Original Article

Effectiveness of group therapy based on detached mindfulness techniques in reducing drug craving and the likelihood of drug use in substance-dependent individuals

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Abstract

Introduction: The purpose of this study was to investigate the effectiveness of group therapy based on detached mindfulness techniques (DM) in reducing drug craving and the likelihood of drug use in substance-dependent individuals.

Materials and Methods: In a clinical trial 24 male subjects were selected through purposive sampling from Yavaran Omid Addiction Treatment Clinic in Mashhad, Iran in 2013. Subjects were assigned to experimental and control groups randomly. The experimental group attended group therapy sessions (six one-hour sessions) based on DM techniques and the control group continued the common group therapy program of the clinic. Before and after the treatment, both groups completed the questionnaires including Relapse Prediction Scale, Meta-Cognitive Questionnaire-30, Beck Depression and Anxiety Inventories, and also the experimental group subjects completed the Clinical Global Improvement (CGI) Scale as well as the Client Satisfaction Questionnaire (CSQ) in the post-treatment. Data analysis was carried out using Multivariate Analysis of Covariance (MANCOVA), t-test by SPSS-19.

Results: The results of MANCOVA indicated that there was no significant relationship between the two groups in post-test ($P>0.05$), but the results of t-test indicated a significant anxiety reduction among the subjects of the experimental group ($P=0.03$). Also, improvement percentages showed that the subjects of the experimental group improved more than the subjects of the control group. Additionally, the scores obtained from CGI and CSQ demonstrated that subjects in the experimental group were pleased with the method of treatment and reported highly desirable states after the treatment.

Conclusion: It seems that the group therapy based on detached mindfulness techniques was more effective for reducing drug craving and the likelihood of drug use in substance-dependent individuals.

Keywords: Craving, Group therapy, Mindfulness, Substance dependency

Introduction

Substance dependence is one of the most important social harms in modern societies and despite many efforts that have been made to solve this problem there is no definitive treatment for it (1). Unfortunately, due to the secrecy of drug-dependent individuals, exact statistics regarding the number of consumers are not available and the existing statistics are based on self-reported individuals, which are mostly propagandistic. According to Rabin and Gear, people who are less educated or have abandoned their studies and those who are single or have been separated from their spouse are more at risk than others. It seems that age and gender are among the effective factors in this regard so that Hersen and Van Hasselt in their research came to the conclusion that youths (especially at 25 and 34 years of age) are more likely to experience substance use and drug dependence, and studies also show that men compared to women are more at risk of addiction (refers to 2). Since this problem is a physical, mental and social disorder, a wide range of drug and psychological treatments and social interventions has formed to control it. One of the drug treatments is methadone maintenance treatment in which less harmful substance of methadone replaces the main consumed substance (3). Studies show that many individuals start using drugs again after completing

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drug treatment (4-8) so that a visual or non-visual cue (e.g. a sound or smell in the outside environment) or an intra-psychological fantasy can be an induction agent for craving (9).This involves the patient under treatment in all kinds of thoughts and mental images about the substance and also a kind of inner tendency towards the desired substance and since he has no control over these thoughts and images, all his mind is preoccupied with the desired substance and its immediate consumption (10). Thus, in such circumstances, it is necessary for individuals to become familiar with the effective methods to deal with such thoughts besides drug treatment. Methods adopted by people in the face of their own thoughts, attitudes, desires and beliefs are affected by their meta-cognition (11). The term meta-cognition, first applied by Flavell (12), refers to the thought process about thinking and knowledge of what we know and what we do not know. Wells, the founder of meta-cognitive therapy, believes that what causes emotional disorders in people is not the content of beliefs and thoughts, but is the manner of dealing with this content. Through designing distraction techniques and detached mindfulness (DM), he attempted to reform inefficient methods of dealing with negative thoughts and beliefs (11). Researches also indicate the relationship between meta-cognition and drug dependence (13,14) so that individuals with more inefficient meta-cognitive beliefs and negative emotions and a desire to suppress their thinking are more likely to incline towards drug dependence or be affected by such disorder in the future (15). In this respect, Firoozabadi (16) in his case study concluded that DM and distraction techniques are effective in reducing the temptation of detoxified people and the effect of DM techniques is greater in this regard. Further, studies suggest that group therapy has many direct and indirect effects on rehabilitation of substance abusers' disposition and action (3). Therefore, in this regard, group therapy programs with specific structures including Narcotics Anonymous group (3) therapy and trans-theoretical model (17) and also unstructured group therapies were developed, each of which focuses on specific aspects of treatment. But despite all these efforts, many abusers return again to drug use after withdrawal (8), which shows the existence of a gap in treatment programs. Hence, an effective step can be possibly taken in tackling these defects through analyzing new methods such as the use of third wave therapies in which meta-cognitive treatment is included. Thus, this research in line with previous studies investigates a new model of structured group therapy based on DM techniques, which is a kind of meta-cognitive skills. At the same time, the efficacy of this method was compared with a model of unstructured group therapy to achieve more effective treatment.

