

*Comparison of Health-promoting Life Styles among Medical and Non-medical Students in Zanjan during 2016-2017*

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**Abstract**

**Background:** Although medical students gain essential knowledge about healthy lifestyles, studies show that this group does not behave in a healthy way and no effective lifestyle courses are also available for this group.

**Objectives:** The present study aimed to determine the health-promoting lifestyle in medical and non-medical students in Zanjan during 2016-2017.

**Methods:** The population of this comparative-descriptive study included all students studying at the medical and non-medical universities of Zanjan Province. Census and randomized cluster sampling techniques were used for selecting medical and non-medical students, respectively. The senior students who showed their tendency could participate in the study. In addition, the data were collected by demographic information and health-promoting behavior (HPLPII) questionnaires. Finally, the data were analyzed through using descriptive (frequency, frequency percentage, mean, and standard deviation) and inferential (independent t-test and the Chi-square) statistics in SPSS 16 and  $P < 0.05$  was considered as the significance level.

**Results:** There was a significant difference regarding some demographic variables (sex, educational degree, dwelling place, average family income, the number of family members, along with mother's education and employment status) between medical and non-medical students. The mean and standard deviation of health-promoting lifestyle score in medical and non-medical students were  $2.52 \pm 0.39$  and  $2.53 \pm 0.41$ , respectively, indicating a moderate level. Based on independent t-test, health accountability was higher in medical students compared to non-medical students although physical activity and the nutritional habits of medical students were weaker in this group as compared to non-medical students ( $P < 0.05$ ). However, no significant difference was observed between the mean of the other subgroups and the total score of the health-promoting lifestyle of the two groups ( $P > 0.05$ ).

**Conclusion:** Based on the results, more accurate reviewing and planning are necessary regarding improving the health-promoting lifestyle, especially in the field of physical activity and nutritional habits while removing health promotion lifestyle barriers among students, especially medical students.

**Keywords:** *Healthy lifestyle, Medical students*

**Introduction**

Health-promoting lifestyle is considered as an important determinant of the health condition and is identified as a major contributor to health promotion [1]. Lifestyle points to the methods in

people's lives that affect their health. Health promotion lifestyles (HPLs) include behaviors that empower people to control their health [2]. In addition, health-promoting behaviors encompass health responsibilities, physical activity, nutrition,

interpersonal relationships, spiritual growth, and stress management [3].

Further, lifestyle is strongly associated with health problems and non-communicable diseases such as obesity, cardiovascular disease, hypertension, diabetes, and cancers [4]. The increasing prevalence of non-communicable diseases such as diabetes, cancer, coronary artery disease, and high blood pressure has now turned into a public health concern. These diseases are expected to be responsible for more than seven of the 10 causes of death in developing countries by 2020 [5]. Non-communicable diseases are highly related to unhealthy lifestyle habits [6,7]. Studies demonstrate that improving the health-promoting lifestyle reduces the incidence of non-communicable diseases [5].

One of the main goals of the World Health Organization (2013-2020 Action Plan for the Global Strategy for Prevention and Control of Non-Communicable Diseases) is to strengthen the capacity of individuals and populations to make healthier choices and follow lifestyle patterns which booster health [8]. Health professionals play an important role in flourishing and promoting health, especially in the field of primary care and thus should work toward developing their own special partnerships in education and health care [9]. Medical and paramedical students are considered as future health care providers and play a health-promoting role. Previous studies indicate that physical activity, diet, life satisfaction, and general health have decreased in medical students (10-12). In other paramedical courses including nursing students, studies represent that the status of physical activity and nutrition, stress management, and health responsibilities are undesirable in this group [13].

An overview of the literature suggests that health workers' personal health functions can be effective in influencing their effectiveness and shaping their health-related actions that they provide regarding health [14]. Based on research findings, the lifestyle and health habits of physicians are important predictors of their counseling function regarding disease prevention and health-promoting behaviors [15-17]. This means that physicians with a healthy lifestyle are considered as models and are more likely to advise and motivate patients to modify unhealthy

habits such as poor diet, physical inactivity, and smoking [18].

