

Sexual dysfunction assessed by IIEF in men with alcohol dependence - A case-control study

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Abstract

Background and Aims: Alcohol has been regarded as potentially detrimental to sexual response when taken in excess. There is a lack of case-control studies from India, focusing on sexual dysfunction in men with alcohol dependence using standardized instruments. This study was conducted to evaluate the frequency, nature, and severity of sexual dysfunction and their relationship to socio-economic and alcohol-related variables in men with alcohol dependence syndrome. **Methods:** One hundred married men with alcohol dependence, and 50 healthy controls constituted the sample. The socio-demographic profile and alcohol-related variables were recorded in a specific form prepared for the study. Sexual dysfunction was assessed using a sexual dysfunction checklist followed by IIEF (International Index of Erectile Function) and PEDT (Premature Ejaculation Diagnostic Tool). Cochran-Mantel-Haenszel test and linear regression were used for analysis. **Results:** Men with alcohol dependence were different from controls with regards to age, domicile, family type, religion, nicotine use, and family history of alcohol use. 46% of patients had sexual dysfunction (global or situational) compared to 20% in controls when screened with sexual dysfunction checklist. Those who had dysfunction on the checklist were further assessed with IIEF and PEDT. 28 patients and 5 controls had dysfunction with an odds ratio of 3.5 (CI: 1.26 -9.73; $p=0.01$). The difference was significant even after controlling the confounding variables, age ($p=0.03$; common OR estimate=3.54) and co-morbid nicotine use ($p=0.02$; common OR estimate=3.50). The frequencies of patients with dysfunction in each domain of IIEF were significantly greater than controls except for erectile function (nearly significant) and intercourse satisfaction. Mean IIEF total score in patients was low compared to controls (65.35 ± 14.86 vs. 69.8 ± 11.57 ; $p=0.028$). Majority of patients had mild severity on IIEF domains. None of the alcohol-related variables added significantly to the prediction of sexual dysfunction. **Conclusion:** Chronic alcoholism affects sexual functioning in men. Clinicians should be aware of this association as patients do not openly discuss sexual problems due to associated feelings of meagreness.

Key Word: Sexual Dysfunction, Alcohol dependence, Alcohol and sex

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INTRODUCTION

Alcohol has been a social lubricant as well as a drug of abuse for thousands of years. Along with its putative

powers as a sexual augmenter, alcohol has also been regarded by some as potentially harmful to sexual response when taken in excess.¹ Previous reviews of clinical and experimental studies concluded that the greater amount and duration of drinking are associated with erectile dysfunction (ED), decreased desire, and delayed ejaculation.^{2,3} However, two recent meta-analyses indicated a dose-dependent curvilinear association between alcohol intake and ED. A moderate alcohol intake (<21 drinks/week) was associated with a lower risk, whereas regular and high alcohol intake (>21 drinks/week) was associated with no risk change. They also reported alcohol is unrelated to premature ejaculation. Although alcohol is a known central nervous system depressant, moderate alcohol intake also can

increase sexual desire and lessen sexual anxiety, which could benefit erectile function.^{4, 5} However, chronic and excess alcohol abuse cause testicular atrophy, inhibition of testosterone production, apart from its direct oxidative toxicity, resulting in erectile dysfunction.³ A significant limitation of these data has been the lack of standard instruments to assess sexual dysfunction (SD); only a few recent studies used full the form of International Index of Erectile questionnaire (IIEF) to assess SD. There is a need to carry out more number of studies using standard instruments to understand the relationship in a better way.³

OBJECTIVES OF THE STUDY

1. To study the frequency, nature, and severity of SDs in men with and without alcohol dependence syndrome.
2. To explore the relationship of SDs to socio-demographic and clinical variables in men with alcohol dependence.

SUBJECTS AND METHODS

This unmatched case-control study was conducted in the de-addiction centre of the department of psychiatry in Father Muller Medical College, Mangalore, a south-Indian city in the year 2013. The study sample consisted of two groups: 100 in-patients with an ICD-10 (International Statistical Classification of Diseases and Related Health Problems, Tenth Revision) diagnosis of alcohol dependence and 50 controls enrolled from medical wards admitted for management of transient febrile illness. The institutional ethics board approved the study.

