

Original Article

Sexual Dysfunction in Male Crystalline Heroin Dependents before and after MMT: A Pilot Study

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Abstract

Background: Sexual dysfunction (SD) is a common problem among chronic opiate dependents. The purpose of this study is to examine the prevalence of SD and to investigate whether there is a change in SD after six months of methadone maintenance treatment (MMT) compared with baseline.

Methods: We recruited 30 patients mean age 34.5 years from an MMT center in Damghan, Iran. Patients underwent structured interviews that consisted of the following: (i) socio-demographic characteristics, drug use, and sexual behavior ; (ii) the International Index of Erectile Function (IIEF-15) test for SD; (iii) the Zung test for depression; and (iv) analysis of serological status.

Results: Overall, 8% of participants reported no SD, 69% reported mild to moderate SD, and 23% reported severe SD upon admission. After completion of the MMT program, these results decreased to 61% and 20%, respectively. In comparison with admission, the mean IIEF-15 score showed moderate improvement from 16.77 ± 7.08 to 21.8 ± 6.40 ($P = 0.003$). The mean IIEF-15 score for intercourse satisfaction completely improved from 12.20 ± 4.55 to 15 ± 3.76 ($P = 0.001$). Slight improvements were noted in the mean IIEF-15 score for sexual desire which increased from 5.10 ± 2.28 to 6.57 ± 2.12 ($P = 0.017$) and the mean IIEF-15 score for overall satisfaction which increased from 5.10 ± 2.29 to 6.58 ± 2.12 ($P = 0.017$). However, the mean IIEF-15 score for orgasmic function very slightly decreased from 4.73 ± 4.50 to 4.57 ± 1.92 ($P = 0.191$), which showed no statistically significant improvement after MMT. There was no relation with depression.

Conclusion: The findings of this study reveal a prevalence of SD and improvements in some aspects of SD in patients after six months of MMT. Patients should be screened for SD at the onset of opioid replacement treatment. Future studies on SD should examine the potential benefits of androgen replacement, hormone assay and the role of psychosocial factors.

Keywords: Crystalline heroin, male, MMT, sexual dysfunction

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Introduction

Sexual dysfunction (SD) is a common problem among addicted Iranian opiate users who undergo methadone maintenance treatment (MMT), but only a few studies on SD with methadone-treated patients have been undertaken in Iran and in other countries. As a result, the importance of SD has been underestimated. Research studies in other countries have found that up to 87% of women and 85% of men who enter MMT have reported sexual difficulties while using heroin.¹ Nevertheless, many patients with sexual problems do not report this issue to clinicians² and many clinicians feel uncomfortable about dealing with sexual problems.³ Of the few Iranian studies conducted on SD, Tatari and colleagues in their study on 157 drug dependent subjects in Kermanshah, Iran have found the prevalence rates of erectile function to be 60.5% and sexual desire to be 70.70%.⁴

An Italian study on the prevalence of erectile function among 201 male patients at seven methadone and buprenorphine maintenance treatment centers showed that 24% of patients reported mild

to moderate erectile dysfunction and 18% reported severe erectile dysfunction.⁵

The paucity of research on SD among patients on MMT in Iran and in other countries is a crucial concern. Assessment of SD in these patients is important because identification and management of SD can increase compliance to the treatment procedure, the effectiveness of which, as is well-known, is associated with more doses and a longer duration of treatment.⁶ The present study is designed to examine the prevalence of SD and to investigate whether there is a change in SD after six months of MMT compared with baseline.

Materials and Methods

Participants

The study was conducted in the outpatient Cheraghiyan Center, which is the most active center that provides MMT for opiate abusers in Damghan, Iran. We recruited participants through poster presentation. Married men aged 20–50 years who were chronic smokers of crystalline heroin for six months before study entry and who had a literacy of at least eight years were eligible to enter the study. Initially, 70 males who were on the waiting-list for admission to MMT were selected, however, 13 left MMT because of relapse, 10 referred to methamphetamine, 9 did not take methadone permanently as prescribed by the Cheraghiyan Center physician, and 8 consumed psychiatric and other medications as determined by urine testing. Therefore, the total number of participants was 30 crystalline heroin users during the six month study period. All par-

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Table 1. Participants' characteristics (*n* = 30).

