



# Prevalence and Pattern of Sexual Dysfunction in Male Patients with Alcohol Dependence

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## Abstract

**Background:** Alcohol is a potent substance that causes both acute and chronic changes in almost all neurochemical systems, with the result that heavy drinking can produce serious psychological symptoms including depression, anxiety, and psychoses. It also affects sexual health adversely and causes sexual dysfunction.

**Methods:** This study aimed to find the prevalence and pattern of sexual dysfunction in male patients with alcohol dependence. This cross-sectional study included 100 patients attending psychiatry out patient department (OPD) at a tertiary care center in west India. Informed written consent was taken for collecting socio-demographic and clinical data in a uniform and standard manner. Sexual dysfunction was assessed using a sexual dysfunction checklist, constructed by Arackal and Benegal at the national institute of mental health and neuroscience, Bangalore containing 12 items from the diagnostic criteria for research and ICD-10 classification of mental and behavioral disorders. The Leeds dependence questionnaire was used to assess the severity of alcohol dependence.

**Findings:** Sexual dysfunction was present in 62% of the patients. Among the patients, 36% had difficulty achieving an erection, 34% had difficulty maintaining an erection, 37% reported premature ejaculation, 7% had delayed ejaculation, 14% reported anorgasmia, 1% had ejaculation with a flaccid penis, 2% had pain during intercourse, 6% were dissatisfied with the frequency of intercourse, 4% were dissatisfied with their sexual partner, and 7% were dissatisfied with their performance.

**Conclusion:** Sexual dysfunction is significantly and positively associated with duration, amount of alcohol consumed per day, and severity of alcohol dependence.

**Keywords:** Alcohol; Sexual dysfunction; Erectile dysfunction; Premature ejaculation; India

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## Introduction

Alcoholic beverages have been used in human societies since the beginning of recorded history.<sup>1</sup> The patterns of alcohol intake around the world are constantly evolving and alcohol is ubiquitous today. Alcohol use has been prevalent across all societies. The pattern of alcohol use depends on age, religion, education, type of drink, and other socio-demographic characteristics. Alcohol use is increasing in developing countries. Estimated 3.8% of total global deaths and 4.6% of the total disability adjusted life years are attributed to alcohol.<sup>2</sup> Alcoholism and abuse and dependence on other substances have special relevance to psychiatry. Alcohol is a potent drug that causes both acute and chronic changes in almost all neurochemical systems.<sup>3</sup> An understanding of the effects of alcohol and the clinical importance of alcohol-related disorders is essential for the practice of psychiatry.

An estimated 3.6% of the world population (15-64 years old) has current alcohol use disorder.<sup>4</sup> The National Mental Health Survey of India (2015-2016) conducted

by the National Institute of Mental Health and Neuro-Sciences (NIMHANS), Bangalore, and supported by the Ministry of Health and Family Welfare, government of India, found the overall prevalence of alcohol use disorder to be 4.6% with higher rates observed in the age group of 40-49 years (6.7%) and higher among males (9.1%).<sup>5</sup>

## Alcohol-induced sexual dysfunction

It is a well-known fact that alcohol and many other psychoactive substances affect sexual health adversely and cause sexual dysfunction.<sup>3</sup> Alcohol exerts its harmful effects on different parts of the male reproductive system either directly or indirectly. Different studies over the years have established that the prevalence of sexual dysfunction in patients with alcohol dependence is higher than that in the general population.<sup>6-8</sup> Some studies have reported 70% prevalence of one or other sexual dysfunction in patients with alcohol dependence.<sup>9</sup> Duration of alcohol dependence was positively associated with sexual dysfunction.<sup>10</sup> Amount of alcohol



consumption per day was found to be a strong predictor of sexual dysfunction in many studies.<sup>9,11,12</sup> Similarly, severity of alcohol dependence also showed a positive association in different studies.<sup>8,9,11</sup> A recent review on alcohol-related harms underlined the fact that alcohol dependence affects sexual functioning adversely in males as well as females.<sup>13</sup>

Despite being its rampant use and its harmful effects on sexual health, there are relatively few studies on this aspect in India, especially in this part of the country, which encouraged us to conduct this study.

