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The Relationship Between Anxiety and Sexual Satisfaction Among Alcohol-Dependent Men: An Exploratory Cross-Sectional Study from Rajasthan

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Abstract

Background: Alcohol dependence (AD) is a disorder alcohol use arising from repeated or continuous use of alcohol. The most commonly occurring co-morbid conditions in individuals with alcohol problems are anxiety disorders. Alcohol also have effects on sexual health. Sexual satisfaction is a large part of it that an individual can receive from the activity.

Aim and objective: This study aims to assess the prevalence, severity, and interrelationship between anxiety and sexual satisfaction in men diagnosed with AD.

Material and Methods: A cross-sectional study was conducted on 110 male participants diagnosed with AD, recruited at psychiatry department of a tertiary care center. Participants were assessed using Hamilton scale for anxiety (HAM-A) for anxiety, and new sexual satisfaction rating scale (NSSS) for sexual satisfaction.

Results: The results revealed that the mean age of the participants was 35.65 years. For the group, mean HAM-A score was 18.51 while mean NSSS score was 47.21. A prevalence of severity of anxiety scores was moderate in 50% participants, mild anxiety in 30% participants, and severe anxiety in 20% participants. A strong positive correlation was found between the severity of anxiety and the duration since last regular alcohol use (p value 0.01). There was a negative correlation between HAM-A scores and NSSS scores (correlation coefficient = -0.18) and it was statistically significant (p = 0.05). These findings show significant relationship between AD, anxiety, and sexual satisfaction.

Conclusions: Findings of this study highlight the importance of routine comprehensive clinical assessment in men with alcohol dependence with an especial emphasis to assessment of anxiety disorder and sexual health.

Keywords: Alcohol, Alcohol dependence, Anxiety, Sexual satisfaction, Sexual health.

INTRODUCTION

Alcohol dependence is a disorder of regulation of alcohol intake that arises from repeated or continuous use of alcohol. As per ICD 11[(1)] alcohol use disorder is characterized by the pattern and consequences of alcohol use. The characteristic features of Alcohol dependence are strong internal drive to use alcohol, which is manifested by impaired ability to control use, increasing priority given to use over other activities and persistence of use despite harmful or negative consequences. These experiences are often associated with subjective sensation of urge or craving to use alcohol.

According to WHO In 2019 [(2)], 17% of people aged 15+ years, and 38% of current drinkers were engaged in heavy episodic drinking or "binge drinking" (i.e., consuming at least 60g of pure alcohol on one or more occasions in the last month), while continuous heavy drinking was prevalent among 6.7% men.

A recent report from the National Mental Health Survey (2015-16) in India showed that there was a high prevalence (22.4%) of substance use disorders, of which the prevalence of alcohol use disorder (dependence and harmful use) was 4.6% [(3)].

Alcohol is predominantly a central nervous system depressant. Long term alcohol use affects various spheres of an individual life like physical health, mental health, sexual health, social life, and financial aspects. The most commonly occurring co-morbid conditions in individuals with alcohol problems are mood and anxiety disorders [(4)], with the incidence of co-morbidity varying across studies. Overall co-morbidity has been reported at 37%, while 12-month prevalence for anxiety problems has been reported 17%. [(5)] Symptoms of anxiety can be either

due to alcohol intoxication and withdrawal or can develop independently. Co-occurring anxiety disorders and alcohol use disorders (AUDs) are of great interest to researchers and clinicians. Generally, anxiety symptoms have been associated with increased severity and persistence of AUDs, increased risk for relapse following treatment, and increased lifetime service utilization in the context of substance use disorders.[6]

Alcohol poses various deleterious effects on the health of an individual leading to sexual dysfunction. Interpersonal difficulties further worsen the alcohol use. A large part of sexual activity is the satisfaction that an individual can receive from the activity.[7] The response from an individual's own evaluation of his or her sexual relationship, includes their sexual needs being met, fulfilling expectations of both the partner and the individual, and a positive evaluation of the sexual relationship as a whole. These many facets of sexual satisfaction could also be influenced by outside factors including self-objectification and alcohol consumption.

The present study seeks to understand how alcohol dependence impacts mental health in terms of anxiety, and sexual satisfaction, specifically identifying the factors associated to anxiety and sexual health problems, and overall sexual satisfaction. The findings from this study could contribute to improvising clinical approaches for treating men with alcohol dependence in a holistic manner by addressing both their mental health and sexual health needs.

