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Effectiveness of Barlow`s Unified Transdiagnostic Treatment, Emotion- Focused Therapy and Mindfulness on Moderating the Eating Behavior of Adults with Obesity

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Abstract

Objective: The aim of this study was to compare the effectiveness of Barlow's transdiagnostic, emotion-focused and mindfulness therapy on moderating the eating behavior of adults with obesity.

Method: The present research project was a semi-experimental with pretest, post test, and follow up with a control group. The statistical population included all people with obesity in Tehran. Sixty people were randomly selected through available sampling method and were assigned to four groups: (1) Barlow's transdiagnostic therapy, (2) emotion- focused therapy, (3) mindfulness-based therapy, and (4) control group. Data were analyzed using the Dutch Eating Behavior Questionnaire (DEBQ) in three stages: pre test, post test, and follow up, and were analyzed by mixed-variance analysis.

Results: The research findings showed the within effects significant (P<0.05) regarding emotional, environmental, and restricted eating. Regarding between effects, a significant and constant effectiveness was found in the subscale of emotional and restricted eating in emotion- focused therapy group and in the subscale of environmental eating in mindfulness-based therapy group (P<0.05).

Conclusion: Emotion- focused therapy can help people to moderate emotional and restricted eating through emotional experience and making sense of emotions, and mindfulness therapy can help people to moderate environmental eating by helping them focus on the present moment and break repetitive patterns.

Keywords: Barlow`s transdiagnostic treatment, Emotion-focused therapy, Mindfulness therapy, Eating behavior, Obesity.

Introduction

The World Health Organization defines obesity as the accumulation of excessive or abnormal fat that may harm health (World Health Organization, 2020). Obesity is considered a serious and global health problem, and specifically is associated with physical disorders such as diabetes, high blood pressure and cholesterol, heart and liver disorders, joint pain, apnea and psychological disorders (Forman & Butryn, 2015). Considering obesity as a multidimensional problem with its complications, various methods have been proposed to reduce it. The most important of these methods are surgical-based treatments, medications, diets, and psychological therapies. Surgical-based treatment may have some side effects such as embolism, less than 0.5% mortality during surgery, vomiting, electrolyte imbalance, and weight loss. Medication can also be helpful in treating obesity because it suppresses appetite, but after a few weeks patients may develop tolerance to the drug and some side effects, such as dry mouth, taste change, increased heart rate,

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headaches, dizziness, feces, nausea, constipation or oily stools, bloating, and fluid secretion may appear, and also some mental problems such as depression, suicidal thoughts, memory problems, and decreased concentration may occure (Sadock, Sadock, & Ruiz, 2017). Therapies for obesity, which are specifically limited to restrictive diets and prescriptions for exercises, are only effective for short-term weight loss, and many people regain their initial weight in five years (Lasikiewicz, Myrissa, Hoyland & Lawton, 2014). Since drug therapy for obesity and surgical procedures are associated with significant side effects, the use of psychological interventions to lose weight is of particular importance. Eating behaviors are behaviors that are associated with body mass index or obesity. These behaviors are categorized according to special style of eating and include emotional, external, and restricted eating. Emotional eating is overeating in response to negative emotions. External eating refers to an increased tendency to eat in response to external cues, such as sight or smell of food. Restrained eating refers to the intention to restrict food intake deliberately in order to prevent weight gain or to promote weight loss (Van Strien, 2018).

One of the psychological strategies in eating domain is mindfulness. Mindfulness means maintaining a moment-by-moment awareness of our thoughts, feelings, bodily sensations, and surrounding environment. Mindfulness enhances adaptive self-regulation which is very important to continue eating habits in long-term, especially in the presence of eating stimulators and emotions related to eating. Individuals who overeat less frequently are mindful than those reporting more frequent overeating (Smith, Seimon, Harris, Sainsbury & Da Luz, 2020) There is an association between mindful eating and disturbed body image and eating behaviors. This therapy has shown to be significantly effective in eating behaviors and weight loss (Hanson, Shttlewood, Halder, Shah, Lam, & Barber, 2019). Mindfulness controls eating behavior by making people aware of the present and this results in cessation of automatic mental habits and nonjudgmental acceptance of negative thoughts about the difficulty of weight reduction (Ruffault, Czernichow, Hagger, Ferrand, Erichot, & Carette, 2017).

