

Comparing the Effectiveness of Mindfulness-Based Group Therapy and Methadone Maintenance Therapy on Psychological Symptoms (Obsession, Interpersonal Sensitivity, Depression, Anxiety, and Aggression) among Opioid-Dependent Patients

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Abstract

Background: Addiction is a multidimensional phenomenon that causes irreparable damages to an individual as well as community structure. Despite enormous efforts made, this phenomenon has not diminished. Therefore, the present study aimed to compare the effectiveness of mindfulness-based group therapy and methadone maintenance therapy in improving the psychological symptoms among opioid-dependent patients.

Materials: This was a quasi-experimental study. The sample of this study included 57 patients (each group included 19 individuals) using the convenience sampling method among all those who referred to addiction treatment centers. The tools applied were the clinical interview and the symptom checklist for mental disorders. The obtained data was analyzed using the repeated measures analysis of variance (mixed).

Results: The results indicated that although both mindfulness-based group therapy and commonly used treatments improved the psychological symptoms among the opioid-dependent patients, the mindfulness-based group therapy was more effective in this regard and it significantly led to an increase in the level of mental health among the opioid-dependent patients after coming off the drugs. Moreover, the results revealed that the effectiveness of these methods could also be observed in the follow-up period.

Conclusions: According to the results, the mindfulness-based group therapy, compared to the methadone maintenance therapy, was more effective in decreasing risk behaviors among the opioid-dependent patients.

Keywords: Addiction, Narcotics, Mindfulness, Psychological Symptoms

1. Background

Addiction is one of the most pervasive mental disorders. The problem of drug abuse and dependence is a complex and multifaceted issue. The main reasons for abusing drugs are various and can be related to different social, economic, interpersonal, and individual factors identifying which often seems very difficult. In many cases, solving this problem is much more difficult than understanding its causes and identifying its causative and facilitating factors. According to conducted studies, the number of opioid-dependent patients, in our country, is increasing. When opioid-dependent patients' family members, who for various reasons struggle with and suffer from the problems caused by drug abuse, are taken into consideration, one notices that a considerable part of our people are dealing with this issue (1).

About 90% of people who are dependent on narcotics have to deal with other psychiatric diagnosis as well. The

most common psychiatric diagnoses are major depression disorder, alcohol use disorder, antisocial personality disorder, and anxiety disorders. Moreover, nearly 15% of the people who are dependent on narcotics have attempted to commit suicide at least once (2).

Several studies have indicated the existence of psychiatric disorders among opioid-dependent patients. The results of a study conducted by Parvizifard (3) showed that respectively 72% and 28% of self-introduced opioid-dependent patients had a diagnostic criteria for mood and anxiety disorders (other than the drug use disorder). Among mood disorders, major depression (66%) and dysthymic (6%) were the most common disorders. Among anxiety disorders, generalized anxiety disorder (12%), panic disorder (8%), posttraumatic stress disorder (6%), and obsessive-compulsive disorder (2%) were respectively the most prevalent disorders. Creating neurological-psychiatric symptoms, which are impartible from symp-

toms of common mental disorders that have no known reasons (like schizophrenia and mood disorder), is one of the consequences of drug abuse. This means that mental disorders and substance-related disorders affecting the brain are related (2). In a study, Miller (4) mentioned the results obtained in a study conducted by Regier et al. who reported the prevalence of mental disorders among drug and alcohol abusers. The results were as follows: mood disorders 26.3%, anxiety disorders 28.3%, schizophrenia 6.7%, antisocial personality 17.7%, and other mental disorders 21%. In general, addiction can be regarded as a form of self-medication.

The conducted studies aimed to examine the etiology of substance abuse and recurrence of compulsive behaviors, and demonstrated that in the treatment of addiction relapse prevention, positive and negative emotional states, desire and temptation (5), negative affect, impulsivity, the role of negative emotions especially anxiety and depression (6), emotion dysregulation, low distress tolerance, emotional avoidance (7), habitual behaviors conducted without thinking (8), ruminative thought (9), bias towards symptoms of abusing drugs, low self-efficacy and deficits in coping skills (10), and spiritual vacuum (11) can be considered among the most important risk factors playing roles in the relapse. The relapse may be the result of the interaction of different variables such as emotional variables (positive or negative mood states), behavioral variables (impulsivity), cognitive variables (attitude towards the recovery), environmental and interpersonal variables (lack of family disability, social pressure caused because of drug abuse), physiological variables (such as craving, withdrawal symptoms, and the like), spiritual variables (such as guilt and shame, a sense of emptiness, and a feeling that life is meaningless), and treatment-related variables (such as negative attitudes towards therapists and inadequate healthcare) (12).

Various researchers and theorists, who conducted several studies to examine the etiology of drug abuse and the recurrence of compulsive behaviors, mentioned deficits in emotion regulation, low distress tolerance, emotional avoidance, habitual behaviors conducted without thinking, rumination, positive bias towards symptoms of drug abuse, low self-efficacy, deficits in coping skills, and spiritual vacuum as factors affecting the relapse (9-11). Therefore, treating the addiction relapse is of significant importance.

Due to the extent of the problem of addiction, numerous treatments, including pharmacotherapy and psychotherapy, have been presented and examined. Although various studies have supported the effectiveness of the existing therapies, this effectiveness is relative and there is still no cure, which can be considered as the definite so-

lution to the problem of addiction. Since, on one hand, the pharmacotherapy has several side effects, and, on the other hand, despite the fact that many psychotherapies are effective in treating addiction, they are still faced with high rates of relapse. In fact, while the main objective of treating disorders is to complete the process of recovery, many patients fail to achieve this goal or to keep their body in a condition without any symptoms. The existence of residual symptoms in this disorder, even in patients who show a complete recovery, is common. These residual symptoms are strong predictors of relapse. The rate of relapse in patients with residual symptoms is 3 to 6 times more than that in patients without such symptoms. These results suggested the inadequacy of current treatments and the need for more effective treatments for this disorder.