Materials and Methods

This research was a clinical trial with pretest-posttest control group design and was conducted with the approval of Research Council of Islamic Azad University of Torbat-e-Jam (IRCT code: 2015041321727N1).

Initially, 24 male subjects were selected based on important criteria in the study and through purposive sampling from among the methadone maintenance patients under treatment in Yavaran Omid Addiction Treatment Center in Mashhad in 2013 and were identified as being qualified according to the study of patients records and consultation with a psychiatrist and psychologist of the center. Then, they were randomly assigned to two experimental and control groups (each containing 12 individuals) using a table of random numbers. This number eventually decreased to 5 people per group because of loss. Some of the selection criteria of the initial sample included drug dependence in accordance with the criteria in the revised version of Diagnostic and Statistical Manual of Mental Disorders (4th ed.) (DSM-IV-TR), masculinity, ability to read and write, no history of problematic physical and psychiatric illness, not receiving pharmacological and non-pharmacological treatment (other than methadone) along with the research and completion of the agreement form to participate in the study. In this form, subjects while announcing their agreement were informed about the rights they have in the research as participants including immunity from any physical or mental harm, confidentiality of their personal information and the possibility of leaving the study when they do not want to continue their cooperation. Additionally, the criteria considered in this research to exclude the subjects from the statistical analysis included the following: one session of absence, delay for more than 10 minutes in most sessions, not doing the assignments in most sessions, non-compliance with the rules agreed by the group members such as secrecy and observance of discipline, unwillingness of the subject to continue the research, receiving pharmacological and non-pharmacological treatment and creating unexpected physical and mental problems during the research which might jeopardize the results.

Before and after the group therapy, the two groups

completed Relapse Prediction Scale (RPS), Meta-cognitions Questionnaire-Short Form (MCQ-30), Beck Depression Inventory-2nd ed. (BDI-II) and Beck Anxiety Inventory (BAI). Also, the experimental group completed Clinical Global Index (CGI) and Client Satisfaction Questionnaire (CSQ) in the post treatment.

Research instruments

- *Relapse Prediction Scale (RPS):* It is a 45-item self-report scale provided by Wright et al. (1993) which was translated by Goudarzi (2001) into Persian. Each question contains a hypothetical situation that measures drug craving intensity and the likelihood of substance use in that particular situation. Any of these two parts in each question achieves a score between 0 and 4 based on five-point Likert scale (none, weak, moderate, strong, very strong). Accordingly, the minimum and maximum scores that can be obtained by the subjects in each part of this scale are respectively 0 and 180 and a higher score in the first part of this scale suggests more substance craving and in the second part, indicates greater likelihood of substance use (16). Firoozabadi reported the internal consistency of 0.74 and 0.78respectivelyfor drug craving and likelihood of substance use, using Cronbach's alpha (16). Besides, Kafi, Mollazadeh Esfanjani, Nouri and Salehi (18) in their research reported the Cronbach's alpha of 0.81 and 0.78respectivelyfor the drug craving and the likelihood of substance use, which shows the good reliability of the scale. Researchers in the field of addiction believe that this scale has content validity.

- *Meta-cognitions Questionnaire-Short Form (MCQ-30):* This is the short form of Cartwright-Hatton and Wells Meta-cognitions Questionnaire-long Form (MCQ-65) which contains 30 items and has been developed by Wells and Cartwright-Hatton (19). This scale measures people's beliefs about their thoughts and includes five subscales, each of which has six items. Subscales comprise: 1- positive beliefs about worry (e.g., worry helps me cope with problems); 2- negative beliefs about worry, which emphasize the uncontrollability and dangerousness of worries (e.g., when my worry begins, I cannot stop it); 3- low cognitive confidence (e.g., I have a poor memory); 4- the need to control the thoughts (e.g., inability to control my thoughts is a sign of my weakness); 5) cognitive self-awareness (e.g., I pay much attention to the way my mind works) (11). Items in MCQ-30 receive a score between 1 and 4 based on four-point Likert scale (disagree, slightly agree, almost agree, strongly agree). The minimum and maximum scores that can be obtained by the

subjects in this scale are respectively 1 and 120 and for each subscale, they are 1 and 24. A higher score in each subscale indicates its strength. This questionnaire has been translated and prepared by Shirinzadeh Dastgiri (20) for Iranian population. In the Iranian sample, Cronbach's alpha coefficient for the whole scale was 0.91 and for the subscales of negative beliefs about worry, positive beliefs about worry, cognitive self-awareness, low cognitive confidence, the need to control the thoughts, it was reported 0.87, 0.86, 0.81, 0.80 and 0.71 respectively. In a study, Shareh (21) retranslated this scale due to the difference between the original and translated versions. In his research, reliability of the whole scale was obtained 0.94, using Cronbach's alpha, which shows the high reliability of this scale.