Aim and objectives: The present study aims to determine the prevalence and severity of anxiety, and sexual satisfaction among men diagnosed with Alcohol Dependence. Primary objective was to assess severity of anxiety symptoms and prevalence of sexual satisfaction. Secondary objective was to correlate above parameters with the associated clinical variables of the participants.

MATERIALS AND METHODS

Study design & site: This study was a cross sectional study conducted at department of psychiatry, Ananta institute of medical sciences and research center, Rajsamand, Rajasthan. The study received ethical approval from the Institutional Ethical Committee *(Ref no. AIMS/IEC/2023/120)*.

Study duration: The study duration was 18 months *(July 2023 to December 2024)*.

Study population: The study population included cases of alcohol dependence who consented to participate and fulfilled the inclusion and exclusion criteria. The included participants were married males of age 18 year and above, with a diagnosis of alcohol dependence as per ICD 11 diagnosed separately by two psychiatrists. Participants with diagnosed major psychiatric disorder, chronic medical diseases, those in active alcohol withdrawal state, consuming substance other than alcohol and nicotine, taking any medicine that could affect their sexual function, diagnosed cases of dementia, delirium and other organic disorders, mental retardation, not willing to provide consent were excluded.

Sample size: Final sample size of the present study was 110 men with alcohol dependence.
Estimated true proportion - 0.65
Desired precision (+/-) - 0.05
Confidence level - 95% (z value = 1.96)
Population size (for finite populations) - 150 (for limited number of case and duration)
Sample size was calculated using the formula: n = (Z2 x P x (1 - P))/e2

Where- Z = value from standard normal distribution corresponding to desired confidence level (Z=1.96 for 95% CI)- P was expected true proportion- e was desired precision (half desired CI width).for small populations n can be adjusted so that n (adj) = (Nxn)/(N+n).
Adjustment for finite population size was described by Thrusfield M. [8]
Minimum sample size = 105
So after 5% of adjustment calculated final sample size was 110.

Study tools:

- A semi structured proforma was designed that included **sociodemographic variables** (age, religion, domicile, education, type of family, socioeconomic status as calculated by modified Kuppuswami scale 2023, and employment status), and **Clinical variables** (age at first drink, age at last regular alcohol drinking, number of units of alcohol consumption per day, and presence of nicotine use in years).

- The severity of alcohol dependence was assessed using **Severity of Alcohol Dependence Questionnaires** (SAD-Q). [9] SAD-Q have five aspects (each having four items) covering physical withdrawal, affective withdrawal, withdrawal relief drinking, alcohol consumption, and rapidity of reinstatement. A score of 31 or higher indicates "severe alcohol dependence", while a score of 16 -30 indicates "moderate dependence", and a score of below 16 indicates mild dependence.

- Alcohol withdrawal state at the time of assessment of the participants was excluded using **Clinical Institute Withdrawal Assessment of Alcohol Scale, revised** (CIWA-Ar)[10]- The CIWA-Ar scale can measure 10 symptoms. Three components

(tremor, paroxysmal sweats, and agitation) of total 10 components are rated by observation alone. The other 7 components require discussion with the patient. Scores of less than seven was taken as exclusion of alcohol withdrawal in the present study as was taken in past Indian study. [11]

- **Hamilton rating scale for anxiety (HAM-A)** [12]: HAM-A was used for screening of symptoms of anxiety. The scale consists of 14 items. Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0 to 56.A score of 8 to 14 denotes mild anxiety while the score range 15 to 23 denotes moderate anxiety, and score ≥ 24 denotes severe anxiety. Scores ≤ 7 were considered to represent no/minimal anxiety. In terms of its reliability and validity, the HAM-A scale had generally stood the test of time. It offers a consistent measurement across various contexts and over the repeated uses.

- **The New Sexual Satisfaction Scale (NSSS)** [13]: NSSS is a multi-dimensional self-report 20 item scale designed to measure sexual satisfaction in both clinical and non-clinical samples. It covers various aspects of sexual satisfaction like sexual sensations, sexual awareness and focus, sexual exchange, emotional closeness, and sexual activity. The items are measured on a Likert scale of 1 to 5. Total score ranges from 20-100. Higher total scores denote higher sexual satisfaction. It has satisfactory reliability and validity, and can be used irrespective of the subject's gender, sexual orientation, and relationship status. A validated Hindi version [14] of the scale was used for the purpose of the study. The internal consistency was good (Cronbach's α = 0.94-0.96) and also has good test-retest reliability and validity.

