Iranian J Publ Health, Vol. 42, No. 8, Aug 2013, pp.896-902

Original Article

Effectiveness of Relapse Prevention Cognitive- Behavioral Model in Opioid -Dependent Patients Participating in the Methadone Maintenance Treatment in Iran

Tahereh PASHAEI [1,2], Davoud SHOJAEIZADEH [3], Abbas RAHIMI FOROUSHANI [4], Mahmoud GHAZITABATABAE [5], Maryam MOEENI [6], Fatemeh RAJATI [7], *Emran M RAZZAGHI [8]

1. *Dept .of Public Health, School of Health, Kurdistan University of Medical Science, Sanandaj, Iran.*
2. *Iranian National Center for Addiction Studies, Tehran University of Medical sciences, Tehran, Iran*
3. *Dept. of Health education and Promotion, School of Public Health, Tehran University of Medical Sciences, Tehran Iran*
4. *Dept .of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran*
5. *Dept .of Health and social Demography, Faculty of Social Sciences, University of Tehran, Tehran, Iran*
6. *Dept .of Management and Health Economics, School of Public Health, University of Medical Sciences, Tehran, Iran*
7. *Dept .of Health education and Promotion, Isfahan University of Medical Sciences, Isfahan, Iran*
8. *Dept .of Psychiatry, Tehran University of Medical Sciences, Tehran, Iran*

***Corresponding Author:** Email: razaghie@sina.tums.ac.ir

(Received 11 Jan 2013; accepted 20 Jun 2013)

Abstract

Background: To evaluate the effectiveness of a relapse prevention cognitive-behavioral model, based on Marlatt treatment approach, in Opioid-dependent patients participating in the Methadone Maintenance Treatment (MMT) in Iran.

Methods: The study consisted of 92 individuals treated with methadone in Iranian National Center of Addiction Studies (INCAS). Participants were randomized into two groups: educational intervention group (N=46) and control group (N=46). The intervention was comprised of 10 weekly 90 minute sessions, done during a period of 2.5 months based on the most high risk situations determined using Inventory Drug Taking Situation instrument. Relapse was defined as not showing up for MMT, drug use for at least 5 continuous days, and a positive urinary morphine test.

Results: While, only 36.4% of the intervention group relapsed into drug use, 63.6% of the control group relapsed. The result of the logistic regressions showed that the odd ratio of the variable of intervention program for the entire follow up period was 0.43 (P<0.01). Further, the odd ratio of this variable in one month, three months, and 195 days after the therapy were 0.48 (P<.03), 0.31 (P<.02), and 0.13 (P<.02) respectively that revealed that on average, the probability of relapse among individuals in the intervention group was lower than patients in control group

Conclusion: Relapse prevention model based on Marlatt treatment approach has an effective role in decreasing relapse rate. This model can be introduced as a complementary therapy in patients treated with methadone maintenance.

Keywords: Relapse, Retention. Methadone, Treatment, Opioid addiction

Introduction

According to the World Drug Report 2011, drug abuse especially use of opium is a major health problem in Iran, because it causes the death of about 91 persons in one million 15- 64 year old Iranian people. In 2009, opium addiction was the primary diagnosis for nearly 83% of Iranian clients

seeking treatment programs (1). Estimates show that at least 1.2 million people in Iran are dependent to drug (2). This huge number of drug users apparently should receive appropriate treatment programs. In terms of the public health approach to the problem, abstinence-oriented treatments might not work effectively. Thus, harm reduction with a focus on methadone maintenance treatment as an effective treatment for opioid would become a priority (3).

However, retention time in some treatment program is not favorable (4). In a study, the average relapse rate during six months after treatment admission in Maragheh (Iran) was 64% indicating the necessity for developing complementary Relapse Prevention Treatments (RPT) (5). The relapse prevention proposed by Marlatt and Gordon based on cognitive-behavioral treatment is an influential treatment programs for drug dependence (6).

