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Effectiveness of Lifestyle Modification Therapy on Weight Management, Body Image and Self-Esteem of Overweight Women

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Abstract

Objective: Prevalence of obesity and overweight in Iranian women is increasing. Due to the obesity consequences, prevention is important. The aim of this study was to determine the effectiveness of lifestyle modification on the management of weight loss, body image and self-esteem in overweight women.

Materials and Methods: This study was carried out in a semi-experimental method using pretest-posttest design with control group. The sample of study were 30 obese women referred to nutrition and treatment clinics in the north of Tehran, who were selected by convenience sampling method and randomly assigned to experimental group based on lifestyle and control group. Data were collected using structured clinical interviews, structured clinical interviews for personality disorders, body mass index (BMI), Multiple Body-Self Relationship Questionnaire (MBSRQ), Weight Efficacy Lifestyle (WEL), and Scale of Self-Esteem Index for Women-Short-form (SSEL-W-SF). Data were analyzed using multivariate covariance analysis (MANCOVA). For training subjects, lifestyle modification therapy was used in 12 sessions of 90 minutes, once a week. No intervention was used for control group and pretest and post-test were performed for both groups.

Results: The results showed that lifestyle modification therapy had a significant effect on weight management, body image and sexual self-esteem of women with high overweight. This means that the experimental group had higher weight management, body image and sexual self-esteem after intervention than the control group ($P \leq 0.001$).

Conclusion: These results indicate that training the women with high overweight for lifestyle modification has a significant impact on creating new and original inspirations and actions; and this training can be used as a useful intervention to improve the level of weight management, body image and sexual self-esteem among overweight women.

Keywords: Lifestyle, Weight management, Body image, Sexual self-esteem, Women, Obesity

Introduction

World health organization (WHO) has identified overweight and obesity as one of the major health problems in many countries around the world, which is causing or exacerbating many diseases and associated with a decline in quality of life (1). Metabolic factors such as hormonal changes and the influence of the genetics, the environment, nutritional status and lifestyle have a significant role in overweight (2). The

prevalence of overweight and obesity has increased rapidly in recent decades (3). It is anticipated that the two-thirds of the burden of illness in 2020 would be related to chronic non-communicable disease, which are often related to nutrition and lifestyle (4). According to WHO report, obesity is one of the 10 most common health problems in the world. The prevalence of obesity is increasing in all age groups and in most countries (5). Also according to the report of this organization, the number of people with obesity and overweight in the world is more than one billion people (6). Iran is one of seven countries with the highest prevalence of obesity (7). The prevalence of obesity among Iranians over 18 years old was about 21.5%, which this rate is 27.3% in women and 13.7% in men (8). Epidemiologic research has shown the association of obesity with some diseases, such as heart attack and sudden death, metabolic disorders, insulin resistance and diabetes, high blood pressure, high blood lipids, coronary heart disease and certain types of cancer (9). The results of a study by Santos et al., (10) showed that about 66.6% of women were dissatisfied with their body. In a study by Gavin et al., (11), about 39% of the women were obese, 33.9% were depressed and 84.8% were dissatisfied with their body. Women who had more dissatisfaction with their bodies are more depression. Also, the results of studies showed that behaviors motivating the obesity lead to the degradation of life quality associated with health, vitality, social activism, self-esteem and manner. Therefore, obese people have weaker well-being and physical activity comparing with people with normal weight. This weakness is higher in the physical domain than mental aspects (12).

Over the past few decades, numerous studies have been done on sexual issues and behaviors, but in spite of the theoretical focus on the growth of sexual issues, empirical researches have focused on sexual behaviors, beliefs and attitudes rather than sexual self-control. Hence, the lack of information about the individual s' definitions of sexual issues, how to align them with other aspects of their lives and how to evaluate their sexual behaviors which include emotional and physical responses can lead to an incomplete understanding of sexual behavior (13). Self-esteem has been known somewhat correlated with sexual behavior (14); and therefore, self-esteem may include some titles of sexual self-esteem (SSE). However, the relationship between self-esteem and sexual behavior is complex. Also, another aspect of self-esteem is sexual self-esteem that affects sexual behaviors and is the emotional response of humans to the evaluation of their thoughts, feelings and sexual behaviors (14,15). According to Ramezani et al., (16), there was a relationship between self-esteem with sexual satisfaction and sexual dysfunction, especially in low self-esteem individuals who showed an increased sexual dysfunction and sexual dissatisfaction. In addition, there was a positive relationship between self-esteem, spiritual well-being and sexual satisfaction (17).

