

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_560_20

A cross-sectional study of prevalence and types of sexual dysfunction among married male patients with alcohol dependence syndrome attending tertiary healthcare center from Central Rural India

Ravi Singh Bhainsora, Pradeep Shriram Patil, Ajinkya Suresh Rao Ghogare, Ganpatlal Kodarbhai Vankar¹

Abstract:

BACKGROUND: Chronic and persistent alcohol use is one of the most common significant psychiatric illnesses known to cause sexual dysfunction. The aim of the present study is to study the prevalence and types of sexual dysfunction in the clinical sample of married male patients with alcohol dependence syndrome (ADS).

MATERIALS AND METHODS: The present cross-sectional study was conducted in a tertiary healthcare center from Central Rural India over an 18-month period (from November 1, 2017, to April 30, 2019), with a sample size of 100 patients with diagnosis of ADS. Data were collected using convenient sampling method from married male patients diagnosed with ADS, based on the International Classification of Mental and Behavioral Disorders, 10th Edition—Diagnostic Criteria for Research. Sociodemographic profile and clinical variables were recorded in a specific case report form prepared for the study using the severity of alcohol dependence questionnaire (SADQ) to assess the severity of ADS and using Arizona sexual experiences scale (ASEX) to assess the types and prevalence of sexual dysfunction among patients with ADS. Data were collected and analyzed using SPSS Software Version 15.0, Chi-square test, and Pearson's test of correlation.

RESULTS: Of the 100 patients of ADS assessed, 48% had sexual dysfunction. Majority of the patients reported more than one sexual dysfunction with 87.5% of the patients reporting reduced sexual drive, 79.1% of the patients reported dysfunction in sexual arousal, while erectile dysfunction was found in 58% of the patients. 54% of the patients reported difficulty in reaching orgasm. The lowest prevalence in our study was of orgasmic satisfaction reported by 31.2% of the patients. There was high positive correlation between SADQ scores and ASEX scores. Thus, as the severity of ADS increased, the risk of development of sexual dysfunctions also increased. Further, there was comparatively low but positive correlation between duration of ADS and sexual dysfunction on ASEX scores, indicating that as the duration of ADS increased, the risk of occurrence of sexual dysfunctions also increased.

CONCLUSION: Chronic and severe alcohol dependence increases the chances of developing sexual dysfunctions. These findings can be utilized in the motivation enhancement therapy of patients with ADS to quit alcohol consumption and to improve their quality of sexual life.

Keywords:

Alcohol dependence, Arizona sexual experience scale, erectile dysfunction, orgasm, satisfaction, sexual drive, sexual dysfunction

Department of Psychiatry,
Jawaharlal Nehru Medical
College, Datta Meghe
Institute of Medical
Sciences, Sawangi,
Wardha, Maharashtra,
India, ¹Department of
Psychiatry, Parul Institute
of Medical Sciences and
Research, Vadodara,
Gujarat, India

Address for correspondence:

Dr. Ajinkya Suresh Rao
Ghogare, Assistant
Professor, Department
of Psychiatry, Jawaharlal
Nehru Medical College,
Datta Meghe Institute
of Medical Sciences
(Deemed to be University),
Sawangi - 442 001,
Wardha, Maharashtra,
India. E-mail:
ajinkyaghogaremd@gmail.com

Received: 25-05-2020
Accepted: 10-09-2020
Published: 27-02-2021

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Bhainsora RS, Patil PS, Ghogare AS, Vankar GK. A cross-sectional study of prevalence and types of sexual dysfunction among married male patients with alcohol dependence syndrome attending tertiary healthcare center from Central Rural India. *J Edu Health Promot* 2021;10:47.

Introduction

Alcohol dependence syndrome (ADS) is the diagnostic terminology used in the International Classification of Diseases, 10th Revision–Diagnostic Criteria for Research (ICD 10–DCR).^[1] Patients with ADS have a problematic pattern of alcohol use, leading to clinically significant impairment occurring within a 1–12-month period.^[1] Individual may drink to relieve or decrease his/her stress, but the problem is that drinking to relieve stress may lead to further social, emotional, and physical problems, including sexual dysfunction.

Men comprise large proportion of alcohol-consuming population in India. The prevalence of ADS in Indian males is 7.0%, while the prevalence of heavy episodic drinking in Indian male population (15 + years) and Indian male drinkers only (15 + years) is 28.4% and 55.1%, respectively.^[2] Association between alcohol consumption and sexual dysfunction is multifaceted. Possible mechanisms responsible for sexual dysfunction among patients with ADS include hepatic dysfunction, changes in hypothalamic–pituitary–gonadal axis function, altered metabolism of testosterone, direct depressant effect of alcohol, neurotoxic effect on cells, and interpersonal factors (marital conflicts) due to alcohol consumption.^[3,4] Few studies have reported significant sexual dysfunction between alcohol dependents and social drinkers.^[3,4] Moreover, patients with ADS had more than one sexual dysfunction.^[4,5] A study found that of 97 male alcoholic inpatients, 71% had sexual dysfunction for a period of more than 1 year before hospitalization.^[5] Disturbances among patients with ADS noted were diminished sexual desire in 58%, ejaculatory incompetence in 22%, erectile dysfunction (ED) in 16%, and premature ejaculation in 4%.^[5] ED has been recognized a frequent cause for relapse to alcohol consumption in individuals even after de-addiction management with drugs.^[6] Sexual dysfunction occurring in patients of ADS may be secondary to depressant effect of alcohol itself or alcohol-related diseases or due to multitude of psychological forces related to alcohol consumption.^[7] ADS in India is especially important to watch out for because of consumption of high rates of alcohol use in the rural population. A study from East India reported current alcohol use in 19% of males and 2.4% of women from rural India.^[8] After reviewing the literature, data on this topic from Central Rural India are not available; hence, there was need for comprehensive studies on the assessment of prevalence and types of sexual dysfunction in married male patients diagnosed with ADS. Therefore, this study aimed to find the prevalence and the types of sexual dysfunction among a clinical sample of married male patients suffering from ADS who attended tertiary healthcare center from Central Rural India. Arackal and Benegal observed no significant correlation between the

