



The Effectiveness of Mindfulness-based Stress Reduction (MBSR) Treatment on Anxiety, Depression and Prevention of Substance Use Relapse

Mohammad Niroumand Sarvandani¹, Noshirvan Khezri Moghadam², Hamid Kalalian Moghadam³, Masoud Asadi⁴, Rahele Rafeaie⁵, Maryam Soleimani^{6*}

¹ Student Research Committee, School of Medicine, Shahroud University of Medical Sciences, Shahroud, Iran.

² Department of Psychology, School of Literature and Human Sciences, Shahid Bahonar University of Kerman, Kerman, Iran.

³ Department of Physiology, School of Medicine, Shahroud University of Medical Sciences, Shahroud, Iran.

⁴ Department of Psychology, Faculty of Humanities, Arak University, Arak, Iran.

⁵ Assistant professor, Department of Neuroscience, School of Advanced Technologies in Medicine, Mazandaran University of Medical Sciences, Sari, Iran.

⁶ Department of Psychology and counseling, Faculty of Humanities, University of Hormozgan, Bandar Abbas, Iran.

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Abstract

Background: Addiction and its negative consequences are a global problem and mindfulness is one of the methods that seeks to reduce its negative consequences using cognitive and behavioral techniques. The aim of this study was to evaluate the effectiveness of mindfulness-based stress reduction therapy on anxiety, depression, and the likelihood of relapse.

Methods: The research method was quasi-experimental and a pre-test-post-test design with a control group was used. The statistical population consisted of all people referring to addiction treatment clinics in Kerman and a sample of 50 people (25 people in the control group and 25 people in the experimental group) were selected through voluntary sampling. The experimental group received MBSR during 8 sessions of psychotherapy, but the control group did not receive any intervention. The research instruments were Slip and return questionnaire (Wright, 2001), Beck depression inventory (Beck, 1961) and Beck anxiety inventory (Beck, 1988). In addition, analysis of variance was used to compare the scores of individuals in the experimental and control groups.

Results: The results showed that mindfulness-based stress reduction (MBSR) treatment was effective in reducing anxiety ($F(1, 48)=3.15, p<0.05$), depression ($F(1, 48)=608.71, p<0.05$) and the likelihood of drug addicts returning ($F(1, 48)=18.20, p<0.05$).

Conclusions: Mindfulness is a kind of non-judgmental consciousness that teaches people to cope with negative thoughts and feelings and instead experience positive mental events. As a result, learning leads to less stress, less depression, and the likelihood of relapse through cognitive change in thinking style when faced with problems.

Keywords: Mindfulness, MBSR, Anxiety, Depression, Craving.

*Corresponding to: M Soleimani, Email: soleimani.maryam.ahu@gmail.com

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damaging one's and society.¹ Today, from the viewpoint of psychology, addiction or dependence on drugs regarded as a mental disorder. This term defined as drugs abuse disorders in psychological categories, known as the second most common mental disorder. Many studies emphasize on prevalence of mental disorders such as depression and stress among patients addicted to drugs.² These findings imply that depression, anxiety and/or some physical symptoms may occur during drug abuse and/or withdrawal.³ It should be considered that addiction is a physical, mental, social and spiritual disease and pre-addiction backgrounds play an important role in its formation.⁴ However, to deal with the phenomenon of dependence to drugs, pharmaceutical treatment is not enough and having required information about different aspects of this phenomenon is necessary.

So far, several treatment methods such as psychoanalysis, behavioral therapy, group therapy, drug therapy etc. used for addicts, but each of these methods is somewhat effective and in some cases addiction recurred. It seems, the problem is deeper and something in addict's spirit effects on him/her.³ Researchers found that there are some evidences related to alcohol and drug addicts' beliefs. Different intervention approaches such as supportive group therapy, cognitive and interpersonal psychotherapy applied in the area of addiction personal and group therapy. They studied the effect of cognitive-behavioral treatment on the recurrence and temptation of patients and concluded that this treatment decreases recurrence and temptation⁵ and in another study, they found that the above-mentioned treatment is effective on decreasing some symptoms of drug abuse recurrence.⁶ Kafi et al⁷ showed that cognitive-behavioral group therapy decreased addicts' temptation and recurrence. In recent years, several researches conducted about different drug dependence treatment methods and their effectiveness. Some of these methods are Methadone maintenance treatment, detoxification, and duration (length) of treatment. Unfortunately, the main problem in treating addicts (even with long-term purity period) is high recurrence rate.⁸ In addition, interruption of treatment period and drug abuse is related to more negative consequences such as risk of more drug abuse, more dependence on drugs, using different drugs, increasing criminal behaviors and

