

*Original Article***Sexual Dysfunction and its Correlates with Alcoholic Dependent Men Treated at a Tertiary Care Teaching Hospital in Rural Puducherry**Hiran Das<sup>1</sup>, Arun Selvaraj<sup>2</sup>, Vinoth Krishnadass<sup>3</sup>, Rajagopalan Kumar<sup>4</sup>**Author Affiliation**

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**Abstract**

**Background:** Alcohol consumption steadily increases globally. It affects sexual function and this study aims to study the proportion of alcohol dependent men with erectile dysfunction and premature ejaculation and tried to find out the correlation of alcohol consumption with serum testosterone and sexual dysfunction. **Material and Methods:** Cross sectional hospital based study done in a tertiary care teaching hospital. Eighty alcohol dependent men fulfilling the eligibility criteria were recruited from the deaddiction clinic. They were administered with Alcohol Use Disorders Identification Test (AUDIT), International Index of Erectile Function (IIEF) and Premature Ejaculation Diagnostic Tool (PEDT) tools and their blood testosterone levels were checked. Data were entered in EpiInfo software and analysed using SPSS version 24. Proportion and Pearson correlation were calculated. **Results:** Most of them (67.5%) were in the age group of 35-45 years and almost 80% of them were from rural area. Almost 90% of them had erectile dysfunction and 67% had premature ejaculation. AUDIT score was negatively correlated with serum testosterone level and IIEF score and positively correlated with PEDT score. **Conclusions:** Alcohol deaddictioncentre should routinely screen for the sexual dysfunction among the clients and should be equipped with treatment services for commonest sexual dysfunction along with deaddiction services.

**Keywords:** Alcohol dependence; Erectile dysfunction; Premature ejaculation; Testosterone.

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**Introduction**

Alcohol is a psychoactive substance which consumed chronically leads to social and economic burden for the individual, family and societies. The chronic consumption of alcohol increased globally both in developing and developed countries [1]. The per capita consumption of alcohol in India increased 38%, from 1.6 litres in 2003-05 to 2.2 litres in 2010-12, according to a World Health Organisation (WHO) report [1].

Alcohol consumption affects sexual function in many ways that ranges from suppression of CNS activity, direct gonadal effect that decreases testosterone levels, impairs spinal reflexes which causes both decreased sensation and decreased innervations for erection, reduces the ability of the liver to metabolize estrogenic compounds resulting in feminization in men [2-5]. There could also be a possibility of psychogenic sexual dysfunction among alcoholics which is likely in a situation of marital conflict or socio occupational stressors [6]. Thus

alcohol consumption affects almost all domains of sexual functioning. The most common sexual dysfunction conditions reported among men were decreased sexual drive followed closely by erectile dysfunction (ED) and premature ejaculation (PE) [7]. The chances of developing sexual dysfunctions appear to increase with increasing years, frequency and amount of alcohol consumed [8,9].

Proper sexual functioning gives rise to a sense of psychological, physical, and social well-being and is one of the most important elements of quality of marital life [6]. Dissatisfaction in sexual life is often associated with anger, disgust, increased rates of marital violence, less warmth, and unity in relationships, and all of which may in turn worsen the alcohol consumption thereby creating a vicious cycle.

Many of the adverse physical and psychological effects caused by alcoholism can be reversed or overcome if the problem is treated early enough [10]. Hence, patients recovering from alcohol dependency may need therapy to regain sexual functioning, partly because of psychological readjustment to a nondependent state. Pondicherry being a Union Territory, tax on alcohol sale is lesser and it is one of the factors that results in easy availability of alcohol at affordable cost. People in and around Pondicherry are at high chance to consume alcohol for these reasons and hence the present study was designed with objectives to identify erectile dysfunction and premature ejaculation among patients with alcohol dependence, to study the association between the hazardous alcohol consumption with the socio-demographic details of the study participants, to find out the association between the hazardous alcohol consumption with PE and ED among patients who are diagnosed with alcohol dependence syndrome as per ICD 10 and to find out the correlation between the AUDIT score with the scores of PEDT and IIEF scale and serum testosterone level.

