

Abstract

Objective: The aim of this study was to investigate the effectiveness of therapy based on trans-theoretical model (TTM) in coping strategies among male substance dependent patients under methadone maintenance therapy in Najaf Abad city. **Method:** To this end, a quasi-experimental research design along with control group was employed and the relevant evaluation was performed in pre-test, post-test, and follow-up stages. The statistical population of this study consisted of all the male patients under methadone maintenance therapy in Addiction Treatment Centers of Najaf Abad City within the summer of 2013. From among this population, the number of 30 participants was selected as the study sample via multi-stage random sampling method and these participants were then randomly assigned to experimental ($n=15$) and control ($n=15$) groups. The experimental group received 10 sessions of therapy based on trans-theoretical model within 2 months in addition to receiving methadone, whereas the control group only remained under methadone maintenance therapy. Coping Inventory for Stressful Situations was used in this study for data collection purposes. **Results:** The results obtained from covariance analysis showed that the therapy based on trans-theoretical model was effective in the improvement of coping strategies in the posttest ($P < .001$); however, these results did not show any significant difference in coping strategies scores in the follow-up stage. **Conclusion:** According to these results, it can be concluded that therapy based on trans-theoretical model can be used as an appropriate intervention in addiction treatment.

Keywords: therapy based on trans-theoretical model, substance dependency, coping strategies, methadone maintenance therapy

On the Effectiveness of Therapy based on Trans-Theoretical Model in Coping Strategies in Male Substance Dependent Patients under Methadone Maintenance Treatment

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Introduction

Addiction is a folk and an unscientific term, which means pathological dependency on using one or more types of drugs that leads to the incidence of drug-seeking behaviors; and withdrawal symptoms appear in addicts in case of failure to use the intended drug(s) (Bahari, 2009). The latest classification of mental disorders – the fifth Diagnostic and Statistical Manual of Mental Disorders- has introduced substance use disorder as the scientific equivalent of addiction. Accordingly, the presence of a category of physiological and cognitive symptoms as well as pathological behavioral patterns are the essential characteristics of substance use disorders that represent individuals still continue to use drugs despite confrontation with significant problems related to the substance (American Psychiatric Association, 2013). Such offenses as theft, prostitution, violence, increased false jobs, loss of productivity, and a very large number of broken or troubled families are among the problems caused by drugs. On the other hand, addiction devalues moral and humanistic principles in human beings and, thereby, makes them ready to accept absurd and destructive cultures (Kajbaf & Rahimi, 2011). The national survey of drug use prevalence was conducted among Iranian citizens by the Institute for Humanities and Cultural Studies in 2011, and the results revealed the prevalence rate of 2.65% for the population aged from 15 to 64 years old according to the census of 2006; this value was 2.75% and 2.47% for urban and rural areas, respectively. In addition, the prevalence rates of drug use among the sample population (15,000 people) were 9.7% and 9.3% for men and women, respectively (cited in Sarrami, Ghorbani & Minooei, 2013).

A large number of drug users may experience overwhelming emotions which are likely to result in the consequences of drug use, withdrawal or exposure to severe stress (Tims, Leukefeld & Platt, 1997). According to Lazarus & Folkman (1984), the existence of potential stress or stressful events in people's lives does not necessarily lead to dysfunction, but ineffective coping with stress can be problematic. They believe that coping is the cognitive and behavioral efforts that are constantly changing so that the individual can meet his/her specific outer or inner demands beyond the available resources and his/her ability. Evidence suggests that failure in selecting proper coping responses in high-risk situations is associated with drug use relapse (Shiffman, 1985). In addition, research findings represent the effectiveness of using coping skills as a key factor in preventing relapse and make it possible to distinguish between relapse experiencers and abstention experiencers in all addictive behaviors (Curry & Marlatt, 1985). Researchers conducted a survey on 276 patients undergoing methadone treatment and found that these patients used avoidant coping strategies, such as denial or surrender in the face of emerging stress, which were strongly associated with tendency to drug use and continuous use of different classes of drugs (Belding, Iguchi & Lamb, 1996). It also appears that substance

users use emotion-focused coping strategies more frequently problem-focused coping strategies (Kimberly & Gary, 2003). In the same vein, research has also emphasized the effectiveness of interventions based on coping strategies in the treatment of alcohol and drug abuse compared with other psychosocial treatments (Monti, Rohsenow, Michalec, Martin & Abrams, 1997; Rohsenow, Monti, Martin, Michalec & Abrams, 2000).

