

Original Research Article

Alcohol use and its correlates in suicide attempters in a rural tertiary care teaching hospital in south India

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ABSTRACT

Background: The relationship of alcohol and suicide is well documented. The interactions of alcohol use and suicide are complex. Neurobiological, genetic, psychological, social, cultural, and environmental factors are postulated to influence the outcome. Aim was to find the frequency of alcohol use in suicide attempters and evaluate the association of alcohol use and its correlates in subjects who use alcohol to facilitate the attempt.

Methods: It is a cross sectional observational study set in rural background in south India. Consecutive referrals of suicide attempters (n=175) were selected for the study. Details regarding the socio-demographic profile, suicide related details like lethality, intent, suicidal ideation, previous attempts, and alcohol related details like frequency, quantity and age at onset of alcohol consumption were recorded. Statistical significance of various socio demographic and clinical variables in correlation with use to facilitate attempt were analyzed. Logistic regression was used to determine the predictors in this at risk group of suicide attempters.

Results: Over 43.43% of suicide attempters consumed alcohol. Intentional alcohol use prior to attempt to facilitate the attempt group constitutes about 18.29%. High suicide intent and previous suicide attempt emerged as risk factors when alcohol was used to facilitate the attempt.

Conclusions: Determinants, which increase the risk of suicide with alcohol use in rural south India, were identified.

Keywords: Alcohol, Suicide, Deliberate self harm, Lethality, Suicide intent

INTRODUCTION

Suicide is a medical and social problem with a major world-wide impact.¹ It is a major cause for concern in the Indian context as well. The southern states of Andhra Pradesh, Kerala, Karnataka and Tamil Nadu have a suicide rate of >15 per 100,000 which is comparatively higher than the Northern states.² In recent decades alcohol consumption has increased especially in the developing countries.³ Those with alcohol use are at a higher risk of attempted and completed suicide than those without alcohol use problems.⁴ Estimates indicate that 30-50% of males consumed alcohol before attempting suicide.² In another study, alcohol was detected in the

blood samples of 70% of suicide attempters and 66% of suicide completers.⁵

A review article by Stack done across 17 countries, showed a positive correlation between the alcohol consumption and the suicide rate.⁶ There is further evidence to suggest that most of suicide completers suffer from a psychiatric disorder, most commonly mood and substance use disorders.⁷ The lifetime risk of suicide is reported to be between 4.2-15% among patients suffering from alcohol abuse/dependence.⁸⁻¹⁰

According to Durkheim's theory the alcohol-suicide relationship can be explained by two underlying causal

mechanisms. In the first mechanism, acute intoxication is assumed to increase an individual's suicide risk by fostering psychological distress, impulsive behavior, reducing self-control and triggering suicidal tendencies caused by other factors. The second mechanism concerns the long-term effects of abuse on suicidogenic factors such as psychiatric disorders and social disintegration.¹¹ A more recent understanding is that the interactions between neurobiological, genetic, psychological, social, cultural, and other environmental factors-involved in alcohol use may instigate suicide attempts through mechanisms like mood dysregulation, aggression, impulsivity, disinhibitions and impaired judgment.¹²

Alcohol use has been found to be associated with increased rates of suicide ideation, attempts, and completions in several cross-sectional, as well as longitudinal studies.¹³⁻¹⁸ There is however a paucity of Indian studies in this area of research.

The current study aims to fill this gap by finding the frequency of alcohol use in suicide attempters and study the contribution of various correlates in suicide attempters.

METHODS

It was a hospital based cross-sectional descriptive study. It was conducted in a tertiary care medical college hospital with an emergency unit and psychiatry department admitting all cases of suicide attempts. Cases consisted of all-suicide attempters medically stabilized and referred to the psychiatric department for evaluation and further management. Purposive sampling technique was used to select sample. Study was done after taking informed consent from the patients and obtaining the ethical approval from the Institutional Ethical Board.

