

Comparison of the effectiveness of mindfulness training and cognitive-behavioral group therapy on reducing suicidal thoughts and drug cravings in methadone treated patients

Azad S.,¹ Khosropor F.,*² Molayi H.³

Abstract

Introduction: This research was conducted with the aim of comparing the effectiveness of mindfulness training and cognitive-behavioral group therapy on reducing suicidal thoughts and drug cravings of people under methadone treatment.

Research method: The research method was quasi-experimental, with pre-test, post-test and control groups. The statistical population of this research includes all the people undergoing methadone treatment in addiction treatment centers in the two cities of Tehran, under the supervision of the welfare organization in the second half of 2017, in the number of 2500 people. The sampling method was purposive. The sample included 60 people under methadone treatment randomly selected in 3 experimental groups (20 people in the mindfulness training group, 20 people in the cognitive-behavioral therapy group and 20 people in the control group). The experimental groups underwent treatment sessions, but nothing was done about the control group. Before and after the treatment, the subjects answered Wright's and Beck's suicidal thoughts questionnaires. The tests were repeated one month after the end of the treatment. The data were analyzed using the analysis of variance method with repeated measurements and the Bonferroni tracking test.

Results: The results showed that mindfulness training and cognitive-behavioral group therapy are effective in reducing suicidal thoughts and the temptation of substance craving in the treated people. The effect of mindfulness is greater and the effect is sustained in the one-month follow-up.

Conclusion: As a result, it can be recommended to implement mindfulness training in addiction treatment centers, especially since this research showed that the effect of mindfulness training continues over time.

Keywords: cognitive behavioral therapy, mindfulness, suicidal thoughts

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¹ - PhD in General Psychology, Islamic Azad University, Zarand Branch, Zarand, Iran.

² - Assistant Professor, Department of Psychology, Islamic Azad University, Zarand Branch, Zarand, Iran.

³ - Assistant Professor, Department of Psychology, Islamic Azad University, Zarand Branch, Zarand, Iran

Introduction:

Drug addiction is one of the basic problems of human life today. In 1950, the United Nations provided the following definition for drug addiction: Drug addiction is a gradual or acute intoxication caused by the continuous use of a drug, either natural or synthetic, which is harmful to the individual and society. (1). It has been nearly a century that the human society has been determined to find a basic solution to this problem. Addiction is one of the saddest problems of today's societies. The harmful and destructive personal, social and cultural effects of drug abuse and addiction have caused drug abuse patients and community treatment staff to take action to prevent, quit and prevent the relapse of drug use. Therefore, health professionals and educational and therapeutic institutions, theories, models, have experimented with various solutions and techniques in the prevention and treatment of substance abuse and prevention of relapse, and also until now, many treatment methods such as psychoanalysis, behavioral therapy, group therapy, drug therapy, etc. have been performed on patients with addiction disorders, but each of these methods has been effective to some extent and has led to the relapse and return of substance abuse. (2) It seems that the problem is deeper and something somewhere in the person's psyche puts them in a mode of consumption again. Jackson (3) found in research that there is evidence related to the beliefs of people with disorders in the field of alcohol and drug abuse. In recent years, a lot of research has been done about different methods for treating drug addiction, such as maintenance treatment with methadone, detoxification, duration of treatment and different effects of treatments. Unfortunately, the major problem in the treatment of addicts, even with a long-term clean period, is their high rate of relapse (4).

Also, interrupting the treatment period and reusing drugs is associated with more negative consequences such as the possibility of more drug use, more severe dependence on drugs, use of different drugs, increase in criminal behavior and imposing additional costs on healthcare networks (5). Among the new treatments for addiction, especially in the field of psychological treatments, it is possible to mention the integration of observational thinking (mindfulness) meditation techniques with traditional cognitive behavioral therapy, which is referred to as the third wave of behavioral therapy (6). Techniques based on the dynamic interaction of the body of the mind through the method of meditation and mindfulness are among the methods that have flourished in recent years, originating from its eastern roots, in the form of psychological intervention programs (7). Different interventional approaches have been used in the field of individual and group addiction treatment, such as supportive group therapy, cognitive and interpersonal psychotherapies. Considering the effectiveness of the mindfulness method in physical and psychological disorders, it seems to be effective in the treatment of reducing some of the symptoms of opioid addiction. Examples of these new approaches include mindfulness-based therapy in the prevention of addiction relapse (8). In recent years, mindfulness-based interventions have also received attention in the treatment of substance abuse disorders (9). Mindfulness is a non-judgmental, indescribable, and present-based awareness of the experience that is within a person's attention span at a particular moment. In addition, this concept includes the acknowledgment of

