



## Health Promoting Lifestyle and its Determinants Among University Students in Sabzevar, Iran

Ali Mehri, Mahnaz Solhi<sup>1</sup>, Gholamreza Garmaroudi, Haidar Nadrian<sup>2</sup>, Shirin Shahbazi Sighaldehy<sup>3</sup>

Department of Health Education and Promotion, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran, <sup>1</sup>Department of Health Services and Health Education, School of Health, Iran University of Medical Sciences, Tehran, Iran, <sup>2</sup>Department of Health Education and Promotion, Tabriz University of Medical Sciences, Tabriz, Iran, <sup>3</sup>Department of Reproductive Health, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran

### Correspondence to:

Dr. Mahnaz Solhi, Department of Health Services and Health Education, School of Health, Iran University of Medical Sciences, Tehran, Iran.  
E-mail: [solhi.m@iums.ac.ir](mailto:solhi.m@iums.ac.ir)

**How to cite this article:** Mehri A, Solhi M, Garmaroudi G, Nadrian H, Sighaldehy SS. Health promoting lifestyle and its determinants among university students in Sabzevar, Iran. *Int J Prev Med* 2016;7:65.

### ABSTRACT

**Background:** Healthy lifestyle is a major strategy to promote current and subsequent health status. The aim of this study was to assess the status of health-promoting the lifestyle and its determinants among students.

**Methods:** A stratified random sample of 500 students in a university in the city of Sabzevar, Iran participated in this cross-sectional study. Health-promoting lifestyle was measured using Walker's health-promoting lifestyle profile II.

**Results:** There was a significant correlation between all domains of health-promoting the lifestyle. The highest score among the domains was for an interpersonal relationship (70.8%), and the lowest score was for nutrition (53.6%), and physical activity (53.4%). Significant differences were found in physical activity by gender ( $P \leq 0.05$ ). There were significant differences in health responsibility, spiritual growth and body mass index by marital status ( $P < 0.01$ ).

**Conclusions:** Since one out of five students in this study were overweight/obese, health program planning to promote lifestyle, especially physical activity and nutrition among students is recommended. Our findings may be helpful for faculty administrators, curriculum planners, and health educators in designing guidelines to structuralize a healthier campus and to develop health promotion programs supporting healthy choices among students.

**Keywords:** Health-promoting lifestyles, lifestyle, University students

### INTRODUCTION

Noncommunicable diseases (NCDs) are increasing throughout the world and causes major problems in developing countries. Globally, NCDs are responsible for 63% of all deaths (36 million out of 57 million deaths)

and it is accounted for 80% of the global burden of diseases.<sup>[1]</sup> Statistics indicate that 53% of the causes of death are related to human lifestyle. Due to unhealthy lifestyle, there is happened a great increase in the prevalence and incidence of many chronic conditions, including obesity, atherosclerosis, and coronary heart disease (CHD).<sup>[2,3]</sup> Among these chronic conditions, the prevalence of obesity as a serious epidemic health problem has been increased, both in developing

#### Access this article online

##### Quick Response Code:



Website: [www.ijpvmjournal.net/www.ijpm.ir](http://www.ijpvmjournal.net/www.ijpm.ir)

DOI:  
10.4103/2008-7802.180411

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: [reprints@medknow.com](mailto:reprints@medknow.com)

and developed countries, which is as a result of unhealthy eating and physical inactivity in a sedentary lifestyle.<sup>[4,5]</sup> It is assumed that obesity is the fifth leading cause of mortality, globally, and is considered as a risk factor for many diseases such as cancers, hypertension, Type 2 diabetes, metabolic syndrome and CHD<sup>[6]</sup> in a way that 44% of Type 2 diabetes, 23% of ischemic heart diseases and 7–41% of cancers are attributable to overweight and obesity.<sup>[7]</sup> Nevertheless, it is possible to tackle these risk factors by changing and modifying lifestyle which would, in turn, decrease the rate of chronic diseases' morbidity and mortality.<sup>[8,9]</sup>