Another important psychological factor in obesity is body image. The body image is in fact a person's perception of the size and proportion of her/his body that accompanies the thoughts, feelings and attitudes of the others towards her/his body (18,19) and has a multidimensional structure that consists of two distinct parts, including a perceptual part (estimate of body size), and a perspective part (person's sense and perception of the body) (20,10). Thompson also points out that the physical appearance structure involves three cognitive, mental and behavioral components. The prevalence of body dissatisfaction is a major concern, because it is associated with psychological disorders such as depression, social anxiety, eating disorders, sexual dysfunction and ill-form body disorders (1,49). Body dissatisfaction also contributes to the development of inconsistent eating behaviors (21). Overweight people, especially young women, suffering from lack of self-esteem feel that they are more judged by others (22). Studies show that the mental image of the

body has a more destructive effect on depression and self-esteem than people's real overweight, which is due to the emphasis of mass media, propagandas and Western social values about slimming. Therefore, the need for attention to perception of the body image is required along with the apparent state of treatment. Trainings that aim to prevent risky behaviors and unhealthy habits in life in the early years of life should emphasize the learning of a healthy lifestyle, because unhealthy lifestyle causes many illnesses and disorders (23). A healthy lifestyle is a way of life that provides, maintains and improves the level of health and well-being of an individual. The use of a healthy lifestyle and the development of health habits with the goal of preventing diseases, improving the quality of life, increasing the life expectancy and improving the health of the body and mind should begin from the embryonic age (24). Researches by the Center for the Prevention and Control of Diseases have shown that 80 percent of the risk attributable to coronary heart disease and 70 percent of deaths from heart attacks can be reduced through lifestyle changes (25). Although several methods have been proposed for the treatment of obesity, always the best treatment is prevention through the training of the accurate lifestyle and behavior change program. Research has also shown that behavioral change programs are effective not only in the treatment of obesity, but also in reducing stress resulting from it and improving the efficacy sense and body image (26,27). Gerstel et al., (28) in a study aimed at the effectiveness of lifestyle training on weight gain and metabolic syndrome in women concluded that women in the experimental group compared to the control group, after receiving the intervention, enjoyed weight loss and proper activity of the endocrine glands. Mohammadi et al., (3) in a study entitled "the effectiveness of training intervention on lifestyle modification of the first period high school male students with overweight in the city of Tonkabon" found that the behaviors affecting on the lifestyle associated with overweight and obesity including the eating in standing state, while watching TV, at sleeping time, between main meals, eating snacks during starvation, fast eating, watching TV at leisure time and playing with computer at leisure time were significantly improved after the intervention in the experimental group. Lloyd et al., (29) in a research to study the behavior and consequences of overweight and the training of lifestyle program showed that lifestyle training program is effective on weight loss and improvement of body image in obese individuals. Costa Dias Pitangueira et al., (30) in a study to investigate the effectiveness of a program based on life modification in controlling and preventing obesity found that the experimental group, after receiving training sessions, had more control over the components of obesity compared with the control group.