Introduction

Nowadays, drugs addiction is one of the major problems of human life. It could effect on any part of life. Communication, work and social relations are all may be influenced. In 1950, the UN presented the following definition for drugs addiction: Drugs addiction is acute or chronic toxicity caused by permanent use of a drug whether natural or blended and

increasing costs of health care networks.⁹ One of new drug treatments, especially in the context of psychological treatments is integration of mindfulness meditation techniques with traditional cognitive behavioral therapy.¹⁰

Mindfulness derived from cognitive-behavioral therapies and is one the most important components of the third wave of psychotherapy models.¹¹ All mindfulness exercises designed in a way to increase human being's attention to his/her body. The important role of the body in interdisciplinary areas such as mind body medicine confirmed. Researches, which use mindfulness mainly, focus on the interaction between body, cognitive and emotional processes.¹² Mindfulness used in the area of addiction and had positive treatment results and effects. If training prevention method combine with mindfulness, then, it will be more effective on aversion and judgment of injecting drug users.¹³

Regarding the effectiveness of mindfulness method on physical and psychological disorders,^{14,15} it seems this method is effective on decreasing some symptoms of drug abuse recurrence. Garland et al¹⁶ concluded that mindfulness is related to the attention control and emotional regulation and therefore, through increasing the control on visual clues of alcohol and drug abuse, it can effect on treating these disorders. Training mindfulness can increase the cognitive control of temptation and decrease the related stress to alcohol abuse¹⁷ and in a research; they found that if training prevention method combined with mindfulness, it would be more effective on addicts' aversion and judgment about drugs.¹³

Researchers conducted a research about the effectiveness of mindfulness method on physical and psychological disorders and concluded that mindfulness therapy increase individuals' physical and mental health.¹⁷ Mindfulness is non-judgmental and unexplainable awareness based on the present time toward an experience, which put in an individual's attention range at a special moment. Moreover, this concept includes accepting and admitting the above-mentioned experience. In another definition, mindfulness is a technique, which encourages non-judgmental awareness about the present time by minimizing thoughts and emotions involvement.¹⁸ Farhadi et al¹⁹ studied the effect of cognitive-behavioral therapy on mindfulness and depression and concluded that mindfulness therapy decreases patients depression through changing their thoughts.

Temptation is the most powerful predictors of recurrence among other predictors (even simultaneous with disorders like stress and depression). Mindfulness decreases the negative effects of temptation well. It also applies its positive effects on improving sleeping condition (insufficient and inappropriate sleeping is of the most important factors of increasing possibility of recurrence).²⁰ Adding MBSR treatment plan to matrix treatment plan plays an effective role on both prevention and treatment.²¹ Mindfulness by emphasizing on acceptance instead of suppressing thoughts²² and breaking the chain of stress about recurrence in drug addiction²³ increasing the improvement rate. Training mindfulness may increase cognitive controlling of temptation while decreasing stress of alcohol abuse. Therefore, it influences on alcohol abuse too.²⁴ Mindfulness related to controlling attention and emotion

regulation. Thus, it can be effective in treatment of alcohol and drug abuse through increasing control of visual cues in using them.²⁵ Disorders such as anxiety and depression are also involved in addiction through various effects on people's lives, including psychological distress, marital insecurities,²⁶ and mental/physical performance of patients. In many cases, the mentioned patients attracted to alcohol and drugs abuse²⁷ in order to decrease their unpleasant internal situations. In a study they concluded that applying mindfulness-based cognitive treatment method is significantly effective on mental health level of under treatment addicted.¹

Since for now treatment of addiction is the main purpose of fighting against behavioral diseases such as AIDS and Hepatitis and one of the most important problems of general health over the world. According to the report of the united nations crime prevention and drug control office (2005),²⁸ the number of available drug users (among 15-64 years old population) in the world is 200 million or 5% of the world total population. Based on this report, 16 million of drug users or 40% of them use opium and 11 million-use heroine. Researches show that 20% to 90% of under treatment users return to drug abuse. Reviewing past researches shows that due to low pharmaceutical obedience and high give-up, the effectiveness of pharmaceutical maintenance therapy (without mental-social interventions) is weak.²⁹ According to researchers and theorists findings (in studying etiology of drug abuse and recurrence of compulsive behaviors), different reasons of drug abuse are: Defect in emotion regulation, low pain bearing, emotional avoidance, without thinking and habitual behavior, rumination, orientation toward drug signs, low self-efficacy, confronting skills defect and spiritual vacuum.³⁰ Therefore, in prevention and treatment process of drug abuse recurrence, using methods effective on these problems is necessary and it seems these methods can increase the effectiveness of treatment. Some researchers believe applying mindfulness method (due to its hidden mechanisms, such as: acceptance, increasing awareness, desensitization, being punctual, observing without arbitration, encountering and realizing in combination with traditional cognitive behavioral therapy techniques) can decrease symptoms and consequences of withdrawal, increase the effectiveness of treatment and help recurrence prevention.³¹ Regarding the above-mentioned contents, studying the effectiveness of MBSR plan on anxiety, depression and drug temptation rate, is so important.

