

## Effectiveness of Mindfulness-based Stress Reduction Program and Mindfulness Yoga in Weight Loss in Women with Obesity

Soheila Rahmani<sup>1</sup>, Mohammad Ebrahim Hokmabadi<sup>2\*</sup>, Sepideh Reza Poor<sup>2</sup>, Shamim Razaghi Kashani<sup>3</sup>, Zohreh Mortezaei<sup>4</sup>, Seyed Mohammad Mahdi Moshirian Farahi<sup>5</sup>

<sup>1</sup>Department of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran; <sup>2</sup>Department of Psychology, Gorgan Branch, Islamic Azad University, Gorgan, Iran; <sup>3</sup>Department of Educational Psychology, Alzahra University, Tehran, Iran; <sup>4</sup> Department of Psychology, Islamic Azad University of Tehran Research, Tehran, Iran; <sup>5</sup> Department of Psychology, Ferdowsi University of Mashhad, Mashhad, Iran

\*Email: [Ebi.hokmabady@gmail.com](mailto:Ebi.hokmabady@gmail.com)

### Abstract

The purpose the study is to investigating effectiveness of Mindfulness-based stress reduction program and Mindfulness yoga in weight loss in women with obesity. In fourteen two-hour sessions, experiment group received treatment of mindfulness-based stress reduction. The findings showed that the Mindfulness-based stress reduction program was effective in reducing obesity and the results of the follow-up showed the stability of results. The results of the research suggested that evidence that mindfulness-based stress reduction program can be a good treatment for weight loss in women with obesity.

**Keywords:** mindfulness-based stress reduction program, yoga, weight loss, obesity.

### Introduction

Today more than the past, with the development of medical technology and laboratory equipment, risk of physical diseases have been evaluated and considered by health care professionals (Santonja, Morales, Villanueva and Cortés, 2012) among these diseases, those who have desire to become chronic have more effect and importance in human life. Among the physical diseases that have a major impact on people's health and are associated with many psychological issues is obesity (Bishop, 2002) disorder in lipid metabolism, often shows itself as a chronic disease called obesity.

Obesity is one of the health problems and risk factor for many diseases such as diabetes, cardiovascular disease, hypertension and cancer (Brown and Ryan, 2003; Cardaciotto, 2005). From first half of the twentieth century, obesity is on the rise and encompass a significant portion of people in developed and developing countries which is remembered as the most important nutritional disease and social problems all over the world (Carlson, Speca, Patel and Goodey, 2003). Not only because of physiologic factors, but also from the result of interaction between psychological and physiological that has been classified, obesity has been known as a disease by the medical center. Most likely in Iran, obesity is included the excess percentage of different group of gender and age (Davidson et al., 2003). It is unclear whether obesity is an independent risk factor for health, or causes a risk to human health by preparing the field for some diseases and cancers.

Concern for this health sector leading to promote preventive measures that have been focused on 2 goals: to inform the public about the potential risks of overweight and about the benefits of reform unhealthy eating behaviors (Douketis, Macie, Thabane and Williamson, 2005). Food adjustment mechanism is influenced by environmental factors. In addition, the results showed that cultural, family and dynamic factors are involved in obesity. Although many researchers, have introduced special family history, predisposing factors, personality structures and unconscious

conflicts as causes of obesity but obese people may suffer from any imaginable psychological disorder and various confusion in life that also predisposes them to obesity. (Kabat-Zinn and Hanh, 2009; Kabat-Zinn, Lipworth, Burney and Sellers, 1987). Studies show that when some patients, gain normal weight show signs of a more serious mental disorder because they do not have other coping mechanism (Kristeller and Hallett, 1999). Today, the prevalence of obesity is growing and there is a different way to reduce obesity, however, find a way that is tailored to the needs of the people, is difficult. In recent years, advances in the treatment of mental disorders and the reduction of obesity have led to the emergence of new approaches and methods by clinical psychologists (Yanovski, 2000).