In this treatment approach, after identifying high risk situations leading to drug use and relapse, appropriate interventions are designed and prepared by therapists. This educational treatment improves efficacy of the MMT program because it provides patients with an opportunity to develop skills and strategies that help them coping effectively with high risk situations related to drug use and realize and manage relapse warning signs (7). The purpose of this paper is to evaluate the effectiveness of a relapse prevention cognitive-behavioral model, based on Marlatt approach in the treatment of individuals with opioid use disorder participating in MMT program at the outpatient clinic of the Iranian National Center for Addiction Studies (INCAS).

Materials and Methods

This research applied an interventional study design. As the study was an interventional study, a sample of 92 total patients participating in MMT program at INCAS was randomly allocated to either "intervention" or "control" groups. Each group consisted of 46 patients. This study was approved by the Ethics Committee of Tehran University of Medical Sciences. Also, a written consent was given to all participants prior to participating in the study.

The inclusion criteria consisted of participating on MMT for at least one month and not suffering from serious physical or mental illnesses such as active suicidal or homicidal ideation, frank delusions or overt aggressive and threatening behaviors. There was no limitation on gender of participants. However, since most of the clients were male, we recruited only male clients to our study for the sake of statistical purposes. Relapse criteria were defined as not showing-up for MMT, confirmation of return to drug use for at least five continuous days and positive urinary morphine test (random urine testing was a rule at the clinic). However, there were patients who had discontinued their program due to other reasons such as moving to another clinic or program. This latter group was not counted for relapse.

Socio-demographic information, history of drug taking, treatment history, as well as some high risk behaviors related to addiction were collected through a short questionnaire. Besides, Farsi version of IDTS was used to identify high risk situations resulting in drug use and drug relapse. The questionnaire covers 8 types of drug taking situations including unpleasant emotions (ten items), physical discomfort (five items), pleasant emotions (five items), testing personal control (five items), urges and temptations to use (five items), conflict with others (ten items), social pressure to use (five items), and pleasant times with others (five items). Each item consists of a four-point scale. The scoring ranges were from 0 to3, i.e. never, rarely, frequently, and almost always, respectively (8). In order to prevent responses under the influence of drugs or drug withdrawal that could result in suspected unreliability and invalidity, we applied the one month delay rule for recruiting on intervention program. Further, r to evaluate clients' confidence levels across high risk situations, the Drug taking Confidence Questionnaire (DTCQ-8) was utilized (9).

To assess the influence of intervention on relapse in both the intervention and control group, the Mantel Haenszel statistical test was used. This test is used because the effect of the intervention vari-

able on relapse is influenced by covariates that can be controlled. Also, the probability of relapse in that regression was modeled as a binary response (1=relapse, 0=no relapse) in a linear logistic regression to determine the predictors of relapse. The level of statistical significance was set at 0.05. Data analyses were performed using SPSS11.5.

The interventions

This intervention program had a manual suggested by Alan Marlatt (10-11). It was based on a logic model because we evaluated high risk situations for each patient. Both one therapist and one facilitator involved in the intervention were trained for at least 10 hours. In each session, one of the researchers was used to inspect the therapists' work according to the group therapy checklist. The intervention was comprised of 10 session of group therapy that held weekly. Each session, which lasted 90 minutes, was dedicated to a specific topic including introduce intervention and members of group, managing emotions, thought of using substances, craving and urge as well as social pressure for drug use, relapse, anger, in addition to refusal skills problem solving, communication skills and building a recovery support system.

Each session was started by reviewing risky situations patients had faced. The main topic of the session was discussed within a focus group structure. In addition, at the end of each session, patients were given a reminder sheet that outlined the elements of the session topic and relevant skills. Also, they did some homework. Compensatory sessions were planned for participants who had occasionally missed a particular session. As improvement of self-efficacy is a major component of RPT (9), specific attention to this topic was made in almost every session. Self-presentation of success case stories by clients from outside the group as social modeling was part of the practice.

