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Retention and Relapse in Methadone Maintenance Treatment: A Descriptive Analytical Study

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Abstract

Background: Despite the considerable efforts made in Iran to treat people with addiction, relapse is still common. This study was designed to determine retention and relapse rates and related factors at Yasin Methadone Maintenance Treatment Center.

Patients and Methods: In this study, retention rate, relapse rate, and related factors were examined in 74 cases using a descriptive-analytical method. Information about 20 variables were gathered from patient medical records using an information form and a checklist and data was analyzed by the chi-square, Fisher's exact, and Mann-Whitney tests using SPSS software.

Findings: The retention and relapse rates were 24.3% and 75.7%, respectively. Only three factors showed a significant difference ($p<0.50$) between the retention and relapse groups: (1) financial status, (2) motivation for treatment, and (3) cooperation during counseling ($p=0.04$, $p=0.001$, $p=0.026$, respectively). No significant differences were observed between groups for the other factors.

Conclusion: Because it is clear that financial status, motivation, and counseling can affect retention rate, it is recommended to study the effect of these factors on retention using methods such as a randomized clinical trial.

Keywords: addiction, treatment, retention, relapse, methadone

1. Introduction

Drug addiction is a serious personal and social problem that can threaten the health of addicts as well as public health. Physical, mental, economic, cultural, and political complications are only some of the problems that impose a heavy cost on society. Addiction is a physical, psychological, and social disease with individual/interpersonal, social, and environmental components. Although much effort has been focused on the control, treatment, and alleviation of addiction, none have been fully successful because there are a variety of factors, such as psychological dependence, which may cause relapse into addiction. As a result, addiction continues in a vicious cycle. The multidimensional nature of drug dependency and its concurrence with other disorders (personality disorders, anxiety, depression) are potential obstacles to successful treatment of drug-dependent individuals (Grant, 1990; Hasin et al., 2002).

Much attention has been focused on the psychological treatment of depression as associated with substance abuse which indicates that treatment of mood disorders can reduce the substance abuse rate (Quello et al., 2005). Some studies have suggested that addiction is a form of self-treatment in which the addict abuses drugs to address problems such as depression (Gollnisch, 1997). Substance abuse in more advanced stages (especially addiction to heroin) is associated with increased dependence. In such cases, despite the types of treatment used,

many heroin-dependent individuals cannot permanently abstain from drug use. In the absence of maintenance treatment, they devote their entire lives to acquiring these substances (Vazirian, Mostashari, & Mohsenifar, 2006).

A review of three decades of research papers on addiction has shown that it is the most common psychiatric problem after mood disorders (Rahimi-Movaghar et al., 1998). Studies also show that addiction increases the risk of HIV infection (Fauci, 2008). From 1986 to 2006, about 64% of the new HIV cases in Iran were acquired through intravenous drug use (Rahimi-Movaghar et al., 2012). Hepatitis B and C also occur at higher rates in intravenous drug users than in the non-addicted population (Amin-Esmaeili et al., 2012). Currently, drug-related crime forms the largest percentage of crime in Iran and 48% of prisoners were arrested in connection with drugs (Hoseini et al., 2010). Because there are several factors involved in addiction, if only one factor is taken into account in treatment, the probability of treatment success will greatly decrease (Nourozi et al., 2005).

One of the most effective method approaches to the treatment of addiction is maintenance methadone therapy (MMT), which has been used in Iran for the past 11 years (Yarmohammadi-Vasel et al., 2014). At MMT centers, those seeking treatment complete admission forms and undergo a clinical examination. The physician then gathers information in accordance with the existing protocols and determines the therapeutic dose of methadone. There are three stages of methadone treatment: Induction, maintenance and tapering off and detoxification (Vazirian et al., 2006). Studies conducted by the National Center for Addiction Studies and the Iranian Drug Control Headquarters indicate that, despite treatment, a large percentage of people referred to the centers relapse within one year.

Continued failure is a contradiction of the policies of the Ministry of Health, Treatment and Medical Education, and the Iranian Drug Control Headquarters on reducing crime and increasing societal safety. It is necessary to put more effort into solving this social problem, identifying the factors affecting relapse, and methods which can potentially control these factors. Research on variables affecting relapse (age, gender, treatment cost, motivation for withdrawal, type of substance used, and method of ingestion) can help determine the main factors and find correct solutions (Sadeghi et al., 2012). The focus of the present study is the factors contributing to relapse. This study determined the retention and relapse rate for MMT treatment of addiction and identification of associated factors at Yasin MMT center.

