Adherence to Methadone Maintenance Treatment and its Predictors in Southeast of Iran

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Abstract

Background & Objectives: Adherence to Methadone Maintenance Treatment (MMT) is one of the most important challenges during treatment process. The positive effects of MMT will be established in case of appropriate adherence. Present study aimed to investigate MMT adherence and its predictors among addicts referred to rehab centers in Kerman province, south east of Iran.

Methods: This research was carried out on 334 patients referred to rehab centers in Kerman province during 2017. Participants were selected through multistage random sampling method. Data collected using a questionnaire contained demographic data, addiction- related data and Persian version of MMT adherence questionnaire which assessed the adherence during the previous 3 and 30 days. Data analyzed by SPSS 19.

Results: The mean age of the participants was 39.14 ± 10.93 years and most of them were male (85%). Seventy-three (21.8%) adhered to their treatment, 239 (71.6%) were nonadherent, and 22 (6.6%) highly nonadherent. Older age at the onset of addiction, longer duration of substance abuse, and no history of previous MMT were significant predictor for higher adherence.

Interpretation & Conclusion: our study revealed about on fifth of addicts referred to rehab centers had good adherence to MMT. It is recommended the rehab centers to determine the factors associated with low adherence and use effective interventions to reduce them.

Keywords: Methadone; Medication adherence; Opioid abuse; Opiate Substitution Treatment; Iran

Introduction

Methadone maintenance therapy is a well-known approach for treatment of opioid dependence [1]. It has been proven this strategy reduces drug-related troubles (with family, work and society), high risk behaviors and transmission of blood born infections and improves addict's quality of life and survival [2-5]. Adherence to MMT is one of the most important challenges during treatment process. According to WHO report, "Adherence is the result of a complex interaction of the social environment, patient, and healthcare professionals" [6]. All the proven positive effects of MMT occur when the patient has long-term adherence to treatment [7]. As shown in previous studies, different factors affect the adherence to MMT. Wei and colleagues classified the factors affecting adherence to treatment into three main groups" patient related, clinic related and medication dose". They found older age, those who live with the family, being employed, having a long history of abuse and high therapeutic doses of methadone (>60 mg/d) had relatively higher retention rate [8]. In a literature review, Zhou and Zhuang revealed, in addition to the above factors, marital status, being female, high education level and having religious belief predict retention to MMT in China [9]. Sharma and colleagues found among injecting drugs abusers in

Nepal, having previous history of relapse, poor knowledge about MMT and difficulty in access to rehab centers were associated with poor adherence [10]. Amato and colleagues revealed using appropriate doses of methadone is the most effective predictor for retaining in the substitutive treatment [11]. Given that the positive effects of MMT will be established in case of appropriate adherence [7], so it is critical that rehab centers determine the predictors of MMT adherence among their clients. Present study aimed to investigate MMT adherence and its predictors among addicts referred to rehab centers in Kerman province, south east of Iran.

Materials & Methods

This cross-sectional study carried out on 334 patients referred to the rehab centers in Sirjan (The second largest county in Kerman province, south east of Iran) during 2017. Participants were selected through the multistage random sampling method. Ten of the 24 rehab centers were selected randomly and in each centers 33 clients were selected using convenient sampling method. The study was approved by the research review board at Kerman University of Medical Sciences

(Ethic code: 96000040). Inclusion criteria were referring to the selected center at the time of the study and informed consent to participate. Exclusion criteria was the participants with more than 10% unanswered questions. Data collected using a two-section self-administered questionnaire. First section contained demographic data such as age, gender, marital and job status and household income. Data related to addiction including the type of substance was used prior to the admission, method and duration of substance abuse and the number of previous MMT also collected. Second part was the Persian version of MMT adherence questionnaire which used in a similar study [12]. The instrument has nine questions regarding the adherence during the previous 3 and 30 days. Three-point scale was used for the responses on items 1 to 5 and 9(0: Never/No/ scrupulously, 1: Often or Sometimes/Yes/ Almost respected all the doses or often changed the dose and 2: Very often or Always/ Never respected or completely stopped the treatment). Responses on item 6 to 8 was as Yes/No (0: No and 1: Yes). If all items get zero, it