duration of ADS and the number of sexual dysfunction complaints.^[9] Another study observed that longer the duration of ADS and more the severity of ADS, the more is the risk of development of sexual dysfunction.^[10] Systematic review studies concluded that alcohol acts as a risk factor for sexual dysfunctions among which ED is common.^[11,12] A systematic review of clinical and experimental studies on sexual dysfunctions in alcohol-dependent men from North India concluded that in male alcoholics, greater quantity of alcohol consumption, greater severity of ADS, and grater duration of drinking were associated with ED, inhibited libido, and retarded ejaculation.^[13] “Is there an association between duration of ADS, severity of ADS, and sexual dysfunction in patients with diagnosis of ADS?” reflects the research question of the present study. Based on the previous studies,^[9–13] we hypothesized that higher the duration and severity of ADS, higher may be the risk for the development of sexual dysfunctions. Despite the evidence that alcohol-induced sexual dysfunction, mainly ED, is responsible for frequent relapses to alcohol consumption among those with diagnosis of ADS,^[5] and despite the higher rates of alcohol use in males from Rural India,^[8] there are no study data available regarding the assessment of relationship between duration of ADS, severity of ADS, and alcohol-induced sexual dysfunctions among the males from Central Rural India. Hence, we decided to do this study so that the patients with ADS from Central Rural India could gain insight into the main cause of their sexual dysfunction in the form of alcohol, which might in turn motivate them to give up the alcohol consumption.

Materials and Methods

Sample collection and study design

The present cross-sectional observational study was conducted in the department of psychiatry of tertiary healthcare center from Central Rural India. The study was approved by the institutional ethics committee on October 3, 2017, with reference letter number: DMIMS (DU)/IEC/2017-2018/6707. The study began on November 1, 2017, and data collection was completed on April 30, 2019. Informed written consent was taken from all study subjects after explaining them the nature and purpose of the study. Patients diagnosed with ADS admitted in the drug de-addiction inpatient setting of the department of psychiatry of tertiary healthcare center from Central Rural India were included in study. All study participants were assessed in detailed by a postgraduate (PG) student and a trained psychiatrist. All patients were subjected to detailed clinical, biochemical, and radiological (ultrasonography of abdomen) examinations to rule out any major comorbid medical and surgical illnesses. The final number of the study participants was 100. By knowing the fact that the

prevalence of heavy drinking among Indian males with diagnosis of ADS is as high as 55.1%,^[2] and applying the formula for sample size determination for cross-sectional study design ($n = 4pq/L^2$)^[14], we got required a number of sample size to be 100. In the formula mentioned, p is prevalence of heavy drinking in patients of ADS, $q = 100 - p$, L is allowable error, and it is 20% of the p . Hence, by taking the prevalence of heavy drinking in patients of ADS to be 50%,^[2] 95% confidence interval, and 20% allowable error of margin, the minimum sample size required was 100. Inclusion criteria adopted for the study were married male patients in the age group of 21–40 years, those having regular sexual partner, those fulfilling ICD 10–DCR diagnostic criteria for ADS,^[1] and those willing to give the consent. Minimum age of the study participants was kept at 21 years because legal age for marriage for Indian males is 21 years. Maximum age of the study participants was kept at 40 years because 40% of males are affected by sexual dysfunction mainly by ED at this age.^[15] Exclusion criteria were patients not willing to give consent, those not fulfilling ICD 10–DCR diagnostic criteria for ADS,^[1] those having a history suggestive of primary sexual dysfunction (i.e., history of sexual dysfunction before initiation of alcohol consumption), those suffering from major psychiatric disorders such as mood disorders, psychotic disorders, neurotic disorders and substance dependence except for alcohol and nicotine, local injuries to genitalia, any genital anomalies, major medical as well as surgical disorders, and those receiving medications such as antihypertensive, antipsychotic, and antidepressant known to interfere with sexual functioning. Data were collected by convenient sampling method after fulfilling inclusion criteria, using a predesigned, semi-structured questionnaire. It was used to record the sociodemographic data, general examination, systemic examination, and mental status examination of the study participants.

Severity of alcohol dependence questionnaire

Severity of alcohol dependence questionnaire (SADQ) is a 20-item questionnaire designed to measure the severity of ADS. It is relatively quick to complete (approximately 5 min) and is easy to score.^[16] Each item is rated upon a four-point frequency scale (almost never, sometimes, often, and nearly always) and the responses are scored 0, 1, 2, or 3 accordingly. Thus, the range of total score is from 0 to 60. Score below 16 indicates mild alcohol dependence, 16–30 indicates moderate alcohol dependence, and 31 or higher indicates severe alcohol dependence.^[16] Internal consistency of SADQ is high. In construct validity, single factor accounts for 53% of the variance. Concurrent validity suggests that clinical rating correlates with SADQ to 0.63.^[17] Please see “Annexure 1” for SADQ. “Annexure 1” is added after the section of “References”.

