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ORIGINAL ARTICLE

High-risk behavior in patients with alcohol dependence

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ABSTRACT

Context: Severity of alcohol dependence is related to the high-risk behavior of alcohol dependents.
Aim: To assess the high-risk behavior in patients with alcohol dependence and study the association between them.
Settings and Design: This is a descriptive study of high-risk behavior in patients with alcohol dependence, conducted over a period of 15-month duration that is from January 2011 to April 2012 on 200 alcohol-dependent patients (178 men and 22 women) in the Department of Psychiatry, Mamata Medical College and General Hospital, Khammam (TS), India.
Materials and Methods: Patients and their caregivers fulfilling the selection criteria were included in the study, and informed consent was obtained. Interview was carried out after 2 weeks to rule out the possibility of the presence of withdrawal symptoms in alcohol-dependent patients. Tools used for data collection include Sociodemographic and Clinical Profile Schedule, Clinical Institute of Withdrawal Assessment for Alcohol, Mini–Mental Status Examination, Severity of Alcohol Dependence Questionnaire, and High Risk Behavior Questionnaire.
Statistical Analysis: Descriptive statistics, Chi-square test, and logistic regression test were used.
Results: The occurrence of high-risk behavior was substantial among patients with alcohol dependence syndrome. Event analysis method indicated that road traffic accidents associated with prior heavy drinking was the most frequently observed high-risk behavior.
Conclusions: The study reiterates the relationship between alcohol and sexual behavior and also highlights that individuals dependent on alcohol are a specifically vulnerable group.

Key words: Alcohol dependence, event analysis, high-risk behavior, Mini–Mental Status Examination, withdrawal assessment for alcohol

INTRODUCTION

Morbidity and mortality associated with alcoholism is in part related to the link between alcohol use and high-risk behavior.[1] Alcohol use has been shown to be positively correlated with a variety of risk-taking behaviors such as high-risk sexual behavior, violent and criminal acts, self-injurious behavior, and fatal injury including motor vehicle accidents.[2] The term risk implies the probability of occurrence of harm, and different approaches have been used to examine the association between alcohol use and high-risk behavior.[3] Studies indicate that there is a relationship between alcohol use and problematic or risky behavior; however, the nature of these links has often been explained in terms such as "involved," "implicated," and "associated."[2] Literature has shown that alcohol use is positively correlated with sexual behavior

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which predisposes to a high risk for HIV infection.[3] Lifetime drinking problems significantly predicted current criminal behavior (odds ratio 1.3–1.5), with slightly stronger relations (odds ratio 1.7–1.8 and conviction [odds ratio 1.7–1.65]), and approximately 5% of those with alcohol use disorders die by suicide and 20%–35% of completed suicides are carried out by individuals with alcoholism.[4,5] The alcohol use and high-risk behavior are strongly associated, which needs to be addressed, especially in the study area where alcohol consumption is culturally accepted. The present study was undertaken to assess the relationship between high-risk behavior and alcohol dependence in alcohol-dependent patients.

MATERIALS AND METHODS

The present study was conducted over a period of 15-month duration that is from January 2011 to April 2012 on 200 alcohol-dependent patients (178 men and 22 women) at the Department of Psychiatry, Mamata Medical College and General Hospital, Khammam (TS), India. All the patients admitted to Mamata Medical College and Hospital, Khammam (TS), during the study period and their caregivers fulfilling the selection criteria were included in the study, and informed consent was obtained. Interview was carried out after 2 weeks to rule out the possibility of the presence of withdrawal symptoms in alcohol-dependent patients. Personal, family, and clinical details of patients were collected from patients and their caregivers. The Clinical Institute of Withdrawal Assessment (CIWA) for Alcohol was administered to ensure that the patients are not in withdrawal state.

The Severity of Alcohol Dependence Questionnaire (SOADQ) was used to determine the severity of the condition of alcohol-dependent patients. Assessments were cross sectional and nonblind, and the diagnoses of alcohol dependence syndrome were confirmed by the senior consultant in accordance with the International Classification of Diseases-10 criteria. Following this, the data were collected in a systematic approach using the following tools.

