Research Report

DEPRESSIVE SYMPTOMS IN ALCOHOL DEPENDENCE- A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Patients with alcohol dependence often suffer from comorbid psychiatric illnesses like depression which may influence treatment and outcomes. Sociodemographic factors may potentially influence depressive symptoms in patients with alcohol dependence. **Aims:** To study the prevalence of depressive symptoms in patients with alcohol dependence and to identify sociodemographic factors affecting this association. **Methods:** Patients with alcohol dependence above 18 years of age were included. The diagnosis was made by ICD-10 diagnostic criteria. The severity of alcohol dependence was rated with the severity of the alcohol dependence questionnaire (SADQ) and depression with the Hamilton depression rating scale (HAM-D). Sociodemographic data were recorded in each patient. Statistical analysis was done using independent t-tests, Chi-square tests, one-way analysis of variance (ANOVA) and Pearson's correlation analysis. **Results:** The mean SADQ Score was 21.5±8.6 (range, 9-48). The severity of alcohol dependence was mild in 15(25%), moderate in 40(66.7%) and severe in 5(8.3%), respectively. The mean Hamilton depression rating scale score was 7.8±3.9(range, 3-17). The prevalence of depression in our study was 38.3%. Out of these, 17(28.3%) had mild and 6 (10%) had moderate depression. There was a positive and significant correlation between SADQ scores and depression scores (Pearson's correlation coefficient, r=0.494, P=0.001). Patients who were unemployed (ANOVA, P=0.046, separated (ANOVA, P=0.002), and joint family (ANOVA, P=0.039) had significantly higher depression scores. **Conclusion:** In conclusion, sociodemographic factors like unemployment, marital separation and living in joint families may significantly influence the association between alcohol dependence and depression.

Keywords: Alcohol dependence, depression, prevalence, sociodemographic factors

INTRODUCTION

Clinical trials have reported a higher prevalence of depressive symptoms in patients with alcohol dependence.[1-2] Alcohol abuse and alcohol dependence are common psychiatric illnesses; according to WHO, they are responsible for about 3.3 million deaths worldwide.[3] It is estimated that about 350 million people suffer from depression, and out of these, nearly one million of them commit suicide each year. It has been projected that depression will become the second leading cause of global disease burden by 2030.[4-5]

Epidemiological studies have found that alcohol dependence and depression often coexist, and the mounting evidence from these studies suggest that there might be a causal link between the two conditions.[6-7] Thus, it appears that a vicious circle may coexist between these two conditions. Alcohol abuse tends to lengthen the duration of depression and increases the

frequency of depressive episodes, consequently increasing the risk of suicidal tendencies.[8-10]

The reported prevalence of depressive symptoms in patients with alcohol dependence is about 16%-68%. [11] An African study found a significant correlation between alcohol abuse and depressive symptoms in patients admitted to the psychiatry department.[12] A prospective study by Flensborg-Madsen et al. found contrasting results; the role of alcohol dependence in major depression was stronger than the causal role of major depression in alcohol dependence, respectively.[13]

The hypothesis that alcohol dependence may lead to depression implies that successful treatment of alcohol dependence may be beneficial in relieving depression in these patients.[14-15] Second, patients who binge drink alcohol to get rid of depressive symptoms, can achieve remission only after successful treatment of alcohol dependence. Clinical studies on depression in the current episode of drinking have been more successful in identifying the association between alcohol dependence and depression. In patients with alcohol dependence, depressive symptoms need to be assessed not only during episode of drinking but during the period of abstinence as well. The present study aimed to evaluate the prevalence of depression in patients with alcohol dependence and to identify sociodemographic factors affecting this association.

METHODS

The study sample in the present study consisted of alcohol-dependent patients admitted in the psychiatry ward of a tertiary care teaching hospital from January 2019 and February 2020. The study was approved by the Institutional Ethics committee. Written informed consent was obtained from all patients or their attendants according to the tenets of the declaration of Helsinki.

Inclusion criteria

Patients above 18years of age, of either sex, fulfilling the diagnostic criteria of alcohol dependence according to the severity of alcohol dependence questionnaire (SADQ), participated in the study; the SADQ is a short, easy-to-complete, self-administered, 20-item questionnaire designed to measure the severity of dependence on alcohol as formulated by Edwards & Gross (1976) and Edwards (1978). 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. Thus, the total maximum score possible is 60, and the minimum is 0.[17]

The severity of depressive symptoms was rated on Hamilton Rating Scale for Depression (HAM-D).[18] No medication was permitted except low dose benzodiazepines and multivitamins (thiamine) during the study period. However, patients were not suffering from any withdrawal symptoms at the time of assessment, and they were not on any psychotropic medication when they were being assessed for the study.

