

**RESEARCH PAPER****ALCOHOL USE DISORDERS AND ASSOCIATED FACTORS AMONG PATIENTS ADMITTED TO MEDICAL UNITS, AT TEACHING HOSPITAL KANDY**

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**Abstract**

**Background:** Alcohol is an organic substance which is known to produce dependence. The burden and mortality related to alcohol use and related illnesses have a significant psychosocial and economic impact in most of the countries.

**Objectives:** To estimate the prevalence, describe the patterns of alcohol use disorders and risk factors among patients admitted to the medical units of Teaching Hospital Kandy for a period of one year from December 2016 to November 2017.

**Methods:** A descriptive cross sectional study was conducted in the medical wards of Teaching Hospital Kandy for a period of one year from December 2016 to November 2017. A total of 386 participants were selected using a systematic random sampling technique. An interviewer administered, structured questionnaire and a screening tool, namely the Alcohol Use Disorders Identification Test (AUDIT) were used to collect data.

**Results:** The prevalence of alcohol consumption in the sample was 67.6% (N=261). All were consuming arrack. According to the alcohol consumption score, a majority of the alcohol consumers (n=183:70.1%) were in the low risk level (p<0.001). According to the dependence score a majority (n=213:81.6%) were included into the “no alcohol dependence level”. But when the problematic score was considered, a majority of the participants were included in to the problematic use of alcohol category (n=156, 59.8%). Being older than 50 years of age (OR=2.326:95%CI=1.349-4.011) and being married (OR=5.31:95%CI=1.371-20.574) were associated with a higher alcohol consumption score. Alcohol dependence was higher among participants with a low monthly income (OR=3.075:95%CI=1.575 - 6.003).



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**Conclusions:** The prevalence of alcohol use among patients admitted to medical wards of Teaching Hospital Kandy is high. Among patients with medical disorders who consumed alcohol, in many the alcohol intake was at a problematic level. Considering the total AUDIT score, most of the patients were in the hazardous, harmful or high risk groups, which need special attention to minimize the risks of alcohol related problems in the future. Therefore specific management strategies combined with psychiatric and medical treatment programmes should be planned in the future.

**Keywords:** alcohol, consumption, dependence, score

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## Introduction

Alcohol is an organic substance which is known to produce dependence<sup>1</sup>. The patterns of alcohol consumption and the types of alcohol related problems vary from country to country<sup>2</sup>. The burden and mortality related to alcohol use and related illnesses have a significant psychosocial and economic impact in most of the countries<sup>3</sup>. Intentional and unintentional injuries, malignancies, hepatic disorders and psychological dependency are common physical and psychological sequela of alcohol consumption<sup>4</sup>. Each year more than three million mortalities are reported due to alcohol related problems. Approximately 6% of all the mortalities around the world are caused by unsafe use of alcohol<sup>5</sup>. The harmful use of alcohol encompasses several aspects of drinking, such as the volume of alcohol drunk over time; the pattern of drinking that includes occasional or regular drinking to intoxication; the drinking context, for example if it increases the public health risks; and the quality or contamination of alcoholic beverages<sup>6</sup>. Alcohol use disorders are a recognized clinical condition related to alcohol use<sup>7</sup>. People may develop withdrawal symptoms when abruptly reducing or discontinuing their alcohol intake, which is one of the diagnostic criteria of alcohol dependence syndrome<sup>2</sup>. The impact of alcohol on a person may be influenced by his/her genetic, psychological, social and environmental factors<sup>8</sup>. The proportion of the Sri Lankan

population who has ever used alcohol is reported to be 42.4%, being 69.6% among males and 26.5% among females<sup>9</sup>. The average number of patients admitted due to disorders related to alcohol consumption were 7353 per year from 2004 to 2012<sup>10</sup>. The management of alcohol use disorders may contribute to a significant portion of the national health care expenditure.

## Materials and Methods

A descriptive cross-sectional study was conducted at the medical wards of Teaching Hospital Kandy for a period of one year, from December 2016 to November 2017. Patients aged above 18 years were included in the study. Patients with other psychiatric disorders and patients on treatment for alcohol withdrawal syndrome were excluded from the study. The sample consisted of 386 participants, selected by the systematic random sampling technique.