Arizona sexual experiences scale

Arizona sexual experiences scale (ASEX) is a clinician-administered questionnaire.^[18] It is a user-friendly, 5-item rating scale based on a 6-point Likert scale. It is short, easy to understand, and contains less intrusive questions. It was developed for the assessment of sexual dysfunctions in patients. It particularly determines the modifications and alterations of sexual functions in relation to intake of medicines or psychotropic substances, including alcohol. Each item explores particular domains of sexuality such as “sexual drive, sexual arousal, penile erection, ability to reach orgasm, and satisfaction from orgasm.” The possible total scores range from 5 to 30, with higher scores indicating more sexual dysfunction.^[18] Sexual dysfunction is defined as a total score of 19 or more, or a score of 5 or more on any domain, or a score of 4 or more on any three domains. ASEX appears to be useful in the range of clinical situations, including patients with primary sexual dysfunction, specific psychiatric disorders, specific physical illnesses, and treatment emergent sexual dysfunction.^[18] ASEX has been utilized in patients with ADS and/or other substance use disorders.^[13] The study of internal consistency between five items of ASEX was found to be good ($\alpha = 0.82$). Test–retest reliability was satisfactory ($r = 0.92$, $P < 10(-3)$). Regarding construct validity of ASEX scale, factor analysis revealed one factor that was responsible for 83.7% of variance.^[19] McGahuey *et al.* observed that the results from Cronbach’s alpha analysis indicated that ASEX scale had demonstrated excellent internal consistency and reliability ($\alpha = 0.9055$).^[18] They also observed that ASEX had demonstrated strong test–retest reliability (for patients – $r = 0.801$, $P < 0.1$, for controls – $r = 0.892$, $P < 0.1$).^[18] In summary, McGahuey *et al.* observed that ASEX scale showed high positive and negative predictive values along with high internal consistency, reliability, and validity, supporting the effectiveness of ASEX scale in the detection of sexual dysfunction clinically.^[18] Please see “Annexure 2” for ASEX scale. “Annexure 2” is added after the section of “References”.

Data analysis

Data from both SADQ and ASEX clinician-rated scales were entered with the help of Microsoft Excel version 2007. Final data were analyzed with the help of SPSS statistical software version 15 (IBM, Chicago, Illinois, United States of America). Continuous variables such as age of the study participants in years and duration of alcohol dependence in years were presented as mean and standard deviation (SD), while categorical variables such as age groups, educational status, occupational status, religion, family type, family head, locality/area of residence, and presence/absence of sexual dysfunction among patients with ADS were presented as frequency

and percentage. Ordinal variable such as severity of ADS was divided into mild, moderate, and severe categories, based on the scores of SADQ.^[15] Chi-square test was used to determine the level of significance. Central tendencies and dispersion of variables were studied using descriptive statistical methods such as mean and SD. Study group with sexual dysfunction and without sexual dysfunction were matched in respect of sociodemographic profile to identify the confounding variables. Matching was performed according to the type of variables using Chi-square test and student “t” test. Sexual dysfunction was identified by comparing two groups in respect of their alcohol dependence by respective tests of significance. A statistical technique of logistic regression analysis was applied to explore the predictive relationship between severity of ADS, duration of ADS, and likelihood of development of alcohol-induced sexual dysfunctions. Level of significance was set at 0.05.

Results

Prevalence of sexual dysfunction in clinical sample of patients with alcohol dependence syndrome

In the present study, out of 100 ADS patients, 48 (48%) had sexual dysfunction.

Association of sociodemographic characteristics with sexual dysfunction in patients with alcohol dependence syndrome

Table 1 shows demographic correlates of sexual dysfunction in patients with ADS. Majority of the patients were from the age group of 31–40 years (68%) with a mean age of the study participants being 35.62 ± 4.55 years, had education up to primary school level (34%), were employed (96%), from Hindu religion (97%), from joint family (71%), not the head of their family (69%), from rural background (61%), and had duration of alcohol dependence up to 10-year period (62%). Sexual dysfunction in males with ADS was associated with the age above 30 years, being a head of the family and duration of alcohol dependence above 10 years.

Severity of alcohol dependence in study population

Table 2 and Figure 1 show that according to the SADQ scores, 81% had severe alcohol dependence and 19% had moderate alcohol dependence.

Distribution of cutoff scores of Arizona sexual experience scale in patients with alcohol dependence syndrome

Table 3 shows that of 48 patients of ADS who had sexual

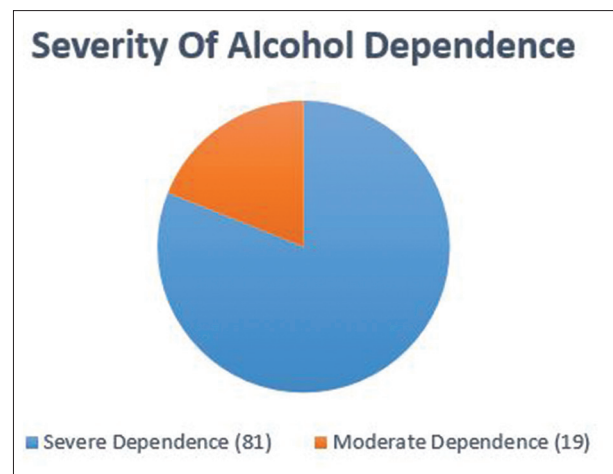


Figure 1: Distribution of patients with alcohol dependence syndrome according to the severity of alcohol dependence as measured by SADQ scores

dysfunction according to the ASEX score, 9 (18.8%) had ASEX total score of 19 or above, 35 (72.9%) had ASEX scores of 4 on three domains but total score below 19, and 4 (8.3%) had ASEX scores of 5 on one domain but total score below 19.