Mindfulness is a method to observe and accept thoughts, images, and feelings without getting involved with the content of these thoughts or testing the reality and challenging negative thoughts with classic cognitive-behavioral techniques. In mindfulness, distraction techniques are used to suppress or avoid negative thoughts (13).

In recent years, mindfulness meditation practices have been used as important methods in combining different interventions applied to treat disabilities and distress. Although these meditation practices were initially introduced for physical diseases, including chronic low back pain, their effectiveness in improving emotional disorders, especially anxiety and depression, has been determined (14). Growing evidence has suggested that mindfulness is effective in dealing with clinical situations especially psychiatric ones (15) and increasing the number of research has shown the usefulness of mindfulness in various cases such as chronic pain (16), posttraumatic stress disorder, somatization, stress management models, coping and resilience (17), addictive behaviors (18), behavioral abnormalities such as aggression and substance abuse (19), impulsivity (20), social anxiety (21), and rumination and depression (22). Based on the conducted studies, the mindfulness affects depression in at least 2 ways: by confronting mental ruminations and through reducing the number of emotional automated responses, which impact the insula (23). The mindfulness-based therapy is also effective in reducing stress, anxiety, and depression (24).

According to the results obtained from the previously conducted studies, combining training preventive methods with mindfulness can have relatively successful effects on judgment and aversion of opioid-dependent patients who inject drugs (25, 26). The mindfulness therapy is effective in reducing drug abuse (1). Moreover, temptation is the strongest predictor of relapse among other predictor variables (even comorbidity with other disorders such

as anxiety and depression) and mindfulness therapy is effective in reducing negative effects of temptation to use drugs (27). The greater the severity of mindfulness associated with spirituality, the less the use of alcohol, tobacco, and other drugs (16).

Indeed, by minimizing the involvement of thoughts and feelings, MBRP combined with meditation and specific mental orientations towards an experience can be applied to encourage awareness to the present moment in a non-judgmental way. This therapy is derived from cognitive-behavioral therapies and is considered as an important component of the third wave of psychological therapy models. All mindfulness-based exercises are designed to enhance attention to the body. The significant role of the body was proven in new interdisciplinary fields including mind-body medicine. Studies that applied mindfulness laid the emphasis on interactions among physical, cognitive, and emotional processes. In practice, extensive research conducted on adult population revealed the efficiency of this therapy in dealing with various issues including managing stress and anxiety as well as promoting emotion regulation skills (27). Therefore, given the effectiveness of mindfulness in treating mental disorders, the current study aimed to compare the effectiveness of mindfulness-based group therapy and methadone maintenance therapy on psychological symptoms (obsession, interpersonal sensitivity, depression, anxiety, and aggression) among opioid-dependent patients.

2. Methods

2.1. Participants

The statistical population under study included all opioid-dependent patients who were referred to addiction treatment centers in Tehran. Among these people, 57 individuals who were willing to receive treatment services were selected and randomly placed into 2 experimental groups and 1 control group. Since this was a group study and considering the Morgan's table, 15 to 25 people could be assigned to each group. With regard to the sample size placed in the mindfulness-based therapy group, the methadone maintenance therapy group, and the control group, as well as the possibility of dissuasion of the group members, the sample size was considered 19 individuals for each group. Given that some participants abandoned the study, the number of participants in the considered groups, i.e. the mindfulness-based therapy group, the methadone maintenance therapy group, and the control group, decreased respectively to 13, 12, and 14 individuals.

The inclusion criteria of the current study were as follows: 1. being 20 to 45 years old, 2. having at least an ele-

mentary school education, 3. abusing opioids and not being dependent on stimulant drugs, 4. obtaining patient's written consent to participate in this study, 5. not having mental retardation, 6. not having psychotic disorders, and 7. not dealing with structural brain abnormalities. The exclusion criteria considered in this study were as follows: Having serious suicidal thoughts revealed through interviews conducted by a psychiatrist and

2.2. Baseline and Post-Intervention Assessment

2.3. Materials

The clinical interview was conducted based on the diagnostic and statistical manual of mental disorders: the structured and semi-structured diagnostic interviews contain a systematic collection of specific questions formed to evaluate those behavioral patterns, thoughts, and feelings that are typically associated with diagnosing a special disorder in a person (28). Using the DSM-V, the severity of drug addiction was in a moderate level (having 4 variables out of the 9 variables).

2.4. Symptom Checklist-90-Revised (SCL-90-R)

This scale was developed to assess those physical and mental conditions, which indicate the extent and severity of symptoms of mental disorders in people ranging from normal to abnormal ones.

Later in 1976, Derogatis revised this scale. This scale includes 9 dimensions and 3 subscales. Several studies examined the criterion validity of this scale and reported that this scale was highly correlated with the Minnesota multiphasic personality inventory, the middlesex health questionnaire, and various indicators were used to examine abnormal psychiatric states. This scale can be applied for examining the following: depression and sexual dysfunction, physical and sexual abuse, drugs, stress, and oncology. Studies that assessed the reliability of this scale indicated its good test-retest reliability and internal consistency. In Iran, the SCL-90-R is among the reliable and widely used scales, which was translated into Persian years ago. Its cut-off point, reliability coefficient, sensitivity, features, and efficiency were respectively 0.04, 0.97, 0.94, 0.98, and 0.96. Using the test-retest method, the reliability of this scale was reported between 0.77 and 0.90. This scale has been used in a number of studies (29).

2.5. Procedure

The method of this study was the quasi-experimental (including pretest, posttest, and follow-up) with a control group. The groups receiving the mindfulness-based group therapy and methadone maintenance therapy were considered as the experimental groups and a group, which did

not receive any such treatments was regarded as the control group (camp group).

The study was carried out through conducting the following steps:

- 1) Conducting the pretest in all 3 groups
- 2) Implementing the independent variable (the mindfulness-based group therapy) on the experimental groups
- 3) Carrying out the posttest in all 3 groups
- 4) Implementing the follow up period for all the experimental groups and the control group.

Additionally, the following ethical considerations were observed in the current study: the sample was selected using the convenience sampling method, the participants voluntarily took part in this study, the essential information on the method of conducting the study was provided, the participants were ensured that the obtained information would remain confidential, the method, which was found more effective based on the results obtained in the current study was taught to the control group.

