



A Study on the Severity of Alcohol Dependence and Its Effect on Sexual Functioning in Men with Alcohol Dependence

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Received: 12 February 2026

Accepted: 26 March 2026

Published: 13 April 2026

KEYWORDS

Alcohol Dependence,
Sexual Dysfunction,
Erectile Dysfunction,
Abstinence, IIEF, SADQ,
De-addiction, India

ABSTRACT:

Background:

Alcohol dependence is a chronic condition with widespread physiological, psychological, and interpersonal consequences. One of its lesser-addressed yet significant complications is sexual dysfunction, which may perpetuate a cycle of distress and continued alcohol use. Despite increasing evidence linking alcohol use with impaired sexual functioning, few studies have assessed the correlation between the **severity** of alcohol dependence and **specific domains** of sexual dysfunction, especially within the Indian population.

Objectives:

This study aimed to evaluate (1) the severity of alcohol dependence in men, (2) the pattern of sexual functioning at baseline, (3) changes in sexual functioning after two months of abstinence, and (4) the association between alcohol dependence severity and sexual dysfunction.

Methods:

A total of 60 male patients aged 18–55 years with Alcohol Dependence Syndrome (ICD-10 criteria) were recruited from a de-addiction ward at Justice K.S. Hegde Charitable Hospital, Mangalore. Psychiatric comorbidities were screened using MINI 6.0. Severity of dependence was assessed using the Severity of Alcohol Dependence Questionnaire (SADQ). Sexual functioning was evaluated using the International Index of Erectile Function (IIEF), administered at admission and after two months of abstinence. Data analysis involved descriptive statistics, Wilcoxon signed-rank tests, and Pearson correlations.



Results:

Severe alcohol dependence was found in 93.3% of participants. At baseline, 70% had severe erectile dysfunction (ED). After two months of abstinence, significant improvements were seen in erectile, orgasmic, intercourse, and overall satisfaction domains ($p < 0.001$), though sexual desire remained largely unchanged ($p = 0.074$). Higher SADQ scores were negatively correlated with erectile function both before ($r = -0.415$) and after abstinence ($r = -0.583$), with statistical significance ($p = 0.001$).

Conclusion:

Sexual dysfunction is closely linked to alcohol dependence severity, but abstinence significantly improves multiple aspects of sexual functioning. Routine assessment, counseling, and therapy addressing sexual health can enhance recovery outcomes.

Introduction: Alcohol consumption remains a major global public health issue due to its significant contribution to disease, disability, and mortality. Despite regional variations in drinking patterns, the harmful use of alcohol consistently ranks among the top five risk factors for adverse health outcomes worldwide [1]. Harmful alcohol use refers to a consumption pattern that results in physical or mental health damage. Alcohol dependence is a complex condition characterized by behavioral, cognitive, and physiological symptoms that develop following repeated alcohol use. Key features include a strong craving for alcohol, impaired control over consumption, persistence despite harmful consequences, increased priority given to alcohol use over other obligations, heightened tolerance, and sometimes withdrawal symptoms upon cessation. Prolonged alcohol use has been closely linked to sexual dysfunction, which often leads to distress and difficulties in interpersonal relationships. In turn, these issues may reinforce alcohol consumption, creating a detrimental cycle [2]. The mechanisms behind sexual dysfunction in individuals with alcohol dependence are multifactorial, involving the direct depressant effects of alcohol on the central nervous system, alcohol-induced medical conditions, and numerous psychological factors [2].

Sexual dysfunction is defined as a disturbance in the stages of sexual activity—such as desire, arousal, orgasm, and satisfaction—that results in personal or relational distress. According to the DSM-5, such

dysfunction must persist for a minimum of six months and cause significant interpersonal strain [3]. In India, studies have reported that up to 71% of patients receiving treatment for alcohol-related problems experience sexual dysfunction, with many suffering from these issues for a year or more before seeking help [4,5]. Despite the profound impact, the burden of sexual dysfunction remains under-recognized. For instance, the United Kingdom reported an annual economic burden of £53 million associated with erectile dysfunction alone, considering both direct costs and productivity losses. The consequences of sexual dysfunction include psychological distress, anxiety, depression, diminished confidence, poor self-esteem, reduced quality of life, and strained relationships [6]. A diagnosis of alcohol-induced sexual dysfunction requires confirmed evidence of alcohol use, intoxication, or withdrawal, and the sexual disturbance must be a prominent part of the clinical presentation [7].

