

Original Article

Putative Effect of Alcohol on Suicide Attempters: An Evaluative Study in a Tertiary Medical College

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ABSTRACT

Context: Alcohol abuse is a known risk factor for suicide. Alcohol increases aggression and impulsivity, which are strongly related to suicidal behavior. Sociocultural factors influence both alcohol use and suicide rates. Studies, conducted in one population, are not applicable to other and the results cannot be generalized. **Aims:** The aim was to study the putative role of alcohol in suicide cases in the rural Indian population by analysis of various sociodemographic variables. **Settings and Design:** This was a cross-sectional study in conducted in a tertiary medical college. **Materials and Methods:** Two hundred consecutive patients who survived a suicide attempt were evaluated by a psychiatrist. The data were recorded for sociodemographic variables, psychiatric disorders, suicide intent, lethality of the suicide attempt, and history of alcohol intake prior to the suicide attempt. Using alcohol intake prior to the suicide attempt as a determining dimension, various sociodemographic variables were analyzed for their statistical significance and the role of alcohol in suicide cases was assessed. **Results:** Seventeen percent suicide attempt survivors had a history of alcohol intake prior to the suicide attempt. Fifteen percent had a history of alcohol use disorder. Alcohol use affected the suicide rate in the male population in the late twenties to mid-thirties age group, illiterate and people with high school education, semiskilled workers, shop owners, and student population. Alcohol dependence, bipolar II disorder, intermittent explosive disorder, and dysthymic disorder had higher rate of suicide attempt with the use of alcohol prior to the suicide attempt. Alcohol users attempted a more lethal suicide attempt and were found to have problems with primary support group and occupational problem as precipitating stressor for suicide attempt. **Conclusions:** Alcohol use increases the suicide rate, in the specific rural Indian population.

Key words: *Alcohol use disorder, lethality, suicide intent, suicide*

INTRODUCTION

The suicide rate in India is high and poses a major public health challenge. More than one lakh Indians

commit suicide every year and in the last two decades, the suicide rate has increased from 7.9 to 10.3 per 100,000. Suicidal behavior is determined by a number of social and individual factors. Alcoholism plays a major role in suicide in India. A total of 35% of suicide cases in India are attributed to alcohol Dependence and alcohol abuse, with particularly 30%–50% of male suicide cases being under the influence of alcohol.^[1]

Suicidal behavior is strongly determined by two important factors: aggression and impulsivity. A lower serotonin level has been implicated both for the aggression/impulsivity and suicidal behavior. As both of

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these factors are closely related to alcoholism, constructs related to aggression and impulsivity confer additional risk for suicide in people with alcohol dependence.^[2] The lifetime mortality rate due to suicide is as high as 18% under the influence of alcohol dependence.^[3]

Acute alcohol intake is associated with suicide. A high rate of positive blood alcohol level has been found in the suicide completers, and intoxicated attempters use a more lethal mode of suicide attempt.^[2]

Various recent studies in different countries have tried to establish a relationship between suicide and alcohol consumption. While studies from Belgium, Canada, The Netherlands, New Zealand, Norway, Sweden, Switzerland, USA, West Germany Czechoslovakia, Denmark, Finland, and Luxembourg found a positive correlation, other studies from Denmark, Luxembourg, and New Zealand failed to establish a positive association between per capita alcohol consumption and rate of suicide.^[4-7] The inconsistencies in results of these epidemiological studies indicate that multiple sociocultural factors affect suicide rates and studies from one country is not applicable to other nations.^[2]

MATERIALS AND METHODS

This cross-sectional study was conducted during 2010–2011, in a large teaching hospital, having major drainage from rural and also nearby urban areas. All the suicide attempters who got admission in this hospital in various departments were referred to the Psychiatry department after discharge for psychiatric evaluation and future management. Those survivors were included in this study, and the related information was also collected from their attendant.

Subjects

A total of 200 ($n=200$) consecutive patients of both sex, were interviewed and taken as subjects, fulfilling the following inclusion criterion: (1) age ≥ 15 years and (2) willingness to participate and give valid informed consent. The exclusion criteria were (1) mental retardation and (2) cognitive impairment.

