

Effects of Participatory Training Program on the Control of Overweight and Obesity in Female Adolescents

Marjan Mirzania, M.Sc. ¹, Maryam Eshghizadeh, M.Sc. ², Fateme Mousavinia, B.Sc. ³, Mahdi Moshki, Ph.D. ⁴

1- Health Education and Promotion Department, School of Health Sciences & Student Research Committee, Gonabad University of Medical Sciences, Gonabad, Iran

2- Lecturer in Nursing Education, Social Development & Health Promotion Research Center, Gonabad University of Medical Sciences, Gonabad, Iran

3- School of Health Sciences & Student Research Committee, Gonabad University of Medical Sciences, Gonabad, Iran

4- Professor of Health Education and Promotion Department, School of Health Sciences; Social Development & Health Promotion Research Center, Gonabad University of Medical Sciences, Gonabad, Iran (Corresponding author; Drmoshki@gmail.com)

Received: 21 April, 2018

Accepted: 12 September, 2018

ARTICLE INFO

Article type:

Original Article

Keywords:

Adolescent
Overweight
Obesity
Participation
Training

Abstract

Background: Adolescent obesity has become a serious public health challenge in the 21st century. The purpose of this study was to determine the effects of a participatory training program on the control of overweight and obesity in female adolescents.

Methods: One hundred female participants aged 12 to 14 years with overweight or obesity were recruited from four schools which were selected randomly from the list of all schools. The height, weight, and body mass index (BMI) of participants were measured. A training program which consisted of proper nutritional behaviors as well as balanced physical activities was proposed through educational tools and lectures to the experimental group. Besides, questioning and answering sessions as well as group discussion with health and nutrition experts were held.

Results: After the intervention, a significant difference was observed in the BMI of experimental group (26.39 ± 3.06) compared with that of the control group (27.71 ± 3.29). Also, the frequency of rice consumption (4.14 ± 1.14), macaroni (121 ± 0.40), eggs (2.15 ± 0.92), meat (2.03 ± 0.83) and chicken (2.06 ± 1.008) significantly decreased after the intervention. Prior to the intervention, two groups were not significantly different in the terms of physical activity; however, a significant difference was found between the two groups after the intervention.

Conclusion: According to the results of this study and the observed positive impact on the nutrition and physical activity patterns of adolescents, it seems that such training interventions in schools would be effective on preventing and controlling obesity as well as long-term health.

Copyright: 2018 The Author(s); Published by Kerman University of Medical Sciences. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Mirzania M, Eshghizadeh M, Mousavinia F, Moshki M. Effects of Participatory Training Program on the Control of Overweight and Obesity in Female Adolescents. Journal of Kerman University of Medical Sciences, 2018; 25 (4): 365-374.

Introduction

Obesity and overweight negatively affect the health status and life quality (1). Obesity, the excessive accumulation of adipose tissue in the body, is caused by an imbalance between energy intake and energy expenditure. In recent decades, obesity has become an important nutrition and health issue in both developed and developing countries and it is getting more prevalent among adolescents (2). The childhood and adolescent obesity has become a serious public health challenge in the 21st century (3). In fact, one third of children and adolescents in the U.S. are overweight or at the risk of being overweight (4).

Adolescence, as one of the most challenging stages of one's life, generally ranges from 12 to 21 years (5). Neglect to rapid physiological and psychological changes in adolescents may cause irreparable damage to their health. Adolescents consist approximately 20% of the total world population (6,7). Similarly, they comprise 16.34% of the Iranian population in accordance with the 2011 census (8). Literature shows that obesity in 14% of children, 4% of 7-year-old children, and 70% of 11-14 year-old adolescents will lead to obesity in adulthood (9). Studies have reported the rate of overweight and obesity as 10.2% and 3.7% respectively in Iranian female adolescents, which is significantly higher than those in male adolescents (6). Adolescents with obesity may experience long-term or short-term health consequences such as being more prone to hyperlipidemia, hypertension, insulin resistance, type 2 diabetes, cardiovascular disease, and cancer compared with those having normal weight (10,11). A systematic review on the global economic burden of obesity revealed that obesity accounts for 0.7-2.8% of the total nationwide cost of health care. It also

reported that medical expenses of obese people are 30% higher than those with normal weight (12).

