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The Effectiveness of Mindful Self-compassion Treatment as a Compound Method with Diet Therapy on Body Mass Indexes and the External Shame in Women with High Body Mass Indexes

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Abstract

Introduction: Overweightness has been one of the most prevalent global problems during recent years. This investigation was carried out to compare the compound treatment of diet therapy and mindful self-compassion with diet therapy as a one component treatment.
Method: The current research was a quasi-experimental study with pre-test, post-test and a two-month follow-up on 40 women with high Body Mass Indexes (BMIs). The participants were selected among the women who had sought professional help in nutrition clinics of Kermanshah in 2019. Convenience sampling was applied and the 40 participants were equally divided between experimental and control groups. Both groups received diet therapy but one of them received eight sessions of mindful self-compassion in addition to the diet therapy. Data were collected using the external shame scale and by measuring the BMIs. The data were analyzed using SPSS-25.
Results: The results of repeated measures ANOVA indicated that mindful self-compassion has led to significant reductions in external shame components (except for being ashamed of making mistake), the total external shame score, and the BMI.
Conclusion: Teaching and practicing mindful self-compassion can effectively reduce external shame and the BMI. This findings highlight the importance of self-compassion in decreasing psychological problems and weight control.

Keywords: Mindful Self-compassion, Diet Therapy, High Body Mass Indexes

Introduction

Overweightness and obesity have recently become prevalent in many societies and countries and have affected one third to 50% of adults [1, 2]. Overweightness means having a weight 10 to 19% higher than the ideal and turns to obesity if the additional weight is 20% higher than the ideal weight [3]. A percentage of 9.8 of adults are dealing with overweightness. The prevalence of overweightness and obesity has been reported to be 21.5% in the Iranian population above the age of 18 (27.3% in women and 13.7 in men) [4, 5]. Overweightness and obesity are concerning issues since they can deeply affect health and longevity. According to studies, obesity is correlated with cardiovascular diseases, type-2 diabetes, blood pressure and high cholesterol and has major effects on death tolls [6, 7]. The BMI (weight divided by height squared) is widely used as the criterion and indicator for obesity. The body of overweight individuals is indicated by 25-29.9 BMI and BMIs higher than 30 are indications of obesity. Psychological factors are differently and significantly correlated with various levels of high BMIs [8]. One of the painful aspects of overweightness

is experiencing negative emotions such as depression and anxiety [9]. An important negative emotion which forms psychological and social problems of overweight individuals and is positively correlated with BMI is external shame.

External shame is defined based on how an individual is viewed by others in the social context. Therefore, the incorrectly perceived self might lead to being ignored, criticized or rejected by the others [10]. Although experiencing no shame could result in psychological distress and violating interpersonal and social norms, excessive levels of shame may also emerge as psychopathological symptoms [11].

Nutritionists believe that the best therapeutic methods in overweightness and obesity are the ones that emphasize modifying diets [12]. The aim of diet therapy is to reduce consuming energy for weight loss. Weight loss and maintaining weight are difficult goals in diet therapy; because the Basal Metabolic Rate (BMR) decreases after weight loss and the individuals would have to continue their diets. Even though low-calorie diets lead to weight loss during a short time, usually soon the decreased weight returns [13, 14]. Considering the problems caused by overweightness and obesity and their comorbid disorders, a wide range of psychotherapeutic methods such as cognitive-behavioral therapy, self-efficacy training, relaxation and hypnotherapy have effectively facilitated weight loss and reduced the psychological symptoms of obese individuals [15- 17].

A potential factor which could decrease the dissatisfaction of obese individuals with their bodies is self-compassion. Since the structure of self-compassion is strongly correlated with psychological health, it has received more attention by psychologists [18]. Neff has recently suggested the structure of self-compassion to be a form of healthy self-acceptance. Self-compassion is a kind open approach to the undesirable aspects of self and the life of the self and includes three main components of self-kindness versus self-judgement, common humanity versus isolation and mindfulness versus over-identification. One of the recently suggested concepts in psychotherapy is mindful self-compassion which highlights various techniques such as loving, kindness, kind breathing, and informal exercises for daily life like peaceful touching and compassionate letter writing [19]. In a study for assessing the effectiveness of short term meditation intervention on self-compassion and body dissatisfaction by Albertson et al., 98 and 130 participants were respectively and randomly assigned to the intervention and control groups. After the intervention, the experimental group had significantly lower body dissatisfaction and appearance -based body shame. The changes maintained after a three-month follow-up [20].