Considering the positive relationship between knowledge and performance, it is necessary to examine the effect and efficacy of educational programs that medical students undergo on healthy lifestyles and health-promoting behaviors. Therefore, to achieve this goal, it seems that the health-promoting lifestyle in medical students should be compared with that of non-medical students. In general, studies comparing the health-promoting lifestyle in both groups of students are highly limited and occasionally contradictory. For example, Can et al. [19] found that nursing students' health-promoting lifestyle was better compared to the other students (i.e., finance, management, and educational science). However, Shaban et al. failed to demonstrate any significant difference between health-promoting behaviors in medical and non-medical students [20]. Non-medical students have no course in their curriculum related to health and usually receive this information through personal studies and the media. It is expected that students in the health sciences to be aware of healthy behaviors and act upon them [19]. Therefore, given the importance of the lifestyle of medical students and the contradictory results in this regard, the present study aimed to compare the health-promoting lifestyle in medical and non-medical students in Zanjan during 2016-2017.

### **Methods**

The population of the current comparative-descriptive study consisted of all students studying at the medical and non-medical universities of Zanjan Province. The sampling was conducted from November 1, 2016, to May 31, 2017. In addition, medical and non-medical students participated in the study by census and multi-stage sampling methods, respectively. In this way, first, a college was selected as a cluster from each non-medical university and then the samples were selected from different courses of study in each college utilizing a random stratified sampling method.

The sample size was calculated using the formula  $N = \frac{Z^2 \cdot p \cdot d}{\alpha}$ , with regard to  $\alpha=0.05$ ,  $Z=0.975$ ,  $d^2=1.96$ ,  $p=0.5$ , and  $d=0.05$  and design effect=1/8, the sample size was equal to 680 for non-medical universities.

Moreover, the sample size was totally calculated as  $N=1220$  taking into account the total number of senior students of Zanzan University of Medical Sciences (540 people). The characteristics of the participants in the study included being a senior student, having no history of chronic diseases, and showing their willingness for participating in the study. Having explained the research objectives, the qualified students were recruited in the study, and they completed the data collection questionnaire. A number of 661 out of 680 non-medical students responded to the questionnaire (percentage of response: 97%) and 469 out of 540 medical students (71 cases were not willing to participate in the study) participated in the study and 442 individuals completed the questionnaire (percentage of response: 94%). Before distributing the questionnaire, informed consent forms were obtained from the participants and they were assured of the confidentiality of the information.

The demographic information and health-promoting lifestyle questionnaires were used as data collection tools. The health-promoting behavior questionnaire had 52 items and included six subsets encompassing health responsibility (nine questions), physical activity (eight questions), nutritional habits (nine questions), spiritual growth (nine questions), interpersonal communication (nine questions), and stress management (eight questions). Each question was scored according to the Likert spectrum (for every question ranging from never (1), sometimes, (2), usually (3), to always (4). The total score of overall health-promoting behaviors was 52-208 and a separate score was calculated for each aspect. Additionally, the minimum and maximum average scores for the overall score of lifestyle and its subgroups were between 1 and 4 [3].

Using Cronbach's Alpha method, Walker et al. reported the reliability of the health-promoting behavior questionnaire from 0.79 to 0.86 for the

six dimensions and 0.94 for the whole questionnaire [3]. In addition, Zeidi et al. utilized Cronbach's Alpha to estimate the validity and reliability of the Persian version of the health-promoting behavior questionnaire as 0.44, 0.86, 0.75, 0.91, 0.79, and 0.81 for various dimensions such as spiritual growth, health accountability, interpersonal communication, stress management, physical activity, and nutritional habits, respectively and 0.82 for the whole questionnaire [21]. In the current study, the validity of the tools was calculated by the content validity method in collaboration with ten professors of Zanzan Nursing and Midwifery Faculty. Further, the tool reliability was computed by using the Cronbach's Alpha method after completing a questionnaire by 60 senior medical ( $n=30$ ) and non-medical ( $n=30$ ) students of Zanzan University of Medical Sciences and the University of Zanzan. It should be noted that these 60 students did not participate in the study ( $r=0.84$ ).

The obtained data were analyzed using descriptive and inferential statistics in SPSS software, version 16. After determining the normality of the data by Smirnov's-Kramonouograph test, a t-test was used for comparing the health-promoting lifestyles between medical and non-medical students. Eventually, the Chi-square test was utilized to compare the demographic data in the two groups.

## Results

The mean age of medical and non-medical students was  $23.91\pm 3.97$  and  $24.04\pm 4.18$ , respectively. In addition, 58.1% of medical students were females and 58.7% of non-medical students were males. Further, most medical students (80.5%) and the majority of non-medical students (83.7%) were single and 64.7% of medical students and 85.6% of non-medical students were undergraduate for a bachelor's degree. The demographic characteristics of the students are separately presented in Table 1.

