

⇒ Research Article



The Effectiveness of Schema Therapy Intervention in Weight, Body Image and Self-esteem of Obese People: A Randomized Controlled Trial

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Background: Helping people with obesity as well as identifying the factors affecting their weight, body image, and self-esteem have become health necessities. Schema therapy is an effective method of third-wave psychotherapy for reducing the problems of obese people. This study aimed to determine the effectiveness of schema therapy in watching body weight as well as improving body image and self-esteem in patients with obesity.

Methods: The present study was a randomized controlled trial. The study's statistical population included all obese people referring to Mehr Counseling and Psychology Center in Tehran (Iran) in 2019. Out of the given population, 32 individuals were selected by adopting convenience sampling method and, then, were randomly divided into schema therapy (n=16) and control (n=16) groups. Data were obtained using body mass index (BMI), Cooper Smith self-esteem questionnaire, and body image questionnaire. The data were analyzed by using repeated-measures analysis of variance and SPSS 22 software. The significance level of the tests was set at 0.05.

Results: The results showed that schema therapy had a significant effect on the weight ($P<0.001$), body image ($P<0.001$), and self-esteem ($P<0.001$) compared to the control group. The results also revealed that BMI and self-esteem were significantly improved by schema therapy training ($P<0.001$).

Conclusion: It was concluded that schema therapy had a positive effect on weight, body image, and self-esteem in people with obesity.

Keywords: Schema therapy, Body weight, Body image, Obesity

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Background

Obesity is a metabolic disorder characterized by body fat, a significant risk factor for the disease. Furthermore, at least 400 million and 1.6 billion of the world population are obese and overweight, respectively (1). Obesity is an epidemic and growing problem in Iran, and official estimates suggest that 67% of women and 33% of men aged over 20 years are afflicted with obesity (2). One of the most important problems of people with obesity is overweight. If the body mass index (BMI) (dividing weight by kilogram by square height by meter) is equal to or greater than 25, the person is regarded as an overweight one; but if it is equal to or greater than 30, the person is considered as an obese one. Obesity is associated with less vitality, anxiety, depression, suicidal thoughts, fatigue, and mood disturbances, and generally exerts negative effects on health and quality of life (3).

Another problem obese people are faced with is their decreased self-esteem (4). Self-esteem comes from a sense of self-worth and self-confidence, so self-esteem is an individual evaluation that brings one's attention to

oneself (5). Self-esteem means how much people love themselves, how satisfied they are with their performance, and how close their ideal self and actual self are. When people's appearance is not aligned with social and cultural ideals, it leads to feelings of shame and guilt. A positive and negative perception of weight can affect people's self-esteem (6).

Body image defects are also one of the most common psychological problems in overweight people. The body image is a mental image that shows how the person feels about every one of his or her entire organs. This image is a multidimensional phenomenon that includes cognitive dimensions (one's thinking about their body), perceptual (touch and vision), and emotional (one's feelings for oneself) (7). A person's perception of his body leads to a greater or lesser estimate of the size of the body parts. The resulting emotional, cognitive changes are associated with feelings of dissatisfaction and concern about the individual's shape and organs. Dissatisfaction with the body arises when the actual body's mental image does not match the mental image of the ideal body itself (8).

Schema therapy is a method of third-wave psychotherapy effective in reducing the problems of obese people. Schemas are deep and inclusive patterns composed of memory, excitement, as well as cognition, and are formed in childhood and adolescence and continue in adulthood (9). Schema therapy is a relatively new and integrated treatment that presents a regular program for evaluating and modifying early maladaptive schemas to increase valuable feelings; it has been formed based on cognitive-behavioral, interpersonal, attachment, and experimental treatments. This method helps people feel more relaxed and less vulnerable, and more willing to enter communities and establish social relationships (10). The results of Calvert et al (11) showed that schema therapy reduced eating disorder symptoms.

This study's innovation lies in the fact that few studies have investigated the effectiveness of schema therapy in watching weight as well as improving body image and self-esteem of obese individuals. The given studies investigating the effect of schema therapy have failed to follow the therapeutic effects after a long time.

Objectives

This study aimed to determine the effectiveness of schema

therapy in watching body weight as well as improving body image and self-esteem in people with obesity.

