

Research Report

ALCOHOL USE DISORDERS IN MALES WHO HAVE SURVIVED A SUICIDAL ATTEMPT- A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Alcohol use disorders could be a major risk factor for suicidal behaviour. Our study aimed to find out the proportion of adults with Alcohol Use Disorder (AUD) in males who have survived a suicidal attempt and to find out the association of AUD and alcohol use-related factors with high suicidal intent. **Methods:** This cross-sectional study of 230 consecutive male inpatients of age 18-70 years admitted with non-fatal suicidal attempt in consultation liaison psychiatry used a specifically designed proforma to get the socio-demographic, suicide, and alcohol use-related variables. The suicide intent was assessed using Beck's Suicide Intent scale. The Alcohol Use Disorders Identification Test (AUDIT) was used to identify AUD. The severity of Alcohol Dependence Questionnaire (SADQ) was used to assess the severity of AUD. **Results:** 43.9 % of adult males with non-fatal suicidal attempt had AUD, and 15.2% had high suicidal intent, 63 (62.4%) had used alcohol on the day of the attempt, and 40 (39.6%) of them used alcohol before the attempt to facilitate the suicidal attempt. Of the patients with moderate or low suicidal intent, 75 (38.5%) had AUD, and 26 (74.3%) with high suicidal intent had AUD, which was found to be significant ($\chi^2 = 15.46$, $p = 0.001$). Severity of alcohol dependence had a significant association with high suicidal intent ($\chi^2 = 4.46$, $p = 0.03$). Logistic regression after adjusting for confounders showed that AUD [Odds ratio= 4.18 (1.78-9.79); $p=0.001$] and severity of AUD [Odds ratio= 3.33 (1.33-8.30); $p=0.01$] remained significant risk factors for adult suicide attempts. **Conclusions:** AUD was found to be significantly associated with high suicidal intent among adult males who have survived a suicidal attempt. Early recognition of risk factors for suicide, including alcohol use disorders and various alcohol use-related factors, helps in preventing suicides.

Keywords: Alcohol Use Disorder, Severity of Dependence, Intentional Self-harm, Suicidal Intent

INTRODUCTION

In the last two decades, more than one lakh Indians have committed suicide every year.¹ Suicide rate in southern states of India, especially in Kerala, is higher than in northern states.² A Previous suicide attempt is the single most important risk factor for further attempts. Also, substance use disorder, primarily Alcohol Use Disorder (AUD), is found to be a major risk factor for attempted suicides. A study on alcohol use and its

correlates in suicide attempters in a rural tertiary care teaching hospital in South India has found that 43.43% of males had consumed alcohol before attempting suicide.²

Alcohol use and suicide attempts showed a positive relationship in many studies conducted worldwide based on the relation between AUD and risk and intent of suicide. Severe problematic alcohol use also contributes to disinhibition and feelings of

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sadness and irritability, which contribute to suicide attempts and completed suicide. Impulsivity and aggression are closely related to alcohol, which increases the risk of suicide attempts.² Alcohol use can increase impulsivity and aggression due to impairments in judgment and decreased inhibitions, which can influence suicidal behavior. Studies have shown that those with alcohol use have a higher risk of suicide attempt than those without alcohol use. Alcohol use also increases the lethality and intent of suicide attempts.^{3,4}

The National Family Health Survey (NFHS-5) reported that 19.9% of men and 0.2% of women in Kerala, aged 15 and above, consumed alcohol.⁵ The state of Kerala had 9549 deaths by suicide in 2021 and ranks fifth in the suicide rate with 26.9 per one lakh population.⁶ One of the main risk factors for suicidal behavior is the harmful use of alcohol and alcohol use disorders.⁷ Prevalence of alcohol use disorders is higher in adult men than in adult women.⁸ Men commit suicide compared to four times as many women, which points towards the importance of alcohol use and suicide attempts in the male gender.⁵

In our institution, on average, around 50-60 males who have survived a suicidal attempt are referred to the Department of Psychiatry per month to avail psychiatric services from other departments. There is a paucity of research regarding the AUD and adult males who have survived a suicidal attempt from Kerala. By gaining a better understanding of alcohol use and suicide attempts in our state, we can offer early intervention and early prevention.

The current study aimed to find out the proportion of adults with AUD in males who have survived a suicidal attempt in a tertiary care setting. This study also aimed to find out the association of AUD and alcohol use-related factors with high suicidal intent.