2.6. Mindfulness Procedures

The related experimental group participated in 8 training sessions held once a week; however, the control group (camp) did not receive any psychotherapy or pharmacotherapy interventions. A form including the place and time of holding these sessions was provided and distributed among the participants. The following measures were taken in the training sessions: the mindfulness-based therapy was conducted on the experimental group based on the Bowen, Chawala, and Marlatt treatment protocol (30), during 8 group sessions. These sessions were held once a week for 2 months. Each session lasted for 90 minutes.

MBRP sessions included the following:

First session: automatic pilot and relapse

Second session: awareness of triggers and craving

Third session: mindfulness in daily life

Fourth session: mindfulness in high risk situations

Fifth session: acceptance and skillful actions

Sixth session: seeing thoughts as thoughts

Seventh session: self-care and lifestyle balance

Eighth session: social support and continuing practice

3. Results

The results indicate that the frequency distribution of participants in all 3 groups, the mindfulness-based therapy group, the control (camp) group, and the methadone maintenance therapy group, was respectively 33.3, 35.9, and 30.8. The highest level of education

in the mindfulness-based therapy group was diploma (38.5%) and the highest level of education in the control group (42.9%) and the methadone maintenance therapy group (58.3%) was middle school education. Most of the participants placed in these 3 groups were married. The frequency distribution of participants' jobs was as follows: without a job (42.3%), employed (50%), and self-employed, respectively had the highest frequency in the mindfulness-based therapy group, the control (camp) group, and the methadone maintenance therapy group. The means and standard deviations related to age, age of onset of drug abuse, duration of the recent treatment, the number of unsuccessful quits, and the last time they used drugs were also examined, the results of which are presented in Table 1.

Table 1. The Means and Standard Deviations Related to Age, Age of Onset of Drug Abuse, Duration of the Recent Treatment, the Number of Unsuccessful Quits, and the Last Time They Used Drugs^a

	Mindfulness Group	Control Group	Methadone Maintenance Group
Age	35.15 (5.14)	30.14 (6.99)	31.17 (6.65)
Age of onset of drug abuse	21.69 (3.72)	22.0 (3.61)	21.75 (5.44)
Duration of the recent treatment (number of days)	60.0 (0.000)	32.41 (8.01)	361.67 (496.60)
The number of unsuccessful quits	7.31 (2.95)	4.29 (2.40)	3.25 (0.96)
Last time they used drugs (number of months)	3.31 (1.31)	3.71 (0.99)	4.25 (1.81)

^aValues are expressed as mean (standard deviation).

Due to the small sample size and since the assumption of normal distribution of data was violated and the variances were not equal, to compare the means of these 3 groups in variables of age, age of onset of drug abuse, duration of the recent treatment, the number of unsuccessful quits, and the number of recent relapses, the Kruskal-Wallis nonparametric test was used. The obtained results indicate that considering the variables of age ($X^2 = 4.49$, $df = 2$, $P < 0.105$), age of the onset of drug abuse ($X^2 = 0.785$, $df = 2$, $P < 0.675$), and the number of recent relapses ($X^2 = 1.44$, $df = 2$, $P < 0.485$), there were no significant differences among these 3 groups. Moreover, with regards to the duration of the recent treatment ($X^2 = 29.16$, $df = 2$, $P < 0.000$) and the number of unsuccessful quits ($X^2 = 14.37$, $df = 2$, $P < 0.01$), there were significant differences among these groups.

This was a quasi-experimental study; therefore, it included an intragroup factor (the experimental groups and the control group) and a number of intergroup factors (various dependent variables). Since the dependent variables under study were assessed in 3 levels in these groups, the method of the current study followed a multivariate binary design. To examine the results and to answer the research questions and hypotheses, a two-way repeated measures analysis of variance with an intergroup variable (measured 3 times in three stages, i.e. the pretest, posttest, and follow-up) and an intragroup variable (the mindfulness-based therapy, the control (camp) group, and the methadone maintenance therapy group) was used. The means and standard deviations of these 3 groups on variables of mindfulness (observing, describing, acting with awareness, nonjudging, and nonreactivity) in the pretest, posttest, and follow-up are presented in [Table 2](#).

The results of Mauchly's test presented in [Table 3](#) demonstrates that the assumption of sphericity is rejected ($P > 0.05$); therefore, to interpret this test, a conservative test, like Geisser-Greenhouse test, should be applied for variables of mindfulness.

Considering the observation variable, interpersonal sensitivity, depression, anxiety, and aggression, the results presented in [Table 4](#) show that the main effect is significant. This means that there is at least a difference between the means obtained in 2 stages of measurement ($F(1, 36) = 22.22, P < 0.000, \text{Partial eta Squared} = 0.32$).

When analyzing the results of [Table 4](#), the main effect of stage and the interactional effect of group with stage with regard to the observation variable were important for us. At this stage, given the significance of the interactional effect, 2 simple effects of the group and stage were examined. Initially, using one-factor repeated measures analysis of variance with 3 stages of measurement in various levels (the mindfulness therapy group, the control group, and the methadone maintenance therapy group), the simple effect of stage (regardless of the intragroup factor) was examined comparing the means of the observation variable obtained in 3 stages.

The results of [Table 5](#) indicates that considering the observation variable, interpersonal sensitivity, depression, anxiety, and aggression, there are no significant differences at least in 2 stages of measurement among the mindfulness therapy group, the control (camp) group, and the methadone maintenance therapy group. To further examine the results and conducting pairwise comparisons of the pretest, posttest, and follow-up, the pairwise comparisons were conducted with the Benferroni correction.

Considering the groups considered in this study (the mindfulness therapy group, the control (camp) group, and the methadone maintenance therapy group), to examine

the simple intergroup effect, in each stage of measuring including the pretest, posttest, and follow-up, one-way analysis of variance (ANOVA) was used ([Table 7](#)).