- *Beck Depression Inventory-2nd ed. (BDI-II):* This questionnaire was first introduced in 1961 by Beck, Mendelson, Mock and Erbaugh. It was revised in 1971 and was published in 1978 under the name of Amended Beck Depression Inventory (BDI-1A) (22). Beck and his colleagues (22) carried out a fundamental revision in this questionnaire for greater coordination of this scale with the criteria of DSM-1V, resulting in BDI-II. This scale like its original version has 21 items, which is applied to identify and measure the severity of depression in adults and adolescents with 13 years of age and older over the past two weeks. Items in this questionnaire are associated with issues such as a sense of failure and disability, feeling of guilt, irritability, sleep disturbances, and loss of appetite. Each question is a 4-point scale which achieves a score between 0 and 3; thus, the minimum and maximum scores that can be obtained from this scale are respectively 0 and 63. Cut off scores in this scale are as follows: 0-13= non-depressed, 14-19= mild to moderate depression, 20-28= moderate to severe depression and 29-63= severe depression (22). Psychometric characteristics of this questionnaire in a sample of 94 people in Iran were as follows: alpha coefficient= 0.91, correlation coefficient between the two halves= 0.89 and retest coefficient with a one-week interval= 094 (23). Dobson and Mohammad Khani in their study on 354 people who had received a diagnosis of major depression reported the overall reliability of 0.91 for this scale and confirmed the validity of this test. The above evidence indicates the high reliability and validity of this scale (24).

- *Beck Anxiety Inventory (BAI):* This scale was developed by Beck and Steer [22] with regard to two main aspects of anxiety, that is, cognitive and physiological symptoms. This questionnaire

contains 21 items, which reviews the frequency of anxiety symptoms in the last week. Each question achieves a score between 0 and 3 based on a 4-point Likert scale (0 = very low, mild, moderate and severe= 3). Accordingly, the minimum and maximum scores obtained from this scale are respectively 0 and 63. Higher scores indicate more anxiety (0-7= very low, 8-15= mild, 16-25= moderate, 26-63= severe). In a study, Kaviani and Mousavi (25) after translating this scale into Persian examined its validity and reliability in Iranian population. According to this study, this scale enjoys retest reliability with an interval of one month (r= 0.83, P<0.001) and appropriate validity (r= 0.72, P<0.001).

- *Client Satisfaction Questionnaire (CSQ):* This questionnaire which was designed by Larsen (26) to measure the amount of client satisfaction with services received during treatment includes 8 questions each having 4 answers, which achieve a score between 1 and 4 (4 = very positive, positive, negative, very negative = 1) based on their degree of being positive or negative. Accordingly, the minimum and maximum scores that can be obtained by the subjects in this scale are respectively 8 and 32 and a higher score indicates greater satisfaction with treatment. Internal consistency coefficient of this questionnaire is 0.93 and it enjoys good content and construct validity (27). The reliability of this scale in Iranian population has been reported as good (28).

- *Clinical Global Index (CGI):* This scale that is the second subscale of the clients' global impression (CGI) of the treatment questionnaire was designed by Guy (29) and is completed by the clients at the end of treatment (posttest and follow-up) to assess the rate of response to treatment. It contains a question with a seven-point Likert scale and accordingly, clients receive a score between 1 and 7 (1=very much improved, much improved, slightly improved, unchanged, slightly deteriorated, much deteriorated, extremely deteriorated=7). Higher scores are a sign of less improvement. This questionnaire was rendered into Persian by Shareh through translation and retranslation. Its content validity was confirmed by clinical psychologists and psychiatrists. Its reliability in a sample of 23 patients with obsessive-compulsive disorder was obtained 0.91, using retest with an interval of one week (28).

The overall structure of sessions in this study was devised based on the book "Cognitive therapy in groups" by Michael Free (30) and "Meta-cognitive therapy for anxiety and depression" by Adrian Wells (11). Accordingly, subjects of the experimental

group participated in group therapy sessions based on DM techniques for 3 weeks (6 one-hour sessions). Treatment plan of the experimental group in each session generally included reviewing the assignments of the previous session in the form of the oral report presented by individual members, training new techniques and setting an assignment for the next session (comprising the use of the technique learned at the time of dealing with intrusive thoughts between the sessions). The following items were practiced with the participants during the sessions: suppression/counter-suppression experiment in the first session,free association technique and thoughts on leaves in the second session, tiger task and cellular phone in the third session, fantasy and clouds metaphor in the fourth session, recalcitrant child technique in the fifth session and passenger train technique in the sixth session. The control groupsimultaneously continued the usual group therapy program of the center in the way that they discussed the following issues: Effective communication skills, anger and methods to control it, what is change and how you can change, problem solving skills, methadone and its complications and Say-No skill.