### **Aims and Objectives**

The aim of the present study was to estimate and evaluate the prevalence and patterns of sexual dysfunctions among individuals with alcohol dependence. For these purposes, the research protocol was formulated to determine the prevalence of sexual dysfunction among subjects with alcohol dependence and establish the association between severity of alcohol dependence and sexual dysfunction. The other aim of this study was also to substantiate the relationship between duration of alcohol dependence and sexual dysfunction and corroborate the association between amount of alcohol intake and sexual dysfunction among individuals with alcohol dependence.

### **Methods**

This cross-sectional study was conducted on the individuals attending the inpatient and outpatient services of Department of Psychiatry, PDU Medical College, Rajkot- a tertiary care center. One-hundred consecutive patients meeting the inclusion criteria for the study were recruited. One-hundred and twenty-seven patients during this process were contacted, 27 of whom were excluded from the study due to various reasons including refusal for informed consent, presence of primary sexual dysfunction, and confirmed diagnosis of systemic illness known to cause sexual dysfunction. Diagnosis of alcohol dependence was reviewed and confirmed by senior psychiatrists independently based on the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria.<sup>2</sup>

### ***Inclusion and exclusion criteria for subjects***

One-hundred male subjects aged 18 to 50 years with diagnosis of alcohol dependence, meeting DSM-5 criteria were recruited. Upper age of the participants was restricted to 50 years as chronic disorders affecting sexual health become more prominent as age advances. In addition, only subjects with regular sexual partner or married were eligible to participate in the study. Unwilling subjects or refusal to give written consent was considered as the exclusion criteria. In addition, subjects with history of primary sexual dysfunction (prior to initiation of alcohol use/abuse) and having abstinence from alcohol for more

than 4 weeks were ineligible for the study. Additionally, all the patients with other physical illness (diabetes mellitus, hypertension, alcoholic cirrhosis, endocrine disorders, other systemic illnesses) known to cause/contribute to sexual dysfunction and with other co-morbid psychiatric disorders including any other substance dependence (except nicotine dependence) as per ICD-10 criteria and use of drugs affecting sexual function (antipsychotics, antidepressants, antihypertensives, steroids, disulfiram etc.) were considered unsuitable for study.

### **Materials**

#### ***Socio-demographic proforma of the patient***

A standard proforma was used to collect data on socio-demographic data of patients (name, age, sex, residence place, religion, education, occupation, marital status, type of family, number of family members, and per capita income). History and mental status examination, DSM-5 diagnosis, details of alcohol use, past history of alcohol use, family history of alcohol use, details of co-morbid nicotine use, and efforts made for de-addiction were recorded.

#### ***Sexual dysfunction checklist***

A sexual dysfunction checklist, developed by Arackal and Benegal of NIMHANS, Bangalore,<sup>9</sup> was used to assess sexual dysfunction. It contained items corresponding to 12 areas of sexual dysfunction described in the Diagnostic Criteria for Research, ICD-10 classification of Mental and Behavioral Disorders. Based on the above-mentioned checklist, it was determined if the patient had sex aversion, low sexual desire, difficulty in achieving erection, difficulty in maintaining erection, premature ejaculation, inhibited/ delayed ejaculation, orgasm with flaccid penis, anorgasmia, coital pain, frequency dissatisfaction, and dissatisfaction of sexual relation with partner and own sexual function.<sup>15</sup>

#### ***Leeds Dependence Questionnaire***

The severity of alcoholism was assessed using the Leeds Dependence Questionnaire.<sup>16,17</sup> It contains 10 questions to assess the severity of alcohol dependence. All items are scored from 0 to 3 (0=No dependence, 1=low to moderate dependence, 2=moderate to high dependence, 3=high dependence). There were no normative data.

### ***Procedure***

Initially, the semi-structured proforma was administered to 5 patients as pilot cases to find out any problems, and if required, to modify the proforma based on the experience. The assessment of these pilot cases demonstrated that providing the proforma to these five patients was not an issue, hence, they were later included in the main study. Patients underwent a detailed clinical evaluation that included a history and a mental status examination. The

DSM-5 criteria were used in the diagnosis. One-hundred consecutive male patients with alcohol dependence were taken for study as per inclusion and exclusion criteria. Informed written consent was taken for collecting socio-demographic and clinical data in a uniform and standard manner. An interview was carried out in a separate room ensuring autonomy and privacy of the patients. Sexual dysfunction was assessed using a sexual dysfunction checklist,<sup>9</sup> and severity of alcohol dependence was assessed using Leeds dependence questionnaire.<sup>17</sup>

**Statistical analysis**

Data analysis involved calculation of mean and standard deviation. Continuous variables were analyzed with determination of range, and categorical data was analyzed using frequency and percentages. Continuous and categorical variables were compared using *t* test and chi-square test, respectively.