Inclusion Criteria

- Married men (currently having a stable heterosexual sexual partner.)
- Age: 25 - 60 years.

Exclusion Criteria

Those with

- a history of primary sexual dysfunction unrelated to alcohol dependence.
- comorbid physical or psychiatric disorder/s or on medications that can potentially cause SD.
- dependence on substance/s other than alcohol except for tobacco.

Procedure: After explaining the purpose and design of the study, written informed consent was obtained for participation from all the patients and controls recruited for the study. The socio-demographic and clinical variables were recorded in a specific form prepared for the research. All the patients and controls were asked for complete treatment history and underwent a thorough clinical examination to rule out any medical disorders that can impair sexual functioning. They were further

administered the ICD-10-AM (International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) Symptom Checklist for mental disorders screener by a trained clinician. Those who required further examination were administered the appropriate modules of the ICD-10-AM to rule out psychiatric disorders that can impair sexual functioning. If any control found to have alcohol dependence while assessment, he was enrolled as a case to avoid selection bias. The patients during the 3rd week of their admission and controls during the day of discharge were screened for the presence of SD using sexual dysfunction checklist. The checklist was constructed using items from ICD 10 research diagnostic criteria for sexual dysfunction. Those with SD on the checklist were further assessed with the International Index of Erectile questionnaire (IIEF) and Premature Ejaculation Diagnostic Tool (PEDT) to establish and assess the severity of each domain of sexual dysfunctions.

Statistical Analysis: The results were analyzed using SPSS version 25. Data were analyzed in the form of mean and standard deviation for the continuous variables and frequency and percentage for the categorical variables. Pearson's chi-square test or Fisher's exact test were used for comparing categorical variables between cases and controls. The Shapiro-Wilk test assessed the normality distribution of the variables. The Mann-Whitney U-test was used to compare continuous variables that are not normally distributed. Linear regression was used to test the association between SD and socio-demographic and alcohol-related variables. Statistical significance was assumed at a p-value <0.05.

RESULTS

With regard to socio-demographic data, men with alcohol dependence were different from controls with regards to age, domicile, religion, and family type. They were older than controls. Majority of the controls are from rural, joint, Islamic families compared to cases. Though initiated earlier, the majority started regularly taking (77%) and developed dependence (93%) only after 25 years. The duration of dependence lasted less than five years in 56% of cases by the time of de-addiction. The quantity of alcohol consumed per day was 14.9 (\pm 7.33) standard drinks (6-48 drinks per day). The predominant brand used was whisky (77%). More than half (54%) of the patients had alcoholic liver disease. Ultrasound was done in 27 patients who can afford. Most of them (19) had fatty hepatomegaly. Eight had chronic liver disease (including cirrhosis). 67% of patients were having nicotine use compared to 26% in controls with significant difference ($p=0.00$). 46% of patients had sexual dysfunction (global or situational) compared to 20% in

controls when screened with sexual dysfunction checklist. Those who had dysfunction on the checklist were further assessed with IIEF and PEDT. 28 patients and 5 controls had dysfunction with an odds ratio of 3.5 (CI: 1.26 -9.73; $p=0.01$). The difference was significant even after controlling the confounding variables, age ($p=0.03$; common OR estimate=3.54) and co-morbid nicotine use ($p=0.02$; common OR estimate=3.50). Thus, the difference in SD between cases and controls wasn't due to these factors. (Table I) Among 28 patients who had SD, 19 had a loss of desire. 10 had an ED. 12 had orgasmic dysfunction, 12 had intercourse dissatisfaction. 13 had an overall dissatisfaction. Thus, some patients had dysfunction in multiple aspects. Among 5 controls who had SD, 3 had a loss of desire. 1 had ED. 1 had orgasmic dysfunction. 2 had intercourse dissatisfaction. The frequencies of SD in controls were significantly lower compared to cases with respect to sexual desire (0.03), orgasmic function (0.04), and satisfaction with overall sexual life (0.005). Also, the total mean score of IIEF was significantly lower in cases than in controls (65.35 ± 14.86 vs. 69.8 ± 11.57 ; $p=0.028$), indicating SD was more in