Procedure

The nature and aims of the study were fully explained to the patient and their attendant. Written informed consent was taken before the interview. Relevant data were then collected in especially designed semistructured sociodemographic proforma, documenting sociodemographic variables and in the Beck Suicide Intent Scale questionnaire for measuring the suicide intent. The information regarding alcohol intake prior to the suicide attempt and previous alcohol consumption behavior were collected in the “Other

aspect” questionnaire in the Beck Suicide Intent Scale and in separate proforma. “Relationship between alcohol intake and attempt” had three aspects and so was subcategorized accordingly: (1) some alcohol intake prior to but not related to attempt, reportedly not enough to impair judgment, reality testing (Some Alcohol Intake subgroup); (2) enough alcohol intake to impair judgment, reality testing and diminish responsibility (Enough Alcohol Intake subgroup); (3) intentional intake of alcohol in order to facilitate the implementation of attempt (Intentional Alcohol Intake subgroup). We also included questions on stressor (according to Axis IV of DSM-IV-TR diagnosis) in the proforma. The lethality of the suicide attempt (lethal or nonlethal) was assessed from the emergency report on admission, based on clinical conditions of the patient during admission. The lethality of the attempt was assessed after the completion of the interview to prevent interviewer bias in assessing suicide intent. Psychiatric diagnosis was made according to DSM-IV-TR diagnostic criterion.

RESULTS

After clustering the total population into two major groups by using the history of alcohol intake prior to the suicide attempt as the determining dimension, we found that the mean age of the “Absent” group (negative history of alcohol intake prior to the suicide attempt) was 25.40 ± 9.3 years and that of the “Present” group (positive history of alcohol intake prior to the suicide attempt) was 28.33 ± 1.52 years for the “Some Alcohol Intake” subgroup, 32.56 ± 10.75 years for the “Enough Alcohol Intake” subgroup, and 25.66 ± 9.15 years for the “Intentional Alcohol Intake” subgroup. A total of 34 survivors (17%) had a history of alcohol intake prior to the suicide attempt. The distribution of population in those major groups and subgroups was found to be statistically significant ($P < 0.05$) for age, gender, educational status, occupational status, residence, Axis I psychiatric disorder (DSM-IV-TR), lethality of the suicide attempt, and perceived stressor. Most of the attempters who had a history of alcohol intake prior to the suicide attempt were males (30.31%), and of them, majority had a history of “enough alcohol intake” (22.22% of males) to impair judgment. A total of 24.05% of the illiterate population had a history of “enough alcohol intake” and formed the bulk of the “Present” group. Most of the people, having a positive history for alcohol intake, were unskilled workers (40%), shop owners (53.81%), and students (25%), and of them unskilled workers (33.34%) and shop owners (30.77%) had a major history of “enough alcohol intake.” A total of 10.0 % of student had a history of “intentional alcohol intake” to facilitate suicide [Table 1]. Most of the patients were from

rural background (98.5%) and of them 16.75% had a history of alcohol intake prior to the suicide attempt [Table 2]. Alcohol use disorder was found in 15.0% of survivors (alcohol dependence 10% + comorbid alcohol dependence 3.5% + alcohol intoxication 1.5%). Most

of the patients who had a history of alcohol intake prior to the suicide attempt also had diagnosis of bipolar II disorder (66.67%), intermittent explosive disorder (37.5%), dysthymic disorder (66.66%) in Axis I of DSM-IV-TR criterion [Table 3]. A total of 28.76% of