Statistical Analysis: Data was collected using the designed proforma and an excel sheet was prepared. Statistical analysis was performed with the help of software SPSS 22 (IBM crop 2011. IBM SPSS statistics for windows, version 20.0.Armok, NY: IBM crop). All quantitative variables were summarized by mean and standard deviation, while qualitative variables were summarized by frequencies and percentage. For assessing the correlation Pearson correlation coefficient was used. Results were considered statistically significant at the p value <0.05.

RESULTS

The participants of the current study were a total of 110 patients diagnosed as alcohol dependence and were fulfilling the inclusion criteria and exclusion criteria. Mean age of the participants was 35.65 years (SD 5.33).

Table 1 Sociodemographic variables

Variable	Number (N)	Percentage (%)
Religion		
Hindu	103	93.6
Islam	5	4.5
Buddhism	2	1.81
Domicile		
Rural	78	70.9
Urban	32	29.1
Education		
Illiterate	1	0.9
Literate	3	2.7
Primary	21	19.5
Secondary	79	71.8
Graduate	6	5.5
Type of family		
Joint	66	60
Nuclear	25	22.7
Extended nuclear	19	17.3
Socioeconomic status		
Lower middle (11-15)	19	17.3
Upper lower (5-10)	91	82.7
Employment status		
Never employed	6	5.45 %
Presently unemployed	29	26.36 %
Full time employed	4	3.63 %
Part time employed	30	27.27 %
Self employed	40	36.36 %
Student	1	0.93 %

Table 1 shows that majority of participants were Hindu by religion, living in rural domicile, educated up to secondary level, residing in joint families, from upper lower socioeconomic status, and were self-employed.

Table 2 Associated clinical variables

Variables	Mean	SD
Age at first drink (years)	24.80	3.32
Age at last regular alcohol drinking (years)	26.08	3.15
Alcohol consumption per day (number of units)	18.03	3.88
Duration of nicotine use (in years)	11.8	7.9

Table 2 shows mean and standard deviation of various associated clinical variables of the participants. Nicotine use was reported by 85.5% participants.

Table 3: Distribution of participants according to severity of alcohol dependence as per Severity of alcohol dependence questionnaire (SAD-Q) (N= 110)

SAD-Q Range	Number	Percentage (%)
Mild (less then < 16)	3	2.72
Moderate (16-30)	57	51.82
Severe (>30)	50	45.46

Table 3 shows the severity of alcohol dependence as per the severity of alcohol dependence questionnaire (SAD-Q). Majority of participants (51.82%) had moderate alcohol dependence while severe dependence was present in 45.46% participants, and mild dependence in 2.72% participants. SAD-Q score for the all participants ranged from 15 to 43. As a group, the mean SAD-Q score for the participants was 28.88 (SD 5.92) that denoted the moderate alcohol dependence.

Table 4: Distribution of participants according to Hamilton rating scale for anxiety (HAM-A) score (N= 110)

HAM-A Score	Number (N)	Percentage (%)
0-7 (no/ minimal)	0	0
8-14 (mild)	33	30
15-23 (moderate)	55	50
>24 (severe)	22	20

Table 4 shows the distribution of participants as per the HAM-A score. Fifty percent participants had moderate anxiety while 30% had mild anxiety, and 20% had severe anxiety. HAM-A score for the all participants ranged from 9 to 31. The mean of HAM-A for all participants as a group was 18.51 (standard deviation of 5.5) which denotes the moderate anxiety. For the all participants NSSS score ranged from 26 to 80. The mean of the sexual satisfaction score for all participants as a group by using new sexual satisfaction scale was 47.21 (SD 3.52) which suggests that there was poor sexual satisfaction among the participants.