Lifestyle is the way of living of individuals, families, and societies which can be healthy or unhealthy in terms of personal behaviors such as nutrition, physical activity, and stress management. A healthy lifestyle may result in better health and happiness, and in contrast, an unhealthy lifestyle may cause illness and morbidity.<sup>[10,11]</sup> Pender *et al.* indicated that health promoting behaviors (HPBs), including self-initiated actions, behaviors, and health perceptions may have an impact on individual happiness and well-being.<sup>[12]</sup> Health-promoting behaviors comprise of six-dimensions including health responsibility, physical activity, nutrition, interpersonal relations, spiritual growth, and stress management. Increasing evidence indicate that if individuals can practice properly and routinely, it would result in better health and lifestyle.<sup>[13]</sup>

Considering the changes happened in the study modes and living in campus dormitories, there is an assumption that many students may experience a wide range of unhealthy habits such as high level of fast food intake, low level of physical activity and irregular sleep, as well. Moreover, the young age of students may lead them to believe that they are in good health, and this would be a possible reason why they are not very conscious of their health behaviors.<sup>[14]</sup> So, investigating the students' lifestyles and their contributing factors may be considered as a priority for preventive efforts and control of NCDs.

The number of studies on health-promoting lifestyles among university students in Iran, especially in Sabzevar city is scarce. The current study was conducted to determine the status of university students' healthy lifestyle behaviors and their determining factors applying the Health Promoting Lifestyle Profile (HPLP).<sup>[15]</sup>

## METHODS

### Design and sample

To investigate health-promoting lifestyle among students, a stratified random sample of 530 students in a university in the city of Sabzevar, Iran participated in this cross-sectional study. Sabzevar is a city in Razavi Khorasan province located in northeastern part of Iran. The number of questionnaires returned was 500 out

of 530 (response rate: 94.33%). The purpose of this study was explained to the participants. To conduct the study, ethical approval was provided by Ethics Committee in Islamic Azad University-Sabzevar Branch (Ethical Code = 17521206). The subjects were mentioned that their participation was completely voluntary. Researchers assured the confidentiality and anonymity of data.

### Study instruments and variables assessment

A self-administered questionnaire was used for data collection. It consists two following sections: (1) Respondents' demographic and anthropometric information including age, education level, marital status, residence status and education level of parents, body weight and height which were transformed into body mass index (BMI) ( $\text{kg}/\text{m}^2$ ) and (2) HPBs items. BMI is an important indicator for obesity prevalence among large populations and generally, reflects the degree of fatness among individuals. It is a statistical measure of the weight of a person scaled according to his/her height. Four categories of BMI included being underweight ( $\leq 18.5$ ); having normal weight (18.6–24.9); being overweight (25–29.9); and being obese ( $\geq 30$ ).<sup>[16]</sup>

To determine the health-promoting lifestyle behaviors, the Persian version of HPLP-II, which was validated by Morowati Sharifabad *et al.*, was used. The scale has six-dimensions with 45 items (health responsibility [7 items], physical activity [5 items], nutrition [9 items], self-actualization [8 items], interpersonal relationships [8 items], and stress management [8 items]). All the items of HPLP-II were presented positively, and there were no reversed items. Participants responded to each item on a 4-point Likert scale (1 = never, 2 = frequently, 3 = almost and 4 = always). The higher score in HPLP-II shows the higher level of health-promoting behavior. Applying Cronbach  $\alpha$ -test it was found that the reliability of the scale was favorable ( $\alpha = 0.88$ ). This coefficient for subscales ranged from  $\alpha = 0.69$  to  $\alpha = 0.86$ .<sup>[17]</sup>

### Statistical analysis

Statistical Package for Social Sciences (SPSS) version 17.0 (IBM Corporation) for windows was used to manipulate and data analysis. The statistical description of the sociodemographic variables was performed applying frequencies, means, and standard deviations (SDs). To analyze the differences between HPBs by sociodemographic characteristics, we used *t*-test and one-way ANOVA with Tukey test as *post hoc* analysis. Moreover, Pearson correlation test was used to assess the associations between HPBs scores and some of the demographic variables. The level of significance was set to be  $< 0.05$ , *a priori*.

## RESULTS

A total of 500 students were surveyed. There were 230 males (46%) and 270 females (54%). The mean

age of the respondents was 21.80 (SD = 3.75) years. The majority of the students were a bachelor (77.3%). About 19% of students' parents (24.8% of fathers and 13.1% of mothers) had a college education and higher. Furthermore, 67.8% of parents (66.1% of fathers and 69.5% of mothers) received high school education or lower and about 7.4% were illiterate.

