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## RESEARCH ARTICLE

### Investigation of Health-Promoting Lifestyle and its Determinants Among Students of Medical Sciences in Iran

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#### Abstract:

#### Background:

A person's lifestyle plays an important role in his health. This study aimed at determining the health-promoting lifestyle and its related factors among the medical students of Shahrood Islamic Azad University.

#### Methods:

In this cross-sectional study, a total of 500 students of medical sciences were selected using the stratified random sampling method and they completed the health-promoting lifestyle, self-efficacy, and well-being questionnaires. The collected data were entered into SPSS 16 and were analyzed with a T-test, Chi-square, Pearson correlation coefficient, and a backward regression model.

#### Results:

The mean age of the students was  $22.25 \pm 1.45$  and 65% of the participants were female. The mean scores of health-promoting lifestyle, well-being, and self-efficacy were  $134.1 \pm 23.85$ ,  $14.41 \pm 5.09$ , and  $41.67 \pm 8.05$ , respectively. Among the students, 32.8% had a health disorder and only 2.2% had a high self-efficacy. Well-being and self-efficacy were statistically correlated with the health-promoting lifestyle ( $p < 0.001$ ). The results showed that out of 17 independent variables, only 4 variables of educational level, academic year, marital status, well-being were the best predictors of health-promoting lifestyle.

#### Conclusion:

More than 90% of students had low self-efficacy and more than 30% of them did not have good well-being. Moreover, the health-promoting lifestyle of students was moderate. More attention to the above areas, such as well-being status and applying required interventions, can help to improve the situation.

**Keywords:** Health, Healthy lifestyle, Self efficacy, Exercise, Students, Medical.

#### Article History

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## 1. INTRODUCTION

In any society, university students, as the future-building generation of the country, receive a major part of community planning and budgeting. Moreover, students' academic achievement and success are one of the important

characteristics in evaluating higher education, and all countries attempt to achieve this goal [1]. In other words, society and especially higher education are interested in and concerned about the individual's destiny, his or her successful growth and development, and position in society [2]. A multitude of factors, including a health-promoting lifestyle, a sense of self-efficacy, and well-being, play a role in this development [3].

Studying at a university is a time when students are

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increasingly making independent decisions about their lifestyle and health performance [4]. A healthy lifestyle includes actions that are taken to improve well-being and prevent diseases [5]. By choosing a lifestyle that promotes their health and prevents diseases, people can do activities, such as sticking to a healthy diet, sleeping and physical activity, exercising, maintaining body weight, avoiding smoking and alcohol, and protecting against diseases. In contrast, an unhealthy lifestyle underlies many high-risk behaviors, such as unhealthy eating habits, physical inactivity, tobacco and alcohol use, and high-risk sexual behaviors, all of which lead to a variety of chronic diseases and disorders [6, 7].

The findings of a study in China showed that a small number of students had a healthy lifestyle [8]. However, the results of some other studies indicated a moderate lifestyle among medical students [4, 9 - 19]. But the results of some studies in Iran showed that medical students do not have a healthy and desirable lifestyle [20, 21].

Walker and colleagues define health-promoting lifestyle as including six dimensions of health responsibility, nutrition (having a food pattern and food choice), physical activity (exercise and following a regular work-out program), stress management (identifying stress sources and taking actions to manage it), interpersonal relationships (maintaining close relationships), and spiritual growth. They believe a person's lifestyle impacts his self-efficacy and well-being [4, 22 - 25]. An unhealthy lifestyle during young age is strongly associated with disability and health problems in adulthood, and if unhealthy behaviors are detected and altered in the early stages, many adulthood health risk factors can be prevented and, hence the efficacy of the person will increase [4].

According to Bandura and Adams, self-efficacy is a person's judgment of his or her skills and abilities to perform tasks required in special situations [26]. Self-efficacy reduces tensions in the face of life's stressful events and indirectly influences a person's life satisfaction and well-being, and enhances his or her' lifestyle and brings about future career success [27].