Alcohol has long been cited as a risk factor for sexual dysfunction in academic literature, clinical teachings, and review articles [8–11]. Acute alcohol intoxication is known to increase sexual desire while impairing performance, likely due to its dual action of central nervous system depression and behavioral disinhibition [8]. Chronic alcohol abuse is a leading cause of impotence and related sexual difficulties, especially among men consuming more than three standard units or approximately 18 grams of alcohol



daily [12]. While numerous studies have explored the relationship between alcohol dependence and sexual dysfunction, few have examined how the *severity* of alcohol dependence correlates with impairments across the sexual response cycle. Therefore, this study aimed to evaluate the impact of alcohol dependence severity on sexual functioning and to assess changes following a period of abstinence. The findings aim to enhance the understanding of alcohol's effects on sexual health and offer clinical insight to support patient motivation for abstinence.

Objectives: The study seeks to assess the severity of alcohol dependence in men, evaluate their sexual functioning, monitor changes in sexual functioning after two months of abstinence, and determine the association between the severity of alcohol dependence and sexual dysfunction.

Material and Methods:

This observational analytical study was conducted at Justice K.S. Hegde Charitable Hospital, Mangalore, from November 2016 to September 2018. A total of 60 male participants diagnosed with Alcohol Dependence Syndrome (ADS) according to the ICD-10 diagnostic criteria were recruited from the hospital's de-addiction ward. Participants were selected using purposive sampling based on specific inclusion and exclusion criteria. Eligible participants were men aged 18–55 years, currently in a relationship, and meeting ICD-10 criteria for alcohol dependence. Exclusion criteria included any clinically verified history of primary sexual dysfunction prior to alcohol use, comorbid physical or psychiatric disorders contributing to sexual dysfunction, use of substances other than alcohol and tobacco, and inability or refusal to provide informed consent. The sample size was estimated in consultation with a statistician using the formula: $\text{Sample Size} = 4pq/L$, where p is the prevalence of the characteristic under study from prior literature, $q = 1 - p$, and L (constant) = 25. All participants were provided informed consent forms in Kannada, and ethical approval was obtained from the Institutional Review Board.

Participants underwent assessments using a structured battery of validated tools. Socio-demographic and clinical data were recorded using a standardized intake proforma. Psychiatric comorbidities were screened using the Mini International Neuropsychiatric Interview (MINI, Version 6), a brief structured diagnostic interview. The severity of alcohol dependence was assessed using the Severity of Alcohol Dependence Questionnaire (SADQ), a 20-item tool measuring five domains: bodily withdrawal, affective withdrawal, relief craving, daily consumption, and reinstatement of dependence. Each item is rated on a 4-point Likert scale, with total scores categorizing dependence as mild (<16), moderate (16–30), or severe (>30). Sexual functioning was evaluated using the International Index of Erectile Function (IIEF), a 15-item self-report questionnaire assessing five domains: erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction. The erectile function domain is scored out of 30 and categorized into severity grades, while lower scores in other domains indicate greater dysfunction. IIEF was administered at baseline and again after two months of alcohol abstinence to measure changes in sexual function. Data were entered into Microsoft Excel and analyzed using SPSS. Descriptive statistics were applied to summarize sample characteristics. Frequency and percentage were used for categorical variables; means and standard deviations were calculated for continuous variables. The Kolmogorov-Smirnov test was used to assess normality of distribution. Pearson's correlation was used for normally distributed variables, while non-parametric alternatives (log-transformed where needed) were employed otherwise. Changes in IIEF scores pre- and post-abstinence were evaluated using the Wilcoxon signed-rank test, with statistical significance set at $p < 0.05$. Ethical safeguards included confidentiality, informed consent, and the right to withdraw at any stage without affecting treatment.

