

A Cross-sectional Study of the Patterns and Impact of Socio-demographic Factors in Anxious and Depressed Alcohol Dependent Patients

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ABSTRACT

Introduction: Socio-demographic factors may play a pivotal role in anxious and depressed alcohol dependent patients. Identifying the patterns and impact of these factors may be important in the successful management of Alcohol Use Disorders (AUDs).

Aim: To assess the patterns and impact of socio-demographic factors in anxious and depressed alcohol dependent patients.

Materials and Methods: This cross-sectional study was conducted at Rama Medical College Hospital and Research Centre Hapur, Uttar Pradesh, India, from August 2018 to January 2020. Patients with history of substance dependence, gross brain damage, severe medical complications, or evidence of drinking during the hospital stay were excluded. Severity of Alcohol Dependence Questionnaire (SADQ) was used to rate the extent of alcohol dependence and Hamilton Depression Rating Scale (HAM-D or HDRS) to rate depression. Socio-demographic data was recorded in each patient which included age, gender, background, education level, employment status, occupation, marital status, and family type. The

severity of anxiety symptoms was measured on Hamilton Anxiety Rating Scale (HAM-A). Independent t-tests, Chi-square tests, one-way Analysis of Variance (ANOVA) and Pearson's correlation analysis were used for statistical analysis. A p-value <0.05 was considered statistically significant.

Results: The total of 90 alcohol dependent patients with mean age of 37.6±9.3 years and mean HDRS score was 8.5±4.3. The overall prevalence of depression cohort was 40%. Out of these 30 (33.3%) had mild and 6 (6.7%) had moderate depression, respectively. The mean Hamilton anxiety scale score was 18.6±5.2. Patients who had a lower Socio-economic Status (SES) (p-value=0.049 and 0.004), were maritally separated (p-value <0.001 and 0.027), living in a nuclear family (p-value=0.005 and <0.001) and were unemployed (p-value <0.001 and p-value <0.001) had significantly higher depression and anxiety scores, respectively.

Conclusion: In anxious and depressed alcohol dependent patients, lower SES, marital separation, living as a single family and unemployment significantly influenced depression and anxiety.

Keywords: Marital separation, Socio-economic status, Unemployment

INTRODUCTION

Co-occurrence of two or more psychiatric disorders at the same time is not unusual [1]. Clinical studies show that alcohol dependence and major depression often co-exist [2-4].

The co-morbidity of depression/anxiety in patients with alcohol dependence may have a negative impact not only on the course of Alcohol Use Disorders (AUDs) but also a delayed response to treatment; the risk of relapse (to alcohol consumption) following treatment doubles as compared to those patients with no psychiatric disorder [5,6].

Several hypotheses have been put forward to explain the co-morbid relation between alcohol dependence and depression. One school of thought believes that the co-morbidity may be due to underlying factors, such as genetic or social and environmental characteristics, which predispose individuals to enhanced risk for both these conditions [7,8]. Second, individuals with low SES are more likely to face barriers in achieving highly valued goals than those with a higher SES, leading to higher rates of psychopathology [9].

Various surveys have been used in the past for studying the association of socio-demographic factors in alcohol dependent subjects [10-12].

Ross HE, (Ontario Health Survey) examines the demographic and socio-economic profiles of alcohol dependent subjects with and without co-morbid disorders [10]. Survey of a representative household sample using the University of Michigan Composite International Diagnostic Interview (UM-CIDI) is a non clinician administered psychiatric diagnostic interview that was developed by Alcohol, Drug Abuse, and Mental Health Administration

(ADAMHA) and WHO to facilitate psychiatric epidemiologic research throughout the world [11]. The United States National Longitudinal Alcohol Epidemiologic Survey data by Grant BF et al., evaluates the association of socio-demographic factors with alcohol dependence and major depression [12].

A search of Scopus and 'MEDLINE' databases revealed that no studies have been conducted in the Indian subcontinent evaluating demographic and socio-economic factors in anxious and depressed alcohol dependence and co-morbid depression. Therefore, the present study evaluated the impact of socio-demographic factors in anxious and depressed alcohol dependent patients.