cases than in controls. In the eight patients with chronic liver disease, the total mean IIEF score was lesser than the case group (59.38 ± 19.43 vs. 65.35 ± 14.86 ; $p=0.086$). When PEDT was assessed, 1 had probable, and 2 (4.3%) had evident premature ejaculation among the case group. In the control group, 2 had evident premature ejaculation. Also, controls had a higher mean score on PEDT compared to cases (2.5 ± 3.43 vs. 4.1 ± 6.08 ; $p=0.58$). This finding indicates controls had more problem with premature ejaculation than cases, however, not significant. (Table II) Sexual dysfunction was quantified on IIEF by grading into mild, mild to moderate, moderate, and severe dysfunction. Of 19 (41%) patients that had a loss of sexual desire, half (9, 20%) of them had mild severity. 13% had mild to moderate, and 9% had a moderate loss of sexual desire. (Table III) Multiple linear regression analysis was done to assess the predictors of sexual dysfunction (total IIEF score) among socio-demographic and clinical variables. None of the alcohol-related variables added significantly to the prediction of sexual dysfunction in our study. (Table IV).

Table 1: Comparison of sexual dysfunction between cases and controls

Sexual Dysfunction (IIEF and PEDT)		Chi Square test	Odds Ratio	95% CI	
Cases (N=100)	Controls (N=50)			Lower	Upper
28	5	6.29, $p=0.01$	3.5	1.26	9.73
CMH test adjusted for age		4.68, $p=0.03$	3.54	1.22	10.28
CMH test adjusted for nicotine use		5.15, $p=0.02$	3.50	1.22	10.03

Table 2: Comparison of cases and controls with regards to domains of IIEF and PEDT

IIEF (Higher score = less dysfunction)	Cases with sexual dysfunction	Controls with sexual dysfunction	Chi Square/ Fisher's Exact test P value	Cases with sexual dysfunction	Controls with sexual dysfunction	Mann-Whitney U test P value
Sexual Desire (10)	19	3	0.03	8.28 \pm 2.05	8.8 \pm 1.99	0.313
Erectile Function (30)	10	1	0.07	26.7 \pm 6.8	28.1 \pm 6.01	0.102
Orgasmic Function (10)	12	1	0.04	8.54 \pm 2.74	9.6 \pm 1.26	0.144
Intercourse Satisfaction (15)	12	2	0.15	12.83 \pm 3.66	13.3 \pm 3.5	0.338
Overall Satisfaction (10)	13	0	0.005	9.0 \pm 1.79	10	0.06
Total score (75)				65.35 \pm 14.86	69.8 \pm 11.57	0.028
PEDT (Higher the score, more is problem with premature ejaculation)	3	2	0.75	2.5 \pm 3.43	4.1 \pm 6.08	0.58

Table 3: Quantitative index of sexual dysfunction on IIEF

Severity	Mild		Mild to Moderate		Moderate		Severe	
Domain	Cases (46)	Controls (10)	Cases (46)	Controls (10)	Cases (46)	Controls (10)	Cases (46)	Controls (10)
Sexual Desire	09 (19.6%)	01 (10%)	06 (13%)	02 (20%)	04 (8.7%)	0	0	0
Erectile Function	06 (13%)	0	01 (2.2%)	0	01 (2.2%)	01 (10%)	02 (4.3%)	0
Orgasmic Function	05 (10.9%)	0	01 (2.2%)	01 (10%)	03 (6.5%)	0	03 (6.5%)	0
Intercourse Satisfaction	08 (17.4%)	01 (10%)	0	0	01 (2.2%)	01 (10%)	03 (6.5%)	0
Overall Satisfaction	06 (13%)	0	05 (10.9%)	0	02 (4.3%)	0	0	0