Overall, in recent years, the body ideal has been defined as over-slimming, and many adolescents, especially girls, consider slimming very important for being attracted. Negative feelings, behaviors, and inappropriate cognitive processes about a person's body image and physical appearance result in distortion of the body image and negative self-concept that may be due to overweight and obesity. Given the importance of preventing overweight and obesity and the importance of forming a healthy lifestyle, doing training interventions can be very helpful. Each person's body image consists of a sense of physical satisfaction, self-esteem and beliefs about appearance. The term 'beliefs' about the appearance is a cognitive structure and involves ineffective attitudes towards the appearance of an individual in her/his everyday life. Physical appearance, on the other hand, is an important part of the body image, because it is the first source of information that others use for social interactions with the individual. Such a factor plays an essential role in determining the beliefs and behaviors about the individual's body; therefore, doing interventions based on

lifestyle modification can change the person's perception of her/his physical appearance and reduce the amount of negative assessments. Consequently, conducting the present research and the other similar researches on obese men and women seemed to be necessary. Also, the research gap about the effectiveness of psychotherapy methods based on lifestyle modification on sexual self-esteem and body image can lead to further interventions for overweight women, which this issue increases the novelty of this research. Therefore, this study was conducted to answer the question: "Whether treatment through lifestyle modification is effective on weight management, body image and sexual self-esteem of women with overweight?"

Materials and Methods

This research was carried out in a semi-experimental method with pretest-posttest design with control group. The effectiveness of an independent variable, namely lifestyle modification, has been investigated on dependent variables of weight management, body image and sexual self-esteem.

The statistical population of this study consisted of all obese women referred for weight loss to nutrition and treatment clinics in Tehran in 2016. The sample consisted of 30 obese women referred to nutrition and treatment clinics in northern Tehran that were selected using convenience sampling method based on admission criteria of BMI equal to 30 or higher, female, having at least 18 years of age, minimum education at the level of diploma, lack of using psychoactive drugs or weight-promoting agents, lack of psychiatric disorders requiring immediate treatment, lack of eating disorder, non-menopausal period or pregnancy and physical problems, and the exclusion criteria of having mental disorders such as personality disorder, bipolar disorder or obsessive-compulsive disorder, heart disease, cancer and diabetes, hypothyroidism, hypertension [blood pressure] (Bp≤ 100/160mmHg), simultaneous receiving of psychotherapy or another weight loss program. The selected individuals were randomly assigned to the training intervention group based on lifestyle modification [experimental group] and control group. The procedure was so that after the access to the nutrition and therapeutic regimen clinics in the north of Tehran, by observing ethical considerations and stating the research objectives, among 70 obese women with body mass index equal to 30 or higher referring to 5 nutrition and therapeutic regimen clinics, 50 individuals were selected. Then, among the 50 selected persons, 30 subjects who enjoyed the criteria for entering the study were randomly assigned into two experimental and control groups. The following tools were used to diagnose psychiatric disorders associated with obesity and to collect research data:

Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I)

It is a semi-structured interview for the diagnosis of axis I disorders, developed by First et al., (31). This interview was used to assess psychiatric disorders associated with obesity, such as psychotic symptoms, deformity disorder, major depression, suicidal tendencies, and eating disorders and abandoning them. The present interview had a good validity and reliability for the diagnosis of mental disorders (32). Sharifi et al., (33) reported a diagnostic agreement for most of the specific and generalized diagnoses, from moderate to good (Kappa higher than 0.60). The overall agreement (total kappa) was 0.25 for current diagnoses and 0.55 for overall lifetime diagnoses.

Structured Clinical Interview for DSM [Personality Disorders] (SCID-II)

This tool is a semi-structured diagnostic interview designed to measure 10 personality-based disorders II which have been designed based on DSM-IV. To determine personality disorders, this test can be used as categorical or dimensional. The questionnaire has 119 items and is administered in less than 20 minutes; the level of education required to

respond to it is at least grade 8. The examiner develops an interview according to the questions that the subject gives them a positive response. The high reliability and validity of this test have been shown in various studies (31,34). To determine the reliability by test-retest method, SCID was performed by two interviewers with a two-week intervals on 284 subjects and the Kappa coefficients ranged from 0.24 for obsessive-compulsive personality disorder to 0.44 for demographic personality disorder (with total Kappa of 0.53). Content validity of the translated version of the interview was confirmed by three psychology professors and the reliability coefficient of this tool was obtained equal to 0.87 by test-retest method with a one-week interval. In the present study, this interview was used to assess personality disorders associated with obesity, especially borderline personality disorder and obsessive-compulsive disorder, and abandoning them.