A total of 175 patients of both sexes, were interviewed and included as subjects during the study period from 01December 2016 to 28 February2018 at P.E.S Institute of Medical Sciences and Research, Kuppam, Andhra Pradesh after they fulfilled the following criteria. The inclusion criteria were:

- Age ≥ 18 years
- Giving informed consent to participate in study.

The exclusion criteria were

- Mental retardation
- Neurological or medical conditions affecting the cognitive status of patient
- Any other psychoactive substance use except nicotine.

Relevant information collected from the patient and their attendants were recorded in a semi-structured proforma. Details regarding the socio-demographic profile, suicide related details like lethality, intent, suicidal ideation,

previous attempts and alcohol related details like frequency, quantity, and age at onset of alcohol consumption were recorded. Psychiatric diagnosis was made as per ICD-10 criteria by a qualified psychiatrist.

Tools of assessment

*Severity of Alcohol Dependence Questionnaire (SADQ)*¹⁹

It is one of a gamut of alcohol problem scales developed to measure degree/severity of alcohol dependence rather than presence or absence of alcohol problem. It is a short, easy-to-complete, self-administered, 20-item questionnaire. There are five subscales with four items in each: Physical withdrawal, affective withdrawal, withdrawal relief drinking, alcohol consumption, and rapidity of reinstatement. Each item is scored on a 4-point scale, ranging from "Almost Never" to "Nearly Always," resulting in a corresponding score of 0 to 3. The total maximum score possible is 60 and the minimum is 0. The degree of dependence is ascertained as mild (total score <16), moderate (total score 16-30) and Severe (>30).

The questionnaire takes between 2 and 5 minutes to administer. During administration of the questionnaire it is ensured that the patients focus on a recent period of drinking that is typical of their heavy drinking.

*Beck suicide intent scale*²⁰

It is a semi-structured, interviewer administered assessment scale consisting of 15 items. It is designed to assess the severity of suicidal intention associated with an episode of self harm. The scale consists of two sections, the first of which is objective, and in the second section, subjective characteristics of the suicide attempt are evaluated. Scores obtained are classified as: 10 points "low- intent", 10-15 points "intermediate- intent" and >15 points "high- intent" suicides. Beck reported high inter-rater reliability ($r=0.95$) and internal consistency (Spearman-Brown coefficient of 0.82). Scores have shown significant associations with the medical seriousness of suicide attempts.

Cases were segregated into two major groups no alcohol use group (absent) and alcohol use in suicide attempters group (present).

Alcohol intake in relation to suicide attempt was categorized into three sub-groups:

- Alcohol use prior to attempt but not related to attempt
- Alcohol use prior to attempt to facilitate the attempt
- Alcohol use present but not prior to attempt.

Alcohol use prior to attempt was taken as positive if the person consumed alcohol within 24hrs prior to the attempt to suicide.

RESULTS

Total of 175 cases were recruited during the study period. Among the 175, n= 76 (43.43%) consumed alcohol, out of which, 22(12.57%) had alcohol use prior to attempt which was not related to the attempt, while 32 (18.29%) had alcohol to facilitate the attempt and 22 (12.57%) consumed alcohol earlier but not within 24 hours prior to the suicide attempt. The distribution of population in these major groups and subgroups was found to be

statistically significant ($P<0.05$) for gender, occupation, education, family type, income, history of previous suicide attempt, history of smoking, perceived stressors and psychiatric diagnosis. Most of attempters who used alcohol to facilitate the attempt were males (96.88%). Most suicide attempters using alcohol to facilitate the attempt belonged to the 41-50yrs age group, were unskilled workers, married, high school educated, came from rural background, and from the low income group (Table 1).

Table 1: Socio demographic distribution of study sample.