Academic self-efficacy also refers to a person's belief in his or her ability to perform a task successfully, and it is considered as a determining factor in the success of students at the university [28]. Evidence suggests that self-efficacious students are more likely to attempt to understand the course materials; they think more deeply about the materials and the coursework and plan to do their tasks, and this factor plays a role in their current and future success [29]. People with high self-efficacy remove barriers by improving their self-management and perseverance skills and are more resilient to problems, therefore, having a higher self-efficacy can help maintain health-promoting behaviors. People with low self-efficacy, upon confronting problems, are easily persuaded that their actions are futile and easily give up [30]. Although the results of some studies indicate high self-efficacy in participants [4, 24, 30], the results of a study in Tehran showed that university students had a low sense of self-efficacy [31].

Since, during the college years, students are exposed to many well-being and high-risk lifestyle behaviors [8], it is

necessary to study the health-promoting lifestyle and its determinants so that their well-being can be improved. Therefore, the present study aimed at determining the status of a health-promoting lifestyle and its related factors among the medical students of Shahroud Islamic Azad University.

## 2. METHODS

In this cross-sectional study, a total of 500 students of medical sciences (medicine, nursing, anesthesiology, and laboratory sciences) of Islamic Azad University of Shahroud (a non-governmental university) were randomly selected using a stratified sampling procedure, and health-promoting lifestyle [22, 32], well-being [33] and self-efficacy [34] questionnaires were administered to them in the year 2018. First, the list of students in each field in different semesters was taken from the teaching affairs office, and then 30% of the students in each field were randomly selected in each academic semester. The selected students completed the questionnaires and the collected data were analyzed.

### 2.1. Ethical Consideration

Prior to the commencement of the study, the proposal had been reviewed and approved by the Ethics Committee of Medical Sciences Research at the Islamic Azad University of Shahroud.

### 2.2. Instruments

The questionnaires were divided into two sections: demographic information, including 15 items about age, gender, marital status, education, the field of study, semester, student's local or non-local status or locality, student's current residence, family's economic status, economic activity along with education, parental residence, number of family members, father's job, and specific questionnaires included:

A) A fifty-two item health-promoting lifestyle questionnaire [22, 32] which has 6 domains of nutrition (8 items), physical activity (8 items), health responsibility (13 items), stress management (5 items), interpersonal relationships (8 items), and spiritual growth (10 items) was used. The response to each item ranges on a four-point Likert scale from 1 (never) to 4 (always), and the total score on the questionnaire can range from the minimum 52 to the maximum 208. The scores obtained on each subscale are divided into 3 categories. On each subscale as well as on the whole questionnaire, if respondents' scores are equal to or less than 49% of the maximum score, they were interpreted as poor on that subscale, while a total score of 50% to 74% indicates they are moderate and scores equal to or exceeding 75% are indicative of a good condition. The reliability coefficients of 0.82 and 0.929 were reported for the questionnaire in Iran and in Shahroud, respectively [4, 25, 35].

B) Sherer's Self-Efficacy Scale [34] includes 17 five-point items on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Items 1, 13, 8, 9, 3, and 15 are scored normally, but other items are scored in reverse. A higher score indicates a higher level of self-efficacy and a lower score indicates lower self-efficacy. This scale has a maximum score of 85 and a minimum score of 17. A score of 58 or higher

indicates high self-efficacy and a score of less than 58 indicates low self-efficacy. The reliability of the scale administered to students was reported to be 0.83 [4].

C) World Health Organization’s Well-being Index contains 5 items. The response to each can range from 0 to 5, and the total score can range between 0 and 25. A score of less than 13 indicates a well-being disorder and a score of 13 or above indicates a good well-being status. The reliability of this tool among students was reported to be 0.94 [33].

**2.3. Statistical Analysis**

The collected data were analyzed using SPSS16 through ANOVA and Chi-square, t-test, Pearson correlation coefficient, and a backward regression model at the significance level of 0.05.