2. Methods

This was a descriptive-analytical study performed in 2012 to determine the causes of relapse after treatment for drug addiction at outpatient services. The population was composed of 74 patients (71 men and 3 women) referred to Yasin MMT Center in Karaj, Iran. They were monitored for at least nine months. Information in the medical records of all individuals was collected using the census method and a checklist tool. Because all records were complete, there was no need for face-to-face interviews or to exclude any medical record from the study. Patients with concurrent psychological disorders received psychological intervention and were referred to a psychiatrist as needed. To maintain ethical standards for the study, the records were archived confidentially and all data was reported anonymously. This study was conducted in partial fulfillment of a MPH degree at Shahid Beheshti University of Medical Sciences in Tehran, Iran.

The variables examined were age, gender, occupation, marital status, education, type of addiction, duration of addiction, addiction severity, type of substance use, concurrent psychiatric disorders, financial status (ability to meet treatment expenses), cooperation in counseling sessions, motivation, the use of more than one substance (e.g., heroin and crack), duration of previous treatment, number of relapses, reasons for current treatment, and longest period of previous treatment.

Cases that had continued treatment for longer than nine months were categorized as the retention group and those who had withdrawn from methadone therapy and relapsed into substance abuse were categorized as the relapse group. The variables in both groups were compared and the results were compared using the chi-square, Fisher's exact, and Mann-Whitney tests.

3. Results

The results of the study are shown in Tables 1, 2 and 3. The study population comprised 74 cases, 18 (24.3%) of whom remained under treatment for longer than nine months (retention group), and 56 (75.7%) who had discontinued treatment (relapse group). The ages of the patients were 18 to 70 years of age with a mean age of 34.6 years. The patients in the retention group were 20 to 48 years of age with a mean age of 32.4 years. The patients in the relapse group were 18 to 70 years of age with a mean age of 34.4 years. No significant difference in age was observed between groups ($p=0.594$).

Table 1. General description of all subjects (quality variables)

No.	Variable	Frequency	Percentage (%)
1	Sex:		
	Male	71	95.9
	Female	3	4.1
2	Marital Status		
	Married	50	67.6
	Single	22	29.7
	Divorce	2	2.7
3	Jobs:		
	Employed	52	70.3
	Unemployed	22	29.7
4	Education:		
	Illiterate	3	4.1
	Primary	17	23
	Guidance	22	29.7
	High school	29	39.2
	Bachelor	3	4.1
5	Type of addiction:		
	Crack	38	51.3
	Opium	34	45.9
	Herbal capsule	2	2.70
6	How to use		
	Oral	20	27
	Smoking	48	64.9
	Injection	4	5.4
	Oral-smoking	2	2.7
7	Concurrent psychiatric disorders:		
	Yes	9	12.2
	No	65	87.8
8	Motivation for treatment		
	High	39	52.7
	Low	31	41.9
	Medium	4	5.4
9	Financial status:		
	Good	6	8.1
	Medium	27	36.5
	Low	40	54.1
	Missing	1	1.4
10	The use of more than one Substance:		
	Yes	43	58.1
	No	31	41.9
11	Reasons for discontinuation of treatment (relapse):		
	Temptation	64	86.5
	Financial problems	10	13.5
12	Status of cooperation in consultation during treatment:		
	Adequacy	43	58.1
	Inadequacy	31	41.9

No.	Variable	Frequency	Percentage (%)
13	Reasons for admission:		
	Being tired of addiction	27	36.5
	Impotence	2	2.7
	Family pressure	17	23
	Mental problems caused by drug	22	29.7
	Job strain	3	4.1
	Marriage	2	2.7
	Treatment	1	1.4
14	Latest status of treatment:		
	Retention	18	24.3
	Relapse	56	75.7
	Sum	74	100

Table 2. General description of all subjects (quantitative variables)

Row	Name of quantitative variable	
1	**Age:**	**Years**
	Maximum	70
	Minimum	18
	Mean	34.6
	Standard deviation	10.26
2	**Duration of addiction:**	**Years**
	Maximum	40
	Minimum	2
	Mean	9.26
	Standard deviation	6.98
3	**The amount of substance use per day by crack users**	
	Maximum	3g
	Minimum	0.5g
	Mean	1.39g
	Standard Deviation (SD)	0.60
	The amount of substance use per day by opium users	6g
	Maximum	0.5g
	Minimum	2g
	Mean	1.18
	Standard deviation	

Table 3. General description of all subjects (Other quantitative variables)

Row	Name of quantitative variable	Years	
4	**Number of relapse:**	Percentage	Frequency
	No	1.4	1
	Once	32.4	24
	Twice	24.3	28
	Three times	18.9	14
	Four times	6.8	5
	More than 4 times	8.1	6
	Unknown Frequency	8.1	6
5	**Duration of treatment before discontinuation of treatment in relapsed people:**		

	Maximum	7 months
	Minimum	11 months
	Mean	2.7 months
	Standard deviation	1.7
	Longest time of persistence when referring:	
	Maximum	36 months
6	Minimum	0.19 months
	Mean	4.35 months
	Standard deviation	6.5

Of the retention group, 66.7% were married, 33.3% were single, and none had been divorced. In the relapse group 67.9% married, 28.6% were single, and 3.6% had been divorced. There was no significant difference between groups for marriage (p=0.868).