Since there is a high prevalence of obesity in Iran, identifying the psychological factors involved in it for weight loss and health-care costs seems vital. Designing psychological interventions could be a considerable help to these individuals and set the ground for future investigations. Self-compassion is one of the factors that has effectively improved psychological symptoms in physical or mental patients. It includes caretaking of the self in hardships and the perceived failures. High self-compassion is correlated with psychological well-being and can support individuals against stress and negative emotions. According to studies, the mindful self-compassion can alleviate psychological problems and increase the mental well-being of different clients [19, 21]. Previous studies have focused on the effectiveness of self-compassion on obesity. However, the current study has examined the effectiveness of mindful self-compassion as a novel treatment on the external shame and the Body Mass Index (BMI) of women with high BMIs for the first time. According to what was mentioned, the current study has sought answers to the following questions: Does the combination of the mindful self-compassion and diet therapy alleviate the levels of shame in women with high BMIs? Does the mindful self-compassion combined with diet therapy lead to significant improvements of the BMIs in women with high BMIs?

Method

The current research was a quasi-experimental study with an experimental and a control group and was approved by the ethics committee at Kermanshah University of Medical Sciences (IR.KUMS.REC.198.422). The study population consisted of all women with high BMIs (BMI≥30) who had referred to the nutrition clinics of Kermanshah in 2018-2019. To determine the required sample size for comparable effect sizes, the mean and standard deviation of previous studies were utilized [19]. Fourteen participants were needed for each group but due to the likelihood of dropouts, 20 individuals were recruited for either one of the groups. After considering the inclusion criteria and the randomized allocation of the participants, the pre-test was applied.

Afterwards the experimental group's participants received eight 90-minute weekly sessions of the compound treatment. The participants of the control group, only, received three sessions of diet therapy under the observation of a nutritionist. Diet therapy sessions were offered once every two weeks. The diet program was tailored to each individual's weight. The participants were restricted from eating fast food. They had to walk for thirty minutes, daily. The post-test was done one week after the end of the sessions and two months later, the follow-up was applied.

The inclusion criteria included having a BMI of 30 or higher, having at least a secondary school diploma for completing the questionnaires, having informed consent for participating in the program, being able to follow the diet, and not receiving any current educational programs other than this study. The external criteria included being diagnosed with one of the severe psychological disorders (psychotic disorders or personality disorders), being diagnosed with any of the chronic medical disorders (Thyroid, kidney disease, cardiovascular, diabetes, etc.), using any Cortisone acetate or hormonal drugs, being absent for more than two therapy sessions, being formerly (within the last year) or currently involved in substance abuse, being pregnant or willing to get pregnant, and

receiving drugs causing weight changes. In order to observe the ethical principles of research and to respect the rights of the participants, the research aims and its process were explained to all the participants. The option of leaving the study at any point was also introduced. They were ensured that their information will always be confidential and the collected data will be published without revealing any personal information and the data will be analyzed in clusters.

The data were analyzed using SPSS-26. Both descriptive and inferential statistics were utilized for data analysis. The used descriptive statistics included frequency, percentage, mean and standard deviation and the inferential statistics consisted of repeated measures ANOVA. Before applying repeated measures ANOVA, the required statistical pre-assumptions were considered and confirmed.

Table1. Content of Mindful Self-compassion

Session 1	Introduction and sessions' content	Determining the framework and setting rules for the group, applying the pre-test assessments for the control and experimental groups, explaining the rationale for the self-compassion intervention, education on the cognitive and professional emotional resources, performing the affectionate breathing technique
Session 2	Explaining the concept of self-compassion	Performing the affectionate breathing technique, describing what mindfulness is and what it does not include, explaining the interaction between self-compassion and emotion regulation, education on self-kindness-common humanity-mindfulness in self-compassion, the physiology of self-compassion and self-criticism, the conceptualization of the three circles model of emotion regulation
Session 3	Explaining the concept of mindfulness	Performing the affectionate breathing technique, describing the attentional styles, education on the inter-relatedness of mindfulness, self-compassion, and emotion regulation, describing why a wandering mind is a sad/ saddening mind (considering the role of the default mode network)
Session 4	Explaining the concept of loving-kindness	Performing the "loving friend" technique, comparing loving-kindness and compassion and self-compassion, the concept of being compassionate towards the others, developing awareness of the emotional product of being compassionate towards the others with/without showing compassion towards one's self, managing the compassion fatigue
Session 5	Finding your compassionate voice	Performing the affectionate breathing technique, describing self-criticism and safety seeking, finding exercises for the self-compassionate and soothing phrases and tones, describing the features of a compassionate individual, writing a compassionate letter
Session 6	Finding the meaning of life	Performing the affectionate breathing technique, education on the concepts of the main life values, needs, and aims, recognizing the unrealistic expectations, the specification of the valuable aims
Session 7	Managing the difficult emotions	Performing the affectionate breathing technique, the concept of acceptance, explaining the difference between pain and distress, discussing the challenging relationships, validating the emotions, expressing the pain caused by keeping/ avoiding relationships, education on emotions such as aggression, sadness, and anxiety in the light of self-compassion, expressing the fragile feelings and the unmet needs, performing the expressing and receiving compassion technique
Session 8	Enjoying life	Performing the affectionate breathing technique, reviewing the previous sessions, explaining the positive emotions and understanding them, developing self-compassion while experiencing the positive emotions, applying the loving-kindness technique, applying the post-test assessments for the experimental and control groups