Results

Participants were 37.7(SD=10.9) years old on average at the time of recruitment. The average years of education was 10.14 (SD= 2.8). A proportion of 43.5% of the participants was married at the time of recruitment. The unemployment rate among the study group was 31.5%. About 59% of patients had some drug injection experience prior to recruitment in the treatment program. A total of 63 participants (68.5%) reported poly-drug use. In addition, 45.7% of patients had a history of involvement with the law. The mean drug use span among participants was 14.2 (SD=9.4) years and the average age of starting addiction was 21.86 (SD=7.1) years old.

The result of Mantel Henszel test for most of the variables was homogeneous. This means that there is no difference between those variables for intervention influence on relapse risk probability ($P \geq 0/05$). The effect of some variables including level of education, employment status, marital status, self efficacy, social support, and alcohol were heterogeneous.

Table 1 shows the results of logistic regression estimation. The odd ratio of the variable of intervention program in 30 days, 90 days, and 195 days after the intervention, (i.e. the follow-up period) were 0.48, 0.31, and 0.13 respectively. This revealed that on average, the probability of relapse among individuals in the intervention group was lower than patients in control group (Table 1).

Table 1: Result of logistic regression for the impact of intervention

Response	OR	*P*-value	95%CI for OR
Relapse in 30 days	0.48	0.03	0.20-11.46
Relapse in 90 days	0.32	0.02	0.105-0.953
Relapse in 195 days	0.13	0.02	0.07-0.459

Probability of relapse among illiterate patients, ones with primary and secondary education, were respectively about 1.03 and 2.12 times more than those that had at least a diploma and higher. Relapse risk for unemployed participants was 3.97 times more than people in full-time jobs. Additionally, risks of relapse among participants who were single and married were about 1.36 and 1.76 times more than divorced and speared ones. Furthermore, depriving from social support increased

risk of relapse among patient about 1.98 times. Moreover, risk of relapse for participants not having enough self-efficacy as well as those with low self-efficacy were respectively around 3.93 and 3.05 times more than that of enough or high self-efficacy. Besides, the probability of relapse among patients that consumed alcohol was nearly 1.48 less than others (Table 2).

Table 2: Result of logistic regression for factors associated with relapse

Variable	OR	*P*-value	95 % C.I for OR	
			Lower	Upper
group	0.43			
intervention	1	0.01	0.14	1.3
control				
Education				
Illiterate –primary		0.01	0.19	5.6
secondary	1.03	0.04	0.70	6.4
Diploma	2.12			
and more	1			
Job				
unemployed	3.97	0.04		15.11
Part time	0.91	0.04	1.04	3.09
fulltime	1		0.27	
Marriage status				
Single	1.36	0.04	0.32	5.71
Married	1.76	0.04	0.42	7.46
Divorce-	1			
separated				
Self efficacy				
<50	3.93	0.04	0.91	17.06
50-70	3.05	0.01	0.79	11.97
>70	1			
Social support				
low	1.98	0.04	0.64	6.2
high	1			
Alcohol use				
Yes	0.479	0.178	0.164	1.39
No	1			

Discussion

This study was designed to evaluate the effect of CBT-based relapse prevention on patients already on MMT. According to our findings, the role of the cognitive–behavioral treatment program is genuinely effective because this relapse prevention program resulted in longer retention on MMT. This result is consistent with some published studies showing that RPT is a successful approach to reduce substance use and to be particularly effective in maintaining on retention program over long term follow up periods (12-15). Longer retention on MMT provides harm reduction benefits, including social and physical health, and quality of life in patients.

Higher level of self efficacy was an indicator for better retention on treatment in our study. While more studies are in conformity with our findings (16-19), the relationship between self-efficacy and improved outcomes is ambiguous in other studies (20). As indicated elsewhere, we put a greater em-

phasis on self-efficacy in our trial by continuing the topic in consecutive sessions and by presenting successful patients as role models to our clients. This might have been a reason for better results in our study.