Nowadays, worrisome changes are seen in the dietary habits of people in various countries especially in adolescents. In this regard, Iranian female and male adolescents are no exception (2,4). Moreover, the physical activity of children and adolescents has decreased due to the popularity of watching TV and playing computer games (13). A study has shown that the diet of about 74% of adolescents in Tehran is unhealthy and in need of improvement (7). A study conducted in the UK to investigate the effects of school-based programs on the reduction of obesity risk factors indicated no significant difference in the body mass index (BMI) and physical activity between experimental and control groups (14). People need information, constant support, and encouragement to find suitable solutions for achieving positive self-esteem, self-efficacy, and weight loss. The studies conducted so far have mostly focused on the effects of training on the control of overweight and obesity among individuals or families or as a self-care program. However, training by itself is not enough and other synergistic factors must also be considered in the form of participatory program involving adolescents, parents, and school officials. They should become aware of overweight and obesity complications in adulthood, so they are encouraged to participate in weight loss programs (15).

The stages of this program were as follows: identifying facilitating and inhibiting factors contributing to the risk of overweight and obesity in adolescents, training support of adolescents, counseling, follow-up and finally evaluation. The girls of today become the mothers of tomorrow and the keys to current and future generations. Given the increasing number of adolescents in developing countries and the

formation of adulthood behavioral patterns during the adolescence, special attention should be paid to their health crisis and its consequent vulnerability. The purpose of this study was to determine the effects of a participatory training program on the control of overweight and obesity in female adolescents.

Materials and Methods

This randomized controlled trial was conducted during 2014-2015. This study was approved by the Research Ethics Committee of Gonabad University of

Medical Sciences (GMU/93/47) and registered (code No: IRCT2016070228747N1) in the Iranian registry office of clinical trials. The researchers explained the research objectives to school officials and obtained the required permissions to conduct the study in the schools of Gonabad city (in the northeast of Iran). The study protocol is conformed to the ethical guidelines of the 1975 Declaration of Helsinki. Participation in the current study was voluntary and informed consent was granted from all participants and their parents (Figure 1).