MATERIALS AND METHODS

The study was a cross-sectional study conducted at the Department of Psychiatry, Government Medical College in Kerala from April 1, 2021, to March 31, 2022. The study population consisted of adult male inpatients aged 18-70 years admitted with non-fatal suicidal attempt referred from other departments to the Department of Psychiatry to avail consultation-liaison services. Adult male patients aged 18-70 years who gave informed consent were included in the study. Patients with intellectual disability and those who refused to give consent were excluded. All consecutive subjects meeting study criteria during the study period were recruited.

The sample size was calculated using the formula $N = 4PQ/d^2$, where P= proportion of alcohol use disorders in males who have survived a suicidal attempt, Q= 100-P, and d= Allowable error (20% of P). In a previous study, the proportion of alcohol use disorders in adult males who have survived a suicidal attempt was found to be 30.29 %.² Hence, the sample size was calculated to be 230. The desired power of the study was determined as 0.8.

The Institutional Ethics Committee approval was obtained prior to the commencement of the study. Written informed consent was obtained from all subjects in the regional language. Confidentiality and privacy were

maintained. The tools for the study were as follows.

Beck's Suicide Intent Scale: The Beck's suicide intent scale was used to assess the intent of the suicidal act. It is a semi-structured, interviewer-administered assessment scale with good internal consistency (Cronbach's $\alpha = 0.90$), reliability ($r = 0.76$), and validity.^{9,10} The scale consists of 2 sections, the first of which is objective, and the second section deals with the subjective characteristics of the suicide attempt. The original scale has 20 items. The first 15 items consist of three statements, each graded on a scale of 0 to 2. The scale has three parts. The items 1–9 form the first part, which asks about the circumstances related to a suicidal attempt. The second part (items 10–15) is a self-report instrument used to assess the individual's thoughts and feelings at the time of the attempt. A score below 10 is considered low intent, 10–15 medium intent, and above 15 as high intent. The self-answering part of this validated scale was translated into the regional language, Malayalam. Experts in the field assessed face validity and content validity. The translated version was back-translated by a language expert to ensure that the meaning had not been altered during the translation process.

Socio Demographic Details and Details of Alcohol Use Related Factors: The Socio demographic factors, type of suicide attempt, past history of suicide attempt, family history of alcohol use, past history of mental illness, substance use disorder other than alcohol, pattern of use of alcohol, frequency and quantity of use, pattern of use while attempting suicide were assessed using specially designed proforma.

AUDIT Questionnaire: The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item screening tool developed by the World Health Organization (WHO) to assess alcohol consumption, drinking behaviors, and alcohol related problems.^{11,12} A score of 8 or more is considered to indicate hazardous or harmful use of alcohol. AUDIT score in the range of 8–15 represented a medium level of alcohol problems, whereas scores of 16 and above represented a high level of alcohol problems. The self-reporting part of this validated scale was translated into the regional language, Malayalam. Face validity and content validity were checked by the experts in the field; the translated version was back-translated by a language expert to see that the meaning had not changed by translation.

Severity of Alcohol Dependence Questionnaire (SADQ): The Severity of Alcohol Dependence Questionnaire was developed by the Addiction Research Unit at the Maudsley Hospital.¹³ It is a measure of the severity of alcohol dependence. The SADQ questions cover the following aspects of dependence syndrome, like physical withdrawal syndrome, affective withdrawal syndrome, relief drinking, frequency of alcohol consumption, and speed of onset of withdrawal symptoms. The answer to each question is rated on a four-point scale from 0 to 3. A score below 16 usually indicates a mild physical dependency, a score of 16–30 moderate dependency, and a score of 31 or higher indicates severe alcohol dependence. The scale was translated in regional language – Malayalam. Face validity and content validity were checked by the experts in the field; the translated version was back-translated by a language expert to see that the meaning had not changed by translation.

This study was a cross-sectional analytical study of all consecutive male inpatients, aged 18-70 years, who were admitted with non-fatal suicidal attempt and referred from various departments of Government Medical College in Kerala, who received consultation liaison psychiatry services during the study period. The Junior Resident and the Consultant saw the patient. Before enrolment in the study, the nature of the study was explained to the participants and their caregivers, and a written informed consent form in the regional language was obtained from those who satisfied the eligibility criteria. A personal interview was conducted, and a self-report of the participant was also collected. A specially designed proforma was used to collect sociodemographic details and other clinical details of participants. Presence of alcohol use disorders in adult males who have survived a suicidal attempt was identified and diagnosed using the AUDIT questionnaire. Alcohol use-related factors, including severity of dependence, were assessed using a specially designed proforma and SADQ. Suicide intent and its severity were assessed using Beck's Suicide Intent scale.