Results:

**Table 1: Profile of subjects in the study**

		Frequency (n = 60)	Percentage
Age	18-25	2	3.3%
	26-35	12	20.0%
	36-45	26	43.3%
	46-55	20	33.3%
Educational Level	Illiterate	1	1.7%
	Primary School	26	43.3%
	High School	19	31.7%
	Diploma	10	16.7%
	Bachelors	2	3.3%
	Masters	2	3.3%
Occupational Status	Unemployed	4	6.7%
	Unskilled	21	35.0%
	Semi-skilled	25	41.7%
	Skilled	10	16.7%

In the present study, the majority of the subjects (43.3%) were in the age group of 36–45 years, followed by 33.3% in the 46–55 age group and 20% in the 26–35 age group, while only 3.3% were between 18–25 years. Regarding educational background, 43.3% of the participants had completed primary school, followed by 31.7% who had a high school education. A smaller proportion had obtained a diploma (16.7%), bachelor's degree

(3.3%), or master's degree (3.3%), and only 1.7% of the subjects were illiterate. Occupational status revealed that 41.7% were semi-skilled workers, 35% were unskilled laborers, 16.7% were skilled workers, and 6.7% were unemployed [Table 1].

Table 2: Severity of Alcohol Dependence and Erectile dysfunction

		Frequency (n = 60)	Percentage
SADQ	Moderate	4	6.7
	Severe	56	93.3
EF-1	Severe	42	70
	Moderate	15	25
	Mild	3	5
EF-2	Severe	2	3.3
	Moderate	23	38.3
	Mild-Moderate	27	45.0
	Mild	3	5.0
	No dysfunction	5	8.3

EF – Erectile Function

Based on SADQ scores, a significant majority (93.3%) of the participants fell in the severe dependence category, while only 6.7% were moderately dependent. In terms of erectile function before abstinence (EF-1), 70% of participants had severe erectile dysfunction, 25% had moderate dysfunction, and 5% had mild dysfunction. After two months of abstinence (EF-2), only 3.3% remained in the severe dysfunction category, while 38.3% had moderate, 45% had mild-moderate, 5% had mild dysfunction, and 8.3% showed no dysfunction. This trend indicates substantial improvement in sexual functioning following abstinence from alcohol [Table 2].

**Table 3: Change in Sexual Function after 2 months of Abstinence**

Sexual Function Dimensions	N	SD	Median	IQR	Wilcoxon Signed Rank Test p Value
IIEF-EF 1	60	6.408	2.00	(1-12)	<0.001*
IIEF-EF 2	60	4.250	19.00	(14-20)	
IIEF-OF1	60	1.878	1.00	(1-4)	<0.001*
IIEF-OF 2	60	1.294	6.50	(5-8)	
IIEF-SD 1	60	1.355	8.00	(6-8)	0.074
IIEF-SD 2	60	1.141	8.00	(7-8)	
IIEF-IS 1	60	2.832	2.00	(0-5)	<0.001*
IIEF-IS 2	60	1.986	8.00	(7-10)	
IIEF-OS 1	60	1.340	2.00	(2-4)	<0.001*
IIEF-OS 2	60	1.115	6.50	(6-8)	

Erectile function (EF) scores significantly improved from a median of 2.00 (IQR 1–12) at baseline to 19.00 (IQR 14–20) after two months of abstinence ($p < 0.001$). Similarly, orgasmic function (OF) improved from a median of 1.00 (IQR 1–4) to 6.50 (IQR 5–8), with statistical significance ($p < 0.001$). Sexual desire (SD) showed a slight increase from a median of 8.00 (IQR 6–8) to 8.00 (IQR 7–8), though

this was not statistically significant ($p = 0.074$). Intercourse satisfaction (IS) improved markedly from a median of 0.00 (IQR 0–5) to 8.00 (IQR 7–10) with $p < 0.001$, and overall satisfaction (OS) also showed significant improvement from a median of 2.00 (IQR 2–4) to 6.50 (IQR 6–8), with $p < 0.001$. These findings suggest that abstinence from alcohol is associated with statistically significant improvements in multiple dimensions of sexual function, particularly in erectile, orgasmic, and satisfaction domains [Table 3].