MATERIALS AND METHODS

This cross-sectional study was done at Rama Medical College hospital and Research Centre, Hapur, Uttar Pradesh, India tertiary care teaching hospitals in the northern part of India from August 2018 and January 2020. Approval was obtained from the Institutional Review Board and the local Ethics committee (RMCH&RC/PSY/2018/06). The trial was registered with University Hospital Medical Information Network Clinical Trials Registry (UMIN-CTR) with registration number UMIN000046501. A written informed consent was obtained from all patients or their attendants and the study was performed according to the tenets of the declaration of Helsinki.

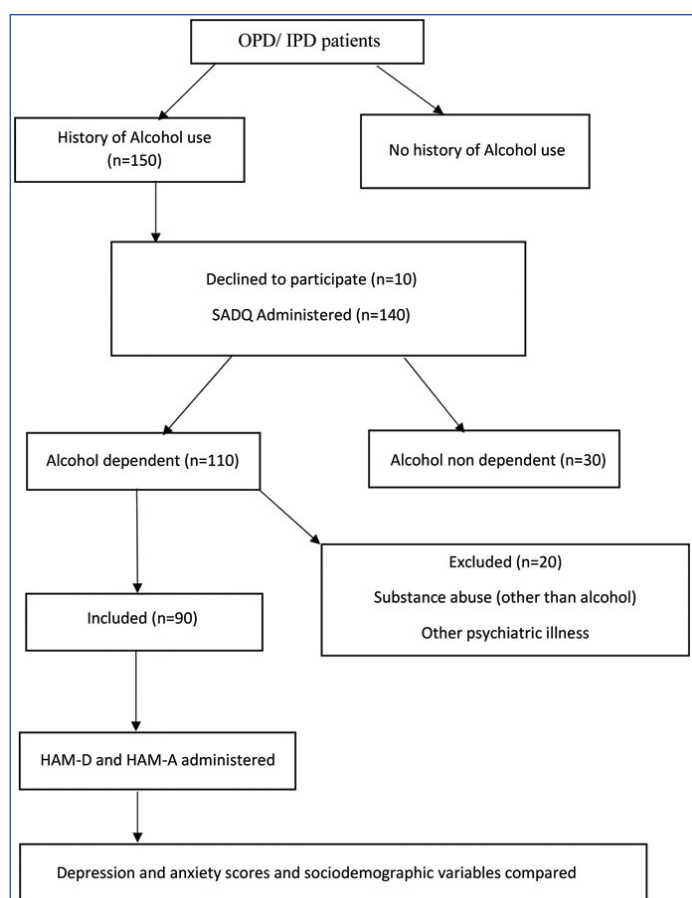
Sample size calculation: Sample size was calculated using formula,

$$N = Z^2 P \times (1-P) / d^2$$

According to a study conducted in South India, the prevalence of co-occurring psychiatric disorders in alcohol dependent patients was 33% [13]. 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 90.

Inclusion and Exclusion criteria: Anxious and depressed alcohol dependent subjects above 18 years of age were included in the study. Patients with known history of psychiatric illness other than depressive disorders or any concomitant substance dependence (other than alcohol), gross brain damage as reflected by gross cognitive impairment, severe medical complication, or evidence of drinking during the hospital stay were excluded from the study.

During this period, 150 patients from Outpatient Department/ Inpatient Department with history of alcohol use were screened. Out of these, 140 (93.3%) patients with a history of alcohol use consented to participate in the study and were administered SADQ. A total of 90 patients were found eligible for inclusion in the study [Table/Fig-1].



[Table/Fig-1]: Flow chart showing patients screening, inclusion and exclusion. OPD: Outpatient department; IPD: Inpatient department; SADQ: Severity of alcohol dependence questionnaire; HAM-D: Hamilton depression rating scale; HAM-A: Hamilton anxiety rating scale

Procedure

Prevalidated questionnaires were used to assess severity of alcohol dependence, depression, and anxiety, respectively. Alcohol dependence was rated on SADQ questionnaire; the SADQ is a short, easy-to-complete, self-administered, 20-item questionnaire [14]. The severity of depressive symptoms in alcohol dependent patients was rated on HAM-D [15]. The severity of anxiety symptoms was rated on HAM-A. Flow chart showing patients screening, inclusion, and exclusion from the study is depicted in [Table/Fig-1].

