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Original Article

Effectiveness of mindfulness-based cognitive therapy on clinical syndrome and body image in women with bulimia nervosa

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Abstract

Introduction: The purpose of present research was to investigate the effectiveness of mindfulness-based cognitive therapy on clinical syndrome and body image in women with bulimia nervosa disorder.

Materials and Methods: This is a quasi-experimental study with pre-test, post-test, and control group. The study population consisted of all women who referred to two nutrition and diet therapy clinics in Mashhad between February and May 2015, among which 30 women with inclusion and exclusion criteria were selected as the sample using convenience sampling. The 30 participants were randomly assigned to two 15-person groups. The first group received mindfulness-based cognitive therapy and the second group was the control group that was placed on a waiting list. Binge Eating questionnaire (Gormally, 1982), Fisher's image inventory and Depression Anxiety Stress Scale (DASS-21) were used to collect data. Data analysis was conducted using analysis of covariance in SPSS.

Results: Based on the test results, mindfulness-based cognitive therapy significantly reduced depression (P<0.05), anxiety (P< 0.05) and stress (P< 0.05). Furthermore, the therapy increased the body image scores in experimental group compared to the control group at post-test stage (P< 0.05).

Conclusion: The results showed that mindfulness-based cognitive therapy reduces depression, anxiety and stress, as well as improves body image in people being treated. Thus, the use of this therapy is recommended for patients with bulimia nervosa.

Keywords: Body image, Bulimia nervosa, Clinical syndrome, Cognitive therapy, Mindfulness

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Introduction

The most challenging psychiatric disorder to treat is eating disorder (1), which has been named a feeding and eating disorder in DSM-5. Eating orders are syndromes in which cognitive changes related to food, body weight, and wrong eating patterns can lead to nutrition and life-threatening medical complications. Feeding and eating disorders in DSM-5 are Pica disorder, rumination disorder, food avoidance/restrictions disorder, anorexia nervosa, bulimia nervosa, binge eating disorder, and unknown feeding and eating disorder. Bulimia nervosa is a disorder in which the patient eats a large amount of food and feels

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out of control in eating. Compensatory behaviors to avoid weight gain are also seen in the patients. These behaviors are, on average, seen twice a week or three months during bulimia nervosa. Bulimia nervosa is a psychiatric disorder characterized by eating a large amount of food in a short period and then adjusting extra calories by vomiting or other extreme actions (2). The mean prevalence of bulimia nervosa has been reported to be 1 percent for women and 0.1 percent for men in West Europe and the United States (3). In Iran, an epidemiological study on eating disorders indicated the presence of 0.9% anorexia nervosa, 3.23% bulimia nervosa, and 63.6% mild syndrome of eating disorder in a sample of 3100 subjects (4). Iran, like many developing countries, is experiencing an obesity epidemic and its complications. Recent epidemiological studies showed that the prevalence of overweight and obesity in Iran is equal to or greater than in Europe and the United States. People with overweight and obese are more likely to have adverse psychological, economic and social consequences, and overweight adolescents, compared with normal-weight peers, are more likely to have concerns and intellectual engagement about their weight and behavioral inhibition such as binge eating and chronic regimes (4). Eating disorders and especially bulimia nervosa, endanger the public health of adolescents (5). Attitudes and behaviors toward eating are characterized by multiple psychological factors such as stress, anxiety, and depression, and the variables play a very important role in the formation and development of eating disorders (6). In addition to the effect of stress or psychological stressors on susceptibility to eating disorders, "perception of body image" is among other variables that play a determining role in creating bulimia nervosa and anorexia. The pressure of being thin that has a deep impact on a person can be well seen in the media and publications. According to social comparison theory, women often compare themselves too thin models and characters in the media and in magazines, and when they find a discrepancy between the ideal and what they perceive their bodies to be, they may engage in dieting or disordered eating (7). Studies conducted on students revealed that women, in comparison to men, build their self-esteem upon different structures, such as perfectionism and body image (6). Many women and girls have problems with their body image. Disability in the diet, disinhibition, and negative body image are among the characteristics of people with bulimia nervosa (8). Impaired perception of body size and weight, obsessive thoughts about food, exercise, and distorted body image are symptoms that people with this disorder suffer from (9). Body image is a central concept for self-concept. Body image is not just a phenomenon resulting from the social structure but also is associated with the issue of how a person experiences his/her interactions with others. In this way, people who perceive themselves as unattractive are more likely to have social phobias (10). Mindfulness-based interventions are considered third-generation or third-wave cognitive-behavioral therapy. Mindfulness is a form of meditation rooted in eastern religious teachings and rituals, especially Buddhism (11). Bishop believes that mindfulness in contemporary psychology is an approach to raising awareness on responding to mental processes, including novel emotional disorders (12). Since mindfulness-based therapies deal with both the physical and mental aspects, they have shown high efficacy in the treatment of some clinical disorders and physical illnesses. In the last two decades, a large number of interventions and mindfulness-based therapies have emerged (13). In recent years, the ability of mindfulness has been recognized as a skill to control disease, stress, and life challenges in Western life (14). In research on the effects of mindfulness on depression, Schulman concluded that mindfulness reduced depression by 70 percent. In a study using a methodology based on the presence of mind on 25 depressive patients with 2-year follow-up. It was seen that the therapy not only reduces depression but also is effective in preventing the recurrence of depression (15,16). In a prospective study, Sullivan et al. applied the mindfulness-based psychological intervention to reduce anxiety and depression in patients with myocardial infarction. The results showed that during the next 12 months, psychological symptoms had improved in the experimental group compared to the control group (17). In another research, Zeidan et al. showed that mindfulness improves mood and its short-term training reduces depression (18).