said experience and its acceptance. In another definition, mindfulness is a technique that, combined with meditation and specific mental orientations towards an experience, encourages awareness of the present in a non-judgmental way by minimizing conflict in thoughts and feelings (10). Mindfulness is derived from cognitive behavioral therapies and is considered one of the important components of the third wave of psychological treatment models (11). Also, one of the other non-pharmacological methods that can have an effect in reducing drug cravings and mental disorders in addicts is cognitive behavioral therapy. In this type of treatment, the person is encouraged to consider the relationship between their negative thoughts and feelings of discomfort as hypotheses that should be rejected. It should be tested and the behaviors that result from one's thoughts are negative as a benchmark to evaluate the validity or correctness of those thoughts. The cognitive-behavioral therapist tries to encourage the client to a kind of collaborative experience and during it he benefits from the patient's own experiences in a series of behavioral experiments in order to evaluate the correctness or incorrectness of those beliefs (12).

All of the mindfulness exercises are designed to increase awareness of the body. The important role of the body in new interdisciplinary fields such as mind-body medicine has been proven in researches that use mindfulness, emphasizing the interaction between physical, cognitive and emotional processes (13). Mindfulness has also been used in the field of addiction and has had positive therapeutic results and effects (14). If prevention method training is combined with mindfulness, it can have relatively successful effects on the judgment and aversion of injection drug addicts (15).

Another psychological treatment that is highly effective in the field of treating chronic diseases and addiction is cognitive-behavioral therapy. This method of treatment emphasizes both the role of behavioral and cognitive processes in the formation of mental disorders and experimental behavioral and cognitive measures to change the patterns of ineffective responses. Therapeutic interventions are designed to reduce the frequency of maladaptive responses of treatment seekers and to teach new cognitive and behavioral skills in such a way as to reduce unwanted behaviors and increase adaptive behaviors, and since addiction can originate from dysfunctional cognitions and behaviors, as a result of changing and correcting these factors form the basis of treatment; Therefore, the cognitive-behavioral approach by challenging these components and modifying them is considered an important treatment in this field and is known as one of the primary methods of addiction treatment (16). Research results have shown that mindfulness training and cognitive-behavioral therapy group have an effect on reducing suicidal thoughts (17).

Suicide is one of the common social problems. This phenomenon has existed in all societies, from the most primitive to the most advanced, and has attracted the attention of social science researchers, mental health and the general public. And in some cases, those who have discussed in this field or carried out a special investigation, have refused to provide a special definition, and the criterion of their work has often been the definition provided by Emile Durkheim, a French sociologist. The basis of Durkheim's definition, suicide is: A death that occurs directly or indirectly

as a result of an action taken by a person and at the same time he is aware of the result of his behavior (death), according to Schneiderman, suicide is a conscious act to harm himself, which can be considered a multidimensional discomfort in a needy person. that for his determined problem, this action is thought to be the best solution (18).

The use of mindfulness therapy and cognitive behavioral therapy makes people under methadone treatment have a great ability to face a wide range of thoughts, emotions, and experiences (whether pleasant or unpleasant), and this in turn reduces the suicidal thoughts of people under Methadone treatment has an effect. A cognitive-behavioral perspective shows people under methadone treatment that thoughts are always related to feelings and behavior. As a result, whenever people under methadone treatment go towards suicide in any way, they will experience suicidal thoughts or thoughts. They learn the connection between their thoughts and feelings, so they can recognize and control these thoughts in a better way. Cognitive reconstruction during treatment helps them recognize and control their cognitive distortions, and this identification helps them predict the path leading to suicide (19).

Temptation is the strongest predictor of relapse among other predictors, and mindfulness can effectively reduce the negative effects of temptation. The higher the intensity of mindfulness related to spirituality, the lower the use of alcohol, tobacco and drugs (20). Research shows that mindfulness is a useful augmentative strategy in reducing the likelihood of relapse (21). Mindfulness can also exert its positive effects on improving sleep (insufficient and poor-quality sleep is one of the most important factors that increase the likelihood of relapse) (22). Mindfulness increases recovery rates by emphasizing acceptance rather than suppression of thoughts (23) and breaking the stress cycle of substance abuse relapse (24). Mindfulness training and cognitive behavioral therapy can increase cognitive control over temptation and reduce stress related to alcohol abuse, so it also plays a role in the treatment of alcohol abuse (24).