The results of post hoc test show that in pretest, there were no significant differences among these groups' mean scores. In the posttest, the mean score of the mindfulness therapy group was significantly lower than the mean scores of the control group and the methadone maintenance therapy group and no significant difference was found between the control group and the methadone maintenance therapy group. In the follow-up, the mean score of the mindfulness therapy group was significantly lower than the mean scores of the control group and the methadone maintenance therapy group and no significant difference was found between the control group and the methadone maintenance therapy group.

4. Discussion

The results of the current study indicated the effectiveness of the mindfulness-based group therapy in improving the psychological symptoms (obsession, interpersonal sensitivity, anxiety, depression, and aggression) among the opioid-dependent patients in the posttest and follow-up. This effectiveness was statistically significant and after carrying out the mentioned therapies, the need to abuse drugs reached a moderate level.

The obtained results indicated that the mindfulness-based group therapy significantly affected obsession and improved the mindfulness-based components among the opioid-dependent patients. These findings are in line with the results of studies conducted by Breslin et al. (31), Leigh et al. (16), Bowen et al. (32), Fathi-Ashtiani and Dastani (29), Garland et al. (33).

The results of Fernandez et al. (34) indicated the effectiveness of the mindfulness-based therapy in decreasing obsession and improving mindfulness-based skills among opioid-dependent patients. To explain these results, it can be mentioned that compared to other conventional therapies, the mindfulness-based group therapy was more effective. This effectiveness may be due to strengthening motives among patients and increasing their awareness and knowledge of their performance. These findings demonstrated the effectiveness of the mindfulness-based therapy in improving the symptoms of obsession. The results obtained from the current study supported the results obtained from previously conducted studies. These findings are consistent with the results of other researchers indicating that conventional methods including medication, methadone maintenance treatment, and the like alone cannot treat drug addiction and psychological interven-

Table 2. The Means and Standard Deviations of These Three Groups on the Variables of Mindfulness in the Pretest, Posttest, and Follow-Up

	Mindfulness		Control (Camp)		Methadone Maintenance	
Obsession						
Pretest	11.30	3.17	11.21	3.01	11.50	2.93
Posttest	9.38	2.72	11	2.98	11.30	2.83
Follow-up	5.52	2.43	11.21	2.99	11.16	2.58
Interpersonal sensitivity						
Pretest	25.07	3.94	23.71	4.77	23.83	3.97
Posttest	14.69	3.59	23.28	4.56	23.08	3.60
Follow-up	14.84	3.64	23.57	4.56	22.75	3.54
Depression						
Pretest	32.38	5.59	30.50	6.64	31.16	4.58
Posttest	18.30	3.03	28.71	5.99	29.91	4.58
Follow-up	18.07	3.06	28.57	5.68	29.00	4.59
Anxiety						
Pretest	22.46	3.92	20.92	4.21	20.83	3.45
Posttest	15.07	2.59	21.14	4.63	21.75	3.98
Follow-up	15.30	2.71	21.50	4.78	21.25	3.88
Aggression						
Pretest	16.07	3.59	15.78	3.72	15.08	4.62
Posttest	8.84	2.96	14.92	4.358	14.91	4.33
Follow-up	8.91	3.04	15.14	4.016	14.66	4.030

Table 3. The Results of Mauchly's Test was Conducted to Examine the Homogeneity of the Covariance

Intergroup Factor	Mauchly's W	X ²	Df	P Values
Observation variable	0.521	22.82	2	0.000
Interpersonal sensitivity	0.521	22.82	2	0.000
Depression	0.291	43.23	2	0.000
Anxiety	0.271	45.70	2	0.000
Aggression	0.124	73.13	2	0.000

tions such as the mindfulness therapy can be considered as an important part of treating drug addiction (35, 36).

When evaluating the results in the pretest and posttest, the results showed the statistically significant effectiveness of the mindfulness-based group therapy in decreasing the symptoms of stress, anxiety, and depression among opioid-dependent patients. Therefore, the results of the present study are in line with the results of similar studies (16, 17, 27, 31, 35). On the other hand, since it was effective in decreasing stress, anxiety, and depression, the results are in line with the results of several previously conducted studies (22, 24, 36-42).

Training mindfulness skills is effective in preventing the onset or recurrence of the psychological symptoms. Mindfulness is the ability to manage a particular issue and stay focused on it, which guarantees the success of the treatment. Thus, the ability to focus is the main key to mindfulness. As a result of mindfulness interventions, patients understand how to focus their attention on the experience of a moment and stay away from negative thoughts and ruminations (43). Mindfulness is an indescribable and non-judgmental consciousness gained based on the present moment and is focused on the experience itself. Moreover, acknowledging and accepting the mentioned

Table 4. The Repeated Measures Analysis of Variance Conducted to Examine the Intergroup and Intragroup Effects of Stage with Group with Regard to the Scores on the Mindfulness Variables

Variable	Source	Sum of Squares	Df	Mean of Squares	F	P Value	Eta Squared
Obsession	Stage	10.98	1	10.98	22.22	0.000	0.32
	Stage*Group	13.92	2	6.96	14.08	0.000	0.439
	Error	17.79	36	0.494			
Interpersonal sensitivity	Stage	10.98	1	10.98	22.22	0.000	0.382
	Stage*Group	13.92	2	6.96	14.08	0.000	0.439
	Error	5.72	36	0.159			
Depression	Stage	730.88	1	730.88	98.66	0.000	0.73
	Stage*Group	652.49	2	326.24	44.04	0.000	0.710
	Error	266.68	36	7.40			
Anxiety	Stage	82.04	1	82.04	29.23	0.000	0.44
	Stage*Group	253.93	2	126.96	45.24	0.000	0.71
	Error	101.01	36	2.80			
Aggression	Stage	145.58	1	145.58	33.40	0.000	0.48
	Stage*Group	189.80	2	94.90	21.77	0.000	0.54
	Error	156.91	36	4.35			

experience are involved in determining the severity of anxiety and depression symptoms (44) and in decreasing stress, anxiety, and depression (39, 40, 45).