Although studies have used extensive research methods, most of them are cross-sectional or correlational studies. Therefore, a limited number of these studies are directly linked to eating behavior. Finally, although the existing literature has confirmed the nature and origins of the pathology in the field of interest variables in eating disorders, they are deficient in the field of treatment-related studies. Given the above and the importance and impact of body image and psychological stress on eating disorders, the purpose of the present research was to investigate the effectiveness of mindfulness-based cognitive therapy on clinical syndrome and body image in patients with binge eating disorders.

Materials and Methods

The research method is the clinical trial with a pre-test, post-test, and unequal control group. In this study, treatment is the independent variable, and its levels are mindfulness-based cognitive therapy and non-intervention. Clinical syndrome variables (depression, anxiety, stress) and body image were considered dependent variables. The population included women referring to nutrition clinics in Mashhad.

The study used a non-probability sampling (targeted) method and included 30 subjects. After filling out the Gormally's Binge Eating questionnaire, getting the diagnosis of bulimia nervosa, and checking the inclusion criteria, the subjects were randomly assigned to two groups: 15 subjects for mindfulness-based cognitive therapy (experimental group) and 15 subjects for the waiting list (control group). It should be noted that two subjects were excluded from the intervention group because of a three-session absence, and finally, the intervention group consisted of 13 subjects.

Similarly, two subjects of the control group were excluded from the group because of being absent in the post-test session and not filling out the questionnaires. The inclusion criteria for the research project were: female gender, minimum age of 18 years and maximum age of 40 years, minimum education of diploma, filling the overeating questionnaire and having a minimum score of 18 (having bulimia nervosa disorder), no simultaneous participation in other treatment programs and not receiving individual counseling or medication, no acute and chronic physical disease, no special diet under the supervision of nutrition doctor, desiring to continue the project after taking the necessary explanation about the time, place and type of sessions. Gormally's Binge Eating questionnaire, Fisher's body image inventory, and Depression Anxiety Stress Scale (DASS-21) was used to measure the intended variables.

Research instruments

A) Binge Eating Scale: Gormally et al. designed the scale to measure the intensity of overeating. The scale consists of 16 items, and each item consists of three or four statements. The subjects are asked to choose the statement best describes them. The items are rated from zero to three, and the total score ranges from zero to 46). A score of 17 or below indicates no binge eating, and a score from 18-26 indicates moderate binging.