Body Mass Index (BMI)

This index is obtained by dividing the weight (in Kilograms) by the square of height (in meters). The weight was measured using an Arzum portable digital scale with 100g sensitivity and the height was also measured by a non-exponential tape meter with 0.5 centimeter accuracy.

Multidimensional Body-Self Relations Questionnaire (MBSRQ)

One of the methods used to measure body image disparagement is the application of the MBSRQ (35). This questionnaire is a 69-item test that has been designed to measure the multidimensional relations of the body-self. The test items measure the six dimensions of body-self relations, including appearance evaluation, body (members) satisfaction, fitness assessment, fitness orientation, and subjective weight, based on the five-point Likert scale as: 1=absolutely disagree to 5=absolutely agree. The psychometric properties of the MBSRQ questionnaire have been confirmed in some studies (35). In the Persian form of this scale (36), the Cronbach's alpha coefficients of the items of each of the subscales for a sample of 217 students were 0.88, 0.85, 0.83, 0.79, 0.91 and 0.94 respectively, indicating a good internal consistency of the questionnaire. Correlation coefficients between the scores of 67 people of the above mentioned sample in two steps with a two-week interval were 0.78 for appearance evaluation, 0.75 for appearance orientation, 0.71 for fitness assessment, 0.69 for fitness orientation, 0.84 for subjective weight and 0.89 for physical satisfaction, which indicated the satisfactory test-retest reliability of the scale.

Weight Efficacy Lifestyle Questionnaire (WEL)

This questionnaire was developed by Clark et al., (37). In WEL, respondents are asked to rank their confidence in avoiding eating in twelve seductive settings. The items are graded in a 10-point scale; the higher scores show their greater self-confidence. The 20-item WEL involves five situational factors: negative emotions (items 1, 6, 11, 16 &19), accessibility (items 2, 7, 15, 17 & 20), social pressure (items 3, 8, 13 & 18), physical impairment (items 4, 14 & 19) and positive activities (items 5, 10 & 12); each of these subscales has 4 items. The findings from two separate therapeutic-clinical trials (N=382) showed that WEL is sensitive to changes in the total score and so it is sensitive to the subset of the scores of situational five factor. In order to obtain the total score of this questionnaire, the score of all questions is collected and divided by 20, and in order to obtain a score for each subscale, the sum of scores of the same sub-scale is divided by 4. The score for each subscale can be between 9 and 45 and the higher score indicates the higher confidence. The score for all WEL internal consistency items has also been reported well (37). The Persian form of WEL was translated by Sadeghi et al., (38), and the Cronbach's alpha coefficient, test-retest and two-half test over 58 students were obtained

equal to 0.94, 0.68 and 0.91, respectively. Also, Babaei, et al., (39) reported the validity and reliability of this scale as desirable.

Sexual Self-Esteem Index for Women-Short Form (SSEI-W-SF)

This questionnaire has 35 items, designed to measure effective responses in women's sexual evaluation. The items are answered in a six-point Likert scale from 1 to 6 (completely disagree to completely agree). Items 6, 7, 11, 13, 14, 17, 18, 20, 21, 22, 23, 26, 27, 28, 29, 31, and 34 have been inversely scored. This questionnaire reflects the areas of sexual self-esteem including experience and skill (items 4, 5, 13, 16, 17 & 19), attractiveness (items 2, 7, 12, 22, 27, 32 & 34), control (items 6, 9, 11, 14, 21 & 29), moral judgment (items 10, 18, 20, 25, 31, 30 & 35) and adaptation (items 8, 15, 23, 24, 26 & 28). By summation of the scores of the 5 areas together, the total score of the scale is obtained and the higher score indicates the higher sexual self-esteem. Cronbach's alpha coefficient for the whole of this scale was 0.92, for skill and experience was 0.86, for the attractiveness was 0.88, for control was 0.80 and for adaptation was 0.80 (13).