The importance of conducting this research is that in interventions based on acceptance and mindfulness strategies and cognitive behavioral therapy, as opposed to strategies based on change, instead of changing the content of thoughts and dysfunctional attitudes, they focus on accepting and changing the person's relationship and attitude towards thoughts as a kind of mental reality. Also, instead of changing and avoiding negative emotions, acceptance without judgment, exposure and negative emotional states, thoughts and imaginations are emphasized and in recent years, mindfulness has drawn a lot of attention in the scientific community and as moment-to-moment awareness. , is defined as the experience gained from purposeful attention, along with the non-judgmental acceptance of existing experiences (7). Studies show that treatments based on mindfulness and cognitive and behavioral therapy are more effective in reducing mental pressure, increasing resilience and self-efficacy, and quality of life, emotional regulation, relapse prevention, post-traumatic stress disorder, depression stress, anxiety, suicidal thoughts, and other disorders. are (19). The necessity of this research is that interventions based on mindfulness and cognitive behavioral therapy are currently being considered in the treatment of substance abuse disorder.

Research shows that in the treatment and prevention of addiction relapse, negative and positive emotional states, desire and temptation are among the most important risk factors for relapse. In the discussion of the necessity of this research in examining the etiology of substance abuse and the recurrence of compulsive behaviors, various researchers and theorists, lack of emotion regulation, low tolerance for discomfort, emotional avoidance, thoughtless and habitual behavior, anxiety, bias towards the symptoms of substances, lack of coping skills and emptiness have been called spiritual (25).

Therefore, in the treatment and prevention of relapse of drug use and reducing suicidal thoughts, it is necessary to use methods that can affect these issues, and it seems that it can increase the effectiveness of treatment. Some researchers believe that the use of mindfulness and cognitive behavioral methods due to the mechanisms hidden in it, such as: acceptance, increased awareness, desensitization, presence in the moment, observation without judgment, confrontation and release and traditional cognitive behavioral therapy techniques, due to the effect on These processes can increase the effectiveness of treatment while reducing the symptoms and consequences after quitting and help prevent the relapse of drug use (26). Considering the negative effects that this addiction has on the physical and mental health of addicts, without a doubt, effective and long-term psychological interventions in this field are indispensable and undeniable. Since most of these people's problems are caused by their faulty and ineffective cognitions, and also most of these people do not have the necessary self-awareness of the problem, without a doubt, cognitive-behavioral and mindfulness treatments in the field of informing these people and replacing their faulty cognitions with positive thoughts and gain Being aware of one's ineffective thoughts has an undeniable and hopeful role. According to the above, it is important that the results of the current research can be beneficial for experts and clinical psychologists and health counselors and therapists who use psychological interventions on addicts. Therefore, the aim of the present study is to compare the effectiveness of mindfulness training and cognitive-behavioral group therapy on reducing suicidal thoughts and drug cravings in people under methadone treatment.

Research method:

The present research method was semi-experimental (semi-experimental) pre-test-post-test and one-month follow-up with the control group. The statistical population of this research includes all the people undergoing methadone treatment in the addiction treatment centers of the two cities of Tehran under the supervision of the welfare organization in the second half of 2017 in the number of 2500 people. The sampling method of this research was purposive sampling. According to Delaware, the participants in the experimental group can be from 3 to 15 people, but most of the therapists have suggested 8 to 12 people to participate in the group. People under methadone treatment who were randomly selected into 3 experimental groups (20 people in the experimental group, mindfulness training, 20 people in the experimental group of cognitive-behavioral therapy, and 20 people in the control group). In this research, Wright's substance craving scale (1997), Beck's suicidal ideation scale (27) was used, and for the training of cognitive-behavioral therapy

group, cognitive-behavioral skills were used from Michael Frey's practical guide to cognitive therapy, translated by Mohammadi (28) for training. Mindfulness was used from the mindfulness therapy training package (7).

Entry criteria

- 1) The minimum education level is a diploma.
- 2) The person is under methadone treatment, that is, he receives methadone medication for legal treatment at the substance abuse treatment clinic.
- 3) The minimum age is 20 and the maximum age is 50 years.

Exit criteria

- 1) Limitation of time and place to participate in meetings
- 2) Suffering from a severe physical illness and disability that prevents attendance at meetings.
- 3) receiving psychotherapy or drug treatment and other treatments that will disrupt the treatment process.