Severe binging is identified as a score of 27 or higher. English, Portuguese and Italian versions of the scale have good reliability, sensitivity, and specificity). In research, Abolghasemi and Jafari investigated the psychometric properties of the Iranian version of the binge eating scale.

To this end, Dezhkam et al. investigated 60 obese subjects aged from 20 to 50 and 60 subjects with normal weight who were homogenized in terms of age, gender, education, socioeconomic level, and marital status. The reliability of the scale was 0.72, 0.67, and 0.85 using test-retest (after 9 to 20 days), split half, and Cronbach's alpha, respectively. The sensitivity and specificity of the Persian version of the binge eating scale, using a cutting point of 17, were 84.6 and 80.8, respectively (19,20).

B) Depression, Anxiety, and Stress Scale (DASS-21): The Depression, Anxiety, Stress Scale (Lovibond, 1995) was created according to the overlap of depression and anxiety in order to define and measure the structures of anxiety and depression. In fact, the scale is a set of three self-report scales to measure negative emotional states (depression, anxiety, and stress) (21).

The questionnaire is scored based on the intensity and level of anxiety, depression, and stress. If the subject has no anxiety, depression, or stress, he/she will receive a zero score, and if the subject chooses low, high, and very high options, he/she will score 1, 2, and 3, respectively. In this questionnaire, each scale consists of seven questions, and accordingly, a subject's score is calculated in the above scales.

In this study, we used the short form of DASS questionnaire, which contains 21 questions (7 questions for each scale). The minimum and maximum scores in these subscales are 0 and 21, respectively. The reliability of the scale was measured through internal consistency, and its validity was assessed using factor analysis and criterion validity by running the Beck depression test, Zhang anxiety test, and perceived stress test. In general, the obtained coefficients of reliability and validity of the scale were very satisfactory and significant at $P<0.001$ level.

The correlations between DASS depression subscale and Beck Depression test, DASS anxiety subscale and Zhang anxiety test, and DASS stress subscale and perceived stress test were 70%, 67%, and 49%, respectively. There was a significant difference between men and women in the obtained scores. Thus, different norms were presented for men and women.

According to the research results, DASS-21 is eligible for use in clinical situations and psychological research (21).

C) Body image questionnaire: Fisher's body image questionnaire: The body image test (Fisher, 1970) has 46 items. Each item has a score from 1 to 5 (1=very dissatisfied, 2=dissatisfied, 3= neither satisfied nor dissatisfied, 4 = satisfied, 5 = very satisfied). A score of 46 on the test indicates disorder, and scores higher than 46 indicate a lack of disorder. The calculated correlation coefficient in the first and second run using the Pearson method was 0.81 for first-year students, 0.84 for second-year students, 0.87 for third-year students, and 0.84 for the total students. Given the significance level of the coefficients, it is plausible that there is a significant correlation between the scores of the first run and that of the second run. In Asgari et al. research, the reliability of the body image questionnaire was calculated to be 0.93 and 0.91 using Cronbach's alpha and split-half method, respectively (22). Cognitive therapy developed by Mohammadkhani et al. includes eight group-training sessions (one session a week), and each session lasts for two hours. The details of this method are shown in Table 1 (23).

Table 1. Summary of MBCT training sessions

Session	Programs
1	Setting the general policy considering the confidentially and privacy of people's life, introducing the members and familiarizing them with each other, a description of the binge eating disorder and its symptoms and treatments, automatic guide training, defining the mindfulness, practice on eating raisins with awareness, homework, discussion and determining the weekly sessions, explaining the tapes and pamphlets of the first session
2	Checking homework, physical verifications exercise, practicing mindfulness in everyday life, thoughts and feelings practice, pleasant event recording, 10-minute sitting meditation, getting feedback
3	Checking homework, conscious "audio" "visual" meditation (30 or 40 minutes), three-minutes breathing space practice, reviewing walking with mindfulness, feedback and discussion about the practice
4	Checking homework, conscious "audio" "visual" meditation (30 or 40 minutes), awareness of breathing, body, sounds and minds, determining the homework, feedback
5	A 40-minute sitting meditation focusing on breathing and sounds with the aim of using meditation techniques in stressful situations, determining the homework, feedback
6	Sitting meditation focusing on breathing and body senses with the aim of controlling rumination using looking-at-yourself-from-the-outside method
7	Sitting meditation focusing on breathing and body senses, the practice of viewing the relationship between activity and mood, reviewing thoughts, preparing for the end of the period
8	Reviewing the past contents and conclusion