Table 5: Correlation among the duration of last regular alcohol use, HAM-A score and NSSS score

Variables	Correlation coefficient (r value)	*p* value
Duration of last regular alcohol use Vs HAM-A scale	0.24	0.01
Duration of last regular alcohol use vs NSSS score	-0.07	0.46
HAM-A scale score Vs NSSS score	-0.18	0.05

Table 5 shows that the duration of last regular alcohol use correlated positively with the Hamilton rating scale for anxiety score (correlation coefficient 0.24) and it was statistically significant (p value 0.01) that shows as the duration of last regular alcohol use increased, the scoring of the anxiety scale also significantly increased. The table also shows that the duration of last regular alcohol use was negatively correlated (-0.07) with NSSS scores reflecting less sexual satisfaction upon increasing the duration since last regular alcohol use, though it was not statistically significant (p value 0.46). This shows that as the duration of last regular alcohol use increased, the scoring of sexual satisfaction rating

scale decreased that meant the more the duration of alcohol use, less the sexual satisfaction. There was a negative correlation between HAM-A scores and NSSS scores (correlation coefficient = -0.18) and it was statistically significant (p = 0.05) that indicated that higher anxiety may be modestly associated with reduced sexual satisfaction, just reaching the threshold for statistical significance.

DISCUSSION

The findings of this study revealed important insights into the relationships of Alcohol use disorder with anxiety, and sexual satisfaction among the participants.

Sociodemographic Profile of Participants: In the present study, the mean age of the participants was 35.65 years, with a standard deviation of 5.33 years. This indicated that the participants were relatively homogeneous in age, with most individuals falling within a narrow age range around the mean. The mean age of the sample was 39.14 years in a study conducted by Prabhakaran *et al* [15], the mean age of the study participants was 35.62 years in Bhainsora et al. [16] Younger adults with alcohol use disorders may exhibit more impulsive behaviours. In the present study, majority of the study participants were from Hindu religion (93.6%). This finding was in line with the earlier studies. In study by Bhainsora et al. [16] majority of the study participants were from Hindu religion (97%). Vaishnavi *et al* [17] also observed similar results with 85.5% study participants being Hindu.

In present study, the majority of participants were from the rural area of residence (70.9%). Majority of the participants (61%) were from the rural area of residence in the study by Bhainsora et al [16] also. This was consistent with previous research by Suresh et al [18] who reported similar rural predominance among alcohol-dependent populations. Rural areas often face limited access to healthcare facilities, mental health services, and addiction treatment centers, which can lead to delayed diagnosis and inadequate management of alcohol use disorders. In the present study, majority of participants (71.8%) were educated up to secondary school level. Prabhakaran *et al* [15] conducted their study in Kerala state of India and observed that majority of the study participants (86.9%) were educated up to higher secondary school level. This difference could be attributed to relatively higher literacy rate in the particular state.

In present study majority of participants were self-employed (36.36%) while 27.27% participants were part time employed. In contrast to our finding, Prabhakaran et al [15] observed that all participants were employed and having higher education level in Kerala. In the present study the majority of participants were self-employed or part time employed, which may indicate economic instability.

In the present study, majority of the study participants (60%) were from joint family. This finding was in line with the study done by Bhainsora et al [16], as they found majority of the participants (71%) were from joint family. The high prevalence of joint family structures in the present study was also in line with prior study by Kumar & Rao 2019[19], suggesting the cultural influence on familial systems. In the present study, majority of participants were belonging to upper lower category (82.7%) of socioeconomic status that was followed by lower middle class (17.3%). This indicates a higher prevalence of alcohol dependence among individuals from economically disadvantaged backgrounds. Present study is in line with findings of Reddy MP et al [20] who found the majority of participants belonged to the upper lower class (70%) and middle (15%) socio-economic class.

Associated variables: In the current study the mean age of participants at their first drink was 24.80 year (SD 3.32). Similar result was found in the study done by Chatterjee et al [21] where the mean age of the participants at their first drink was 24.85 years. The mean age at last regular alcohol drinking in our study was 26.08 years (SD 3.15) that was in line with the study done by Johnson et al [22] who found that the mean age of onset of dependence was 27.8±5.7 years. These findings may reflect that peer pressure, work, family and financial related problems can play a role for initiation of alcohol consumption.

In our study the severity of alcohol dependence for the group as a whole was moderate dependence (mean SAD-Q score 28.88, SD 5.92) which is comparable to the study by Khalid A et al [23] where the severity of dependence was moderate dependence.

The mean number of units of the alcohol consumption per day in our study was 18.03 units (SD 3.88). In contrast to our study, a study by Acharya RK et al [24] found 46% of participants used >30 units/day followed by 35% of participants used 15-30 units/day of alcohol and 19 % of participants consumed <15 units/day. The difference can be attributed to the fact that there was higher proportion of participants with severe dependence of alcohol in study by Acharya RK et al [24] while in our study majority of participants had moderate alcohol dependence.