Table 1: Demographic Characteristics of Medical and Non-medical Students

Variable	Absolute and Relative Abundance	Non-medical Students N (%)	Medical Students N (%)	P value
<b>Gender</b>	Female	257(58.1)	273(41.3)	<0.001
	Male	185(41.9)	388(58.7)	
<b>Marital status</b>	Single	356(80.5)	553(83.7)	0.209
	Married	86(19.5)	108(16.3)	
<b>Educational degree</b>	Associate diploma	30(6.8)	11(1.7)	<0.001
	Bachelor	286(64.7)	566(85.6)	
	Master and general practice degree	126(28.5)	74(12.7)	
<b>Dwelling place</b>	Dormitory	268(60.6)	169(25.6)	< 0.001
	Family	21(4.8)	41(6.2)	
	Friends	147(33.3)	447(67.6)	
	Alone	6(1.4)	4(0.6)	
<b>Average family income</b>	1.5 million Toman or less	230(52.0)	398(60.2)	0.007
	More than 1.5 million Toman	212(48.0)	263(39.8)	
<b>Number of family members</b>	Less than 4	123(27.9)	239(36.2)	< 0.001
	Four people	243(55.0)	386(58.4)	
	More than 4	76(17.2)	36(5.4)	
<b>Mother's education</b>	Illiterate	71(16.1)	113(17.1)	0.070
	Diploma or lower	253(57.2)	411(62.2)	
	Higher than diploma	118(26.7)	137(20.7)	
<b>Father's education</b>	Illiterate	39(8.8)	73(11.0)	0.172
	Diploma or lower	238(53.8)	372(56.3)	
	Higher than diploma	165(37.3)	216(32.7)	
<b>Mother's employment status</b>	House wife	338(76.5)	596(86.1)	<0.001
	Employed	104(23.5)	92(13.9)	
	Unemployed	7(1.6)	12(1.8)	
<b>Father's occupation</b>	Employee	107(24.2)	153(23.1)	0.205
	Worker	16(3.6)	34(5.1)	
	Self-employed	221(50.0)	294(44.5)	
	Retired	91(20.6)	168(25.4)	

Based on the findings, there was a significant difference between the medical and non-medical students regarding some demographic variables (e.g., sex, educational degree, dwelling place, average family income, as well as the number of family members, mother's education, and mother's employment status).

The mean score of health-promoting lifestyle in medical and non-medical students was  $2.52 \pm 0.39$  and  $2.53 \pm 0.41$ , respectively. There were

significant differences ( $P < 0.05$ ) between the two groups in terms of health accountability, physical activity, and nutritional habits (Table 2). However, an independent t-test did not show any significant difference among the subgroups of spiritual growth, interpersonal communication, and stress management and the total score of the overall health-promoting lifestyle between the two groups ( $P > 0.05$ ).

**Table 2: Comparison of Mean and Standard deviation of Total Score and Sub-groups of Health Promotion Lifestyle in Medical Students and Non-medical Students**

Group Health-promoting Behaviors	Medical Students	Non-Medical Students	P value
	Mean±SD	Mean±SD	
Health responsibility	2.43±0.56	2.24±0.58	0.000
Physical activity	2.10±0.67	2.32±0.70	0.000
Nutrition	2.34±0.58	2.51±0.51	0.000
Spiritual growth	2.91±0.80	2.87±0.65	0.273
Interpersonal relations	2.75±0.64	2.69±0.57	0.093
Stress management	2.53±0.54	2.55±0.57	0.929
<b>Total</b>	<b>2.52±0.39</b>	<b>2.53±0.41</b>	<b>0.538</b>

### Discussion

The comparison results between medical and non-medical students on health-promoting lifestyles represented no significant difference between the mean score of the overall health-promoting lifestyle and that of the subgroups like spiritual growth, interpersonal communication, and stress management between the two groups. Contrarily, significant differences were observed between the two groups regarding the sub-groups of health accountability, physical activity, and nutritional habits. In other words, physical activity and nutritional habits were weaker in medical students compared to non-medical students while health accountability was higher in medical students compared to non-medical students.

However, Shaban found no significant difference between the health-promoting behaviors among medical and non-medical students of the University of Tehran [20]. According to Baradaran-Rezaei et al., there was no significant difference between the mean score of physical activity among the students of Tabriz University of Medical Sciences and Tabriz University [22]. The results of Norhaini's study also showed that 7.3% of medical students and 21.9% of non-medical students in Malaysia exercise more than three times a week [23].