Procedure

After coordination with nutrition and regimen clinics, 5 clinics were selected from available centers by convenience method. After attending each of the clinics, observing the ethical considerations and expressing the goals of the research, the women's consent for participation in this research was obtained by informing the women and clinic officials and obtaining the permission of them. Then, from 70 obese women referring to the centers, 50 people were randomly selected, interviewed and evaluated. Subsequently, 30 obese women who had the criteria for entering the research were randomly assigned to the experimental and control groups. The subjects were explained about the research conditions and its objectives, they were asked to participate the intervention training. At first, pretest was administered to both groups and they were asked to complete the questionnaires according to their characteristics and not to leave the questions unanswered as much as possible. The experimental group was then subjected to lifestyle modification training, and the control group did not receive any intervention. The treatment sessions consisted of 12 sessions of 90 minutes performed collectively and once a week at a location determined by researchers (one of the nutrition clinics that could be accessed). During these sessions and two weeks after the completion of the training, post tests were administered to both groups and then the data were analyzed by MANCOVA. To observe the moral considerations, the subjects were mentally prepared to participate in the research and were assured that their information would be confidential.

In lifestyle modification training that was developed by Karageorghis (40,47,48) sport lifestyle modification, change of attitudes, and modification of social relations and modification of diets have been considered (40,47,48). The program is presented in 12 sessions, which are held weekly in 90 minutes. In this program, self-monitoring skills of eating, control of stimulus and receiving hidden calories, developing healthy eating behaviors and social behaviors, defective behavioral chain modification, self-rewarding, nutrition training, calorie calculation, ABC model of behavior (prognosis-behavior-consequence), conducting dysfunctional self-statements, prevention of slip, recurrence and disintegration were trained based on the program.

Results

Body image is a person's perception of the aesthetics or sexual attractiveness of their own body. Also body image is far beyond the mental image of individuals from the appearance and reflects her/his personal relationships with the body and involves emotions, beliefs, conceptions, thoughts, and other activities related to the physical appearance. Participants

with minimum age of 18 and maximum of 38 appeared in the experimental group whose mean and standard deviation were 28.12 ± 2.45, while in control group, minimum age of 18 and maximum of 36 with mean and standard deviation of 27.82 ± 4.21 were obtained.

As shown in Table 1, the mean (and standard deviation) of the pretest score of the subjects in the experimental group in their multidimensional body-self relations was 151.80 (and 6.63), and the pre-test score of the control group was 156.60 (and 6.42). The posttest score of the subjects in the experimental group in the multidimensional body-self was 202.26 (and 7.07), and the post-test score of the control group was 161.73 (and 7.15). The mean (and standard deviation) of the pretest score of the subjects in the experimental group in weight-efficacy lifestyle was 84.40 (and 2.84), and the pre-test score of the control group in weight-efficacy lifestyle was 81.33 (and 3.99). The posttest score of the subjects in the experimental group in weight-efficacy lifestyle was 118.73 (and 3.32), and the post-test score of the control group for this variable was 86.66 (and 3.17). Also, the mean (and standard deviation) of the pre-test score of sexual self-esteem was 77.40 (and 3.37), and the pre-test score of the control group in sexual self-esteem was 82.73 (and 3.36). The mean (and standard deviation) of the post-test score of the experimental group in sexual self-esteem was 116.26 (and 5.07), and the total post-test score of the control group was 89.46 (and 3.48). In other words, the scores of the experimental group have increased in dependent variables.