Sociodemographic and Clinical Profile Schedule

Sociodemographic and Clinical Profile Schedule sheet was administered on patients to collect information on variables related to personal and family profile including age, sex, level of education, employment status, religion, marital status, occupation, type of family, domicile, and family income. Clinical variables such as age of onset of alcohol use, age of dependence, and duration of dependence were recorded in patients with alcohol dependence syndrome.

Clinical Institute of Withdrawal Assessment for Alcohol 120

The CIWA is an 8-item scale for the clinical qualification of the severity of alcohol withdrawal syndrome. Its origin stems from the 15-item CIWA-A and the 10-item CIWA-Ar (Sullivan *et al*., 1989). It is a reliable, brief, and clinically useful scale. A score of ≤8 indicates that the withdrawal symptoms have either subsided or are minimal. This scale was translated into Telugu, standardized, and administered on the sample.

Mini–Mental Status Examination 121

The Mini-Mental Status Examination (MMSE) is a 30-point cognitive test developed in the 1970s to provide a bedside assessment of a broad array of cognitive function, including orientation, attention, memory, construction, and language. It can be administered in <10 min. The MMSE was translated into Telugu, standardized, and used. The MMSE was used in the present study to rule out cognitive impairment. Patients who were deemed to be out of withdrawal state and not having any cognitive impairment were then assessed on the following measures. The purpose of using MMSE is that it can be quickly administered to alcoholic patients for cognitive mental status examination who might only cooperate for short periods of time.

Severity of Alcohol Dependence Questionnaire 122

This is a 20-item questionnaire designed to measure the severity of dependence of alcohol; it is a short, easy-to-complete, self-administered test. There are five subscales, namely physical withdrawal, affective withdrawal, withdrawal relieves drinking, alcohol consumption, and rapidity of reinstatement; under each subscale, four items are present. As all the patients were Telugu speaking, the SOADQ was translated into Telugu, standardized, and used.

High-Risk Behavior Questionnaire

This questionnaire was developed using the event analysis method.[1] The high-risk behaviors studied included (a) road traffic accidents, (b) crime and violence, (c) self-injurious behavior, and (d) high-risk sexual behavior. The relationship of high-risk behavior to alcohol use was determined by inquiring that critical incident to define the role of alcohol during that incident. The questions included the following:

- Whether alcohol was consumed during or immediately prior to the incident
- The quantity and frequency of drinking
- Consequences of the risk behaviors.

However, the event analysis technique does not eliminate the problems of compounding; individual differences such as risk-taking propensity may be responsible for both alcohol use and risk behavior in these events. The High Risk Behavior Questionnaire was translated into Telugu, standardized, and administered to the sample.

Statistical analysis

The data were analyzed using descriptive statistics, Pearson's correlation coefficient, *t*-test, and logistic regression.

RESULTS [TABLES 1-5]

The occurrence of high risk behaviour was substantial among patients with alcohol dependence syndrome. Event analysis method indicated that road traffic accidents associated with prior heavy drinking was the most frequently observed high risk behaviour.

DISCUSSION

Alcohol consumption is the growing risk factor for disease burden in developing countries.[6] Alcohol dependence causes physical and emotional problems and has a huge impact on family life, employment, violence, and crime.[7-9] Families and society are disrupted, and abuse of alcohol affects nearly every bodily system.[10,11] Alcohol consumption is a proximal risk factor for partner violence in alcoholic men.[12,13] The attributable risk of injury is greater for those who were drinking before the accident than for the actual drinking pattern.[14] Many arrestees indicated that they were under the influence of alcohol at the time of alleged offense.[15] Alcohol-related assaults present to emergency departments in Scotland every day.[16] Table 1 shows the frequency distribution of clinical variables; the age at initiation of drink for 64% of patients was 18–25 years, for 25%, it was between 26 and 35 years, around 7% had their first drink when they were below 18 years, and for 5%, the age of initiation of drink was above 35 years. Teenage and early adulthood seem to be the period of initiation of drink; this may be due to peer pressure. The age at dependence for 69% of patients was between 21 and 30 years, 25% were dependent between 31 and 40 years of age, 6% became dependent at <20 years of age, and 1% was dependent above 41 years of age. The data on the duration of dependence showed that 66.5% were dependent for 1–10 years, 22.5% were dependent for 11–20 years, 10.5% for 21–30 years, and only 0.5% were dependent for above 30 years; the duration of dependence may lead to habituation. Hingson *et al*. (2000) in their study found that younger respondents had greater likelihood of experiencing lifetime alcohol dependence after analytically controlling for family history of alcoholism and numerous behavioral and personality characteristics related to the age at drinking onset.[17]