BMI of students ranged from 14.33 to 35.64 kg/m<sup>2</sup>. The mean of BMI was 22.32 kg/m (SD = 3.36) [Table 1]. Overall, the BMI for 67.6% of the sample was in normal range, 12.1% was underweight, and 20.3% was overweight and/or obese.

The mean score of health-promoting lifestyle subscales is presented in Table 1. The mean of health-promoting lifestyles among students was 135.38 (SD = 15.21) out of 180. The highest mean (26.46 out of 32) was for an interpersonal relationship, followed by spiritual growth, stress-management, and health-responsibility. The mean scores for nutrition and exercise behavior dimensions were found to be lower in proportion to the mean score of the other dimensions.

Based on Pearson correlation coefficient [Table 2], there were statistically significant and positive relationships

**Table 1: Mean, standard deviation, minimum, maximum and possible range of body mass index and health promotion lifestyles profile-II subscales (n=500)**

Dimension	n	Minimum	Maximum	Mean±SD	Possible range
Physical activity <sup>b</sup>	484	5.00	20.00	13.02±3.23	5–20
Health responsibility	470	7.00	28.00	13.33±3.33	7–28
Nutrition	469	15.00	36.00	26.27±3.98	9–36
Spiritual growth	459	12.00	32.00	26.10±4.02	8–32
Interpersonal relationship <sup>a</sup>	464	13.00	32.00	26.46±3.20	8–32
Stress management	475	9.00	32.00	23.61±3.89	8–32
Life style	365	91.00	176.00	135.38±15.21	45–180
BMI	457	14.33	35.64	22.32±3.36	-

<sup>a</sup>The highest item, <sup>b</sup>The lowest item. BMI=Body mass index, SD=Standard deviation

**Table 2: Correlation matrix (r coefficient) of health promoting lifestyle profile subscales**

Subscales	1	2	3	4	5
Physical activity	1				
Health responsibility	0.380**	1			
Nutrition	0.326**	0.447**	1		
Spiritual growth	0.273**	0.326**	0.411**	1	
Interpersonal relationship	0.217**	0.223**	0.319**	0.411**	1
Stress control	0.382**	0.391**	0.506**	0.473**	0.447**

\*\*Correlation is significant at the 0.01 level

between HPLP subscales ( $P < 0.01$ ). Statistically significant associations were found between health responsibility and stress control with physical activity and nutrition.

Independent sample *t*-test was conducted to compare individuals on marital status and gender [Table 3]. It was found that female and single respondents scored significantly lower on physical activity, health responsibility, spiritual growth ( $P < 0.001$ ) and lifestyle ( $P \leq 0.005$ ). BMI was significantly different by marital status ( $P \leq 0.001$ ), and living arrangements ( $P < 0.05$ ). Based on BMI, married and off-campus living students were 3 times more likely to be overweight or obese compared to single and on-campus living students.

Moreover, ANOVA indicated a statistically significant difference ( $P < 0.05$ ) in physical activity, health responsibility, nutrition and lifestyle by residence place [Table 4]. The mean score of physical activity, health responsibility, and nutrition variables as well as lifestyle variable (as a whole) were the highest among the students living with their parents.

## DISCUSSION

The purpose of this study was to explore health promoting lifestyles and their related factors among students in Sabzevar-Iran. Our results provided a glimpse of lifestyle among Iranian students. University students are the future decision-makers for organizations, communities, and countries, as well. Considering the importance of their health, support provision for health-promoting behaviors among Iranian students should be a priority for policymakers and health care professionals to provide community-based services aiming at help them to develop a healthy lifestyle.

The overall score for health-promoting lifestyle among students was moderate which is consistent with those found in the other studies.<sup>[8,18]</sup> This finding shows the importance of health promotion planning with an emphasis on empowerment to develop healthy lifestyle among this target group.

