The effectiveness of Teaching Emotion Regulation Approach in Reducing Emotional Eating, weight Loss, and Maintaining a Healthy Weight in Obese Women in Three Month Follow-up

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Abstract

The obesity has led to numerous physical and psychological diseases. According to research findings, the psychological factors such as emotional dysregulation may lead to obesity and its recurrence. Therefore, the psychological issues should be considered in weight loss. This study aimed to investigate the effectiveness of teaching emotion regulation approach in reducing emotional eating and weight loss. This study used the clinical trial. Using convenience sampling method, 30 obese women who referred to obesity clinics and clubs in Tehran were selected as sample. They randomly divided into two groups: 15 patients in experimental group and 15 patients in control group.The experimental group attended one and a half hours emotion regulation skills teaching sessions for two months on a weekly basis.The control group did not receive any intervention.Two questionnaires were used for collecting the data: Dutch's eating habits questionnaire and body mass index. Using software SPSS, the multivariate analysis of covariance was conducted to analyze the data.The findings showed that the emotion regulation approach was not effective in reducing emotional eating. However, it was effective in reducing obesity; this was constant in a three-month follow-up.According to findings, it can be concluded that the emotion regulation may be an effective intervention for weight loss.

Key words: Obesity, Emotional Eating, Emotion Regulation Approach.

1. Introduction

According to World Health Organization, the obesity is one of the public health concerns which has led to disabilities and economic problems (1, 2).Obesity is a complex disease which has been caused by genetic factors, increased access to high-energy foods, and reduced physical activity in modern societies. It is the result of psychological and physiological factors (3, 4).

This disease is considered as the most important nutritional complication (5). The prevalence of this disease has been increasingly reached to alarming levels in first half of twentieth century. It has also became a serious threat to health of millions people (6, 7).

According to studies, the people with a high body mass index are subject to death 40% more than those with normal body mass index (8). Since obesity is correlated with physical health problems such as heart disease (9,10, 11), cancer (12), various joint and bone pains, liver diseases, cerebrovascular disorders, gynecological diseases, metabolic disorders, disorders in hormones functioning, and diabetes (13) and psychological problems such as depression (14), anxiety (15,16), low self-esteem (17), distorted body image, abnormal behaviors related to eating, and avoidance behaviors (18,19,20), there have been proposed different types of treatments for weight loss over the past decades (21).

The studies show that psychological factors are critical in development and perpetuation of obesity. The mechanisms of food eating are affected by environmental and psychological factors. In the transition from this simplistic theory that weight gain and obesity are solely caused by an imbalance in equilibrium process (which controls the amount of food intake), today, researchers have concluded that complex psychosocial mechanisms are at work. Many evidence show that weight gain and obesity are caused by both direct physiological factors and changes in health behaviors such as food choices and amount of food intake (22).

Seyed et al (2011) found that the emotion regulation strategies may change mesocorticolimbic activities and create a balance in food intake. However, this study aimed to investigate effectiveness of teaching emotion regulation approach in reducing emotional eating, weight loss, and maintaining a healthy weight in obese women in three month follow-up.

2. Research Methodology

This was applied experimental research with pretest, posttest, and control group. Using convenience sampling method, 30 obese women who referred to obesity clinics and clubs in Tehran were selected as sample. The criteria for including participants in this study were: (1) BMI over 30, (2) having at least third grade middle school education degree, (3) having emotional eating style, (4) being female, (5) age from 20 to 45 years old. They randomly divided into two groups: 15 patients in experimental group and 15 patients in control group.The experimental group attended one and a half hours emotion regulation skills teaching sessions for two months on a weekly basis.The control group did not receive any intervention.The Dutch's eating habits questionnaire, body mass index, and Gross and John's Emotion Regulation Questionnaire were used as research tools. Using software SPSS, the descriptive statistics (mean, standard deviation, and variance) and inferential statistics (covariance test, test-retest coefficient, Levine test to evaluate the consistency of error variance, and Kolmogorov-Smirnov test to evaluate the normality of variables distribution) were conducted to analyze the data.

3. Findings

The test-retest was conducted between pre-test and post-test to calculate the reliability (=0.69). Table 1 shows the descriptive characteristics of two groups, including mean and standard deviation of pretest and posttest.

Table 1. Descriptive statistics

Emotional eating	BMI	Statistical index	Test	Groups
99.0000	30.4392	Mean	Pre-test	Emotion regulation group
13.32121	.93317	Standard deviation		
91.2500	29.0025	Mean	Post-test	
10.75449	1.01108	Standard deviation		

Emotional eating	BMI	Statistical index	Test	Groups
94.0667	30.8653	Mean	Pre-test	Control group
8.85975	1.38476	Standard deviation		
93.4000	30.5227	Mean	Post-test	
3.97851	1.50073	Standard deviation		

According to Table 1, the mean BMI for emotion regulation group in pre-test and post-test is 30.43 and 0.29, respectively. This variable in control group in pre-test and post-test is 30.86 and 30.52, respectively. The mean of emotional eating in emotion regulation group in pre-test and post-test is 99 and 91.25, respectively; in emotion regulation group in pre-test and post-test, it is 94.06 and 93.4, respectively. The findings showed that the regression coefficients are consistent between two groups. Levine test results confirmed that the error variance between groups is identical. The scatter plot showed that the relationship between variables is linear in all three groups. Also, Kolmogorov-Smirnov test showed that the distribution of variables is normal. According to Table 2, it can be seen that the regression coefficients are identical in two groups (p> 0.05). The box test results showed that the assumption of covariance matrix equality among dependent variables of groups is observed (P> 0.05).