Event analysis technique was used to determine the occurrence of high-risk behavior in temporal relationship with alcohol use. High-risk behavior was defined as occurrence of the event within 2 h of consumption of 32 g of alcohol that had been consumed in <2 h. The high-risk behaviors that were specifically examined in the present study were road traffic accidents, crime and violence, self-injurious behavior, and risky sexual behavior. Table 2 presents the frequency of occurrence of high-risk behavior among the sample studied. This showed that 21% of the sample had road accidents, 15% indulged in crime and violence, 7.5% exhibited self-injurious behavior, and 16.5% had risky sexual behavior, which shows that among the sample, a notable percent of them had road traffic accidents. Poulose and Srinivasan (2009) studied the association between high-risk behaviors and alcohol abuse among patients admitted to an inpatient facility for the treatment of alcohol dependence syndrome. Their findings indicated that there was a high prevalence of high-risk behavior following an episode of heavy drinking in male patients with alcohol dependence syndrome. Both severity of drinking and personality factors were associated with the occurrence of high-risk behavior as a consequence of heavy drinking.[18] Alcohol certainly has deleterious effects on motor performance relevant to driving, and its effect on risk-taking is elusive.[19]

From Table 3, it is evident that, among the sociodemographic variables, there is a significant association between age ($P = 0.001$), marital status ($P = 0.001$), education ($P = 0$), and high-risk behavior. However, no significant association was found between gender ($P = 0.113$), occupation ($P = 0.451$), family type ($P = 0.425$), and high-risk behavior. Steinberg

Table 1: Frequency of distribution of clinical variables

Variables	Frequency (%)
Age at initiation of drink (years)	
<18	13 (6.5)
19-25	128 (64)
26-32	50 (25)
>33	9 (4.5)
Total	200 (100)
Age at dependence (years)	
<20	12 (6.0)
21-30	137 (68.5)
31-40	50 (25.0)
>41	1 (0.5)
Total	200 (100)
Duration of dependence (years)	
1-10	133 (66.5)
11-20	45 (22.5)
21-30	21 (10.5)
>30	1 (0.5)
Total	200 (100)

Table 2: Frequency of occurrence of high-risk behavior and severity of alcohol dependence among the sample

Variables	Frequency (%)
High-risk behavior	
Nil	80 (40.0)
RTA	42 (21.0)
Crime and violence	30 (15.0)
Self-injurious behavior	15 (7.5)
Risky sexual behavior	33 (16.5)
Total	200 (100)
Severity of alcohol dependence	
Nil	80 (40.0)
<20 low	30 (15.0)
21-30 moderate	76 (38.0)
31-40 high	14 (7.0)
Total	200 (100)

RTA – Road traffic accident

Table 3: Associations between high-risk behavior as determined by event analysis and sociodemographic variables

