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THE EFFECTIVENESS OF COGNITIVE BEHAVIORAL THERAPY IN GENERAL HEALTH AND SELF-CONCEPT OF OBESE WOMEN IN TEHRAN

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ABSTRACT
The aim of the present study has been to determine the effectiveness of cognitive behavioral therapy (CBT)in general health and self-concept of obese women. This study is quasi-experimental and it has employed apre-test/post-test control group design. The sample size included 40 women suffering from DMI who were selected through random sampling; from among them, 20 women were placed in experimental group and the other 20 were placed in control group. In order to collect data, Goldberg's (1979) General Health Questionnaire (GHQ) as well as Beck Self-Concept Test (1978) or BSCT were used; they were completed by the respondents both in pre-test and post-test stages. Experimental group were provided with cognitive behavioral therapy for 12 sessions (one 2-hour session per week), but the control group did not receive any treatment. The obtained data were analyzed by using analysis of covariance technique. Data analysis indicated that the mean scores for general health and self-concept for experimental group have significantly increased compared to control group. The results of this study suggested that cognitive behavioral therapy is effective in the improvement of general health and self-concept, and results in weight loss.

KEYWORDS: general health, self-concept, obesity, cognitive behavioral therapy

INTRODUCTION

The most common deviation from vital balance in eating, at least among humans, is obesity. Overweight refers to a weightabove standard norms;these norms are typically obtained from standards resulted from epidemiology or statistical data, and in most cases, weight gain means increasing obesity (Kaplan and Sadock, 2007). Prevalence of being overweight and obese is rapidly increasing in developing countries as in industrialized countries (Carol *et al*., 2013). Poor diet and lack of physical activity are among the most important reasons for being overweight and obese which itself is one of the most significant causes of non-communicable diseases (World Health Organization, 2011). The obesity rates for both sexes are almost identical, but it is more common among women to feel overweight. More than 50% of women and also more than 35% of men in America are essentially overweight (De Silvestri *et al*., 2014).

According to the studies of Yager and Powers (2007), obesity leads to premature death of two million adults in a year around the world. The studies conducted in Iran also show that prevalence of obesity has increased over the past years and it is expected that its prevalence increases in future years because of increasing urbanization. Obesity is associated with complications including type 2 diabetes, coronary artery disease, stroke, gallbladder disease, osteitis, breathing difficulties, increased blood pressure, breast cancer and colorectal cancer, blood fat problems and sleep apnea (BrettA and Xavier, 2010). Obesity affects not only people's physical health but also their psychological state (Golparvar *et al*., 2007). Decreased self-confidence, altered mental image of the body, increased depression and anxiety and dissatisfaction with the body are among the problems and changes occurring in self-perception during obesity. The results of many studies indicate that women do not accept their physical characteristics as they are (Mokhtari, 2010). One individual perceives his/her exterior, his/her behavior and his/her traits like the external world and these perceptions form a comprehensive, more or less coherent, solid and objective image. This image or in other words, the totality of feedbacks, judgements and mental evaluations and/or the values placed on the behavior, abilities and traits by an individual and/or his/her general evaluation of his/her personality is the self-concept of an individual. Self-concept is same as self-perception. It means an objective point of view of skills, characteristics and abilities that an individual has about him/herself. Self-concept is a set of beliefs, opinions and feedbacks of an individual about him/herself which is more based on description rather than judgment. Accordingly, self-concept can be positive or negative (Pope and McHale, 1992, cited in Fathi Ashtiani, 1995). Given the physical and psychological risks of obesity in people suffering from it and increase of obesity around the world as well as increase of economic expenses and financial losses due to obesity, it seems essential to change eating behavior and accompanying thinking patterns.

Behavioral and environmental factors such as choosing and being interested in foods is one of the factors contributing to obesity, therefore cognitive behavioral therapy is one of the methods for treating and preventing obesity. Since the purpose is not only weight loss, a new approach has been developed for cognitive-behavioral analysis of obesity (De Silvestri *et al*., 2014).Cognitive-behavioral therapy models of eating disorders and obesity emphasize the role of cognitive factors in development and persistence of central and important features of this disorder such as going on a diet, extreme eating and overeating and behaviors exhibited with the aim of weight control. These cognitive factors include abnormal attitudes about weight and physical shape, current orientations in information processing and beliefs about oneself (Bieling *et al*., 2010).