Materials and Methods

The present study was a randomized controlled trial. The study's statistical population included all obese people referring to Mehr Counseling and Psychology Center in Tehran (Iran) in 2019. Out of the given population, 32 participants were selected by convenience sampling method and randomly (by simple random sample) divided into two groups of schema therapy (16 individuals) and control group (16 individuals). The study sample size was estimated to be 32 based on previous studies with the maximum standard deviation of 10, $\alpha=0.05$, and test power of 95% (12). Therefore, 32 men and women referring to counseling and psychology center were enrolled in the study and were randomly divided into two groups of schema therapy (16 patients) and control (16 patients) (Figure 1). Inclusion criteria were obesity based on physician's diagnosis, age range between 30 and 50 years, level of diploma to master's degree, and lack of chronic diseases and mental disorders based on psychologist's approval and General Health Questionnaire competition (GHQ-28). Exclusion criteria

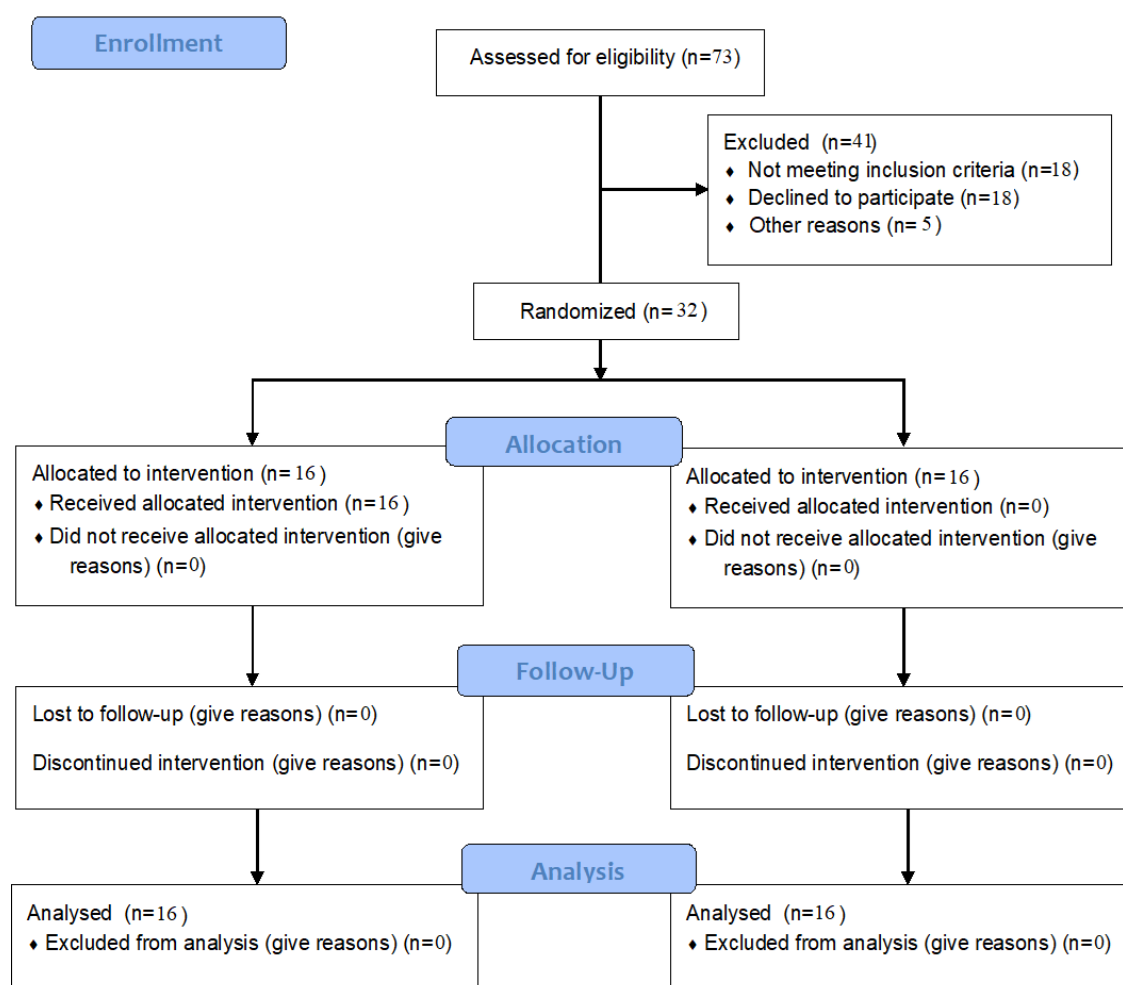


Figure 1. Flowchart Consort.

were the absence of more than two sessions in treatment sessions and the occurrence of significant stresses caused by unforeseen events such as the death of a first-degree relative or divorce. The research's ethical considerations were as follows: 1. All subjects received written information about the research and participated in the research only if they were willing to. 2. Individuals were assured that all information would remain confidential and be used for research. 3. To respect privacy, the names and surnames of the participants were not registered. To control the internal and external validity threats in our study, the method of selecting subjects for control and experimental groups was implemented randomly.