Table 2: Multivariate tests

Sig. level	Error degree of freedom	Degree of freedom	F	Valve	Effect		
0.808	14	2	.217[b]	0.03	Pillai's Trace	BMI * group	pre-test

0.808	14	2	.217^b	0.97	lambda Wilkes	
0.808	14	2	.217^b	0.031	Hotelling ś Trace	
0.808	14	2	.217^b	0.031	Roy ś Largest Root	
0.841	14	2	.176^b	0.024	Pillai's Trace	Pre-test group* emotional life
0.841	14	2	.176^b	0.976	lambda Wilkes	
0.841	14	2	.176^b	0.025	Hotelling ś Trace	
0.841	14	2	.176^b	0.025	Roy ś Largest Root	
0.483	30	4	0.888	0.212	Pillai's Trace	Group * BMI * pretest pre-test emotional life
0.489	28	4	.880^b	0.789	lambda Wilkes	
0.498	26	4	0.865	0.266	Hotelling ś Trace	
0.174	15	2	1.967^c	0.262	Roy ś Largest Root	

Table 3: Levine test to evaluate error variance in groups

Sig.	df2	df1	F	
0.538	21	1	0.392	BMI post-test
0.146	21	1	2.274	Post-test of emotional eating

According to table 3, the error variance is identical in two groups; other assumption of covariance is also confirmed.

Table 4: Multivariate tests

Squared trace size	Sig. level	Error degree of freedom	Assumed degree of freedom	F	Value	Trace	
0.358	0.018	18	2	5.027[b]	0.358	Pillai's Trace	
0.358	0.018	18	2	5.027[b]	0.642	lambda Wilkes	Group
0.358	0.018	18	2	5.027[b]	0.559	Hotelling ś Trace	
0.358	0.018	18	2	5.027[b]	0.559	Roy ś Largest Root	

Table 5: Effects among participants

Trace size	Level	F	Mean Square	Degree of freedom	Type III sum of squares	Dependent variable	Source
0.854	0	37.06	18.5	3	55.360[a]	BMIpost-test	Modified model
0.253	0.128	2.146	39.62	3	118.871[b]	Post-test of emotional eating	
0.011	0.647	0.216	0.107	1	0.107	BMIpost-test	Intercept
0.157	0.075	3.551	65.58	1	65.58	Post-test of emotional eating	
0.727	0	50.66	25.22	1	25.22	BMIpost-test	BMIpre-test
0.04	0.383	0.797	14.73	1	14.73	Post-test of emotional eating	
0.008	0.709	0.144	0.072	1	0.072	BMIpost-test	Post-test of emotional eating
0.062	0.278	1.245	22.99	1	22.99	Post-test of emotional eating	
0.343	0.005	9.902	4.93	1	4.93	BMIpost-test	Group
0.026	0.487	0.502	9.269	1	9.269	Post-test of emotional eating	
			0.498	19	9.46	BMIpost-test	Error
			18.47	19	350.9	Post-test of emotional eating	
				23	20577	BMIpost-test	Total
				23	44035	Post-test of emotional eating	

Table 6: Binary comparisons

95% Confidence interval difference		Sig. level	Standard deviation	Mean differences (I-J)	(J) group	(I) group	Dependent variable
High limit	Low limit						
3.001	-6.072	0.487	2.167	-1.536	Control	Emotion regulation	Post-test of emotional eating
6.072	-3.001	0.487	2.167	1.536	Emotion regulation	Control	

According to Table 4, there is a significant difference in the mean of two (emotion regulation and control) groups. According to Table 5, there was a significant difference in post-test score of BMI between two groups (P <0.01); however, there was no significant difference in post-test score of emotional eating between two groups. In the following, the research hypotheses will be examined.

Hypothesis 1: Emotion regulation reduces emotional eating.

According to table 6, there is no significant difference in post-test score of emotional eating between two groups (P> 0.05). Therefore, this hypothesis is rejected.

Hypothesis 2: Emotion regulation reduces weight.

Table 7: Binary comparisons

95% Confidence interval difference		Sig. level	Standard deviation	Mean differences (I-J)	(J) group	(I) group	Dependent variable
High limit	Low limit						
-0.375	-1.865	0.005	0.356	-1.120[*]	Control	Emotion regulation	Post-test BMI

1.865	0.375	0.005	0.356	1.120*	Emotion regulation	Control	

According to table 7, there is significant difference in post-test score of IBM between two groups (P> 0.01). Therefore, this hypothesis is confirmed.

The univariate test results (table 8) also confirm the multivariate test results.

Table 8: Univariate test

Sum of squares	Sig. level	F	Mean square	Degree of freedom	Sum of squares	Dependent variable	
0.343	0.005	9.902	4.93	1	4.93	Constant value	BMIPost-test
			0.498	19	9.46	Error	
0.026	0.487	0.502	9.269	1	9.269	Constant value	Post-test of emotional eating
			18.467	19	350.868	Error	

4. Conclusion

The findings showed that emotion regulation approach teaching impacts on weight loss in obese women. It can be said that this intervention was successful due to its impact on internal and psychological factors associated with excessive eating, increased awareness of satiety and hunger signs, controlling impulsive and automatic reactions in individuals, increased conscious eating, and thinking style of individuals about emotional events and eating. The findings of three month follow-up showed that this intervention has caused lost weight maintenance. Therefore, the emotion regulation approach teaching intervention may be used as a treatment for obese people to lose weight and change their eating style. In addition, the findings showed that this intervention had little effect in reducing emotional eating.

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