Results

The mean and standard deviation of the subjects' age were 30.07 and 7.85, respectively, with a range of 18 to 40 years. There was no significant difference between the experimental (intervention) and control groups in terms of age, education, and marital status. Table 2 shows some demographic information on subjects such as education and marital status. Table 3 shows the mean and standard deviation of research variables in pre-test and post-test for experimental and control groups.

Table 2. Demographic information of subjects

Variable	Level	Frequency	Percent	Frequency	Percent
		Intervention		Control	
Education	Diploma	4	31%	4	33%
	Associate degree	4	31%	3	25%
	Bachelor's degree	4	31%	5	43%
	Master's degree	1	7%	0	0%
Marital status	Single	4	31%	5	42%
	Married	7	54%	7	58%
	Divorced	2	15%	0	0%

Table 3. Mean and standard deviation of research variables in pre-test and post-test for experimental and control groups

	Control group				Intervention group			
	Pre-test		Post-test		Pre-test		Post-test	
Variable	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Depression	15.25	5.429	14.92	5.125	17.38	6.007	10.54	3.406
Anxiety	11.00	2.796	10.33	2.741	11.31	7.158	8.77	3.961
Stress	22.00	5.908	21.58	5.712	24.00	6.481	16.00	5.759
Body image	163.17	18.507	162.92	17.207	157.23	16.321	169.08	15.223

Table 4 shows the results of Levene's test for equality of variances. Since the significance level of the F-statistic was higher than 0.05 (significance level), equality of variances was met in all studied variables for the intervention and control groups.

Table 4. Results of Levene's test for equality of variances in the intervention and control groups

Variable	Statistic	Significance
Depression	0.002	0.969
Anxiety	0.158	0.694
Stress	0.488	0.492
Body image	1.259	0.273

Table 5. Results of univariate analysis of covariance for studied variables

Variable	Degree of freedom	Statistics	Significance	Effect size
Depression	1	87.63	0.000	0.80
Anxiety	1	13.908	0.001	0.39
Stress	1	223.784	0.000	0.91
Body image	1	108.443	0.000	0.83

According to Table 5, the results of a univariate analysis of covariance showed that, in women with bulimia nervosa, there is a significant difference between intervention and control groups in terms of depression (F= 87.63, $P<$ 0.05). The results also show that, in people with binge eating disorder, there is a significant difference between intervention and control groups in terms of anxiety (F= 13.908, $P<$ 0.05). Moreover, the result showed that, in women with bulimia nervosa, there is a significant difference between intervention and control groups in terms of stress (F= 223.784, $P<$ 0.05). In other words, mindfulness-based cognitive therapy reduced depression, anxiety, and stress in subjects of the intervention group compared to the subjects of the control group in the post-test. The effect of this intervention on reducing anxiety, depression, and stress is 80%, 39%, and 83%, respectively. In addition, the results showed that, in women with bulimia nervosa, there is a significant difference between intervention and control groups in terms

of body image (F= 108.443, *P*< 0.05). In other words, mindfulness-based cognitive therapy reduced negative body image in the subjects of the intervention group compared to the subjects of the control group in the post-test. The effect of this intervention on reducing negative body image was 83 percent. This means that 83 percent of the total residual variance was due to the effect of the intervention.