## Materials and Methods

### *Study setting and design*

This current study was conducted in a tertiary care teaching hospital situated in rural part of the Union Territory of Puducherry. The college is found in the Villupuram and Puducherry highway, hence is visited predominantly by the patients from neighbouring districts of Tamil Nadu and Puducherry. It was a hospital based cross sectional study carried out in the Department of Psychiatry.

The study was carried out for a period of 18 months from October 2015 to May 2017.

### *Study subjects*

The study subjects were the male patients, in the age group of 18 to 49 years who were diagnosed to have Alcohol Dependence Syndrome as per ICD-10, DCR criteria with uncomplicated withdrawal and were having regular sexual partner [11]. They were recruited from the in-patient Department of Psychiatry that runs a de-addiction clinic. Patients who had co-morbid medical illnesses (diabetes mellitus, thyroid disorders) or physical disorders (anatomical or structural perineal, genitourinary lesions and neurological or spinal cord lesions) were excluded. Those who had history of primary sexual dysfunction prior to initiation of alcohol use were also excluded. Respondents with psychiatric disorders like schizophrenia, delusional disorder, anxiety disorders and mood disorders and known cases of mental retardation or dementia were not included. Alcoholics with history of taking drugs within the past one year which are known to cause sexual dysfunction (antipsychotics, antidepressants, antihypertensive, steroids, disulfiram, etc.) and those with other substance use like tobacco and cannabis were also excluded from the study.

### *Sample size and sampling*

Sample size was calculated to be 80 using the formula  $4pq/d^2$ , taking into consideration the prevalence of sexual dysfunction among patients with alcoholic dependence syndrome as 72% based on a previous study, [8] with 15% relative precision, 95% confidence interval and 10% non-response rate. Every patient diagnosed with alcoholic dependence syndrome was assessed for eligibility and those fulfilling the criteria were recruited consecutively till the desired sample size was achieved during the study period.

### *Study procedure and study tool*

The study was carried out after obtaining Institute Ethical Committee clearance (IEC Code No: 42/2015). Written informed consent was obtained from all participants before collecting information from them related to the study variables. Respondents were assessed for the eligibility criteria of the study by the principal investigator. The participants were interviewed using a pilot tested structured questionnaire. The information on socio-demographic features like age, education, occupation, socio-economic status

(SES), [12] history of comorbidities and intake of drugs that affect sexual function were collected using the questionnaire. Alcohol dependence of the patients was measured by Alcohol Use Disorders Identification Test (AUDIT) scale [13]. The International Index of Erectile Function (IIEF) [14] and Premature Ejaculation Diagnostic Tool (PEDT) were administered in their local language by the principal investigator. In the ward, early morning blood samples were collected centrifuged and sera were stored under  $-10^{\circ}\text{C}$ . Using testosterone Elisa kit the tests were run. Ethical principles were adhered throughout the study.

The AUDIT scale was developed by the World Health Organization to identify persons whose alcohol consumption has become hazardous or harmful to their health. It includes items that assess three domains included in ICD-10 for alcohol use disorders: alcohol dependence; harmful drinking; and hazardous drinking. It takes about 2-3 minutes to administer the AUDIT questionnaire and score it. The AUDIT has shown high internal consistency and test-retest reliability (0.64 to 0.92). Overall, median sensitivity is about 0.86 and median specificity is about 0.89 [13].

The IIEF tool is an abridged five item version of the 15 item International Index of Erectile Dysfunction scale. The five items were selected based on the criteria for ED as defined by the National Institute of Health. It was developed to diagnose the presence and severity of ED. It mainly focuses on erectile function and intercourse satisfaction over the past six months. Higher scores indicate lesser chances of ED. It is an easy to use diagnostic tool to identify ED based on the self-report of the patient. The scale has a sensitivity of 98% and a specificity of 88% [14].