Table 4: Predictors of sexual dysfunction among socio-demographic and clinical variables

Socio-demographic and Clinical variables	Linear regression analysis	
	B value	P-value
Age in years	-0.129	0.435
Duration of dependence	-0.149	0.376
Amount of drinks	0.084	0.586
Alcoholic liver disease	-0.007	0.967

Dependent variable: Total IIEF score

DISCUSSION

The results of this study suggest that SD is a significant area of hidden morbidity among men with alcohol dependence. 46% of men with alcohol dependence complain of one or more problems with sexual functioning when assessed with sexual dysfunction checklist (26% global and 20% situational). 20% of controls have SD. These men are further administered with the International Index of Erectile Function (IIEF) and Premature Ejaculation Diagnostic Tool (PEDT) to confirm and assess the severity of each domain of SD. PEDT scale is used as IIEF provides a superficial assessment of domains of sexual functioning other than erection.⁶ 28 patients and 5 controls have confirmed SD. This finding is similar to what has been reported in earlier studies. The rates of SD in these studies have ranged between 8 and 95.2%.³ Among these studies, three have used IIEF for assessing SD in men, and the SD ranged between 60 and 85%.⁷⁻⁹ The low prevalence rate in our study may be because of cultural differences in reporting SD.¹⁰ SD was present in 37% of the study population in a study done in another south Indian city using the Arizona Sexual Experience Scale (ASEX) scale. The difference may be due to an increased quantity of alcohol taken, i.e., about 21 standard units per day compared to 15 units in our study.¹¹

Nature and severity of sexual dysfunction: Every aspect of sexual functioning is disturbed in patients with alcohol dependence in our study. Some patients have dysfunction in multiple aspects. These findings are similar to previous studies which reported different types of SDs as the common in men with alcohol dependence.^{8, 11-14} The common sexual dysfunctions reported in these studies have been ED, premature ejaculation, delayed ejaculation, and low sexual desire.³ The most common SD reported in our study was low sexual desire, followed by dissatisfaction with overall sexual life. Studies each by Akhtar, Jensen, and Vijayaseenan reported low sexual desire as the commonest problem.^{12, 15, 16} Our study showed 19% has low desire, 10% erectile impotence, 3% has premature ejaculation, 12% has orgasmic dysfunction. These frequencies of patients with dysfunction in each domain of IIEF were significantly greater than controls except for erectile function (nearly

significant) and intercourse satisfaction. In the study using the ASEX scale in south-Indian city, 13% has a low sexual drive, 25% has erectile dysfunction, 15.5% has premature ejaculation, and 8.3% has delayed orgasm.¹¹ The differences may be due to differences in the amount and duration of alcohol drinking. In this study, mean IIEF scores of men with alcohol dependence was significantly lesser than controls (65.35 ± 14.86 vs. 69.8 ± 11.57 $p=0.028$). The mean ED score was 26.7 ± 6.8 . A study done using same scale in Turkish alcohol-dependent males in 2008 showed mean total IIEF scores of men with alcohol-dependence was 57 ± 9.23 with mean ED scores 23.41 ± 3.91 .⁹ Another recent case-control study conducted in Turkey showed mean IIEF score in men with alcohol dependence was 46.7 ± 3.3 compared to 55.3 ± 1.6 in the control group and the difference was not significant. The subscale scores of IIEF did not differ significantly between those with alcohol dependence and controls. However, the overall satisfaction score was significantly less than controls.¹⁷ Similarly, in our study, the overall satisfaction score in patients was nearly significant less than controls ($p=0.06$). Our study shows 13% has mild, 4.4% has moderate, and another 4.3% has severe ED. In the recent Turkish study, 13.5% of the alcohol users had mild ED, 18.9% had moderate ED, and 21.6% had severe ED.¹⁷ However, in the Turkish study done in 2008, 70.3% of participants have a mild (17-25), and 4.4% have a moderate (11-16) ED.⁹ The low prevalence of mild severity of ED in our study may be because of culture and beliefs that keep Asian men to be quiet if they had mild SD. They fear a loss of control and a loss of their cultural role if they seek medical attention for their SD.¹⁰ Our study showed a greater severity of ED in those with comorbid premature ejaculation (PE) than those without PE though non-significant (25.67 vs. 26.77). These results confirm the hypothesis that the relation between PE and ED is a vicious circle and they are closely linked to each other, as suggested by Jannini *et al.*¹⁸ These two conditions should not be considered separate but should be considered from a multidimensional perspective to confront the problem adequately.¹⁹