Emotions, particularly negative emotions, have an important role in eating disorders (Greenberg, 2011; Davis, Anderson, & Pobocik, 2014; Glisenti, Strodl & King, 2018). Emotion-focused therapies can work on disrupted patterns which facilitate emotional dependence on food and can help breaking the cycle of addiction which results in emotional eating and eventually obesity (Compare, Calugi, Marchesinib, Molinari, & Grave, 2013). For people with the disorder, the feelings are unbearable and must be avoided and eating disorders are the most effective way for attaining this target. Eating and nourishing disorders manifest themselves in avoidance behaviors and, in this regard, Emotion Focused Therapy (EFT) for these disorders includes changing emotions and helping clients reexperience in order to develop balance, relaxation and emotional change (Dolhanty & Greenberg2007 ,). EFT helps individuals identify and modify emotional schemas and self-organization, and change the belief that the only source of comfort is eating. In general, the main goal of EFT is to overcome eating disorders, go beyond secondary emotions, and achieve incompatible nuclear emotions. Changing incompatible emotions, along with achieving adaptive emotional experiences, help individuals correct dysfunctional behaviors and not let eating diosrders fulfill as a tool for adaptation. This is accomplished by processing the painful incompatible active emotions that surround the “self” (Greenberg, 2011). Emotion-focused therapies are effective in treating anorexia nervosa (Sala, Heard, & Black, 2016), binge eating (Compare et al., 2013), and depression in women with eating disorder (Glisenti, Strodl & King, 2018). Other psychological therapies for obesity, including unified transdiagnostic interventions for disorders that have common causes, are very

similar in behavior and brain function, and respond to similar therapies (Barlow, Ellard, Fairholme, Farchione, Boisseau, Allen & Ehrenreich-May, 2011). Of the basic common characteristics of Emotional Disorders, we can point to evidence of high rates of comorbid diagnosis, generalizability therapeutic responses, the possible existence of a general neurotic syndrome, neural activity patterns, especially high irritability associated with limbic system structures, hidden common constructs, such as three-part of emotional disorders, commom cognitive and behavioral processes such as biases, and recurring thoughts (Suarez, Bennett, Goldstein, & Barlow, 2009). Barlow's unified transdiagnostic treatment is designed for people with anxiety disorders and unipolar mood disorder and can be effective in other emotional disorders. This treatment reduces the symptoms of depression and anxiety, modifies emotion regulation strategies, and increases the quality of life of people with effective eating disorders (Rahmani, Omidi & Rahmani, 2018). Clinical profile of people with obesity shows the unbalanced and impaired emotional function, and it seems that this treatment can also be used in obesity treatment.

While there is not much research on the role of psychological factors in obesity and psychological interventions to correct eating disorders associated with obesity, it seems that research design is very important to investigate the role of psychological factors and the effectiveness of these interventions. In this regard, due to increasing growth of the problem of obesity and its detrimental effects on mental and physical health of infected people, as well as the skepticism of therapists in using the dominant treatment method, this study aims to compare the effectiveness of Barlow's transdiagnostic therapy, emotion-focused therapy and mindfulness therapy on regulating eating behavior of people with obesity.

Methods

This research was a semi-experimental study with a pretest-posttest and follow up design with a control group. The statistical population consisted of all adults with obesity who had referred to the community centers in Tehran. The sampling method was a multistage sampeling. First, a list of east, west, south and north regions of Tehran was prepared and one of the regions was selected randomly. Then, a public announcement about free treatment for obesity in community centers in the selected region was made. According to Cohen`s table for four groups at the level of error of the first type (0.05), the average effect volume of 0.5 and the test power of 0.81, 60 indivudualsrs were randomly selected and assiged into four groups: Barlow`s unified transdiagnostic treatment, Emotion- focused therapy, mindfulness therapy, and control group. The Barlow's transdiagnostic intervention was performed in twelve 60 minute sessions based on the principles and methods of meta-diagnosis. Emotion-focused therapy consisted of eleven sessions each of which lasted 90 minutes, and the mindfulness-based therapy consisted of eight 90 minute sessions. Participants were treated in groups and weekly. inclusion criteria included body mass index greater than 30, no drug abuse or drug dependency, age between 20 to 40, and consentment to participate in the research. Criteria for the termination of participation included volunteer's reluctance to continue, being absent in more than two sessions, and getting pregnant. Participants in all four groups answered the Dutch Eating Behavior Questionnaire (DEBQ) as a pre test. The first group was treated with Barlow's transdiagnostic approach and the second group was given emotion-focused therapy, the third group was treated with mindfulness therapy, and finally the control group members did not receive any treatment. At the end of the course and three months later, participants in all four groups completed the Dutch Eating Behavior Questionnaire (DEBQ) as post test and follow up.