	Absent		Present						P value
			Use not related to attempt		Use to facilitate attempt		Use but not prior to attempt		
Age									
18-30 Years	10	52.63%	3	15.79%	4	21.05%	2	10.53%	0.605
31-40 Years	25	52.08%	8	16.67%	6	12.50%	9	18.75%	
41-50 Years	36	56.25%	8	12.50%	15	23.44%	5	7.81%	
51-60 Years	28	63.64%	3	6.82%	7	15.91%	6	13.64%	
Gender									
Male	29	29.59%	20	20.41%	31	31.63%	18	18.37%	0.000*
Female	70	90.91%	2	2.60%	1	1.30%	4	5.19%	
Occupation									
Semiskilled	18	40.00%	9	20.00%	13	28.89%	5	11.11%	0.006*
Skilled	3	23.08%	2	15.38%	5	38.46%	3	23.08%	
Unemployed	17	80.95%	1	4.76%	1	4.76%	2	9.52%	
Unskilled	61	63.54%	10	10.42%	13	13.54%	12	12.50%	
Marital status									
Married	87	60.00%	18	12.41%	24	16.55%	16	11.03%	0.25
Separated	7	46.67%	1	6.67%	3	20.00%	4	26.67%	
Un Married	5	33.33%	3	20.00%	5	33.33%	2	13.33%	
Education									
Primary	59	66.29%	13	14.61%	7	7.87%	10	11.24%	0.000*
High School	13	30.23%	7	16.28%	17	39.53%	6	13.95%	
Illiterate	27	62.79%	2	4.65%	8	18.60%	6	13.95%	
Residence									
Rural	76	58.02%	14	10.69%	25	19.08%	16	12.21%	0.594
Urban	23	52.27%	8	18.18%	7	15.91%	6	13.64%	
Family TZYPE									
Joint	79	63.71%	12	9.68%	16	12.90%	17	13.71%	0.003*
Nuclear	20	39.22%	10	19.61%	16	31.37%	5	9.80%	
Income PM									
10000- 20000	0	00.00%	1	12.50%	4	50.00%	3	37.50%	0.000*
5000-10000	20	39.22%	9	17.65%	17	33.33%	5	9.80%	
< 5000	79	68.10%	12	10.34%	11	9.48%	14	12.07%	

*p value <0.05

In the study population 38.28% (n= 67) had a psychiatric diagnosis, the most common psychiatric diagnosis being depression (20.57%) n=36, further 31.25% of depressive cases used alcohol to facilitate their attempt. Consumption of poison was the most common mode of suicide attempt in 40% (n=70) of our study sample.

Among those consuming poison, the commonest agents used were the organo-phosphorous compounds.

Nineteen (59.38%) of the subjects who used alcohol to facilitate their attempt used a lethal means for their attempt. Eleven (34.38%) subjects of the same group also displayed a high suicide intent.

A total of 101 subjects (57.7%) had perceived stressors prior to their attempt. Previous suicide attempts were reported by 26(14.86%) subjects. Fifty three (30.29%) of

the subjects reported past suicidal ideation. History of smoking was reported by 41(23.43%) of the suicide attempters.

Table 2: Clinical characteristics of the study sample.

Clinical variables	Absent	Present			P Value
		use not related to attempt	use to facilitate attempt	use but not prior to attempt	
Suicide Intent Scale					
Low	47 63.51%	13 17.57%	4 5.41%	10 13.51%	0.001*
Medium	42 56.76%	7 9.46%	17 22.97%	8 10.81%	
High	10 37.04%	2 7.41%	11 40.74%	4 14.81%	
*Lethality of Attempt					
Lethal	42 49.41%	10 11.76%	19 22.35%	14 16.47%	0.166
Non Lethal	57 63.33%	12 13.33%	13 14.44%	8 8.89%	
Mode of Attempt					
Poisoning	38 54.29%	12 17.14%	13 18.57%	7 10.00%	0.173
Drug overdose	31 65.96%	6 12.77%	7 14.89%	3 6.38%	
Others	30 51.72%	4 6.90%	12 20.69%	12 20.69%	
Previous Suicide Attempt					
No	87 58.39%	20 13.42%	21 14.09%	21 14.09%	0.011*
Yes	12 46.15%	2 7.69%	11 42.31%	1 3.85%	
Stressors					
No	50 67.57%	9 12.16%	11 14.86%	4 5.41%	0.032*
Yes	49 48.51%	13 12.57%	21 20.79%	18 12.57%	
Suicide Ideation					
No	72 59.02%	14 11.48%	20 16.39%	16 13.11%	0.638
Yes	27 50.94%	8 15.09%	12 22.64%	6 11.32%	
Smoking					
No	89 66.42%	13 9.70%	16 11.94%	16 11.94%	0.000*
Yes	10 24.39%	9 21.95%	16 39.02%	6 14.63%	
Psychiatric Diagnosis					
Adjustment Disorder	14 63.64%	3 13.64%	2 9.09%	3 13.64%	0.002*
Bipolar Disorder	0 00.00%	2 100.0%	0 00.00%	0 00.00%	
Depression	20 55.56%	3 8.33%	10 27.78%	3 8.33%	
Absent	65 60.19%	13 12.04%	14 12.96%	16 14.81%	
Personality Disorder	0 00.00%	1 25.00%	3 75.00%	0 00.00%	
Psychosis	0 00.00%	0 00.00%	3 100.0%	0 00.00%	