SADQ questionnaire: The SADQ is a self-administered 20-item questionnaire which measures severity of alcohol dependence and was devised by Edwards and Gross (1976) and Edwards (1978). It has five subscales each having four items: physical withdrawal, affective withdrawal, withdrawal relief drinking, alcohol consumption, and rapidity of reinstatement. A scoring is done on a 4-point scale

for each item: “almost never” to “nearly always,” resulting in a corresponding score of 0-3. The maximum score can be 60 and the minimum 0 [14].

Hamilton Depression Rating Scale (HAM-D): The severity of depressive symptoms in alcohol dependent patients was rated on HDRS also known as HAM-D [15]. The scale has 17-items; depressed mood, feeling of guilt, suicide, insomnia (early, middle, late night) work and activity, retardation, agitation, anxiety psychic, anxiety somatic, and somatic symptoms gastrointestinal, general somatic, loss of weight, insight, genital symptoms respectively.

Scoring:

- 0-7: no depression,
- 8-13: mild,
- 14-18: moderate,
- 19-22: severe and
- >23: very severe depressions

Hamilton Anxiety Rating Scale (HAM-A): The severity of anxiety symptoms was rated on HAM-A. The HAM-A score is based on 14 individually rated items with the total score ranging from 0-54 [16]:

- 14 or less: mild anxiety,
- 15-23: moderate anxiety and
- ≥ 24 : severe anxiety

Assessment of depression and anxiety was done when patients were either not intoxicated or not in withdrawal state.

Socio-economic Status (SES) was assessed based on a web-based questionnaire [17] which was modified as per the requirements in our study. This included information about

- Patient's age,
- Gender,
- Religion (Hindu, Muslim, others) background (rural and urban),
- Education level (illiterate, primary school, higher secondary, graduate, postgraduate)
- Employment status (employed, unemployed, student), marital status (married, unmarried, divorced) and
- Family type (joint, nuclear),
- Socio-economic status (lower, middle).

STATISTICAL ANALYSIS

Statistical analysis was performed using IBM statistical software, Statistical Package for the Social Sciences (SPSS) Statistics version 27.0 (IBM Inc.). Normally distributed data was expressed as mean \pm SD. Association between two categorical variables was evaluated using Chi-square tests (gender and grades of depression severity). A one-way repeated measure Analysis of Variance (ANOVA) was done to determine whether there were any statistically significant differences between the means of three or more levels of a within-subjects factor over time (depression/anxiety scores and socio-demographic variables). 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 (depression severity and alcohol dependence severity). 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

The mean age of patients was 37.6 \pm 9.3 (range, 21-58 years). The demographic profile of study participants is mentioned in [Table/ Fig-2]. All patients belonged to Hindu religion.

Parameter	N (%)
Age groups	
20-30	32 (35.6)
31-40	31 (34.4)
41-50	20 (22.2)
>50	7 (7.8)
Gender	
Male	84 (93.3)
Female	6 (6.7)
Marital status	
Married	59 (65.6)
Unmarried	21 (23.3)
Separated	10 (11.1)
Education	
Primary school	19 (21.1)
High school	30 (33.3)
Graduate	39 (43.3)
Postgraduate	2 (2.2)
Family type	
Joint	58 (64.4)
Nuclear	32 (35.6)
Locality	
Rural	28 (31.1)
Urban	31 (34.4)
Semi urban	31 (34.4)
Employment status	
Employed	59 (65.6)
Unemployed	25 (27.8)
Medical students	6 (6.7)
Socio-economic status	
Lower	49 (54.4)
Middle	41 (45.6)

[Table/Fig-2]: Demographic characteristics of participants (N=90).

The mean SADQ Score was 22.6±8.9 (range, 10-50). Severity of alcohol dependence was mild in 23 (25.6%), moderate in 59 (65.6%) and severe in 8 (8.9%), respectively. The mean HDRS score was 8.5±4.3 (range, 3-18). The overall prevalence of depression was 40%. Out of these 30 (33.3%) had mild and 6 (6.7%) had moderate depression, respectively. The mean Hamilton anxiety scale score was 18.6±5.2 (range, 10-28). In study participants, 34 (37.7%) had mild, 42 (46.7%) had mild-moderate and 14 (15.6%) had moderate-severe anxiety symptoms, respectively [Table/Fig-3].