The PEDT is a short, multi-dimensional and psychometrically validated measure that can be easily administered to facilitate the diagnosis of PE. It is a self-administered five item questionnaire. It was based on the diagnostic criteria of PE as per DSM-IV-TR. Higher scores indicate higher chances of PE. It is used worldwide as a diagnostic tool for PE [15].

### *Statistical analysis*

Data were entered in EpiInfo software version 7.2.2.6 and analysed using software SPSS version 24. Categorical study variables were summarized in frequency and percentages. Association between alcohol use disorder and the socio-demographic details of study participants and sexual dysfunction status were identified using Chi-square test. Pearson

correlation was done to find out the correlation between AUDIT with serum testosterone, IIEF and PEDT scores. All tests were two tailed and the  $p$  value  $<0.05$  was considered significant.

### **Results**

Of the total 80 men who were diagnosed with alcoholic dependence, 54 (67.5%) belong to the age group 35 to 45 years and the rest were in the age group of 26 to 34 years. Majority (82.5%) of the participants were residing in the rural area and the remaining 17.5% were from urban background. One fifth of them studied up to primary school, 43.8% of them completed middle school and only 15% of them were graduated. Most of the participants were employed and they were involved in unskilled (43.8%) and semiskilled (40%) type of occupation. Socio-economic status wise participants belonging to lower middle category were the maximum (56.3%) followed by lower (36.3%) and middle group (7.5%) (Table-1).

Based on AUDIT score, 25 (31.2%) had harmful alcohol use disorder and 55 (68.8%) had high risk for alcohol related disorder. As per IIEF score, 43 (53.8%) had mild, 29 (36.3%) had moderate and 8 (10%) had no ED. PEDT score suggested 45 (56.3%) of them had PE, nine of them probably suffer from it and 26 (32.5%) of them had no evidence of it (Table-2).

High risk of alcohol use disorder were found more in the age group 26 to 34 years (76.9%) compared to 26 to 34 years old participant (64.8%) but this was not associated statistically. Harmful and high risk alcohol use disorders were almost same among participants residing in both rural and urban area hence there was no association found statistically. Alcoholics who were educated up to primary school were more at risk to develop alcohol related disorders (93.8%) compared to graduated alcoholics (58.3%). Education appears to reduce the risky consumption of alcohol and its related complications but was not statistically significant. Unskilled workers were at high risk to develop alcohol related disorder (74.3%) compared to semiskilled (68.8%) and unemployed (53.8%). Those who belonged to lower SES were at more risk to develop harmful effects of alcohol (44.8%) than who were from other SES, however these associations were not statistically significant ( $p > 0.05$ ) (Table 1).

Alcoholics with higher AUDIT score indicating high risk for developing alcohol use disorder

had higher proportion of ED (93.1%) compared to those who had comparatively lesser AUDIT score (6.9%). This association was statistically significant ( $p = 0.002$ ). Study respondent who had high risk for alcohol related health complications had statistically significant higher proportion of PE (88.9%) compared to those with lesser score on AUDIT ( $p = 0.001$ ) (Table 2).

The correlation between AUDIT score and serum testosterone was moderately negative ( $r$  value was  $-0.63$ ) and was statistically significant, that is

when the AUDIT score increases the testosterone level decreases. Similarly the relationship between AUDIT score and IIEF score (ED) was also moderately negative ( $r$  value was  $-0.48$ ) and significant. Less IIEF score indicates ED hence negative correlation with AUDIT score. Whereas the correlation between AUDIT score and PEDT score (PE) was moderately positive and significant ( $r$  value was  $0.43$ ) that explains that increase in AUDIT score increases the risk of ED (Fig. 1).