**3. RESULTS**

The mean age of the students was 22.25 ± 1.45 and 65% of

the participants were female. Among them, 32.8% had a well-being disorder; 2.2% had high self-efficacy, and the mean score of the health-promoting lifestyle was 134.01± 23.85, which is moderate, and the mean score of physical activity was 16.8±5.07, which is poor. The mean score of well-being was 14.41 ± 5.09 and the mean score of self-efficacy was 41.67±8.05.

The findings showed no significant relationships between gender, the locality of the student, the family's economic status, the parents' place of residence, the student's economic activity, the parental life status, the student's field of study, academic semester and year, with self-efficacy and well-being. But there was a significant relationship between marital status and parental place of residence with self-efficacy. Moreover, the relationships of well-being with economic activity along with education and student academic year were significant. Also, there was a significant relationship between health-promoting lifestyle status and field of study (Table 1).

**Table 1. Relationship between some demographic variables with self-efficacy, well-being, and health-promoting lifestyle.**

Variables	-	Self-efficacy n(%)		p	Well-being n(%)		p	Health-Promoting Lifestyle n(%)			p
		Low n=489	High n=11		Normal n=336	Abnormal n=164		Poor n=51	Moderate n=368	Good n=81	
Gender	Male	173(98.9)	2(1.1)	0.24	122(69.7)	53(30.3)	0.38	15(8.6)	132(75.4)	28(16)	0.66
	Female	216(97.2)	9(2.8)		214(65.8)	111(34.2)		36(11.1)	236(72.6)	53(16.3)	
Field of study	anesthesiology	84(97.7)	2(2.3)	0.43	62(72.1)	24(27.9)	0.63	4(4.7)	77(89.5)	5(5.8)	0.001
	Laboratory sciences	90(95.7)	4(4.3)		65(69.1)	29(30.9)		8(8.5)	69(73.4)	17(18.1)	
	Medicine	211(98.1)	4(1.9)		139(64.7)	76(35.3)		28(13)	160(74.4)	27(12.6)	
	Nursing	104(99)	1(1)		70(66.7)	35(33.3)		11(10.5)	62(59)	32(30.5)	
Level of education	B.Sc.	279(97.6)	7(2.4)	0.82	199(69.6)	87(30.4)	0.29	22(7.7)	210(73.4)	54(18.9)	0.12
	G.P.	210(98.13)	4(1.87)		137(64.02)	77(35.98)		29(13.55)	158(73.83)	27(12.62)	
Marital status	Single	403(98.5)	6(1.5)	0.02	271(66.3)	138(33.7)	0.34	41(10)	298(72.9)	70(17.1)	0.50
	Married	86(94.5)	5(5.5)		65(71.4)	26(28.6)		10(11)	70(76.9)	11(12.1)	
Locality	Yes	209(97.2)	6(2.8)	0.43	151(70.2)	64(29.8)	0.21	17(7.9)	159(74)	39(18.1)	0.24
	No	280(98.2)	5(1.8)		185(64.9)	100(35.1)		34(11.9)	209(73.3)	42(14.7)	
Student’s current place of residence	Dormitory	132(97.8)	3(2.2)	0.44	93(68.9)	42(31.1)	0.50	15(11.1)	101(74.8)	19(14.1)	0.66
	Lodging	190(99)	2(1)		122(63.5)	70(36.5)		24(12.5)	138(71.9)	30(15.6)	
	Parental house	147(96.7)	5(3.3)		105(69.1)	47(30.9)		11(7.2)	113(74.3)	28(18.4)	
	Relative’s house	20(95.2)	1(4.8)		16(76.2)	5(23.8)		1(4.8)	16(76.2)	4(19)	
Family Economic status (\$)	≤ 50	4(80)	1(20)	0.05	2(40)	3(60)	0.18	0(0)	4(80)	1(20)	0.37
	50-100	5(100)	0(0)		5(100)	0(0)		0(0)	5(100)	0(0)	
	100-150	11(100)	0(0)		6(54.5)	5(45.5)		0(0)	11(100)	0(0)	
	≥ 150	469(97.9)	10(2.1)		323(67.4)	156(32.6)		51(10.6)	348(72.7)	80(16.7)	
Economic activity along with education	Yes	113(100)	0(0)	0.07	86(76.1)	27(23.9)	0.02	6(5.3)	85(75.2)	22(19.5)	0.11
	No	376(97.2)	11(2.8)		250(64.6)	137(35.4)		45(11.6)	283(73.1)	59(15.2)	
Parental place of residence	City	403(99)	4(1)	0.001	270(66.3)	137(33.7)	0.39	41(10.1)	304(74.7)	62(15.2)	0.44
	Village	86(92.5)	7(7.5)		66(71)	27(29)		10(10.8)	64(68.8)	19(20.4)	
Semester	1-4	58(96.7)	2(3.3)	0.63	28(46.7)	32(53.3)	0.001	10(16.7)	45(75)	5(8.3)	0.07
	≥ 5	431(98)	9(2)		308()	132()		41(9.30)	323(73.40)	76(17.3)	

