79(20%)
	Primary education	87(22%)
	Secondary education	72(18.2%)
	Certificate or college diploma	10(2.5%)
	Degree and above	7(1.8%)
Income/Ethiopian birr	<150	30(7.6%)
	151-650	58(14.7%)
	651-1400	82(20.8%)
	1441-2350	33(8.4%)
	2351-3550	13(3.3%)
	3551-5000	3(0.8%)
	>5000	1(0.8%)
	No income	128(32.4%)
	Unknown	47(11.9%)
Occupation	Farmer	161(40.8%)
	Student	107(27.1%)
	House wife	25(6.3%)
	Merchant	23(5.8%)
	Day laborers	53(13.4%)
	Civil servant	26(6.6%)
Residence	Urban	195(49.4%)
	Rural	200(50.6%)

### Incidence of alcohol use related interpersonal violence injury

The number of ARVI, among all injury cases, was found to be 119(30.1%).

Among males it was 107(89.9%). The male to female ratio was 8.9:1. Those between 20-29 years of age were the most affected 42(35.29%) followed by those less than

20 years of age 29(24.36%), while those older than 60 years of age were least involved 3(2.5%). The age group of 30-39, 40-49, and 50-59 were 21(17.64%), 16(13.44%) and 8(6.72%) respectively.

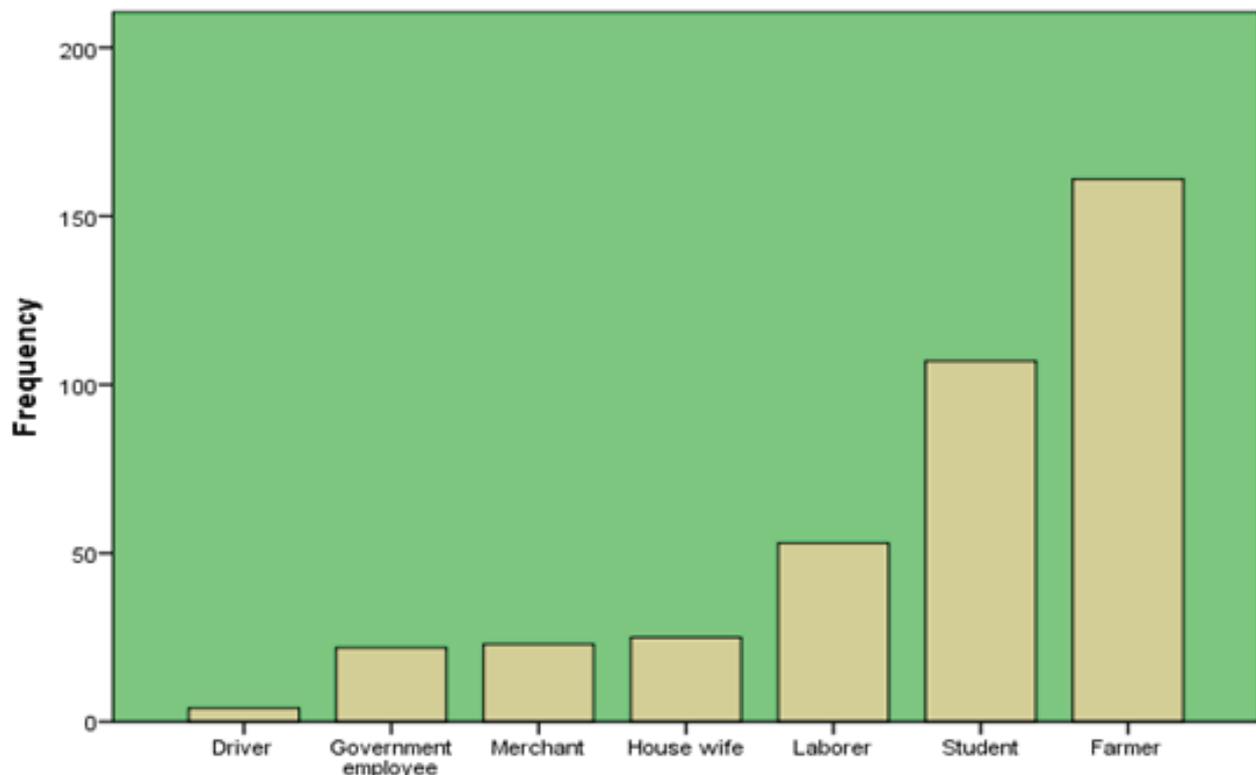
Slightly more than half of the victims 200(50.6%) came from rural areas while the rest were from urban settings. As shown in Figure 1, the most common occupation among the patients was farming [64(53.78%)] followed by students [28(23.52%)], indicating a high probability of poor school performance and school drop-out.

In this study, the victim offender relationship was examined. The majority of offenders were known to be friends (62; 52.1%), relatives (22; 18.5%), police (12; 10%), partners (11; 9.2%), and three of the cases were injured by a parent. In 9(7.5%) of the cases, the relationship was unknown. The nature of the injuries

were as follows: fractures 57 (47.89%), open wounds in 27(22.62%), superficial injury in 29(24.36%), organ system injury in 8(6.7%). The majority of the victims' were treated and discharged 71(59.66%) and 37(31%) were admitted to the hospital. In 11(9.2%) of the cases, victims were referred to other health institutions. Most of the violence occurred on roadways 57(47.89%). [Table 2]

#### Factors associated with alcohol use related interpersonal violence injury

In the bivariate logistic regression; low family income, sex, sex of the performer, educational status (primary education), residency, type of injury, poor behavioral control, and poor family functioning were significant risk factors. However, in the multivariate logistic regression, sex, poor behavioral control and poor family functioning were found to be independently



**Figure 1.** Alcohol use related interpersonal violence injury by occupation, University of Gondar Hospital, Northwest Ethiopia, 2014 (n=119)

**Table 2.** Location of alcohol use-related interpersonal violence injury, University of Gondar Hospital, Northwest Ethiopia, 2014 (n=119)

The location of the conflict	Frequency (%)
Road	57(47.89%)
Home surrounding	26(21.84%)
Bar	25(21%)
Marketplace	7(5.88%)
Farmland	4(3.36%)
Total	119(100%)

associated with the outcome variable (Table 3).