Shapiro Walk test was used to examine the normal distribution of scores. The results of this test showed that the distribution of the scores of the variables of multidimensional self-body relations, weight-efficacy lifestyle and sexual self-esteem was normal in the pretest-posttest, and the data has a normal distribution (P>0.05). Before using the parametric test of multivariate covariance analysis, the Box's and Levene's tests were used to observe its hypotheses. According to Box test, which was not significant for the research variables (P= 0.325, F=1.143, and BOX=14.860) and for the variable of the quality of life (P=0.689, F=0.729 and BOX=8.011), the homogeneity condition of variance/covariance matrices has been correctly observed. Based on the Levene's test and its insignificance for all variables, the equality condition of intergroup variances has

Table 1. Mean and standard deviation of the components of multidimensional self-body relations, weight efficacy lifestyle and sexual self-esteem in the pre-test and post-test of the studied groups

Variable \ Conditions	Component	Experimental group				Control group			
		pretest		Post-test		pretest		Post-test	
		M	SD	M	SD	M	SD	M	SD
Multidimensional self-body relations	Appearance evaluation	27.20	2.90	36.80	2.65	30.066	5.61	31.53	4.79
	Appearance orientation	41.06	1.62	50.40	4.71	40.86	2.09	42	1.96
	Fitness assessment	9.73	1.33	16.53	2.19	10	1.19	10.93	1.43
	Fitness orientation	41.13	2.16	52.20	2.85	42.20	2.67	42.73	2.78
	Subjective weight	5.66	1.04	10.53	1.06	5.93	0.96	7	1
	Physical satisfaction	27	1.92	35.80	1.61	27.53	1.50	28.58	2.32
	Total	151.80	6.63	202.26	7.07	156.60	6.42	161.73	7.15
Weight-efficacy lifestyle	Social pressure	17.33	1.29	24.46	0.91	17.46	0.99	18.46	1.18
	Access to food	20.20	1.78	28.26	1.03	19.86	1.64	21.73	1.43
	Positive emotions	11.40	0.98	17.20	2.36	11.86	1.12	12.53	0.99
	Negative emotions	20.33	1.98	29	1.06	19.53	1.35	21.06	1.09
	Physical impairment	15.13	1.18	19.80	2	12.86	1.95	15.40	1.40
	Total	84.40	2.84	118.73	3.32	81.33	3.99	86.66	3.17
Sexual self-esteem	Experience and skill	14.20	1.01	21.73	1.22	15.93	1.27	16.40	1.72
	Attractiveness	14.60	1.12	22.26	1.57	16.93	1.75	18.40	1.59
	Control	16	2	24.73	1.83	16.86	1.30	19	1.19
	Moral judgment	15.73	1.43	23.13	2.41	18.40	1.59	19.13	1.24
	Adaptation	16.86	1.18	24.40	1.63	17.13	1.24	18.86	1.18
	Total	77.40	3.37	116.26	5.07	82.73	3.36	89.46	3.48

also been observed.

The results of Wilks' Lambda test showed that the effect of the group on the combination of the variables of multidimensional self-body relations, weight-efficacy lifestyle and sexual self-esteem was significant [$P \leq 0.001$, Wilks F (13,16) =0.212]. The above test allowed the use of multivariate covariance analysis (table 2). The results showed that there was a significant difference between, at least, one of the variables in the two studied groups.

Based on the results of multivariate analysis of covariance test, psychotherapy based on lifestyle modification had a significant effect on multidimensional self-body relations (F (28,1) =243.337, $P<0.001$), weight-efficacy lifestyle (F (28,1) =328.860, $P<0.001$), and sexual self-esteem (F (28,1) =284.228, $P<0.001$) was significant. In other words, these findings indicate an increase in multi-dimensional self-body relations, weight-efficacy lifestyle, and sexual self-esteem in the experimental group compared with the control group (table 3).

Discussion

The present study aimed to evaluate the effectiveness of lifestyle modification therapy on weight management, body image and sexual self-esteem in women with obesity. The results showed that lifestyle modification therapy was effective in weight management in women with high overweight. In other words, women with high overweight had a higher weight management after receiving a three-month intervention based on lifestyle modification compared to control group. These results are consistent with other studies (26,27,28,3,30). Young et al., (41) also investigated the effects of lifestyle modification interventions and showed that lifestyle changes involving exercise led to weight loss and lipid profile improvement, which is consistent with the results obtained in this study. Wing et al., (42) believe that in weight management and treatment groups, by focusing on weight loss, weekly weight assessment and follow-up and support from the therapist, the members of the group, family, and friends for weight loss, the quality

