

# A Study of the Sexual Function, Sleep, and Weight Status of Patients after 6 Months of Methadone Maintenance Treatment

Noushin Parvaresh MD<sup>1</sup>, Abdol Reza Sabahi MD<sup>2</sup>, Shahrzad Mazhari MD<sup>1</sup>, Hoda Gilani MD<sup>3</sup>

## Original Article

### Abstract

**Background:** Methadone is a synthetic opioid and receptor agonist morphine; thus, its consumption has the effects and side effects of opioid. Methadone maintenance treatment (MMT) is used as an alternative treatment for people who are suffering from substance abuse and do not have the ability to withdraw. Despite its benefits, this drug also has side effects. The purpose of this study was to investigate the effects of methadone treatment on sexual function, sleep, and weight after 6 months.

**Methods:** The study subjects consisted of 200 patients who had referred to the Methadone Clinic of Shahid Beheshti Training Hospital, Kerman, Iran, during a 6-month period and were treated using MMT. Data collection tools consisted of the demographic questionnaire, Pittsburgh sleep quality index (PSQI), and Arizona sexual experience scale (ASEX). The questionnaires were completed by the participants before and 6 months after the treatment.

**Findings:** The results of this study showed that methadone consumption has significant effects on sexual dysfunction, sleep disorders, and weight gain.

**Conclusion:** The consideration of the side effects of MMT can result in consumers' commitment to the treatment.

**Keywords:** Methadone maintenance treatment (MMT), Sleep disorders, Sexual dysfunction

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1- Associate Professor, Neuroscience Research Center, Kerman University of Medical Sciences, Kerman, Iran

2- Assistant Professor, Neuroscience Research Center, Kerman University of Medical Sciences, Kerman, Iran

3- General Practitioner, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

Correspondence to: Abdol Reza Sabahi MD, Email: abdsaba@kmu.ac.ir

## Introduction

Methadone is a synthetic narcotic substance and a mu receptor agonist. Its intake causes satisfaction and has an analgesic effect and other effects of morphine-like substances.<sup>1</sup> Due to its 2 features of long half-life and high oral absorption, methadone is used as an alternative treatment to prevent or reduce withdrawal symptoms in the treatment of drug abuse.<sup>2</sup> Methadone maintenance treatment (MMT) is used in addicts who are not able to maintain a constant abstinence from drugs. Using this method of treatment the craving for drugs is resolved in these patients. However, psychological dependence to heroin can be gradually overcome.<sup>3</sup> Refusal of injection and the prevention of risky behaviors, and returning to work, community, and family is a major goal of public health and is expected with MMT.<sup>4</sup> The purpose of this study was to investigate the effects of methadone treatment on sexual function, sleep, and weight after 6 months of use.

MMT is a continuity of a kind of addiction, and despite its proven success in many countries, its careless and irresponsible prescription can cause serious danger. Methadone has a low therapeutic index, meaning that the medication dose required for treatment is very close to the toxic dose. In particular, its use in combination with other drugs has potential risks.<sup>5</sup>

In addition, MMT can have some side effects. Drowsiness, opioid craving, constipation, dental problems, weight gain, sleep disturbance, decreased libido, nausea and vomiting, irregular menstruation, excessive sweating, dizziness, blurred consciousness, rash, loss of appetite, irritability, and weakness are some side effects of methadone.<sup>3</sup> Some of these side effects, like nausea and drowsiness, abate within the first weeks of treatment, but some side effects, such as constipation, excessive sweating, and reduced libido or sexual dysfunction, persist for months.<sup>6</sup>

Sexual disorders are major barriers to commitment to continuing maintenance treatment with opioid pharmaceutical compounds especially in patients who are treated with high doses or for prolonged periods.<sup>7</sup> In his research, Kreek concluded that in patients undergoing MMT, the side effects of sweating, constipation, sexual dysfunction, and sleep and appetite

disorders may emerge or persist from 6 months to 3 years after treatment.<sup>8</sup>