Profile of distribution of types of sexual dysfunction in patients with alcohol dependence syndrome

Table 4 shows that majority of the patients had more than one sexual dysfunction with 42 (87.5%) patients reported reduced sexual drive, 38 (79.2%) patients reported difficulty in sexual arousal, 28 (58.3%) patients reported ED, and 26 (54.2%) patients reported difficulty in reaching orgasm. Lowest prevalence in the present study was of dissatisfaction with orgasm reported by 15 (31.3%) patients.

Correlation between severity of alcohol dependence questionnaire and Arizona sexual experience scale scores in patients with alcohol dependence syndrome

As shown in Table 5, there was high positive correlation between SADQ scores and ASEX scores. Thus, as severity of ADS increased, ASEX scores correspondingly increased. The correlation was statistically highly significant. This finding suggests that the present study hypothesis is directional hypothesis, stating the positive correlation between severity of ADS as measured by SADQ and presence of sexual dysfunction as measured by ASEX scale.

Correlation between years of alcohol dependence and Arizona sexual experiences scale scores in patients with alcohol dependence syndrome

As shown in Table 6, there was positive correlation between years of alcohol dependence and sexual dysfunction on ASEX scores. As duration of alcohol

Table 1: Demographic correlates of sexual dysfunction in patients with alcohol dependence syndrome

Demographic data	ADS with sexual dysfunction (n=48), n (%)	ADS without sexual dysfunction (n=52), n (%)	P
Age groups (years)*			
21-30	10 (20.8)	22 (42.3)	0.02
31-40	38 (79.2)	30 (57.7)	
Education			
Illiterate	5 (10.4)	2 (3.9)	0.29
Primary school	17 (35.4)	17 (32.7)	
Secondary school	12 (25.0)	10 (19.2)	
Intermediate	9 (18.8)	10 (19.2)	
Graduate	5 (10.4)	13 (25.0)	
Occupation			
Employed	47 (97.9)	49 (94.2)	0.33
Unemployed	1 (2.1)	3 (5.8)	
Religion			
Hindu	47 (97.9)	50 (96.2)	0.60
Muslim	1 (2.1)	2 (3.8)	
Family type			
Joint	35 (72.9)	36 (69.2)	0.68
Nuclear	13 (27.1)	16 (30.8)	
Family head			
Yes	21 (43.8)	10 (19.2)	0.008
No	27 (56.2)	42 (80.8)	
Locality			
Rural	32 (66.7)	29 (55.8)	0.26
Urban	16 (33.3)	23 (44.2)	
Duration of alcohol dependence (years)#			
Up to 10	22 (45.8)	40 (76.9)	0.001
Above 10	26 (54.2)	12 (23.1)	

*Mean age: 35.62±4.55 years, #Mean duration of alcohol dependence: 9.44±6.17. ADS=Alcohol dependence syndrome

Table 2: Severity of alcohol dependence in the study population

Severity of ADS according to SADQ score	n=100 (%)
Severe alcohol dependence (score of 31 or more)	81 (81)
Moderate alcohol dependence (score of 16-30)	19 (19)

ADS=Alcohol dependence syndrome, SADQ=Severity of alcohol dependence questionnaire

dependence increased, ASEX scores also increased. Although correlation was statistically significant, the correlation was comparatively low.

Logistic regression analysis illustrating the predictive relationship between the severity of alcohol dependence syndrome, duration of alcohol dependence syndrome, and likelihood of development of sexual dysfunction

Table 7 shows that there was significant relationship between the severity of ADS, duration of ADS, and alcohol-induced sexual dysfunctions among patients with diagnosis of ADS.

Discussion

Sex is one of the most important aspects of human life.

It is a way of expressing love, desire, trust, warmth, affection, and mutual intimacy. Alcohol has been viewed as sex facilitator by reducing inhibition; however, at very same time, it has been found to be one of the major reasons for sexual dysfunction.^[4,5,7] In the present study, a total of 100 married male patients with diagnosis of ADS were evaluated for the prevalence and types of sexual dysfunction. In the present study, we also had explored association between sexual dysfunction and ADS-related parameters such as severity as well as duration of ADS.