was considered as adherent, one or more items with score of 1 but no with score of 2 as non-adherent, and one or more items with score 2 as highly nonadherent. The original version of the instrument was translated into Persian by two expert separately. By comparing the text of two translations, the Persian version was prepared and culturally adapted. This Persian version was back translated into English by a translator who was not familiar with the content of the original questionnaire. Face and content validity of the instrument confirmed by a panel of experts. It reliability determined in a pilot study using internal consistency by Alfa Cronbach coefficient as 0.96. Our study approved by the Ethics Committee of Kerman University of Medical Sciences (Code: 96000040). The questionnaires were completed anonymously and voluntarily. Ten minutes required to complete the questionnaire. The participants were assured the data would be used only for research purposes. Data analyzed by SPSS 19 using T test and chi square and logistic regression

Results

Table 1: Demographic data of the participants admitted to rehab centers.

Variables		Num (%)	Variables		Num (%)
Gender	Male	284(85)	Job	Employed	240(71.9)
	Female	47(14.1)		Student, university student, soldier	4(1.2)
	Unknown	3(1.9)		Housewife	38(9.9)
Marital status	Single	60(18)		Unearned income	8(2.4)
	Married	253(75.7)		Retired	17(5.1)
	Divorced	13(3.9)		Unemployed	26(7.8)
	Widow/widower	8(2.4)		Unknown	6(1.8)
Residence status	House	319(95.5)	Source of referral	One's own	213(63.8)
	shelter	6(1.8)		Family	68(20.4)
	Without shelter	4(1.2)			
	Unknown	5(1.5)		One's own& family	13(3.9)
Living conditions	With family	305(91.3)		Community rehab center	8(2.4)
	With friends	14(4.2)			
	Alone	10(3)		Prison rehab center	2(0.6)
	Unknown	3(0.9)			
Monthly household income(USD)	Under 250	157(47)		Community rehab center& one's own	2(0.6)
	250-500	116(34.6)			
	≥500	21(6.3)		Community rehab center &family	4(1.20
	Unknown	40(12.1)		Unknown	24(7.2)

A total of 334 questionnaires were completed. The mean and standard deviation of participants' age was 39.14 ± 10.93 years with minimum and maximum of 15 and 82 years, respectively. Two hundred and eighty four (85%) were male and 253 (75.7%) were married (Table 1). Seventy-three (21.8%) adhered to their treatment, 239 (71.6%) were nonadherent, and 22 (6.6%) highly nonadherent. The mean and standard deviation of age was 42.64 ± 11.97 and 38.13 ± 10.43 years, respectively in the adherent and non/highly nonadherent clients which was statistically

significant (P = 0.002). The mean and standard deviation of the age of starting addiction was 27.14 ± 8.48 and 23.00 ± 6.47 years, respectively in the adherent and non/highly nonadherent clients which was statistically significant (P = 0.001). The substance abuse duration was not statistically different between the groups (P = 0.17). The frequency of MMT adherence according demographic and addiction data compared through chi square and fisher exact tests. Among the demographic characteristics, only the monthly household income was correlated to MMT

adherence. The higher the income level, the more adherence to treatment (P=0.001) Among addiction characteristics, the type of the substance used prior to admission, the number of previous MMT and history of injection drug use (IDU) and psychiatric diseases had statistically significant correlation with the adherence. Participants with history of using sedative medications and those with history of IDU and psychiatric diseases had lower adherence to MMT. (P=0.004,0.04,). Participants without history of previous MMT had higher adherence (P= 0.001).In logistic regression, the age of the onset of addiction, duration of use, and history of previous MMT significantly predict the adherence to treatment. Accordingly, for increasing every one year to the age of the onset, the odds of adherence was 1.1 times. With every increase of one year to the duration of use, the odds of adherence was 1.03 times. The odds of the adherence was 4.2 times in those who had no history of previous MMT (Table 2).

Table 2: Association between selected characteristics and adherence to MMT in Logistic regression.