Variables	Characteristics	Mean ± SD	Frequency (%)
Personal and social characteristics	Age	34.5 ± 4.2	
	Employment	Employed	29(97.7)
		Unemployed	1(3.3)
	Education	< 12 years	18(60)
		12 years	10(33)
		> 12 years	2(7)
	Living with	Spouse	30(100)
	Marriage age	25 ± 6.1	
	Marital status	Married	30(100)
History of drug use	Lifetime opioid use		30(100)
	Lifetime stimulant us		8(26.6)
	Lifetime hallucinogen use		1(3.3)
	Age of first opioid use	22.1 ± 4.3	
	Age of first crystalline heroin smoking	28 ± 5.1	
	Length of addiction	6 ± 2.1	
Depression	No depression		10(33.3)
	Mild		14(46.7)
	Moderate		6(20)
Serology of infectious disease	HIV ¹	Negative Positive	30(100) 0
	HBV ²	Negative Positive	30(100) 0
	HCV ³	Negative Positive	30(100) 0
Sexuality	Number of partners	1 More	30(100) 0
	Extra marital sex last month	Yes No	0 30(100)
	Average number of sex before MMT	4 ± 4.1	
	Average number of sex after MMT	6 ± 3.2	
	Condom use	Yes No	16(53.3) 14(46.7)

¹Human immunodeficiency virus; ²Hepatitis B virus; ³Hepatitis C virus

ticipants were interviewed using the Structured Clinical Interview for DSM-IV (SCID-I)⁷ and met DSM-IV criteria⁸ for heroin dependence. Participants were asked not to use antidepressants, neuroleptics, antipsychotics, sedatives, anxiolytics, and antiandrogens during the study because of the negative effects of these medications on sexual function and the possibility of inference with the study procedure and aims. Participants who were diagnosed with comorbid drug and alcohol use, severe hypertension and stress, hormonal problems due to medical or surgical conditions such as testicular surgery, or who suffered from neurological, metabolic and arteriopathic problems such as diabetes were excluded because of the negative effects of these problems with the study procedure. All participants were provided with written consent forms. Participation was voluntary and confidential. The study was approved by the Institutional Review Board of University of Welfare Sciences and Rehabilitation.

Interview and serological status

A structured interview was administered which included questions on socio-demographics, drug use details, and sexual behavior. In addition, the International Index of Erectile Function (IIEF-15)⁹ was administered upon admission to MMT and after six months of MMT. The IIEF-15 is a reliable multidimensional scale test that explores various aspects of SD. The test is self-administered and has 15 questions that examine 5 scales of erectile function, orgasmic function, sexual desire, intercourse satisfaction and overall satisfaction. Maximum mean scores for the IIEF-15 are as follows: erectile function (30), orgasmic function (10), sexual desire (10),

intercourse satisfaction (15), and overall satisfaction (10). Higher scores indicate less dysfunction.

The reliability and validity of IIEF-15 were approved in Iran in the study on the Farsi International Index of Erectile Dysfunction and Doppler Ultrasonography that evaluated male impotence.¹⁰

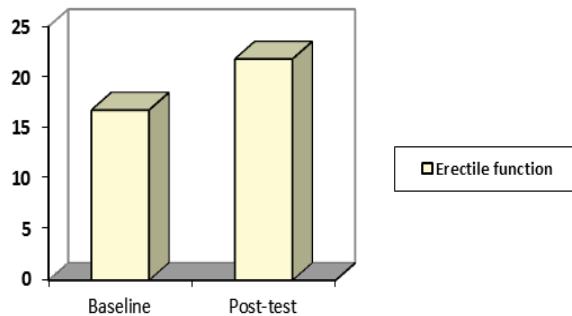
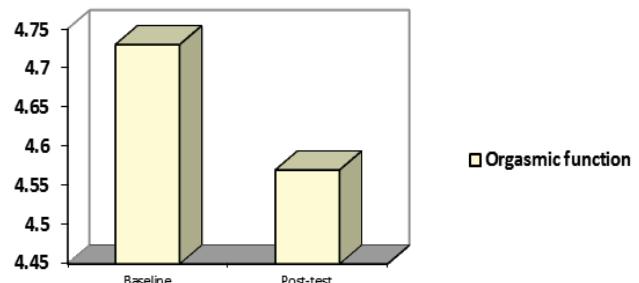
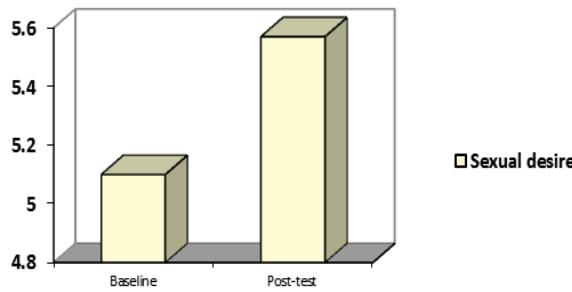
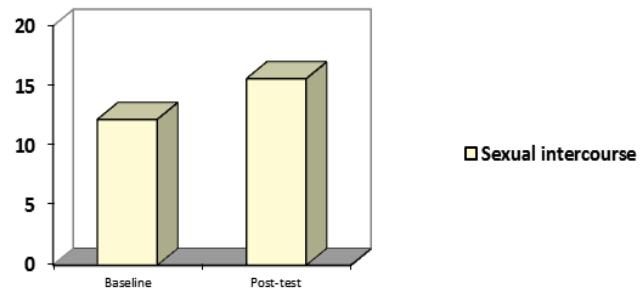
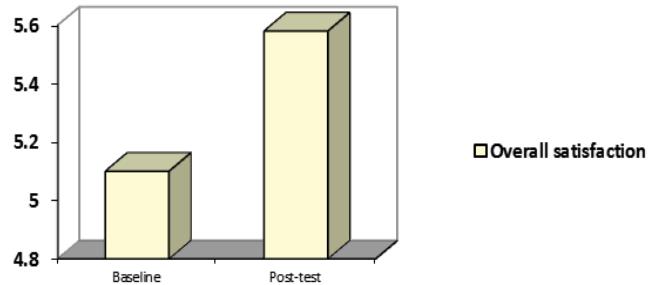
The Zung Self-rating Depression Scale (SDS)¹¹ was also administered at admission to MMT to assess depression as a crucial and prevalent factor influencing SD. The Zung SDS is an index with mild depression at a score of 50–59, moderate depression at 60–69 and severe depression over 70. Analysis of serological status was also part of a scheduled entry medical examination to diagnose viral infections that influenced the sex hormone system and excluded participants who were infected with human immunodeficiency virus (HIV), hepatitis B virus and hepatitis C virus. Two urine samples were randomly taken each month for a multi-drug urine test to control for drug and medication use other than methadone in participants.