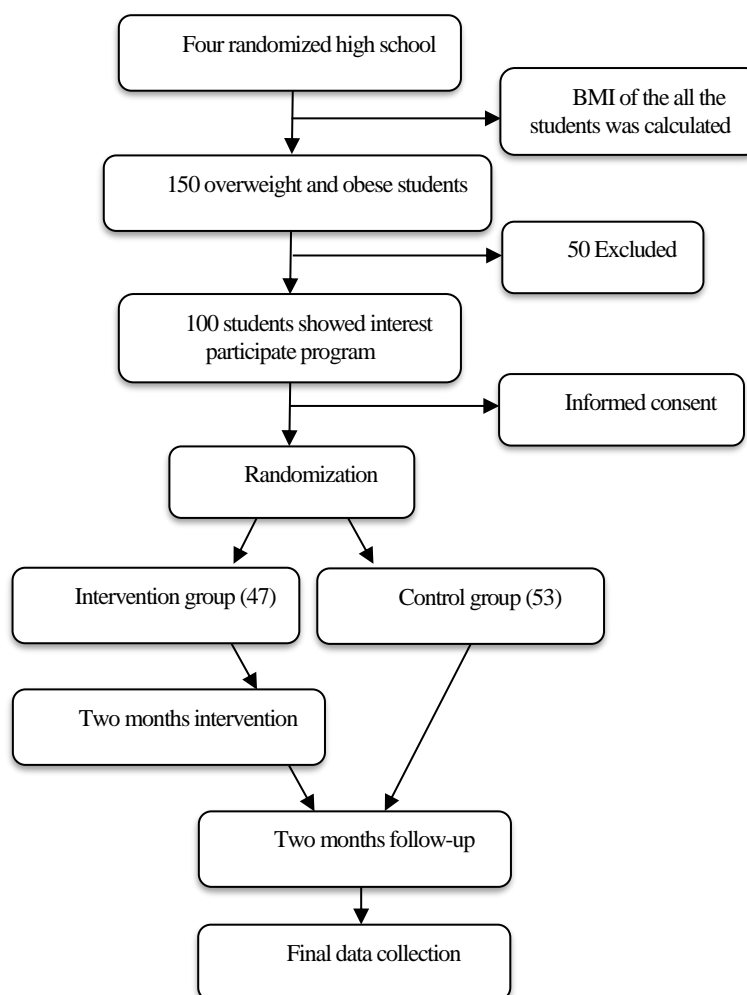


Figure 1. Flow chart of enrolment

Participants

Participants included high school female students aged 12 to 14 years in Gonabad, Iran. Four schools were selected randomly from a list of all schools. The height, weight, and BMI of participants were measured. They were classified as overweight and obese if their age/gender-specific BMI was \geq 85th and 95th percentile based on the growth chart of Centers for Disease Control and Prevention (CDC) (16). The exclusion criteria were unwillingness to participate in the research, the diagnosis of diabetes mellitus, having a psychiatric disorder, using weight loss medications and participation in another weight management program. A total of 100 overweight or obese female students were included in this intervention program.

Sample size calculation and randomization

The sample size was estimated to be 45 based on a pilot study of BMI for each group. The informed consent was obtained and the participants were divided into experimental (n=47) and control (n=53) groups. Then, demographic questionnaire, food frequency questionnaire (FFQ) and international physical activity questionnaire (IPAQ) were distributed among participants in both groups.

Measurements

Data collection tools consisted of a demographic questionnaire, food frequency questionnaire (FFQ), and international physical activity questionnaire (IPAQ). Esfahani et al. confirmed the validity and reliability of the FFQ (17). The questionnaire used in this study was

adopted from FFQ and its reliability was confirmed using content validity. IPAQ, a questionnaire used by the World Health Organization, includes the questions of physical activities within 7 days. IPAQ reliability was measured by Cronbach's alpha as 0.61 (18).

Intervention and outcomes

This study was conducted based on suitable nutritional behaviors (such as recommendations to prevent obesity and the causes and complications of obesity, overweight) and balanced physical activity (emphasis on the importance and benefits of proper physical activity and pointing to the problems caused by inactivity). The current study was designed according to initial need assessment using educational tools, lectures, and group discussions with health and nutrition experts in 8 sessions (six sessions for experimental group students, two sessions for parents and school officials and each session lasted one hour). During the program, a training booklet was distributed among students. Training was not the only objective of this study. In addition, we incorporated task assignments for students, parents, and school officials (like morning exercise program, designing wall newspapers, parents accompanied by students in physical activities, limiting the use of TV and computer, and restricting ready snacks). The intervention lasted for two months and the participants were then followed-up for another two months. The follow-up program was complemented by texting and educational pamphlets to evaluate the effects of training on participants.

Outcome measures

Final evaluation was performed after six months using FFQ, IPAQ, and measuring anthropometric parameters such as height, weight, arm circumference, waist circumference, and waist to hip ratio. The control group received no special interventions during the study; however, the training booklet was distributed to them after the study in order to comply with research ethics.

Height, weight, and BMI

Weight of participants was measured using a medical weight scale, zeroed, and calibrated. Weight was measured to the nearest 0.5 kg in light clothes and without shoes. Height barefoot by portable stadiometer calibrated to within 0.5-cm intervals was used to measure the participants' height, while their feet were stick together and the knees, hip, shoulder, and back aligned with a vertical line. BMI was also calculated for all participants (weight in kilograms divided by the square of the height in meters).