To explain these results, it can be mentioned that according to Segal, Teasdale, and Williams (46), various strategies can be applied when dealing with stress, anxiety, and depression. One of these strategies is that through abusing drugs, an opioid-dependent patient may attempt to escape from situations, which create stress, anxiety, and depression, while the other strategy considers this condition as an opportunity to focus on what is happening in the present moment. They believed that despite the fact that employing the first strategy has short-term benefits, there is some evidence that using this strategy does not have any long-term advantages, since it does not change the patients' attitudes towards painful feelings. However, the second strategy, through making these people more and more aware of the psychological symptoms, such as stress, anxiety, and depression, and aiding them to stay focused on states that they experience in these conditions, makes these people able to learn how to deal with the issue in another way. Since all the people experience being anxious or sad and no one is immune from having negative thoughts, sooner or later these thoughts, anxiety, and sadness should be dealt with, because even if an attempt is made to escape from these thoughts and negative moods, they still exist.

Therefore, it seems that through applying mindful-

ness, one can associate with any kind of experience (even an unpleasant one) without being stuck in it. In this condition, the main task of an opioid-dependent patient who experiences stress, anxiety, and sad mood is to welcome the painful experience, just like the pleasant experience, rather than trying not to deal with it.

Considering what was mentioned earlier, the mindfulness skills training program, which is effective in reducing the levels of stress, anxiety, and depression, can be applied to reduce the severity of mental symptoms among opioid-dependent patients. The mindfulness intervention program with extensive content in all areas of life, such as exercises (yoga, meditation, and mindfulness of breathing), controlling the attention and focus, gaining appropriate and effective coping skills to deal with stressful life events, understanding the disease and changing the patients' attitudes towards it, changing attitudes and thought patterns, training advanced relaxation, training time management and stress management and creating a happy and joyful mood, can be effective in reducing the levels of stress, anxiety, and depression among opioid-dependent patients, decrease the severity of the disease, and possibly reduce the adverse consequences of drug abuse.

Although the mindfulness group therapy and conventional therapies have a number of goals, including improving psychological symptoms among opioid-dependent patients, decreasing drug abuse, creating positive expectations of the therapy, establishing facilitating therapeutic

Table 5. Comparing the Simple Effect of Intergroup Factor Presented Separately for the Experimental Groups with Regard to the Mindfulness Variables

Group	Variable	Source	Sum of Squares	Df	Mean of Squares	F	P Value	Eta Squared	
Mindfulness therapy	Obsession	Level	24.03	1	24.03	25.16	0.000	0.677	
		Error	11.46	12	0.955				
	Interpersonal sensitivity	Level	24.03	1	24.03	25.61	0.000	25.61	
		Error	11.46	12	0.955				
	Depression	Level	1330.61	1	1330.61	69.91	0.000	0.85	
		Error	228.38	12	19.03				
	Anxiety	Level	332.65	1	332.65	256.93	0.000	0.80	
		Error	81.84	12	6.82				
	Aggression	Level	332.65	1	332.65	28.34	0.000	0.70	
		Error	140.84	12	11.73				
	Control (camp) group	Obsession	Level	0.000	1	0.000	0.000	1.000	0.000
			Error	2.000	13	0.154			
Interpersonal sensitivity		Level	0.000	1	0.000	0.000	1.000	0.000	
		Error	1.57	13	0.121				
Depression		Level	26.03	1	26.03	12.32	0.004	0.48	
		Error	27.46	13	2.11				
Anxiety		Level	2.28	1	2.28	2.01	0.179	0.134	
		Error	14.71	13	1.13				
Aggression		Level	2.89	1	2.89	4.36	0.057	0.252	
		Error	8.60	13	0.662				
Methadone maintenance therapy		Obsession	Level	0.667	1	0.667	1.69	0.22	0.133
			Error	4.33	11	0.394			
	Interpersonal sensitivity	Level	0.667	1	0.667	28.60	0.000	0.72	
		Error	4.33	11	0.030				
	Depression	Level	28.16	1	28.16	2.57	0.137	0.189	
		Error	10.83	11	0.985				
	Anxiety	Level	1.04	1	1.04	1.53	0.241	0.123	
		Error	4.45	11	0.405				
	Aggression	Level	1.04	1	1.04				
		Error	7.45	11	0.678				

relations, and the like, in common, the mindfulness-based group therapy can be significantly effective through applying reciprocity and complex human experiences, known as therapeutic elements, which are considered as the main strength of this therapy. These therapeutic elements are as follows: 1. Creating Hope: The hope created through feedbacks provided by a therapist and other group members can build trust in the treatment method and increase its positive results. Patients can benefit from both therapeutic effects and the aid of their group members as a significant source of hope. 2. Providing a Public Experience:

When taking part in such a treatment for the first time, many people feel that their distress is unique; however, since this group therapy does not emphasize the uniqueness of patients' feelings, opioid-dependent patients feel relieved in the group. After listening to other group members' problems and finding similarities with their own thoughts, patients find out that their issues are not exclusive. 3. Providing Information: Usually at the end of a successful session, patients learn a lot about various concepts including symptoms, group and interpersonal dynamics, and the process of psychotherapy. Compared to

Table 6. The Pairwise Comparisons of the Results Related to the Dependent Variables Obtained in Three Stages in These Three Groups with Regard to Impulsivity Variables

Groups	Stages	Obsession		Interpersonal sensitivity		Depression		Anxiety		Aggression	
		Posttest	Follow-Up	Posttest	Follow-Up	Posttest	Follow-Up	Posttest	Follow-Up	Posttest	Follow-Up
Mindfulness therapy	Pretest	1.92 ^a	1.92 ^a	1.92 ^a	1.92	14.07 ^a	14.30 ^a	7.38 ^a	7.15 ^a	7.23 ^a	7.15 ^a
	Posttest		0.000		0.000		0.231		-0.231		-0.077
Control (camp)	Pretest	0.214	0.000	0.214	0.000	1.78 ^a	1.92 ^a	-0.214	-0.571	0.857	0.643
	Posttest		-0.214		-0.214		0.143		-0.357		-0.214
Methadone maintenance therapy	Pretest	0.167	0.333	0.167	0.333	1.25 ^a	2.16 ^a	-0.917 ^b	-0.417	0.167	0.417
	Posttest		0.167		0.167		0.917		0.500		0.250