The schema therapy sessions held for the experimental group in eight sessions. Then the obtained scores were analyzed by pre-test and post-test, and follow-up session scores were compared to evaluate the effectiveness of independent variables in the groups. The control group was a wait list control group.

Body Mass Index

This index was obtained from the division of weight (kg) by the square of height (by meter). The weight was measured by a portable digital scale with a sensitivity of 100 g, and the height was measured by 0.5 cm in a dilatable tape meter.

Cooper Smith Self-Esteem Questionnaire

This scale, developed by Cooper Smith in 1976, is basically used to assess people's self-esteem. This checklist has 58 questions, 8 of which are polygraphs (13). Fifty questions of the checklist for assessing self-esteem cover four areas and require yes or no answers. Obtaining a high score in this questionnaire means enjoying a high self-esteem. The test's scoring method is 0 and 1, and the minimum and maximum scores that a person may get are 0 and 50, respectively. Cooper Smith obtained the original version of this questionnaire's reliability by retesting the reliability coefficient of 0.88 after five weeks and 0.7 after three years (13). The Persian version of this questionnaire's reliability using Cronbach's alpha coefficient for the whole questionnaire was 0.86, and the correlation coefficient of Cooper-Smith scale scores was 0.80 by Eysenck test (14).

Body Image Questionnaire

this questionnaire was developed by Cash in 1990. The questionnaire includes 46 materials designed to evaluate the body image, and consists of 6 components (15). The subscales of this questionnaire are: 1) assessment of appearance status; 2) tendency to appearance; 3) proportionality assessment; 4) tendency to proportion; 5) preoccupation with overweight; and 6) satisfaction with body areas. The scoring method is based on 5-option Likert (i.e., from number 1 for the opposite option, to 5 for the entire agreed option). The scores of this scale range from 46 to 230. The original version of this questionnaire's reliability was 0.83 using Cronbach's alpha, and its validity was 0.77 simultaneously (15). Soltani et al obtained the questionnaire's reliability by using Cronbach's alpha of 0.89 (16).

The main format of schema therapy has been mentioned in Table 1. This protocol's validity had been confirmed by its creators and had a high face and content validity. Schema therapy was performed in the experimental group.

To describe the data, mean and standard deviation were calculated. To analyze the data, repeated measure analysis of variance was used. It is worth noting that the Levene's test (designed for evaluating the homogeneity of variances), Kolmogorov-Smirnov test (designed for examining normality of data distribution), Box's M test, and Mauchly sphericity test were used to examine the assumptions of the inferential test. The above statistical analyses were performed using SPSS.22 software. The significance level of the tests was 0.05.

Results

The mean \pm standard deviations of age in the schema therapy group and control group were 45.20 ± 9.39 and 46 ± 81.9 , respectively. There was no significant difference between the two groups in terms of age ($P=0.865$). Minimum and maximum age in experimental group were 31 and 49 years, respectively; while those in the control group were 30 and 48 years, respectively. As for the gender of the participants in two groups, there were 8 (50%) female and 8 (50%) male ones in the experimental group; whereas there were 9 (56.3%) female and 7 (43.7%) male ones in the control group. There was no

Table 1. A Summary of Schema Therapy for Patients With an Eating Disorder

Session	Objective	Determining Agenda	Teaching Technique and Designing Tasks
1-2	Establishment of a therapeutic relationship, assessment of the patient's problem, evaluation of the schemas, and formulation of the problem based on the procedure of the schema.	Explaining schema therapy model and objectives transparently and in simple words to the patients.	Summarizing all the information obtained from schema therapy in the patient's problem conceptualization form.
3-4	Identification of the schemas, employment of cognitive techniques, and challenging the schemas.	Identifying and challenging the schemas and teaching the cognitive techniques.	Training the cognitive and experimental techniques.
5-6	Implementation of emotional (experimental) techniques.	Defining the agenda based on the subjects and duties.	Training the experimental (emotional) techniques and behavioral pattern-breaking.
7-8	Encouragement of the patients to avoid incompatible contrastive strategies and practice useful contrastive behaviors.	Discussion and debate about how to avoid incompatible contrastive behaviors.	Training the pattern-breaking techniques.

significant difference between the two groups in terms of gender distribution ($P=0.941$). BMI was 1.02 ± 32.88 in the experimental group but it was 0.44 ± 32.25 in the control group, which showed that the two groups were not significantly different regarding the BMI ($P=0.107$). The mean and standard deviation of research variables are presented in Table 2.