Other measurements (MUAC, WC, WHR)

Mid-upper arm circumference (MUAC) was measured at the midpoint between acromion and olecranon while the participants had a relaxed standing position with the arms hanging by the side. Then, arm circumference was measured using a non-elastic measuring tape with participants in position with a right angle of their hands. Waist circumference, between the last rib and the upper edge of the iliac crest, was also measured using a non-elastic tape (to within 0.1 cm).

Likewise, the femoral head circumference was measured. Waist to hip ratio (WHR), as an indicator of body fat distribution (abdominal fat), was calculated by dividing waist circumference by hip circumference (in cm) for all participants. As there is no definite classification for WHR in adolescents, we used 80% of the WHR values of adult women for female adolescent participants in this study. All measurements were conducted by a single researcher to avoid errors caused by different individuals.

Data Analysis

Data were described and analyzed using descriptive statistics (such as mean) and inferential statistics (including Chi-square, Kolmogorov-Smirnov, Mann-Whitney, Fisher's exact test, t-test, and ANOVA) by SPSS-20 (Chicago, IL, USA).

Results

There was no significant difference between two groups in terms of personal variables such as adolescents' age, parents' weight, and fathers' education level and income ($P > 0.05$). In contrast, there was a significant difference in terms of mothers' education level and parents' occupation. In fact, the highest mothers' education level of the experimental group was university degree (55.3%), while it was high school education (34%) for the control group. Therefore, Parents' education level of the intervention group was significantly higher than that of the control group. The most frequently observed occupation for fathers in the experimental and control group was office job (55.1%)

and self-employment (81.1%), respectively. Similarly, the highest frequent occupation for mothers was employee (55.1%) in the experimental group and

housekeeping (77.4%) in the control group. Table 1 shows the anthropometric characteristics of the participants before and after the intervention.

Table 1. Comparison of anthropometric characteristics before and after intervention

Variables	Before intervention			After intervention		
	Intervention (n=47)	Control (n=53)	P-value ^a	Intervention (n=47)	Control (n=53)	P-value ^a
Weight	69.17±9.10	68.58±10.92	0.404	65.46±8.77	68.39±11.56	0.123
Height	157.17±5.59	156.64±6.20	0.877	157.40±5.56	156.75±6.20	0.793
BMI	27.95±3.07	27.48±3.05	0.612	26.39±3.06	27.71±3.2	0.004
AC	31.59±2.80	31±2.62	0.274	30.48±1.92	30.41±2.46	0.794
WC	87.59±7.06	84.32±6.89	0.004	81.63±5.88	83.52±7.04	0.165
WHR	0.85±0.04	0.80±0.04	0.647	0.79±0.037	0.79±0.037	0.558

Abbreviations: BMI: body mass index; AC: Arm circumference; WC: waist circumference; WHR: Waist to hip ratio

^a t-test for equality of means

The results of Spearman test indicated a positive correlation between BMI of participants and the weight of parents ($P < 0.0001$). The results showed a reduction in the mean values of BMI and waist circumference in

the experimental group after the intervention. Table 2 indicates that the consumption patterns of rice, macaroni, egg, cake, and chocolate changed significantly after the intervention.

Table 2. Comparison of the mean frequency of food intake in a week before and after intervention

Foodstuffs	Before intervention			After intervention		
	Intervention (n=47)	Control (n=53)	P-value	Intervention (n=47)	Control (n=53)	P-value
Bread	2.40±0.61	2.56±0.99	0.049*	1.85±0.50	2.49±0.84	0.001*
Rice	4.89±1.80	4.18±1.46	0.033*	4.14±1.14	3.83±1.29	0.138*
Macaroni	1.38±0.68	1.28±0.50	0.651*	1.21±0.40	1.15±0.36	0.462*
Meat	2.58±0.90	2.08±1.02	0.012**	2.03±0.83	2.16±1.002	0.676**
Chicken	2.59±0.85	2.11±0.68	0.007**	2.06±1.008	2.07±0.62	0.443**
Fish	1.12±0.33	1.44±0.60	0.009**	1.21±0.41	1.40±0.55	0.231**
Egg	3.38±1.48	3.24±1.50	0.650**	2.15±0.92	3.20±1.57	0.000**
Cake	1.73±0.86	1.6±1.04	0.619**	1.47±0.61	1.65±0.89	0.009**
Chocolate	2.61±1.5	1.6±0.73	0.915**	1.76±0.59	1.57±0.5	0.026**
Butter	2±1.05	2.50±2.13	0.824**	1.96±1.09	2.76±2.12	0.246**
Cream	2.27±1.22	1.35±0.60	0.013**	1.71±0.75	1.28±0.46	0.255**
Honey	1.65±0.68	2.59±1.40	0.017**	1.75±0.93	2.33±1.34	0.192**
Sugar halva^a	1.28±0.48	1.37±0.74	1**	1±0	1.37±0.74	0.711**
cream cheese	3.14±1.41	2.27±1.17	0.028**	2.03±0.77	2.57±1.08	0.041**