Two hundred and thirty participants were included in the study. Data was entered into a Microsoft Excel sheet and analyzed with R Software version 4.3.0 for Windows. Continuous variables were described as mean and standard deviation. Categorical variables were described as frequency and percentages. The proportion of patients with alcohol use disorder was found with a 95% confidence interval (CI). Bivariate analysis was performed using the chi-square test and odds ratio with 95% CI. Logistic regression was carried out to determine adjusted OR with 95% CI to find out the association between alcohol use disorder

and high suicide intent. The association of alcohol-related factors with high intent suicide was studied, taking the subgroup of the study sample with alcohol use disorder.

RESULTS

The data of 248 patients were obtained by chart review.

Sociodemographic Data

Out of the 230 adult males who have survived a suicidal attempt after AUDIT screening, 101 participants (43.9%) were found to have a score ≥ 8 , indicating the presence of AUD, and 129 participants (56.1%) had a score < 8 . Other substance use was found in 55 (23.8%) of the participants, out of which 39 (16.9%) were having nicotine dependence and 16 (6.9%) had harmful use of other substances. The socio-demographic and clinical characteristics of the adult males who have survived a suicidal attempt and the various modes of attempt to suicide by the participants are summarized. (Table 1 & 2)

Table 1: Socio demographic and clinical characteristics of adult males who have survived a suicidal attempt

Variables		Frequency (n= 230)	Percentage
Age Group	21-30 Years	67	29.1%
	31-40 Years	94	40.9%
	41-50 Years	35	15.2%
	51-60 Years	28	12.2%
	61-70 Years	6	2.6%
Marital Status	Unmarried	86	37.4%
	Married	115	50.0%
	Separated	18	7.8%
	Widower	11	4.8%
Religion	Christian	64	27.8%
	Hinduism	153	66.5%
	Islam	13	5.7%
Education	Illiterate	9	3.9%
	Primary School	14	6.1%
	Middle School	8	3.5%
	High School	165	71.7%

Intermediate/ITI	16	7.0%	
Graduate	8	3.5%	
Post Graduate	6	2.6%	
Professionals	4	1.7%	
Occupation	Employed	214	93.0%
	Unemployed	16	7.0%
Family Type	Extended	60	26.1%
	Joint	104	45.2%
	Nuclear	66	28.7%
Body Mass Index	Normal Weight	189	82.2%
	Under Weight	8	3.5%
	Obese	33	14.3%
Income Status	Below Poverty Line	222	96.5%
	Above Poverty Line	8	3.5%
Past H/o Mental Illness	Yes	27	11.7%
	No	203	88.3%
Past H/o non-fatal suicidal attempt	< 3 Attempts	15	6.5%
	> 3 Attempts	8	3.5%
	No Attempts	207	90.0%
Family H/o Alcohol use	Yes	168	73.0%
	No	62	27.0%
Substance Use other than Alcohol	Harmful Use	16	6.9%
	Dependence	39	16.9%
	No	175	76.2%

Table 2: Type of Suicide Attempt among adult males who have survived a suicidal attempt

Type of suicide attempt	Frequency (N-230)	Percentage
X60. Intentional self-poisoning by and exposure to nonopioid analgesics, antipyretics	14	6.1%
X61. Intentional self-poisoning by and exposure to antiepileptic, sedative hypnotic, antiparkinsonism and psychotropic drugs	6	2.6%
X63. Intentional self-poisoning by and exposure to other drugs acting on the autonomic nervous system	5	2.2%
X64. Intentional self-poisoning by and exposure to other and unspecified drugs, medicaments	17	7.4%
X66. Intentional self-poisoning by and exposure to organic solvents and halogenated hydrocarbons	17	7.4%
X68. Intentional self-poisoning by and exposure to pesticides	49	21.3%
X69. Intentional self-poisoning by and exposure to other and unspecified chemicals and noxious substances	56	24.3%