Males represented 95.9% of patients and 4.1% were female. The entire retention group was male (100%). The relapse group comprised 94.6% men and 5.4% women. There was no significant difference between groups for gender (p=0.316).

In the retention group, 83.3% of patients were employed and 16.7% were unemployed. In the relapse group, 66.1% were employed and 33.9% were unemployed. Although there was a higher number of employed participants in the retention group and a number of unemployed participants in the relapse group, the difference was not statistically significant (p=0.163).

All participants in the retention group were literate (33.3% had elementary education; 16.7% had secondary school education; and 50% had high school education. The relapse group consisted of 5.4% who were illiterate, 19.6% had elementary level education, 33.9% had secondary school level education, 35.7% had high school education, and 5.4% had university education. There was no significant difference between groups for education level (p=0.330).

In the retention group, 38.9%were addicted to crack and 61.1% to opium. In the relapse group, 57.4% were addicted to crack and 42.6% to opium. Although there were more relapsing patients among people addicted to crack, no significant difference was observed between groups (p=0475 and p=0.223, respectively) In the retention group, the maximum duration of addiction was 17 years, the minimum was 2 years, and 9.5 years was the mean duration. In the relapse group, the maximum duration of addiction was 40 years, the minimum was 2 years, and the mean duration was 9.16 years. There was no significant difference between groups for duration of addiction (p=0.320).

The maximum amount of crack use was 3 g/d, the minimum was 0.5 g/d, and the mean usage was 1.35 g/for the retention group. Maximum opium use for the retention group was 3 g/d, the minimum was 0.5 g/d, and the means usage was 1.8 g/d. The maximum use of crack in the relapse group was 3 g/d, the minimum was 0.5 g/d, and the mean use was 1.39 g/d. The maximum use of opium in the relapse group was 6 g/d, the minimum was 0.5 g/d, and the mean was 2.1 g/d. There were no significant differences between groups for crack (p=0.475) and opium use (p=0.223).

In the retention group, 33.2% took the substance orally, 61.1% smoked the substance, and 5.6% injected the substance. In the relapse group, 25% of cases took the substance orally, 66.1% smoked the substance, 5.4% injected the substance, and 3.6% of users took the substances both orally and by injection. No significant difference was observed between groups for the different types of usage (p=0.89).

In the retention group, 5.6% had been diagnosed with serious psychological disorders and 94.4% had no history of serious psychological disorder. In the relapse group, 14.3% had been diagnosed with serious psychological disorders and 85.7% had no history of serious psychological disorder. There were no significant differences between groups for psychological disorders (p=0.43).

Motivation for obtaining treatment was low in 11.1% of the retention group and high in 88.9% of cases. In the relapse group, motivation was low in 55.8% and high in 44.9% of cases. This showed a significant difference between groups (p=0.001).

The financial status (ability to meet treatment cost) was good for 16.7% of the retention group, moderate for 61.1%, and poor for 22.2% of participants. In the relapse group, the financial status was good in 5.5% of cases, moderate in 29.1% of cases and poor in 65.5% of cases. These figures represented a significant difference

between groups (p=0.04) that indicates that those with a poor or moderate financial status were more prone to relapse.

In the retention group, 55.6% tested positive for more than one substance and 44.4% used only one substance. In the relapse group, 58.9% tested positive for more than one substance and 41.1% used only one substance. This variable showed no significant role on maintenance or relapse between groups (p=0.80).

Only the relapse group was tested for duration of prior treatment. The maximum duration was 7 mos, the minimum duration was 1 mo, and the mean duration was 2.7 mos.

The probable reason for prior relapse in the retention group was financial status for 5.6% of participants and temptation for 94.4% of cases. In the relapse group, financial status was the reason for treatment in 16.1% of cases and temptation in 83.9% of cases. There were no significant differences between groups (p=0.434).