Data obtained from questionnaires in both groups was analyzed through Multivariate Analysis of Covariance (MANCOVA) and t dependent test using SPSS-19 software. Further, percentage of improvement was used to calculate the rate of subjects' improvement in variables.

$\Delta \% = (A0 - A1)/A0$ in which A0 is the score of the measured questionnaire in baseline, A1 is the score of the same questionnaire at the end of treatment and Δ is the amount of changes (31). It should be noted that in the present study, all the tools were evaluated by an independent assessor (an MA in Clinical Psychology who had received adequate training in the field of implementing the research questionnaires) to prevent bias inthe participants' response to the questionnaires. Also, effort has been made that the subjects do not recognize to which group (experimental or control) they belong and remain unaware of comparing their performance with the performance of another group to reduce biases in response to the tools.

Results

The results obtained from the frequency percentage of demographic characteristics indicated that the experimental group members have elementary education (40%), middle school education (20%), associate degree (20%) and bachelor's degree (20%) while the control group members enjoy elementary

education (20%), middle school education (20%) and diploma (60%). In the experimental group, married, single and divorced individuals respectively accounted for 20%, 60% and 20%. But in the control group, 40% were married and 60% were divorced. The substance used included crystal (40%), heroin (40%) and crystal and opium (20%)in the experimental group and crystal (40%), opium (20%) and crystal and opium (40%) in the control group. Duration of drug dependence in the experimental group included 10 years (40%), 8 years (20%), 20 years (20%) and 26 years (20%). Duration of drug dependence in the control group is as follows: 5 years (60%), 20 years (20%) and 42 years (20%). The number of attempts to quit is as follows: 3 times (20%) and more than 10 times (80%) in the experimental group and once (20%), 3 times (20%), 7 times (20%) and more than 10 times (40%) in the control group. Employment status includes: unemployed (20%), self-employed (60%) and employees (20%) in the experimental group and self-employed (80%) and unemployed (20%) in the control group. The age of members ranges from 41 to 57 years old for the experimental group and 33 to 57 years old for the control group. The mean duration of treatment with methadone was 19.7 months (ranging between 2 and 36 months) in the control group and 23.6 months (ranging between 4 and 36 months) in the experimental group. Both groups were analyzed in terms of the above features through Chi-square test for independent groups, but no significant difference was found (P=0.446).

Chi-square test showed that there is no significant difference between the two groups in terms of demographic variables such as education (P=0.255), marital status (P=0.155), abused substance (P=0.343), consumption method (P=0.333), duration of dependence (P=0.015), number of attempts for drug withdrawal (P=0.446), length of treatment (P=0.682), employment status (P=0.238) and age (P=0.973), which indicates the relative homogeneity of the two groups in terms of the above features.

The results of the multivariate analysis of covariance (Table 1) suggested that there is no significant difference between the two groups after the completion of group therapy in terms of meta-cognition components (positive beliefs about worry, P=0.321; negative beliefs about worry, P=0.367;cognitive confidence, P=0.057; the need to control the thoughts, P=0.303; cognitive self-awareness, P=0.790 and meta-cognition, P=0.600), anxiety (P=0.105) and depression (P=0.108). It should be mentioned that data contained the assumptions of using multivariate analysis of covariance (normality of the sample, homogeneity of variances and equality of regression slopes). On the other hand, scores of impact coefficient were between low to moderate in the likelihood of drug use (0.464) and drug craving (0.333), and more than moderate in anxiety (0.751), depression (0.516) and cognitive confidence (0.522). This shows the clinical significance of the difference between two groups in the foregoing (32).

Table 1. Results of MANCOVA obtained from comparing the scores of the research variables of the two groups after the completion of group therapy

Variable	Control				Experimental				F	Sig	Impact coefficient
	Pre-test		Post-test		Pre-test		Post-test				
	M	SD	M	SD	M	SD	M	SD			
Likelihood of drug use	70.00	46.14	59.40	37.93	34.20	25.53	12.20	18.36	3.45	0.13	0.46
Drug craving	61.40	35.89	54.40	33.20	42.40	29.71	20.60	28.50	0.12	0.32	0.33
Positive beliefs about worry	13.80	4.81	16.60	6.38	19.00	4.94	17.40	6.50	1.40	0.32	0.32
Negative beliefs about worry	17.40	6.98	19.00	6.48	21.00	2.23	18.40	2.19	1.12	0.36	0.27
Cognitive confidence	13.40	7.79	16.40	6.58	17.40	2.88	16.20	2.58	9.07	0.057	0.75
Need to control thoughts	17.00	6.00	16.80	4.80	21.80	2.48	21.00	1.22	1.54	0.30	034
Cognitive self-awareness	13.00	5.19	15.60	5.02	20.00	1.58	20.20	2.86	0.08	0.79	0.03
Metacognition	74.60	26.11	80.40	26.76	99.20	7.66	93.20	12.91	0.34	0.60	0.10
Depression	33.20	16.13	26.20	20.36	33.20	8.70	20.60	1.19	4.27	0.10	0.52
Anxiety	31.60	18.44	27.60	15.99	30.60	16.80	9.44	9.83	4.37	0.10	0.52