Ethical statement

Informed consent forms were filled up by the

participants and all necessary information, including the aims, confidentiality, and non-disclosure of participants' information, and the like were given to them. It was explained that if participants are reluctant to continue, they can stop taking part in the study at any time. It was also explained that after the completion of the study, the results would be revealed to participants. Meanwhile, placebo training sessions for the control group were planned.

Research instrument

The Dutch Eating Behavior Questionnaire (DEBQ) is a 33-item self-report questionnaire developed by Van Strien et al. (1986) to assess three distinct eating behaviors in adults: (1) emotional eating, (2) extra eating, and (3) restrained eating. Items on the DEBQ range from 1 (never) to 5 (very often), with higher scores indicating greater endorsement of the eating behavior. The total sum of each subscale makes

Table 1: Contents of Barlow's transdiagnostic therapy sessions

Sessions	Content
1	Increasing motivation, motivational interviewing for participation and involvement of patients, presentation of treatment rationale, and determination of treatment goals.
2	Presentation of psychoeducation, recognition of emotions and tracking emotional experiences, and teaching the main components of emotional experience.
3	Emotional awareness training, and learning to view emotional experiences (emotion and reaction to emotions) especially using mindfulness technique.
4	Cognitive appraisal and reappraisal, informing the impact and interaction between thoughts and emotions, identifying autonomic maladaptive appraisal, common thinking traps, and increasing the flexibility of thinkin.
5	Identifying emotional avoidance patterns, familiarizing with different strategies for avoiding emotions and their impact on emotional experiences, and recognizing the contradictory effects of emotional avoidanc.
6	Emotion-Driven Behaviors Study (EDBS), familiarity with and identification of emotion-driven behaviors, understanding their effects on emotional experiences, identifying maladaptive EDBSs.
7	Gaining knowledge and tolerance of physical senses, increasing awareness of the role of emotional feelings in emotional experiences, practicing exercises or visceral confrontation in order to be aware of physical sensations, and increasing the tolerance of these symptoms (Module 6).
8-11	Visceral confrontation and confrontation with situational emotions, awareness of the rationale of emotional confrontation, teaching how to prepare a fear and avoidance hierarchy, and designing repeated and effective emotional exercises.
12	Prevention of relapse, overview of the treatment content and patient progress, and identifying the ways in which treatment advantages maintain and predicting future difficultie.

Table 2: Contents of Emotion-Focused Therapy sessions

Sessions	Content
1	Familiarity of members, describing the rules of therapy sessions
2	Identifying and introducing basic exercises and basic emotions in group members
3	Familiarity with primary, secondary and instrumental emotions
4	Explaining the experience cycle and working on experiential blocks
5	Explaining the role of language in expressing or inhibiting emotion and introducing the technique of representing experience
6	Working on traumas
7	Emotional coaching of people in the where and now of the meeting
8	Representation of remaining emotions and their recall through other techniques
9	Strengthening emotional and physical processes and preventing cognitive narratives
10	Helping make sense of and discover people's agency in new emotional experiences
11	Summarying and conclusion

Table 3: Contents of Mindfulness-Based Therapy sessions

Sessions	Content
1	Familiarity with mindfulness: Reading and reflecting meditation, teaching breathing practice and doing it
2	Practical training on eating mindfully, explaining about eating (oral) stimuli
3	Conducting training on conscious eating and official meditation and explanation about eating stimulants (stomach)
4	Establishment in Meditation: Exercise-guided body meditation practice, eating and its connection with (emotional) stimuli
5	Body and emotion communication training: Talking about mental-emotional patterns and understanding mental-emotional stimuli
6	Discovering more emotions related to eating
7	Peace with the body and acceptance of unpleasant feelings
8	Summary and conclusion

the score for that subscale. Many reserache have reported Cronbach's alpha for this scale (α = 0.82 – 0.94). In one study, Pearson's correlation with the DEBQ questionnaire's age scales, body mass index, eating attitude questionnaire (EAT-26) and the restrained restraint scale (RS) were measured. The results showed that there was a positive association between the subscales of emotional eating and

external eating with the BMI of the participants and a negative association between external eating and age. There is also a positive association between restrained eating and the overall score of the eating attitude questionnaire and the restrained restraint