Sociodemographic profile of study participants

In the present study, majority of the study participants (68 [68%]) were in the age group of 31–40 years. Prabhakaran *et al.* found that majority of the study participants (40 [47.6%]) were in the age group of 41–50 years.^[20] It was a contrasting finding to our study finding as we had included participants up to the age of 40 years. We had included study participants up to the age of 40 years because 40% of males are affected by sexual dysfunction mainly by ED at this age.^[15] In the present study, the mean age of the study participants was 35.62 ± 4.55 years (range: 21–40 years). Mean age of the study participants in the study conducted by Prabhakaran *et al.* was 39.14 ± 6.6 years (range:

Table 3: Distribution of cut off scores of Arizona sexual experiences scale in patients with alcohol dependence syndrome

Cutoff scores of ASEX	Patients with sexual dysfunction, n (%)
ASEX total score of ≥ 19	9 (18.8)
ASEX scores of 4 on 3 domains but total score of <19	35 (72.9)
ASEX score of 5 on 1 domain but total score of <19	4 (8.3)
Total sum of patients with sexual dysfunctions	48 (100)

ASEX=Arizona sexual experiences scale

Table 4: Distribution of types of sexual dysfunction according to Arizona sexual experiences scale scores in patients with alcohol dependence syndrome (n=48)

Types of sexual dysfunction	n (%)
Low sexual drive/desire	42 (87.5)
Difficulty in sexual arousal	38 (79.2)
Erectile dysfunction	28 (58.3)
Difficulty in reaching orgasm	26 (54.2)
Dissatisfaction with orgasm	15 (31.3)

Table 5: Correlation between severity of alcohol dependence questionnaire and Arizona sexual experience scale scores in patients with alcohol dependence syndrome

Severity of alcohol dependence	Correlations		
	Statistical test	SADQ scores	ASEX scores
SADQ scores	Pearson correlation	1	0.557**
	Significant (two-tailed)		0.000
	n	100	100

**Correlation was significant at the 0.01 level (two-tailed). ASEX=Arizona sexual experiences scale, SADQ=Severity of alcohol dependence questionnaire

22–49 years).^[20] In the present study, majority of the study participants (34 [34%]) were educated up to primary school level (i.e., up to 4th standard). Prabhakaran *et al.* had conducted their study in Kerala state of India and observed that majority of the study participants (73 [86.9%]) were educated up to higher secondary school level (i.e., up to 12th standard).^[20] This difference in education level of the study participants among two studies reflected higher literacy rate of Kerala. Kerala is an Indian state with the highest literacy rate.^[20] In the present study, majority of the patients of ADS (96 [96%]) were employed. In contrast to the present study finding, Prabhakaran *et al.* observed that all the participants were employed.^[20] Higher employment rate in their study might be secondary to higher literacy rate in their study population.^[20] In the present study, majority of the study participants (97 [97%]) were from Hindu religion. Ghogare and Saboo observed a similar finding with majority of the study participants (60 [60%]) belonging to Hindu religion.^[21] In their study, 20 (20%) patients belonged to Muslim religion.^[21] Vaishnavi *et al.* observed similar results with 85.5% being Hindu, 7% Muslim, and 7.5% Christian.^[22] Findings from these studies had shown cultural variation in alcohol consumption in Indian population, with

rates of alcohol consumption being lesser among Muslims.^[21,22] In the present study, majority of the study participants (71 [71%]) were from joint family and rural area of residence (61 [61%]). In contrast to the present study finding, Ghogare and Saboo found that majority of the study participants (68 [68%]) were from nuclear family and urban area of residence (54 [54%]).^[21] They had conducted their study in tertiary healthcare center from urban area of Central India.^[21] This difference reflects the fact that joint family structure where a person lives with his/her parents is commonly seen in rural area, while nuclear family structure where a person lives separately from parents is commonly seen in urban area.

Alcohol-related data among the study participants

In the present study, majority of the study participants (62 [62%]) had duration of alcohol consumption up to 10 years. Ghogare and Saboo observed similar finding with majority of their study participants (43 [43%]) having duration of alcohol consumption up to 10 years of period.^[21] Similar finding was observed by Prabhakaran *et al.* who had observed that majority of their study participants (65 [77.5%]) had 1–10-year period of alcohol dependence.^[20] In the present study, majority of the study participants (81 [81%]) had severe ADS based on the SADQ scores. Prabhakaran *et al.* also observed similar finding with majority of the study participants (58 [69%]) having severe ADS according to the SADQ scores.^[20]

Sexual dysfunction-related data among study participants

In the present study, the prevalence of sexual dysfunction among patients of ADS was 48%, of which majority had more than one sexual dysfunction. It indicates that patients suffering from ADS are at increased level of developing multiple sexual dysfunctions than nonalcoholics. This is in concordance with other studies.^[9,23] Prevalence of sexual dysfunction in patients of ADS was 36.9% in the study conducted by Prabhakaran *et al.*^[20] Most common type of sexual dysfunction observed in the present study was that of low sexual drive/desire which was seen in 42 (87.5%) of our study participants, followed by difficulty in sexual arousal (38 [79.2%]), ED (28 [58.3%]), difficulty in reaching orgasm (26 [54.2%]), and dysfunction in satisfaction with orgasm (15 [31.3%]). This finding was similar with other studies.^[5,13,23] Most common

Table 6: Correlation between years of alcohol dependence and Arizona sexual experience scale scores

Correlations			
ADS related parameter	Statistical test	Years of alcohol dependence	ASEX scores
Years of alcohol dependence	Pearson correlation	1	0.254*
	Significant (two-tailed)		0.011
	<i>n</i>	100	100

*Correlation was significant at the 0.05 level (two-tailed). ADS=Alcohol dependence syndrome, ASEX=Arizona sexual experiences scale

Table 7: Logistic regression analysis illustrating the predictive relationship between severity of alcohol dependence syndrome, duration of alcohol dependence syndrome, and likelihood of alcohol-induced sexual dysfunction