An interviewer administered structured questionnaire as administered. A screening tool for alcohol use disorders, namely the Alcohol Use Disorders Identification Test (AUDIT), published by the WHO, was used as the study instrument<sup>7,11</sup>. Concurrent validity of this AUDIT tool was achieved in 2007 for the Sri Lankan population<sup>9</sup>. This tool classifies and identifies alcohol use disorders in two steps. The first step is identification of consumption, dependence and problematic alcohol via several specific questions. In the second step, identification

of individuals as low risk, hazardous, harmful and high risk is done, based on the scores of all the answers given for the questions (Table 1)<sup>(7)(12)</sup>. Both the above mentioned steps were conducted during this study. The practical feasibility of using a questionnaire was estimated before conducting the study. Ethical clearance was obtained from the Ethical Review Committee, Teaching Hospital Kandy.

Informed written consent was obtained prior to data collection. The data were analysed by using SPSS version 23.0. All continuous variables were described using measures of central tendency. Frequencies and percentages were used to describe categorical variables, and 95% confidence interval and 0.05 probability cut off level were used for statistical significance.

## Results

The age of the participants ranged from 18-84years (mean =50.45years: SD=16.47years). A majority were in the 46-65 years age group (n=182, 47.21%). Relative to each age group, the distribution of the study participants between the age groups was significantly different ( $\chi^2=128.11$ ,  $p<0.001$ ). A majority were married (n=330, 85.5%), and most were Sinhalese in ethnicity (n=329, 85.2%) (Table 2).

When the educational level of all the study participants was considered, 7.5% (n=29) had not attended school and 6.5% (n=25) had completed a basic degree. The educational level of the majority was below

ordinary level (n=250, 64.8%). A majority was manual workers (n=189, 49%) and earned a monthly salary of less than Rs. 25,000/- (n=184, 47.7%) (Table 2).

In this study sample, the proportion of current users of alcohol was 67.6% (n=261). With regards to the type of alcohol used, all users were consuming arrack. When all the alcohol users were considered, 63.6% were smoking nicotine (n=166) and 44.1% were betel chewers (n=115).

According to the alcohol consumption score, a significant number of alcohol consumers (n=183, 70.1%) were in the low risk level ( $\chi^2=42.24$ :  $p<0.001$ ). According to the dependence score, a majority of the alcohol consumers (n=213, 81.6%) belonged to the “no alcohol dependence level”. But when the problematic score was considered, a majority of the alcohol consumers were included in to the “problematic use of alcohol” category (n=156, 59.8%). According to the total score, 46.4% belonged to the ‘low risk category’ and the remainder were hazardous, harmful or high risk users of alcohol (n=140, 53.6%) (Table 3).

Being older than 50 years of age (OR=2.326:95%CI=1.349-4.011) and being married (OR=5.31:95%CI=1.371-20.574) was significantly associated with a high alcohol consumption score. According to the risk levels, low income (OR=0.946) and an educational level below Ordinary Levels

**Table 1. Categorization of level of alcohol consumption according to the total AUDIT score**

Total AUDIT Score	Level of alcohol consumption
0-7	Low Risk
8-15	Hazardous
16-19	Harmful
>20	High Risk or Dependence

**Table 2. Socio Demographic profile of the participants**

	<b>Category</b>	<b>(N)</b>	<b>Percentage ( %)</b>
<b>Age</b>	<25 years	34	8.8
	26-45 years	106	27.5
	46-65 years	182	47.2
	>66 years	64	16.6
<b>Marital status</b>	Married	330	85.5
	Unmarried	56	14.5
<b>Ethnicity</b>	Sinhala	329	85.2
	Muslim	26	6.7
	Tamil	25	6.5
	Other	6	1.6
<b>Educational status</b>	No Schooling	29	7.5
	Below O/L	250	64.8
	Up to A/L	82	21.2
	Graduated	25	6.5
<b>Occupation</b>	Labourer	189	49.0
	Non-Executive	78	20.2
	Executive	14	3.6
	Entrepreneur	69	17.9
	Professional	3	0.8
	Retired	22	5.7
<b>Income</b>	<25000	184	47.7
	26000-50000	160	41.5
	51000-75000	27	7.2
	>75000	3	.8
	<b>Total</b>	<b>386</b>	<b>100</b>

(OR=0.712) were identified as protective factors against a higher consumption score, but these findings were not statistically significant (95% CI 0.556-1.609 and 0.395-1.283 for low income and education level, respectively). A majority of the smokers had a low consumption score, however smoking was a non-significant risk factor for a higher alcohol consumption score (OR=1.551, 95% CI=0.877-2.743) (Table 4).