Results

Examination of the descriptive indexes of the demographic characteristics of the subjects showed that 93.3% of the subjects in the Barlow`s transdiagnostic treatment group and 86.7% of subjects in the emotion-focused therapy group, and all the participants in mindfulness group and control group were women, while 6.7% of the subjects in the Barlow`s transdiagnostic treatment group and 13.3% of subjects in the emotion-focused therapy group were men.

As the results of Table 4 show, in the control group, the mean scores in the pre test did not change much in the post test and follow up stages, but in the experimental groups, the scores decreased in the post test and follow up stages. The Calmogrof-Smirnov test examined the assumption of normality distribution of data, then the same variance assumption with the Levene's test and the MBOX test assuming the homogeneity of the variance-covariance matrix was examined. Finally, according to the assumptions, mixed-design analysis of variance was used to analyze the data. The three stages of pre test, post test, and follow up were identified as within groups factor and experimental grouping of subjects in three experimental groups and one control group as a between groups factor.

The results of Table 5 show that emotional,

Table 4: Descriptive Indicators of Eating Behaviors

		Follow up post test pretest					
Group	**Variable**	**Mean**	**S.D**	**Mean**	**S.D**	**Mean**	**S.D**
Barlow`s Unified Transdiagnostic Treatment (n=15)	Emotional eating	40.40	4.41	39.40	4.22	39.53	4.01
	Environmental eating	31.47	6.18	31.13	4.06	31.00	4.03
	Restricted eating	37.53	4.35	36.27	3.93	36.13	3.94
Emotion- Focused Therapy (n=15)	Emotional eating	40.53	5.42	33.40	2.74	33.53	2.61
	Environmental eating	33.47	6.11	32.13	4.88	32.13	4.83
	Restricted Eating	38.73	4.89	27.40	2.55	27.07	2.34
Mindfulness (n=15)	Emotional eating	39.46	3.85	38.06	4.90	38.13	4.76
	Environmental eating	32.00	4.55	23.26	3.89	23.46	3.70
	Restricted Eating	37.06	3.57	35.86	3.06	35.80	3.09
control (n15=)	Emotional eating	40.20	4.60	40.00	4.44	40.00	4.44
	Environmental eating	32.60	5.46	31.93	5.62	31.93	5.62
	Restricted Eating	36.93	4.28	36.80	4.21	36.80	4.21

environmental, and restricted eating in relation to within groups factors were significant at 0.001 level according to the calculated F value for the effect of time steps of pretest, posttest, and follow up. (Emotional eating: Eta= 0.53, F= 65.47, Environmental eating: Eta= 0.24, F= 17.80, and restricted eating: Eta= 0.67, F= 117.74). Also in the between groups factor, the subscales of emotional, environmental, and restricted eating were significant at the levels of 0.03, 0.01, and 0.001, respectively, according to the calculated F values (emotional eating: Eta= 0.15, P =0.03, F= 3.28, environmental eating: Eta= 0.26, P =0.01, F= 6.68, and restricted eating: Eta= 0.32, P=0.001, F= 8.92). As a result, it can be said that there was a significant difference between the overall mean of each of the variables of emotional, environmental and restricted eating in at least one of the four groups (three experimental groups and one control group). In addition, the interaction of time and group of subscales of emotional, environmental, and restricted eating was significant at the 0.001 level (emotional eating: Eta= 0.60, F= 28.44, environmental eating: Eta= 0.32, F= 9.07, restricted eating: Eta= 0.78, F= 66.26). As a result, there was a significant difference between the mean scores of pre test, post test, and follow up scores in emotional, environmental, and restricted eating scores in the four groups. The adjusted mean of emotional eating scores, environmental eating and restricted eating in the four experimental and

Table 5: Summary of the results of mixed-design analysis of variance with within groups and between group factors of eating behavior subscales