**Results**

The mean age of the study participants was 36 ± 4.3 years and majority of them (81%) were in the age group of 30 to 50 years. Majority of them practiced Hinduism (n = 91) and came from urban background (n = 82). More than half (n = 56) of the recruited subjects had elementary education and more than two-thirds were laborers (n = 76). Almost all of them were married (n = 98) and had per capita income less than INR 5000 (Table 1).

As depicted in Table 2, almost one-third of the subjects had alcohol dependence in the range of less than five years and between 5-10 years (n = 32 each). One-fourth of the subjects had alcohol dependence in the range of 11-15 years and few number of them were alcohol-dependent over 15 years (n = 13).

Every third of the recruited subjects consumed averagely 15 to 30 units (n = 35) and 30 to 45 units (n = 30). The amount of alcohol consumed was analyzed assuming 40% of alcohol concentration. According to the Leeds dependence questionnaire, almost half of the subjects had high severity of dependence and the remaining half were equally represented low to moderate (n = 25) and moderate to high dependence (Table 2).

Almost two-thirds of the subjects had one or another sexual dysfunction (n = 62) and more than half of the subjects were presented with more than one type of sexual dysfunction. Premature ejaculation (n = 37), difficulty in achieving erection (n = 36), difficulty in maintaining erection (n = 35), and hypoactive sexual desire disorder were equally prevalent sexual dysfunction presentations among the study subjects (Table 3).

Mean duration of alcohol abuse/dependence was significantly different (P = 0.0051) among individuals with one or more sexual dysfunction in comparison to individuals with no sexual dysfunction (11.5 years vs 6.2 years). Similarly average alcohol consumption was almost

**Table 1.** Distribution of Socio-demographic characteristics among individuals with alcohol dependence

Socio-demographic variables		Patients (n = 100) (%)
Age (y)	18-30	19
	31-40	44
	41-50	37
Religion	Hindu	91
	Muslim	9
Residence place	Urban	82
	Semi-urban	6
	Rural	12
Education	Illiterate	19
	Primary	56
	Secondary/Higher secondary	25
Occupation	Unemployed	10
	Labourer	76
	Service	4
	Business	9
	Retired	1
Marital status	Single	2
	Married	98
Type of family	Nuclear	76
	Joint	24
Per capita monthly family income (INR)	≤ 5000	96
	> 5000	4

**Table 2.** Distribution of alcohol dependence clinical variables

Clinical variables		Patients (n = 100) (%)
Duration of alcohol dependence (years)	≤ 5	32
	6-10	32
	11-15	23
	16-20	8
	≥ 20	5
Amount of alcohol consumed/day (units/day)	< 15	19
	15-29	35
	30-45	30
	≥ 45	16
Severity of dependence	No dependence	0
	Low to moderate	25
	Moderate to high	26
	High	49

double among the sexual dysfunction-affected subjects and differed significantly (P = 0.024). Severity of alcohol dependence was significantly different between sexual dysfunction-affected individuals compared to the group with no sexual dysfunction (P = 0.0183; Table 4).

**Discussion**

The main aim of the present study was to estimate the

**Table 3.** Prevalence and pattern of sexual dysfunction

	Patients (n = 100) (%)
Sexual dysfunction	
Present	62
Absent	38
More than one sexual dysfunction	51
Sexual aversion	6
Hypoactive sexual desire	35
Difficulty in achieving erection	36
Difficulty in maintaining erection	34
Premature ejaculation	37
Delayed ejaculation	7
Ejaculation with flaccid penis	1
Anorgasmia	14
Pain during intercourse	2
Dissatisfaction with frequency of intercourse	6
Dissatisfaction with sexual partner	4
Dissatisfaction with performance	7

**Table 4.** Relationship between duration of alcohol consumption, amount of alcohol consumption, and severity of alcohol dependence with sexual dysfunction

	Sexual dysfunction present	Sexual dysfunction absent	P value
Mean duration of alcohol consumption (years)	11.495	6.197	0.0051
Mean amount of alcohol consumption (units/day)	33	16	0.0249
Severity of alcohol dependence (according to Leeds dependence questionnaire)			0.0183
Low-moderate	3 (12)	22 (88)	
Moderate-high	18 (69)	8 (31)	
High	41 (84)	8 (16)	

prevalence and pattern of sexual dysfunction among alcohol-dependent subjects. Within group, comparison of the subjects revealed no difference regarding age, religion, residence place, and family type. No significant differences were found in occupation, income, socioeconomic status, and locality.