*Independent T-test, ** Mann-Whitney test

^a A sweet food breakfast in Iran.

The level of physical activity in the experimental and control groups was not significantly different before the intervention, while it changed statistically after the intervention ($P=0.025$). Furthermore, the mean duration

of weekly moderate intensified exercises in the experimental group was significantly different after the intervention, while it had no significant change in the control group (Table 3).

Table 3. Distribution of physical activity before and after intervention

Physical activity	Before intervention		After intervention	
	Intervention N (%)	Control N (%)	Intervention N (%)	Control N (%)
Total	27(45)	33(55)	29(47.5)	32(52.5)
Mild	8(61.5)	5(38.5)	0(0)	6(100)
Moderate	19(40.4)	28(59.6)	29(52.7)	26(47.3)
P-value	0.192		0.025	

Fisher's test

Discussion

The results of this study show the efficacy of participatory training programs on the control of overweight and obesity in female adolescents. After the intervention, the BMI mean in the experimental group was significantly lower compared with the control group. Before the intervention, the WC was greater in the experimental group in comparison to control group; however, no significant difference was found after the intervention. Guoa et al. reported significant changes in BMI, WHR, and waist-to-height ratio (WHtR) for the experimental group after 12 months follow-up; however, they found an increase in HC and WC (19). Sun et al. observed a significant reduction in the WC of the overweight and obese children after a 10-week intervention (20). These results are inconsistent with the results of Peyman et al. and Azadi et al. who did not find a significant BMI difference between two groups after the intervention (21,22). The inconsistency between the findings of the present study and those of other studies can be attributed to the differences of the

intervention duration, training program type or even the gender of the study population.

According to the present study, the main meals and snacks for the experimental group were turned into only main meals after the intervention. In addition, the weekly consumption of fish and fruit in the experimental group increased; whereas, meat, chicken, bread, rice, and macaroni intakes decreased. The findings of a study on dietary pattern in children and adolescents indicated a reduction in the frequency of breakfast and snack but an increase in the frequency of eating out in children and no relationships were found between these variables (23). Hajikazemi et al. also found a significant relationship between BMI of overweight and obese girls and frequency of daily consumption of bread, cereals, rice, oil, and soft drinks compared to other groups (2).

In this study, a significant difference was observed in terms of physical activities between the two groups after the intervention. Furthermore, a significant difference was observed in the mean duration of weekly

moderate intensified exercise in the experimental group after the intervention compared with the control group. Similarly, Alborzimanesh et al. and Azadi et al. demonstrated a significant negative correlation between the mean duration of walking to school with overweight and obesity which is consistent with the current study. Walking, as a moderate intensity physical activity, affects the energy expenditure of children and consequently their obesity (24,22). Sociocultural excuses can be regarded as a reason for inattention to moderate intensity physical activities. Furthermore, urban life and apartment living are considered as the inhibitors of physical activities in adolescents which limit such activities only to weekends (24).