X70. Intentional self-harm by hanging, strangulation and suffocation	28	12.2%
X76. Intentional self-harm by smoke, fire and flames	7	3.0%
X77. Intentional self-harm by steam, hot vapours and hot objects	3	1.3%
X78. Intentional self-harm by sharp object	17	7.4%
X80. Intentional self-harm by jumping from a high place	11	4.8%

On assessing suicidal intent by Beck's Suicide Intent Scale, it was found that out of 230, 35 (15.2%) [95% CI -10.8%-20.5%] participants had high suicide intent, 96 (41.7%) [95% CI -35.3%-48.4%] patients had low suicide intent, 99 (43.1%) [95% CI -36.6%-49.7%] had medium suicidal intent. Out of the 101 participants with AUD, 63 (62.4%) had used alcohol on the day of the attempt, and 40 (39.6%) of them used alcohol before the attempt to facilitate the suicidal attempt. Among 35 patients with high suicidal intent, 26 (74.3%) had AUD, and nine patients (25.7%) did not have AUD. In patients with moderate or low suicidal intent, 75 (38.5%) had AUD. This association was found to be significant ($\chi^2 = 15.46$, $p = 0.001$). (Table 3)

Table 3: Association of Alcohol Use Disorder and clinical variables with High Suicidal Intent among adult males who have survived a suicidal attempt

Variables	Suicide Intent		χ^2	p
	High n (%)	Medium/Low n (%)		
Age	<40 Years	26 (74.3%)	133 (68.2%)	0.51
	>40 Years	9 (25.7%)	62 (31.8%)	
Marital Status	Married	22 (62.9%)	93 (47.7%)	2.73
	Unmarried /Living Alone	13 (37.1%)	102 (52.3%)	
AUD	Yes	26 (74.3%)	75 (38.5%)	15.46
	No	9 (25.7%)	120 (61.5%)	
Past H/o Mental Illness	Yes	5 (14.3%)	22 (11.3%)	0.25
	No	30 (85.7%)	173 (88.7%)	
Family H/o Alcohol Use	Yes	26 (74.3%)	142 (72.8 %)	0.32
	No	9 (25.7%)	53 (27.2%)	

History of non-fatal suicidal attempt	Yes	18 (51.4%)	19 (9.7%)	0.94	0.76
	No	17 (48.6%)	176 (90.3%)		
Substance Use other than Alcohol	Yes	4 (11.4%)	51 (26.2%)	1.73	0.18
	No	31 (88.6%)	144 (73.8%)		
Psychiatric co-morbidity other than AUD	Yes	18 (51.4%)	122 (62.6%)	1.54	0.21
	No	17 (48.6%)	73 (37.4%)		

Out of 101 patients with AUD, when severity was scored with SADQ, 35 (34.7%) had severe alcohol dependence. Out of the 101 participants with AUD, 76 (75.2%) had started alcohol use at the age of 21-30 years, and 8 (7.9%) started alcohol use after 30 years of age. Of the alcohol use-related factors, only the severity of alcohol dependence had a significant association with high suicidal intent ($\chi^2=4.46$, $p=0.03$). (Table 4)

Table 4: Association of alcohol related factors with suicidal intent

Variables		Suicidal Intent		χ^2	p
		High n (%) 26	Medium/ Low n (%) 75		
Frequency per week in days	<4 days	10 (38.5%)	32 (42.7%)	0.14	0.81
	≥ 4 days	16 (61.5%)	43 (57.3%)		
Quantity per day in drinks	< 4 Drinks	9 (34.6%)	30 (40.0%)	0.23	0.62
	≥ 4 Drinks	17 (65.4%)	45 (60.0%)		
Duration of dependence	< 10 Years	25 (96.2%)	62 (82.7%)	2.94	0.10
	≥ 10 Years	1 (3.8%)	13 (17.3%)		
Pattern of drinking	Episodic	7 (26.9%)	11 (14.7%)	1.98	0.23
	Continuous	19 (73.1%)	64 (85.3%)		
Last drink of alcohol	Day of attempt	19 (73.1%)	44 (58.7%)	1.70	0.19
	Previous days of attempt	7 (26.9%)	31 (41.3%)		
Alcohol use in relation to suicide attempt	Present but not prior to attempt	6 (23.1%)	17 (22.7%)	1.58	0.20
	Prior to attempt to facilitate the	13 (50.0%)	27 (36.0%)		

Severity of Alcohol Dependence	attempt				
	Mild/ Moderate	12 (46.2%)	52 (69.3%)	4.46	0.03
	Severe	14	23		
			(53.8%)	(30.7%)	

Socio-demographic and clinical variables, along with AUD, were included in the model for logistic regression. After adjusting for confounders, Alcohol Use Disorder [Odds ratio= 4.18 (1.78-9.79); $p=0.001$] and severity of AUD Disorder [Odds ratio= 3.33 (1.33-8.30); $p=0.01$] remained significant risk factors for adult suicide attempts.