Table 4: Association between the Severity of Alcohol Dependence and

	Sexual Function Dimensions	N	SD	50th (Median)	P Value
SAD Q Moderate	IIEF-EF1	4	11.057	15.50	0.066
	IIEF-EF 2	4	6.752	22.00	
	IIEF-OF1 /10	4	2.449	4.50	0.066
	IIEF-OF2 -/10	4	1.155	6.00	
	IIEF-SD1 -/10	4	1.000	6.00	0.157
	IIEF-SD2 -/10	4	.816	7.00	
	IIEF-IS1 -/15	4	3.786	7.00	0.066
	IIEF-IS2 -/15	4	1.893	9.50	
	IIEF-OS1 -/10	4	1.915	5.00	



		IIEF-OS2 -/10	4	.500	7.00	0.066
Severe		IIEF-EF1	5/6	5.68/6	2.00	<0.001*
		IIEF-EF2	5/6	4.00/7	19.00	
		IIEF-OF1 -/10	5/6	1.80/4	1.00	<0.001*
		IIEF-OF2 -/10	5/6	1.30/4	6.50	
		IIEF-SD1 -/10	5/6	1.36/1	8.00	0.038*
		IIEF-SD2 -/10	5/6	1.15/6	8.00	
		IIEF-IS1 -/15	5/6	2.64/6	.00	<0.001*
		IIEF-IS2 -/15	5/6	2.00/9	8.00	
		IIEF-OS1 -/10	5/6	1.24/6	2.00	<0.001*
		IIEF-OS2 -/10	5/6	1.14/9	6.00	

Wilcoxon Signed Rank Test

In the present study, the association between the severity of alcohol dependence and different dimensions of sexual function was assessed by categorizing participants into moderate and severe dependence groups (Table 4). Among the four participants with moderate alcohol dependence, the median erectile function score increased from 15.50 (SD \pm 11.06) at baseline to 22.00 (SD \pm 6.75) after two months of abstinence, though this change did not reach statistical significance ($p = 0.066$). Orgasmic function also showed a non-significant increase from a median of 4.50 (SD \pm 2.45) to 6.00 (SD \pm 1.15), and similar patterns were observed in sexual desire (median increased from 6.00 to 7.00), intercourse satisfaction (7.00 to 9.50), and overall satisfaction (5.00 to 7.00), none of which showed statistically significant differences.

However, in the group with severe alcohol dependence ($n = 56$), significant improvements were observed in multiple domains. Erectile function improved significantly from a median of 2.00 (SD \pm 5.69) to 19.00 (SD \pm 4.01), with a p -value < 0.001 . Orgasmic function increased from 1.00 (SD \pm 1.80) to 6.50 (SD \pm 1.30), also statistically significant ($p < 0.001$). Significant improvements were seen in intercourse satisfaction (from 0.00 \pm 2.65 to 8.00 \pm 2.00, $p < 0.001$) and overall satisfaction (from 2.00 \pm 1.25 to 6.00 \pm 1.15, $p < 0.001$). Sexual desire also showed a modest but statistically significant improvement (from 8.00 \pm 1.36 to 8.00 \pm 1.15, $p = 0.038$). These results suggest that while moderate alcohol dependence showed trends toward improvement, statistically significant and clinically meaningful improvements in sexual function were more evident among those with severe alcohol dependence following abstinence [Table 4].

Table 5: Correlation between SADQ and Erectile Dysfunction

SADQ	Pearson Correlation	P value
IIEF-EF 1	-0.415	0.001*
IIEF-EF 2	-0.583	0.001*

Further analysis using Pearson's correlation (Table 5) showed a statistically significant negative correlation between SADQ scores and erectile function scores, both before and after abstinence. The correlation between SADQ and IIEF-EF1 (baseline erectile function) was $r = -0.415$ ($p = 0.001$), and the correlation between SADQ and IIEF-EF2 (erectile function after abstinence) was $r = -0.583$ ($p = 0.001$). This indicates that higher alcohol dependence severity is significantly associated with lower erectile function scores, both at baseline and after abstinence, with a stronger negative correlation observed post-abstinence [Table 5].