In terms of health-promoting lifestyle subscales, the students scored highest in interpersonal relations and spiritual growth. Their weak performance was in physical activity and nutrition habits. These results are also similar with the findings of the other studies.<sup>[14,18-21]</sup> Interpersonal relationships defined as “Seeking support” and intimacy from friends and family, participation in support agency and voluntary activities, participation in educational programs, seeking professional counseling when needed.<sup>[15]</sup> In our study, the majority of students sought support and participated in some sort of support activities. It means that they have the potential to change their weak, healthy behaviors such as physical

**Table 3: Mean and standard deviation of health promoting lifestyle profile subscales and body mass index by gender and marital status**

Dimension	Gender (mean ± SD)		P	Marital status (mean ± SD)		P
	Male	Female		Single	Married	
Physical activity	14.3±3.0	12.31±3.1	0.000	13.25±3.2	13.00±3.1	0.493
Health responsibility	20.46±4.2	19.81±4.1	0.096	19.78±4.1	21.24±4.1	0.002
Spiritual growth	26.43±4.1	25.95±3.8	0.207	25.83±4.1	27.24±3.1	0.001
Nutrition	25.84±4.0	25.60±3.9	0.527	25.53±3.9	26.16±4.0	0.152
Life style	137.7±15.7	133.21±14.4	0.005	134.45±15.18	137.91±14.26	0.079
BMI	22.62±3.2	22.01±3.5	0.053	21.98±3.1	23.37±3.7	0.001

BMI=Body mass index, SD=Standard deviation

**Table 4: The mean and standard deviation of health promoting lifestyle profile subscales and body mass index by residency status**

Dimension	On-campus	Off-campus	Living with parent	P
Physical activity	13.55±3.41	12.83±3.25	13.91±2.93	0.007
Health responsibility	20.33±4.09	19.52±4.01	20.99±4.12	0.006
Spiritual growth	26.31±4.20	25.58±4.09	27.06±3.79	0.005
Nutrition	25.75±4.06	25.25±3.99	26.39±4.00	0.043
Life style	136.11±15.86	132.88±14.12	139.20±15.74	0.005
BMI	21.72±3.34	22.82±3.19	22.22±3.33	0.042

BMI=Body mass index

activity, and nutrition habits provided that health sector design and implement health promotion programs targeting youth people. As an emphasis to this claim, Mahdipour *et al.*, 2013 noted that interpersonal relations and social capital are definitive indicators of health status among students. Therefore, health professionals should consider these indicators in their health education and promotion planning for youth, to assure the success of their programs.<sup>[8]</sup>

Considering the role of appropriate diet and physical activity on the improvement of a student's health and the affordability and cost-effectiveness of lifestyle changes in controlling NCDs,<sup>[22,23]</sup> more attention should be paid to these issues. The weakest performance of students was on physical activity dimension. Gender differences analysis showed that females perform a significantly lower level of physical activity compared to the males. This result is consistent with those found by Regina *et al.*, 2005 and Burke and McCarthy, 2011.<sup>[24,25]</sup> This alarming finding shows that Iranian students, especially girls have a sedentary lifestyle. Several explanations may be noted for such a low level of physical activity, including lack of exercise facilities in the university campus, insufficient safe outdoor playgrounds, low self-efficacy on exercise and lack of walking tracks in most of the cities, particularly, for females. Another reason for the low level of physical

activity among girls may be cultural limitations existed for females to participate in outdoor public, visible exercise opportunities.<sup>[26-28]</sup> Because physical activity is among the most effective factors in promoting health and protecting the quality of life, insufficient physical activity is a serious public health concern yielding physical and social consequences,<sup>[29,30]</sup> especially for women in developing countries. Thus, health promotion planning to motivate students for regular physical activity with the purpose of promoting health and preventing diseases is necessary.

The second highest score among health-promoting lifestyle subscales achieved by the students was spiritual growth. This finding may be explained by the fact that the university environment in Iran has provided an appropriate atmosphere to develop spiritual growth among university students.

The results of present study showed that health responsibility and stress control had a strong relationship with physical activity and nutrition. In other words, the higher the health responsibility and stress control among the students, the better physical activity, and nutrition habits. Thus, it can be concluded that developing and implementing goal-oriented programs to promote health responsibility and stress management may promote physical activity and nutritional behaviors among students. Stress control focuses on methods and techniques used to control and manage stress. In this study, it was ranked as the lowest HPLP-II subscale. In fact, students in this study did not use any stress management techniques and did not find enough time to be relaxed. Thus, education and provision of opportunities to apply stress management techniques such as having enough sleep, taking the time to relax, concentrating on pleasant thoughts may be helpful.<sup>[21]</sup>

The results showed that the students reported 62.4% of health self-responsibility. Self-responsibility was the third lowest dimension among the six subscales. It was found that single students, scored significantly lower on health responsibility and spiritual growth subscales, compared to married students. These differences should be considered

while program planning aiming at improve health promoting lifestyle among students.