The results of experimental studies have referred to the effectiveness of agonist maintenance treatment, especially methadone maintenance treatment (MMT) as a common treatment method for in most countries (Drummond, 2007). In MMT, which aims to reduce damage to the patient, methadone is prescribed in required quantities for the patient in a long-term mode until it can be replaced by drugs (Rostami & Haddadi, 2005). However methadone has several side effects, including loss of breath, sleeping difficulty, decreased peristalsis, lowered blood pressure, increased sweating, and reduced libido as well. In addition, deviation from methadone treatment towards the illegal use can cause drug overdose and may harm the logical and effective treatment of methadone maintenance treatment (Noroozi, Naderi, Binazadeh & Sefatian, 2005). Thus, according to numerous studies, it seems that the outcome of methadone treatment along with counseling will be psychological interventions and more successful social support (Waldron, Slesnick, Brody, Truner & Paterson, 2001).

One of the most effective psychological interventions for the treatment of drug dependence is treatment based on trans-theoretical model. This model has received considerable attention as one of the effective models in addiction during the past two decades (Prochaska & Diclemente, 1984). The effectiveness of trans-theoretical model has been approved in health-related behaviors, such as reduced obesity and weight control, improved physical activity, quitting smoking, and cessation of drug use (Prochaska, Norcross & Diclemente, 1994). Trans-theoretical model of change provides an integrated and multi-dimensional framework for understanding how people make decisions to change, undertake it, and keep changing. The constructs and core concepts of this model consist of stages of change (precontemplation, contemplation, preparation, action, and maintenance), processes of change, decisional balance, and self-efficacy/temptation. Change is defined as the relationship between these core constructs (Prochaska & Norcross, 2006; Prochaska, Johnson & Lee, 1998; Prochaska et al., 1994). Several studies have verified the effectiveness of therapy based on trans-theoretical model in addiction and use of various drugs. Evers et al. (2012) conducted a study on 22 high school students who used alcohol, tobacco, and drugs in the United States during a three-month follow-up and showed that the use of trans-theoretical treatment can be used alone or alongside other therapies to help high school students reduce or discontinue the use of tobacco, alcohol, and illegal drugs. Saravani, Kajbaf, Amiri, Abadi& Kianpour (2012) examined the psychological (mental health) symptoms on 40 detoxified

male addicts. In their study, they compared three treatment methods, namely motivational interviewing, trans-theoretical therapy, and a combination of both treatments. The results showed that all the three interventions were equally effective in the psychological symptoms among addicted men compared with normal people. Nikkhah (2013) carried out a study on drug-dependent individuals in Mashhad and showed that there is a significant difference in terms of self-esteem and relapse prevention strategies (divided into two parts: temptation and desire) between the control and experimental groups after the administration of trans-theoretical therapy. Moreover, numerous studies have confirmed the effectiveness of psychological interventions in the improvement of coping strategies (Farnam, 2013; Ashoori, Mollazadeh & Mohamadi, 2008, Litt, Kadden, Kabela-Cormier & Perry, 2008).

In this regard, previous research findings have revealed the effectiveness of trans-theoretical model in substance abusers and have referred to the improper and untimely use of coping strategies in the face of daily problems and stress as one of the major causes of relapse in drug-dependent individuals. Therefore, this study aims to determine the effectiveness of therapy based on trans-theoretical model in coping strategies in male substance dependent patients under methadone maintenance treatment.

Method

Population, sample, and sampling method

A quasi-experimental research design along with control group was employed and the relevant evaluation was performed in pre-test, post-test, and follow-up stages. The statistical population of this study consisted of all the male patients under methadone maintenance therapy in Addiction Treatment Centers of Najaf Abad City within the summer of 2013. In this study, multi-stage random cluster sampling method was used in such a way that two addiction treatment centers, named Omid and Toloo were chosen from among addiction treatment centers at first. Then, 30 participants were randomly selected from among the volunteer subjects who met the inclusion criteria and were assigned to two experimental and control groups ($n_1=n_2=15$). The inclusion criteria for participating in the present study were being male, placement in the age range of 18 to 50 years, the past history of using opiates (opium and heroin), being under methadone maintenance treatment, not suffering from severe psychiatric problems on Axis I, minimum education of primary school, history of drug use for one year and above, and experiencing drug use abstention at least once. In the final analysis, two members of the experimental group who did not fully attended the sessions were excluded from the study, and, consequently, two members of the control group were randomly excluded from the study as well.