Substance craving questionnaire: This scale is a 45-question tool provided by Wright that can be used to measure the temptation and probability of drug use in drug dependent people (27). The scoring of this questionnaire is such that all questions are scored on a five-point scale including 0=none, 1=weak, 2=moderate, 3=strong, 4=very strong. Based on this method, the scores obtained are collected and then scored according to the table below.

Lower score limit	Average score	Upper limit of grades
0	90	180

The scores of the above 45 statements are added together. The minimum possible score will be 0 and the maximum will be 180.

- A score between 0 and 60: the rate of return prediction is weak.
- A score between 60 and 90: the rate of return prediction is average.
- A score above 90: the rate of return prediction is strong.

Firouzabadi using Cronbach's alpha, has reported 74% internal consistency for temptation. According to the purpose, experts have found this scale to have content validity (27).

Beck Suicidal Ideation Scale: The Beck Suicidal Thoughts Scale (27) is a 19-question self-assessment tool. This questionnaire is based on a three-point scale from 0 to 2, and each question or phrase has 9 options, the answer to option one is not awarded, but the answer to option two is

awarded one grade and option three is awarded two grades; And the overall score of the person varies from zero to 38. The questions of the scale measure things such as: death wish, suicidal desire, suicidal thoughts, etc. This scale has high reliability. By using R, Cronbach's alpha coefficients were 0.87 to 0.97, and by using R, test-retest reliability was obtained at 0.54 (26).

Mindfulness: Mindfulness therapy in this research refers to therapy sessions that were held during 8 sessions (8 weeks) one hour once a week based on Kabat Zen Mindfulness Therapy sessions (MBSR).

Summary of the content of treatment sessions:

- The first session: familiarization with automatic guidance and how to direct attention to different parts of the body.
- The second session: more focus on the body and more control of the reaction to daily events.
- The third session: Deliberate focus of awareness on breathing, more concentration and integration.
- The fourth session: teaching presence of mind and avoiding distractions.
- The fifth session: teaching permission to be present to the experience as it is, without judging or changing it.
- Sixth session: familiarizing the participants with the way that limits the creation and thoughts of the experience.
- Seventh session: reviewing the symptoms of substance abuse and relapse, suicidal thoughts
- Eighth session: Teaching how to regularly practice mindfulness.

Cognitive-behavioral group therapy

Cognitive-behavioral therapy group that was conducted once a week for 12 sessions of one and a half hours. The above cognitive skills were used from Michael Frey's practical guide to cognitive therapy, translated by Mohammadi and the book of cognitive-behavioral therapy group, translated by Khodayari Fard.

Table 1: Brief description of cognitive-behavioral group therapy sessions

Titles and goals of group therapy sessions	General content of group therapy sessions
First session	1- Acquaintance and introduction, explanation of goals
Targets: Familiarization and introduction, explanation of the goals and rules of the group, implementation of the pre-examination, presentation of the treatment	2- Performing the pre-test 3- Description of the rules of group therapy sessions

logic, statement of the cognitive behavioral group therapy model.	<ul style="list-style-type: none"> 4- Explaining the method and logic of cognitive-behavioral group therapy, social adaptation and quality of life 5- The length of group sessions is 14 sessions 6- Group therapy exercises 7- Identifying negative thoughts and beliefs 8- How to check homework
second session Targets: Relaxation training	<ul style="list-style-type: none"> 1- Checking the assignments of the previous session 2- Relaxation training 3- assignment
third session Targets: Familiarity with negative beliefs and thoughts, cognitive errors and ways to identify them	<ul style="list-style-type: none"> 1- Checking the assignments of the previous session 2- Identification of unpleasant and negative thoughts 3- The effect of unpleasant thoughts and the continuation of what has consequences 4- How do negative thoughts affect substance craving, suicidal thoughts, quality of life, emotion regulation, resilience, and self-efficacy? 5- Introduction of cognitive errors 6- assignment
fourth Session Targets: Challenge with negative and irrational beliefs and thoughts	<ul style="list-style-type: none"> 1- Checking the assignments of the previous session 2- Addressing the challenge with the negative thoughts identified in the previous session 3- Express your prediction, i.e. negative thinking, clearly 4- Check the available evidence for and against it 5- Set up an action plan that will help you check whether your prediction is correct or not 6- Write down the results 7- Coping with thoughts in the form of identifying negative thoughts 8- Response to negative thoughts and practical action to test these thoughts