Wilson Trence and Zendberg (2012) stated, in a study on the role of cognitive behavioral therapy on managing obese individuals, that most cognitive therapies are based on five strategies including 1) self-supervision and goal setting, 2) stimulus control in order to change eating style, 3) activity, 4) cognitive reconstruction techniques focused on challenging and altering thoughts and incompatible unreal expectations, and 5) stress management and social support, and adopting these strategies has been useful in short-term but ineffective in long-term. Fouladvand *et al*. (2012) conducted a study titled "Effectiveness of Cognitive-Behavioral Therapy in Treating Obese Adolescents". This study was a single-case experimental trial of multiple-baseline type. The treatment process was carried out in two phases of losing and maintaining weight on four obese high school girl students. At the beginning of treatment sessions, instruments such as evaluation checklist and eating disorders questionnaire were used. In this study, the patients were weighted at the beginning of each session. The results indicated that cognitive behavioral therapy for obesity has been effective in losing weight and maintaining it in adolescents suffering from obesity.

Murphy *et al*. (2010) conducted a study titled cognitive behavioral therapy for preventing and treating obesity (a randomized clinical trial with three years follow-up). In this study, 150 obese women were randomly placed in two groups (cognitive behavioral therapy and control group with minimum intervention). The aim has been reviewing the immediate and long-term effects of cognitive behavioral therapy for minimizing the weight of the individuals under study. The findings were indicative of 10% loss of the initial weight of the experimental group and three years follow-up confirmed these results.

Furthermore, Marta Ferrer *et al*. (2012) conducted a study titled cognitive behavioral therapy in improvement of diet, body composition in overweight and obese adolescents. Statistical population of the study included 16 men and 31 women who were randomly placed in two groups (one group with cognitive behavioral therapy and one group without it) based on age, sex, body mass index and waist size. Treatment included 10 sessions of cognitive behavioral therapy and 5 weeks of follow-up calls. The results were indicative of the effectiveness of cognitive behavioral therapy.
Sotoudeh *et al*. (2010) conducted a study titled the comparison of the state of central obesity among the women living in Eslamshahr with their conception of their state of obesity and their husbands' opinion. The results showed that women suffering from central obesity who had a misconception of their state of obesity perceived that their husbands also had the same opinion about their state of obesity.

The results of the study conducted by Mousavian *et al*. (2010) also indicated that mindfulness based on cognitive therapy is effective in weight loss and the results obtained from one-month follow-up indicated stability of results. Besides, Sadeghi *et al*. (2009) and Fischer *et al*. (2014) found similar results. Recent studies have indicated that behavior modification program plays a key role not only in treating obesity but also in reducing the stress due to it and improving sense of adequacy and correcting the beliefs of individuals about themselves. Therefore, since women play a major role in transmitting healthy eating culture and accepting right eating patterns, and since about 30 to 35 percent of housewives are overweight and obese, if their knowledge of nutrition is boosted, they can direct the taste of family towards a healthy diet. Thus, identifying experimentally supported treatments, particularly for women, can assist in further stabilization of the role of psychological interventions as part of interdisciplinary approaches for controlling and treating obesity. Since 5-10 percent weigh loss can be achieved by many obese individuals, and in addition, it is worth achieving, the importance of therapeutic interventions including cognitive behavioral therapy which is a new approach towards weight loss becomes more evident. In these conditions, the need for studying the effectiveness of current treatment methods is essential in order to examine their degree of compliance with specific cultural, social, economic, religious and political conditions of the society as well as new innovations with the aim of quick, sustainable and low-cost effectiveness. Cognitive behavioral therapy is a special kind of short immediate treatment which can be considered

an appropriate method for therapists and specialists of this field. This study has been designed with the aim of examining the effectiveness of cognitive behavioral therapy in general health and self-concept among obese women. It is hoped that the awareness resultant from this study can prepare the therapists for educational interventions for the target group.