There was a minimum period of two weeks from the last drink and assessment for depressive symptoms.

Exclusion criteria:

Patients with a known history of psychiatric illness other than depressive disorders or any concomitant substance dependence, gross brain damage as reflected by gross cognitive impairment, severe medical complication, or evidence of drinking during the hospital stay were excluded.

Sample size calculation

Our aim was to estimate the prevalence of unknown parameter(s) from the target population using a random sample. The sample size was calculated using the formula $N = Z^2 P (1-P) / d^2$.

In this formula, N is the sample size, Z is the statistic corresponding to the level of confidence (standard normal variate), P is expected prevalence (that will be obtained from previous studies published or a pilot study conducted by the researchers in our region/country), and d is precision (corresponding to effect size). According to a study conducted in South India, the prevalence of co-occurring psychiatric disorders in alcohol-dependent patients was 33.3%.[16] Considering precision of 5 %, the level of confidence aimed for was 95%, the normal standard variate Z=1.96, the estimated sample size was calculated to be 60.

Statistical analysis

Statistical analysis was performed using IBM statistical software, SPSS Statistics version 27 (IBM Inc.).

Normally distributed data were expressed as mean ±SD, and Chi-square tests were used for proportions. A one-way repeated measure ANOVA was done to determine whether there are any statistically significant differences between the means of three or more levels of a within-subjects factor over time. A P value<0.05 was considered statistically significant. The Pearson product-moment correlation was used to determine the strength and direction of a linear relationship between two continuous variables. Pearson correlation coefficient, denoted as r (i.e., the italic lowercase letter r), measured the strength and direction of a linear relationship between two continuous variables. Its value can range from -1 for a perfect negative linear relationship to +1 for a perfect positive linear relationship. A value of 0 (zero) indicates no relationship between two variables.

RESULTS

Table 1. Demographic characteristics

Parameter	N (%)
Age Groups	
20-30	22(36.7)
30-40	22(36.7)
40-50	11(18.3)
More than 50	05(8.3)
Marital Status	
Married	39(65)
Unmarried	15(25)
Separated	06(10)
Education	
Primary School	13(21.7)
High School	19(31.7)
Graduate	27(45)
Postgraduate	01(1.7)
Family Type	
Joint	38(63.3)
Nuclear	22(36.7)
Locality	
Rural	23(38.3)
Urban	18(30)
Semi urban	19(31.7)
Occupation	
Employed	41(68.3)
Unemployed	16(26.7)

After applying exclusion criteria, a total of 60 patients were found eligible for analysis. The mean age of patients was 35.8±9.1(range, 23-60 years). The demographic profile of study participants is mentioned in Table 1

The mean SADQ Score was 21.5±8.6 (range, 9-48). The severity of alcohol dependence was mild in 15(25%), moderate in 40(66.7%) and severe in 5(8.3%), respectively.

The mean Hamilton depression rating scale score was 7.8±3.9(range, 3-17). The prevalence of depression in our cohort was 38.3 %. Out of these, 17(28.3%) had mild and 6 (10%) had moderate depression.

Table 2 shows SADQ and Hamilton depression scores in study participants.

Table 2. Alcohol dependence and depression scores.

Parameter	N (%)
SADQ Score	
Mild	15(25)
Moderate	40(66.7)
Severe	05(8.3)
Depression Score	
No depression	37(61.7)
Mild depression	17(28.3)
Moderate depression	06(10)

There was a significant association (Chi-square test, P=0.001) between alcohol dependence severity and severity of depression (Figure 1).