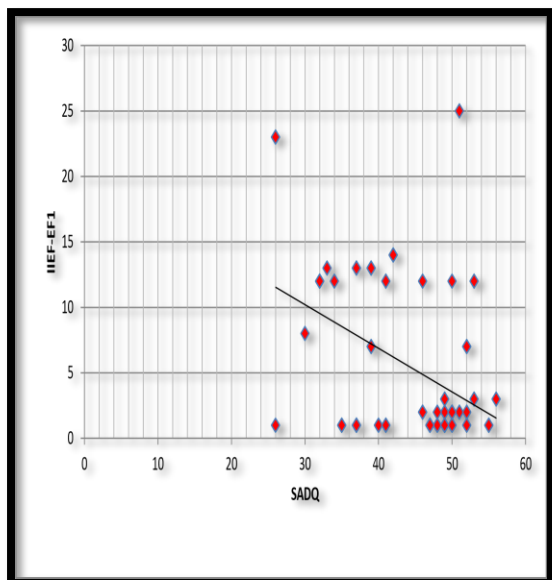


Figure 1: Scatter plot showing Correlation between SADQ and IIEF - EF1

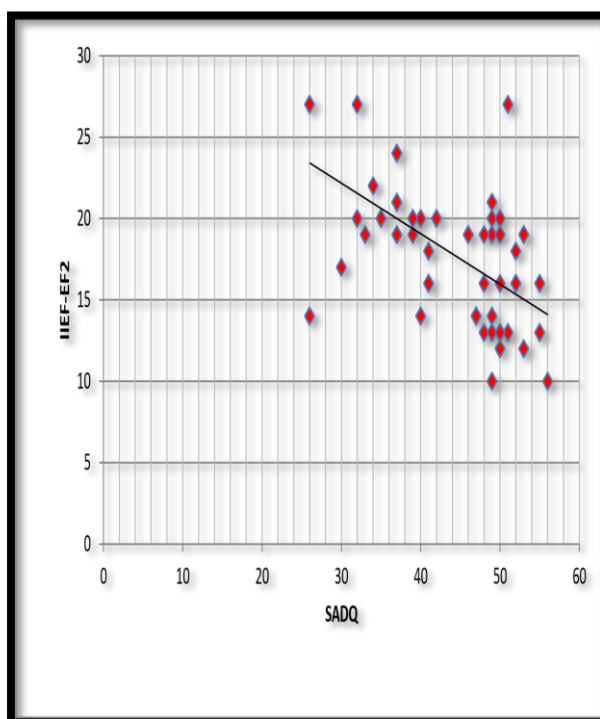


Figure 2: Scatter plot showing Correlation between SADQ and IIEF – EF2

DISCUSSION:

This study recruited 60 male patients from the de-addiction ward at Justice K.S. Hegde Charitable Hospital who fulfilled specific inclusion and exclusion criteria. Patients with comorbid psychiatric disorders were excluded after assessment using the MINI, with diagnoses including Bipolar Affective Disorder, Delusional Disorder, and Major Depressive Disorder leading to exclusion. Seven participants were lost to follow-up, likely due to relapse, a common concern in addiction recovery. Ultimately, all included participants completed both assessments, with none withdrawing post-enrolment.

Age-Related Factors: Participants were predominantly between 36–45 years (43.3%) and 46–55 years (33.3%), with minimal representation in the younger age brackets. Erectile dysfunction (ED) is a condition whose incidence increases with age, partly due to concurrent physical comorbidities. Findings from Mulhall et al. [13] and the Massachusetts Male Aging Study [14] confirm that age is an independent risk factor for ED, with prevalence rising from 1.2% annually in the 40–49 age group to 4.6% in the 60–69 group. While our study did not directly analyze age as a risk factor, the age distribution of the sample aligns with known epidemiological trends of higher ED risk with advancing age.

Education: Education levels revealed that 43.3% of the participants had completed primary school, while 31.7% had completed high school. Only 3.3% had attained a bachelor's or master's degree. Crum et al. [15] highlighted a higher prevalence of alcohol use disorders (AUDs) among individuals who had not completed high school. Tomar et al. [16] found similar trends in India, noting increased AUD prevalence in illiterate populations. Although education did not directly influence sexual function in our study, lower educational attainment may indirectly contribute through increased susceptibility to alcohol misuse.

Occupational Status: A significant proportion of the study population were either semi-skilled



(41.7%) or unskilled laborers (35%). The association between unskilled labor and alcohol dependence is well documented in Indian literature, notably by Tomar et al. [16]. Although occupational status was not analyzed for direct correlation with sexual dysfunction, it remains a critical socioeconomic determinant influencing alcohol consumption behaviors and thereby, sexual health.