Babakhanian et al., in their study on men under MMT, found that after 6 months of treatment patients showed moderate improvement in erectile function, complete improvement regarding sexual intercourse, and partial improvement regarding sexual desire, but no improvement in orgasmic function.<sup>9</sup> The results of the study by Ramazanzadeh et al. in Sanandaj, Iran, showed a significant improvement in patients' marital satisfaction after 7 months of treatment with methadone.<sup>10</sup>

The study by Sadeghpour et al. on patients undergoing MMT in Tehran, Iran, showed that patients who had been treated for more than 6 months had more satisfactory quality of life and sleep compared to those who were new to the treatment, or had been previously treated and had relapsed.<sup>11</sup> The study by Peles et al. conducted on 23 patients undergoing MMT showed no significant change regarding sleep during 6-12 months of follow-up, but weight gain in a small group of patients increased sleep apnea.<sup>12</sup> Mysels et al. Performed a comparative study on methadone and naltrexone. Methadone is a mu receptor agonist which causes weight gain and naltrexone is a mu receptor agonist which causes weight loss; however, no significant differences were observed between the two and in comparison to the baseline condition.<sup>13</sup>

Due to the expansion of MMT centers, the consideration of the complications of MMT can be effective in the increasing or continuation of MMT in order to achieve benefits. In the present study, the prevalence of sexual dysfunction, and sleep and appetite disorders were investigated on patients who referred to the Methadone Clinic of Shahid Beheshti Training Hospital, Kerman, Iran. The results of this study, in addition to clarifying the aspects or effects of this treatment, could be a prelude to future interventions to reduce morbidity and increase patients' continuation of treatment, and thus, the improvement of their quality of life and public health.

## Methods

This was a cross-sectional study. The study population consisted of all 200 patients who had undergone MMT within a 6 month period in 2013 at the Shahid Beheshti Training Hospital in

Kerman. The subjects were selected via convenience sampling method. During admission, the demographic questionnaire, Pittsburgh sleep quality index (PSQI), and Arizona sexual experience scale (ASEX) were completed for all participants. Moreover, the patients were weighed at the beginning of treatment. The study was explained to them and they were reassured regarding the confidentiality of their information. After 6 months, the questionnaires were completed again by the patients. They were also asked about night sweats and lack of appetite.

Exclusion criteria included inability to understand the questions, history of hospitalization at a psychiatric hospital except for withdrawal, diabetes, epilepsy, high blood pressure and use of anti-hypertensive drugs, and use of antidepressants, tranquilizers, anticholinergic drugs, and antipsychotics. The Persian version of the PSQI had a 0.77 Cronbach's alpha coefficient, score range of 0-21 and cut-off point of 5.<sup>11,14</sup> The Persian translation of the ASEX had a Cronbach's alpha of 9%, a good reliability, and a correlation coefficient of 0.80.<sup>15</sup> Data analysis was performed using SPSS software (version 20, SPSS Inc., Chicago, IL, USA) and after determining the descriptive measures of central tendency and dispersion. Repeated measure was used to investigate the effects of methadone on sexual function, sleep, and weight over time and the impact of the gender factor.

## Results

In this study, 200 patients were evaluated. Due to the withdrawal of one case, 199 patients were analyzed, including 180 male patients (90.5%) and 19 female patients (9.5%). Among the participants, 39 were single (19.6%), 158 were married (79.4%), and 2 were divorced (1.0%). In terms of education, 11 patients were illiterate (5.5%), 38 patients had primary education (19.1%), 79 patients were under diploma (39.7%), 40 patients had diploma (20.1%), and 31 patients had university education (15.6%). Table 1 shows the demographic characteristics of the participants. The addiction status of the participants was as follows: 9 patients had heroin addiction (4.5%), 4 patients had glass addiction (2.0%), 33 patients had opium sap addiction (16.6%), 1 patient had crystal addiction (0.5%), 13 patients had opium addiction (6.6%), and 139 patients had addiction to two or more substances (69.8%). The minimum dose of methadone was 30 mg and maximum dose was 140 mg.