**Table 1:** Association between alcohol use disorder and the socio-demographic details of study participants (N=80).

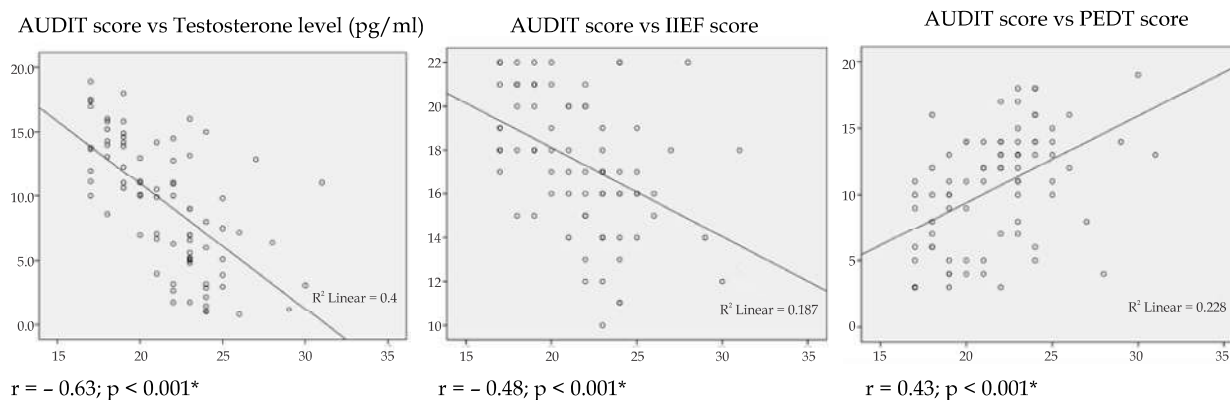
Characteristics	Total (N=80)	Harmful (N=25)	High risk (N=55)	p value*
	n (%)#	n (%)@	n (%)@	
<i>Age category in years</i>				
26-34	26 (32.5)	06 (23.1)	20 (76.9)	0.27
35-45	54 (67.5)	19 (35.2)	35 (64.8)	
<i>Residency</i>				
Rural	66 (82.5)	21 (31.8)	45 (68.2)	0.81
Urban	14 (17.5)	04 (28.6)	10 (71.4)	
<i>Education status</i>				
Primary	16 (20)	01 (06.3)	15 (93.8)	0.06
Middle	35 (43.8)	11 (31.4)	24 (68.6)	
Intermediate	17 (21.3)	08 (47.1)	09 (52.9)	
Graduate	12 (15)	05 (41.7)	07 (58.3)	
<i>Occupation</i>				
Unemployed	13 (16.3)	06 (46.2)	07 (53.8)	0.39
Unskilled	35 (43.8)	09 (25.7)	26 (74.3)	
Semiskilled	32 (40)	10 (31.3)	22 (68.8)	
<i>Socio-economic status</i>				
Middle	6 (7.5)	01 (16.7)	05 (83.3)	0.13
Lower middle	45 (56.3)	11 (24.4)	34 (75.6)	
Lower	29 (36.3)	13 (44.8)	16 (55.2)	

**Note:** # Column %, @ row %, \*p value based on Chi-square test

**Table 2:** Relationship between alcohol use disorder with erectile dysfunction and premature ejaculation status of study participants (n = 80).

Characteristics	Total (N = 80)	Harmful (N = 25)	High risk (N = 55)	p-value
	n (%)#	n (%)@	n (%)@	
<i>Erectile dysfunction</i>				
Absent	8 (10)	04 (50)	04 (50)	0.002*
Mild	43 (53.8)	19 (44.2)	24 (55.8)	
Moderate	29 (36.3)	02 (6.9)	27 (93.1)	
<i>Premature ejaculation</i>				
Present	45 (56.3)	05 (11.1)	40 (88.9)	0.001*
Probable	9 (11.3)	06 (66.7)	03 (33.3)	
Absent	26 (32.5)	14 (53.8)	12 (46.2)	

**Note:** # Column %, @ row %, \*p value statistically significant ( $<0.05$ ) and based on Chi-square test



Note:  $r$  is Pearson's correlation coefficient and \* $p$  value statistically significant (<0.05)

Fig. 1: Correlation between AUDIT score with testosterone level, erectile dysfunction and premature ejaculation score.