Co-relation of sexual dysfunction with socio-demographic and clinical variables: The scores of each domain of SD on IIEF were correlated with socio-

demographic and alcohol-related variables. None of the socio-demographic or alcohol-related variables were found to be determinants of sexual dysfunction measured by IIEF in our study. Previous studies had shown conflicting results on these correlations. These studies have reported an increase in SD with advancing age consistently.^{9,20} Similarly, our research has shown the same finding, though not significant. Previous reviews of clinical and experimental studies concluded that the greater amount and duration of drinking are associated with erectile dysfunction (ED), decreased desire, and delayed ejaculation.² However, some of the recent studies refute the link between SD and alcohol. A population-based cross-sectional survey to evaluate the association between alcohol consumption and IIEF-5 assessed ED reported that compared to never-drinkers, the age-adjusted odds of having ED were lower among current, weekend, and binge drinkers and higher among ex-drinkers. Among current drinkers, the odds were the lowest for the consumption of 1-20 standard drinks a week. After adjustment for cardiovascular disease or cigarette smoking, age-adjusted odds of ED were reduced by 25-30%. These findings suggest a modest negative association between alcohol consumption and ED.²¹ Similarly, a meta-analysis in 2007 of population-based cross-sectional studies by Cheng *et al.* to assess the association of alcohol consumption and ED yielded a protective association of alcohol on ED.²² Two recent meta-analysis also reported alcohol intake was associated with a lower risk of erectile dysfunction. Their findings indicated a dose-dependent curvilinear or J-shaped relationship such that a moderate alcohol intake (<21 drinks/week) was associated with a lower risk, whereas regular and high alcohol intake (>21 drinks/week) was associated with no risk change. However, the limitation of these meta-analyses was that they included only non-experimental descriptive studies and therefore, does not provide information on cause and effect. These meta-analyses also reported alcohol is unrelated to premature ejaculation.^{4, 5} Similarly, no association was found between alcohol and PE in our study. The patients with chronic liver disease (CLD) or cirrhosis had lower IIEF score compared to the entire group. This finding indicates SD increases with the severity of liver dysfunction. Previous studies found conflicting results regard to the effect of CLD/cirrhosis on prevalence and severity of sexual dysfunction. The prevalence of ED in alcoholic cirrhosis is 50-70% in the previous studies.²³⁻²⁶ In a recent cohort study, the severity of liver dysfunction and portal hypertension along with hypertension and diabetes are identified as independent predictors of ED.²⁶ The present study is one of the few case-control studies using

standardized instrument IIEF. It uniquely assessed the severity of different aspects of SD caused by alcohol.

Limitations of the study are

- Only male and married patients are included and lack of random sample.
- Nicotine use is not excluded from the study.
- Data on nocturnal erection or hormonal levels are not assessed ruling out psychogenic SD.
- Psychosocial factors such as relationship conflict are not specifically assessed.

Future studies should attempt to overcome these limitations. There is a need for experimental studies with larger sample size that assess hormonal levels and nocturnal erections in men with alcohol dependence to delineate psychogenic from organic cause of SD. Also, needed to evaluate the sexual dysfunctions in various phases of drug dependence, especially during the stable abstinence phase.

CONCLUSION

Chronic alcoholism mediating through hepatic and gonadal failure affects sexual functioning in men. There is a need to increase the awareness of clinicians as sexual problems are not spontaneously reported by patients due to associated feelings of inadequacy. Further, there is ample evidence that alcohol-induced SD, for the most part, is reversible with cessation of alcohol use.²⁷

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