Additionally, the scores obtained from Client Satisfaction Questionnaire (Table 2) in the

experimental group are between 19 and 29 with an average of 26, which shows the high satisfaction of

the experimental group members with the treatment. In this group, all the subjects reported their satisfaction with the treatment as being between 26 and 29, except for one participant whose satisfaction was 19. This indicates that most of the clients have been almost completely satisfied with the offered treatment since the closer the CSQ score becomes to 32, it means that satisfaction with the treatment has been higher and the more this number approaches zero, it means that there is no satisfaction with the provided treatment. The score of Clinical Global Index for the subjects in the experimental group (Table 2) was between 1 and 3 with an average of 1.8, which generally shows significant improvement of the subjects due to treatment since the more the subject's score approaches 1, clients report more improvement; but the more the subject's score approaches 7, clients report less improvement and more deterioration.

Table 2. Results of patient satisfaction with the treatment and Clinical Global Improvement of the subjects in the experimental group after the completion of group therapy

Subject	Client Satisfaction Questionnaire (CSQ)	Clinical Global Improvement (CGI)
1	28	2
2	29	2
3	28	1
4	19	3
5	26	2
Mean	26.00	1.8
Standard deviation	4.06	0.83

To further assess the changes in each group after treatment, t dependent test was applied (Table 3). The results indicated that the experimental group had a significant decrease in anxiety scale ($P= 0.031$), but the control group showed no significant change in any of the cases examined.

Table 3. Summary of the results of t dependent test obtained from comparing the pretest and posttest scores of the research variables in each of the experimental and control groups after the completion of group therapy

Variable	Control						Experimental					
	Pre-test		Post-test				Pre-test		Post-test			
	M	SD	M	SD	t-test	Sig	M	SD	M	SD	t-test	Sig
Likelihood of drug use	70.00	46.14	59.40	37.93	1.74	0.15	34.20	25.53	12.20	18.36	1.41	0.22
Drug craving	61.40	35.89	54.40	33.20	0.94	0.39	42.40	29.71	20.60	28.50	1.49	0.21
Positive beliefs about worry	13.80	4.81	16.60	6.38	1.44	0.22	19.00	4.94	17.40	6.50	2.13	0.09
Negative beliefs about worry	17.40	6.98	15.00	6.48	1.80	0.14	21.00	2.23	18.40	2.19	1.81	0.14
Cognitive confidence	13.40	7.79	16.40	6.58	1.48	0.21	17.40	2.88	16.20	2.58	0.62	0.56
Need to control thoughts	17.00	6.00	16.80	4.80	0.12	0.91	21.80	2.48	21.00	1.22	0.54	0.61
Cognitive self-awareness	13.00	5.19	15.60	5.02	1.48	0.21	20.00	1.58	20.20	2.86	0.11	0.91
Metacognition	74.60	26.11	80.40	26.76	1.55	0.19	99.20	7.66	93.20	12.91	0.96	0.38
Anxiety	31.60	18.44	27.60	15.99	0.99	0.37	30.60	16.80	9.44	9.83	3.27	0.03
Depression	33.20	16.13	26.20	20.36	0.98	0.37	33.20	8.70	20.60	11.19	2.30	0.08

Moreover, the scores of improvement in both groups (Table 4) showed that after the completion of group therapy, the experimental group has had a better condition in all the examined cases except the subscale of cognitive self-awareness, compared to the pretest while the condition of the control group deteriorated at the end of the group therapy in the subscales of positive belief about worry, cognitive confidence, the need to control the thoughts, cognitive self-awareness and meta-cognition scale, compared to the pretest. The rate of improvement in all the cases except negative beliefs about worry in

the experimental group was higher than the control group.