Although, about two-third of the students were in the normal range of BMI, about one-fifth were overweight and/or obese, especially females. Nojomi and Najamabadi, Raj *et al.*, and Garrusi *et al.*, confirmed that being overweight and obesity issues are common health problems among students.<sup>[31-33]</sup> BMI may be considered as a trigger that urges individuals to necessitate some strategies for modifying their lifestyle. Considering the important role of body image and its relationship with self-concept, especially among females, the BMI may be noticed as a focus while designing health educational/promotional programs for students. Moreover, there was an increased risk for being overweight or obese among married and off-campus living students. Thus, health-promoting interventions should be, increasingly, focused on these student groups.

### Limitations

The cross-sectional design of this study does not explain causation and changes over time in lifestyle behaviors among these students. Therefore, a generalization of the findings should be done with caution. As all information collected in this study was based on self-reporting, it is possible that the answers have socially desirable response bias.

### CONCLUSIONS

The low HPLP scores among the students urge the need for promoting their healthy behaviors, with a particular focus on their physical activity. Since 20% of the students were overweight or obese, program planning to improve healthy behaviors, especially, physical activity and nutritional habits with specific consideration on gender, marital status and place of residency among the students is recommended. Finally, our findings may help faculty administrators, curriculum planners, and health educators in designing guidelines to structuralize a healthier campus and to develop health promotion programs supporting healthy choices among students.

### Acknowledgements

This work has been put together by all the authors. AA and MS contributed to the conception or design of the work. AA, MS, GG, and HN worked on the acquisition, analysis, or interpretation of data. SS and HN edited the manuscript and gave the final revision. The authors would like to thank the students for their participation in this study.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