Parameter	n, %
Severity of alcohol dependent questionnaire score	
Mild	23 (25.6)
Moderate	59 (65.6)
Severe	8 (8.9)
Depression score on Hamilton Depression Rating Scale	
No depression	54 (60)
Mild depression	30 (33.3)
Moderate depression	6 (6.7)
Anxiety symptoms on Hamilton Anxiety Rating Scale	
Mild	34 (37.7)
Moderate	42 (46.7)
Severe	14 (15.6)

[Table/Fig-3]: Alcohol dependence, anxiety, and depression scores. SADQ: Severity of alcohol dependent questionnaire

[Table/Fig-4] shows level of significance between depression scores, anxiety scores and socio-demographic variables. Depression and anxiety did not significantly differ between male and female (Chi-square tests, p-value=0.788 and p-value=0.928, respectively) [Table/Fig-4].

Socio-demographic variables	p-value (Depression)	p-value (Anxiety)
Age	0.124	0.117
Gender	0.788	0.928
Locality	0.053	0.111
Socio-economic status	0.049*	0.004*
Education Level	0.274	0.003*
Employment status	<0.001**	<0.001**
Marital Status	<0.001**	0.027*
Family type	0.005*	<0.001**

[Table/Fig-4]: Statistical significance level between socio-demographic variables, depression, and anxiety. *Independent t-test; **ANOVA

There was a significant and positive correlation between SADQ scores, depression scores (Pearson's correlation coefficient, $r=0.306$, $p\text{-value}=0.003$) and anxiety symptoms (Pearson's correlation coefficient, $r=0.455$, $p\text{-value}=0.001$), respectively [Table/Fig-5a-d].