^a P < 0.01
^b P < 0.05.

other conventional therapies, using this advantage, the mindfulness-based group therapy can be more effective in increasing the possibility of identifying and controlling internal and external factors playing role in having a craving for abusing drugs. 4. Creating Altruism: Compared to other conventional therapies, the mindfulness-based group therapy creates more support and assurance and aids patients to take advantage of using their group members' tips. This aids opioid-dependent patients to understand their problems result from opioid-dependence better. 5. Modifying Behaviors: Compared to other conventional therapies, the mindfulness-based group therapy modifies opioid-dependent patients' behaviors through simulating conditions similar to which these people experience at home. In this way, some family members' reactions can be simulated and members of the treatment group have the opportunity to modify these reactions. 6. Encouraging Social Learning: Another important therapeutic element of the mindfulness-based group therapy is that it aids patients to improve their social skills and this increases the efficiency of the mindfulness-based group therapy compared to other conventional therapies.

Like any other studies, the current study had some limitations mentioning which can pave the way for researchers to conduct more accurate studies. 1. The sample of this study was just limited to the methadone maintenance treatment centers and camps in Tehran. 2. In terms of methodology, the main limitation of this study was in generalizing the results. Although the significant results obtained from smaller samples are more accurate, the limited number of participants placed in the experimental groups decreased the external validity of the study. Conducting future intervention studies with larger samples can compensate for this deficiency. 3. The participants placed in the experimental groups were all selected among male opioid-dependent patients. This makes it difficult to generalize the results to females. However, because of the nature of drug abuse disorder that is more common in males and according to their availability and possibility

of taking part in the study, the sample was selected from among the male population. Other researchers are recommended to attempt to eliminate these limitations.

4.1. Conclusions

Although the mindfulness group therapy and conventional therapies have some common goals, such as improving psychological symptoms among opioid-dependent patients, reducing the amount of drug abuse, creating positive expectations towards the treatment, establishing facilitating therapeutic relationships and the like, due to transactional and complex human experiences known as therapeutic elements, which are considered as one of the strength of this therapy, the mindfulness-based group therapy was more effective compared to other conventional therapies. It can be said that mindfulness had a more significant impact on risky behaviors compared to other conventional and maintenance therapies (the methadone maintenance therapy and the spiritual therapy). The results of this study demonstrated the effectiveness of mindfulness therapy in increasing mindfulness components. All the findings obtained in the current study supported the results obtained from the previously conducted studies.

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References

- Jahangir AH, Masjedi A, Mojtahedi H, Imani S, Habibi M. Comparison the effectiveness of mindfulness based group therapy with Maintenance treatment in the reduction craving, impulsivity symptoms and psychological and increases components of mindfulness in opioid addicts. Tehran: Shahid Beheshti University of Medical Sciences Faculty of Medicine; 2015.
- Sadock BJ, Sadock AS, Sadock PRB. Kaplan and Sadock comprehensive Text book of psychiatry Kindle Edition. ; 2012.

Table 7. Comparing the Simple Effects of Intergroup Factor in Each Levels of Intragroup Factor in Various Stages of Measuring with Regard to Psychological Symptoms

Source of Effect			Sum of Squares	Df	Mean of Squares	F	P Value
Obsession	Pretest	Within groups	0.540	2	0.270	0.029	0.970
		Error	334.66	38			
	Posttest	Within groups	27.84	2	13.92	1.70	0.196
		Error	321.59	38			
	Follow-up	Within groups	28.33	2	14.16	1.82	0.000
		Error	279.10	38			
Interpersonal sensitivity	Pretest	Within groups	14.91	2	7.45	0.408	0.666
		Error	672.35	38			
	Posttest	Within groups	629.43	2	313.21	19.83	0.000
		Error	1194.97	38			
	Follow-up	Within groups	608.06	2	304.03	19.22	0.000
		Error	1177.43	38			
Depression	Pretest	Within groups	24.42	2	12.21	0.372	0.69
		Error	1204.66	38			
	Posttest	Within groups	1050.68	2	525.34	23.39	0.000
		Error	5918.23	38			
	Follow-up	Within groups	992.00	2	496.00	23.36	0.000
		Error	98.75	38			
Anxiety	Pretest	Within groups	21.61	2	10.80	0.710	0.498
		Error	569.43	38			
	Posttest	Within groups	351.42	2	175.71	11.82	0.000
		Error	886.30	38			
	Follow-up	Within groups	320.45	2	160.22	10.44	0.000
		Error	872.97	38			
Aggression	Pretest	Within groups	6.67	2	3.23	0.204	0.816
		Error	576.66	38			
	Posttest	Within groups	320.05	2	160.02	10.29	0.000
		Error	879.59	38			
	Follow-up	Within groups	313.46	2	156.73	11.30	0.000
		Error	812.76	38			