	<p>9- Cognitive restructuring to change false beliefs, attitudes and assumptions</p> <p>10- Instead of recognizing yourself as ineffective, replace them with more adapted and correct thought patterns.</p> <p>11- assignment</p>
<p>The fifth and sixth sessions Targets: Correction of cognitive distortions and cognitive methods of self-control</p>	<p>1- Checking the assignments of the previous session</p> <p>2- What is the correction of cognitive distortions?</p> <p>3- Changing incorrect social perceptions</p> <p>4- Cognitive methods of self-control</p> <p>5- Group discussion and presentation of supplementary activities</p> <p>6- assignment</p>
<p>The seventh session Targets: Anger control skills training</p>	<p>1- Checking the assignments of the previous session</p> <p>2- Definition of anger</p> <p>3- Examining popular beliefs about anger</p> <p>4- Check your thoughts</p> <p>5- Identification of each person's tolerance threshold</p> <p>6- Identification of physical, psychological, social and... anger symptoms</p> <p>7- The principles of anger management from cognitive-behavioral aspects</p> <p>8- assignment</p>
<p>The eighth session Targets: Teaching problem solving skills</p>	<p>1- Checking the assignments of the previous session</p> <p>2- Definition of the problem</p> <p>3- To consult</p> <p>4- Providing alternative solutions</p> <p>5- Decision making</p> <p>7- Application and implementation of the solution</p> <p>8- assignment</p>
<p>9th and 10th session Targets: Examining factors affecting healthy life (physical, psycho-social and</p>	<p>1- Checking the assignments of the previous session</p> <p>2- What is the definition of healthy life, examining its different dimensions</p>

spiritual factors), self-esteem and self-respect

- 3- What are the physical factors of a healthy life?
- 4- Group activity in the field of physical factors of healthy life
- 5- What are the psycho-social factors of a healthy life?
- 6- Group activity in the field of psychological factors of healthy life
- 7- Setting life goals (short-term, mid-term, long-term)
- 8- What is self-esteem and self-respect?
- 9- Examining the effective factors in strong self-esteem are:
 - 1. Self-awareness and self-identification
 - 2. Value everything that is
 - 3. Believing in your uniqueness
- 10- Group activity in the field of identifying similarities and differences
- 11- Group activity in the field of gaining respect from others

The eleventh session**Targets: Behavior analysis skill training (A-B-C)**

- 1- Checking the assignments of the previous session
- 2- The goal of this intervention is to teach clients so that they can analyze their ineffective behavior patterns.
- 3- Identifying response patterns or A-B-C
- 4- Teaching awareness of consequences
- 5- Describe your personal behavior
- 6- Determining the events that occur before and after the response
- 7- Group discussion and two-person conversation practice
- 8- assignment

The twelfth session**Targets: Teaching positivity and discovering strengths in order to increase the quality of life, emotional regulation, resilience, self-efficacy and reduce the temptation of drug addiction and suicidal thoughts.**

- 1- Checking the assignments of the previous session
 - 2- Group activity in the field of positivity and discovering strengths
 - 3- Teaching the steps of positivity is done in five steps
 - 4- assignment
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Thirteenth session Targets: Teaching communication skills	1- Checking the assignments of the previous session 2- Effective verbal response style 3- Active listening skills 4- assignment
The fourteenth session Targets: Conclusion of cognitive-behavioral group therapy sessions	1- Checking the assignments of the previous session 2- Teaching activities planning and time management technique 3- Preparing the group to maintain and consolidate the learned skills (cognitive-behavioral techniques) 4- Conclusion of meetings 5- Conducting the post-exam

First, he referred to the addiction treatment centers in the two cities of Tehran, which was under the supervision of the welfare organization, and a list of methadone consuming men was prepared, then the necessary explanations were given to those who referred to this center about the formation of mindfulness training sessions and cognitive-behavioral therapy groups, and the people who A high score from the questionnaire of substance craving and suicidal thoughts was selected and informed consent form was given to them and after agreeing and signing the mentioned form, 60 people were selected as the research sample and mindfulness and cognitive-behavioral therapy group were assigned to the experimental group by Therapist of the cognitive-behavioral therapy group who was trained for 12 one-and-a-half-hour sessions once a week at the Arvand Psychological Services and Counseling Center, as well as the mindfulness therapy sessions that took place during 8 sessions (8 weeks) of one hour once a week based on Kabat Zain's mindfulness therapy sessions by The therapist was trained in the experimental group at Arvand Psychological Services and Counseling Center and the questionnaires were analyzed and the tests were re-administered one month after the end of the treatment.