Being less than 50 years of age was associated with alcohol dependence, but again this risk was not statistically significant (OR=0.661, 95% CI=0.349 – 1.252). None of the unmarried participants had alcohol dependence. Alcohol dependence was higher among participants with a low monthly income (OR=3.075, 95% CI=1.575 - 6.003). Having a monthly income of less than Rs 25,000/= and being a smoker (OR = 4.190, 95% CI=1.797 -

**Table 3: Pattern of Alcohol use disorders among participants**

	Number (N)	Percentage (%)	
<b>Consumption score</b>			
<b>Low risk</b>	183	70.1	$X^2=42.24$
<b>High risk</b>	78	29.9	$p<0.001$
<b>Dependence score</b>			
<b>No alcohol dependence</b>	213	81.6	$X^2=104.31$
<b>Alcohol dependence</b>	48	18.4	$p<0.001$
<b>Problematic score</b>			
<b>no</b>	105	40.2	$X^2= 9.96$
<b>yes</b>	156	59.8	$p=0.002$
<b>Total Score</b>			
<b>Low Risk</b>	121	46.4	
<b>Hazardous level</b>	87	33.3	$X^2=102.63$
<b>Harmful level</b>	19	7.3	$p<0.001$
<b>High Risk</b>	34	13.0	
<b>Total</b>	261	100	

**Table 4: Factors associated with alcohol consumption among participants**

		Consumption score		OR	95%CI
		High	Low		
<b>Age</b>	<b>&gt;50years</b>	49	77	2.326	1.349 – 4.011
	<b>&lt;50years</b>	29	106		
<b>Marital status</b>	<b>Married</b>	76	153	5.31	1.371 - 20.574
	<b>Unmarried</b>	2	30		
<b>Income</b>	<b>&lt;Rs.25000/=</b>	36	87	0.946	.556- 1.609
	<b>&gt;Rs.25000/=</b>	42	96		
<b>Education</b>	<b>Below O/level</b>	54	139	0.712	.395- 1.283
	<b>Above O/level</b>	24	44		
<b>Smoking</b>	<b>Yes</b>	55	111	1.551	.877- 2.743
	<b>No</b>	23	72		
<b>Total</b>		<b>78</b>	<b>183</b>		

9.775) was identified as significant factors associated with alcohol dependence. Having a relatively low educational level was also noted to be a factor associated

with alcohol dependence, but this finding was not significant (OR=1.186, 95% CI=0.566 - 2.485) (Table 5).

**Table 5: Factors associated with alcohol dependence among participants**

Age	Dependence score		OR	95%CI
	High	Low		
>50years	19	107	0.661	0.349 – 1.252
<50years	29	106		
<b>Marital status</b>				
Married	48	181	-	-
Unmarried	-	32		
<b>Income</b>				
<Rs.25000/=	33	90	3.075	1.575 - 6.003
>Rs.25000/=	15	123		
<b>Education</b>				
Below O/level	37	156	1.186	0.566 - 2.485
Above O/level	11	57		
<b>Smoking</b>				
Yes	41	125	4.190	1.797 - 9.775
No	7	88		
<b>Total</b>	<b>48</b>	<b>213</b>		

When the problematic score was considered, none of the factors reviewed showed a significant association. Being married (OR=1.329, 95% CI=0.612 - 2.887) and having an educational level above ordinary levels (OR=0.821, 95% CI=0.464-1.452) were identified as factors associated with problematic alcohol use; being over 50 years (OR=0.759, 95% CI=0.462 – 1.247) was negatively correlated with problematic alcohol use, but again these findings were not significant (Table 6).

## Discussion

According to estimations done in 2014, the period prevalence of alcohol consumption in Sri Lanka was approximately 40%<sup>9</sup>. The current study was conducted among patients who were admitted with medical disorders and among them, the proportion of current alcohol users was as high as 67.6%. While a majority of them did not have features of alcohol dependence, the fact that many had a problematic pattern of alcohol use, as screened by the AUDIT, is cause for concern.

A significantly positive correlation was observed between alcohol consumption and increasing age. This creates several complicated implications, as the prevalence of most of the non-communicable diseases increases with the advancing age. Alcohol adds to the complication of other comorbid medical disorders, and worsens the prognosis of these disorders.

When the pattern of consumption was concerned, a majority of the alcohol consumers had either hazardous, harmful or high-risk patterns of use (Table 3). These are important findings that should be addressed. Participants with alcohol dependency had a relatively low income (Table 5). Married people showed a higher risk for problematic alcohol usage (Table 5). On the other hand, having a low educational level and a higher income increased the risk of problematic alcohol use (Table 5). These associations should be studied further in more detail.