The present study discovered a significant association between students' BMI and their parents' weight, which is consistent with previous studies (13,25). Many researchers consider two possible major reasons in the relationship between obesity of parents and children: First, the effect of genetic factors on obesity and the inheritance of genes causing obesity from one generation to the next. Second, wrong behaviors and improper dietary patterns of families can include eating high amounts of greasy foods, sweet foods as well as high calorie foods (26). This study identified no significant relationships between the BMI of the participants and their parents' education level and occupation as well as family monthly income before the intervention. Mohamadpour-Koldeh et al. showed that BMI of samples was significantly associated with parents' job and education level. However, they did not declare any significant relationship between BMI and

family's economic status, which is consistent in this case with the results of our study (27). The reason of no relationship between the studied adolescents' status with their parents' education level and family's economic status is twofold: 1) although income and education level are widely used to explore the socioeconomic status, there is no standard classification for these parameters. 2) the study population was homogeneous and they tended mostly towards education.

One of the strengths of this program was involving parents and school officials in the training program. Schools can play a significant role in obesity prevention programs through enhancing students' awareness to promote healthy nutrition and physical activity. This study was limited concerning sampling and holding training courses due to lack of cooperation from schools. Furthermore, there was a paucity of basic information such as the history of students' overweight and obesity as well as inaccessibility to the documentation associated with the education degree and occupation of parents which are considered as other limitations in this study

Conclusion

With respect to increasing the prevalence of obesity among adolescents and according to the observed positive impact on the nutrition and physical activity patterns of adolescents in this study, it seems that such participatory training interventions in schools would be effective on the prevention and control of obesity and consequently adolescents' long-term health.

Acknowledgements

The authors would like to thank the vice chancellor of research in Gonabad University of Medical Sciences, Department of Education in Gonabad, school officials,

participants and their parents as well as all those who showed sincere cooperation in the implementation of the study.

References

1. Alizadeh Z, Younespour S, Mansournia MA. Long term effects of a continuous and intermittent aerobic exercise on weight changes and body fat percentage in overweight and obese women. *Tehran University Medical Journal* 2013; 70(10):630-9. [In Persian].
2. Hajikazemi ES, Moghaddam M, Hosseini AF, Heidarihayat N. Relationship between obesity and food habits among female adolescents. *Iran Journal of Nursing* 2012; 25(77):21-9. [In Persian].
3. Chandrakala P, Soumya A. A study of prevalence of overweight and obesity in adolescents. *Int J Contemp Pediatrics* 2016; 3(3): 960-4.
4. Kathleen Mahan L. Krause's Food, Nutrition and Diet Therapy. Translated by Abbasalizad Farhangi M. Tehran: Arjmand Pub, 2008 [In Persian].
5. Ngwenya NA, Ramukumba TS. Prevalence of adolescent obesity at a high school in the City of Tshwane. *Curationis* 2017; 40(1):1-7.
6. Bazhan M, Kalantari N. Association of anthropometric indices with some dietary factors of high school girls in Lahijan. *Iranian Journal of Endocrinology and Metabolism* 2009; 11(2):159-67. [In Persian].
7. Bagherniya M, Sharma M, Mostafavi F, Keshavarz SA. Application of social cognitive theory in predicting childhood obesity prevention behaviors in overweight and obese Iranian adolescents. *Int Q Community Health Educ* 2015; 35(2):133-47.
8. www.amar.org.ir. Selected Results of Population and Housing General Census, 2011. Available from: https://www.amar.org.ir/Portals/0/sarshomari90/n_sarshomari90_2.pdf [In Persian].
9. Weigley ES, Mueller DH, Robinson CH. Robinson's Basic Nutrition. Translated by kholdi N. Tehran: Salami pub, 2009 [In Persian].
10. Aryeetey R, Lartey A, Marquis GS, Nti H, Colecraft E, Brown P. Prevalence and predictors of overweight and obesity among school-aged children in urban Ghana. *BMC Obes* 2017; 4(38):1-8.
11. Mollerup PM, Gamborg M, Trier C, Bojsøe C, Nielsen TR, Baker JL, et al. A hospital-based child and adolescent overweight and obesity treatment protocol transferred into a community healthcare setting. *Plos One* 2017; 12(3):1-17.
12. Tabatabaei-Molazi O, Larijani B. A review of the prevalence of obesity and its management in Iran. *Iranian Journal of Diabetes and Metabolism* 2013; 12(5):357-74. [In Persian].
13. Rahimi R, Fesharaki, Sahebolzamani M, Rahmani A. The efficacy of a lifestyle modification course in overweight female elementary school students in Urmia, Iran. *Journal of Isfahan Medical School* 2012; 30(188):1-9. [In Persian].
14. Sahota P, Rudolf MC, Dixey R, Hill AJ, Barth JH, Cade J. Randomised controlled trial of primary school based intervention to reduce risk factor for obesity. *BMJ* 2001; 323(7320):1029-32.