Variable	Source	Sum of Square	Df	Mean Square	F	Sig.	Prtial Eta Squared
Emotional eating	Emotional eating	229.01	1.03	221.06	65.47	0.001	0.53
	Emotional eating* Group	298.45	3.10	96.28	28.44	0.001	0.60
	Error	195.86	57.85	3.38			
	Group	506.17	3	168.72	3.28	0.03	0.15
	Error	2874.93	56	51.34			
Environmental eating	Environmental eating	304.34	1.01	301.78	17.80	0.001	0.24
	Environmental eating* Group	465.25	3.02	153.77	9.07	0.001	0.32
	Error	957.06	56.47	16.94			
	Group	1154.24	3	384.74	6.68	0.001	0.26
	Error	3221.73	56	57.53			
Restricted eating	Restricted eating	504.63	1.04	481.84	117.74	0.001	0.67
	Restricted eating* Group	852.03	3.14	271.18	66.26	0.001	0.78
	Error	240.00	58.64	4.09			
	Group	1033.46	3	344.48	8.92	0. 01	0.32
	Error	2162.66	56	38.61			

control groups were shown in different stages of pre test, post test and follow up in figures 1, 2 and 3, respectively.

In order to compare the two-by-two and to examine the difference between the significant mean levels, a Bonfroni follow up test was performed.

Regarding the emotional eating variable, there was a significant difference between the scores of this variable in the pre test and post test scores and follow up, but the difference between the post test scores and the follow up was not significant. Comparison of the adjusted means showed that the emotional eating scores in the pre test phase (M = 40.15) were higher than in the post test (M = 37.71) and follow up (M = 37.80) phases. There was also a significant difference between the effect of the

Table 6: Pairwise Comparisons

Variable		Mean difference	S. E	Sig.
Emotional eating	Pre test- Post test	2.43*	0.29	0.001
	Pre test- Follow up	2.35*	0.30	0.001
	Post test- Follow up	-0.08	0.04	0.18
	Barlow`s Unified Transdiagnostic Treatment- EFT	3. 95	1.51	0.07
	Barlow`s Unified Transdiagnostic Treatment- Mindfulness	1.22	1.51	1.00
	EFT- Mindfulness	-2.73	1.51	0.45
	Barlow`s Unified Transdiagnostic Treatment- Control	-2.89	1.51	1.00
	EFT- Control	-4.24*	1.51	0.04
	Mindfulness- Control	-1.51	1.51	1.00
Environmental eating	Pre test- Post test	2.77*	0.65	0.001
	Pre test- Follow up	2.75*	0.65	0.001
	Post test- Follow up	-0.02	0.04	1.00
	Barlow`s Unified Transdiagnostic Treatment- EFT	-1.37	1.59	1.00
	Barlow`s Unified Transdiagnostic Treatment- Mindfulness	4.95*	1.59	0.02
	EFT- Mindfulness	6.33*	1.59	0.001
	Barlow`s Unified Transdiagnostic Treatment- Control	-0.95	1.59	1.00
	EFT- Control	4.22	1.59	1.00
	Mindfulness- Control	-5.91*	1.59	0.001
Restricted eating	Pre test- Post test	3.48*	0.31	0.001
	Pre test- Follow up	3.61*	0.33	0.001
	Post test- Follow up	0.13	0.06	0.09
	Barlow`s Unified Transdiagnostic Treatment- EFT	5.58*	1.31	0.001
	Barlow`s Unified Transdiagnostic Treatment- Mindfulness	0.40	1.31	1.00
	EFT- Mindfulness	-5.17*	1.31	0.001
	Barlow`s Unified Transdiagnostic Treatment- Control	-0.20	1.31	1.00
	EFT- Control	-5.77*	1.31	0.001
	Mindfulness- Control	-0.60	1.31	1.00

emotion-focused experimental group and the control group, but no significant difference was found between the emotion- focused groups and Barlow's transdiagnostic therapy and mindfulness therapy. Also, there was no significant difference between Barlow's transdiagnostic group and mindfulness group and each of them with the control group. Comparison of adjusted means shows that the scores of emotional eating in the experimental group of emotion (M= 35.82) were lower than the experimental groups of Barlow's transdiagnostic group (M= 39.72), mindfulness group (M= 38.55) and control group (M= 40.06).