Prior to performing the repeated measurement analysis of variance test, the results of Box's M, Mauchly, and Levene's tests were evaluated for observing the assumptions. Since the Box's M test was not significant for any of the research variables, the homogeneity requirement of variance-covariance matrices was not ruled out. Furthermore, the fact that none of the Levene's test variables were insignificant showed that the condition of equality of intergroup variances had been applied. The variance of dependent variable error was equal in all groups. Finally, the Mauchly sphericity test results showed that this test was significant for the research variables. Therefore, the assumption of the equality of variances among the subjects was not verified. The Greenhouse-Geisser test was used to evaluate the univariate test results for within-subject effects and interactions. Also, the Wilks' lambda test with a value of 0.22 ($P>0.001$) showed a significant difference in schema therapy's effectiveness in watching weight as well as improving body image and self-esteem at a significant level of 0.05.

As shown in Table 3, the analysis of variance was significant for both within-subject factor (time) of the BMI variable as well as between-subject factor. Moreover, the interaction between group and time was found to be significant ($P<0.001$) with an effect of 0.46. As for the image body variable, analysis of variance was determined significant for both within-subject (time) and between-subject factors. Also, the interaction between group and time was detected to be significant ($P<0.001$) with an effect of 0.80. The results of the self-esteem variable indicated that the analysis of variance was significant for both within-subject (time) and between-subject factors ($P<0.001$). Also, the interaction between group and time was significant ($P<0.001$) with an effect of 0.65. Therefore, the Bonferroni post-test was used to investigate the differences in the pre-test, post-test, and follow-up stages in each component (Table 4).

Discussion

This study aimed to determine the effectiveness of schema therapy in watching weight as well as improving body image and self-esteem in people with obesity. The results showed that schema therapy was effective in watching the weight of patients with obesity. This result was in line with the findings from the studies by Pugh (17) and Irani et al (18) on the effects of schema therapy on emotional adjustment, body image, and weight loss among obese individuals with nervous overweight. Moreover, our finding was in agreement with the studies by Pak Andish et al (12) on the effects of schema therapy on quality of life and body image of obese women.

By way of explanation for the schema therapy effectiveness, schema therapy has been developed for people with refractory treatment. In this regard, it facilitates detecting and manipulating the deepest cognitive structures that develop treatment resistance among people (10). On the other hand, schema therapy helps people with obesity to replace inadequate coping responses with adaptive behavioral patterns by using appropriate experimental and behavioral tasks. One of the therapeutic stages in schema therapy is behavioral pattern-breaking. In this stage, attempts are made to manipulate coping styles(9).

Schema therapy also brings about profound personality changes and can help to improve self-esteem in people with obesity. Consequently, adjustment of infrastructural schemas along with inefficient coping responses leads to behavior change and improves self-esteem in people with obesity. Schema therapy is an integrated approach

Table 3. Repeated Measurement Analysis to Investigate the Effect of Time and Group on Weight, Body Image, and Self-esteem

Variables	Source of change	Effect	F	P	Eta
BMI	Within-subject	Time	107.15	0.001	0.70
		Time*Group	19.56	0.001	0.46
	Between subject	Group	9.24	0.001	0.29
Body Image	Within subject	Time	284.22	0.001	0.86
		Time*Group	93.65	0.001	0.80
	Between subject	Group	5.59	0.001	0.17
Self-Esteem	Within subject	Time	147.03	0.001	0.76
		Time*Group	42.06	0.001	0.65
	Between subject	Group	40.30	0.001	0.64

Table 2. Mean and Standard Deviation of Research Variables

Variable	Group	Pre-test		Post-test		Follow-up	
		Mean	SD	Mean	SD	Mean	SD
BMI	Schema therapy	32.75	1.48	31.38	1.02	31.56	1.26
	Control	33.25	0.44	33.19	0.40	33.00	0.63
Body image	Schema therapy	99.31	10.96	121.56	13.76	120.75	13.88
	Control	117.12	11.67	117.00	11.79	117	11.81
Self-esteem	Schema therapy	10.69	3.30	15.06	2.72	15.00	2.42
	Control	11.75	2.11	11.94	2.14	12.00	2.06