Data analysis methods and tools: Descriptive information of research variables was expressed using descriptive statistics indicators with SPSS 21 software, which includes. Mean, standard deviation was used to test the hypotheses from analysis of covariance. In addition to the main analyzes of analysis of variance with measurement and to determine the intragroup effects in the research variables, Bonferroni's post hoc test was used for possible differences between the pre-test and post-test scores.

Results:

Table 2: Pre-test - post-test values of the research variables in the treatment and control groups and the follow-up stage

group	Variable	pre-exam		post-test		Follow up	
		X	S	X	S	X	S
Mindfulness training	Suicidal thoughts	12/8	4/79	6/40	1/75	7/35	2/20
	Temptation of substance craving	104/35	17/73	51/40	21/71	52/40	21/13
CBT	Suicidal thoughts	14/05	3/73	10/25	2/91	10/65	3/01
	Temptation of substance craving	104/50	17/72	82/20	26/07	83/30	24/04
Control	Suicidal thoughts	14/75	4/22	14/70	3/94	14/85	4/01
	Temptation of substance craving	104/65	17/74	101/75	14/58	106/15	17/52

Table 2 shows the averages and standard deviations of the research variables before and after the implementation of the independent variables and the follow-up period in the group of mental therapy training and cognitive-behavioral group therapy and the control group, in other words, this table shows the pre-test-post-test scores of the studied variables of suicidal thoughts, temptation It shows craving for substances. As the above table shows, the scores of the pre-tests have changed compared to the post-tests in all the investigated variables in the training of mental therapy and group therapy of cognitive-behavioral therapy. Meanwhile, this change is not observed for the control group in any of the steps.

Table 3: Results of Box's test and Levin's test in research variables

Variable	Box test		Levine test			
	Box's M	sig	pre-exam		post-test	
			F	sig	F	sig
Suicidal thoughts	4/62	0/233	0/851	0/432	0/664	0/520
Temptation of	4/516	0/649	0/033	0/967	0/421	0/787

substance
craving

Before conducting the analysis of variance with repeated measurements, in order to comply with the defaults, the results of the M-box test were checked, since the M-box test was not significant for any of the research variables, the condition of homogeneity of the variance-covariance matrices was properly met. Also, the non-significance of any of the variables in Levin's test showed that the condition of equality of variance between groups was met and the error variance of the dependent variables was equal in all groups.

Table 4: repeated measures analysis of variance for within-group and between-group effects of stage in the variable of suicidal thoughts

Variable	Source	ss	df	ms	F	p	Eta	Statistical power
Suicidal thoughts	Factor	350/208	1	350/208	40/616	0/000	0/416	1
	Intergroup interactive effect	203/817	2	101/908	11/819	0/000	0/293	0/992
	group	525/317	2	262/658	14/029	0/000	0/330	0/998
	intergroup error	1067/175	57	18/722	-	-	-	-

According to Table 4, the investigation of the main stage shows that there is a significant difference at least between the average of two times of the executions, the F values in the investigated variables are significant at the level of less than 0.000, also the eta squared values indicate the share of the dependent variable that is influenced by the independent variables. It means mindfulness training and cognitive-behavioral group therapy. Also, the interaction effect shows that there is a significant difference in the stages of pre-test-post-test implementations, in other words, the amount of changes in the scores of the compared groups in suicidal thoughts was not the same, and therefore the therapeutic interventions had an effect, it can also be said that the results of Table 4 show that with the significance of the factor and interactive effect within groups; The existence of a significant difference between the three measurements of pre-test, post-test and follow-up on suicidal thoughts and the interaction of the three stages of measurement with the two experimental groups and the control group is confirmed at the level of 0.000. Bonferroni's post hoc test was used for pairwise comparison of the research groups, the results of which are presented in Table 5.

Table 5: Bonferroni's post hoc test for pairwise comparisons in 2 times of implementation of the dependent variables of suicidal thoughts in the groups of mindfulness training and cognitive behavioral therapy.

Variable	Test	base group	comparison group	difference in averages	meaningful
Suicidal thoughts	post-test	Mindfulness	Control	**5/12	0/000
		cbt	Mindfulness	*2/55	0/032
		Control	cbt	*2/57	0/030

**p< 0/01 *p< 0/05

Bonferroni's test (Table 5) was used for pairwise comparison of groups and determination of post-test differences in dependent variables. The results show that the difference in scores in the post-test stage in the variable of suicidal thoughts is observed in the mindfulness training groups, the cognitive-behavioral therapy group and the control group. The results of Table 5 show that between the average scores of the control group and the two experimental groups of mindfulness training and the cognitive-behavioral therapy group in There is a significant difference in the post-test phase, which means that the two treatment methods have reduced the suicidal thoughts of people under methadone treatment, also the results showed that there is a significant difference between the average scores of the two mindfulness training groups and the cognitive-behavioral therapy group in the post-test phase, that is, the method Mindfulness has worked more effectively on reducing suicidal thoughts, as a result, the first research hypothesis that the effectiveness of mindfulness training and cognitive-behavioral group therapy is different on reducing suicidal thoughts is confirmed.