In 2007, Tomkine et al., stated that educational level, unemployment, low income and poor socioeconomic status are strongly associated with a hazardous level

**Table 6: Factors associated with problematic alcohol use among participants**

	problem score		OR	95%CI
	present	absent		
<b>Age</b>				
>50years	71	55	0.759	0.462 – 1.247
<50years	85	50		
<b>Marital status</b>				
Married	135	94	1.329	0.612 - 2.887
Unmarried	21	11		
<b>Income</b>				
<Rs.25000/=	78	45	1.333	0.810-2.194
>Rs.25000/=	78	60		
<b>Education</b>				
Below O/level	113	80	0.821	0.464-1.452
Above O/level	43	25		
<b>Smoking</b>				
Yes	106	60	1.509	0.953-2.654
No	50	45		
<b>Total</b>	<b>156</b>	<b>105</b>		

of alcohol consumption. The present study too shows that income and educational level are strongly associated with a hazardous level of alcohol consumption<sup>13</sup>. According to the study done by Fink et al, 35% were hazardous level drinkers and participants less than 75 years were more prone to problematic alcohol use<sup>14</sup> in our study this was seen in participants less than 50 years of age<sup>15</sup>. The same study instrument was applied among Sri Lankan Navy officers in 2012<sup>16</sup>. According to the results of that study, the prevalence of alcohol consumption was 71.2% among participants<sup>16</sup>. The prevalence of alcohol consumption among participants was approximately equal in the study done among the Sri Lankan Navy officers and the present study (Table 3). Among Navy officers, 16.69% were hazardous level alcohol users<sup>16</sup>, but medical patients in this study had a twice as high rate of hazardous use of alcohol (Table 3). In both studies young age, marital status and smoking

status was positively associated with alcohol used disorders<sup>17</sup> (Table 4, 5 & 6).

Although alcohol consumption was at a low risk level among a majority of low-income participants, they were more prone to have problematic or harmful patterns of use (Table 4, 5 & 6). A majority of the participants of all the alcohol usage categories were smokers (Table 4, 5 & 6). This would augment the harmful effects of alcohol and also act as a risk factor for developing other non-communicable pathologies.

Hazardous drinking is a pattern of alcohol consumption that increases the risk of harmful consequences for the users or others. Harmful use of alcohol refers to alcohol consumption that results in harmful consequences to physical and mental health. Alcohol dependence is a cluster of behavioral, cognitive and physiological phenomenon that may develop after repeated alcohol use. Specific treatment is

required for harmful use and dependence. These conditions may often also be associated with co-morbid psychiatric comorbidities<sup>18</sup>. Rational and methodical management is an essential need for a person suffering from these disorders and a proper assessment by a consultant psychiatrist is mandatory. But challenges in treating patients with alcohol use disorders of different levels include, lack of motivation on part of the affected person to seek help at specialized psychiatric units for proper treatment. Therefore, measures such as community awareness and screening programs to identify and refer at risk and dependent patients to specialized centers may be beneficial in this regard. Evidence suggests that hazardous and harmful drinkers will benefit from brief clinical interventions and counselling programmes in medical wards and primary care settings.

Patients with alcohol use disorders, particularly dependent patients, have a high level of psychiatric and physical comorbidities<sup>4,9</sup>. These patients are likely to present to hospital seeking treatment for other medical comorbidities<sup>18</sup>. These associated medical comorbidities include liver disease, inflammatory conditions in pancreas, heart failure, clotting disorders, non-psychological CNS dysfunctions and infections due to immune suppression. These patients get admitted to busy medical and surgical wards, where staff may have limited time and lack specialized knowledge and skills to address the associated alcohol related and psychological problems. Therefore development of more integrated management strategies, and improvement of identification and referral services may help reduce morbidity in these patients.

## **Limitations**

This study was conducted in a single treatment unit established at a local setting. Selection of the sample was done by systematic random sampling technique and sampling was not done to allow equal distribution of the confounding factors. Therefore, representativeness and the heterogeneity of the study sample may have been limited.

As the selection of the study participants and data collection were done by the principal investigator, selection bias and an information bias may have occurred. But efforts were made to minimize this bias by use of the internationally accepted and used AUDIT tool and guidelines. However a possible limitation is that for this study, the original AUDIT tool, and not the locally validated version, was used.

## **Conclusions**

The prevalence of alcohol use among patients admitted to medical wards of Teaching Hospital Kandy is high. Considering the total AUDIT score, most of the patients were in the hazardous, harmful or high risk groups, which need special attention to minimize the risks of alcohol related problems in the future. Therefore specific management strategies combined with psychiatric and medical treatment programmes should be planned in the future.

**Conflicts of Interest-** No conflicts of interests to be declared.

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