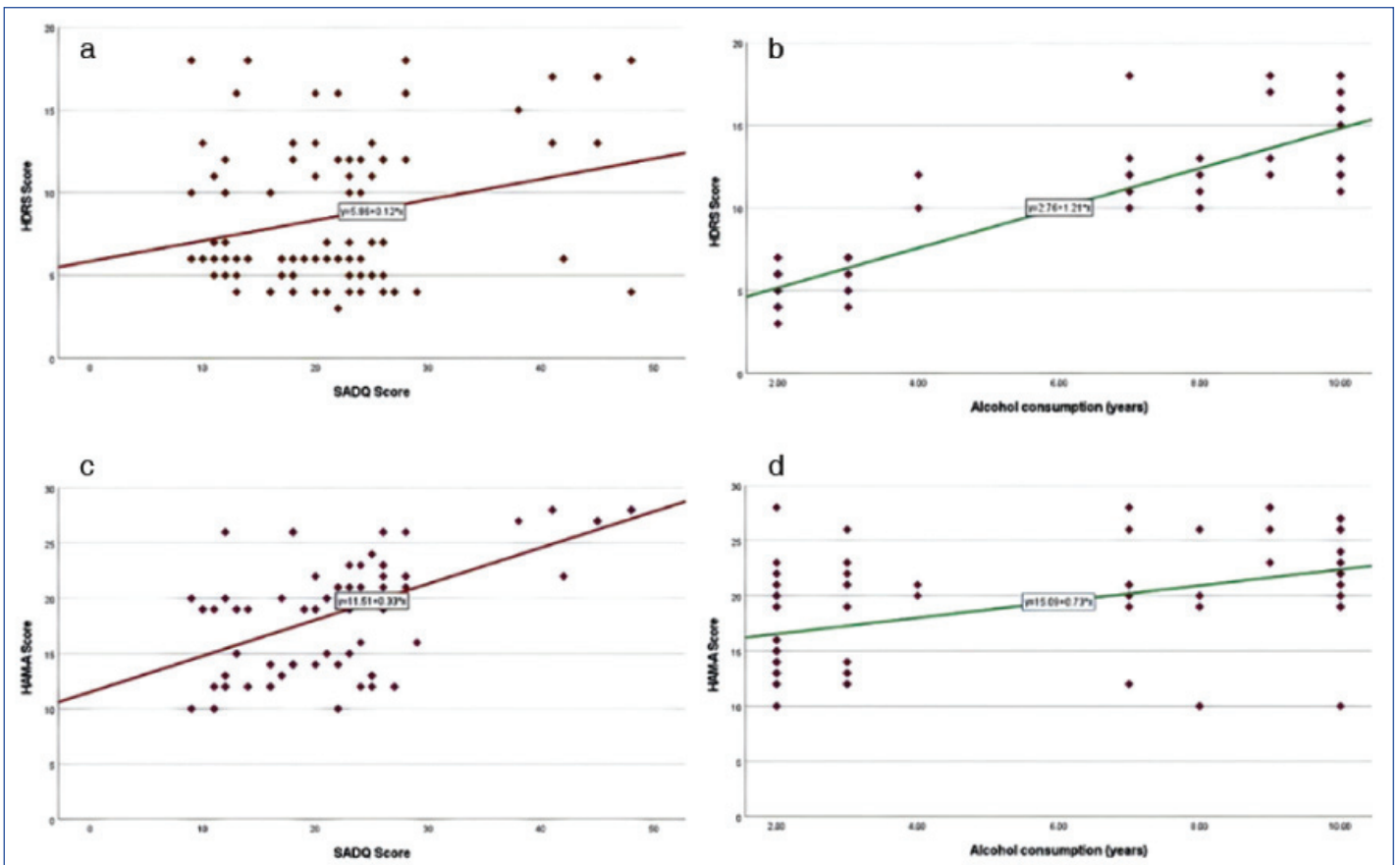
The mean duration of alcohol consumption was 4.8±3.3 years (range, 2-10 years). The depression scores correlated strongly with the duration of alcohol consumption (Pearson's correlation coefficient, $r=0.726$, $p\text{-value}<0.001$). Anxiety symptoms also significantly correlated with duration of alcohol consumption (Pearson's correlation coefficient, $r=0.409$, $p\text{-value}<0.001$). There was a significant correlation between depression scores and anxiety symptoms in patients with alcohol dependence (Pearson's correlation coefficient, $r=0.472$, $p\text{-value}=0.001$). The impact of socio-demographic variables in alcohol dependent patients on depression and anxiety was evaluated. The depression and anxiety scores did not significantly differ by age (ANOVA, $p\text{-value}=0.124$ and $p\text{-value}=0.117$), gender (Independent t-test, $p\text{-value}=0.788$ and $p\text{-value}=0.928$), locality (Independent t-test, $p\text{-value}=0.053$ and $p\text{-value}=0.111$). A differential response was observed with the level of education; anxiety symptoms but not depressive symptoms were significantly higher among postgraduates (ANOVA, $p\text{-value}=0.003$ and $p\text{-value}=0.274$), respectively [Table/Fig-6a-d].

Patients who had a lower socio-economic status ANOVA $p\text{-value}=0.049$ and $p\text{-value}=0.004$), were divorced/separated (ANOVA $p\text{-value}\leq 0.001$ and $p\text{-value}=0.027$), family type (Independent, t-test, $p\text{-value}=0.005$ and $p\text{-value}\leq 0.001$) and were unemployed (ANOVA, $p\text{-value}<0.001$ and $p\text{-value}<0.001$) had significantly higher depression and anxiety scores [Table/Fig-7a-d], respectively.