A striking result emerging from our data was the significance of education levels. The risk of relapse was higher for patients with lower levels of education as compared to the group with higher education levels. This finding supported some previous research that had concluded low education levels had been associated with poor treatment outcome (21-24). As skills training was a core segment of our intervention, clients with lower education might have found it more difficult to participate in the training and assimilated less of the material.

Another important finding was a strong correlation between employment status and risk of relapse. Risk of relapse in unemployed patients was greater than clients in full time jobs. This foreseeable result is compatible with various previous studies (25-27). Yet, our finding is in contrast with other studies proposing that being employed had a negative correlation with retention in treatment (28-30).

Contrary to some of the findings reported in the literature, probability of relapse was higher among single and married patients as compared with separated or divorced individuals within the present study. This finding is in contrast with many former studies that have shown better treatment outcome for married individuals (30-32). One explanation for this finding is that married and single patients may have some difficulties in relationships with family members because of drug abuse resulting in obtaining lower support; therefore, they are more subject to relapse during treatment.

In the present study, significantly a lower level of social support was related to the risk of relapse. This finding confirmed that social support plays an effectual role in longer treatment time that is consistent with other studies (33-38). Another study indicated that deprivation from social support at the start of treatment could hinder completion of the 21-day treatment program (39). Our finding is in contrast to some other studies that failed to confirm social support as a predictor for successful treatment. One study showed that stronger connections to family before treatment had a negative effect on the treatment result (40).

A rather unexpected result, however, was the negative correlation between alcohol consumption and the risk of relapse. There is inconsistent evidence in the literature in regard to this correlation. Some earlier studies demonstrated a negative correlation between alcohol use and retention time (41-42). One study demonstrated that use of alcohol was not related to relapse (43). One conjecture claims that alcohol use may be justified as an alternative to reduce cravings and drug use.

Our finding in this study was subject to limitations. We conducted this study among patients attending in INCAS and these findings cannot be extrapolated to all opioid-dependent patients.

This study also had several strengths. First, this study applied RPT based on the crustal roots of drug use among patients. Secondly, patients were followed-up for a long time to determine the effect of training intervention more accurately.

Conclusion

Our study demonstrated relapse prevention treatment has a significant role in decreasing relapse among opioid–dependent individuals on MMT. In order to help patients remaining in retention longer, this study advocates serious focus on increases in social support and self-efficacy.

This is beneficial not only in terms of health cognitive-behavior change, but also perception of social support associated with behavior change. We suggest relapse prevention services can be introduced as a complementary therapy, facilita-ting more successful treatments in MMT pro-grams.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

Acknowledgements

In this article, we used some information from the study proposal number 14331 which had been approved by the Deputy of Research of Tehran University of Medical Sciences. This study was supported by the INCAS. The authors would like to thank all the staff of this institute and the study participants.