Instruments

Coping Inventory for Stressful Situations: This questionnaires was constructed by Endler and Parker in 1990 to assess various coping methods in stressful situations. This test consists of 48 items and three subscales, namely task-oriented, emotion-oriented, and avoidance coping that are scored based on Likert scale method (1 = never to 5 = very much). The first 16 items refer to task-oriented dimension, the second 16 items refer to emotion-oriented dimension, and the third 16 items refer to avoidance coping dimension. Participants choose only one option in each item that fit s his/her status and, indeed, determine their reaction in difficult and stressful conditions. When a participant earns a higher score in each of the coping strategies, it means that s/he employs that coping style more frequently. The administration of the scale to adults and adolescents is similar. The minimum and maximum scores of each subscale are equal to 16 and 80, respectively. Endler and Parker reported the internal consistency coefficient of the original Coping Inventory for Stressful Situations to be equal to .92. The reliability of this test was also calculated via Cronbach's alpha method and the coefficients of .90 and .92 were obtained for girls and boys in task-oriented dimension; the coefficients of .85 and .82 were obtained for girls and boys in emotion-oriented dimension, and the coefficients of .82 and .85 were obtained for girls and boys in avoidance coping dimension (Endler and Parker, 1999). In this study, the short form of this questionnaire (33 items) was used. Chapari (2013) conducted a survey on female high school students and reported the Cronbach's alpha coefficients of .78, .82, and .68 for task-oriented, emotion-oriented, and avoidance coping dimensions, respectively.

Demographic Characteristics Form: This was a researcher-constructed form specifies the patient's personal information about age, education, marital status, employment status, history of addiction, the type of consumed drug and substance, and history of drug use abstention.

Procedure

In this study, some notification forms were installed in addiction centers in Najaf Abad with the consent of the relevant authorities. Then, two centers whose patients showed the highest willingness to participate in the study were and 30 male addicts under methadone maintenance treatment were randomly selected from among the volunteer subjects who met the inclusion criteria and were assigned to two experimental and control groups. Members of both groups completed Coping Inventory for Stressful Situations before the intervention as the pretest stage. Then, the experimental group attended ten 90-minuite weekly sessions of group therapy based on stages of change (trans-theoretical model treatment) within two months, whereas the control group was only treated with methadone. At the end of the intervention and at the post-test stage, the participants completed Coping Inventory for Stressful Situations once more as

the posttest stage. It is noteworthy that there are 10 change processes in the trans-theoretical model of change that enables people to go from one stage to the next stage of change (Velasquez, Mary, Crouch, DiClemente, translated by Ebrahimi & Mohamadzadeh, 2011). Accordingly, each of the 10 sessions of group therapy based on stage of changes was dedicated to one of the processes of change. The content of these sessions is described in Table 1.

Table 1: Structure and content of therapy sessions

Session	Process of change	Content of session
First session	Consciousness Raising	Basic familiarity and communicating with participants, addressing the issue of increasing awareness and understanding the stages of change
Second session	Self- Reevaluation	Recognizing the importance of personal values in life and determining the conflicts of substance use behavior with values
Third session	Decisional balance	identification of both sides of the substance use coin and weighting the positive and negative aspects of drug use
Fourth session	Environmental Reevaluation	Understanding the effects of one's behavior on the surrounding environment, the role of individuals, and the effects of drug use on the fulfillment of such roles
Fifth session	Self-efficacy	Helping participants understand tempting situations and the importance of self-efficacy in these situations
Sixth Session	Self-Liberation	Creating personal goals for cessation of drug use, developing the change program and commitment to change
Seventh session	Stimulus Control	Identifying potential external or inner stimuli of drug use and education of avoidance practices or their changes
Eighth session	Counter Conditioning	Teaching of alternative unhealthy behaviors with healthier behaviors and to best way to establish efficient relationship
Ninth session	Reinforcement Management	Emphasis on rewarding the success, expression of the real sample, and creation of new ideas for rewarding
Tenth session	Helping Relationship	Introduction of social support networks, Discovery helping relationships, summary of the sessions, suggestions and feedback