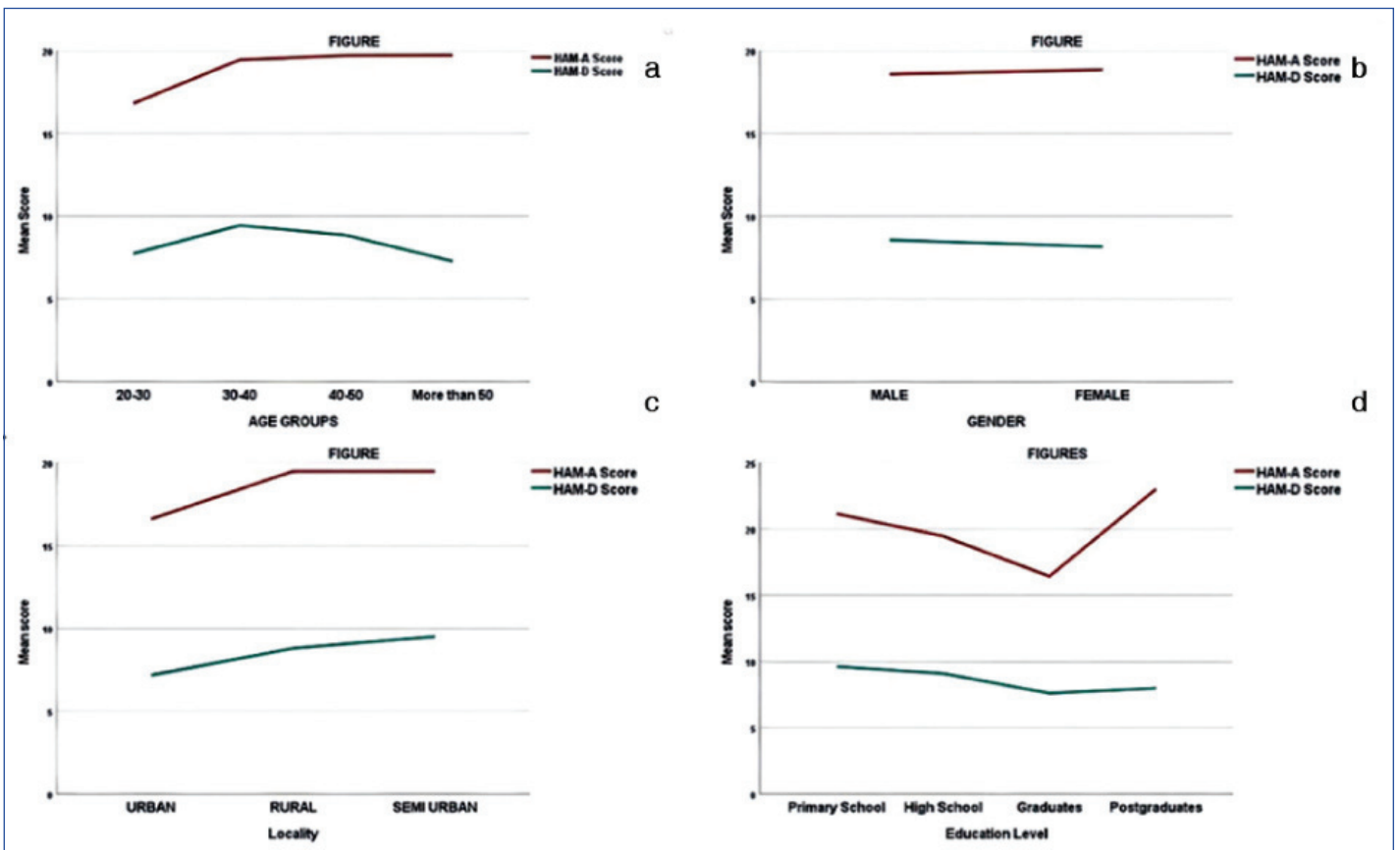
DISCUSSION

The results of the present study revealed that lower SES ($p\text{-value}=0.004$ and $p\text{-value}=0.049$), marital separation ($p\text{-value}=0.027$ and $p\text{-value}<0.001$), joint family ($p\text{-value}<0.001$ and $p\text{-value}=0.005$) and unemployment ($p\text{-value}<0.001$ and $p\text{-value}<0.001$) significantly influenced anxiety and depression, respectively, in alcohol dependent patients.

The prevalence of depression in patients with AUDs has been reported to be as high as 35% [18]. In the current study, the prevalence of depression was 40%. A study by Kuria MW et al., found that the prevalence of depression in alcohol dependent persons was 63.8% [19]. However, at six months after detoxification and rehabilitation, the prevalence of depression was 30.2%. As the present study was cross-sectional, the patients were assessed only at intake. There could be the possibility of reduction in prevalence after community-based detoxification and rehabilitation for alcohol dependence. The higher prevalence of depression could be attributable to small sample size, type II error and consequently, overestimation.