The main reason for admission to the retention group was growing tired of substance abuse for 27.8% of cases, family pressure in 22.2% of cases, mental health problems following substance use in 38.9% of cases, work pressure in 5.6% of cases, and marriage in 5.5% of cases. For the relapse group, 39.3% had grown tired of substance abuse, 3.6% cited weight loss, 23.2% family pressures, 26.8% cited mental problems caused by substance use, and 3.6% cited work pressure. There was no significant difference between groups for these variables (p=0.755).

The number of previous relapses in the retention group was once for 29.4%, twice for 17.6%, three times for 35.3%, and more than four times for 11.8% of cases. For the relapse group, it was once for 37.3%, twice for 29.4%, three times for 15.7%, and more than four times for 7.8%. There were no significant differences between groups for these variables (p=0.160).

In the retention group, the maximum duration of retention prior to current treatment was 24 mos, the minimum was 0.24 mos, and the mean duration of retention was 3.9 mos. In the relapse group, the maximum duration of retention was 36 mos, the minimum was 0.19 mos, and the mean duration was 3.4 mos. There was no significant difference between groups for this variable (p=0.490).

In the retention group, 66.7% of cases showed good cooperation with counseling in 66.7% of cases, and inadequate cooperation in 33.3% of cases. In the relapse group, 33.9% showed good cooperation and 66.1% showed inadequate cooperation. There was a significant difference between groups (p=0.026), indicating that the retention group better cooperated in counseling sessions.

This comparison of variables between the retention and relapse groups' shows significant differences in terms of financial status; degree of motivation; and cooperation with counseling. No significant differences were found for the other items.

4. Discussion

The problem of substance abuse and dependence is complex and multifaceted. Substance abuse has a variety of causes rooted in socio-economic, interpersonal and individual factors that are often difficult to identify. Studies suggest that the number of addicts in Iran is increasing. If the families addicts are included in the calculation, it is clear that a large portion of citizens are grappling with this issue (Mokri, 2002). The present study used the descriptive-analytical method to examine the factors affecting retention and relapse in patients referred to Yasin Center. The results indicate that there were significant differences between the retention and relapse groups in terms of financial status, motivation level, and cooperation with counseling.

Similar descriptive studies have been carried out in Iran to examine the prevalence of the factors affecting relapse. In the present study, these factors were investigated by comparing retention and relapse groups. Hoseini et al. (2010) studied the duration of retention in Yazd and found a significant relationship between age, type of substances abuse ,method of consumption and survival rate .There is not a similar significant relationship in the present study.

Afsar et al. (2012) studied factors affecting relapse to drug use among patients undergoing methadone maintenance treatment and found a relapse rate of 48.2%, which is lower than the relapse rate found in the present study. The main causes of relapse were temptation, peer pressure, depression, and low dose of methadone in Afsar's study. Regression analysis showed that the factors of perceived susceptibility, perceived benefits, and self-efficacy were strong predictors of relapse.

Narenjiha et al. (2009) found that the retention rate in treatment was 10% lower and the relapse rate about 10% higher than in the present study. The effect of counseling on retention rate was similar for the present study and that found by Fischer and Scott (1998), Marcques and Formigoni (2001), and Azad et al. (2009). The effect of

poverty and unemployment on addiction and relapse was consistent with the results of Shargh (2011) in which economic problems and unemployment existed in 34.6% of patients. The results of the current study also showed a significant difference between the retention and relapse groups for motivation and cooperation in counseling which is supported by findings of Navidian et al. (2016) in southeastern Iran.

The present study had some limitations. It was performed within a specific time frame and under specific geographical conditions and should not be generalized to other areas. The study shows only the prevalence of risk factors in the two groups. Additional studies (such as randomized clinical trials) are required to demonstrate the effects of these variables on relapse and retention.

5. Conclusion

Financial status, motivation, and cooperating with counseling were the variables that were most effective on retention in MMT. Further study is required on these factors using methods such as randomized clinical trials.

Competing Interests Statement

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

Afsar, A., Bashirian, S., Pourajal, J., Hazavehii, M. M., Vatannavaz, E., & Zinatmotlagh, F. (2012). Prediction of effective factors on relapse in Hamedan MMT centers using health-belief model. *Journal of Health System Researches (Exclusive of health education)*, 2034-2045.

Amin-Esmaeili, M., Rahimi-Movaghar, A., Razaghi, E. M., Baghestani, A. R., & Jafari, S. (2012). Factors correlated with hepatitis C and B virus infections among injecting drug users in Tehran, IR Iran. *Hepatitis monthly, 12*(1), 23-31. PMid: 22451840. PMCid: PMC3298872. http://dx.doi.org/10.5812/hepatmon.4332

Azad, M. R., Ghanbar, B. A., & Tabatabii, I. (2009). Studying the effect of group-therapy with a cognitive behavioural approach on make addicts with a major depression. *Principles of mental health, 11*(3), 195-204.