The tools used in this study were as follows:

The External Shame Scale: This self-report scale which was derived from the internal shame scale, was designed in 1994 by Gilbert et al. to assess external shame. It consists of 18 items and three components including feel of inferiority, feelings of emptiness and being ashamed of making mistake. Each item is scored on a five-point Likert scale (Never=0 to almost always= 4). Gross et al. have reported the reliability of this scale (Cronbach's alpha=0.94) and its test-retest reliability (0.94). This scale is positively and significantly correlated with perfectionism scale (0.17), and negative emotion (0.51) and is negatively and significantly correlated with self-compassion (0.21) [22]. In Iran, Foroughi et al. have used Cronbach's alpha to report the reliability of this total scale and its components (total= 0.93, feel of inferiority= 0.92, feelings of emptiness= 0.71 and being ashamed of making mistake= 0.75) [23].

Body Mass Index (BMI): This indicator is calculated after dividing the weight (Kg) by height squared (m). The weight must be assessed using a digital scale with a 10-gram accuracy and the height is supposed to be assessed by an un-expandable tape measure meter with a 0.5-cm accuracy.

Results

The total number of the participants in this study was 40 whose demographic characteristics is presented in Table 2. The results of the analysis indicated no significant difference between the two groups.

The means and standard deviations of external shame components, the total external shame, and the BMIs are shown in Table 3.

According to the results of Table 3, the mean of external shame components, the total external shame and the BMI have decreased after the post-test and the two-month follow-up. However, this reduction has been higher in the experimental group.

Before applying the repeated measures ANOVA, the results of Box's M test, Mauchly's test and Levene's test were assessed to consider the required pre-assumptions. Since the Box's M results were not significant for any of the variables, the variance-covariance matrices were homogenous. Moreover, since none of the variables were significant in Levene's test, it can be concluded that the between-group variances are equal and the error variance of the dependent variables is equal in all groups. In addition, the results of Mauchly's test indicated that this test was not significant for any of the variables. Therefore, the within-group variances were equal.

The results of Table 4 indicate that the compound treatment of mindful self-compassion leads to significant improvements in external shame in the experimental group compared to the control group. The highest effect sizes were related to "feeling of inferiority" (0.36), "feelings of emptiness" (0.25), and the "total external shame" (0.18). Although this treatment led to improvements in being ashamed of making mistake, this improvement was not statistically significant (0.09). Furthermore, with an effect size of 0.24, this program could significantly improve the BMI in the experimental group compared to the control group.

Table 2. Demographic Characteristics of Subjects

Parameters	Experimental group	Control group
Age, y	28.85±.96	29.6±1.09
Married	17 (85.00)	18 (90.00)
Single	3 (15.00)	2 (10.00)

Table 3. Means and Standard Deviations of External Shame Components, Total External Shame, and the BMIs

Variable	Group	Pre-test		Post-test		Follow-up	
		Mean	SD	Mean	SD	Mean	SD
Feel of inferiority	Compound treatment	22.17	1.28	13.88	1.05	14.52	1.12
	Diet therapy	22.82	1.62	15.82	1.46	16.70	1.57
Feelings of emptiness	Compound treatment	4.58	1.12	4.18	0.88	4.29	0.91
	Diet therapy	3.88	1.05	3.41	0.79	3.41	0.79
Being ashamed of making mistake	Compound treatment	5.76	1.09	3.70	0.84	3.76	0.97
	Diet therapy	5.64	0.93	4.17	1.07	4.94	1.14
Total external shame	Compound treatment	32.52	1.12	21.70	1.35	22.58	1.37
	Diet therapy	32.35	1.53	23.29	1.45	25.01	1.79
BMI	Compound treatment	35.00	1.06	31.88	0.69	32.00	0.61
	Diet therapy	34.41	0.71	31.58	0.50	31.52	0.51