There was a significant difference between pre test of environmental eating scores with post-test and follow-up, but the difference between post-test scores and follow-up was not significant. Comparison of the adjusted means showed that the environmental eating scores in the pre-test phase (M= 32.38) were higher than the post test (M = 29.61) and the follow up phase (M = 29.63). In the variable of environmental eating, there was a significant difference between the effect of the experimental group of mindfulness with the Barlow's transdiagnostic group, the emotion-focused group and the control group. But there was no significant difference between Barlow's transdiagnostic group and the the emotion-focused group, and each of them with the control group. Comparison of the adjusted means showed that the environmental eating scores in the experimental group of mindfulness (M= 26.24) were lower than the experimental groups of Barlow's transdiagnostic group (M= 31.20), emotion-focused group (M= 32.57) and control group (M= 32.15).

In the inhibited eating variable, there was a significant difference between the pre test, post test and the follow up eating scores, but the difference between the post test scores and the follow up was not significant. Comparison of the adjusted means showed that the scores of inhibited eating in the pre test phase (M = 37.56) were higher than the post test phase (M = 34.08) and follow up (M = 33.95). There was a significant difference between the effect of the emotion-focused experimental group and the

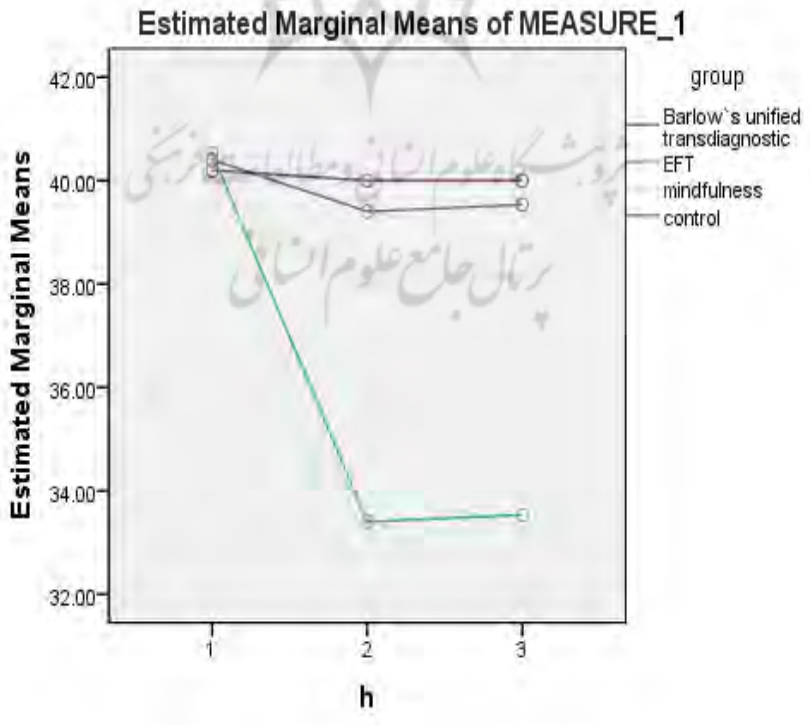

Figure 1: Interaction of time and group of subscales of emotional eating

Barlow's transdiagnostic group, mindfulness-based group and control group. Also, there was no significant difference between Barlow's transdiagnostic group and mindfulness with each other and each of them with control group. Comparison of the adjusted means showed that the scores of inhibited eating in the experimental group of emotion-focused group (M=31.06) were less than the experimental groups of Barlow's meta-diagnostic group (M= 36.64), mindfulness group (M= 36.24) and control group.

Discussion and conclusion

The aim of this study was to compare the effectiveness of Barlow's transdiagnostic therapy, emotion-focused therapy and mindfulness-based therapy on the eating behaviors of people with obesity. Analysis