Materials and Methods

The research method used in this research is a quasi-experimental pre-test, post-test with a control group. The statistical population of the present study who were methadone users in Kerman addiction treatment centers (under the supervision of welfare), which numbered 800 people. Because the sample size of research is the study of cause and effect relationships and the presence of at least 15 people in each group is necessary for comparison.³² In this study, the required sample was selected from the total statistical population of 50 people (25 in the control group and 25 in the experimental group) and the sampling method was voluntary sampling. In this way, at first, 5 addiction treatment clinics in Kerman

(under welfare organization supervision) and 50 volunteers were divided into two groups. At first, the research was briefly described and after obtaining the patients' consent and mentioning that their details and information will be kept confidential, they were given questionnaires of anxiety, depression, and return prediction scales for answering, and then a the group was placed in a mindfulness-based stress reduction treatment program (According to table 1) and the other group was kept stationary, and then the anxiety, depression, and return prediction scale questionnaires were re-assigned to them.

Materials:1- return prediction scale (RPS): This questionnaire is a 45-item self-assessment scale provided by Wright. Each question contains a situation in which the subject must imagine himself/herself and answer two parts of this scale; (A: The strength of desire in a particular situation, B: The probability of consumption in that situation). Goodarzi translated this scale and in order to measure its reliability, the researcher performed a sample of 45 points with criteria of substance dependence. Cronbach's alpha for the first part of the questionnaire, which measures the desire to use drugs, is equal to 58%, and for the second part, which measures the probability of consumption and slipping. Is equal to 63%.³³ According to Firoozabadi (using Cronbach's alpha), internal consistency related to temptation rate was 74%. Regarding the purpose, this scale has content validity.³⁴

2- Beck anxiety inventory (BAI): This questionnaire includes 21 options that include common symptoms of anxiety. Subjects mark their level of resentment last week in the opposite column to respond. The method of scoring the answers is none=0, mild=1, moderate=2 and severe=3. In this way, a person's score range can range from zero to 63. If the test score is between 0-7, it means that there is no anxiety, between 8-15 means mild anxiety, between 16-25 means moderate anxiety, and between 26-63 indicates severe anxiety. In order to study the validity and reliability of Beck's anxiety

test, 1513 men and women of Tehran city (in different age-sex groups) filled BDI questionnaire, randomly. Moreover, 261 anxious patients participated in this study. In order to calculate test-retest reliability coefficient, 112 tastes of normal population (tested before), in the interval of one month from the first stage filled questionnaires again. Furthermore, in order to calculate validity coefficient, 150 individuals of clinical anxious patients interviewed and based on a quantitative rating (0-10), two assessors assessed individuals' anxiety rate. Regarding obtained scores, two assessors had no information about BAI. Obtained results showed that our considered test has appropriate validity ($r=0.72$, $p=0.001$), reliability ($r=0.83$, $p=0.001$) and internal stability ($\text{Alpha}=0.92$).³⁵

3- Beck depression inventory (BDI-II): BDI-II is a self-report questionnaire that has 21 questions and is used to assess the severity of depression and to determine the symptoms of depression in the population of psychiatric patients and in the normal population to determine depression. Scores on this scale are scored in a range of 0-3. 0 means the absence of a special sign to 3, which means the highest degree of existence of that particular sign. Studied related to reliability and validity of this test were satisfactory. For example, according to Beck's report, reliability of this questionnaire was 93%.^{36,37} Using covariance analysis and SPSS 18 software questionnaires information analyzed.

In this research, ethical considerations including observance of scientific honesty and trustworthiness, conscious consent to participate in the research, observance of anonymous right to protect the laws, and confidentiality of other information are required. Statistical analysis was conducted using IBM SPSS (version 24.0 IBM Corp., Armonk, NY, USA, 2016). Descriptive statistics summarized participant characteristics. ANCOVA was used to significantly evaluate the differences between the means in the pre-test and post-test stages. The significance level was set at 0.05 for all tests.

Table 1. A review of mindfulness-based stress treatment (MBSR) training program³⁸

Session	Goals	Practices
Session 1	Simple awareness	Raisin meditation & body scan
Session 2	Attention and the brain	Simple awareness and/or mindful eating
Session 3	Dealing with thoughts	Sitting meditation Mindful Yoga(1) Mindful Yoga(2)
Session 4	Stress: Responding vs. Reacting	STOP: The one-minute breathing space
Session 5	Dealing with difficult emotions or physical pain	Turning toward" meditation
Session 6	Mindfulness and communication	Mountain meditation Lake meditation
Session 7	Mindfulness and compassion	Lovingkindness meditation
Session 8	Conclusion	Developing a practice of your own

Results

The results of Levin test in table 2 for depression $F(1, 48)=3.45$, $p>.05$, anxiety $F(1, 48)=3.96$, $p>.05$, and temptation to $F(1, 48)=3.80$, $p>.05$, found to indicate homogeneity of variances.