ADS related parameters	B	SE	Wald	df	Statistical significance	Exp(B)	95% CI for Exp(B)	
							Lower	Upper
Severity of ADS	2.413	0.780	9.562	1	0.002	11.171	2.420	51.576
Constant	-0.273	0.224	1.485	1	0.223	0.761		
Duration of ADS	1.567	0.447	12.280	1	0.000	4.792	1.995	11.512
Constant	-0.898	0.358	6.302	1	0.012	0.407		

B=Coefficient for the constant (also known as "intercept"), SE=Standard error around the coefficient of constant, df=Degree of freedom for Wald Chi-square test, Wald=Wald Chi-square test that tests null hypothesis that constant equals 0 and used to determine statistical significance for each independent variable, Exp(B)=Exponentiation of the B coefficient, CI=Confidence interval, ADS=Alcohol dependence syndrome

type of sexual dysfunction in the study conducted by Prabhakaran *et al.* was ED, which was present in 25% of the study participants.^[20] The second most common type of sexual dysfunction in their study was dysfunction in satisfying orgasm (20%).^[20] Aswal *et al.* had observed the prevalence of sexual dysfunction among patients of ADS to be 76% and impotence (28%) was the most common diagnosis in them, followed by loss of libido (26%), delayed ejaculation (10%), excessive libido (8%), and premature ejaculation (4%).^[24] In the present study, the least common type of sexual dysfunction was orgasmic dissatisfaction (31.3%) which was similar to findings of Arackal and Benegal,^[9] but contrary to the findings of Vijayasenan,^[5] who reported premature ejaculation (4%) as least common in patients suffering from ADS. These differences among studies indicated variations in sexual dysfunction profiles due to ADS across various studies.

Relationship between sexual dysfunction and sociodemographic variables in study participants

In the present study, among sociodemographic variables, sexual dysfunction in married male patients with ADS was associated with the age above 30 years and being head of the family. In contrast to our finding, Prabhakaran *et al.* had found association of sexual dysfunction with occupation variable only.^[20] In their study, more unskilled workers reported sexual dysfunction than skilled workers.^[20] In addition to it, 50% of professionals reported significant sexual dysfunction ($P = 0.022$).^[20] Professionals due to their awareness, higher level of education, and less stigmatizing view toward disclosing sexual problems might have reported more freely regarding their sexual dysfunctions.^[20] In the present study, we also found association between patient being head of the family and sexual dysfunction, which might be result of having

more dominant role in household, more responsibilities, as well as facing less resistance from family members to their alcohol consumption. Moore and Goldstein found that 56% of patients in family practice reported one or more sexual dysfunctions.^[25] Being head of the family, one could feel distressed because of duties, such as caring for an elderly family member, preschool and school-age children,^[26] caring for needs of spouse, and playing a role of bread-winner to support their family. Such added sources of stress might account for sexual dysfunctions among patients of ADS who were family head.

Relationship between sexual dysfunction and alcohol dependence syndrome-related variables in study participants

In the present study, among ADS-related variables, sexual dysfunction in married male patients with ADS was associated with the duration of alcohol dependence and severity of ADS. Prabhakaran *et al.* had observed significant association of sexual dysfunction with the duration of alcohol dependence.^[20] Saha had also observed that chance of developing sexual dysfunction had increased with increasing years of alcohol consumption.^[27] These findings indicate that as duration of alcohol dependence increased, exposure of patient's body to deleterious effects of alcohol also increased, resulting in high risk of sexual dysfunction. In contrast to the present study finding as well as those findings of Prabhakaran *et al.*^[20] and Saha^[27], Arackal and Benegal^[9] did not found significant association between sexual dysfunction and duration of alcohol consumption. In the present study, although majority cases had severe alcohol dependence (score ≥ 31) on SADQ, the higher the score, higher will be the chance of frequent, hazardous, quantity of drinking, and dependence. The present study shows higher SADQ score in alcohol-dependent patients with sexual dysfunction which can be seen by

positive correlation between SADQ and ASEX scores. This is comparable to what has been found in former studies.^[13,20,28] Schiavi *et al.*^[29] found that sexual dysfunction caused due to alcohol was reversible with abstinence. This notion was contradicted by Fahrner,^[23] who proved similar prevalence of sexual dysfunction even after 9 months of follow-up in patients with ADS. Lemere and Smith attributed permanent neurologic damage to the persistence of ED even after many years of sobriety.^[3] These findings make it imperative to conduct follow-up studies for sexual dysfunctions in patients with ADS, especially during the period of abstinence to prove whether abstinence reverses alcohol-induced sexual dysfunction or not.

Conclusion

Significant number of the study participants had one or more sexual dysfunctions. Duration of alcohol consumption significantly increases the possibility of sexual dysfunction. Severity of alcohol dependence significantly intensifies the possibility of sexual dysfunction. Educating and motivating the patients with ADS about the relationship between the ADS and the sexual dysfunctions caused by ADS may lead to cessation/ reduction of alcohol consumption by them. Good sexual function is one of essential components of quality of life and is crucial for maintaining a satisfying intimate relationship as it provides a sense of physical, psychological, and social well-being.