Results

Since two members of the experimental group did not participate in intervention sessions completely, they were excluded from the study, and, consequently, two members of the control group were randomly excluded from the study as well. Thus, the final analysis was performed on 26 patients ($n_1=n_2=13$). The descriptive statistics related to demographic features showed that 62% of the participants in both groups were placed in the age range of 34-18 years and 39% of them were in the age range of 35-50 years. In addition, the highest frequency of education in both groups pertained to diploma level (46%) and bachelor's degree took up the lowest frequency of education (experimental

= 23%, control = 16%). In terms of marital status, the results indicate that 77% of the participants were married and 23% of them were single. Regarding the employment status, 69% of the control group and 77% of the experimental group were employed and the rest of the participants were unemployed. The most highly frequent drug used by the patients was a combination of all three drugs, i.e. opium, opium sap, and heroin (42%); and heroin was the least frequently used drug (16%).

Overall, 27% of individuals had experienced substance use below 5 years, 31% of them had experienced substance use below 10 year, and 42% of had experienced substance use over 10 years. Moreover, 42% of the participants had experienced 1 to 3 attempts of drug use abstention 58% of them had experienced more than 5 abstention attempts. The descriptive statistics of coping strategies have been presented in the table below for each group and test stage.

Table 2: Descriptive statistics of components of coping strategies for each group and test stage

Component	Test stage	Experimental (n=13)		Control (n=13)	
		Mean	SD	Mean	SD
Task-oriented coping	Pretest	24.30	1.18	25.07	.90
	Posttest	40.76	3.56	25.23	2.97
	Pretest	23.38	2.84	23.15	4.33
Emotion-oriented coping	Posttest	33.23	1.30	33.07	.95
	Pretest	19.23	4.58	32.07	6.65
	Posttest	32.46	2.60	33.15	2.23
Avoidant coping	Pretest	33.61	1.12	32.84	1.21
	Posttest	22.61	3.88	33.30	5.43
	Follow-up	21.15	3.23	23.30	3.52

Multivariate regression of analysis should be used to evaluate the effectiveness of the intervention. One of the assumptions of using this test is the equality of error variance. This assumption was evaluated via Levene's test and the results are presented in the table below.

Table 3: Results of Levene's test examining the equality of error variances in components of coping strategies

Component	Test stage	Df	F	Sig.
Task-oriented coping	Posttest	24	.230	.636
	Follow-up	24	3.980	.058
Emotion-oriented coping	Posttest	24	.368	.550
	Follow-up	24	.292	.594
Avoidant coping	Posttest	24	.595	.448
	Follow-up	24	.113	.740

Equality of covariance matrices is another assumption for using this test. Box's Test results implicated the satisfaction of this assumption ($P>.05$, $F=.714$, Box's

$M=20.681$). Considering the satisfaction of the required assumptions, multivariate covariance analysis was performed. The results indicate the significance of the difference between the groups ($P<.0001$, eta squared=.849, Wilks' Lambda=.151). Univariate analysis of variance was used to examine differences in patterns as follows.

Table 4: The results of univariate analysis of variance representing differences in the posttest

<i>Component</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>	<i>Effect size</i>	<i>Statistical power</i>
Task-oriented coping	1325.74	114.74	.001	.845	1
Emotion-oriented coping	967.68	29.120	.001	.581	1
Avoidant coping	655.46	27.110	.001	.564	1

As it is observed in the above table, there is a significant difference between the two groups in all the components ($P<.001$). In other words, therapy based on trans-theoretical model has significantly increased the scores of task-oriented coping component and significantly reduced emotion-oriented coping and avoidant coping components. The follow-up scores were used to assess the survival of the intervention effect. The results of univariate analysis of covariance have been presented in the table below.

Table 5: The results of univariate analysis of covariance representing differences in the posttest

<i>Component</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>	<i>Effect size</i>	<i>Statistical power</i>
Task-oriented coping	.34	.02	.882	-	.05
Emotion-oriented coping	2.02	.32	.574	-	.08
Avoidant coping	26.57	2.10	.162	-	.28

As it is observed in the above table, there is no significant difference between the two groups in any of the components. In other words, the treatment has had no survival effect.