Statistical analysis

A series of analyses were conducted by performing the Mann-Whitney U test to reveal the changes that participants reported in their SD at admission to MMT (baseline) compared with six months of methadone treatment (post-test).

Results

Patient characteristics and prevalence of erectile dysfunction (ED) The study included 30 married males who were between 24–47

**Figure 1.** Erectile function before and after MMT.**Figure 2.** Orgasmic function before and after MMT.**Figure 3.** Sexual desire before and after MMT.**Figure 4.** Intercourse satisfaction before and after MMT.**Figure 5.** Overall satisfaction before and after MMT.

years old (mean: 34.5; SD = 4.2). The majorities of participants were employed and had education levels of less than 12 years or diploma. Participants were on methadone maintenance at a mean dose of 6.62 mg/day for the first month of treatment (range: 4.03–14.12 mg; 26% above 10.9 mg). The dose was gradually increased to 14.12 mg/day during the remaining five months of the study (range: 10.9–31.28 mg; 25% above 19.17 mg). The mean for sexual intercourse upon admission to MMT was 4 (SD = 4.1) times per month, which increased to 6 (SD = 3.2) times per month at the end of six months of MMT. Participants reported that sexual activity was limited to their spouses who were not drug users and no risky behavior was reported within six months before entry to MMT (Table 1).

Prevalence of sexual dysfunction (SD)

At baseline, 8% of the participants reported no SD, 69% reported mild to moderate SD, and 23% reported severe SD, which decreased to 61%, and 20%, respectively, after six months of MMT. The median age score for SD was 30 years and the mean age score for SD prevalence was 32.5 (SD = 2.3) years. Age, education, employment, drug use history, depression scores in Zung (SDS), methadone dose and treatment duration were not associated with

SD prevalence ($P > 0.05$). The baseline ED mean score in IIEF was 16.77, which showed a moderate prevalence for ED among participants that positively increased to 21.8 in the post-test (Figure 1). Further analysis showed a moderate improvement in ED among participants after taking methadone (Z score = -2.933; U score = 252; P value ≤ 0.003) compared with baseline (Table 2). The baseline orgasmic functions mean score was 4.73, which indicated the presence of a moderate orgasmic problem among participants that remained almost unchanged (4.57) in the post-test (Figure 2). Further analysis showed that orgasmic function did not change after taking methadone (Z score = -1.308; U score = 364; P value ≥ 0.191) compared to baseline (Table 2). The baseline sexual desire score was 5.10, which increased moderately to 6.57 in the post-test (Figure 3). Further analysis revealed a slight improvement in sexual desire among participants after taking methadone (Z score = -2.396; U score = 289.500; P value ≤ 0.017) compared with baseline (Table 2). The baseline intercourse satisfaction score was 12.20, which was moderate and significantly increased to a score of 15 in the post-test, which indicated no problems with intercourse satisfaction in the post-test (Figure 4). Further analysis revealed intercourse satisfaction among participants completely improved after taking methadone (Z score = -3.175; U score = 236;

Table 2. IIEF scores of ED and related sexual aspects in baseline and after six months of MMT ($n = 30$).