MATERIALS AND METHODS

Research method, statistical population and sample size: the present study is a quasi-experimental study with pre-test/post-test control group design. The statistical population of the present study includes all theobese women in Tehran. Sampling was carried out through random method. From among different sports centers, *Shahrbanoo* sports club located in district 10 of Tehran was selected. For this purpose, the people present in the sports club were presented with some explanations about the study, so that they could optionally participate in this study. Then, 40 persons were selected from among those willing to participate, who had the entry criteria for treatment, and they were randomly placed in two experimental and control groups after homogenization; then the control group were provided with cognitive behavioral teachings. The description for cognitive behavioral sessions are presented in table 1.

Data collection instruments are body mass index and general health questionnaire (GHQ) as well as Beck self-concept test (BSCT). *Body mass index*: in the present study, the obesity is estimated through body mass index (BMI) (dividing weight in kilograms by the square of height in meters) on the condition that this index is equal or greater than 30 kilograms (Sarafino, 2013).*General health questionnaire*: general health questionnaire (GHQ) is a screening device based on self-reporting method. The purpose of this questionnaire is not to achieve a specific diagnosis in the hierarchy of mental illnesses, but its main purpose is to differentiate between mental illness and health, which is designed for all the people of society. This questionnaire is consisted of the 4 following subscales: physical symptoms, anxiety and insomnia, social dysfunction and depression. The duration of the test is about 10-12 minutes on average. Scoring method of GHQ is in this way that options ‘a’ to ‘d’ are assigned a score of 0, 1, 2, 3. As a result, every individual’s score for each subscale would be in the range of 0 to 21 and for the whole questionnaire would be in the range of 0 to 84. The scores of each respondent are calculated separately in each subscale and then the scores of 4 subscales are added together and the total score is obtained. In this questionnaire, lower score indicates better mental health.

Reliability and Validity: by 1988, over 70% studies were conducted in regard to the reliability of GHQ around the world. In order to estimate the reliability of GHQ, a meta-analysis was carried out in regard to those studies and the results indicated that average sensitivity of the GHQ-28 is equal to 84% (ranging from 77% to 89%) and average specificity of it is 82% (ranging from 78% to 85%) (Goldberg and Williams, 1988, cited in Taghavi, 2001). In order to assess thereliability of the questionnaire of GHQ according to Goldberg (1979), review of internal consistency which is measured through Cronbach’s alpha coefficientfor the whole questionnaire has been reported to be 95%. Internal consistency has been reported to be 93% through Cronbach’s alpha. *Beck self-concept test*: one of the common ways of reviewing self-concept is Beck self-concept test (BSCT). This test was devised by Beck and Steer in 1987 based on Beck's cognitive theory, and contains 25 items. According to the studies conducted by Beck *et al*. (1992), this scale measures 5 aspects of characteristics including mental ability, job efficiency, physical attraction, social skills and deficiencies and merits. *Reliability andValidity*: Beck *et al*. (1985) reported the reliability coefficients to be 88% and 65% by using test-retest method after one week and three months interval respectively. Besides, internal consistency coefficient for this scale is reported 80%. The reliability of this questionnaire is reported 55% in comparison to Rosenberg self-esteem scale. In addition, the reliability of this questionnaire has been reported 80% for depressed men, 76% for depressed women, 75% for anxious men, and 78% for anxious women by using Cronbach’s alpha. In Iran, the reliability of this questionnaire has been reported 65% and 68% by using split-half method and Cronbach’s alpha respectively.

The Cronbach’s alpha of 79% has been obtained for this questionnaire. In order to analyze the data, descriptive and inferential statistics were employed. In the descriptive stage, frequency tables, bar charts and histogram, measures of central tendency (mean, median and mode0 and measures of dispersion (variance, standard deviation, range of variations, minimum and maximum), and in inferential statistics of the data, one-way analysis of covariance and SPSS software 19 were used.