Table 4. ANOVA of External Shame Components, Total External Shame, and the BMIs

Variable	Source	SS	DF	F	Sig.	Effect size
Feel of inferiority	Between-group (group)	64.324	1	18.378	0.01	0.36
	Interaction (time of the group)	9.941	1	6.022	0.01	0.15
	Within- group (time)	1206.196	2	559.873	0.01	0.94
Feelings of emptiness	Between- group (group)	15.686	1	11.03	0.01	0.25
	Interaction (time of the group)	0.132	1	0.137	0.714	0.004
	Within- group (time)	3.902	2	3.232	0.04	0.09
Being ashamed of making mistake	Between- group (group)	6.627	1	3.532	0.06	0.09
	Interaction (time of the group)	7.11	1	8.84	0.01	0.21
	Within- group (time)	57.961	2	47.677	0.01	0.59
Total external shame score	Between- group (group)	41.422	1	7.47	0.01	0.18
	Interaction (time of the group)	28.471	1	44.634	0.01	0.58
	Within- group (time)	1986.431	2	2.283	0.01	0.98
BMI	Between- group (group)	5.186	1	10.373	0.01	0.24
	Interaction (time of the group)	9.941	1	0.059	0.776	0.003
	Within- group (time)	198.059	2	196.613	0.01	0.86

Discussion

The current study was carried out in order to examine the effectiveness of the compound treatment of mindful self-compassion compared to diet therapy. According to the results, mindful self-compassion as a compound treatment led to significant reductions in external shame (except for being ashamed of making mistake) and the BMI. These findings are in line with other studies and meta-analyses about therapeutic use of self-compassion and mindfulness [24- 28]. In a meta-analysis, O'Reiley et al. assessed the effectiveness of mindfulness-based interventions according to 21 studies and concluded that 86% of the studies indicated improvements in eating behaviors [29].

To explain the reductions in external shame, it could be stated that the mindful self-compassion program has led to a decreased feeling of inferiority and feelings of emptiness by its components like self-compassion, common humanity, self-kindness and teaching formal and informal meditations [19]. Oliveira et al. tried to determine whether body compassion can moderate the effect of external shame on body image related shame and eating disorders in a study on 354 women in Portugal. They concluded that body compassion is negatively correlated with shame experience and eating habits. The analyses also indicated that as the mediator variable, body compassion has been effective on the relationship between general shame feelings, body image related shame and its relevant behaviors, and eating disorders [29]. In a study aiming at discovering the effect of external shame on body perception regarding the mediating role of self-compassion in a young Portuguese sample, Marta-Simoes et al. reported that BMI and external shame are negatively correlated. Accordingly, self-compassion is positively correlated with body perception and external shame can directly affect body perception [10].

To explain the reduction in the BMI, it can be mentioned that the experimental group was more successful in continuing the diet therapy due to using the mindful self-compassion program and doing the meditations [19, 30]. This finding is in line with the study of Taylor et al. who aimed at studying the relationship between self-compassion, mindful eating, and the symptomology of eating disorders and the BMI on a sample of 150 university students of America. They concluded that high levels of self-compassion can properly predict the BMI and fewer eating disorder symptoms. Moreover, high self-compassion could predict more mindful eating [31].

This study had some limitations. Firstly, the statistical population consisted of women with high BMIs (overweight); therefore, the results should be cautiously generalized to other individuals, especially men. Secondly, the data collection was done by self-report scales. Finally, the follow-up stage was done only after two months. It is recommended to other researchers to examine the effectiveness of the same program on men and to also have longer follow-up assessments (for example after six months or a year). Furthermore, interviews are recommended along with self-report scales. This intervention could be compared with other therapeutic methods.

Conclusion

mindful self-compassion can be used as a treatment to improve the psychological problems of women with high BMI.

Conflict of Interest

Authors have no conflict of interests.

Ethical Approval

In order to observe the ethical principles of research and to respect the rights of the participants, the research aims and its process were explained to all the participants. The option of leaving the study at any point was also introduced. They were ensured that their information will always be confidential and the collected data will be published without revealing any personal information and the data will be analyzed in clusters. In addition, the ethical code of this study was IR.KUMS.REC.198.422.

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