Night sweating was mentioned by 29 patients (14.6%) and lack of appetite in 26 cases (13.1%). The results showed that methadone had a significant effect on sexual function of the consumers ( $P < 0.001$ ). Therefore, methadone caused sexual dysfunction in the patients and this effect was not significantly different in males and females ( $P = 0.100$ ) (Table 1). Table 2 illustrates the effect of methadone on each sexual stage.

**Table 1.** Mean changes of sexual function, sleep, and weight after 6 months of MMT (methadone maintenance treatment)

Variable	Gender	Number	Baseline mean	Mean after 6 months of treatment	P
Sexual dysfunction	Male	180	16.45	18.33	< 0.001
	Female	19	17.11	17.79	
	Total	199	16.51	18.28	
Sleep disorder	Male	180	7.58	7.94	< 0.001
	Female	19	7.00	7.95	
	Total	199	7.52	7.94	
Weight change	Male	180	63.23	65.13	< 0.001
	Female	19	59.21	61.05	
	Total	199	62.84	64.74	

**Table 2.** Mean changes of the ASEX (Arizona sexual experience scale) scores with regards to sexual stages after 6 months of MMT (Methadone maintenance treatment)

Sexual stages	Before MMT	After MMT
	Mean $\pm$ SD	Mean $\pm$ SD
Sexual desire	3.2 $\pm$ 1.01	3.7 $\pm$ 1.0
Excitement	6.9 $\pm$ 1.9	7.1 $\pm$ 1.9
Orgasm	6.5 $\pm$ 1.9	7.5 $\pm$ 1.8

MMT: Methadone maintenance treatment; SD: Standard deviation

## Discussion

This study was conducted on 199 patients who underwent MMT. The incidence of sexual dysfunction and sleep disorders had significantly increased with methadone ( $P < 0.001$ ). Their weight had also significantly increased after receiving MMT ( $P < 0.001$ ). These changes were not associated with the gender of the patients. The complications of the medications were due to lack of commitment to the treatment. Sexual dysfunction was a barrier to commitment to continuing maintenance therapy with opioid compounds.<sup>7</sup> Some side effects abate within the first weeks of treatment which is a sign of physiological adaptations to the effects of the medication. Some of the side effects, such as constipation, excessive sweating, and sexual dysfunction, persisted for months during MMT.<sup>6</sup>

The results of the present study were consistent with that of other studies on MMT. In the study by Kreek, the rate of sexual dysfunction in the participants was similar to that in the general population, but the rate of orgasmic disorders was higher which may respond to the reduction of dose.<sup>8</sup> In the study by Kheirabadi et al., the majority of the subjects in the study (94.8%) had sexual dysfunction, ranging from mild to severe, and this had a significant relationship with prolactin blood levels.<sup>16</sup> In the study by Roshanpajhu et al.<sup>17</sup> in Tehran a reduction in sexual desire was also observed which was consistent with the present study. Nevertheless, the results of this study were inconsistent with some previous studies. Including the study by Babakhanian et al. which showed a moderate improvement in erectile function and sexual function after maintenance treatment.<sup>9</sup>

Furthermore, the results of this study were inconsistent with that of Ramazanzadeh et al. regarding improvement in marital satisfaction after treatment, which could be related to differences in study methods.<sup>10</sup> The results of this study were in consistent with that of Peles et al. regarding sleep quality of patients treated with methadone maintenance.<sup>12</sup> The strength of the present study

was its larger sample size compared to the mentioned study. Weight gain was observed in a small number of patients in the study by Peles et al.<sup>6</sup> The present study results regarding weight changes were also different from Mysels et al. study.<sup>13</sup> That study had a smaller sample size compared to the present study. The social life improvement of the patients was possibly the reason for their weight gain as a positive factor during MMT in the present study.<sup>13</sup>

The side effects of MMT, in comparison to its public health benefits and focus on reduction of harm, are justifiable. Furthermore, the disagreement between the results of the present study and other studies may be due to the different variables addressed in different studies, including quality of life and improving family relationships, which may affect the outcome of the research.