Table 2. Information on validity indices of multivariate covariance analysis (MANCOVA)

Condition	Test	Value	F	dF	Df of error	*P*	Eta
Group membership	Pillais trace	0.788	62.953	16	13	$P \leq 0.001$	0.788
	Wilks' Lambda	0.212	62.953	16	13	$P \leq 0.001$	0.788
	Hotelling effect	77.480	62.953	16	13	$P \leq 0.001$	0.788
	Roy's biggest root	77.480	62.953	16	13	$P \leq 0.001$	0.788

Table 3. Results of multivariate covariance analysis of scores of variables of multidimensional self-body relations, weight efficacy lifestyle and sexual self-esteem in experimental and control groups

Component	SS		dF		MS	F	*P*	Eta
Appearance evaluation	208.033	1	28	30	208.033	13.864	$P \leq 0.001$	0.331
Appearance orientation	529.200	1	28	30	529.200	40.530	$P \leq 0.001$	0.591
Fitness assessment	235.200	1	28	30	235.200	68.127	$P \leq 0.001$	0.709
Fitness orientation	672.133	1	28	30	672.133	84.267	$P \leq 0.001$	0.751
Subjective weight	93.633	1	28	30	93.633	88.175	$P \leq 0.001$	0.759
Physical satisfaction	512.533	1	28	30	512.533	127.981	$P \leq 0.001$	0.820
Total	12322.133	1	28	30	12322.133	243.337	$P \leq 0.001$	0.78
Social pressure	270.000	1	28	30	270.000	240.254	$P \leq 0.001$	0.896
Access to food	320.133	1	28	30	320.133	204.340	$P \leq 0.001$	0.879
Positive emotions	163.333	1	28	30	163.333	49.638	$P \leq 0.001$	0.639
Negative emotions	472.033	1	28	30	472.033	401.324	$P \leq 0.001$	0.535
Physical impairment	360.533	1	28	30	360.533	136.173	$P \leq 0.001$	0.829
Total	7712.033	1	28	30	7712.033	328.860	$P \leq 0.001$	0.84
Experience and skill	252.300	1	28	30	252.300	161.043	$P \leq 0.001$	0.852
Attractiveness	187.500	1	28	30	187.500	87.695	$P \leq 0.001$	0.758
Control	168.033	1	28	30	168.033	40.099	$P \leq 0.001$	0.589
Moral judgment	246.533	1	28	30	246.533	103.131	$P \leq 0.001$	0.786
Adaptation	229.633	1	28	30	229.633	112.147	$P \leq 0.001$	0.800
Total	8653.800	1	28	30	8653.800	284.228	$P \leq 0.001$	0.81

of life increases. Also, these results are congruent with the meta-analysis of Kitzmann et al., (43), which showed that lifestyle interventions in different environments and with different participants were effective and the effect of short-term treatment will continue for months after the end of the treatment and will lead to weight loss and improved eating habits. This finding can be explained by the fact that psychological interventions use different strategies to promote health behaviors and correct the malicious beliefs of individuals about their health status and achievement, because these interventions cause people to do health behaviors and weight loss in a less stressful environment, without fear of weight gain (44), loss of dietary inhibition (45) by increasing physical activity and healthy eating (12), and thereby increasing the weight and quality of life management associated with their weight, so that these interventions improve the physical function, the feeling of vitality, and the reduction of physical discomfort resulting from overweight (44).

The results also showed that lifestyle modification therapy was effective on the body image of overweight women. In other words, women with high overweight had a higher body image after receiving a three-month intervention based on lifestyle modification compared to control group. These results are consistent with other studies (26,27,28,3,30).