In India, the increased health risky behaviors and decreased health-promoting behaviors were reported in fourth-year medical students who passed over three years of their stay in medical colleges. More precisely, the number of students doing physical activities dropped by half after entering the medical college compared to before the entry and their eating habits were unpleasant as well [11]. Contrarily, physical activity and

nutrition are the first line of defense against obesity and the prevention of cardiovascular diseases [24].

Most courses of medical sciences students are practical and clinical and take a lot of time compared to the theoretical lessons, therefore, greater amounts of time constraints and busier curriculums are regarded as the reasons for poor physical activity in these students. Furthermore, in the study conducted by Majra in India, all students reported that long working hours and the lack of time contributed to halting or reducing physical activity [11]. However, in this study, physical activity was weaker in medical students compared to non-medical students and had the lowest score among the other HPLP dimensions although this dimension was also poor in non-medical students. It seems that the limitation of sports equipment, the lack of time management and leisure are among the factors that affect this issue. The lack of motivation is considered as another effective factor for poor physical activity among the participants. Students become more interested in sports and sports exercises if they have the motivation [25].

Based on the results of this study, nutritional habits in medical students were weaker than those in non-medical students. Peltzer conducted a study on 1304 students of health sciences and non-health sciences universities of 17 countries with medium and low incomes. Although the knowledge scores of health risk behaviors were higher in health care students in the field of risky dietary behaviors, most health science students had poor nutritional behaviors (e.g., inadequate consumption of vegetables and fruits, salt intake,



and eating red meat) compared to non-health students [26].

The results of the study by Sajwani in Pakistan showed that although medical students had more knowledge about a healthy lifestyle, there was no significant difference between dietary habits and lifestyle among these students and non-medical students [27]. Moreover, the results of another study in Greece demonstrated that although medical students had more knowledge about healthy food, there was no difference between dietary habits in both medical and non-medical students [28]. Almutairi et al. in Saudi Arabia also found that the students of health and non-health sciences used less low-fat diets, and there was no significant difference between the two groups in this regard [29]. Can et al. in Turkey reported that the average score of nutritional habits in nursing students was better than that of social sciences students, which contradicts the results of the present study [19]. The cause of this difference can be contributed to the difference in the population between the two studies. However, in the study by Can, the average score of nursing students was moderate in the subgroup of nutritional habits [19]. It should be noted that most medical students (60.6%) of the present study lived in the dormitory and only 21% lived with their families while 67.6% of non-medical students lived with their families and only 25.6% of them resided in the dormitory. Thus, it seems that this issue is regarded as one of the main reasons for undesirable dietary habits among medical students. This finding was confirmed in the other studies in Japan, Turkey, Iran, and Malaysia [19,30-32]. For this reason, it is recommended to carefully review the nutrition programs of universities and student dormitories and increase their quality.

Based on the results of the current study, the mean score of health accountability was significantly higher among medical students compared to non-medical students. In the study by Almutairi et al in Saudi Arabia, health accountability in health students was better than that of non-health students [29]. In the study of Can et al. in Turkey, the mean score of health accountability in nursing students was significantly higher than that of social sciences students [19]. In the Ulkopolat study, the average score of health accountability was higher in senior nursing students [33]. This

may be due to the presence or availability of medical students in health care settings.

It is especially important that health care workers be familiar with a healthy lifestyle and serve as a role model for the clients [34]. For this reason, the students of health sciences are expected to be aware of healthy behaviors and act upon them [19]. Some studies reported that the knowledge of medical and health sciences students is higher compared to the other students [26,28]. However, unlike the expectation, the health-promoting behaviors of medical students did not differ significantly from those of the other students. It was observed that if doctors less encourage healthy behaviors in their patients if they do not pursue such behaviors [34-35] and patients are less likely to obey even if the doctors explain these behaviors [36]. Given that the average health-promoting lifestyle was at a moderate level, interventions need to be designed and implemented so that to improve the health-promoting lifestyle, especially in medical sciences students in the areas of physical activity and nutrition, as a model of healthy behavior for the other people in the community. The findings of this study can help managers and educational planners in designing educational guidebooks to develop health-promoting programs and make universities healthier.