Alcohol use and Tobacco Use: In our study the comorbid tobacco use was found in 85.5% of participants with alcohol dependence. Similar results were found in study done by Pendharkar et al [11], in which 84.5% patients were dependent on tobacco. The positive comorbid history of tobacco

use may implicate that nicotine use with alcohol use could be because of the social habits, easily acceptance of the nicotine as smoke or chewing form at society level.

Alcohol use among participants and Anxiety: In present study the mean of anxiety symptoms for the group which was assessed by using the HAM-A scale was 18.51 that shows the group was in moderate anxiety category, and half of the participants were having moderate anxiety symptoms. Our findings are in line with study done by Boschloo I et al [25] which showed the mean of anxiety symptoms was 16.7 that indicated moderate anxiety in the study participants. Our finding was also in line with study done by Mathur P et al [26] which showed the mean of Hamilton rating scale for anxiety score was 18.6±5.2 and majority of participants had moderate anxiety. Co-occurring alcohol use and anxiety symptoms may create a bidirectional relationship, where each condition exacerbates the other.

Alcohol use among participants and Sexual satisfaction: Poor sexual satisfaction was reported in our study participants which was in line with the study done by Mandal S et al [27] that also showed the poor sexual satisfaction in alcohol dependent participants. The findings from our study reinforce the importance of routinely assessing sexual health and satisfaction in alcohol-dependent patients.

Correlation among the duration of last regular alcohol use with other parameters: In our study, the duration of last regular alcohol use correlated positively with the severity of anxiety scores (*correlation coefficient 0.24*), and the correlation was statistically significant (*p value 0.01*). As the duration of alcohol intake increased, the severity of anxiety symptoms also increased. So that could be due to use of alcohol as self-medication used to get rid from the anxiety symptoms. Our findings were in line with the study done by Malkarjun Bole R et al [28], and Ravikant T et al [29] who also showed similar findings. The duration of last regular alcohol use in our study was negatively correlated *(-0.07)* with sexual satisfaction but it was not significant *(p value 0.46).* Which showed that longer duration of alcohol use can lead to higher sexual dissatisfaction warranting attention, assessment and the required appropriate management. In our study there was also a negative correlation between HAM-A and NSSS *(r = -0.18, p = 0.05),* suggesting that increased anxiety score was modestly linked to decreased sexual satisfaction.

CONCLUSIONS: In our study the majority of participants were identified as Hindu, around three fourth participants resided in rural areas and majority of participants lived in joint family, educated up to secondary level, and were self-employed, while a significant portion of participants belonged to the upper-lower socioeconomic. More than three fourth participants had a history of tobacco use. Majority of participant had moderate dependence for the severity of alcohol dependence. Our study participants had symptoms suggestive of moderate anxiety and poor sexual satisfaction. Longer duration of last regular alcohol intake was associated with higher anxiety and poor sexual satisfaction.

STRENGTHS: The present study addresses interrelated psychological and sexual health domain offering a holistic view of the psychological burden of alcohol dependence. Sexual satisfaction is often underreported and under-researched in alcohol dependent populations, despite its significant impact on quality of life. Male specific data is valuable, as gender differences exist in alcohol use patterns and related consequences. This allows tailored interventions for male patients. Few studies assess all these variables together in a single population. This integrated approach may yield new correlation or causal patterns.

LIMITATIONS: The study's sample size may not be large enough to fully generalize the findings to the broader population. With a relatively small number of participants, particularly those from specific religious, cultural, or geographical backgrounds (e.g., predominantly Hindu and rural) reflecting limited sociodemographic diversity, the results may not be applicable to more diverse or larger populations. In this cross sectional study, the potential confounding variables that might influence the relationship among anxiety, sexual satisfaction and alcohol dependence, such as stressful life events, and poor lifestyle factors were not assessed.

IMPLICATIONS: The results of this study have implications in terms of awareness creation, improvising deaddiction services, training and further research on this special population with alcohol dependence. Furthermore, it also paves the way for understanding the need for comprehensive, feasible, and psychosocial/sexual support for patients with alcohol dependence having sexual satisfaction related problems and co morbid anxiety.

CONFLICT OF INTERERST: None declared.
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