Table 1. Subject headings and materials used in cognitive behavioral training

Content of sessions	General plan of the structure of therapy sessions
1. Familiarity with patients 2. administering pre-test (GHQ and BSCT) 3. planning the agenda for the session 4. familiarizing the patients with cognitive-behavioral model and teaching basic concepts and methods 5. implementing cognitive-behavioral therapy techniques such as diagnosing mood swings, diagnosing automatic thoughts, preparing thinking report in two or three columns, diagnosing cognitive errors, planning activities and behavioral activation 6. giving home assignment in order to develop cognitive behavioral therapy skills in organizing problems and situations of real life 7. reviewing main points presented, giving and receiving feedback, and finalizing sessions	**Initial period of treatment (sessions 1-4)**
1. talking to patients 2. examining the symptoms 3. planning the agenda for the session 4. examining home assignments given in previous sessions 5. implementing cognitive-behavioral therapy techniques such as automatic thoughts and schemata, preparing thinking report in 5 columns, graded exposure to irritating stimuli and implementing a plan for changing schemata 6. the goals of treatments should be often reviewed throughout the intermediate period 7. the structuring declines during the intermediate period of cognitive behavioral therapy 8. giving new home assignment 9. reviewing main points presented, giving and receiving feedback and finalizing the session	**Intermediate period of treatment (sessions 5-8)**
1. talking to patients 2. examining the symptoms 3. planning the agenda for the session 4. examining home assignments given in previous sessions 5. implementing cognitive-behavioral therapy techniques such as diagnosis and change of schemata, preparing thinking report sheets in 5 columns, practical planning for controlling problems and/or practicing revised schemata and completing exposure questionnaires 6. the goals of treatment are reviewed throughout the final period of cognitive behavioral therapy and activity goals are formulated for the post-treatment period 7. special attention is paid to diagnosis of potential factors triggering relapse and it is attempted to use methods such as cognitive-behavioral practice to help patients maintain their health after the treatment period 8. the structuring also declines during the final period with accepting further responsibility in implementing cognitive-behavioral therapy methods in daily life by the patient 9. giving new home assignment 10. reviewing main points presented, giving and receiving feedback and finalizing the session In the 12th session, GHQ and BSCT is also administered to the patients.	**Final period of treatment (9-12 sessions)**

RESULTS

Given the establishment of three assumptions of analysis of covariance (assumption of homogeneity of variances, assumption of linear relationship between pre-test and post-test, and assumption of homogeneity of regression slopes) in test data, univariate one-way analysis of covariance has been used in order to analyze the data and examine the effect of independent variable (cognitive behavioral therapy) on dependent variables; the summary of its analysis is presented as follows.

Table 2. Results of analysis of covariance related to post-test scores of general health (and its components) in experimental and control groups

eta	Significance level	F	Mean square	Degree of freedom	Sum of squares	Source of changes	Variable
474.	0.001	34.236	1918.225	1	a1918.225	Post-test	**General health**
939.	0.001	584.963	32775.625	1	32775.625	Intercept	
474.	0.001	34.236	1918.225	1	1918.225	Group	
			56.030	38	2129.150	Error	
				40	36823.000	Total	
439.	0.001	29.749	198.025	1	a198.025	Post-test	**Physical symptoms**
911.	0.001	386.989	2576.025	1	2576.025	Intercept	
439.	0.001	29.749	198.025	1	198.025	Group	
			6.657	38	252.950	Error	
				40	3027.000	Total	
252.	0.001	12.778	119.025	1	a119.025	Post-test	**Anxiety and insomnia**
879.	0.001	276.562	2576.025	1	2576.025	Intercept	
252.	0.001	12.778	119.025	1	119.025	Group	
			9.314	38	353.950	Error	
				40	3049.000	Total	
282.	0.001	14.910	57.600	1	a57.600	Post-test	**Depression**
834.	0.001	191.450	739.600	1	739.600	Intercept	
282.	0.001	14.910	57.600	1	57.600	Group	
		14.910	3.863	38	146.800	Error	
				40	944.000	Total	
267.	0.001	13.823	65.025	1	a65.025	Post-test	**Social dysfunction**
928.	0.001	487.936	2295.225	1	2295.225	Intercept	
267.	0.001	13.823	65.025	1	65.025	Group	
			4.704	38	178.750	Error	
				40	2539.000	Total	

First hypothesis: cognitive behavioral therapy is effective in improving general health of obese women.
According to the data presented in table 2, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group ($P<0.05$). These results suggest that the observed difference between the mean scores of general health in experimental group in post-test (21.70) and in control group in post-test (35.55) is significant, and since the mean for experimental group is lower in post-test, it has been effective in post-test.