Characteristic	Adjusted OR	95% confidence intervals	P
The age of onset	1.1	1.03-1.12	0.001
Duration of substance abuse	1.03	1.01-1.07	0.03
History of previous MMT			<0.001
Yes	1	--	
No	4.20	2.16-8.16	

Discussion

Our study revealed about a fifth of addicts referred to rehab centers in Sirjan had adherence to MMT which seems to be lower than similar studies. Sharma et al found nearly three quarters of injecting drug users in Nepal had good adherence to MMT. (10) Perrine Roux et al showed among those who referred for MMT in France, at the end of the first year, only 35.2 percent wer adherent [12]. Jiang H found MMT adherence rate was 58.11% among HIV-positive clients admitted for MMT in China [13]. Wang et al revealed among addicts attending five major MMT clinics in Dehong Prefecture, 10.4% and 12.9% were only positive for morphine and methamphetamine respectively, and 9.2% for both [14]. Almost in all previous studies have been conducted in Iran, MMT retention not MMT adherence has been investigated. Pashaei and colleagues in a Survival Analysis revealed 43 percent of patient referred for MMT had relapse and the median retention time was about 6 months [15]. According to the above studies, it seems MMT clinics for improving the effectiveness of treatment need to look for non-pharmacological interventions to increase adherence to treatment. Previous literatures revealed motivational interviewing, necessary skills training increases the probability of the retention in long-term MMT programs [1-16]. The need for these interventions in our

region, that the frequency of adherence to treatment is lower than other studies, is felt more. In this case, we can expect positive results from the treatment and the cost effectiveness of it. As a first step, it was essential to identify the factors that led to non-adherence. Our study revealed, among demographic data, older age, higher income and starting addiction at an older age were associated with higher adherence. Perrine Roux revealed lower socioeconomic status is a risk factor for non-adherence so these patients need more tailored care [12]. We found, like Shen et al. [17], no significant difference in adherence according gender while other studies indicated female patients have lower adherence to MMT. It seems that women, because of some special obstacles have less willingness and incentive to adhere to treatment [12-18]. Therefore, it is necessary to study more specifically with regard of women's adherence in our region. We found patients with history of previous MMT are more likely to be non-adherent which was consistence with previous studies [10] Lower adherence among this group may be due to using of inadequate dose of methadone. Similar studies in this regard found adequate dose of methadone is an important predictor for good adherence [8-12]. For better efficacy of treatment, our physicians should consider the adequacy of methadone dosage, especially in patients with history of multiple previous treatments. In our study, patients with history of psychiatric diseases had lower adherence to MMT which was compatible with similar studies [15-19]. Chalana et al. [15] found after inpatient opioid detoxification, patients with higher score on the depression scale had higher rate of relapse. Therefore, more accessible mental disorder screening services for timely intervention recommended. In present study using sedative medications was associated with lower adherence to MMT. Previous study in Iran also found being poly substance dependent and using stimulant drugs are risk factor for shorter retention time. Other similar studies show the same result.(12) Therefore, special care and careful follow up are essential during the treatment of these patients. Unlike our results, Wei, and colleagues revealed drug abuse by injection and needle sharing were associated with relatively higher retention rat [8]. These high risk behaviors can eliminate the benefits of the treatment and its cost-effectiveness, so, the patients with a history of any of these behaviors require careful evaluation and more accurate follow up. Our study was a cross-sectional one and was limited to one district of Kerman province, therefore, its generalizability must be done with caution. Another limitation was that the data was self-reported, which does not necessarily yield precise evidence of real situation of the adherence to MMT. But it was probably the first study that assessed MMT adherence. Almost in all previous studies have been conducted in Iran, MMT retention not MMT adherence has been investigated.

Conclusion

Our study revealed about on fifth of addicts referred to rehab centers in Sirjan had adherence to MMT which seems to be lower than similar studies.it is necessary for the rehab centers

to determine the factors associated with low adherence and, accordingly, use effective interventions to reduce these factors.

Acknowledgment

References

1. Navidian A, Kermansaravi F, Tabas EE, Saeedinezhad (2016) Efficacy of Group Motivational Interviewing in the Degree of Drug Craving in the Addicts Under the Methadone Maintenance Treatment (MMT) in South East of Iran. Arch Psychiatry Nurs 30(2): 144-149.

2. Noori E, Ahmadipour H (2014) High Risk Behaviors and Related Factors Among Addicts Admitted to Rehabilitation Centers in Southern Kerman. Int J High Risk Behav Addict 6(1): e30005.