In explaining these results, it can be said that the body image slowly evolves over time and generally begins from childhood. This construct is first formed in childhood by contact, or lack of contact, with people such as parents and family members. Personal contacts such as hugging, kissing and other types of affection can help construct a positive initial body image, and the lack of such contact can also have a reverse effect and result in the formation of a negative initial body image. Therefore, childhood has an undeniable role in the formation of body image, which its absence is felt in the lifestyle. Therefore, in this therapeutic model, the schemas related to body modify the severity about physical appearance, being confirmed by all, and that I must deserve to have an attractive and beautiful appearance. By training a healthy lifestyle based on increasing activity, it trains clients how to challenge and modify the schemas, and therefore individuals communicate with themselves, others, and nature. In terms of self, the person enjoys being with herself/himself, her/his social relationships increase, and ultimately s/he is able to make a good body image from being in the nature and practicing fitness exercises.

Also, the results showed that lifestyle modification therapy was effective on self-esteem of women with high overweight. In other words, women with high overweight had a higher body image after receiving a three-month intervention based on lifestyle modification compared to control group. These results are congruent with other studies (26,27,28,3,30).

In explaining the result of this hypothesis, it can be said that lifestyle modification therapy teaches women to correct their behaviors by increasing security and support, availability, meeting the needs of the spouse and creating safe behaviors, the ways to increase intimacy and communication, training the correct communication skills and creating a desirable sexual relation (14). Also, by reconstructing the attitude of women towards their bodies, this approach tries to increase the security and safe behaviors in their life, reduce marital conflicts, improve their well-being, and promote their physical and psychological well-being. In fact, lifestyle-based modification teaches women that they can disclose issues related to physical appearance, the pleasure of physical and emotional relations to their spouse, receive a positive response from their spouse, and can be supported by them (46). In addition, they can increase their verbal and nonverbal interactions, show sexual self-assimilation, such as touching, hugging and kissing in relation to the spouse, and express their thoughts, feelings, needs and desires, and

have a closer physical presence in order to provide the ground for sexual self-esteem. Regarding the fact that sexual relationship is one of the most important issues in marital life and acts as an emotional barometer in relationships, it can reflect the couple's satisfaction from other aspects of the relationship; as a result, it is a good measure of the overall health and well-being of couples' relationships. Therefore, by these approaches the couples are taught to obtain the capability to identify emotions and put them fourth. In addition, by creating security and intimacy among husband and wife this approach mediates the relationship between these emotional skills and marital adjustment in couples (14). On the other hand, women form the main pillar of the family, and the health of the body and soul of women affects the health of the body and soul of the family and the education of children and future generations of the community; therefore, attention to the mental health of women is very important. The results of this study show that obesity as a health problem has a negative effect on women's mental health, decreases the mental image of the body, increases body dissatisfaction and reduces sexual self-esteem. Paying attention to the psychological dimension of obese women and the effort to promote their mental health along with lifestyle modification, dietary correction and activity change is necessary.

From the limitations of the present research, we can refer to the convenience sampling method, the use of self-reporting tools, having difficulty to access overweight women, time limitation, and not having access to the intended sample that caused the follow-up measurement were not possible; therefore, there was no available information that indicated that the changes had been stable in the long run or not. In addition, limiting the sample to overweight women in Tehran caused the generalization of the results to other women with overweight was restricted. Because of such limitations, it is clear that before making any tangible conclusions about the impact of lifestyle-based therapies on improving weight management, body image and sexual self-esteem of overweight women, other careful research plans are needed.

Studies on lifestyle modification are still at the beginning of its path, and more evidence is needed on the mechanism of action of this type of treatment and more work in this area, especially in Iran, must be done. Therefore, it is suggested that more controlled studies are conducted on the effectiveness of this treatment for other variables such as mental health, anxiety, depression, family cohesion in overweight women, and so on. Future studies can also assess the relationship between the levels of concentration processes and the role of behavior change in the level of marital adjustment and sexual self-esteem of overweight women (50,51).

Conclusions

Research on applying lifestyle-based treatment in overweight women with larger samples is one of the other suggestions of the present study. It is suggested that the results of this kind of treatment are compared with other psychological treatments in future studies to reveal the differences and similarities of this treatment with other treatments to determine which treatment is best suited to this group.

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