Table 6: repeated measures analysis of variance for within-group and between-group effects of stage in the variable of temptation and craving for substances

Variable	Source	ss	df	ms	F	p	Eta	Statistica l power	
Temptation of substance craving	Intergrou p	Factor	18575/40	1	18575/40	50/12	0/00	0/46	1
		interactiv e effect	14438/11	2	7219/058	19/47	0/00	0/40	1
	intergrou p	group	14761/21	2	7380/608	17/29	0/00	0/97	1
		error	24326/85	5	426/787	-	-	-	-

According to Table 6, the investigation of the main stage shows that there is a significant difference at least between the average of two times of the executions, the F values in the investigated variables are significant at the level of less than 0.000, also the eta squared values indicate the share of the dependent variable that is influenced by the independent variables. It means mindfulness training and cognitive-behavioral group therapy. Also, the interaction effect shows

that there is a significant difference in the stages of pre-test-post-test implementations, in other words, the amount of changes in the scores of the compared groups in the temptation of substance craving was not the same, and therefore the therapeutic interventions had an effect, it can also be said that the results of Table 6 show that with the significance of the factor and interactive effect within groups; The existence of a significant difference between the three measurement times of pre-test, post-test and follow-up on the temptation of substance craving and the interaction of the three stages of measurement with the two test groups and the control group is confirmed at the level of 0.000. Bonferroni's post hoc test was used for pairwise comparison of research groups, the results of which are presented in Table 7.

Table 7 Bonferroni's post hoc test for pairwise comparisons in 2 times of implementation of the dependent variables of temptation and craving for substances in the groups of mindfulness training and cognitive-behavioral group therapy

Variable	Test	base group	comparison group	difference in averages	meaningful
Temptation of substance craving	post-test	Mindfulness	Control	27/08	**0/000
		cbt	Mindfulness	15/48	**0/004
		Control	cbt	11/60	*0/045

**p< 0/01 *p< 0/05

Bonferroni's test (Table 7) was used for pairwise comparison of groups and determination of post-test differences in dependent variables. The results show that the difference in scores in the post-test stage in the variable of temptation and craving for substances is observed in the mindfulness training groups, the cognitive-behavioral therapy group and the control group. The results of Table 7 show that there is a difference between the average scores of the control group and the two experimental groups of mindfulness training and cognitive-behavioral therapy. In the post-test stage, there is a significant difference, which means that the two treatment methods have reduced the temptation of methadone-treated people, also the results showed that there is a significant difference between the average scores of the two mindfulness training groups and the cognitive-behavioral therapy group in the post-test stage. That is, the mindfulness method has acted more effectively on reducing the temptation of substance craving, as a result, the second hypothesis of the research that the effectiveness of the mindfulness training method and cognitive-behavioral group therapy on reducing the temptation of substance craving is different is confirmed.

Discussion and conclusion:

Based on the findings of this research, two treatment methods have reduced the suicidal thoughts of people under methadone treatment, also the results showed that there is a significant difference between the average scores of the two groups of mindfulness training and cognitive-behavioral