In this study, 32% of patients had alcohol dependence for less than or equal to 5 years, 32% for 6-10 years, 23% for 11-15 years, 8% for 16-20 years, and 5% had alcohol dependence for more than 20 years. Thus, 36% had alcohol dependence for more than 10 years and 68% had alcohol dependence for more than 5 years. Similarly Fahrner demonstrated that 40% and 80% of the subjects with sexual dysfunction had alcohol dependence for 10 and 5 years, respectively, indicating that the sexual dysfunction sets early among patients with alcohol dependence.<sup>6</sup> The results of the present study were consistent with existing studies, which revealed an average of 22.7 years

of problem drinking<sup>7</sup> and validated 22.09 years of alcohol abuse among affected subjects.<sup>10</sup>

Almost one-fifth (n = 19) of patients consumed less than 15 units of alcohol per day, 35% consumed 16-30 units, 30% consumed 30-45 units, and 16% consumed more than or equal to 45 units of alcohol per day. Wetterling et al reported heavy drinking with frequent inebriation in 44.4% of subjects whereas continuous heavy alcohol consumption without intoxication (33.6%) and an episodic drinking style (22.0%) were less frequent.<sup>8</sup>

The results of the present study affirmed that 25% of patients had low to moderate dependence, 26% had moderate to high dependence, and 49% had high dependence (According to the Leeds Dependence Questionnaire). The results were similar to those reported by Wetterling et al, which demonstrated high dependence among 40% of subjects.<sup>8</sup>

In this study, sexual dysfunction was present in 62% of patients. The results are consistent with the results of most of the existing studies. For example, a study conducted by Arackal and Benegal showed 72% prevalence of sexual dysfunction,<sup>9</sup> while Fahrner study demonstrated that 75% of the patients with alcohol dependence had sexual dysfunction.<sup>6</sup> The other prominent studies also demonstrated similar prevalence of sexual dysfunction such as 63% by Jensen<sup>18</sup> and at least one type of sexual dysfunction in the study by Mandell and Miller.<sup>11</sup> However, some of the studies demonstrated low prevalence of sexual dysfunction in comparison to the present study. Jensen found 26% prevalence of sexual dysfunction<sup>18</sup> while Smith et al reported impaired sexual functioning in 33% of subjects.<sup>20</sup> More than half of subjects (51%) had more than one sexual dysfunction in the present study. This finding was similar to the finding by Arackal and Benegal where 48% of patients had more than one sexual dysfunction.<sup>9</sup>

Prevalence of various sexual dysfunctions in this study was also similar to previous studies. Hypoactive sexual desire disorder, difficulty in achieving erection, and difficulty in maintaining erection was reported by 35%, 36%, and 34%, respectively, which is consistent with the results of various other studies across various settings.<sup>6,10,19</sup>

In the present study, 37% reported premature ejaculation, 7% had delayed ejaculation, 14% reported anorgasmia, and 1% had ejaculation with a flaccid penis, which is consistent with the findings of the study by Arackal and Benegal.<sup>9</sup>

In this study, 2% of the patients had pain during intercourse, 6% were dissatisfied with the frequency of intercourse, 4% were dissatisfied with their sexual partner, and 7% were dissatisfied with their performance. Percentages were somewhat higher in the study by Arackal and Benegal, in which 27.03% of patients were dissatisfied with the frequency of intercourse, 9.37% patients were dissatisfied with their sexual partner, and 19.79% patients

were dissatisfied with their performance.<sup>9</sup>

In the present study, mean duration of alcohol consumption in patients with sexual dysfunction was higher (11.495 years) compared to those with no sexual dysfunction (6.197 years). This difference was statistically significant ( $P=0.000$ ). Thus, the duration of alcohol dependence was positively associated with sexual dysfunction. Similarly in the study by Dişsiz and Oskay, predictors of erectile dysfunction in chronic alcohol-dependent males were determined as the age of the subject, age of onset of alcohol use, duration of alcoholism, and cigarette use.<sup>10</sup> But in the study by Cheng et al., regular alcohol consumption was negatively associated with erectile dysfunction,<sup>21</sup> in the study by Schiavi et al, it was found that chronic alcoholic men did not differ from the comparison group in any sexual dimension or the prevalence of sexual problems,<sup>7</sup> and in the study by Arackal and Benegal, no significant correlation was found between duration of alcohol dependence and sexual dysfunction.<sup>9</sup>