**Table 2. Correlation matrix (r coefficient) of the main variables.**

Variables	Well-being	Health-Promoting Lifestyle	Self-efficacy
Well-being	1	-	-
Health-Promoting Lifestyle	0.522*	1	-
Self-efficacy	-0.252*	-0.387*	1

\*Correlation is significant at the 0.001 level

The linear correlations between well-being, self-efficacy, and health-promoting lifestyle scores were significant ( $P < 0.001$ ). (Table 2).

Comparison of mean scores of quantitative variables in terms of well-being, health-promoting lifestyle, and self-efficacy categories are shown in Table 2. Results showed significant differences between self-efficacy, overall health-promoting lifestyle, spiritual growth, health responsibility, interpersonal relationships, stress management, nutrition and physical activity, and semester scores within two well-being categories ( $P < 0.05$ ) (Table 3). Spiritual growth scores were significantly different between self-efficacy categories. Furthermore, mean scores of self-efficacy, well-being, spiritual growth, health responsibility, interpersonal relationships, stress management, nutrition, physical activity, and age were significant in three categories of health-promoting lifestyle ( $P \leq 0.05$ ) (Table 3).

In order to examine the simultaneous relationships of age, gender, number of family members, the rank of birth, field of study, level of education, marital status, locality, place of residence, family economic status, student economic activity, student's parental residence, father's job, parental life status, well-being, the student's academic year, and self-efficacy with the health-promoting lifestyle, a backward linear regression

model was run. The results showed that out of 17 independent variables, only 4 variables of academic level, marital status, academic year, and well-being status were the best predictors of the health-promoting lifestyle scores. Moreover, significant relationships were observed between the health-promoting lifestyle and the academic level ( $p < 0.001$ ) and well-being ( $p < 0.001$ ). It can be said that if the well-being scores of students increase by one unit, the mean score of their health-promoting lifestyle will increase by 2.38 units. The mean score of health-promoting lifestyle for undergraduate students was 6.38 units higher than that for students of medicine. The regression coefficients, 95% confidence intervals, and p-values are displayed in Table 4.

#### 4. DISCUSSION

About one-third (32.8%) of the students had a well-being disorder. In a study of students at Shahroud University of Medical Sciences, 34% of students had a well-being disorder that is slightly higher than the one in the present study [4]. The results of studies in Yazd and Zahedan showed that 54.4% and 38.8% of students had poor well-being, respectively, which is more than the present results [36, 37]. In another study in Tehran, 28.6% of students showed poor well-being, which is lower than the results of this study [38].