Discussion and Conclusion

This study aimed to examine the effect of meta-theoretical therapy on coping strategies in male drug-dependent patients who were treated with methadone maintenance. The results indicate the effectiveness of meta-theoretical therapy in the improvement of coping strategies in the posttest stage. In other words, therapy based on trans-theoretical model resulted in a significant increase in the scores of task-oriented coping component and in a significant reduction in emotion-oriented coping and avoidance coping components in the posttest stage. This finding is consistent with the research findings reported by Evers et al. (2012), Saravani et al. (2012), and Nikkhah (2013) where the effectiveness of

trans-theoretical model in discontinuation of the consumption of a variety of substances (alcohol, cigarettes, tobacco, and drugs) and in the improvement of psychological symptoms of addiction. This finding is also consistent with those of the majority of intervention studies on the effectiveness of psychological interventions in coping strategies in drug-dependent individuals, including research carried out by Litt et al. (2008), Hides et al. (2010), Ashoori et al. (2008), Farnam (2011), and Beigi, Shirazi & Pasandideh (2012). For example, Ashoori et al. (2008) undertook a study on 30 detoxified addicts in Shiraz and showed cognitive-behavioral therapy has been effective in the improvement of coping strategies in drug-dependent individuals in the posttest and two-month follow-up stages.

To explain these findings, one can state that therapy based on trans-theoretical model is some kind of cognitive-behavioral therapy. Cognitive-behavioral therapies are among the treatments that employ the training of coping skills in their therapy sessions and seek the growth of more appropriate coping skills in drug users. The acquisition of self-control skills required for relapse prevention via participation in training programs of cognitive-behavioral coping skills helps addicts replace habits and behaviors of maladaptive coping strategies with alternative healthy behaviors and strategies and use the cognitive processes of consciousness raising and responsible planning (i.e., task-oriented strategy) (Kadden et al., 1992). Trans-theoretical model therapy, as cognitive-behavioral therapies, is a structured treatment that makes use of numerous cognitive and behavioral principles and techniques (such as mental training, cognitive restructuring, interactional conditioning, self-expression, relaxation techniques, reinforcement and rewarding, problem-solving skills, and communication skills) in individual and group therapy sessions. In this therapy, cognitive and behavioral techniques are used to pass the different stages of change in parallel with experimental and behavioral procedures that are the engines of change during the stages. In trans-theoretical therapy, there is a set of techniques for each stage of change. When it is known the person is at what stage, it is possible to help him/her apply the processes that are necessary to move to the next stage change using different techniques (Velasquez, Mary, Crouch, DiClemente, translated by Ebrahimi & Mohamadzadeh, 2011). Accordingly, it is expected that this therapeutic model improves coping strategies in drug-dependent male patients under methadone maintenance treatment, which was confirmed at the posttest results.

In addition, the results of this study were indicative of the absence of survival effect of the therapy. This finding can be explained in that the person is still not able to tolerate negative emotions in the first few months of detoxification in such a way that the highest rate of relapse takes place in the early months of purity (Rosen et al., 2006). In fact, addicts turn to drug use as an avoidant, negative, and inefficient strategy to reduce their own emotional problems (Carver & Scheier, 1990). The individuals in the abstention period after

returning to society expect to be able to compensate for their lost past in a short time and, thereby, great deal of pressure, stress, and anxiety will be imposed on them. On the other hand, individuals, in adolescence, do not learn the effective strategies to cope with adult-specific problems or they might have learned these strategies in a period, but these strategies might have been weakened due to incessant drug use as a strategy to cope with problems. In addition, it is probable that these patients have forgotten effective strategies due to long-term involvement with drug dependent lifestyle wherein a significant portion of their time is spent on the preparation and consumption of drugs and then the recovery drug use effects (Carroll, translated by Bakhshipour & Mohamadkhani, 2002). Therefore, it is clear that psychological training methods, including the available training in trans-theoretical therapies provide a part of potential sources in the improvement while the other part pertains to lifestyle changes in substance abusers. Obviously, it also requires constant practice and dedicated involvement of drug-dependent persons in the change of their previous lifestyle; and it also needs long-term educational and interventionist planning, which is also a time-consuming process.

This study was faced with some limitations like other studies. These limitations include the difficulty in generalizing the results due to the population limited to drug-dependent male patients treated with methadone maintenance in Najaf Abad, the impossibility of conducting next follow-ups, and the conduct of the study solely on males and inaccessibility to female patients. It is suggested that further research be conducted on the effectiveness of trans-theoretical model on patients dependent on other substances, including stimulants. The effectiveness of this therapy can be compared with other psychological interventions (such as cognitive-behavioral therapy, 12-step group therapies, relapse prevention therapy, matrix treatment, etc.) in the recovery of patients treated with methadone. In the same way, future research should be conducted on both genders, i.e. males and females in order to increase the generalizability of the results.

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