Mindfulness-based interventions are considered as one of the third-generation or third wave treatments. In particular Buddha, mindfulness is a form of meditation that rooted in the teachings and eastern religious traditions (Powell, Calvin III and Calvin Jr, 2007). One of the most common treatment for fatigue reduction is mindfulness- based stress reduction program (MBSR) that is presented by Kabat-Zinn in Medical Centre of Massachusetts University in 1979 (Rachman and Hodgson, 1980). This is an 8-week program and every session lasts 2 to 2.30 hours and mindfulness skills for coping with life stresses and raising awareness of the present moment are taught and include thought-related meditation, relaxation and Hatha yoga (Randolph, Caldera, Tacone and Greak, 1999). Mindfulness means paying attention to the present time in a special, targeted, and without judgment way (Segal, Williams and Teasdale, 2002). One of the main goals of this program is promoting health and reducing stress (Shapiro and Schwartz, 2011). Meditation and mindfulness exercises results in increasing self-awareness and self-accept in patients (Simon et al., 2006).

Mindfulness-based stress reduction model showed successes in cancer treatment (Singh, Wahler, Winton and Adkins, 2004) and a considerable improvement in life quality, stress symptoms and sleep quality in patients with breast and prostate cancer and it also resulted in increasing mental clarity, mental health and reducing physical stress significantly (Shapiro and Schwartz, 2011). Bauer (2003) reception as the main quality of the entire clinical program based on mindfulness is described. Unlike other clinical approaches that on efforts to change all the unpleasant symptoms are emphasized, mindfulness-based approaches teach different techniques to increase the acceptance of unpleasant or painful stimulus. This acceptance encourages participants in mindfulness program to adapt to the inevitable discomfort and prevent avoidance and possibly harmful behaviors. Given the mind-consciousness approach, all thoughts that come to mind are equally accepted, so that one does not judge those thoughts and accepts them as their current thoughts (Teasdale, Segal and Williams, 1995).

In an intervention based on mindfulness and stress reduction in 8 weeks on 19 women with breast cancer it was determined that these interventions had a positive effect on improving mental condition (fear of recurrence, stress, anxiety, and depression), psychosocial characteristics (optimism, gaining support from others and spirituality) and physical symptoms (Teasdale et al., 2000). The results of a study showed that mindfulness exercises result in reducing mood disorders and finally increasing life quality in training group (Wadden et al., 2006). In a research that was conducted on 133 patients with breast cancer in stages I to III, results showed that mindfulness had a significant effect on life quality of patients with cancer (Greeson, 2009). In another research mindfulness interventions and meditation were implemented on 49 patients with breast cancer and 10 patients with prostate cancer. Results showed stress symptoms reduction and significant increase in patient's life quality (Ditto, Eclache and Goldman, 2006; Garland, Gaylord, Park, 2009). Results a study revealed that overall life quality; mental, physical, emotional and spiritual welfare and amount of social activity improved significantly and also positive changes in amount of pain, pain

severity, and amount of burnout, amount of support receiving from friends, family and financial and legal concerns. So, a short time mindfulness intervention improves participants' life quality significantly (Brown and Ryan, 2003). In other studies, positive effect of mindfulness-based stress reduction program on stress, anxiety, depression and sleep in patients with cancer was reported (Roth and Robbins, 2004). Furthermore, a study was conducted about the relationship between emotional condition and immune system function after 8 sessions' mindfulness-based stress reduction program and it was reported that the activity of NK cells increased and life quality of patients with cancer improved (Astin, 1998).

Given the physical and psychological problems of obese women and the evidence of the effectiveness of stress-reduction programs based on weight loss in obese women, this study seeks to find out if the Mindfulness-based stress reduction program and Mindfulness yoga in weight loss in women with obesity will be effective.

### **Method**

All Women with Obesity who referred to clinic in Tehran in 2017 consisted the statistical population of this study. Among them, 24 patients were selected randomly assigned into experimental (12 participants) and control groups (12 participants).

*Inclusion criteria:* being infected with the moderate intensity of anxiety (at least score 10), having BMI > 30, individuals should have middle school education or higher, should be 20-55 years old, should not suffer from other chronic diseases, should not have the history of neurological and psychiatric disease and hospitalization, should not abuse drugs, should be able to participate in group therapy sessions and should be willing to cooperate in study.

*Exclusion criteria for experimental group:* Absence of intervention sessions more than two sessions and lack of willingness to continue participating in the intervention sessions.