Discussion

The purpose of the present research was to investigate the effectiveness of mindfulness-based cognitive therapy on depression, anxiety, stress, and body image in women with bulimia nervosa disorder. The findings showed that mindfulness-based cognitive therapy reduced depression in the experimental group compared to the control group. The findings are consistent with the results of Kaviani, Azargoon, Hanasabzade, Esmailian, and Nirenberg (24-28). By focusing on individuals' cognitions (an important aspect in the treatment of depression), mindfulness-based cognitive therapy is among the factors reducing frequent recurrences and focusing on negative thinking patterns, which has led to the emergence of a new movement on the states of mind. The movement opens us to many different and related methods, thereby causing new learning and the emergence of useful empirical perspectives (29). This change in the state of mind enables participants to view experiences from different perspectives and relate to different spaces. This awareness does not necessarily create attitude but creates a new method of viewing cognitive experiences by which we can learn from our experiences. In this way, the person will be able to achieve a better definition of himself/herself, the problem is seen as an inclusive experience, and the person tries to solve it in a good way. This method can effectively reduce depression in people with binge eating disorders. This treatment has reduced the return rate of depression attacks in those with three or more depression attacks (30). Research evidence supports the application of the mindfulness-based stress reduction method. The findings of this research also suggest that mindfulness-based cognitive therapy has reduced anxiety in the subjects of the experimental group compared to the control group. This result is in line with the findings of Schulman, Beyrami, and Farhadi et al. (15,31,32). In explaining these results, we can say that the reason for the reduction of anxiety resulting from disorder symptoms is the content of this approach that overeating can focus on normalizing eating patterns and causes an end to the overeating and purging cycles. According to the conducted studies, it seems that mindfulness interrupts the cycle of negative internal experiences, such as expected anxiety about a non-occurred event in the future or rumination of an event in the past (33). Davidson et al. also reported that mindfulness meditation activates a region of the brain that is associated with positive emotions and beneficial effects on immunization function (34). In addition, Carlson et al. achieved significant improvement in quality of life, stress syndrome, and sleep quality in patients with breast and prostate cancer after receiving a mindfulness-based stress reduction program (35). Additionally, mindfulness-based stress reduction program has significantly increased mental clarity and mental health and reduced body stress (36). Moreover, the findings of this research showed that there is a significant difference between the scores of the intervention group and that of the control group in terms of body image. In other words, mindfulness-based cognitive therapy has increased the body image of subjects of the intervention group compared to the control group. The finding is in line with the studies of Manlic et al., Narimani et al., and Abolghasemi and Jafari (20,37,38). In explaining the finding, we can say that mindfulness-based cognitive therapy uses cognitive practices to improve mental distortions and beliefs related to body image, cognitive errors, and the way of dealing with stress, such as relaxation, meditation, and emotion regulation. The patients are taught to face parts of their body that cause their discomfort with a relaxation technique, gradually reducing their stress, discomfort, and anxiety, and thereby feeling a sense of satisfaction and completeness. So that people with negative body image find mental awareness about values detected during the treatment, including their physical condition, and can improve their body image by reducing rumination and emotional cutoff and increasing acceptance (38). Therefore, mindfulness therapy through cognitive and

emotional strategies has modified and reduced negative body image. One important reason for the formation of bulimia nervosa disorder is a disorder in body image and negative attitudes about body image. Given that the above treatment focuses on changing the attitudes toward the body, it can be effective in improving the body image. In doing any research, the researchers are faced with limitations. Among the limitations of this study was the limitation of the population to women referring to two nutrition clinics in Mashhad, which limits the generalizability of our results to other groups in the society. Group limitation and time limitation to implement follow-up studies were among other limitations of this study. It is suggested that future researchers conduct the treatment in larger groups and compare the results with other treatment methods in the field of binge eating and eating disorders, as well as conduct similar research to investigate the effectiveness of MBCT therapy on other psychological variables associated with overeating.

Conclusion

According to the study of mindfulness-based cognitive therapy, reducing the amount of depression, anxiety, and stress disorders in women with bulimia nervosa is effective, and this technique also improves body image scores in these women. Therefore, this therapy can improve the clinical symptoms in patients with binge eating disorders.

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