Table 3. Alcohol dependency and depression severity

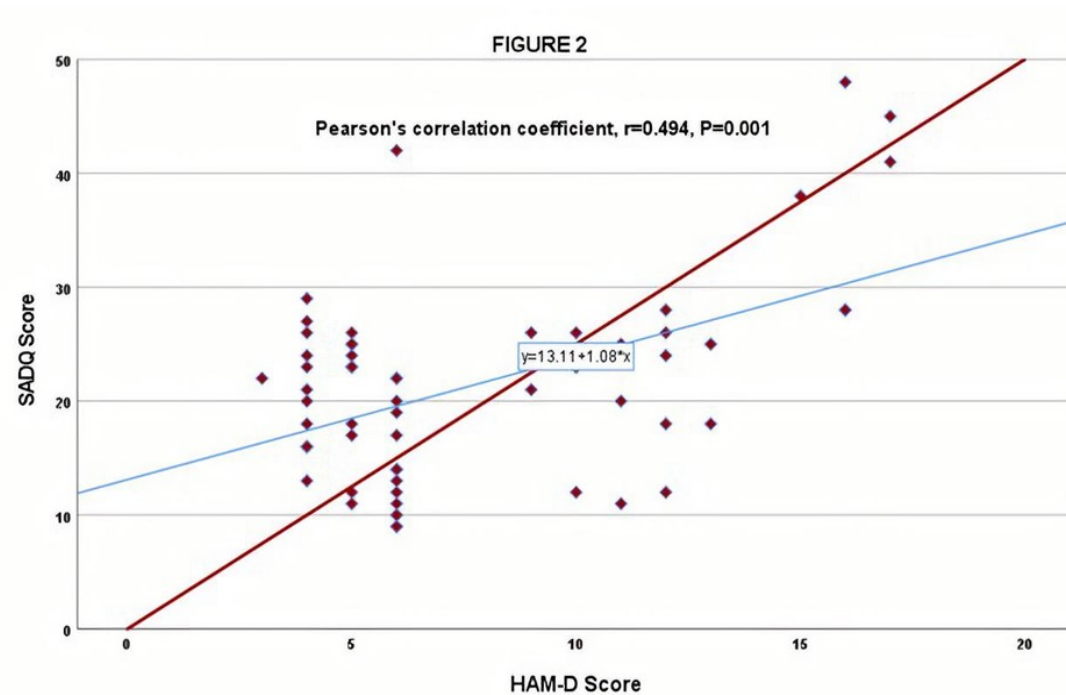| Alcohol dependency (SADQ)	Depression Severity(HAM-D)			P-value
	None	Mild	Moderate	
Mild	12(20)	3(5)	0	
Moderate	24(40)	14(23.3)	2(3.3)	0.001
Severe	1(1.7)	0	4(6.7)	

A HAM-D (Hamilton depression rating scale

There was a positive and significant correlation (Figure 2) between SADQ scores and depression scores (Pearson's correlation coefficient, r=0.494, P=0.001).

The impact of sociodemographic variables on depression in alcohol-dependent patients was evaluated. Patients who were unemployed (ANOVA, P=0.046, separated (ANOVA, P=0.002), of semi-urban locality (ANOVA, P=0.009), and living in a joint family (ANOVA, P=0.039) had significantly higher depression scores (Figure 3). The depression scores did
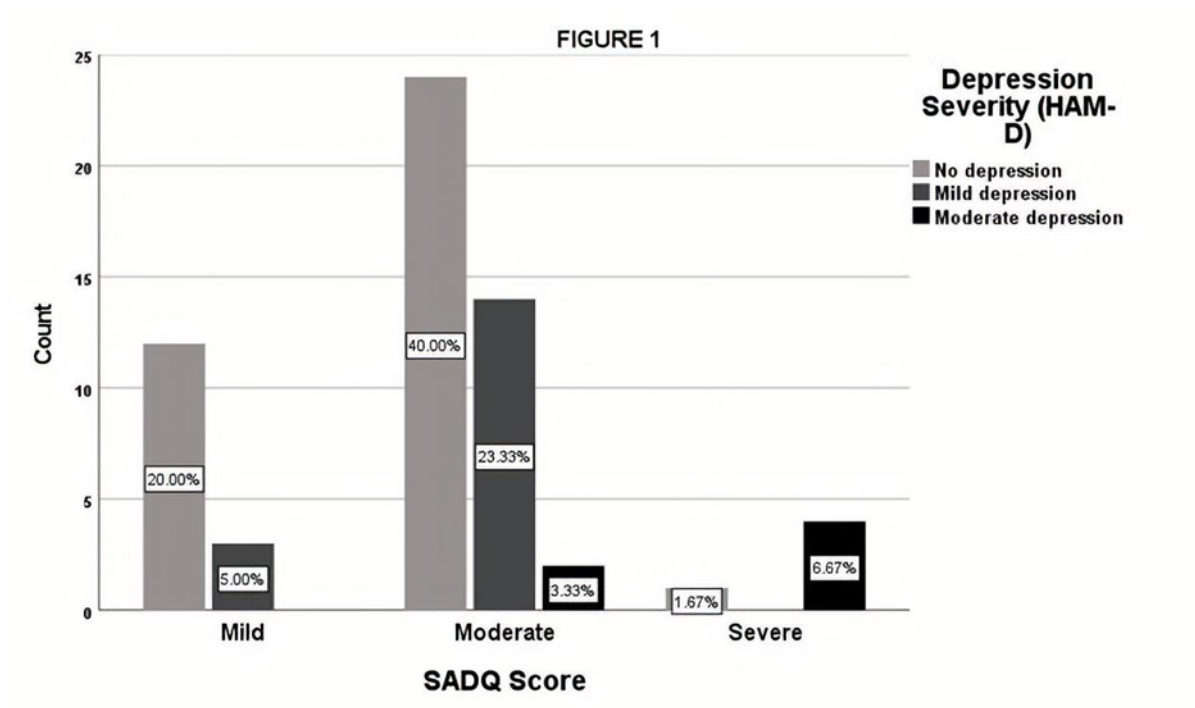
FIGURE 1