The study was conducted at clinic in Tehran by two master clinical psychologists who were familiar enough to the intervention, according to the ethical standards of research such as informed consent and maintaining secrets of participants. Participants of experimental and control groups completed questionnaires in 3 stages, before intervention (pre-test), after intervention (post-test) and 2 months after intervention (follow-up). Treatment was done in 8 group sessions. Eight intervention sessions of this study were followed based on mindfulness-based stress reduction program (Colle et al., 2010) and were conducted once a week in 2 hours for participants of experimental group. Participants of control group did not receive any interventions. Due to ethical considerations, at the end of the research, participants of control group were given a CD of yoga practices. A summary of functional instructions of mindfulness-based stress reduction program is presented in table 1.

### *Tools*

To data collecting, the following questionnaires were used.

**Demographic Information Questionnaire:** This questionnaire was used to collect demographic data required as basic information including age, marital status, education, socio-economic condition, educational background and employment history, alcohol consumption and smoking. Using the subjects' weight and height, body mass index (BMI) through dividing weight in kilograms by the square of height in meters, was calculated for them.

**Table 1. Summary of functional instruction sessions of mindfulness-based stress reduction program**

Session	Topic
<b>First</b>	The introduction of automatic guidance system/knowing how to use present moment awareness of bodily sensation, thoughts and emotions in reducing stress/practicing eating raisins <sup>1</sup> , giving feedback and discussion about the practice/three - minute breathing, giving assignment for next week and distributing leaflets of the first session and CDs of meditation
<b>Second</b>	Re-examining body workout/ giving feedback and discussion about examining body workout/ practicing breathing mindfulness meditation/ yoga stretching exercise/distributing leaflets of the second session and CDs of meditation
<b>Third</b>	Having conscious sitting with awareness of breathing(the sitting meditation)/practicing yoga exercises(in the hospital chapel)/ practicing three - minute breathing /distributing leaflets of the third session and video tape of yoga practices
<b>Fourth</b>	Re-examining body workout /practicing exercises related to conscious yoga(in the hospital chapel)/5-minute practicing of “seeing or hearing”/ re-practicing conscious session with awareness of breathing and body/ distributing leaflets of fourth session and CDs of meditation
<b>Fifth</b>	Practicing breathing /re-practicing conscious session(awareness of breathing ,body, sounds and thoughts)/explaining the stress and identifying participants’ reactions to stress/examining awareness of pleasant and unpleasant events on feeling ,thoughts and bodily sensations/practicing conscious yoga exercises/practicing 3-minute breathing /distributing leaflets
<b>Sixth</b>	Practicing conscious yoga/practicing sitting meditation (mindfulness of sounds and thoughts)/distributing leaflets of the sixth session and number4 video tape to participants
<b>Seventh</b>	Practicing mountain meditation/sleep hygiene/ repeating exercises of the previous session/making a list of enjoyable activities/distributing leaflets of the seventh session
<b>Eighth</b>	Examining body workout /overview of program/examining and discussing programs /practicing stone, beads and marbles meditation

## Results

Collected data were analyzed using mean, standard deviation, frequency distribution tables, univariate covariance analysis test in SPSS-21 software and were shown in the following tables. In this study, 24 Women with obesity (12 patients in control group and 12 patients in experimental group) aged 32-49 years old were studied. Age mean of participants in experimental group was  $42 \pm 5/32$  years and age mean of participants in control group was  $40 \pm 4/56$  years. Table 2 shows mean and standard deviation of participants' scores in weight in women with obesity.

Table 2 shows mean and standard deviation of participants' scores in weight. The effectiveness of mindfulness-based stress reduction program and conscious yoga on weight in women with obesity was examined using repeated measures of variance analysis. A summary was presented in Tables 3, 4.