Table 5. The stepwise regression on shares of developmental family function dimensions in predicting the total score of the mental health

Variable	Group	M	SD	Minimum	Maximum
Likelihood of drug use	Control	10.40	14.36	-6	31
	Experimental	79.20	23.75	45	100
Drug craving	Control	8.40	18.83	-14	30

	Experimental	48.20	43.06	-2	97
Positive beliefs about worry	Control	-14.00	22.80	-37	20
	Experimental	11.20	14.75	0	36
Negative beliefs about worry	Control	13.60	20.08	-9	44
	Experimental	11.40	14.36	-5	28
Cognitive confidence	Control	-20.60	25.40	-53	17
	Experimental	10.20	19.52	-21	33
Need to control thoughts	Control	1.80	23.75	-38	27
	Experimental	6.20	12.53	-14	17
Cognitive self-awareness	Control	-16.40	22.43	-44	18
	Experimental	-0.40	16.94	-25	22
Meta-cognition	Control	-7.80	11.16	-20	9
	Experimental	6.20	13.66	-11	22
Depression	Control	22.20	37.38	-23	70
	Experimental	37.00	32.03	0	74
Anxiety	Control	10.80	17.45	-4	39
	Experimental	44.60	23.53	8	66

Discussion

This study was conducted with the aim of investigating the effectiveness of DM techniques in reducing drug craving and likelihood of drug use in substance-dependent individuals. Although the obtained results showed no statistically significant difference between the two groups which may be due to the small number of participants, short duration of treatment and also inability to control the confounding factors such as type of the substance used, duration and intensity of drug dependence, method of drug use, number of attempts to quit, marital status and family circumstances, education, occupation and income, learning styles, ability for imagery and visualization and mood and personality characteristics of the participants, the scores of impact coefficient in drug craving and likelihood of drug use, anxiety, depression and cognitive confidence indicate the clinical significance of this treatment compared to the control group, which is more important than statistical significance according to contemporary researchers (31). The results of CSQ and CGI in this

research suggest general improvement and high treatment satisfaction of the experimental group and confirm this issue. In addition, after the group therapy, the experimental group subjects have had a better condition in all the cases examined in this study except the subscale of cognitive self-awareness, compared to pretreatment and their scores of improvement percentage except for the scale of negative beliefs about worry further improved compared to the control group while the condition of the control group deteriorated after the group therapy in the subscales of positive belief about worry, cognitive confidence, the need to control the thoughts, cognitive self-awareness and meta-cognition scale. Remarkably, many researchers and therapists believe that evaluation of improvement and satisfaction and also impact size provide a more accurate indicator of the effectiveness of therapeutic interventions compared to statistical indicators (27,30-32). Hence, considering the above-mentioned results, the program proposed in this study with the title of group therapy based on DM techniques is a more useful method than group therapy with free topics for the treatment of substance abusers. These results are consistent with the theory of Wells, who consider these techniques as being effective in reducing the suppression of thoughts, improving meta-cognitive beliefs, strengthening cognitive confidence and treating disorders such as anxiety, depression and drug dependence (11).

Further, comparing the mean scores of improvement percentage indicated that the greatest difference between the two groups exists in the drug craving and the likelihood of drug use. This shows the usefulness of these techniques in reducing the desire and the possibility of substance use. This finding is consistent with the results obtained by Spada et al. (13), Spada and Wells (33), Tonaetto (34), Ahmadi Tahour Soltani and Najafi (35), Saed et al. (15), Haji Alizadeh et al. (14) and Firoozabadi (16), Mohammadifar, Kafi Anaraki and Najafi (36) and Setorg, Kazemi and Raisi (37) who believe that there is a relationship between meta-cognitions and drug dependence, and meta-cognitive therapy can be useful in this respect. Also, the results of this research are consistent with the studies conducted by Ellis andHadson (38) who consider meta-cognitive therapy as an appropriate treatment for emotional disorders such as anxiety due to its impact on positive and negative beliefs; Spada and Caselli (39) who regard meta-cognitive dimensions particularly positive beliefs and low cognitive confidence as part of the causative factors of anxiety and worry and believe that anxiety will be reduced

by improving these cases; Papageorgiou and Wells (40,41); Salarifar and Pour Etemad (42); Hashemi, Mahmoud Alilou and HashemiNosrat-abad (43) who believe that meta-cognitive therapy is effective in reducing major depression.

Besides approving the usefulness of DM techniques to reduce anxiety, this study shows the high sensitivity of this scale to these techniques compared to other cases investigated so that in the experimental group, the only significant change was observed in anxiety scale while the control group showed no significant changes in any of the cases.

Although the small sample size and narrowing down the choices to a medical center restrict the possibility of generalizing the data obtained from this study, the results achieved in this short time can indicate the usefulness of this treatment. Additionally, this therapy provides a good suggestion for combining these techniques with other group therapies for the treatment of substance dependent individuals and other emotional disorders and even it can be used as a precautionary method for training in educational levels because today, we know that meta-cognitions are effective in many emotional disorders. Therefore, the methods which improve this cognitive level can be helpful in this regard. Among other limitations of this study are the lack of exact matching of the subjects in the experimental and control groups in terms of demographic characteristics and also non-existence of a follow-up period due to lack of cooperation on the part of the target center.