Table 4. Bonferroni's Test Results From Comparing Two-to-Two Measurements of Research Variables

Variables	Stages		Mean Difference	Estimation Criteria Error	P
BMI	Pre-test	Post-test	2.06	0.60	0.001
		Follow-up	1.46	0.61	0.001
	Post-test	Follow-up	-0.60	0.54	0.001
Body Image	Pre-test	Post-test	-3.10	0.72	0.001
		Follow-up	-2.70	0.73	0.007
	Post-test	Follow-up	0.40	0.70	0.011
Self-Esteem	Pre-test	Post-test	-3.16	0.72	0.001
		Follow-up	-2.90	0.73	0.001
	Post-test	Follow-up	0.26	0.71	0.011

that uses cognitive, emotional, and behavioral pattern-breaking techniques; cognitive, emotional, and behavioral aspects, to some extent, improve self-esteem in people with obesity (12).

Having awareness of these schemas brings fresh hope to people and helps them adopt a more optimistic view about themselves, their abilities, and their future. In sum, the schema therapy approach provides the ground for change by adding multidimensional dimensions to treatment, which includes multidimensional dimensions to treatment, which includes cognitive, experimental, and behavioral dimensions (11). In the cognitive dimension, schema therapy focuses on the internalized voice of parents and the deepest level of cognition (i.e., schemas) helps people to discover the reason for the lack of values, failures, and incompetence caused by their thoughts (12).

Schema therapy has been proven an effective method for achieving weight loss in people with obesity since it has a high capacity to combine the different approaches (attachment, object relationships, etc) in the form of a therapeutic model. Furthermore, experimental techniques help people to reorganize emotions, examine new self-learning, and regulate interpersonal affection, as well as to provide relaxation to improve schemas. On the other hand, people can use these techniques to test the hypothesis of schemas. Using mental imagery helps the person recognize the main schemas, understand its evolutionary roots, and relate these roots to their current life but not to their personality traits (10). When they learn these techniques, they can adopt them throughout their life and achieve favorable results to develop a positive redemption and, ultimately, improves their body image.

This study faced some limitations, one of which was the fact that the study results were limited to people with obesity. This study only investigated the population of people with obesity in Tehran and, therefore, its results may have been generalized to the population from other regions and cities only after a great care was exercised. It was recommended that further studies be conducted using other sample group and, then, their results be evaluated and compared with our study results.

It was also suggested that the results of the studies be evaluated and followed up after group training. Taking into consideration the positive effect of schema therapy on weight, body image, and self-esteem of people with obesity, it was highly recommended that the psychologists use schema therapy extensively in groups. The Ministry of Health, WELFARE Organization, hospitals, and the Organization of Psychology and Counseling may pave the way for psychologists, physicians, and nurses to be more familiar with the concepts of schema therapy by holding schema therapy workshops.

Conclusion

According to the study findings, it was concluded that the schema therapy positively affected the weight, body image, and self-esteem in people with obesity. Taking into account the beneficial effect of schema therapy on weight, body image, and self-esteem, it was recommended that the schema therapy be widely used as a psychological method to improve psychological problems in people with obesity.

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Conflict of Interests

The authors declare that they have no conflict of interests.

Ethical Approval

This study was conducted in accordance with the code of ethics of Hormozgan University of Medical Sciences (No.: IR.HUMS.REC.1398.336). The study also obtained a clinical trial code number IRCT20200210046451N1 from the Iranian Registry of Clinical Trials

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References

1. Page MM, Johnson JD. Mild suppression of hyperinsulinemia to treat obesity and insulin resistance. *Trends Endocrinol Metab.* 2018;29(6):389-99. doi: 10.1016/j.tem.2018.03.018.
2. Mozaffarian D. Dietary and policy priorities for cardiovascular disease, diabetes, and obesity: a comprehensive review. *Circulation.* 2016;133(2):187-225. doi: 10.1161/circulationaha.115.018585.
3. Darebo T, Mesfin A, Gebremedhin S. Prevalence and factors associated with overweight and obesity among adults in Hawassa city, southern Ethiopia: a community based cross-sectional study. *BMC Obes.* 2019;6:8. doi: 10.1186/s40608-019-0227-7.
4. Iannaccone M, D'Olimpio F, Cella S, Cotrufo P. Self-esteem, body shame and eating disorder risk in obese and normal weight adolescents: a mediation model. *Eat Behav.* 2016;21:80-3. doi: 10.1016/j.eatbeh.2015.12.010.
5. Ravary A, Baldwin MW. Self-esteem vulnerabilities are associated with cued attentional biases toward rejection. *Pers Individ Dif.* 2018;126:44-51. doi: 10.1016/j.paid.2018.01.014.
6. Almenara CA, Aimé A, Maiano C, Ejova A, Guèvremont G, Bournival C, et al. Weight stigmatization and disordered eating