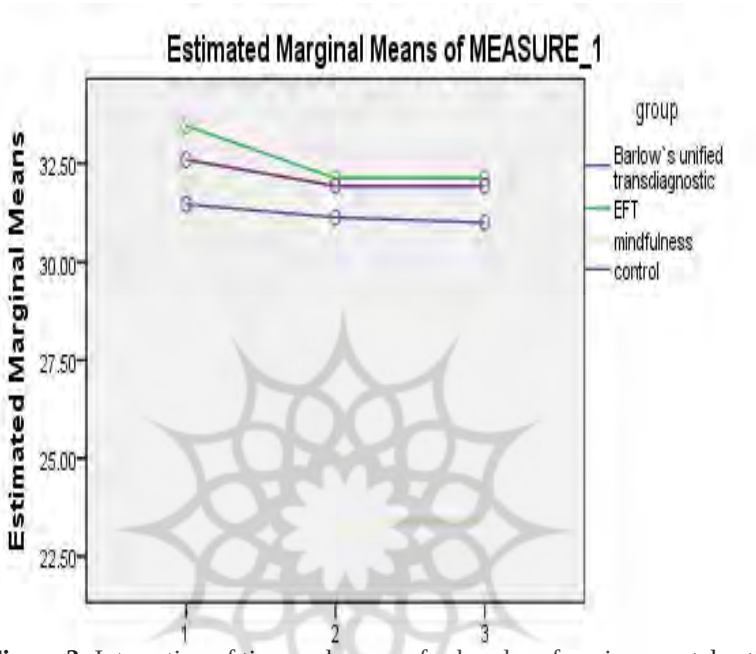

Figure 2: Interaction of time and group of subscales of environmental eating

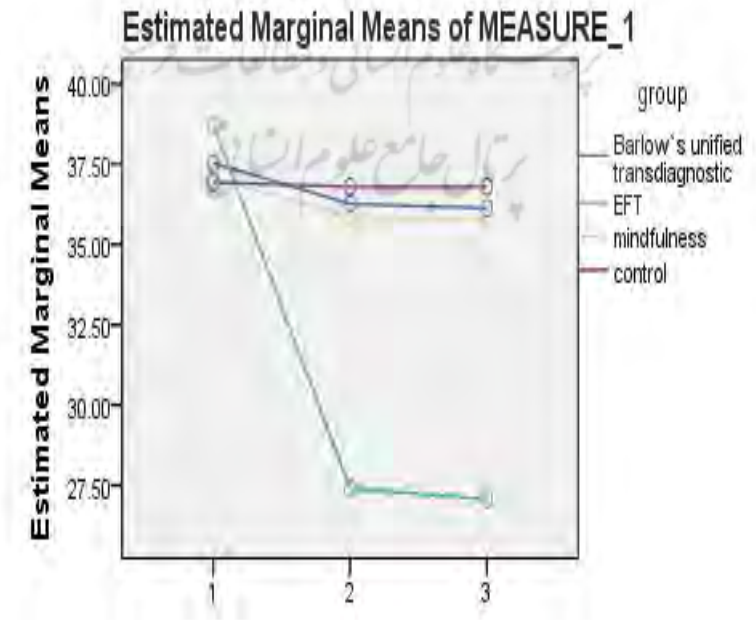

Figure 3: Interaction of time and group of subscales of restricted eating

of the data showed that in the variable of emotional eating, emotion-focused therapy had an effective and stable effect on reducing emotional eating, while the other two methods of intervention were ineffective. This finding was consistent with Glissanti, Stroudel and King's (2018) study, but was not consistent with the findings of Palmeira, Pinto-Gouveia and Cunha (2017) on the effectiveness of mindfulness therapy in emotional eating. Explanation of this finding can be done by considering the role of emotional disorder on eating behavior and especially emotional eating. Emotional dysregulation is one of the predictive variables of the eating disorder pattern that is seen in people with obesity during the period of psychological distress (Griffiths, Angus, Murray, & Touyz, 2014). Emotional eating is one of the ineffective coping strategies in the face of stressful events and internal and external conflicts that are seen in people without adaptive emotional management skills (Davis, Anderson, & Popocik, 2014). Emotion-focused therapies can work on impaired patterns that facilitate emotional dependence on food and help break the addictive cycle that leads to emotional eating and eventually obesity (Compare et al., 2013). Unlike many other therapies, the therapist is encouraged to observe and describe his or her emotions in a non judgmental way. Thus, the therapist considers his/her emotional experiences as a source for exploration and meaningfulness, and through them, emotional plans are finally reconstructed (Greenberg, 2011). Explaining the ineffectiveness of Barlow's transdiagnostic intervention on emotional eating, it can be noted that transdiagnostic therapy is especially effective when a person has several comorbid disorders and the use of several cognitive-behavioral therapies is so time-consuming and costly that makes them impractical or inefficient (Farchoione et al., 2012). Therefore, although the efficacy of this treatment has been investigated and confirmed in people with obesity with comorbid disorders (Rogby, 2018), the present study sample was people with obesity who did not complete the clinical picture of other comorbid disorders. In explaining the ineffectiveness of mindfulness-based intervention on emotional eating, it can be noted that although this intervention emphasizes emotional regulation and improvement of emotional states (Smith et al., 2020), compared to emotional intervention focuses less on improvinge skills that specifically lead to emotional eating.