*p value <0.05

Out of the 76 suicide attempters who provided history of alcohol use, 9(5.14%) reported occasional use, 14(8%) harmful use and 53(30.29%) fulfilled the ICD 10 criteria for alcohol dependence.

Out of the 53 dependent subjects, 9 (5.14%) had mild, 28(16%) had moderate and 16 (9.14%) had severe dependence.

Majority (34 out of 76 person's consuming alcohol) had age at onset of alcohol consumption in 21-30yrs (Table 2).

Sixteen of the 32 had age at onset of alcohol consumption as <20yrs in the alcohol use to facilitate the attempt group which was statistically significant.

In the use to facilitate group 48.15% had 2-4 times of frequency of consumption of alcohol per week, majority had 2-4 drinks of alcohol per day and met criteria for moderate severity of dependence which was statistically significant (Table 3).

In the group which used alcohol facilitate the attempt, 40.63% (n=13) consumed alcohol at a frequency of 2-4 times/week, 59.38% (n=19) consumed 2-4 drinks/day,

46.88% (n=15) had moderate degree of dependence and 53.13% (n=17) had moderate degree of suicidal intent on

the Beck's suicidal intent scale, all of which were statistically significant.

Table 3: Alcohol characteristics in comparison with use to facilitate attempt group.

Alcohol Variable	Use to facilitate attempt		P value
	No	Yes	
Age of onset of alcohol use			
21-30 Years	20 58.82 %	14 41.18%	<0.001*
31-40 Years	4 66.67%	2 33.33%	
< 20 Years	15 48.39%	16 51.61%	
>40 Years	5 100.0%	00 00.00%	
Absent	99 100.0%	00 00.00%	
Frequency per week			
<2 Times	8 57.14%	6 42.86%	<0.001*
2-4 Times	14 51.85%	13 48.15%	
>4 Times	19 63.33%	11 36.67%	
Monthly	3 60.00%	2 40.00%	
Absent	99 100.0%	00 00.00%	
Quantity per day			
2-4 Drinks	33 63.46%	19 36.54%	<0.001*
4-10 Drinks	8 47.06%	9 52.94%	
>10 Drinks	3 42.86%	4 57.14%	
Absent	99 100.0%	00 00.00%	
Severity of dependence			
Occasional	6 66.67%	3 33.33%	<0.001*
Harmful use	11 78.57%	3 21.43%	
Mild	5 55.56%	4 44.44%	
Moderate	13 46.43%	15 53.57%	
Severe	9 56.29%	7 43.75%	
Absent	99 100.0%	00 00.00%	

*p value <0.05

DISCUSSION

This cross-sectional study explored the relationship of alcohol and its correlates in suicide attempters. In the subjects who consumed alcohol 38.29% (n=67) met criteria for alcohol use disorders. Alcohol use disorders ranged from 26.5% to 44.4% among suicide attempters.²¹⁻²⁷ Alcohol was used to facilitate the suicide attempt in 18.29% of our study population. In an earlier study 33% of individuals were found to have consumed alcohol to facilitate a suicide attempt.²⁸