Reference

1. UNODC (2011). *World Drug Report 2011*. 1st ed. UNODC, New York, pp.: 52-55.
2. Shekarchizadeh H, Ekhtiari H, Khami MR, Virtanen JI (2012). Patterns of pre-treatment drug abuse, drug treatment history and characteristics of addicts in methadone maintenance treatment in Iran. *HRJ,* 9(1):9-18.
3. Kheradmand A, Parvaresh N, Darijani M (2011). P01-65 The effect of methadone maintenance therapy on harm minimization between opiate dependents in socio behavioral consulting centers. *Eur Psychiatry,* 26(Supl I):65-71.
4. Amodeo M, Chassler D, Oettinger C, Labiosa W, Lundgren LM (2008). Client retention in residential drug treatment for Latinos. *Eval Program Plann,* 31(1):102-12.
5. Asghar M (2012). Addiction Relapse and Its Predictors: A Prospective Study. *JART*, 3(1):1.
6. Marlatt GA, Donovan DM (2005). *Relapse prevention: Maintenance strategies in the treatment of addictive behaviors*. 1st ed. Guilford Press, United States, pp.: 151-179.
7. Witkiewitz K, Marlatt GA (2004). Relapse prevention for alcohol and drug problems: that was Zen, this is Tao. *Am Psychol*, 59(4):224 -35.
8. Turner NE, Annis HM, Sklar SM (1997). Measurement of antecedents to drug and alcohol use: Psychometric properties of the Inventory of Drug-Taking Situations (IDTS). *Behav Res Ther*, 35(5):465-83.
9. Ramo DE, Myers MG, Brown SA (2008). Psychometric properties of a revised form of the Drug-taking Confidence Questionnaire for use with adolescents. *J Child Adolesc Subst Abuse*, 18(1):24-42.
10. Marlatt GA, Parks A, Witkiewitz K (2002). *Clinical guidelines for implementing relapse prevention therapy*. 1st ed. University of Washington, United States, pp.: 1-49.
11. Daley DC, Marlatt GA (2006). *Overcoming Your Alcohol Or Drug Problem*. 1st ed. Oxford University Press, United States, pp.: 10-86.
12. Irvin JE, Bowers CA, Dunn ME, Wang MC (1999). Efficacy of relapse prevention: A meta-analytic review. *J Consult Clin Psychol,* 67(4):563.
13. Rangé BP, Marlatt GA (2008). Terapia cognitivo-comportamental de transtornos de abuso de álcool e drogas Cognitive-behavioral therapy for alcohol and drug use disorders. *Rev Bras Psiquiatr*, 30(Supl II):S88-95.
14. McKay JR, Alterman AI, Cacciola JS, Rutherford MJ, O'Brien CP, Koppenhaver J (1997). Group counseling versus individualized relapse prevention aftercare following intensive outpatient treatment for cocaine dependence: Initial results. *J Consult Clin Psychol,* 65(5):778 -88.
15. Carroll KM (1996). Relapse prevention as a psychosocial treatment: A review of controlled clinical trials. *Exp Clin Psychopharmacol,* 4(1):46-54.
16. Burleson JA, Kaminer Y (2005). Self-efficacy as a predictor of treatment outcome in adolescent substance use disorders. *Addict Behav,* 30-(9):1751-64.
17. Goldbeck R, Myatt P, Aitchison T (1997). End-of-treatment self-efficacy: a predictor of abstinence. *Addiction,* 92(3):313-24.
18. Sklar SM, Turner NE (1999). A brief measure for the assessment of coping self-efficacy among alcohol and other drug users. *Addiction*, 94(5):723-9.
19. Gwaltney CJ, Shiffman S, Balabanis MH, Paty JA (2005). Dynamic self-efficacy and outcome expectancies: prediction of smoking lapse and relapse. *J Abnorm Psychol,* 114(4):661 75.
20. Maisto SA, Connors GJ, Zywiak WH (2000). Alcohol treatment changes in coping skills, self-efficacy, and levels of alcohol use and related problems 1 year following treatment initiation. *Psychol Addict Behav,* 14(3):257 -66.
21. McLellan AT, Lewis DC, O'Brien CP, Kleber HD (2000). Drug dependence, a chronic medical illness. *JAMA*, 284(13):1689-95.
22. Shahrbabaki ME, Ziaaddini H, Doost AAH, Ghasemi M, Shahrbabaki PE, Nouri RA, et al (2011). Methadone Treatment in Iranian Opiate Addicts: A Preliminary Report. *Addiction and Health*, 3(1-2)53-60.