The results of the data analysis showed that only mindfulness-based intervention was effective and consistent in reducing environmental eating behavior, and the other two interventions were not effective in environmental eating. This part of the research findings is in line with Smith et al. (2020) who showed the effectiveness of mindfulness-based therapy on the frequency of binge eating. However, it is not in line with Abdolkarimi et al. (2018) on the effectiveness of transdiagnostic therapy on eating behaviors. In the explanation obtained, it can be said that mindfulness enables one to identify and disconnect one`s habitual patterns or harmful mental states and begin to respond more reflectively than to react (Lotfi Kangarshahi, Dehghani Arani, Rostami, Ashraf Talesh, & Abolhasani, 2019). Mindfulness is directly related to healthy eating patterns. So the opposite of environmental eating is eating mindfully. In the mindfulness eating, the person eats according to physical indicators, not based on emotional stimulus and environmental factors. In this way, the person avoids eating based on external symptoms (Davis, Anderson, & Popocik, 2014). Therefore, it can be explained that mindfulness-based therapy helps to distance oneself from the pattern of environmental eating. Explaining the ineffectiveness of emotion-focused therapy and Barlow's transdiagnostic therapy, it can be said that environmental eating is an emotional pattern, but more focus is on the individual in order to make him avoid eating in response to internal psychological pressures, negative moods, and external stressful events (Compare et al., 2013); and therefore, unlike mindfulness skills, emotion-focused therapy focuses

less on the outward signs of food. In addition, although Barlow's meta-diagnostic approach has been introduced as a suitable treatment for most patients with eating disorders (Fairburn, Cooper & Shafran, 2003), its effectiveness in environmental eating has not been specifically investigated and needs to be addressed. More studies are needed in this domain.

Similary, the results of data analysis showed that in the subscale of restricted eating, the only effective intervention among therapeutic interventions was emotion-focused therapy which could reduce restricted eating in a consistent way. Among the studies, this finding was consistent with Glisenti, Strodl and King, (2018) who showed the effectiveness of emotion-based therapy in reducing eating frequency, but not with Abdolkarimi et al. (2018), who showed the effectiveness of transdiagnostic therapy. From a conceptual point of view, a restricted eating pattern is one of the non-adaptive patterns in which a person deliberately tries to significantly reduce the volume and amount of food he or she receives (Davis, Anderson, & Popocik, 2014). Importantly, this exaggerated self-control can be triggered by stressful situations and strain. Behavioral inhibition is one of the examples of emotional regulation. Alertness/ inbition is one of the five main areas of psychological schemes associated with maladaptive beliefs and ineffective cognitions about eating and unhealthy eating patterns. In emotional therapy, the reconstruction and reshaping of emotional schemas is one of the therapeutic goals that facilitates the adaptive functions of the individual and affects her emotional processing (Greenberg, 2011). Explaining the ineffectiveness of Barlow's transdiagnostic therapy and mindfulness-based therapy on the restricted eating pattern, it can be said that this variable is associated with extreme self-control. That is why treating people with obesity who have trouble adjusting their emotions can not only rely on calorie-restricting diets, but also on treatments that include emotional regulation skills (Van Strien, 2018). These skills are particularly important in the treatment of emotion-focused therapy, and although in mindfulness-based and Barlow's transdiagnostic therapies, the improvement of emotional experiences is considered, but the improvement of emotional regulation is particularly important in the treatment of emotion, which is an important part of the emotion-focused therapy (Brennan, Emmerling and whelton, 2015), which can be effective in reducing the inhibited pattern of eating.

This study had some limitations, including the fact that the size of the sample in this study was insufficient in accordance with existing standards, and with the accidental coincidence in the assignment of individuals in four groups, many unwanted and disturbing variances were removed from the study, but according to the present sample, which was composed of a higher percentage of people in each group, it is better to consider the sample size and sampling method, especially in generalizeing the findings. Also, the number of treatment protocol sessions used in this study was different. In line with the above limitations, it is recommended the researchers use a larger sample size in order to get more stable findings. Also, determining the effectiveness of interventions in gender segregated groups, people with clinical disorders, and especially eating disorders, can lead to a greater understanding of the phenomenon of obesity and related disorders.

Aknowdlegment

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