- in obese women: the mediating effects of self-esteem and fear of negative appearance evaluation. *Eur Rev Appl Psychol*. 2017;67(3):155-62. doi: [10.1016/j.erap.2017.02.004](https://doi.org/10.1016/j.erap.2017.02.004).
7. de-Magistris T, López-Galán B, Caputo V. The impact of body image on the WTP values for reduced-fat and low-salt content potato chips among obese and non-obese consumers. *Nutrients*. 2016;8(12):830. doi: [10.3390/nu8120830](https://doi.org/10.3390/nu8120830).
 8. Carmona J, Tornero-Quiñones I, Sierra-Robles Á. Body image avoidance behaviors in adolescence: a multilevel analysis of contextual effects associated with the physical education class. *Psychol Sport Exerc* 2015;16(Pt 3):70-8. doi: [10.1016/j.psychsport.2014.09.010](https://doi.org/10.1016/j.psychsport.2014.09.010).
 9. Poursharifi H, Bidadian M, Bahramizadeh H, Salehinezhad MA. The relationship between early maladaptive schemas and aspects of identity in obesity. *Procedia Soc Behav Sci*. 2011;30:517-23. doi: [10.1016/j.sbspro.2011.10.101](https://doi.org/10.1016/j.sbspro.2011.10.101).
 10. Basile B, Tenore K, Mancini F. Early maladaptive schemas in overweight and obesity: a schema mode model. *Heliyon*. 2019;5(9):e02361. doi: [10.1016/j.heliyon.2019.e02361](https://doi.org/10.1016/j.heliyon.2019.e02361).
 11. Calvert F, Smith E, Brockman R, Simpson S. Group schema therapy for eating disorders: study protocol. *J Eat Disord*. 2018;6:1. doi: [10.1186/s40337-017-0185-8](https://doi.org/10.1186/s40337-017-0185-8).
 12. Pak Andish S, Kraskian A, Jamhari F. Comparing the effectiveness of schema therapy and cognitive-behavioral therapy on quality of life and body image of obese women. *Journal of Excellence in Counseling and Psychotherapy*. 2020;9(34):20-32. [Persian].
 13. Coopersmith S, Sakai D, Beardslee B, Coopersmith A. Figure drawing as an expression of self-esteem. *J Pers Assess*. 1976;40(4):370-5. doi: [10.1207/s15327752jpa4004_5](https://doi.org/10.1207/s15327752jpa4004_5).
 14. Borji M, Memaryan N, Khorrami Z, Farshadnia E, Sadighpour M. Spiritual health and resilience among university students: the mediating role of self-esteem. *Pastoral Psychol*. 2020;69(1):1-10. doi: [10.1007/s11089-019-00889-y](https://doi.org/10.1007/s11089-019-00889-y).
 15. Cash TF. *The Multidimensional Body-Self Relations Questionnaire*. Norfolk, VA: Old Dominion University; 1990.
 16. Soltani N, Safajou F, Amouzeshi Z, Zameni E. The relationship between body image and mental health of students in Birjand in 2016 academic year: a short report. *J Rafsanjan Univ Med Sci*. 2017;16(5):479-86. [Persian].
 17. Pugh M. A narrative review of schemas and schema therapy outcomes in the eating disorders. *Clin Psychol Rev*. 2015;39:30-41. doi: [10.1016/j.cpr.2015.04.003](https://doi.org/10.1016/j.cpr.2015.04.003).
 18. Irani S, Akbari B, Abolghasemi A, Bakhshipour Roudsari A. Comparison of the effectiveness of schema therapy and behavioral model-based diet therapy on emotional adjustment, body image, and weight loss among obese individuals with nervous overweight. *Avicenna Journal of Neuro Psycho Physiology*. 2021;8(1):45-51. doi: [10.32592/ajnpp.2021.8.1.107](https://doi.org/10.32592/ajnpp.2021.8.1.107).