DISCUSSION

In our study, 101 (43.9%) of the 230 patients were diagnosed with alcohol use disorder using the AUDIT questionnaire. In a study conducted in India, there is a high proportion of comorbid alcohol dependence associated with deliberate self-harm.¹ An earlier study observed that the majority of males who had survived a suicidal attempt were diagnosed with alcohol use disorders.¹⁴ Also, studies in individuals who have survived a suicidal attempt, who had recent consumption of alcohol while attempting suicide, showed a similar proportion of alcohol use disorder.^{15,16,17} Our study is consistent with previous studies indicating that high alcohol consumption among adult men increases the risk of suicide attempt in the same population.^{2,18} A Literature review on suicide risk in AUD had found that 50.7% were at risk of suicide and 40.7% had already made at least one suicide attempt.¹⁹ The proportion of alcohol use disorder among adult men who survived a suicide attempt in our study suggests that alcohol-related factors increase the risk of suicide among them.² Of the total sample, 15% had high suicide intent, and this finding is consistent with previous studies

conducted worldwide.^{20,21} A study conducted in Kerala emphasizes that alcohol abuse can damage social relationships and cause issues in a person's family, community, and place of employment. According to Emile Durkheim's sociological theory of suicide, the risk of suicide attempt increases when social integration is impaired. Substance use can disrupt social relationships and can be seen as a form of anomie that contributes to suicidal behavior. Suicidal ideation may result from social disintegration in people who use drugs or alcohol.²²

In our study, there is a statistically significant association between alcohol use disorder and the severity of suicide intent. Among people with high suicide intent, 74.3% were diagnosed with AUD, and the finding is similar to previous studies.^{23, 24} This cross-sectional study explored the relationship between the severity of suicidal intent and alcohol use disorder. Alcohol increases impulsivity and aggression, which leads to an increase in suicidal behavior, and people with AUD attempt suicide with high intent and lethality. While most of the participants in our study fell into the medium or low suicide intent categories, a greater proportion of those in the high suicide intent category had Alcohol Use Disorder (AUD), and among them, many were also diagnosed with alcohol dependence. This indicates that chronic alcohol use disorder increases the chance of attempting suicide with high intent.²⁵ Continuous use of alcohol impairs the serotonin system, judgment, and impulse control.

Although the majority of suicide attempters were older (age group around 31-40 years), alcohol consumption started at a younger age, i.e., 21-30 years. This finding is consistent with

a previous study, which found that people with suicidal tendencies drink more and start drinking at a younger age.²⁶ In another study, suicide mortality was found to be primarily related to the amount of alcohol consumed per day (>2 drinks) rather than the frequency of drinking per week or total alcohol consumption.²⁷ However, another study found a dose-response relationship between alcohol consumption 6 hours before the suicide attempt and an alcohol intake of up to 20 drinks.²⁸ A large proportion of cases in our study used alcohol to facilitate the attempt (39.6%), which is consistent with the study conducted on patients in South Indian tertiary care hospitals.²

The study was conducted in a tertiary care hospital where the majority of the cases are referred and could have given rise to a Berksonian bias. Most of the patients with severe suicide attempts and severe AUD come as referred cases to our hospital, which could have resulted in selection bias, and the findings may not be generalizable to the general population. This was a cross-sectional study, which limits the ability to establish causality, and the longitudinal course and outcome of patients could not be assessed. As it was a cross-sectional study, we cannot conclude whether high suicidal intent preceded alcohol use or was influenced by alcohol use. Further research on a large sample with a control group can give more valid results.

CONCLUSION

There is a high unmet need of address the risk of AUD in non-fatal suicidal attempts. Earlier recognition of risk factors for suicide, including alcohol use-related factors, will aid in preventing suicides. It is crucial to

encourage help-seeking from families, peers, and professionals when having suicidal thoughts. There is a high need for further research to explore the risk factors associated with AUD in persons who have survived a suicidal attempt, for taking necessary interventions, including deaddiction.

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