## Discussion

Most of the study subjects with alcoholic dependence syndrome belonged to the age group of 35 to 45 years (67.5%) and almost 80% of them were from rural background. Only 15% were graduates and most of them were unskilled workers belonging to lower middle SES. Almost 90% of them had ED in mild or moderate form. PE was found in 67% of them. Patients with higher AUDIT score had statistically more chance for sexual dysfunction. AUDIT score was negatively correlated with serum testosterone level and IIEF score and positively correlated with PEDT score.

Cross sectional studies done among alcoholic dependent patients in various countries namely China, Nepal and Turkey showed the proportion of patients who had one or other forms of sexual dysfunction ranged from 68% to 75% [16–18]. A systematic review carried out by Grover *et al* showed this proportion ranged from 42% to 95.2% across countries [7]. The studies done in various parts of India namely Kerala, Delhi, Pune and Chandigarh showed the proportion of any sexual dysfunction among chronic alcoholic men ranged from 37% to 76% [8,9,19,20]. In the present study nearly 90% of the alcoholic dependent men had any sexual dysfunction which was much higher than the reported figures in the previous studies done in our country. The reason for this variation could be the tool used for studying sexual dysfunction other than the usual reasons like age, duration, frequency and type of alcohol drinks consumed and co-morbidities found among the participants.

In the current study proportion of alcoholics with ED was found to be 90%. Studies done in Kerala and Delhi reported the prevalence of ED as 25% and 28% respectively [8,19]. However

studies done in other countries reported it to range from 61% to 75% [17,21]. In the present study 67% of the respondents were found to have PE. A study done in Kerala reported it to be 15.5% and in Chandigarh it was 12.8% [8,9]. A review carried out across countries showed ED followed by PE was the common sexual dysfunction seen among alcohol dependent patients [7]. A review by Jain *et al* showed moderate amount of alcohol consumption was associated with ED but it failed to establish dose and effect relationship [22]. Duration of consumption of alcohol, presence of alcohol dependence and increase in AUDIT score were the associated factors of sexual dysfunction among the respondents in the current study. Similar finding was found in a study done in Kerala [8]. Study done in China found that the odds of occurrence of sexual dysfunction were high among those who were chronic alcoholics than normal subjects [16].

The study was done in hospital setting hence the results could not be generalised to all population however the results were valid and applicable to hospitalised alcoholic dependence patients. In this study known confounders that affect sexual dysfunction were controlled by restricting individuals with those factors. But sexual dysfunction that could have happened due to psychological reasons affecting alcoholics and their spouse were not ruled out. Being cross sectional study the temporal relationship between exposure and outcome could not be established. Longitudinal studies recruiting randomly selected participants from community setting to be carried out in future to address the above mentioned limitations of the current study. Studies that try to establish dose and duration effect of alcohol on sexual dysfunction will help to provide proper intervention among risky population.

### Conclusion and Recommendation

This study revealed that almost 80% of the male patients with alcoholic dependence syndrome had one or other form of sexual dysfunction. Chronic and higher level of consumption of alcohol was associated with all forms of sexual dysfunction. Hence treatment of alcoholic dependence also needs to carry out screening of sexual dysfunction on regular basis and treatment of sexual dysfunction also to be included into the routine alcohol deaddiction service. Society need to be educated about the sexual consequences of alcoholic addiction. The treatment of sexual dysfunction associated with alcoholism clearly has to emphasise the need to control the drinking and preferably stop it completely.

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