Second hypothesis: cognitive behavioral therapy is effective in reducing physical symptoms.
According to the data presented in table 2, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group ($P<0.05$). These results suggest that the observed difference between the mean scores of physical symptoms in experimental group in post-test (5.80) and in control group in post-test (10.25) is significant, and since the mean for experimental group is lower in post-test, it has been effective in post-test.

Third hypothesis: cognitive behavioral therapy is effective in reducing anxiety and insomnia.
According to the data presented in table 2, after adjusting the effect of pre-test, there has been significant factor effect

existing between the respondents of the group (P<0.05). These results suggest that the observed difference between the mean scores of anxiety and insomnia in experimental group in post-test (6.30) and in control group in post-test (9.75) is significant, and since the mean for experimental group is lower in post-test, it has been effective in post-test.

Fourth hypothesis: cognitive behavioral therapy is effective in reducing depression.
According to the data presented in table 2, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group (P<0.05). These results suggest that the observed difference between the mean scores of depression in experimental group in post-test (3.10) and in control group in post-test (5.50) is significant, and since the mean for experimental group is lower in post-test, it has been effective in post-test.

Fifth hypothesis: cognitive behavioral therapy is effective in improving social dysfunction.
According to the data presented in table 2, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group (P<0.05). These results suggest that the observed difference between the mean scores of social dysfunction in experimental group in post-test (6.30) and in control group in post-test (8.85) is significant, and since the mean for experimental group is lower in post-test, it has been effective in post-test.
Sixth hypothesis: cognitive behavioral therapy is effective in losing weight.

Table 3. Results of analysis of covariance related to scores of post-test for weight of experimental and control groups

Eta	Significance level	F	Mean square	Degree of freedom	Sum of squares	Source of changes
.001	0.842	.040	.625	1	.625a	**Post-test**
.997	0.001	13128.097	204919.225	1	204919.225	**Intercept**
.001	0.842	.040	.625	1	.625	**Group**
	0.842		15.609	38	593.150	**Error**
				40	205513.000	**Total**

According to the data presented in table 3, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group (P<0.05). These results suggest that the observed difference between the mean scores of weight of experimental group in post-test (71.45) and of control group in post-test (71.70) is significant, and since the mean for experimental group is lower in post-test, it has been effective in post-test.
Seventh hypothesis: cognitive behavioral therapy is effective in improving self-concept.

Table 4. Results of analysis of covariance related to scores of post-test for self-concept in experimental and control groups

Eta	Significance level	F	Mean square	Degree of freedom	Sum of squares	Source of changes
.176	0.007	8.091	469.225	1	469.225a	**Post-test**
.988	0.001	3191.673	185096.025	1	185096.025	**Intercept**
.176	0.007	8.091	469.225	1	469.225	**Group**
			57.993	38	2203.750	**Error**
				40	187769.000	**Total**

According to the data presented in table 4, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group (P<0.05). These results suggest that the observed difference between the mean scores of self-concept in experimental group in post-test (67.60) and in control group in post-test (71.7045 is significant, and since the mean for experimental group is lower in post-test, it has been effective in post-test.
Statistical results of analysis of covariance shows in Figure- 1.

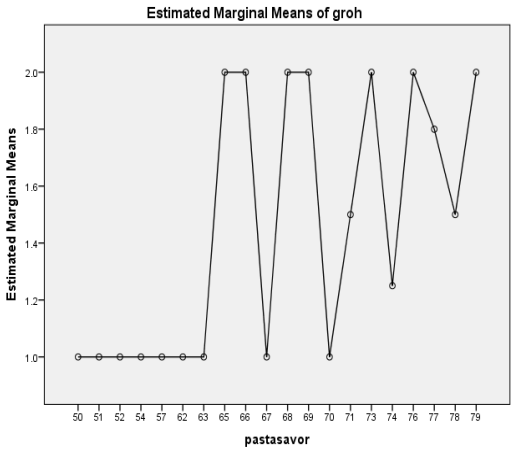

Figure-1. Statistical results of analysis of covariance

DISCUSSION AND CONCLUSION

This study has been conducted with the aim of examining the effectiveness of cognitive behavioral therapy in general health and self-concept among obese women in Tehran. Thus, each one of the hypotheses are interpreted according to the findings of the study as follows.