Most females (90.91%) in our study group did not use alcohol prior to their suicidal attempt. More research on suicide and alcohol use disorders in women is warranted in order to draw conclusions on the influence of alcohol in female suicide attempters. Suicide attempters in our study consisted of more males (56%) than females (44%), as was found in another study done by Bhattacharjee et al.²⁹ This is in contrast to literature available that states that suicide attempts are more common in females.³⁰ This

can be partly explained by the fact that most of the males in our study were farmers and this trend may be representative of the local conditions of dwindling agricultural income and crop failures due to inadequate rains resulting in financial crisis leading to higher suicide rates.³¹

A substantial proportion of 16.55% (n=24) individuals in use to facilitate group were married, which is akin to another study done in rural south Indian population, which proposed that marital conflicts and family stress would have contributed to the increased number of suicide attempts in the married group.³²

Though only a small proportion of cases in our study used alcohol to facilitate the attempt, the intent to kill self was definitely higher in this group as well as a greater number (22.35%) of lethal attempts in comparison to other alcohol use groups. This finding is similar to another study done in patients of mood disorders with suicide attempts under influence of alcohol.³³

The group which used alcohol to facilitate the suicidal attempt had more depressive cases compared to other alcohol use groups. Cheng et al showed that apart from substance dependence and personality disorders, depression was a major contributor for suicide.³⁴ Our study did not further explore the relationship of depression and alcohol in suicide attempters. This provides the ground for future research in this direction.

High suicide intent OR = 12.14, 95% CI [2.64, 55.86], $p = 0.001$ and previous suicide attempt OR = 8.31, 95% CI [1.63, 42.25], $p = 0.011$ emerged as predictors of attempt in the group which used alcohol to facilitate their suicidal attempt. These findings are similar to those found in another study which predicted that risk for subsequent attempts is higher among those with recent suicidal ideation and previous suicide attempts.³⁵ History of smoking was positive in greater number of participants in the group, which used alcohol to facilitate the suicidal attempt. This finding concurs to previous study showing cigarette smoking is associated with higher rates of suicide.³⁶ The correlations of the combined effect of alcohol and smoking in suicidal behaviour was beyond the scope of this study.

Though the proportion of individuals who attempted suicide were older (41-50yrs) the consumption of alcohol had started at an earlier age (age at onset <20yrs) in use to facilitate group. Additional work on the genetic susceptibility and familial influences (nature versus nurture) might lead to a deeper understanding of the current findings. Higher degree of alcohol severity (moderate to severe) was observed in use to facilitate group. This finding correlates with an earlier study in which individuals with suicidal inclinations show heavier drinking pattern and younger age of onset of alcohol use.¹ Majority who consumed alcohol to facilitate attempt had increased quantity of consumption (>2 drinks). In another study, suicide mortality tends to be associated primarily with quantity of alcohol consumed per drinking day (>2 drinks), not with drinking frequency or overall alcohol consumption.³⁷

Limitations in this study are that since this is hospital based, it cannot be generalized to the general population. Details of the blood alcohol levels just prior to suicide attempt were not collected. There is sufficient research done on alcohol and suicide in adolescents, our study didn't include this age group which is a drawback as we couldn't conclude on the overall effect across all age groups. It is important to evaluate the role of other substances influencing suicidal behaviour which were excluded in the present study.

CONCLUSION

Alcohol and suicide have become a heavy burden on society. There is need for a successful approach to tackle coexisting issues of alcohol and suicide as it poses many challenges on healthcare and has psycho-social, financial

and social consequences. Strategies to provide prevention plans and evidence based management of patients with alcohol use surviving suicide is the need of the hour. Healthcare professionals particularly psychiatrists should pay heightened attention to alcohol use in suicide attempters and devise suicide risk assessment in alcohol use disorders. Individuals need to be evaluated for co morbid psychiatric disorders and are to be treated adequately. There is a need for crafting of specific alcohol policy which proved effective in reducing suicide deaths in alcohol using populations of other countries where it was implemented.

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