The present study has some limitations. The questionnaires were completed as the self-report. Thus, the obtained information may be biased by social desirability. Accordingly, it is suggested to use tools such as the Marlowe Krone Social Desirability Index [37] in order to control and reduce this bias. Additionally, cross-sectional studies cannot explain the causes and changes of health-promoting behaviors over time. Given the statistically significant differences regarding some demographic variables between medical and non-medical students, not addressed in the present study, it is suggested that future studies evaluate the impact of this difference on the health-promoting lifestyle.

In addition, interventional studies are recommended to be designed and implemented to promote a health-promoting lifestyle in the students. In the present study, smoking and other addictive substances were not considered thus it is recommended to address these issues in future studies as well.

Ethical issues (i.e., plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, and the like) were completely observed by the authors. Moreover, the study was approved by the Ethics Committee of Zanjan University of Medical Sciences, REC (ethic number: 1393.260).

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### Conflict of interest

The authors declare that there is no conflict of interest in writing this article.

### References

- 1- Mirghafourvand M, Baheiraei A, Nedjat S, Mohammadi E, Charandabi SM, Majdzadeh R. A population-based study of health promoting behaviors and their predictors in Iranian women of reproductive age. *Health Promot Int*. 2015; 30(3):586-94.[In Persian]
- 2- Mo P.K.H, Winnie W.S.M. The Influence of Health Promoting Practices on the Quality of Life of Community Adults in Hong Kong. *Soc Indic Res*. 2010; 95: 503-17.
- 3- Walker SN, Sechrist KR, Pender NJ. The Health-Promoting Lifestyle Profile: development and psychometric characteristics. *Nurs Res*. 1987; 36: 76-81.
- 4- Park J . Principles of health services. ShojaeeTehrani H .(Persian translator). 1<sup>st</sup> ed. Tehran: Samat Publication; 2004. [In Persian]
- 5- Boutayeb A, BoutayebS.The burden of non-communicable diseases in developing countries. *Int J Equity Health*. 2005; 4(1): 1-9.
- 6- Eyre H, Kahn R, Robertson RM .Preventing cancer, cardiovascular disease, and diabetes: a common agenda for the American Cancer Society, the American Diabetes Association, and the American Heart Association. *Diabetes Care*. 2004; 27(7): 1812-24.
- 7- Ignarro LJ, Balestrieri ML, Napoli C. Nutrition, physical activity, and cardiovascular disease: an update. *Cardiovasc Res*. 2007; 73: 326-40.
- 8- World Health Organization (WHO). Global action plan for the prevention and control of noncommunicable diseases 2013-2020. Geneva: World Health Organization. 2003.
- 9- World Health Organization (WHO). Milestones in health promotion: statements from global conferences. Geneva: World Health Organization.2009.
- 10- MacLean L, Booza J, BalonR.The Impact of Medical School on Student Mental Health. *Acad Psychiatry*. 2016; 40: 89-91.
- 11- MajraJ. Do our medical colleges inculcate health-promoting lifestyle among medical students: a pilot study from two medical colleges from southern India. *Int J Prev Med*. 2013; 4(4): 425-29.
- 12- Mooney B, Timmins F, Byrne G, CorroonAM. Nursing students' attitudes to health promotion to: implications for teaching practice. *Nurse Educ Today*. 2011; 31(8): 841-48.
- 13- Mak YW, Kao AHF, Tam LWY, Tse VWC, Tse DTH, Leung DYP. Health-promoting lifestyle and quality of life among Chinese nursing students. *Prim Health Care Res Dev*. 2018; 19(6): 629-36.
- 14- Alpar SE, Senturan L, Karabacak U, SabuncuN. Change in the health promoting lifestyle behaviour of Turkish University nursing students from beginning to end of nurse training. *Nurse EducPract*. 2008; 8(6): 382-88.
- 15- Frank E, Segura C, Shen H, Oberg E.Predictors of Canadian physicians' prevention counseling practices. *Can J Public Health*. 2010; 101: 390-95.
- 16- Howe M, Leidel A, Krishnan SM, Weber A, Rubenfire M, Jackson EA. Patient-related diet and exercise counseling: do providers' own lifestyle habits matter? *PrevCardiol*. 2010; 13(4): 180-85.
- 17- Lobelo F, Duperly J, Frank E. Physical activity habits of doctors and medical students influence their counselling practices. *Br J Sports Med* .2009; 43(2): 89-92.
- 18- Hui WH. The health-promoting lifestyles of undergraduate nurses in Hong Kong. *J Prof Nurs*. 2007; 18(2): 101-11.
- 19- Can G, Ozdilli K, Erol O, Unsar S, Tulek Z, Savaser S et al.Comparison of the health-