Severity of Alcohol Dependence: Out of the 60 participants, 93.3% were diagnosed with severe alcohol dependence, while 6.7% had moderate dependence based on the SADQ scores. Most participants reported alcohol initiation before age 25, consistent with findings from Pradeep R. Johnson et al. [17], who noted that earlier onset of alcohol use correlates with higher severity of dependence. Dwivedi et al. [18] further suggest that cumulative lifetime alcohol consumption contributes significantly to the severity of dependence, a variable not directly addressed in our study but essential for future prognostic considerations.**Alcohol Use and Sexual Functioning:** The study utilized the International Index of Erectile Function (IIEF) to assess five dimensions: Erectile Function (EF), Orgasmic Function (OF), Sexual Desire (SD), Intercourse Satisfaction (IS), and Overall Satisfaction (OS). At baseline (EF-1), 70% of participants reported severe ED, 25% moderate, and 5% mild. This pattern is supported by Van Thiel and Lester [30], who noted erectile dysfunction as the most prevalent sexual dysfunction among alcohol-dependent males. Interestingly, their study suggested that sexual desire is most commonly affected, followed by ED. In contrast, our study found that sexual desire remained relatively unaffected at baseline—a finding divergent from the literature [19, 20].

The Wilcoxon Signed Rank Test demonstrated significant post-abstinence improvement across most dimensions. EF improved from a median score of 2.00 (IQR 1–12) at baseline to 19.00 (IQR 14–20) after two months ($p < 0.001$). Similarly, OF rose from 1.00 (IQR 1–4) to 6.50 (IQR 5–8) ($p < 0.001$), IS increased from 0.00 (IQR 0–5) to 8.00 (IQR 7–10) ($p < 0.001$), and OS rose from 2.00 (IQR 2–4) to

6.50 (IQR 6–8) ($p < 0.001$). Sexual desire showed no statistically significant change ($p = 0.074$), although median scores increased slightly.

These improvements corroborate earlier research by Van Thiel et al. [21], which suggested that alcohol-induced sexual dysfunction may be reversible with abstinence, barring irreversible physiological changes such as gonadal atrophy. However, findings by Schiavi et al. [22] challenge this by reporting no significant change in sexual functioning after 2–3 months of abstinence, thus questioning the reversibility claim. Our study supports the former position by demonstrating statistically significant recovery in most dimensions after abstinence.**Association Between Dependence Severity and Sexual Function:** A comparative analysis between moderate and severe dependence groups revealed significant insights. While those with moderate dependence ($n = 4$) showed non-significant improvements across all domains, those with severe dependence ($n = 56$) displayed statistically significant enhancements in EF, OF, IS, and OS ($p < 0.001$), and in SD ($p = 0.038$). These results suggest that individuals with severe dependence have a more pronounced recovery trajectory in sexual functioning during abstinence, potentially due to a greater margin for improvement from a lower baseline.

This pattern suggests that abstinence yields more observable benefits in severely affected individuals and highlights the importance of early intervention and sustained abstinence in managing alcohol-related sexual dysfunction.**Correlation Between Severity and Erectile Dysfunction:** Pearson correlation analysis (Table 5) showed a significant negative correlation between SADQ scores and erectile function both before and after abstinence. At baseline (IIEF-EF1), the correlation coefficient was $r = -0.415$ ($p = 0.001$), while post-abstinence (IIEF-EF2), it was stronger at $r = -0.583$ ($p = 0.001$). These findings affirm that higher severity of alcohol dependence is associated with worse erectile function, and this association remains robust even after abstinence.



This study has several limitations. The small sample size, particularly in the moderate dependence group, limits generalizability. Inclusion of participants with tobacco use, a known confounder for erectile dysfunction, may affect results. The non-normal population distribution and subjective assessment methods introduce bias. Additionally, the small proportion of moderately dependent individuals (6.7%) limits meaningful comparisons across severity levels.

CONCLUSION:

Sexual dysfunction is a common but often overlooked consequence of alcohol use disorders, with its severity closely linked to the degree of alcohol dependence. Encouragingly, abstinence from alcohol has been shown to significantly improve sexual functioning. Therefore, alongside medical detoxification and de-addiction treatment, routine assessment of sexual health should be integrated into the clinical evaluation. Establishing strong rapport is essential, as sexual history involves sensitive, personal disclosures. Addressing concerns related to sexual dysfunction through appropriate referrals can enhance patient care. Emphasizing improvements in sexual function may serve as an added motivation for sustained abstinence. Incorporating couple or marital therapy into treatment plans can further support recovery and improve relationship satisfaction and overall quality of life.

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