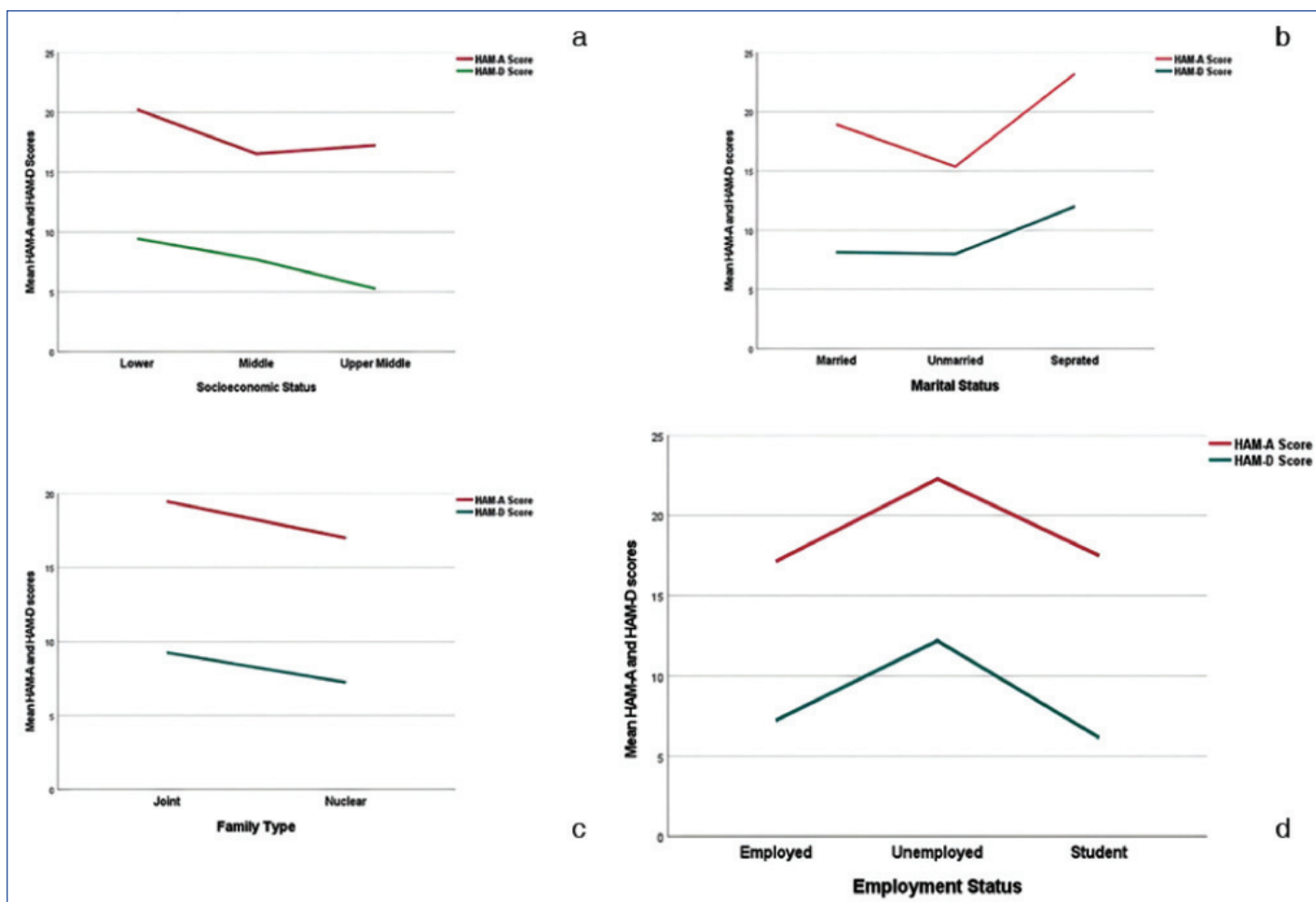
[Table/Fig-5]: a) Scatter plot showing correlation (Pearson's correlation plot) between SADQ score and HRDS score; b): duration of alcohol consumption and HRDS score; c): SADQ score and HAM-A score and d): HAM-A score and duration of alcohol consumption.



[Table/Fig-6]: Means plot showing difference HRDS and HAM-A scores between a): Age groups; b): Gender; c): Locality and d): Education level, respectively. Comparison between depression/anxiety scores and categorical variables done with one-way ANOVA

There are only a few epidemiological studies from south-east Asia evaluating co-morbid alcohol dependence and depression [20-23]. The studies by de Silva V et al., Jonas JB et al., Pradhan SN et al., and Balogun O et al., were conducted in Sri Lanka, India, Nepal, and Myanmar, respectively. Although

these studies point towards a higher prevalence of co-morbid alcohol dependence and depression in low and middle-income countries, the pattern, and the role of socio-demographic factors on co-morbid alcohol dependence and depression was not evaluated [20-23].