Wells (11) has suggested about 10 sessions for the treatment of anxiety disorders and depression and has applied numerous techniques, the most important of which are DM methods while only 6 sessions took place using DM techniques because of limited access to the participants, which is itself a kind of limitation to the present study. Performing a 10-session treatment in which other techniques of meta-cognitive therapy are used probably confirms the effectiveness of this therapeutic approach in the treatment of drug abuse. However, providing meta-cognitive therapy for homogeneous subjects who are abusers of the same substance can offer a more accurate assessment of this issue: in what group of drug users is this treatment more effective?

Conclusion

This study shows that the use of group therapy programs based on DM techniques, which is a kind of meta-cognitive therapy, is more useful compared to the group therapy with free topics and the conventional group therapies applied in addiction treatment centers. Thus, better results can be achieved in the treatment of substance dependent individuals through the enrichment of group therapies with meta-cognitive techniques.

Acknowledgment

References

1. Delavarpoor MA, Soltani M, Hosseinchari M. [Prediction of recovery or relapse from substance abuse based on the emotional intelligence and religious coping]. J Psychiatr Clin Psychol 2008; 3: 307-15. (Persian)

2. Bahrami Ehsa H. [Addiction and process of prevention]. 4th ed. Tehran: Samt; 2011: 17-26. (Persian)

3. Ekhtiyari H, Behzadi A, Sadeghi M, Mirbaha H, Noroozi L, Alavi AH. [A guide to identify and treat drug addiction in Iran]. 3rd ed. Tehran: Arjmand; 2012: 67-93. (Persian)

4. Farzam H, Farhadi KH, Rezaie M, Tolouie AR. [Comparing ultra rapid opiate detoxification with methadone in recurrent of self-introduced addicted subjects]. Journal of Kermanshah University of Medical Sciences 2010; 3(14): 14-18. (Persian)

5. Lawental E. Ultra rapid opiate detoxification as compared to 30-day inpatient detoxification Program: A retrospective follow-up study. J Subst Abuse 2000; 11(2): 173-81.

6. Najafi K, Amir Alavi C, Zarrabi H, Alimohammadzadeh A, Khodaei E, Salajegheh A. [Survey the prevalence of recommence in ultra rapid opiate and heroin dependents]. Journal of Guilan University of Medical Sciences 2008; 67: 55-64. (Persian)

7. Sadeghiyeh Ahari S, Azami A, Barak M, Amani F, Seddigh A. [Main factors in resorting to drug addiction among those who voluntarily referring to detox centers affiliated to Tehran welfare safe]. Research and scientific journal of Ardabil University of Medical Sciences 2004; 12(3): 36-40. (Persian)

8. Noroozi MR, Naderi SH, Binazadeh M, Sefatiyan S. [A comprehensive guide to treat drug addiction]. 2nd ed. Tehran: Pishgamane Tosea; 2005: 25-37. (Persian)

9. Ekhtiyari H, Behzadi A, Oghabiyan MA, Edalati H, Mokri A. [Illustrative signs inducing craving for injecting heroin]. Journal of advances in cognitive science 2006; 3: 43-51. (Persian)

10. Weinstein A, Feldtkeller B, Malizia W, Bailey N. Integrating the cognitive and physiological aspects of craving. J Psychopharmacol 1998; 12: 31-8.

11. Wells A. [Metacognitive therapy for anxiety and depression]. 1st ed. Tehran: Varaye Danesh; 2009: 28-151. (Persian)

12. Flavell JH. Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. J Am Psychologist 1979; 34(10): 906-11.

13. Spada MM, Nikcevic AV, Moneta GB, Wells A. Metacognition as a mediator of the relationship between emotion and smoking dependence. J Addict Behav 2007; 32(10): 2120-9.

14. Haji Alizadeh K, Bahrinian M, Naziri GH, Modarres Gharavi M. [The role of cognitive variables metacognitive dimensions and emotions in substance abuse behaviors]. Journal of advances in cognitive science 2010; 11(3): 70-84. (Persian)

15. Saed O, Purehsan S, Aslani J, Zargar M. [The role of thought suppression meta-cognitive factors and negative emotions in prediction of substance dependency disorder]. Journal of research on addiction 2011; 18: 70-84. (Persian)

16. Firoozabadi A, Ghanbari Hashemabadi BA, Tabatabaie M. [The efficacy of detached mindfulness and distraction techniques in craving and relapse rates in opiate dependent male subjects]. Journal of fundamentals of mental health 2010; 4: 292- 301. (Persian)

17. Ziaudini H, Hosseini M, Nocani M, Tofani Kh. [Group treatment for substance abuse]. 2nd ed. Tehran: Arjmand; 2010: 20-301. (Persian)

18. Kafi SM, Mollazadeh R, Nouri M, Salehi I. [The effectiveness of transactional behavior analytic group therapy on the prevention of relapse among detoxified people]. Journal of new research of psychology 2011; 23: 116-37. (Persian)

19. Wells A, Cartwright- Hatton S. A short form of the metacognitions questionnaire: Properties of the MCQ-30. J Behav Res Ther 2004; 42(4): 385-96.