- promoting lifestyles of nursing and non-nursing students in Istanbul, Turkey. *Nurs Health Sci.* 2008; 10(4): 273-80.
- 20- Shaban M, Mehran A, Taghlili F. Relationship between Perception of Health Concept and Health Promoting Behaviors: A Comparative Study among Tehran University Medical and Non-medical Students. *Hayat.* 2007; 13:27-36. [In Persian]
- 21- MohammadiZeidi I, PakpourHajiagha A, MohammadiZeidi B. Reliability and Validity of Persian Version of the Health-Promoting Lifestyle Profile. *J Mazandaran Univ Med Sci.* 2012; 21(1): 102-13.[In Persian].
- 22- Baradaran-Rezaei M, Shirvani M, Fathi-AzarE. Comparative study of the physical activity among students medical and non-medical universities of Tabriz. *Iran J Nurs.* 2008; 21: 77-87. [In Persian]
- 23- Norhaini M, Norazlan Shah H, FazlylaNadya MF, Mashita M, Mohamad MG. Health risk factors and health promoting behaviour among medical and non-medical students. *Malaysian J Public Health Med.* 2014; 14(2): 1-11. [In Persian]
- 24- Veiga O L, Gómez-Martínez S, Martínez-Gómez D, et al. Physical activity as a preventive measure against overweight, obesity, infections, allergies and cardiovascular disease risk factors in adolescents: AFINOS Study protocol. *BMC Public Health.* 2009; 9: 475: 1-11
- 25- Peltzer K, Pengpid S, Yung TK, Aounallah-Skhiri H, Rehman R. Comparison of health risk behavior, awareness, and health benefit beliefs of healthscience and non-health science students: An international study. *Nurs Health Sci.* 2016; 18(2): 180-87.
- 26- Sajwani RA, Shoukat S, Raza R, Shiekh MM, Rashid Q, Siddique MS. Knowledge and practice of healthy lifestyle and dietary habits in medical and non-medical students of Karachi, Pakistan. *J Pak Med Assoc.* 2009; 59(9): 650-55.
- 27- Tirodimos I, Georgouvia I, Savvala TN, Karanika E, Noukari D. Healthy lifestyle habits among Greek university students: differences by sex and faculty of study. *East Mediterr Health J.* 2009; 15: 722-28.
- 28- Almutairi KM, Alonazi WB, Vinluan JM, et al. Health promoting lifestyle of university students in Saudi Arabia: a cross-sectional assessment. *BMC Public Health.* 2018; 18: 1093-103.
- 29- Wei CN, Harada K, Ueda K, Fukumoto K, Minamoto K, Ueda A. Assessment of health-promoting lifestyle profile in Japanese university students. *Environ Health PrevMed.* 2012; 17: 222-27.
- 30- Mehri A, Solhi M, Garmaroudi G, Nadrian H, Sigaldehy SS. Health promoting lifestyle and its determinants among university students in Sabzevar, Iran. *Int J Prev Med.* 2016; 14: 65. [In Persian]
- 31- Bhuiyan M, Sheng J.W.K, Ghazali F.H.B, Al mughasbiI F.G.A, Arnous M, Maziz M.N.H. Health-promoting lifestyle habits among preclinical medical students. *P J M H S.* 2017; 11:490-95.
- 32- Polat Ü, Özen Ş, Kahraman BB, BostanoğluH. Factors Affecting Health-Promoting Behaviors in Nursing Students at a University in Turkey. *J TranscultNurs.* 2016; 27:413-19.
- 33- Frank E, Rothenberg R, Lewis C, BelodoffBF. Correlates of physicians' prevention-related practices: Findings from the women physicians' health study. *Arch Fam Med.* 2000; 9:359-67.
- 34- Voltmer E, Frank E, Spahn C. Personal Health Practices and Patient Counseling of German Physicians in Private Practice. *Hindawi Publishing Corporation ISRN Epidemiology.* 2013:1-10
- 35- Frank E, Breyan J, ElonL. Physician disclosure of healthy personal behaviors improves credibility and ability to motivate. *Arch FamMed.* 2000; 9:287-90.
- 36- Orow G, Kinmonth A L, Sanderson S, Sutton S. Effectiveness of physical activity promotion based in primary care: systematic review and meta-analysis of randomised controlled trials. *BMJ* 2012; 344:1-17.