15. Jafarzadeh S, Mohammad Khan Kermanshahi S, Hajizadeh E. The effect of health promotion program with collaborative approach on body weight of overweight elementary school girls. *Journal of Fasa University of Medical Sciences* 2015; 4(4): 446-55. [In Persian].
16. Kuczmarski RJ, Ogden CL, Grummer-Strawn LM, Flegal KM, Guo SS, Wei R, et al. CDC growth charts: United States. *Adv Data* 2000; (314):1-27.
17. Esfahani FH, Asghari G, Mirmiran P, Azizi F. Reproducibility and relative validity of food group intake in a food frequency questionnaire developed for the Tehran lipid and glucose study. *J Epidemiol* 2010; 20(2): 150-8.
18. Moeini B, Jalilian F, Jalilian M, Barati M. Predicting factors associated with regular physical activity among college students applying BASNEF model. *Scientific Journal of Hamadan University of Medical Sciences* 2011; 18(3):70-6. [In Persian].
19. Guo H, Zeng X, Zhuang Q, Zheng Y, Chen S. Intervention of childhood and adolescents obesity in Shantou city. *Obes Res Clin Pract* 2015; 9(4):357-64.
20. Sun MX, Huang XQ, Yan Y, Li BW, Zhong WJ, Chen JF, et al. One-hour after-school exercise ameliorates central adiposity and lipids in overweight Chinese adolescents: a randomized controlled trial. *Chin Med J (Engl)* 2011; 124(3):323-9.
21. Peyman N, Ezzati-Rastegar KH, Taghipour A, Esmaily H. Effect of education on the weight self-efficacy lifestyle among adolescent girls with overweight and obesity. *Armaghan-e-Danesh* 2012; 17(2): 117-28. [In Persian].
22. Azadi A, Anoosheh M, Alhani F, Hajizadeh E. The effect of implementation of health promotion program in school to control risk factors for obesity in adolescents. *Iranian South Medical Journal* 2009; 11(2):153-62. [In Persian].
23. Sadrzadeh Yeganeh H, Alavi Naeeni AM, Dorosti Motlagh AR, Mahmoudi M, Jar Elahi N, Chamari M. Relationship between obesity and nutritional behavior among high school girls in Kerman. *PAYESH* 2007; 6(3):193-9. [In Persian].
24. Alborzimanesh M, Kimiagar M, Rashidkhani B, Atefi Sadraini S. The relation between overweight and obesity with some lifestyle factors in the 3rd–5th grade primary schoolgirls in Tehran City 6th district. *Iranian Journal of Nutrition Sciences and Food Technology* 2011; 6(3):75-84. [In Persian].
25. Jiang MH, Yang Y, Guo XF, Sun YX. Association between child and adolescent obesity and parental weight status: a cross-sectional study from rural north China. *J Int Med Res* 2013; 41(4):1326-32.
26. Dorosty AR, Hodjat P. The study of some obesity associate factors in primary school girls. *Journal of School of Public Health and Institute of Public Health Research* 2005; 3(2):25-35. [In Persian].
27. Mohamadpour Koldeh M, Fouladvand MA, Avakh Keysami M. Prevalence of overweight and obesity among Bushehrian high-school girls at aged 14-17 years old. *Iranian South Medical Journal* 2012; 15(3): 221-32. [In Persian].