20. Shirinzadeh Dastgiri S, Goudarzi MA, Rahimi CH, Naziri GH. [Study of factor structure validity and reliability of metacognition questionnaire-30]. Journal of psychology 2008; 12(4): 445-61. (Persian)

21. Shareh H, Gharaie B. Comparison of metacognitive therapy fluvoxamine and combined treatment in improving metacognitive beliefs and subjective distress of patients with obsessive- compulsive disorder. Journal of advances in cognitive science 2010; 1: 1-16. (Persian)

22. Marnat Gray G. [Handbook of psychological assessment]. 4rd ed. Tehran: Roshd; 1997: 1010-20. (Persian)

23. Fata L, Birashk B, Atef-Vahid MK, Dobson KS. [Meaning assignment structures/schema, emotional states and cognitive processing of emotional information: comparing two conceptual frameworks]. Journal of psychiatry and clinical psychology 2003; 42: 312-26. (Persian)

24. Dabson K, Mohammadkhani P. [Research on beck depression questionnaire-II in a large sample of those afflicted with major depression]. Journal of rehabilitation of mental and illnesses disorders 2007; 29: 82-8. (Persian)

25. Kaviyani H, Mousavi A. [Psychometric properties of Persian version of Beck Anxiety Inventory (BAI)]. Journal of Tehran University of Medical Sciences 2008; 2(66): 136-40. (Persian)

26. Larsen DL, Attkisson CC, Hargreaves WA, Nguyen TD. Assessment of client/patient satisfaction: Development of a general scale. J Eval Program Plann 1979; 2: 197-207.

27. McMurtry SL, Hudson WW. The client satisfaction inventory: Results of an initial validation study. J Res Soc Work Pract 2000; 5(10): 644-63.

28. Shareh H. Validation and investigating the psychometric properties of the client satisfaction questionnaire and client clinical global index in a sample of patients with obsessive-compulsive disorder. In press.

29. Guy W. ECDEU Assessment Manual for Psychopharmacology. 2nd ed. US: Rockville, MD; 1976: 218-22.

30. Free M. [Cognitive therapy in groups]. 1st ed. Mashhad: Jihad; 2003: 17-175. (Persian)

31. Barlow DH, Hersen M. Single case experimental designs strategies for studying behavior change. 2nd ed. New York: Pergamon; 1984: 46-68.

32. Cohen J. A power primer. Psychol Bull 1992; 112(1): 155-9.

33. Spada MM, Wells A. Metacognition about alcohol use in problem drinking. J Clin Psychol Psychother 2006; 13(2): 138-43.

34. Tonaetto T. Metacognition and substance use. J Addict Behav 1999; 24(2): 167-74.

35. Ahmadi Tahour Soultani M, Najafi M. [The comparison of metacognitive beliefs and ambiguity tolerance among addicted, smokers and normal individuals]. Journal of clinical psychology 2006; 31: 43-51. (Persian)

36. Mohammadifar MA, Kafi Anaraki M, Najafi M. [The role of metacognition and negative emotions on prediction of abuse behaviors]. Journal of research on addiction 2014; 29(8): 67-76. (Persian)

37. Setorg S, Kazemi H, Raisi Z. [Effectiveness of metacognitive therapy on craving beliefs and substance related beliefs in substance abuse disorder patients]. Journal of research on addiction 2014; 28(7): 148-62. (Persian)

38. Ellis DM, Hudson JL. The metacognitive model of generalized anxiety disorder in children and adolescents. J Clin Child Fam Psychol Rev 2010; 13: 151-63.

39. Spada MM, Caselli G, Manfredi C, Rebecchi D, Rovetto F, Ruggiero GM, et al. Parental overprotection and metacgnitions as predictors of worry and anxiety. J Behav Cogn Psychother 2012; 33(5): 629-37.

40. Papageorgiou C, Wells A. Treatment of recurrent major depression with attention training. J Cogn Behav Pract 2000; 7: 407-13.

41. Papageorgiou C, Wells A. An empirical test of a clinical metacognitive model of rumination and depression. J Cogn Ther Res 2003; 27: 261-73.

42. Salarifar MH, Pouretemad HR. [The relationship between metacognitive beliefs and anxiety and depression disorder]. Yafteh 2012; 50: 29-38. (Persian)

43. Hashemi Z, Mahmoud Alilou M, Hashemi Nosratabad T. [The effectiveness of metacognitive therapy on major depression disorder: A case report]. Journal of clinical psychology 2011; 3: 85-97. (Persian)