In the present study, mean amount of alcohol consumption in patients with sexual dysfunction (33 units/day) was higher compared to that in patients with no sexual dysfunction (16 units/day). This difference was statistically significant. Thus, the amount of alcohol consumed was positively associated with sexual dysfunction. Similarly, Mandell and Miller found that with heavy drinking, 59% of the patients experienced erectile dysfunction, 48% reported an inability to ejaculate, and 84.4% experienced at least one type of the sexual dysfunction disorder.<sup>11</sup> According to the study by Arachal and Benegal, the amount of alcohol consumed appeared to be the most significant predictor of developing sexual dysfunction.<sup>9</sup> Bellis and Hughes demonstrated that consumption of alcohol, especially in excess, was associated with induction of male impotence.<sup>12</sup> A study by Lee et al, compared alcohol drinkers with never drinkers and found that alcohol drinkers who consumed three or more standard drinks (one standard drink equals 12 g of alcohol) a week were more likely to report EDs as defined by having both sexual dissatisfaction and erectile difficulty.<sup>22</sup> Few studies have reported no association between amount of alcohol intake and development of sexual dysfunction.<sup>21,23-25</sup>

In the present study, among patients with low to moderate severity of alcohol dependence, only 3 out of 25 (12%) patients had sexual dysfunction, among patients with moderate-high severity of alcohol dependence, 18 out of 26 (69%) patients had sexual dysfunction while among patients with high severity of alcohol dependence, 41 out of 49 (84%) had sexual dysfunction. These differences were statistically significant. Thus, the greater the severity of alcohol dependence, the more the prevalence of sexual dysfunction will be. Similarly Wetterling et al reported that heavy drinkers suffered more often from erectile

dysfunction than episodic drinkers.<sup>8</sup> However, Schiavi et al demonstrated that prolonged and severe alcohol abuse in men is compatible with normal sexual function,<sup>7</sup> and in the study by Feldman et al, it was revealed that heavy alcohol consumption was not associated with the incidence of erectile dysfunction.<sup>26</sup> The results of the present study also demonstrated similar pattern of sexual dysfunction associated with other types of substance including opioids, methadone among others.<sup>27,28</sup>

#### **Limitations of the study**

The cross-sectional nature of the study made a major limitation. The prevalence and pattern of sexual dysfunctions were studied in patients who were currently dependent on alcohol. So it was not possible to comment on the prevalence and pattern of sexual dysfunctions in patients who are in remission. The sample size was small, therefore, the results of the study cannot be generalized. Since it was a hospital-based study, it cannot be assured that the sample was representative of target population. Though individuals with major psychiatric illnesses were excluded, possibility of subclinical anxiety and depression could not be ruled out as a factor affecting the sexual performance of affected subjects. In the present study, there was no control group, therefore, sexual dysfunction could not be compared between alcoholic-dependent patients and general population.

#### **Conclusion**

The results of this study confirm the fact that individuals with alcohol dependence have high prevalence of sexual dysfunction. The severity of alcohol dependence, duration of problem drinking, and amount of alcohol consumed per day is positively associated with sexual dysfunction. Hypoactive sexual desire disorder, premature ejaculation, difficulty in achieving and maintain erection is equally prevalent among patients with alcohol dependence.

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#### **Authors' Contribution**

RKA conceived the idea of the study, and contributed to design of the study and collection of data. SP contributed to data analysis and interpretation. AKC participated in drafting of manuscript. MJS participated in editing of manuscript and final approval for submission.

#### **Conflict of Interests**

The authors have no conflict of interests.

#### **Ethical Approval**

Research Review Board and Ethics Committee of the institution approved the study. An informed consent was obtained from the subjects prior to participation in the study.

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