therapy in the post-test stage, that is, the mindfulness method is more effective has worked on reducing suicidal thoughts, as a result, the first research hypothesis that the effectiveness of mindfulness training and cognitive-behavioral therapy on reducing suicidal thoughts is different is confirmed. Gudarzi and Golmohammadi and Bashir Gonbadi and Samadi (17) confirmed the effectiveness of mindfulness on suicidal thoughts and aggression in conscript soldiers. In their research, Ramezani, Mohammadi and Sadri Demirchi (29) found that cognitive-behavioral therapy is effective in reducing the symptoms of suicidal thoughts in veterans with post-traumatic stress disorder. Natghi, Mahbobeh and Sohrabi (19) confirmed the effectiveness of cognitive behavioral therapy on reducing suicidal thoughts of adolescents with drug addiction who referred to addiction treatment camps in Tehran. Agricultural research (30) confirmed the effectiveness of group cognitive behavioral therapy with family education on the components related to suicide in girls attempting suicide. Agricultural research (30) confirmed the effectiveness of group cognitive behavioral therapy with family education on the components related to suicide in girls attempting suicide. Research by Robinson Weitz (31) and Pratt (32) confirmed the effectiveness of cognitive behavioral therapy on reducing suicidal thoughts. The results of the research of Zeib, Soko, Jay and Fletcher (33) showed that cognitive behavioral therapy was effective in reducing the suicidal thoughts of drug-dependent adolescents. Psychological education is the main foundation of cognitive-behavior therapy and at the same time it is a kind of experiential and problem-oriented learning. Cognitive-behavior therapist should present the material in group situations in an interactive way, so as to encourage the active participation of group members; Therefore, in the group, the person understands that there are different solutions to the problems, and as a result, suicide is abandoned as the only solution. Mindfulness is a non-judgmental, indescribable, and present-based awareness of the experience that is within a person's attention span at a particular moment. In addition, this concept includes the acknowledgment of said experience and its acceptance. Mindfulness is a way of paying attention and seeing clearly what is happening in our lives. Mindfulness doesn't eliminate life's stresses, but it can help us respond to them in a more relaxed way that benefits our heart, brain, and body. It helps to recognize habitual and often unconscious emotional and physiological reactions to everyday events and stop them. Suicidal thoughts indicate the occurrence of any self-destructive thought, and it is indeed a kind of preoccupation with death that has not yet taken on a practical aspect; Therefore, both methods are effective in reducing suicidal thoughts, but since mindfulness controls and modulates habitual and often unconscious emotional and physiological reactions, it is probably more effective.

Based on the findings of this research, two treatment methods have reduced the temptation of substance craving in methadone patients, also the results showed that there is a significant difference between the average scores of the two groups of mindfulness training and cognitive-behavioral therapy in the post-test stage, that is, the mindfulness method significantly has been more effective in reducing the temptation of substance craving, as a result, the second hypothesis of the research that the effectiveness of mindfulness training and cognitive-behavioral therapy on reducing the temptation of substance craving is different is confirmed. Rahimi, Sohrabi and Soroqd

(34) concluded that cognitive-behavioral group therapy reduces the symptoms of substance use disorder. The research of Salimi, Haq Nazari, Ahmadi Zahor and Zohra Vand (26) confirmed the effectiveness of cognitive therapy based on mindfulness on drug addiction in heroin addicts. Niromand's research (25) showed that the mindfulness-based stress reduction training program is effective in reducing the temptation of substance craving in people who refer to addiction treatment clinics. Manavi (24) in his research confirmed the effectiveness of cognitive-behavioral stress management group training on stress coping styles, perceived stress, and drug craving in drug-dependent men. The research of Hamidi, Shahidi and Khademi (14) showed that mindfulness is effective in reducing harm and preventing drug relapse. Kayani's research (35) showed that two treatment groups based on acceptance and commitment and mindfulness had a significant effect on the intensity of craving for drugs in the two stages of post-test and follow-up. Haddadi, Rostami, and Rahiminejad (36) studied and confirmed the effectiveness of cognitive behavioral therapy group on reducing cravings and addiction severity in crack addicts. Carroll et al.'s research (37), Brewerwal, Wief and Davis (2013) and Trelor, Lybut and Karchers (2012) showed that cognitive behavioral therapy is effective in preventing drug relapse. Avantes and Bitel and Mar Gulin (38) and Witkowitz and Marlette Walker (39), in their research results, stated that mindfulness-based intervention can increase the patient's coping ability to cope with temptation and withdrawal symptoms. The effect that the ability to help other group members has on the individual is one of the important dimensions of the group experience; Therefore, this method can reduce the temptation of craving for substances. Furthermore, the group creates an atmosphere in which the focus on the self becomes a focus on the group members and the group itself. Cognition-behavior therapy can facilitate the strategy of changing focus by increasing group members' support for each other, assuring and providing feedback to them. In other words, the support received from others in the group is returned to them and both sides benefit from this mutual process. Mindfulness is a technique that, combined with meditation and specific mental orientations toward an experience, encourages awareness of the present in a nonjudgmental way by minimizing conflict with thoughts and feelings; Therefore, although mindfulness training and cognitive-behavioral therapy are effective in reducing the temptation of substance craving, but since mindfulness increases a person's ability to manage situations by minimizing conflict in thoughts and emotions, it can play a greater role in the temptation of substance craving.

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