Variable	Characteristics	Mean	SD	U	Z	P-value
Erectile function	Baseline	16.77	7.08	—	—	—
	Post-test	21.8	6.40	252.000	-2.933	0.003
Orgasmic function	Baseline	4.73	4.50	—	—	—
	Post-test	4.57	1.92	364.000	-1.308	0.191
Sexual desire	Baseline	5.10	2.28	—	—	—
	Post-test	6.57	2.12	289.500	-2.396	0.017
Intercourse satisfaction	Baseline	12.20	4.55	—	—	—
	Post-test	15	3.76	236.000	-3.175	0.001
Overall satisfaction	Baseline	5.10	2.29	—	—	—
	Post-test	6.58	2.12	289.500	-2.396	0.017

P value ≤ 0.001) compared with baseline (Table 2).

The baseline overall satisfaction score was 5.10 which increased moderately to 6.58 in the post-test (Figure 5). Further analysis revealed overall sexual satisfaction among participants slightly improved after taking methadone (Z score = -2.396; U score = 289.500; P value ≤ 0.017) compared with baseline (Figure 5).

Discussion

The present study was one of the few Iranian studies on SD among male crystalline heroin abusers on MMT. We have found a prevalence of SD among participants on MMT. This study finding supported other research findings that repeatedly emphasized the prevalence of SD as a common problem among opiate dependent patients who referred for treatment.^{5,12} In the current study, the severity of some aspects of SD among participants decreased moderately after six months of extensive methadone treatment. The mechanism of action of methadone on SD caused by chronic use of crystalline heroin has not been determined; however, we have noted improvements in some aspects of SD among participants. This might be partially a result of the gradual effects of methadone on the sex hormone system during treatment which supports the fact that the constant-state pharmacokinetic properties of methadone result in adaptation and normalization of the endocrine system and body's neuroendocrine function.¹³

We found orgasmic dysfunction was moderately prevalent among participants at baseline. This finding was consistent with the research of Palha and Esteves who studied SD among 101 heroin addicts and found that 60% of men in their study had problems in achieving orgasms.¹⁴ In our study this problem did not improve during MMT and might have been partially due to the number of years orgasmic dysfunction was present in participants. Additional treatment such as androgen replacement therapy might be necessary. In addition, this might have been the result of a variety of psychological and interpersonal factors not reported by participants that needed intervention.

We found low sexual desire and overall satisfaction to be moderately prevalent among participants. This finding supported the study of Palha and Esteves on heroin dependents who found that 75% of men in their study complained of low libido, 71% reported altered sexual arousal and 72% had reduced sexual satisfaction.¹⁴ In the current study these problems slightly improved after participants took methadone.

The long-term side effects of crystalline-heroin dependence on decreased libido were likely to be the core feature of sexual desire and overall satisfaction that possibly required additional therapies such as medications that influence sexual desire and satisfaction or possibly were attributable to the disrupted affective and sexual relationship of participants with their spouses, which required psy-

cho-intervention and marital therapy.

One notable aspect of our study was the improvement in intercourse satisfaction among participants after MMT, which we have found no similar study. This result may be partly due to the low severity of this problem among participants who have been easily influenced by the positive pharmaceutical effects of methadone on sex hormones and is subject to further study.

Several limitations existed in this study. This was across-sectional research without a control group, hormone assay and monthly evaluation by IIEF-15. We used baseline sexual status to compare with post-test results of sexual function among participants. It was difficult to draw a conclusion and direct causal effect between methadone use and improvement in SD from our observations in this pilot study. Additional studies with larger samples and with less dropout rates are necessary.

The traditional, religious atmosphere of Damghan crucially limited the study sample size, therefore this study on SD was a pilot study. Indeed, among a few opiate use treatment clinics in Damghan, no clinic agreed to cooperate with us and many patients refused participation in the study because of traditional negative views on reporting SD in Damghan. Thus the study population was limited to the government operated Cheraghiyan MMT Center and as a result the study findings may not be generalizable to the entire population of opiate-dependent patients who have participated in an MMT program in Damghan. Furthermore, our data was based on self-reporting that lacked objective evidence however we administered the IIEF-15, which is recognized as the gold standard in evaluating SD.¹⁵ We evaluated SD at an appropriate time, in the sixth month, when our extensive interviews with patients showed they frequently reported having adjusted to both the methadone dose and treatment conditions in the MMT program. The present study found no relationship between demographics, drug use history, methadone dose and duration of MMT to improvement in SD which supported the findings of a pioneer study.² Nevertheless, a higher methadone dose and longer duration of MMT in comparison with a low dose and shorter MMT duration in experimental and control groups are subjects for future studies on SD in male patients, particularly when some well-known studies have claimed the reverse effects of methadone treatment on certain aspects of sexual function such as libido and orgasmic function.^{16,17}

SD is an important concern for many patients on MMT and a good opiate use treatment program will need to address this issue. Androgen replacement¹⁸ and pharmacological treatment¹⁹ may be effective approaches for these patients while psycho-intervention for patients and counseling programs for couples may be useful.

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