HAM-D-Hamilton Depression Scale, SADQ- Severity of alcohol Dependence Questionnaire

FIGURE 2

Pearson's correlation coefficient, r=0.494, P=0.001

y=13.11+1.08*x

HAM-D-Hamilton Depression Scale, SADQ- Severity of alcohol Dependence Questionnaire

not differ substantially (Figure 4) by age (ANOVA, P=0.628), religion (ANOVA, P=0.740) and education status (ANOVA, P=0.496).

DISCUSSION

The present cross-sectional study evaluated the prevalence of depressive symptoms in patients with

alcohol dependence at a tertiary care teaching institute in the northern part of the subcontinent. There exists a wide variation in the reported prevalence of depression in patients with alcohol dependence. It has been estimated that the lifetime prevalence of alcohol-use disorders (AUD) in people with depression is about 40%. Among people with alcohol dependence, the
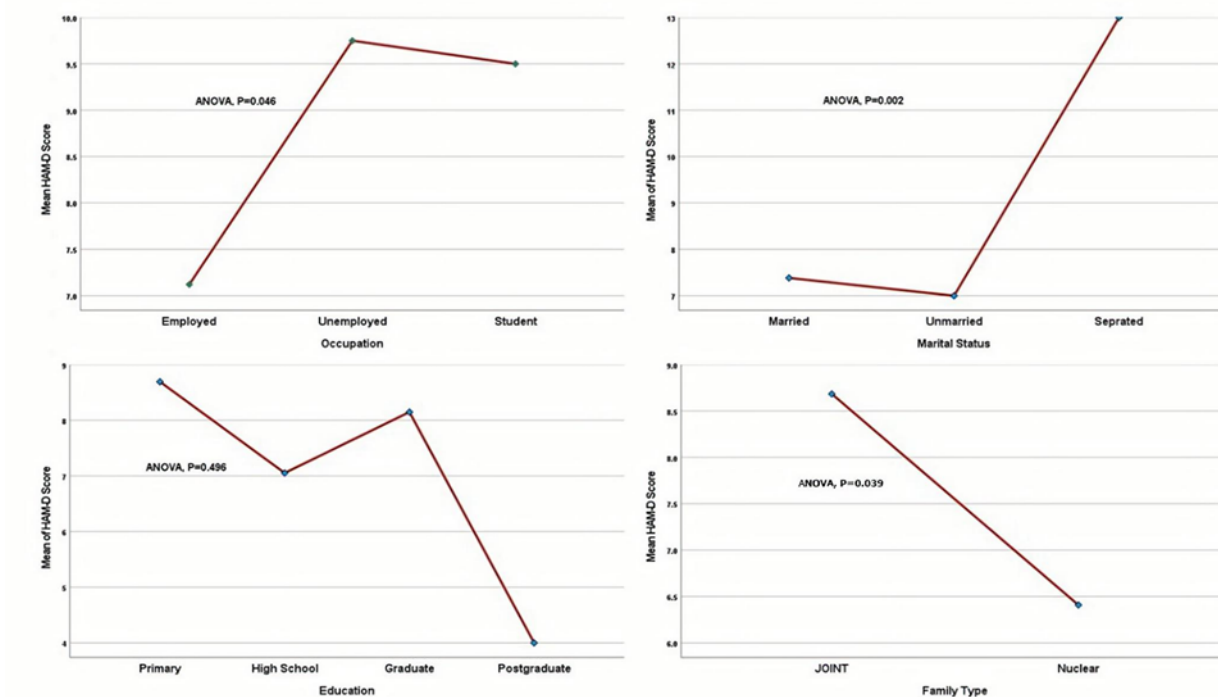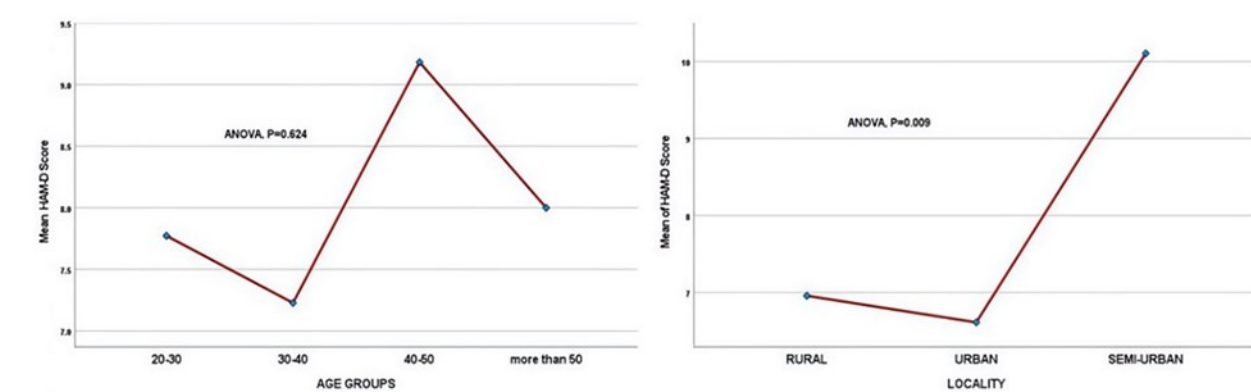
FIGURE 3