Addiction has different aspects, and thus, extensive research is necessary regarding various factors and comparative methods in the normal population and people who continue substance abuse. Lack of available studies on the effects of methadone, its growing use, and MMT justify the need for further studies in this field.

## Conclusion

This study showed that, despite the benefits of methadone in reducing damage, and hence, promoting health, it can have complications such as sleep disorders, sexual dysfunction, and weight gain which can create obstacles for its use. Paying attention to these side effects and trying to control them can be effective in the consumers' commitment to the treatment.

## Conflict of Interests

The Authors have no conflict of interest.

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## بررسی تغییر عملکرد جنسی، وضعیت خواب و وزن بیماران تحت درمان نگهدارنده با متادون پس از شش ماه مصرف

دکتر نوشین پرورش<sup>۱</sup>، دکتر عبدالرضا صباحی<sup>۲</sup>، دکتر شهرزاد مظهری<sup>۱</sup>، دکتر هدی گیلانی<sup>۳</sup>

### مقاله پژوهشی

### چکیده

**مقدمه:** متادون یک داروی مخدر صنعتی و آگونیست گیرنده‌های مورفینی است، بنابراین با مصرف آن آثار و عوارض مصرف مواد شبه مخدر ایجاد می‌گردد. درمان نگهدارنده با متادون (Methadone maintenance treatment یا MMT) به عنوان جایگزین برای افرادی که به سوء مصرف مواد مبتلا بوده‌اند و امکان ترک برای آن‌ها وجود ندارد، مورد استفاده قرار می‌گیرد. این دارو با وجود فواید بسیار، دارای عوارضی نیز می‌باشد. هدف از این مطالعه، تأثیر مصرف متادون بر عملکرد جنسی، خواب و وزن افراد پس از شش ماه مصرف بود.

**روش‌ها:** در تحقیق حاضر ۲۰۰ نفر از افراد تحت درمان نگهدارنده با متادون که به درمانگاه متادون بیمارستان آموزشی-درمانی شهید بهشتی کرمان مراجعه کرده بودند، در یک دوره شش ماهه مورد بررسی قرار گرفتند. ابزار جمع‌آوری اطلاعات شامل پرسش‌نامه‌های دموگرافیک، شاخص کیفیت خواب Pittsburgh و اختلال جنسی Arizona بود که توسط شرکت کنندگان در ابتدا و شش ماه پس از درمان تکمیل گردید.

**یافته‌ها:** یافته‌های مطالعه حاضر نشان داد که مصرف متادون به صورت معنی‌داری سبب بروز اختلال در عملکرد جنسی، اختلال در خواب و افزایش وزن در مصرف کنندگان گردید.

**نتیجه‌گیری:** عوارض مصرف در درمان نگهدارنده با متادون باید به صورت جدی در نظر گرفته شود و توجه به این عوارض ممکن است سبب پایبندی بیشتر مصرف کنندگان به درمان شود.

**واژگان کلیدی:** درمان نگهدارنده با متادون، اختلال خواب، اختلال جنسی

**ارجاع:** پرورش نوشین، صباحی عبدالرضا، مظهری شهرزاد، گیلانی هدی. بررسی تغییر عملکرد جنسی، وضعیت خواب و وزن بیماران تحت درمان نگهدارنده با متادون پس از شش ماه مصرف. مجله اعتیاد و سلامت ۱۳۹۴؛ ۷ (۱-۲): ۹-۲۴.

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Email: abdsaba@kmu.ac.ir

۱- دانشیار، مرکز تحقیقات علوم اعصاب، دانشگاه علوم پزشکی کرمان، کرمان، ایران  
 ۲- استادیار، مرکز تحقیقات علوم اعصاب، دانشگاه علوم پزشکی کرمان، کرمان، ایران  
 ۳- پزشک عمومی، دانشکده پزشکی، دانشگاه علوم پزشکی کرمان، کرمان، ایران  
**نویسنده مسؤول:** دکتر عبدالرضا صباحی