After controlling for the effect of the pretest, the effect of mindfulness-based stress reduction (MBSR) treatment on

anxiety, depression and substance abuse in addicts in both groups was investigated. The results of Table 2 show that mindfulness-based stress reduction (MBSR) treatment on anxiety ($F(1, 48)=3.15$, $p<.05$), depression ($F(1, 48)=608.71$, $p<.05$), and temptation to substances ($F(1, 48)=18.20$, $p<.05$), was effective in addicts in the post-test phase and significantly reduced these variables in the experimental group. (Table 3).

Table 2. Mean and standard deviation of outcome measures by treatment condition

Variable	Groups	Pre-test	Post-test
		Mean±SD	Mean±SD
Anxiety	Experiment	22.16±6.13	18.32±4.73
	Control	21.52±6.65	21.72±6.86
Depression	Experiment	33.86±8.92	28.68±7.45
	Control	34.36±9.86	33.84±10.24
Temptation of drug use	Experiment	123.24±28.46	120.84±28.30
	Control	125.04±24.68	120.84±28.30

Table 2 shows mean and standard deviation of studied samples in term of variables in two pre and posttests of control and experimental group.

Table 3. Results of ANCOVA on the post-test of anxiety, depression, temptation of drug use in addicts of the experimental and control groups

Variable	Source	SS	DF	MS	F	P
Anxiety	Groups	144.500	1	144.500	4.157	0.047
	Error	1668.480	48	34.760		
Depression	Groups	332.820	1	332.820	608.713	0.047
	Error	3852.800	48	80.267		
Temptation of drug use	Groups	10952.000	1	10952.000	18.204	0.000
	Error	28877.920	48	601.623		

Note. SS=Sum of squares. Df=degree of freedom. MS=mean squares

Discussion

In the present research, the effectiveness of MBSR plan on decreasing anxiety is studied. Other researches confirm obtained result. So that, the present study results are in line with Kazemian1 and Garland²³ results. To explain this finding, it can be said that mindfulness is non-judgmental and unexplainable awareness based on the present time toward an experience that put in an individual's attention range at a special moment. Moreover, this concept includes accepting and admitting the above-mentioned experience. In another definition, mindfulness is a technique that encourages non-judgmental awareness about the present time by minimizing thoughts and emotions involvement¹⁸ and immediacy therapy increases individuals' attention and awareness about physical and mental emotions and includes sense of trust in life, deep compassion and real admission of life events. Since, one of the most important aspects of mindfulness-based treatment is that individuals learn to deal with their negative emotions, thoughts, and experience mind accidents positively. Therefore, as a result their anxiety decreases.

In the present research, the effectiveness of MBSR plan on decreasing depression is studied. Other researches confirm obtained result. So that, the present study results are in line with Kazemian 1 Farhadi et al¹⁹ and Garland²³ results. To explain this finding, it can be said that since mindfulness therapy results in cognitive change of patients' thoughts and actions and benefits from conditional strengthening fundamentals, patient tries to go to the next and higher step, this trend leads to patients' gradual and step by step improvement and patient continues his/her personal treatment calmly and consciously and solves his/her problems and shortcomings in different sessions. Mindfulness adjusts emotions and increases awareness about mental and physical emotions and is effective on observing and accepting emotions and physical phenomena (as they occur) clearly. Therefore, it can play an important role in adjusting scores of mental health. Mindfulness is effective on adjusting negative behaviors, thoughts, and results in positive behaviors related to health.

In the present research, the effectiveness of MBSR plan on decreasing drug temptation is studied. Other researches confirm obtained result. So that, the present study results are in line with Imani et al,⁶ Tajeri et al⁵ Kafi et al⁷ and Garland²⁴ results. To explain this finding, it can be said that stopping temptation process is an important component of therapy and in addiction process, it plays an important role in thoughts or accepting addiction by those who act conditionally.

During addiction, triggers, thoughts and temptations can continue simultaneously and common chain of addiction can be as follows: Triggers motivate patients' thoughts and it results in temptation and finally drug abuse. Mindfulness plan can increase self-efficacy and decrease drug abuse temptation through improving cognitive performances, increasing individuation and also helping individuals' to reach dependence, autonomy, abandoning ineffective and destructive patterns, creating goodwill toward him/herself, others and the world and choosing healthy life.

Finally, it should be mentioned that since regarding the present research results mindfulness decreases depression, anxiety and drug temptation of addicts, training mindfulness results in obtaining better results and improving individuals' health.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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