Implications of the present study

This study implies that future studies should assess the impact of knowledge among patients of ADS about alcohol-induced sexual dysfunctions and level of their motivation to quit and remain abstinent from alcohol. Moreover, this study also implies the need for addiction specialists and general physicians to evaluate sexual problems in patients of ADS as treating alcohol dependence can be superficial and presence of sexual dysfunction can further propel patients into a never ending vicious cycle.

Strengths

The major strength of the present study is that we have used a valid and reliable tool (ASEX scale) to assess in-depth various types of alcohol-induced sexual dysfunction in patients with ADS. This study is first of its kind from Central Rural India to emphasize the predictive relationship between severity of ADS, duration of ADS, and alcohol-induced sexual dysfunctions using logistic regression analysis method. Findings of this study can help in the field area by spreading awareness among males with ADS to understand the relationship between alcohol addiction and alcohol induced sexual dysfunctions in better way so that they will gain motivation to quit

harmful alcohol addiction and improve their sexual functioning. For applying observations of this study in field area, services of community psychiatrists, psychiatric nurses, psychologists trained in community psychology, de-addiction specialists, and social workers can be used.

Weaknesses

There are few weaknesses of this study. First, measurement of blood level of alcohol and endocrinal factors related to sexual dysfunctions could provide more relevant data. Second, family dynamics, marital functioning, sexual partners' satisfaction, and other psychosocial factors which may contribute toward sexual dysfunction in alcohol-dependent patients were not analyzed in the current study. Third, comparison between age- and sex-matched sober individuals as controls would have given more reproducible results. Finally, data on alcohol- and sexual function-related parameters were based on self-report, which is vulnerable for bias. As participants were questioned about details of past use of alcohol, they may have answered in such a way as to portray themselves in a good light. Hence, social desirability bias could be present.

Role of psychiatrists in the present study

Present study was carried out by PG student in the subject of Psychiatry (MD [doctor of medicine]) under close observation of PG teacher cum guide who guided PG student in psycho-educating the patients with ADS regarding deleterious effects of alcohol not only on physical and mental health but on sexual health also, so that such sessions of psycho-education would help patients with ADS to understand the link between ADS and sexual dysfunction, which would in turn motivate them to quit alcohol consumption.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, all the patients have given the consent for the clinical information to be reported in the journal. The patients understand that name and initials will not be published, and due efforts will be made to conceal the identity, but anonymity cannot be guaranteed.

Acknowledgments

We sincerely thank to all the study participants who participated in this PG dissertation study of MD in Psychiatry for their cooperation. We also extend our thanks to staff members from the department of psychiatry for their support.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. World Health Organization. The ICD-10 Classification of Mental and Behavioural Disorders: Diagnostic Criteria for Research. Geneva: World Health Organization; 1993. p. 140-5.
2. World Health Organization. Global Status Report on Alcohol and Health 2018. Geneva: World Health Organization; 2018.
3. Lemere F, Smith JW. Alcohol-induced sexual impotence. *Am J Psychiatry* 1973;130:212-3.
4. Whalley LJ. Sexual adjustment of male alcoholics. *Acta Psychiatr Scand* 1978;58:281-98.
5. Vijayasanen ME. Alcohol and sex. *N Z Med J* 1981;93:18-20.
6. McCarthy BW. Returning to drinking as a result of erectile dysfunction. *Alcohol Treat Q* 1984;1:33-4.
7. Gelder M, Gath D, Mayon R, Cowen P. Oxford Text Book of Psychiatry. In: Etiology of Sexual Dysfunction. 3rd ed.. Oxford, UK: Oxford University Press; 1996.
8. Barik A, Rai RK, Chowdhury A. Alcohol use-related problems among a rural Indian population of West Bengal: An application of the alcohol use disorders identification test (AUDIT). *Alcohol Alcohol* 2016;51:215-23.
9. Arackal BS, Benegal V. Prevalence of sexual dysfunction in male subjects with alcohol dependence. *Indian J Psychiatry* 2007;49:109-12.
10. Anil Kumar BN, Shalini M, Sanjay Raj G, Prasannakumar DR. Prevalence, typology and clinical correlates of sexual dysfunction among men with alcohol dependence syndrome. *Int J Med Res Rev* 2016;4:1826-32.
11. Carbone DJ Jr., Seftel AD. Erectile dysfunction. Diagnosis and treatment in older men. *Geriatrics* 2002;57:18-24.
12. Hutter AM Jr. Role of the cardiologist: Clinical aspects of managing erectile dysfunction. *Clin Cardiol* 2004;27:13-7.
13. Pendharkar S, Mattoo SK, Grover S. Sexual dysfunctions in alcohol-dependent men: A study from North India. *Indian J Med Res* 2016;144:393-9.
14. Ghogare AS, Patil PS. A cross-sectional study of co-morbid generalized anxiety disorder and major depressive disorder in patients with tension-type headache attending tertiary health care centre in central rural India. *Niger Postgrad Med J* 2020;27:224-9.
15. Feldman HA, Goldstein I, Hatzichristou DG, Krane RJ, McKinlay JB. Impotence and its medical and psychosocial correlates: Results of the Massachusetts Male Aging Study. *J Urol* 1994;151:54-61.
16. Stockwell T, Murphy D, Hodgson R. The severity of alcohol dependence questionnaire: Its use, reliability and validity. *Br J Addict* 1983;78:145-55.
17. Stockwell T, Hodgson R, Edwards G, Taylor C, Rankin H. The development of a questionnaire to measure severity of alcohol dependence. *Br J Addict Alcohol Other Drugs* 1979;74:79-87.
18. McGahuey CA, Gelenberg AJ, Laukes CA, Moreno FA, Delgado PL, McKnight KM, *et al.* The Arizona Sexual Experience Scale (ASEX): Reliability and validity. *J Sex Marital Ther* 2000;26:25-40.
19. Nakhli J, El Kissi Y, Bouhlel S, Amamou B, Nabli TA, Nasr SB, *et al.* Reliability and validity of the Arizona sexual experiences scale-Arabic version in Tunisian patients with schizophrenia. *Compr Psychiatry* 2014;55:1473-7.
20. Prabhakaran DK, Nisha A, Varghese PJ. Prevalence and correlates of sexual dysfunction in male patients with alcohol dependence syndrome: A cross-sectional study. *Indian J Psychiatry* 2018;60:71-7.
21. Ghogare AS, Saboo AV. A cross sectional study of cognitive impairment in patients of alcohol use disorder attending a tertiary health care center in Central India. *Ann Indian Psychiatry* 2019;3:155-60.
22. Vaishnavi R, Karthik MS, Balakrishnan R, Sathianathan R. Caregiver burden in alcohol dependence syndrome. *J Addict* 2017;2017:8934712.
23. Fahrner EM. Sexual dysfunction in male alcohol addicts: Prevalence and treatment. *Arch Sex Behav* 1987;16:247-57.
24. Aswal S, Verma KK, Mathur A, Singh H, Jain L, Kapur T. Study of psychiatric morbidity and psychosexual dysfunctions in patients of alcohol dependence. *Delhi Psychiatry J* 2012;15:379-84.
25. Moore JT, Goldstein Y. Sexual problems among family medicine patients. *J Fam Pract* 1980;10:243-7.
26. Halvorsen JG, Metz ME. Sexual dysfunction, Part I: Classification, etiology, and pathogenesis. *J Am Board Fam Pract* 1992;5:51-61.
27. Saha A. Prevalence of sexual dysfunction in cases of alcohol dependence syndrome. *Int J Adv Med* 2015;2:110-9.
28. Pavan K, Chada A, Anaveni R, Roy S. Study of prevalence of sexual dysfunction in alcohol dependant individuals: A cross sectional study. *Perspect Med Res* 2017;5:25-9.
29. Schiavi RC, Stimmel BB, Mandeli J, White D. Chronic alcoholism and male sexual function. *Am J Psychiatry* 1995;152:1045-51.