23. O'Brien C, Thomas McLellan A (1996). Myths about the treatment of addiction. *The Lancet*, 347(8996):237-40.
24. Termorshuizen F, Krol A, Prins M, Geskus R, van den Brink W, van Ameijden EJ (2005). Prediction of relapse to frequent heroin use and the role of methadone prescription: an analysis of the Amsterdam Cohort Study among drug users. *Drug Alcohol Depend,* 79(2):231-40.
25. Hser Y, Hoffman V, Grella CE, Anglin MD (2001). A 33-year follow-up of narcotics addicts. *Arch Gen Psychiatry,* 58(5):503 -8.
26. Vaillant GE (1973). A 20-year follow-up of new york narcotic addicts. *Arch Gen Psychiatry,* 29(2):237-41.
27. Reif S, Horgan CM, Ritter GA, Tompkins CP (2004). The impact of employment counseling on substance user treatment participation and outcomes. *Subst Use Misuse,* 39(13-14):2391-424.
28. Havens JR, Latkin CA, Pu M, Cornelius LJ, Bishai D, Huettner S, et al (2006). Predictors of opiate agonist treatment retention among injection drug users referred from a needle exchange program. *J Subst Abuse Treat,* 36(3):306-12.
29. Richardson L, Wood E, Montaner J, Kerr T (2012). Addiction treatment-related employment barriers: The impact of methadone maintenance. *J Subst Abuse Treat,* 43(3) 276-84.
30. Heinz AJ, Wu J, Witkiewitz K, Epstein DH, Preston KL (2009). Marriage and relationship closeness as predictors of cocaine and heroin use. *Addict Behav*, 34(3):258-63.
31. Merline AC, O'Malley PM, Schulenberg JE, Bachman JG, Johnston LD (2004). Substance use among adults 35 years of age: prevalence, adulthood predictors, and impact of adolescent substance use. *Journal Information*, 94(1) 96-102.
32. Moos RH, Nichol AC, Moos BS (2002). Risk factors for symptom exacerbation among treated patients with substance use disorders. *Addiction*, 97(1):75-85.
33. Ellis B, Bernichon T, Yu P, Roberts T, Herrell JM (2004). Effect of social support on substance abuse relapse in a residential treatment setting for women. *Eval Program Plann,* 27(2):213-21.
34. Dodge K, Potocky M (2000). Female substance abuse characteristics and correlates in a sample of inpatient clients. *J Subst Abuse Treat ,* 18(1):59-64.
35. Knight DK, Wallace GL, Joe GW, Logan SM (2001). Change in psychosocial functioning and social relations among women in residential substance abuse treatment. *J Subst Abuse,* 13(4):533-47.
36. Salmon MM, Joseph BM, Saylor C, Mann RJ (2000). Women's perception of provider, social, and program support in an outpatient drug treatment program. *J Subst Abuse Treat,* 19(3):239-46.
37. Gregoire TK, Snively CA (2001). The relationship of social support and economic self-sufficiency to substance abuse outcomes in a long-term recovery program for women. *J Drug Educ,* 31(3):221-38.
38. Dobkin PL, Civita MD, Paraherakis A, Gill K (2002). The role of functional social support in treatment retention and outcomes among outpatient adult substance abusers. *Addiction*, 97(3):347-56.
39. Westreich L, Heitner C, Cooper M, Galanter M, Guedj P (1997). Perceived social support and treatment retention on an inpatient addiction treatment unit. *Am J Addict,* 6(2):144-9.
40. McCusker J, Bigelow C, Luippold R, Zorn M, Lewis BF (1995). Outcomes of a 21-day drug detoxification program: retention, transfer to further treatment, and HIV risk reduction. *Am J Drug Alcohol Abuse,* 21(1):1-16.
41. Fischer B, Firestone Cruz M, Patra J, REHM J (2008). Predictors of methadone maintenance treatment utilization in a multisite cohort of illicit opioid users (OPICAN). *J Subst Abuse Treat,* 34(3):340-6.
42. Joe GW, Simpson DD, Broome KM (1999). Retention and patient engagement models for different treatment modalities in DATOS. *Drug Alcohol Depend*, 57(2):113-25.
43. Termorshuizen F, Krol A, Prins M, Geskus R, van den Brink W, van Ameijden EJC (2005). Prediction of relapse to frequent heroin use and the role of methadone prescription : an analysis of the Amsterdam Cohort Study among drug users. *Drug Alcohol Depend*, 79(2):231-40.