Table 1: Sociodemographic characters of individual groups

History of alcohol intake prior to the suicide attempt	Absent				Present				P value
	Some alcohol intake				Enough alcohol intake		Intentional alcohol intake		
Age (years)									0.001
Mean		25.40		28.33		32.56		25.66	
Median		24		28		36		24	
Std. deviation		9.03		1.52		10.75		9.15	
Gender									—
Male (n=99)	69	69.69%	3	3.03%	22	22.22%	5	5.05%	
Female (n=101)	97	96.03%	—	—	3	2.97%	1	0.99%	
Religion									0.566
Hindu (n=166)	137	82.53%	3	1.79%	20	11.97%	6	3.61%	
Muslim (n=34)	29	85.29%	—	—	5	14.70%	—	—	
Education									—
Illiterate (n=79)	58	73.41%	1	1.26%	19	24.05%	1	1.26%	
Primary (n=39)	36	92.30%	—	—	1	2.56%	2	5.12%	
Middle school (n=69)	62	89.85%	2	2.89%	5	7.24%	—	—	
High school (n=13)	10	76.92%	—	—	—	—	3	23.07%	
Occupation									—
Unemployed (n=12)	12	100%	—	—	—	—	—	—	
Unskilled worker (n=15)	9	60%	—	—	5	33.34%	1	6.66%	
Semiskilled worker (n=66)	53	80.30%	1	1.51%	12	18.18%	0		
Skilled worker (n=3)	1	33.33%	1	33.33%	1	33.33%	0		
Shop owner (n=13)	6	46.16%	1	7.69%	4	30.77%	2	15.38%	
Housewife (n=71)	70	98.59%	—	—	1	1.41%	0		
Student (n=20)	15	75%	—	—	2	10%	3	15%	

Table 2: Sociodemographic characters (residence, family type) of individual groups

History of alcohol intake prior to the suicide attempt	Absent		Present						P value
			Some alcohol intake		Enough alcohol intake		Intentional alcohol intake		
Residence									—
Rural (n=197)	164	83.25%	2	1.01%	25	12.69%	6	3.05%	0.698
Urban (n=3)	2	66.67%	1	33.33%	—	—	—	—	
Family type									
Nuclear (=111)	91	81.99%	1	0.90%	16	14.41%	3	2.70%	
Joint (n=89)	75	84.27%	2	2.25%	9	10.11%	3	3.37%	

Table 3: Psychiatric diagnostic profile (according to DSM-IV-TR) of individual groups

History of alcohol intake prior to the suicide attempt	Absent		Present						<i>P</i> value
			Some alcohol intake		Enough alcohol intake		Intentional alcohol intake		
Alcohol use disorder									—
Alcohol dependence (<i>n</i> =20)	3	15%	—	—	17	85%	—	—	
Alcohol intoxication (<i>n</i> =3)	0		—	—	3	100%	—	—	
Comorbidalcohol dependence (<i>n</i> =7)	1	14.29%	1	14.29%	2	28.56%	3	42.86%	
Other important Axis I disorder									—
Bipolar II disorder, depressed (<i>n</i> =3)	1	33.33%	2	66.67%	—	—	—	—	
Intermittent explosive disorder (<i>n</i> =8)	5	62.5%	—	—	—	—	3	37.5%	
Dysthymic disorder (<i>n</i> =9)	3	33.33%	1	11.11%	2	22.22%	3	33.33%	
Nil (<i>n</i> =58)	55	94.83%	—	—	3	5.17%	—	—	
Important Axis II disorder									0.937
Borderline personality disorder (<i>n</i> =2)	2	100%	—	—	—	—	—	—	

patients who had made a lethal suicide attempt, also had a history of alcohol intake prior to the suicide attempt. The problem with the primary support group (13.97%) and occupational problems (100%) were important stressors to play a role in alcohol intake prior to the suicide attempt [Table 4].

DISCUSSION

Our study revealed that enough alcohol intake prior to the suicide attempt impaired judgment and reality testing and diminished responsibility affected the suicide rate in the early thirties age group (mean age 32.56 ± 10.75 years); and intentional intake of alcohol in order to facilitate the implementation of attempt was found in the mid-twenties population (mean age 25.66 ± 9.15 years). Alcohol intake prior to the suicide attempt to affect suicide rate posed a problem behavior in male population. It is mainly because of higher prevalence rates of “alcohol use disorder” in men.^[8] Illiterate people (24.05%) and unskilled workers (33.34%) had higher rates of “enough alcohol intake” but high-school-educated people (23.07%) and students (15%) used alcohol more to facilitate their suicide attempt intentionally. In our study, the urban population showed alcohol intake as a problem behavior leading to suicide more often (33.33%), but as their percentage (1.5%) was significantly less in relation to the total study population, it became inconclusive. In various retrospective studies, in suicide attempters with alcohol use disorders, alcohol dependence was