Sociodemographic variables	Classification	High-risk behavior					Total	χ^2	*P*
		Nil	RTA	Crime and violence	Self-injurious behavior	Risky sexual behavior			
Age (years), *n* (%)	15-25	7 (21.90)	8 (25.00)	9 (28.10)	1 (3.10)	7 (21.90)	32 (100)	34.008**	0.001
	26-35	23 (37.70)	22 (36.10)	1 (1.60)	5 (8.20)	10 (16.40)	61 (100)		
	36-45	32 (42.70)	7 (9.30)	16 (21.30)	6 (8.00)	14 (18.70)	75 (100)		
	46-55	18 (56.30)	5 (15.60)	4 (12.50)	3 (9.40)	2 (6.30)	32 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.50)	33 (16.50)	200 (100)		
Gender, *n* (%)	Male	67 (37.60)	39 (21.90)	30 (16.90)	14 (7.90)	28 (15.70)	178 (100)	7.467	0.113
	Female	13 (59.10)	3 (13.60)	0 (0.00)	1 (4.50)	5 (22.70)	22 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.5)	33 (16.50)	200 (100)		
Marital status, *n* (%)	Unmarried	20 (31.70)	20 (31.70)	9 (14.30)	4 (6.30)	10 (15.90)	63 (100)	33.034**	0.001
	Married	59 (46.50)	21 (16.50)	21 (16.50)	8 (6.30)	18 (14.20)	127 (100)		
	Divorced	0 (0.00)	1 (33.30)	0 (0.00)	0 (0.00)	2 (66.70)	3 (100)		
	Window/separated	1 (14.30)	0 (0.00)	0 (0.00)	3 (42.90)	3 (42.90)	7 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.50)	33 (16.50)	200 (100)		
Religion, *n* (%)	Hindu	68 (38.40)	34 (19.20)	30 (16.90)	12 (6.80)	33 (18.60)	177 (100)	30.888**	0.000
	Muslim	1 (14.30)	6 (85.70)	0 (0.00)	0 (0.00)	0 (0.00)	7 (100)		
	Christian	11 (68.80)	2 (12.50)	0 (0.00)	3 (18.80)	0 (0.00)	16 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.50)	33 (16.50)	200 (100)		
Education, *n* (%)	Illiterate	12 (38.70)	7 (22.60)	4 (12.90)	3 (9.70)	5 (16.10)	31 (100)	53.94**	0.000
	Up to 5th standard	2 (25.00)	5 (62.50)	0 (0.00)	0 (0.00)	1 (12.50)	8 (100)		
	5th-10th standard	9 (17.00)	22 (41.50)	4 (7.50)	5 (9.40)	13 (24.50)	53 (100)		
	12th standard	19 (63.30)	4 (13.30)	3 (10.00)	2 (6.70)	2 (6.70)	30 (100)		
	College/technical education	38 (48.70)	4 (5.10)	19 (24.40)	5 (6.40)	12 (15.40)	78 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.50)	33 (16.50)	200 (100)		
Occupation, *n* (%)	Employed	64 (40.80)	32 (20.40)	22 (14.00)	10 (6.40)	29 (18.50)	157 (100)	3.678	0.451
	Unemployed	16 (37.20)	10 (23.30)	8 (18.60)	5 (11.60)	4 (9.30)	43 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.50)	33 (16.50)	200 (100)		
Type of family, *n* (%)	Nuclear	75 (39.70)	39 (20.60)	30 (15.90)	14 (7.40)	31 (16.40)	189 (100)	12.256	0.425
	Joint	2 (100)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	2 (100)		
	Extended	3 (75.00)	1 (25.00)	0 (0.00)	0 (0.00)	0 (0.00)	4 (100)		
	Alone	0 (0.00)	2 (40)	0 (0.00)	1 (20.00)	2 (40.00)	5 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.50)	33 (16.50)	200 (100)		

**Indicates significance @ 0.001 level. RTA – Road traffic accident

asserts that late adolescence, over 18 years but <25 years, is a time period of increased likelihood to binge drink and smoke cigarettes, which in turn lead to fatal or serious automobile accidents, the majority of which are caused by risky driving or driving under the influence of alcohol.[20] Research on the predictors of high-risk behavior has indicated a consistent relationship of alcohol use with sexual risk-taking.[21,22]

Table 4 shows the associations between high-risk behavior as determined by event analysis and clinical variables; there was a significant association between the duration of dependence and high-risk behavior ($P = 0$). However, there was no significant association between age at dependence ($P = 0.0648$), age at initiation of drink ($P = 0.068$), and high-risk behavior. This shows that duration of dependence has an influence on high-risk behavior of alcohol dependents. Sise *et al*. in their study on "alcohol and high-risk behavior among young first-time offenders" found the predominance of social sources of alcohol among young first-time alcohol offenders. Drinking and driving or riding with a drinking driver was reported at an alarmingly high rate, and other alcohol-related high-risk behaviors were also common.[23] Alcohol consumption in the 6 h prior to injury was associated with an increasingly higher risk of sports injuries compared with other injuries among women than men.[24] Alcohol appears to be widely used and an important risk factor for drowning in association with recreational aquatic activity.[25]

From Table 5, it is evident that significant association was found between the severity of alcohol dependence and high-risk behavior (road traffic accidents, crime and violence, self-injurious behavior, and risky sexual behavior) of the sample. Gupta *et al*. used a qualitative methodology to explore the context of various high-risk sexual behaviors and their association with alcohol use in individuals with alcohol dependence syndrome. The study reiterates the relationship between alcohol use and sexual behavior and also highlights that individuals dependent on alcohol are a specifically vulnerable group.[26]