<sup>1</sup>Object attention training

**Table 2. Mean and standard deviation of participants' scores in weight**

Group	Steps	Mean	SD	Min.	Max.
Control	Step1	94.35	9.92	79.90	120.20
	Step2	94.17	10.06	79.50	120.40
	Step3	93.75	9.95	79.40	120.20
	Step4	93.88	9.99	79.50	120
	Step5	93.89	9.97	79.50	120
	Step6	93.79	9.81	79.80	119.10
	Step7	93.76	9.87	79.80	119
	Step8	93.74	9.94	79	119
	Step9	93.72	10.80	79	119.30
	Step10	93.81	9.95	79.80	119.10
	Step11	93.86	9.86	79.65	118.89
	Step12	93.54	10.64	79.64	118.88
	Step13	93.32	9.53	79.43	117.70
Experiment	Step1	97.26	9.16	85.50	116.90
	Step2	96.48	9.16	85.70	113.90
	Step3	95.69	8.32	85.20	112.10
	Step4	95.66	8.21	74.80	110.60
	Step5	94.10	9.55	73.60	108.40
	Step6	93.20	9.54	73.60	108.40
	Step7	92.40	9.12	73.50	106.60
	Step8	91.86	8.94	74.20	106.20
	Step9	91.31	9.12	72.80	106.10
	Step10	89.15	10.04	70.20	104.70
	Step11	88.14	9.03	70.19	103.66
	Step12	87.54	10.84	69.11	101.55
	Step13	83.44	9.66	68.80	98.43

**Table 3. Repeated measure results**

Steps	F	DF1	DF2	significant
Step1	0.014	1	22	0.907
Step2	0.002	1	22	0.964
Step3	0.26	1	22	0.872
Step4	0.079	1	22	0.781
Step5	0.007	1	22	0.934
Step6	0.001	1	22	0.982
Step7	0.030	1	22	0.863
Step8	0.037	1	22	0.850
Step9	0.028	1	22	0.869
Step10	0.045	1	22	0.833
Step11	0.023	1	22	0.776
Step12	0.033	1	22	0.789
Step13	0.037	1	22	0.784

**Table 3. The summary of repeated measures variance analysis to examine the effectiveness of mindfulness-based stress reduction program on weight**

	df	Mean square	F	Significant	Effect size
Weight	1	1.232	21.435	0.001	0.532

Repeated measure of variance analysis showed that in three-evaluation stage there is a significant difference in the groups ( $P < 0.05$ ) considering 53 % effect size.

### Discussion

The present study showed that mindfulness-based stress reduction treatment program by a group method leading to weight loss in women with obesity. The results showed that effectiveness of mindfulness-based stress reduction program improved eating disorder. Excessive and abnormal consumption of food in a period of time takes longer among the characteristics of people with obesity, (Morone, Greco and Weiner, 2008). In this case, the person feels that they have no control on their eating behavior. On the other hand, in explaining obesity from the psychological point of view, eating too much is sometimes to prevent unpleasant emotions or in the event of a failure to achieve perfectionism or ambition (Chaskalson, 2011).

Features of mindfulness method is that aware the patient to the roots of the disorder and its mechanism in the mind, prevent them to get stressed, focused on their thoughts and desires in a state of awareness, allows individual not select repeat actions or thoughts and chew them to reduce anxiety and think about the roots of biological disorders (Yanovski, 2000). Although technology, human development and growth allow people to treat many illnesses without requiring physical displacement and saving time, it should have been admitted that many diseases and psychiatric disorders are in the shadow of short-term guidance and doctor's training is possible (Radolph, Cadera and Tacone, 1999). Generally, the cause of effectiveness of the mindfulness method in obese people is that mindfulness training leads to cognitive changes in the patient's thinking.

Thus, they concluded that the person trying to see his next step in the first stage, and this tendency to a higher step would improve gradually and step by step, as well as the patient's peace and awareness, and his treatment is continued and solves his problems at the meeting. In addition, the findings indicated that the practice of reducing obesity in the test group compared to the control group at the follow up stage, means that the subjects of the test group maintained the effect of this exercise in the follow-up phase. Mindfulness-based stress reduction through meditation exercises and focusing on mind-awareness, increases awareness and acceptance in patients. Mindfulness is not a technique or technology, but also as a one available method to reduce suffering and extend the positive qualities such as consciousness, insight, wisdom, and compassion is described (Rosenzweig et al., 2010). Use of relaxation training widely is emphasized as a valuable stress management skill that should be used regularly in life and as a sustainable part of individual skills. Expressing emotions over all meetings of the program had numerous health benefits like presence of mind through self-regulation of attention, by meditation activities effects on emotional and sensory components of the body. Regular exercise of Hatha yoga increase the skeletal - muscle flexibility, strength and balance and help a person to experience states of relaxation and awareness (Yanovski, 2000).

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