Annexures

Annexure 1: Severity of Alcohol Dependence Questionnaire (SADQ)

Please select a number (either 0, 1, 2, or 3) to show how often each of the following statements applied to you during this time.

Question number	Questions	Almost never	Sometimes	Often	Nearly always
1	I woke up feeling sweaty	0	1	2	3
2	My hands shook first thing in the morning	0	1	2	3
3	My whole body shook violently first thing in the morning	0	1	2	3
4	I woke up absolutely drenched in sweat	0	1	2	3
5	I dreaded walking up in the morning	0	1	2	3
6	I was frightened of meeting people first thing in the morning	0	1	2	3
7	I felt at the edge of despair when I awoke	0	1	2	3
8	I felt very frightened when I awoke	0	1	2	3
9	I liked to have a morning drink	0	1	2	3
10	I always gulped my first few morning drinks down as quickly as possible	0	1	2	3
11	I drank in the morning to get rid of the shakes	0	1	2	3
12	I had a very strong craving for drink when I awoke	0	1	2	3
13	I drank more than ¼ bottle of spirits a day	0	1	2	3
14	I drank more than ½ bottle of spirits a day	0	1	2	3
15	I drank more than 1 bottle of spirits a day	0	1	2	3
16	I drank more than 2 bottles of spirits a day	0	1	2	3
17	I would start to sweat	0	1	2	3
18	My hands would shake	0	1	2	3
19	My body would shake	0	1	2	3
20	I would be craving for a drink	0	1	2	3

Annexure 2: Arizona sexual experience scale (ASEX)

It is a user-friendly 5-item rating scale that quantifies sex drive, arousal, vaginal lubrication/penile erection, ability to reach orgasm, and satisfaction from orgasm. Possible total scores range from 5 to 30 with the higher scores indicating more sexual dysfunction.

1. How strong is your sex drive?
 1. Extremely strong
 2. Very strong
 3. Somewhat strong
 4. Somewhat weak
 5. Very weak
 6. Absent
2. How easily are you sexually aroused?
 1. Extremely easily
 2. Very easily
 3. Somewhat easily
 4. Somewhat difficult
 5. Very difficult
 6. Never
- 3a (for men) Can you easily get and keep an erection?
 1. Extremely easily
 2. Very easily
 3. Somewhat easily
 4. Somewhat difficult
 5. Very difficult
 6. Never
- 3b (for women) How easily does your vagina become moist?
 1. Extremely easily
 2. Very easily

3. Somewhat easily
 4. Somewhat difficult
 5. Very difficult
 6. Never
4. How easily can your reach orgasm
 1. Extremely easily
 2. Very easily
 3. Somewhat easily
 4. Somewhat difficult
 5. Very difficult
 6. Never
5. Are your orgasms satisfying?
 1. Extremely satisfying
 2. Very satisfying
 3. Somewhat satisfying
 4. Somewhat unsatisfying
 5. Extremely unsatisfying
 6. Never achieve orgasm