3. Parvizifard AA. The comorbidity of mood and anxiety disorders in substance abusers seeking treatment (self-introduced opioid-dependent patients) and comparing them with normal people. Tehran: Tehran Institute of Psychiatry; 2013.
4. Miller NS. The principles and practice of addictions in psychiatry. WB Saunders Company; 1997.
5. Witkiewitz K, Marlatt GA, Walker D. Mindfulness-Based Relapse Prevention for Alcohol and Substance Use Disorders. *J Cogn Psychother*. 2005;**19**(3):211–28. doi: [10.1891/jcop.2005.19.3.211](https://doi.org/10.1891/jcop.2005.19.3.211).
6. Kashdan TB, Vetter CJ, Collins RL. Substance use in young adults: associations with personality and gender. *Addict Behav*. 2005;**30**(2):259–69. doi: [10.1016/j.addbeh.2004.05.014](https://doi.org/10.1016/j.addbeh.2004.05.014). [PubMed: [15621397](https://pubmed.ncbi.nlm.nih.gov/15621397/)].
7. Hayes AM, Feldman G. Clarifying the Construct of Mindfulness in the Context of Emotion Regulation and the Process of Change in Therapy. *Clin Psychol Sci Pract*. 2006;**11**(3):255–62. doi: [10.1093/clippsy.bph080](https://doi.org/10.1093/clippsy.bph080).
8. Tiffany ST. Cognitive concepts of craving. *Alcohol Res Health*. 1999;**23**(3):215–24. [PubMed: [10890817](https://pubmed.ncbi.nlm.nih.gov/10890817/)].
9. Tesadale JD. In: Cognition, emotion and psychopathology: Theoretical, empirical and clinical directions. Yiend J, editor. Cambridge University Press; 2004. pp. 270–89. Mindfulness-based cognitive therapy.
10. Marlatt GA. Buddhist philosophy and the treatment of addictive behavior. *Cogn Behav Pract*. 2002;**9**(1):44–50. doi: [10.1016/s1077-7229\(02\)80039-6](https://doi.org/10.1016/s1077-7229(02)80039-6).
11. Blume AW. Treating drug problems. 1. John Wiley & Sons; 2005.
12. Barber JG, Crisp BR. Social Support and Prevention of Relapse Following Treatment for Alcohol Abuse. *Res Soc Work Pract*. 1995;**5**(3):283–96. doi: [10.1177/104973159500500302](https://doi.org/10.1177/104973159500500302).