Hypothesis 1: cognitive behavioral therapy is effective in improving general health of obese women. Review of analysis of covariance indicates that after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group ($P<0.05$). These results suggest that the observed difference between the mean scores of general health in experimental group in post-test (21.70) and in control group in post-test (35.55) is significant, and since the mean for experimental group is lower in post-test, cognitive behavioral therapy has been effective in improving general health.

Findings of the study are consistent with findings of Ahghar (2009), Faramarzi *et al*. (2011). Rezaee *et al*. (2011) as well as findings of Grant *et al*. (2002), Carol *et al*. (2013), Hartke and King (2003), and Van den Heuve *et al*. (2007). In explanation of the effectiveness of cognitive behavioral therapy in general health of obese women, it can be said that patients with awareness of their obesity process can figure out their problems and can learn ways of dealing with these problems as well. It means that people can make more use of their capacities and capabilities and become more resilient to life stresses with the help of this treatment method, and this eventually results in improvement of their general health. *Hypothesis 2*: cognitive behavioral therapy is effective in reducing physical symptoms. According to analyses of covariance, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group ($P<0.05$). These results suggest that the observed difference between the mean scores of physical symptoms in experimental group in post-test (5.80) and in control group in post-test (10.25) is significant, and since the mean for experimental group is lower in post-test, cognitive behavioral therapy has been effective in reducing physical symptoms.

The results of the present study are consistent with studies conducted by Rahimian Bogar and Tabatabaee (2011), Davoudi *et al*. (2011), Fu *et al*. (2007), and Knoop *et al*. (2007). In explanation of the effectiveness of cognitive behavioral therapy in reducing physical symptoms in obese people, it can be said that although there are a lot of evidence that many illnesses related to obesity such as diabetes and high blood pressure and hyperlipidemia are significantly improved by slight weight losses of 5 to 10 percent even when many patients are considerably overweight (Fouladvand, 2012), the obesity itself is not the sole cause of physical problems of obese people, but psychological, social and behavioral factors, particularly the patients' belief system, inefficient cognitions and illogical attitudes about obesity and treating it are more associated with physical problems such as diabetes, heart diseases, etc. than physiologic factors. Besides, inefficient thoughts, maladaptive interpretation, and cognitive distortions in regard to obesity such as catastrophizing it, extreme generalization and fear of doing cognitive behavioral activities and preventions related to circumstances leading to eating, using negative coping strategies and sense of lack of control over obesity are all factors

resulting in obese people's sense of helplessness against obesity more than the experience of obesity itself, and all the aforementioned instances are the target of cognitive behavioral therapy (Rahimian Bogar and Tabatabaee, 2011).
Hypothesis 3: cognitive behavioral therapy is effective in reducing anxiety and insomnia. According to analyses of covariance, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group ($P<0.05$). These results suggest that the observed difference between the mean scores of anxiety and insomnia in experimental group in post-test (6.30) and in control group in post-test (9.75) is significant, and since the mean for experimental group is lower in post-test, cognitive behavioral therapy has been effective in reducing anxiety and insomnia. The findings of the study are consistent with findings of Rodebaugh, Holaway and Heimberg (2004), Falci (2011), Zargar *et al*. (2006), Touzandeh Jani *et al*. (2007), Meliani *et al.* (2009), and Jalali *et al.* (2011) who indicated that cognitive behavioral therapy reduces social anxiety.

In explanation of the effectiveness of cognitive therapy in reducing anxiety and insomnia, it can be said that as we know, people invest in certain and distinctive aspects of their existence and they consider others' evaluations in these aspects to be important given the importance they place on these aspects. Worrying about physical attractiveness and lack of confidence about social relationships (e.g. possibility of being rejected by others) causes the obese people to become extremely concerned about others' evaluations of their physical structure. Something like cognitive error of fear of performance, pushes the individual to eat, while eating itself and becoming obese lead to negative evaluation by others; this fosters what is observed in social anxiety in these individuals.