given more emphasis than alcohol abuse.^[9-12] We also found that alcohol dependence (85%) and alcohol intoxication (100%), both diagnoses, were associated with “enough alcohol intake,” and comorbid alcohol dependence (42.86%) was associated with intentional alcohol intake to facilitate suicide attempts. Though previous studies demonstrated that major depressive disorder^[2] is the most important risk factor for suicidal ideation and behavior, our study revealed that dysthymic disorder (66.66%) was more strongly associated with alcohol intake prior to the suicide attempt, but both were enough to impair judgment (22.22%) and intentional to facilitate suicide (33.33%). Aggression and impulsivity are strongly implicated in suicidal behavior. Impulsivity has been related to suicidal and self-destructive behaviors under different psychiatric conditions, including alcohol and substance use disorders.^[13] Supporting the previous literature, intermittent explosive disorder (37.5%) in our study was also associated with intentional alcohol intake to facilitate suicide attempts. Enough alcohol intake prior to the suicide attempt increased the lethality of the suicide attempt as it was found in our study in 17.80% of lethal suicide attempt cases. So alcoholism or alcohol behavior was not only associated with increasing suicide rate in different psychiatric population^[14] but was also showed to increase the lethality of the suicide attempt. Alcohol-dependent individuals who complete suicide are characterized by major depressive episodes and stressful life events, particularly interpersonal difficulties with poor social support.^[11] Alcohol intake

Table 4: Various aspects of the suicide attempt of individual groups

History of alcohol intake prior to the suicide attempt	Absent		Present						P value	
			Some alcohol intake		Enough alcohol intake		Intentional alcohol intake			
Total score on the suicide intent scale										0.116
Low (n=99)	86	—	—	—	12	—	1	—		
High (n=101)	80	—	3	—	13	—	5	—		
Lethality of the suicide attempt										0.002
Lethal (n=73)	52	71.24%	3	4.11%	13	17.80%	5	6.85%		
Non lethal (n=127)	114	89.76%	—	—	12	9.45%	1	0.79%		
Mode of the suicide attempt										0.30
Organopho-sphorus poisoning (n=159)	131	82.39%	2	1.26%	22	13.84%	4	2.51%		
Multiple poisoning (n=1)	—	—	—	—	—	—	1	100%		
Hanging (n=15)	10	66.66%	1	6.67%	3	20%	1	6.67%		
Others (n=25)	25	100%	—	—	—	—	—	—		
Previous suicide attempt										0.625
0 (n=175)	144	82.29%	3	1.71%	22	12.57%	6	3.43%		
<3 attempt (n=17)	17	100%	—	—	—	—	—	—		
3 attempt (n=7)	4	57.14%	—	—	3	42.86%	—	—		
>3 attempt (n=1)	1	100%	—	—	—	—	—	—		
Stressor										—
Problem with primary support group (n=179)	154	86.03%	3	1.67%	16	8.95%	6	3.35%		
Economic problem (n=6)	6	100%	—	—	—	—	—	—		
Occupational problem (n=3)	—	—	—	—	3	100%	—	—		
Not found (n=12)	6	50%	—	—	6	50%	—	—		

in our study also replicated previous findings. We found that alcohol was a problem behavior individuals who attempted suicide out of problems with the primary support group (13.97%) and out of occupational problems (100%).

CONCLUSION

So from our study it was evident that in the rural Indian population, alcohol showed to increase or affect the suicide rate for a particular population or was a risk factor, and the following conclusions were drawn:

1. Male population and people in their mid-twenties and early thirties were at risk
2. Illiterate uses alcohol in enough amounts before the suicide attempt, but educated ones use alcohol intentionally to facilitate the suicide attempt
3. Students use alcohol intentionally to facilitate suicide
4. Comorbid alcohol use disorders increase suicide
5. Dysthymic disorder and intermittent explosive disorder are more strongly associated with alcohol behavior prior to suicide
6. Alcohol increases lethality of the suicide attempt
7. Problems with primary support group is an important stressor in suicide cases associated with alcoholism.

But the study also had following limitations:

1. It was not possible to include all self-harm patients presenting to the general hospital during the study period
2. Follow-up information was not available for the patients in the study sample
3. Some suicides might have been missed owing to their not attending psychiatric department out of stigma.

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