13. Teasdale JD, Barnard PJ. Cognition, Affect and Change: Re-modelling Depressive Thought. Hove: Erlbaum; 1993.
14. Toneatto T, Vettese L, Nguyen L. The role of mindfulness in the cognitive-behavioural treatment of problem gambling. *J Gambling Issues*. 2007;91-100.
15. O'Connell O. Introducing mindfulness as an adjunct treatment in an established residential drug and alcohol facility. *Human Psychol*. 2009;37(2):178-91. doi: [10.1080/08873260902892162](https://doi.org/10.1080/08873260902892162).
16. Leigh J, Bowen S, Marlatt GA. Spirituality, mindfulness and substance abuse. *Addict Behav*. 2005;30(7):1335-41. doi: [10.1016/j.addbeh.2005.01.010](https://doi.org/10.1016/j.addbeh.2005.01.010). [PubMed: [16022930](https://pubmed.ncbi.nlm.nih.gov/16022930/)].
17. Smith BW, Ortiz JA, Steffen LE, Tooley EM, Wiggins KT, Yeater EA, et al. Mindfulness is associated with fewer PTSD symptoms, depressive symptoms, physical symptoms, and alcohol problems in urban firefighters. *J Consult Clin Psychol*. 2011;79(5):613-7. doi: [10.1037/a0025189](https://doi.org/10.1037/a0025189). [PubMed: [21875175](https://pubmed.ncbi.nlm.nih.gov/21875175/)].
18. Garland EL, Boettiger CA, Gaylord S, Chanon VW, Howard MO. Mindfulness is Inversely Associated with Alcohol Attentional Bias Among Recovering Alcohol-Dependent Adults. *Cognit Ther Res*. 2012;36(5):441-50. doi: [10.1007/s10608-011-9378-7](https://doi.org/10.1007/s10608-011-9378-7). [PubMed: [23280000](https://pubmed.ncbi.nlm.nih.gov/23280000/)].
19. Wupperman P, Marlatt GA, Cunningham A, Bowen S, Berking M, Mulvihill-Rivera N, et al. Mindfulness and modification therapy for behavioral dysregulation: results from a pilot study targeting alcohol use and aggression in women. *J Clin Psychol*. 2012;68(1):50-66. doi: [10.1002/jclp.20830](https://doi.org/10.1002/jclp.20830). [PubMed: [21932371](https://pubmed.ncbi.nlm.nih.gov/21932371/)].
20. Murphy C, Mackillop J. Living in the here and now: interrelationships between impulsivity, mindfulness, and alcohol misuse. *Psychopharmacology (Berl)*. 2012;219(2):527-36. doi: [10.1007/s00213-011-2573-0](https://doi.org/10.1007/s00213-011-2573-0). [PubMed: [22169883](https://pubmed.ncbi.nlm.nih.gov/22169883/)].
21. Schmertz SK, Masuda A, Anderson PL. Cognitive processes mediate the relation between mindfulness and social anxiety within a clinical sample. *J Clin Psychol*. 2012;68(3):362-71. doi: [10.1002/jclp.20861](https://doi.org/10.1002/jclp.20861). [PubMed: [22422563](https://pubmed.ncbi.nlm.nih.gov/22422563/)].
22. Mckim RD. Rumination as a mediator of the effects of mindfulness: Mindfulness-based stress reduction (MBSR) with a heterogeneous community sample experiencing anxiety, depression, and/or chronic pain. Dissertation Abstracts International: Section B: The Sciences and Engineering. *Sci Engin*. 2008;68(11):73-6.
23. Paul NA, Stanton SJ, Greeson JM, Smoski MJ, Wang L. Psychological and neural mechanisms of trait mindfulness in reducing depression vulnerability. *Soc Cogn Affect Neurosci*. 2013;8(1):56-64. doi: [10.1093/scan/nss070](https://doi.org/10.1093/scan/nss070).
24. Masuda A, Tully EC. The Role of Mindfulness and Psychological Flexibility in Somatization, Depression, Anxiety, and General Psychological Distress in a Nonclinical College Sample. *J Evid Base Complement Alternat Med*. 2012;17(1):66-71. doi: [10.1177/2156587211423400](https://doi.org/10.1177/2156587211423400).
25. Treloar C, Laybutt B, Carruthers S. Using mindfulness to develop health education strategies for blood borne virus prevention in injecting drug use. *Drugs Educ Prevent Policy*. 2010;17(4):431-42. doi: [10.3109/09687630802585377](https://doi.org/10.3109/09687630802585377).
26. Imani S, Atef Vahid MK, Gharraee B, Noroozi A, Habibi M, Bowen S. Effectiveness of Mindfulness-Based Group Therapy Compared to the Usual Opioid Dependence Treatment. *Iran J Psychiatry*. 2015;10(3):175-84. [PubMed: [26877751](https://pubmed.ncbi.nlm.nih.gov/26877751/)].
27. Bevan E. The effect of mindfulness training on drug craving is moderated by level of negative affect. Marywood University; 2010.
28. Flanagan S, Flanagan J. Clinical interviewing. Roshd publication; 2006.
29. Fathi-Ashtiani A, Dastani M. Psychological tests: Personality and mental health. Tehran: Besat; 2009.
30. Bowen S, Chawla N, Marlatt GA. Mindfulness-based relapse prevention for addictive behaviors: A clinician's guide. Guilford Press; 2011.
31. Breslin FC, Zack M, McMain S. An Information-Processing Analysis of Mindfulness: Implications for Relapse Prevention in the Treatment of Substance Abuse. *Clin Psychol Sci Pract*. 2006;9(3):275-99. doi: [10.1093/clipsy.9.3.275](https://doi.org/10.1093/clipsy.9.3.275).
32. Brown KW, Ryan RM, Creswell JD. Addressing Fundamental Questions About Mindfulness. *Psychol Inquiry*. 2007;18(4):272-81. doi: [10.1080/10478400701703344](https://doi.org/10.1080/10478400701703344).
33. Garland EL, Gaylord SA, Boettiger CA, Howard MO. Mindfulness training modifies cognitive, affective, and physiological mechanisms implicated in alcohol dependence: results of a randomized controlled pilot trial. *J Psychoactive Drugs*. 2010;42(2):177-92. doi: [10.1080/02791072.2010.10400690](https://doi.org/10.1080/02791072.2010.10400690). [PubMed: [20648913](https://pubmed.ncbi.nlm.nih.gov/20648913/)].
34. Fernandez AC, Wood MD, Stein LA, Rossi JS. Measuring mindfulness and examining its relationship with alcohol use and negative consequences. *Psychol Addict Behav*. 2010;24(4):608-16. doi: [10.1037/a0021742](https://doi.org/10.1037/a0021742). [PubMed: [21198223](https://pubmed.ncbi.nlm.nih.gov/21198223/)].
35. Dabaghi F, Asghar Nezaad A, Atefvahid M, Bolhari J. Original research paper: the effectiveness of group cognitive therapy based on mindfulness (mindfulness) and the spiritual schema activation in the prevention of relapse of opioid. *Psychiatr Clin Psychol Iran*. 2007;1(13):366-75.
36. Kang YS, Choi SY, Ryu E. The effectiveness of a stress coping program based on mindfulness meditation on the stress, anxiety, and depression experienced by nursing students in Korea. *Nurse Educ Today*. 2009;29(5):538-43. doi: [10.1016/j.nedt.2008.12.003](https://doi.org/10.1016/j.nedt.2008.12.003). [PubMed: [19141364](https://pubmed.ncbi.nlm.nih.gov/19141364/)].
37. Joo HM, Lee SJ, Chung YG, Shin IY. Effects of mindfulness based stress reduction program on depression, anxiety and stress in patients with aneurysmal subarachnoid hemorrhage. *J Korean Neurosurg Soc*. 2010;47(5):345-51. doi: [10.3340/jkns.2010.47.5.345](https://doi.org/10.3340/jkns.2010.47.5.345). [PubMed: [20539793](https://pubmed.ncbi.nlm.nih.gov/20539793/)].
38. Song YS. Depression, stress, anxiety and mindfulness in nursing students. *Korean J Adult Nurs*. 2011;23(4):397-402.
39. McManus F, Surawy C, Muse K, Vazquez-Montes M, Williams JM. A randomized clinical trial of mindfulness-based cognitive therapy versus unrestricted services for health anxiety (hypochondriasis). *J Consult Clin Psychol*. 2012;80(5):817-28. doi: [10.1037/a0028782](https://doi.org/10.1037/a0028782). [PubMed: [22708977](https://pubmed.ncbi.nlm.nih.gov/22708977/)].
40. Morone NE, Lynch CP, Losasso VJ, Liebe K, Greco CM. Mindfulness to Reduce Psychosocial Stress. *Mindfulness*. 2011;3(1):22-9. doi: [10.1007/s12671-011-0076-z](https://doi.org/10.1007/s12671-011-0076-z).
41. Marchand WR. Mindfulness-based stress reduction, mindfulness-based cognitive therapy, and Zen meditation for depression, anxiety, pain, and psychological distress. *J Psychiatr Pract*. 2012;18(4):233-52. doi: [10.1097/01.pra.0000416014.53215.86](https://doi.org/10.1097/01.pra.0000416014.53215.86). [PubMed: [22805898](https://pubmed.ncbi.nlm.nih.gov/22805898/)].
42. Skanavi S, Laqueille X, Aubin HJ. [Mindfulness based interventions for addictive disorders: a review]. *Encephale*. 2011;37(5):379-87. doi: [10.1016/j.encep.2010.08.010](https://doi.org/10.1016/j.encep.2010.08.010). [PubMed: [22032281](https://pubmed.ncbi.nlm.nih.gov/22032281/)].
43. Bostanov V, Keune PM, Kotchoubey B, Hautzinger M. Event-related brain potentials reflect increased concentration ability after mindfulness-based cognitive therapy for depression: a randomized clinical trial. *Psychiatry Res*. 2012;199(3):174-80. doi: [10.1016/j.psychres.2012.05.031](https://doi.org/10.1016/j.psychres.2012.05.031). [PubMed: [22771173](https://pubmed.ncbi.nlm.nih.gov/22771173/)].
44. Janowski K, Łucjan P. P-133 - Worry and mindfulness: the role in anxiety and depressive symptoms. *Eur Psychiatr*. 2012;27:1. doi: [10.1016/s0924-9338\(12\)74300-6](https://doi.org/10.1016/s0924-9338(12)74300-6).
45. Potek R. Mindfulness as a school-based prevention program and its effect on adolescent stress, anxiety and emotion regulation. New York University; 2012.
46. Segal ZV, Williams JMG, Teasdale JD. Mindfulness-based cognitive therapy for depression. Guilford Press; 2012.