[Table/Fig-7]: Means plot showing difference in HAM-A and HAM-D scores between- a): Socio-economic Status (SES). b): Marital status, c): Family type and d): Employment status, respectively.

Comparison between depression/anxiety scores and categorical variables done with one-way ANOVA

Wang J and Guebaly N conducted a study to evaluate socio-demographic factors associated with co-morbid alcohol dependence and major depressive episodes using data from the Canadian national population health survey. The authors found that being younger (p -value <0.005); being divorced (p -value <0.05), separated (p -value <0.005), or widowed (p -value <0.05); and having low family income (p -value <0.05) were significantly associated with alcohol dependence and depression co-morbidity. In our study, lower SES, marital separation, living as joint family and unemployment significantly influenced co-morbid alcohol dependence, depression, and anxiety. Most findings of our study were consistent with this study [24] except that depression and anxiety scores did not significantly differ by age (ANOVA, p -value=0.124 and 0.117), gender (ANOVA, p -value=0.788 and 0.928), respectively. The present study findings were also consistent with Ross's study [10] based on the Ontario data, except that Ross HE found that subjects who were between the ages of 25 and 44 years were more likely (p -value <0.001) to have co-morbid alcohol dependence and depression. The association of socio-demographic factors with this co-morbidity may be evidence that these are potential risk factors for co-morbid depression and alcohol dependence; however, it is unlikely that these socio-demographic factors are direct causes for co-morbidity. It is probable that these factors may affect mental health through immediate risk factors like chronic stress and unhealthy lifestyle [25].

In our study, men did not differ from women in reporting depression alcohol dependence co-morbidity. This finding was different from the study by Grant BF et al., [12]. The non significant association between sex and co-morbidity could be owing to differential risks of having depression and alcohol dependence by men and women. Participants with co-morbid depression and depression significantly differed in marital status. The significant impact of marital separation on this co-morbidity differed from findings of Grant BF et al., [12].

In the present study, education level was significantly associated with anxiety alcohol dependence co-morbidity (ANOVA, p -value=0.003). This observation in contrast to the study by Grant BF et al., and Droomers M et al., these studies found no association and educational level and depression alcohol dependence co-morbidity [12,26]. It is probable that the association between educational level and alcohol-related behaviour is not universal and depends on the culture of a country; in fact, educational level may play a moderating role between psychological and environmental factors predisposing to alcohol problems.

Bellos S et al., investigated socio-demographic variables in anxious and depressed alcohol dependents in Greek population. After adjusting for depression and anxiety, the authors found that the socio-demographic variables influenced alcohol dependence and anxiety co-morbidity to a lesser extent than co-morbid alcohol dependence and depression. The socio-demographic variables that significantly influenced this association included the duration of unemployment, the economic environment in which unemployment is taking place, the educational level, SES, and previous drinking history of the individual [27].

A study conducted among software engineers ($n=129$) reported that higher rates of professional stress increased risk of harmful alcohol use and significantly increased the incidence of depression [28]. In the current study, anxiety symptoms were significantly higher among postgraduates (ANOVA, p -value=0.003) as compared to graduates and those with lower academic qualifications.

Limitation(s)

The sample size was relatively small, potentially leading to a type II error and consequently, overestimation. As the study design was cross-sectional, it was not possible to make comments about the

temporal association between alcohol-related problems and the studied variables. Second, selection bias could not be excluded, as the response rate of participants was low; participants with lower SES often refuse to participate in community studies. Lastly, the cut-offs used for assessing alcohol dependence in different studies differ. This could potentially influence comparisons of prevalence in our study with other epidemiologic studies in which different cut-off value used to assess alcohol dependence.

CONCLUSION(S)

Lower SES, marital separation, living as joint family and being unemployed significantly influence depression and anxiety symptoms in alcohol dependent patients. In conclusion, the present study suggest that in subcontinent countries, belonging to lower socio-economic status, being maritally separated, living in joint families and being unemployed could significantly influence depression and anxiety symptoms in depressed and anxious alcohol dependent subjects.

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