## DISCUSSION

This study was intended to assess the prevalence and associated factors of alcohol use related interpersonal violence injury among patients visiting the emergency department of University of Gondar Hospital. The overall prevalence of

**Table 3.** Bivariate and multivariate logistic regression analysis of factors associated with alcohol use-related interpersonal violence injury(AURIPVI) at University of Gondar Hospital, Northwest Ethiopia, 2014. (n =395)

Variables	AURIPVI		OR with 95% CI			p-value
	YES	NO	Crude		Adjusted	
Sex						
Male	107	215	2.530	(1.306 4.899)	1.942 (.910 4.141)	0.86
Female	12	61	1		1	
Sex of the performer						
Male	48	211	1		1	
Female	71	65	.188	(.118 .301)	0.300 (.175 .512)**	0.001
<b>Educational status</b>						
Illiterate	50	90	.860	(.487 1.519)	.872 (.441 1.723)	
Read and write	31	48	1.641	(.906 2.974)	1.747 (.848 3.597)	
Primary education	22	65	2.778	(1.366 5.648)	2.060 (.893 4.753)	.289
Secondary education	12	60	.833	(.225 3.093)	.767 (.177 3.332)	
college diploma	4	6	.897	(.731 .000)	.354 (.906 2.974)	
Degree and above	0	7	1		1	
Residence						
Urban	49	146	.623	(.403 .963)	1.036 (.571 1.881)	.907
Rural	70	130	1		1	
Type of injury						
Intentional	61	49	4.872	(3.034 7.826)	2.195 (.922 5.225)	
Unintentional	58	227	1		1	
Poor behavioral control						
Yes	38	20	6.005	(3.308 10.901)	3.024 (1.546 5.914)**	0.001
No	81	276	1		1	
Poor family functioning						
<b>Yes</b>	85	68	6.782	(4.221 10.899)	5.349 (3.033 9.433)**	0.001
No	34	208	1		1	
Low family income						
Yes	63	58	4.228	(2.664 6.711)	0.697 (0.333 1.462)	0.340
No	56	218	1		1	

\*\*Significantly associated with AURIPVI

alcohol use related interpersonal violence injury was found to be 30.1%. This finding is the same as the finding from a Kenyan study which showed that nearly the same prevalence of the problem, i.e. 31.1% (Odero & Ayuku, 2003 W)

However the result is not in line with studies done in many parts of the world; for instance this study is inconsistent with a study done in USA with a prevalence of 42 % (Madan, Beech & Flint, 2001). This may be explained by the fact that the daily income of the population in the two countries is different so that peoples in USA can have extra money to drink alcohol as compared to the people in Ethiopia. The volume of alcohol use can increase the prevalence of the problem under discussion in USA. Also the finding of this work is not in line with a study in Northwest England and Brazil which revealed a prevalence of 72% (Patel, Jones, & Laverick, 2008) and 42.7% (Gawryski et al., 2008) respectively. For this the same reason as above can be mentioned for the existence of the differences between the countries.

In addition, this finding is not constant with many of the sub-Saharan African studies. For instance one study in South Africa documented it as 59% (Bowley et al., 2004) and another study in the same state revealed 60% prevalence (Peden, Vander, Smith & Bautz, 2000) and in Kenya there is a documented prevalence of 45% (Ranney, Odero, Mello, Waxman & Fife, 2009). The possible explanation for this contradiction could be the time, the length of the study period and the setting. One more, this finding is not in line with other work here in Ethiopia at St Luke Hospital, Oromia region which has a documented prevalence of 42.7 % in one year's time (Ayana & Ahmed,

2012). This could be because of the duration of the investigation between the two studies.

Even though other researchers were not recognized sex, poor behavioral control and poor family functioning as a significant factor for the presence of alcohol use related interpersonal violence injury, this study identified these variables to be independently associated with the outcome variable in the multivariate logistic regression.

Patients who were in a habit of poor behavioral control were three times more likely to have alcohol use related interpersonal violence injury as compared to those who were not in the habit of poor behavioral control (AOR: 3.02; 95% CI 1.54 - 5.914) and patients who were from poor family functioning were five times more likely to have alcohol use related interpersonal violence injury as compared to those who were not from low family income (AOR: 5.349 95% CI (3.033 - 9.433). Again females were 70% less likely to have alcohol related interpersonal violence injury as compared to their counter parts (AOR: 0.30095% CI 0.175-0.512).

## **CONCLUSION AND RECOMMENDATION**

In this study, the overall incidence of ARVI was high. Multivariate logistic regression shows sex, poor behavioral control and poor family functioning to be independently associated with the outcome variable. As such, counseling services focusing on methods to reduce alcohol consumption, especially with those individual with poor self-control, are urgently needed.

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