Received: 16 Oct 15 Accepted: 16 Jan 16

Published: 14 Apr 16

### REFERENCES

- Boutayeb A, Boutayeb S. The burden of non communicable diseases in developing countries. *Int J Equity Health* 2005;4:2.
- Belpomme D, Irigaray P, Sasco AJ, Newby JA, Howard V, Clapp R, *et al.* The growing incidence of cancer: Role of lifestyle and screening detection (Review). *Int J Oncol* 2007;30:1037-49.
- Kromhout D, Menotti A, Kesteloot H, Sans S. Prevention of coronary heart disease by diet and lifestyle: Evidence from prospective cross-cultural, cohort, and intervention studies. *Circulation* 2002;105:893-8.
- Amany Mokhtar A, Salma Sa'ad MA. Prevalence of obesity and some related attributes among Umm Al-Qura university female students in Makkah, Saudi Arabia. *Pak J Nutr* 2013;12:275-84.
- Mirmohammadi SJ, Mostaghaci M, Mehrparvar AH, Davari MH, Naghshineh E. Overweight and obesity among Yazd university students. *Iran J Diabetes Obes* 2013;5:83-7.
- Al-Rethaiaa AS, Fahmy AE, Al-Shwaiyat NM. Obesity and eating habits among college students in Saudi Arabia: A cross sectional study. *Nutr J* 2010;9:39.
- Barbany M, Foz M. Obesidad: Concepto, Clasificación y Diagnóstico. Available from: <http://www.cfnavarra.es/salud/anales/textos/vol25/sup1/suple2a.html>. [Last accessed on 2015 Jun 06].
- Mahdipour N, Shahnazi H, Hassanzadeh A, Tabaraie Y, Sharifirad G. Relationship between various aspects of life style in middle-aged women. *Bull Environ Pharmacol Life Sci* 2013;3:68-74.
- Sarrafadegan N, Kelishadi R, Esmailzadeh A, Mohammadifard N, Rabiei K, Roohafza H, *et al.* Do lifestyle interventions work in developing countries? Findings from the Isfahan Healthy Heart Program in the Islamic Republic of Iran. *Bull World Health Organ* 2009;87:39-50.
- Saffari M, Amini N, Eftekhari Ardebili H, Sanaeinasab H, Mahmoudi M, Piper CN. Educational intervention on health related lifestyle changes among Iranian adolescents. *Iran J Public Health* 2013;42:172-81.
- El-Baz M. *Building a Healthy Lifestyle: A Simple Nutrition and Fitness Approach*. New York: Universe Ink; 2004.
- Pender NJ, Muraugh CL, Parsons MA. *Health Promotion in Nursing Practice*. 4<sup>th</sup> ed. New Jersey: Prentice Hall PTR; 2005.
- Pender NJ, Murdaugh CL, Parsons MA. *Health Promotion in Nursing Practice*. 6<sup>th</sup> ed. USA: Upper Saddle River; 2010.
- Wei CN, Harada K, Ueda K, Fukumoto K, Minamoto K, Ueda A. Assessment of health-promoting lifestyle profile in Japanese university students. *Environ Health Prev Med* 2012;17:222-7.
- Walker SN, Sechrist KR, Pender NJ. The Health-Promoting Lifestyle Profile: Development and psychometric characteristics. *Nurs Res* 1987;36:76-81.
- WHO. Global Database on Body Mass Index: BMI Classification. WHO; 2004. Available from: <http://www.who.int/bmi/index.jsp>. [Last accessed on 2015 Jun 06].
- Raj S, Senjam SS, Singh A. Assessment of health-promoting behavior and lifestyle of adolescents of a North Indian city. *Int J Prev Med* 2013;4:1189-93.
- Jian FH, Santhat S, Boonyong K. Health-promoting lifestyles of nursing students in Mahidol university. *J Public Health Dev* 2007;5:27-40.
- Nomjit N, Thanakorn T. Health-promoting behaviors of physical therapy students. *J Phys Ther Sci* 2012;24:1003-6.
- Hui WH. The health-promoting lifestyles of undergraduate nurses in Hong Kong. *J Prof Nurs* 2002;18:101-11.
- Al-Khawaldeh OA. Health promoting lifestyles of Jordanian university students. *Int J Adv Nurs Stud* 2014;3:27-31.
- WCRF/AICR. *Food, Nutrition, Physical Activity and the Prevention of Cancer: A Global Perspective*; 2007. Available from: <http://www.dietandcancerreport.org/>. [Last accessed on 2015 Jun 06].
- WHO Preventing Non Communicable Diseases in the Workplace through Diet and Physical Activity; WHO/World Economic Forum Report of a Joint Event, PG6-7; 2008. Available from: <http://www.weforum.org/pdf>. [Last accessed on 2015 Jun 06].
- Lee RL, Loke AJ. Health-promoting behaviors and psychosocial well-being of university students in Hong Kong. *Public Health Nurs* 2005;22:209-20.
- Burke E, McCarthy B. The lifestyle behaviours and exercise beliefs

- of undergraduate student nurses: A descriptive study, *Health Educ* 2011;111:230-46.
26. Khuwaja AK, Khawaja S, Motwani K, Khoja AA, Azam IS, Fatmi Z, et al. Preventable lifestyle risk factors for non-communicable diseases in the Pakistan Adolescents Schools Study I (PASS-I). *J Prev Med Public Health* 2011;44:210-7.
  27. Khuwaja AK, Fatmi Z, Soomro WB, Khuwaja NK. Risk factors for cardiovascular disease in school children – A pilot study. *J Pak Med Assoc* 2003;53:396-400.
  28. Khuwaja AK, Kadir MM. Gender differences and clustering pattern of behavioural risk factors for chronic non-communicable diseases: Community-based study from a developing country. *Chronic Illn* 2010;6:163-70.
  29. Kaplan MS, Newsom JT, McFarland BH, Lu L. Demographic and psychosocial correlates of physical activity in late life. *Am J Prev Med* 2001;21:306-12.
  30. Janssen I, Leblanc AG. Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *Int J Behav Nutr Phys Act* 2010;7:40.
  31. Nojomi M, Najamabadi S. Obesity among university students, Tehran, Iran. *Asia Pac J Clin Nutr* 2006;15:516-20.
  32. Garrusi B, Safizadeh H, Pourhosseini OA. Study on the lifestyle of the Iranian university students. *Iran J Psychiatry Behav Sci* 2008;2:41-5.
  33. Morowati Sharifabad MA. Optimization Model of Health Promotion and its Evaluation with the Application of Adult Learning Theory Health Promoting Behavior Change in Elderly in Yazd City [Dissertation], Tehran, Tarbiat Modares University; 2005.