Fauci, A. S. (2008). *Harrison's principles of internal medicine* (Vol. 2). McGraw-Hill Medical New York.

Fisher, M., & Scott, S. (1998). Effectiveness study of two group models with substance abusing mentally ill (multi challenged) consumers. *Alcohol Drug abuse,* (52), 25-38.

Gollnisch, G. (1997). Multiple predictors of illicit drug use in methadone maintenance clients. *Addictive behaviors, 22*(3), 353-366. http://dx.doi.org/10.1016/S0306-4603(96)00024-X

Grant, B. F. (1990). The influence of comorbid major depression and substance use disorders on alcohol and drug treatment: Results of a national survey. Treatment of Drug-Dependent Individuals with Comorbid Mental Disorders. *NIDA Research Monograph, 172*, 4-15.

Hasin, D., Liu, X., Nunes, E., McCloud, S., Samet, S., & Endicott, J. (2002). Effects of major depression on remission and relapse of substance dependence. *Archives of General Psychiatry, 59*(4), 375-380. PMid: 11926938. http://dx.doi.org/10.1001/archpsyc.59.4.375

Hoseini, F., Ardakani, M. Y., Ahmadieh, M. H., Vafaiinasab, M. R., Kholasehzadeh, G., & Dastjerdi, G. (2010). Retention Rate in Methadone Maintenance Therapy. *Journal of Shaeed Sdoughi University of Medical Sciences Yazd, 18*(3), 152-158.

Marques, A., & Formigoni, M. (.2001). Comparison of individual and group cognitive-behavioral therapy for alcohol and/or drug-dependent patients. *Addiction,* (96), 835-846. PMid: 11399215. http://dx.doi.org/10.1046/j.1360-0443.2001.9668355.x

Mokri, A. (2002). Brief overview of the status of drug abuse in Iran. *Arch Iranian Med, 5*(3), 184-190.

Narenjiha, H. (2009). *Final report on the rapid assessment of drug abuse and addiction in Iran*. University of Social Welfare and Rehabilitation Sciences, Tehran. PMCid: PMC2731095

Navidian, A., Kermansaravi, F., Tabas, E. E., & Saeedinezhad, F. (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. *Archives of Psychiatric Nursing, 30*(2), 144-149. PMid: 26992862. http://dx.doi.org/10.1016/j.apnu.2015.08.002

Nourozi, M., Nourozi, S., Bitazadeh, M., & Sadatian, S. (2005). *Comprehensive Self-learning of Addiction Treatment* (2nd ed.). Tehran: Nashr e Pishgaman e Tosoea.

Quello, S. B., Brady, K. T., & Sonne, S. C. (2005). Mood disorders and substance use disorder: A complex

comorbidity. *Science & Practice Perspectives, 3*(1), 13. http://dx.doi.org/10.1151/spp053113

Rahimi Movaghar, A., Sharifi, V., Mohammadi, M., & Farhoudian, A. (1998). Researches on substance use in Iran; 3 decades evaluation. *Addiction, 93*, 9-15.

Rahimi-Movaghar, A., Amin-Esmaeili, M., Haghdoost, A.-A., Sadeghirad, B., & Mohraz, M. (2012). HIV prevalence amongst injecting drug users in Iran: A systematic review of studies conducted during the decade 1998-2007. *International Journal of Drug Policy, 23*(4), 271-278. PMid: 22000694. http://dx.doi.org/10.1016/j.drugpo.2011.09.002

Sadeghi, M., Ahmadi, M., Farhoudian, A., Ja'fari, F., & Yarmohammadi-Vasel, M. (2012). Overview of the Status of Research on Drug Dependence and Abuse in Iran. *Quarterly Journal of Rehabilitation, 12*(0), 27-36.

Shargh, A., Neysari, R., & Alilo, L. (2011). *Studying the factors of relapse from addicts' point of view reffered to the centers of western Azarbayjan in 2010/2011, 22*(2), 129-136.

Vazirian, M., Mostashari, G., & Mohsenifar, S. (2006). *Protocole of Opium Treatment by Agonist Medicines* (2nd ed.). Tehran: Nashre Porshokoh. PMid: 16639351.

Yarmohammadi-Vasel, M., Bayat, A., Tavakkoli, M., Farhoudian, A., Farhadi, M. H., & Sharifi, F. (2014). Effectiveness of Methadone Maintenance Treatment on the Mental Health of Harm Reduction Services' Recipients in Drop-In Centers. *Quarterly Journal of Rehabilitation, 14*(0), 49-58.