FIGURE 4

prevalence of depression has been reported to be as high as 35%.[19] A meta-analysis of published studies reported a pooled odds ratio (OR) of 2.4 (95% confidence interval, 2.2–2.6) for depression and alcohol-use disorders.[20] A study by Kuria et al. found significantly higher prevalence rates of 63.8% for depression among

patients with alcohol dependence. [21] The prevalence of depression in our cohort was 38.3 %.

Our study found a positive (Pearson's correlation coefficient, r=0.494) and significant correlation(P=0.001) between severity of alcohol dependence and severity of depression. Patients with higher SADQ scores had a higher HAM-D score. Thus, it appears that the more the person is dependent on alcohol, the more likely they will have depressive symptoms. This observation has been substantiated in other studies as well.[22]

A cross-sectional study in Nepal found a significant association between sociodemographic variables and depression in patients with alcohol dependence. The authors found that uneducated patients who were alcohol dependent had a higher prevalence of depressive symptoms. This observation contrasted with our study. In agreement with our study, they found no significant association between depression and the age of the participants. Moreover, this study found no association between marital status and depression.[23] However, our study found that maritally separated alcohol dependents have significantly higher depressive symptoms (ANOVA, P=0.002). Some other studies conducted in Nepal found a higher prevalence of depression and alcohol abuse in maritally separated patients, which agreed with our study. [24] This could probably be due to confounding factors; older adults with greater burdens of physical health problems are more likely to seek primary care services.

A Canadian study found that young age, single marital status, and low family income may be potential risk factors for comorbid alcohol dependence and depression. In contrast, our study found that living in joint families was a significant risk factor for higher depression scores. Social factors and conditions differ between developed and developing countries and consequently may differently influence the association between alcohol dependence and depressive symptoms. [25]

Our study had several limitations. The sample size was small (n=60), leading to type II error and, consequently, overestimation. We acknowledge the inherent limitations related to non-randomized study design, like selection bias. However, we have adjusted our analysis to avoid bias as rigorously as possible for the major risk factors. The present study could not investigate the causal relationship between alcohol dependence and depression. Lastly, the female gender has largely been underrepresented in studies on alcohol dependence and depression.

In conclusion, sociodemographic factors like unemployment, marital separation and living in joint families may significantly influence the association between alcohol dependence and depression.

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Conflict of interest:
None declared.

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