Hypothesis 4: cognitive behavioral therapy is effective in reducing depression.
According to analyses of covariance, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group ($P<0.05$). These results suggest that the observed difference between the mean scores of depression in experimental group in post-test (3.10) and in control group in post-test (5.50) is significant, and since the mean for experimental group is lower in post-test, it cognitive behavioral therapy has been effective in reducing depression. The results of the study in regard to effectiveness of group cognitive behavioral method are consistent with findings of Trence *et al*. (2012), Stark *et al*. (2006), Rossello *et al*. (2008), Anderson and Rees (2007), and Sotoudeh *et al*. (2010).

In explanation of the effectiveness of cognitive behavioral therapy in reducing depression, it can be said that teaching coping skills can help the individual to resort to healthier strategies in order to cope with internal triggers and particularly negative mood.

Hypothesis 5: cognitive behavioral therapy is effective in losing weight. According to analyses of covariance, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group ($P<0.05$). These results suggest that the observed difference between the mean scores of social dysfunction in experimental group in post-test (6.30) and in control group in post-test (8.85) is significant, and since the mean for experimental group is lower in post-test, cognitive behavioral therapy has been effective in losing weight. The results of the present study are consistent with previous studies conducted by Mousavian *et al*. (2010), Sadeghi *et al*. (2010), Fouladvand (2012) as well as Trence *et al*. (2012), Wilson Trence and Zendberg (2012), Muggia *et al*. (2013) and Carol *et al*. (2013) in regard to the effectiveness of cognitive behavioral therapy in treating obesity and eating disorder. In explanation of the effectiveness of cognitive behavioral therapy in losing weight, it can be said that in this treatment, a number of strategies are taught to the patients for losing weight, preventing relapse, maintaining changes made and permanent improvement. These strategies include identifying risky situations and preparation for coping with these situations, forming effective coping strategies and problem-solving skills. In order to cope with psychological pressures, using previous relapses as an opportunity to learn and gain experience, discovering and identifying the factors leading to relapse in the individual are very helpful, and provide the individual with important information, in such a way that he/she can make use of them in future in coping with similar situation. *Hypothesis 6*: cognitive behavioral therapy is effective in improving social dysfunction. According to analyses of covariance, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group ($P<0.05$). These results suggest that the observed difference between the mean scores of social dysfunction in experimental group in post-test (6.30) and in control group in post-test (8.85) is significant, and since the mean for experimental group is lower in post-test, cognitive behavioral therapy has been effective in improving social dysfunction.

Obesity can have undesirable effects on individual's capabilities for experiencing a dynamic active life. According to the existing evidence, it can be considered that problems arising from obesity are too complicated and are not only limited to the cause and worsening of physical problems, because obesity and problems related to it can negatively affect social physical and psychological performance capability. Teaching life skills can improve problems arising from physical malfunctions, reduce anxiety, improve social performance and reduce depression among obese women. By reducing anxiety, social performance reaches a desirable level. As a result, communication with others and accepting the current state and body of oneself will be better and easier.

Hypothesis 7: cognitive behavioral therapy is effective in improving self-concept. According to analyses of covariance, after adjusting the effect of pre-test, there has been significant factor effect existing between the respondents of the group ($P<0.05$). These results suggest that the observed difference between the mean scores of self-concept in experimental group in post-test (67.60) and in control group in post-test (71.7045 is significant, and since the mean for experimental group is lower in post-test, cognitive behavioral therapy has been effective in improving self-concept.

It seems that obese women experience dissatisfaction with body image more than non-obese women, perhaps because being overweight in today communities is considered a kind of lack of physical attractiveness. As a result, many overweight people do not like their appearance and this is a major reason why they try to lose weight. Therefore, in order to eliminate the negative self-concept, we should focus on schema-level (central and underlying beliefs) cognitions which have a relationship with obesity and eating disorder (such as self-esteem). Findings of the present study are consistent with findings of Hillbert *et al*. (2004) and Irina *et al*. (2013) in regard to the effectiveness of cognitive behavioral therapy in improving self-concept in individuals suffering from obesity and eating disorder. Keeping track of treatment results after treatment is important, and it was not possible to keep track of the treatment results after several months in this study because of time constraints. Because of rather long duration of group therapy, some of the members of the group did not regularly participate in treatment sessions due to personal problems. Thus it is suggested to examine the long-term effect of this therapy. Given the effect of cognitive behavioral therapy on weight loss, it is suggested to teach cognitive behavioral therapy to nutrition specialists and counsellors.

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