3. Esteban J, Gimeno C, Barril J, Aragones A, Climent JM, et al. (2003) Survival study of opioid addicts in relation to its adherence to methadone maintenance treatment. Drug Alcohol Depend 70(2): 193-200.

4. Keshtkaran A, Mirahmadizadeh A, Heidari A, Javanbakht M (2014) Cost-effectiveness of Methadone Maintenance Treatment in Prevention of HIV Among Drug Users in Shiraz, South of Iran. Iran Red Crescent Med J 16(1): e7801.

5. Zamani S, Farnia M, Tavakoli S, Gholizadeh M, Nazari M, et al. (2010) A qualitative inquiry into ethadone maintenance treatment for opioid-dependent prisoners in Tehran, Iran. Int J Drug Policy 21(3): 167-172.

6. Leiva A, Aguilo A, Fajo pascual M, Moreno L, Martin MC, et al. (2014) Efficacy of a brief multifactorial adherence-based intervention in reducing blood pressure: a randomized clinical trial. Patient Prefer Adherence 8: 1683-1690.

7. Sanders JJ, Roose RJ, Lubrano MC, Lucan SC (2013) Meaning and methadone: patient perceptions of methadone dose and a model to promote adherence to maintenance treatment. J Addict Med 7(5): 307-313.

8. Wei X, Wang L, Wang X, Li J, Li H, et al. (2013) A Study of 6-Year Retention in Methadone Maintenance Treatment Among Opioid-Dependent Patients in Xi'an. J addict Med 7(5): 342-348.

9. Zhou K, Zhuang G (2014) Retention in methadone maintenance treatment in mainland China, 2004-2012: a literature review. Addict Behav 39(1): 22-29.

10. Sharma V, Chamroonswasdi K, Srisorrachatr S (2016) Rate of adherence to and factors associated with Methadone Maintenance Treatment Program (MMTP) compliance among injecting drugs use patients in Nepal. Southeast Asian J Trop Med Public Health 47(2): 287-298.

11. Amato L, Davoli M, Perucci CA, Ferri M, Faggiano F, et al. (2005) An overview of systematic reviews of the effectiveness of opiate maintenance therapies: available evidence to inform clinical practice and research. J Subst Abuse Treat 28(4): 321-329.

12. Roux P, Lions C, Michel L, Cohen J, Mora M, et al. (2014) Predictors of non-adherence to methadone maintenance treatment in opioid-dependent individuals: implications for clinicians. C Curr Pharm Des 20(25): 4097-105.

13. Jiang H, Cao X, Wang C, Luo W, Li J, et al. (2014) Study on the adherence and related determinants among HIV-positive clients under methadone maintenance treatment in Dali, Yunnan province from 2005 to 2013, 35(3): 255-258.

14. Wang R, Ding Y, Bai H, Duan S, Ye R, et al. (2015) Illicit Heroin and Methamphetamine Use among Methadone Maintenance Treatment Patients in Dehong Prefecture of Yunnan Province, China, 10(7): e0133431.

15. Pashaei T, Moeeni M, Roshanaei Moghdam B, Heydari H, Turner NE, et al. (2014) Predictors of treatment retention in a major methadone maintenance treatment program in iran: a survival analysis. J Res Health Sci 14(4): 291-295.

16. Alam mehrjerdi Z, Abdollahi M (2015) The Persian methamphetamine use in methadone treatment in Iran: implication for prevention and treatment in an upper-middle income country. DARU J 23: 51.

17. Shen J, Wang M, Wang X, Zhang G, Guo J, et al. (2016) Predictors of Poor Adherence to Methadone Maintenance Treatment in Yunnan Province, China. J Addict Med 10(1): 40-45.

18. Campbell CI, Alexander JA, Lemak CH. (2009) Organizational determinants of outpatient substance abuse treatment duration in women. J Subst Abuse Treat 37(1): 64-72.

19. Chalana H, Kundal T, Malhari AS (2017) Depression as a Risk Factor for Relapse After Inpatient Opioid Detoxification: 1-Year Follow-Up Study Int J High Risk Behav Addict 6(3): e59543