Among the high-risk behaviors in alcoholics, risky sexual behavior was the most common followed by road traffic accidents.[27] Modifiable risk behaviors such as smoking,

Table 4: Associations between high-risk behavior as determined by event analysis and clinical variables

Sociodemographic variables	Classification	High-risk behavior					Total	χ^2	*P*
		Nil	RTA	Crime and violence	Self-injurious behavior	Risky sexual behavior			
Age at initiation of drink (years), *n* (%)	<18	6 (46.20)	4 (30.80)	0 (0.00)	2 (15.40)	1 (7.70)	13 (100)	19.933	0.068
	18-25	47 (36.70)	27 (21.10)	23 (18.00)	6 (4.70)	25 (19.50)	128 (100)		
	26-35	19 (38.00)	10 (20.00)	7 (14.00)	7 (14.00)	7 (14.00)	50 (100)		
	>35	8 (88.90)	1 (11.10)	0 (0.00)	0 (0.00)	0 (0.00)	9 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.5)	33 (16.50)	200 (100)		
Age at dependence (years), *n* (%)	<20	6 (50.00)	4 (33.30)	0 (0.00)	1 (8.30)	1 (8.30)	12 (100)	9.63	0.648
	21-30	49 (35.80)	29 (21.20)	23 (16.80)	9 (6.60)	27 (19.70)	137 (100)		
	31-40	24 (48.00)	9 (18.00)	7 (14.00)	5 (10.00)	5 (10.00)	50 (100)		
	>41	1 (100)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.50)	33 (16.50)	200 (100)		
Duration of dependence (years), *n* (%)	1-10	47 (35.30)	33 (24.80)	15 (11.30)	9 (6.80)	29 (21.80)	133 (100)	37.78**	0.000
	11-20	27 (60.00)	6 (13.30)	9 (20.00)	1 (2.20)	2 (4.40)	45 (100)		
	21-30	6 (28.60)	3 (14.30)	6 (28.60)	4 (19.00)	2 (9.50)	21 (100)		
	>30	0 (0.00)	0 (0.00)	0 (0.00)	1 (100)	0 (0.00)	1 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.50)	33 (16.50)	200 (100)		

**Indicates significance @ 0.001 level. RTA – Road traffic accident

Table 5: Association between high-risk behavior and severity of alcohol dependence

Severity alcohol of dependence variables	Classification	High-risk behavior					Total	χ^2	*P*
		Nil	RTA	Crime and violence	Self-injurious behavior	Risky sexual behavior			
Severity of Alcohol Dependence Questionnaire, *n* (%)	Nil	80 (100)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	80 (100)	245.187**	0.000
	<20 (low)	0 (0.00)	16 (53.30)	0 (0.00)	0 (0.00)	14 (46.70)	30 (100)		
	21-30 (moderate)	0 (0.00)	24 (31.60)	25 (32.90)	11 (14.50)	16 (21.10)	76 (100)		
	31-40 (high)	0 (0.00)	2 (14.30)	5 (35.70)	4 (28.60)	3 (21.40)	14 (100)		
	Total	80 (40.00)	42 (21.00)	30 (15.00)	15 (7.50)	33 (16.50)	200 (100)		

**Indicates significance @ 0.001 level. RTA – Road traffic accident

alcohol intake, drug use, poor diet, and physical inactivity, both individually and collectively, account for substantial morbidity and mortality throughout life.[28-31] The patients scoring high on certain personality constructs such as sensation seeking and impulsivity are vulnerable to indulge in high-risk behavior.[32]

CONCLUSIONS

The occurrence of high-risk behavior was substantial among patients with alcohol dependence syndrome. Event analysis method indicated that road traffic accidents showed association with prior heavy drinking. The severity of alcohol dependence was significantly associated with the occurrence of high-risk behavior. Among the demographic variables, younger age group, male gender, married people, lower level of education, and alcohol dependence of 1- to 10-year duration are associated with an increased prevalence of high-risk behavior among patients with alcohol dependence syndrome.

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Conflicts of interest

There are no conflicts of interest.

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