**Table 3. Relationship between some variables with self-efficacy, well-being, and health-promoting lifestyle.**

Variables	Self-efficacy Mean±SD		p	Well-being Mean±SD		p	Health-Promoting Lifestyle Mean±SD			p
	Low	High		Normal	Abnormal		Poor	Moderate	Good	
Age (y)	22.25±1.46	22±1.48	0.57	22/29±1/45	15/22±1/48	0.37	22.1±1.6	22.35±1.5	21.9±1.25	0.02
Semester	7.43±2.77	7.45±2.66	0.98	7/66±2/72	6/96±2/80	0.008	6.9±2.8	7.6±2.8	7.2±2.4	0.21
Well-being	14.46±5.05	12.1±6.64	0.13	-	-	-	8.7±4.1	14.1±4.5	19.1±3.7	0.001
Health-Promoting Lifestyle	134.3±23.77	121.9±25.58	0.09	140.8±22.5	120.06±22.5	0.001	-	-	-	-
Spiritual growth	28.9±5.95	25.18±5.96	0.04	30.4±5.56	20.55±5.43	0.001	20.55±4	28.2±4.5	36.75±2.9	0.001
Health responsibility	32.78±7.82	29.64±6.52	0.19	34.55±7.40	28.95±7.30	0.001	21.5±3.9	31.70±5.3	44.0±4.65	0.001
Interpersonal relations	22.82±4.40	20.82±5.42	0.14	23.83±4.20	20.6±4.06	0.001	16.3±2.8	22.5±3.4	28.1±2.7	0.001
Stress management	12.49±3.16	11.73±3.26	0.43	13.2±3.10	11.05±2.80	0.001	8.6±1.55	12.2±2.6	6.3±2.3	0.001
Physical activity	16.81±5.07	15.82±5.135	0.52	17.70±5.16	14.96±4.35	0.001	11.8±3.3	16.1±4.1	23.0±4.24	0.001
Nutritional habits	20.49±4.30	18.73±4.24	0.18	21.2±4/30	18.90±3.80	0.001	15.9±2.8	20.0±3.6	25.43±3.55	0.001
Self-efficacy	-	-	-	40.6±8.30	43.80±7.10	0.001	44.7±7.8	42.6±7.4	35.4±7.9	0.001

**Table 4. Backward regression model for factors related to students' lifestyle.**

Variables	$\beta$	P-value	95% confidence interval for $\beta$
Educational level	-6.87	<0.001	(-10.69, -3.06)
Marital status	-4.59	0.052	(-9.23, 0.04)

(Table 4) contd....

Variables	$\beta$	P-value	95% confidence interval for $\beta$
Semesters	5.1	0.08	(-0.69, 10.89)
Well-being	2.38	<0.001	(2.03, 2.73)
Constant	110.42	<0.001	(100.46, 120.38)

Moreover, the mean score of well-being was  $14.41 \pm 5.09$ , which indicated the normal state of health, and it is consistent with the results of a previous study conducted in Shahroud as well as some other studies [4, 39, 40]. However, it is not consistent with the results of the study conducted in Kermanshah [30]. It seems that the reasons for the similarity and differences between the results are due to geographical and cultural differences and the studied environments. However, students seem to suffer from some degrees of well-being. Since students are the future makers of the country and should have the best social performance, attempts should be made, and the cooperation of experts, consultants, and professors should be sought to decrease their well-being problems so that public health problems are reduced.

Only a small percentage (2.2%) of students had high self-efficacy. In other studies at Shahroud University of Medical Sciences (a public university), 68% of students had self-efficacy that did not match the present study [4, 24]. Perhaps one of the reasons for this discrepancy is the private and public nature of the universities studied.

The mean score of health-promoting lifestyle indicated that students had a moderate lifestyle, which is consistent with the results of some studies [4, 11 - 13, 15 - 19]. Some studies have reported poor lifestyles among medical students, which is not consistent with the results of this study (20, 21). The obtained score of the health-promoting lifestyle indicates a moderate lifestyle that is partly acceptable. However, more precise planning is needed to improve the current situation of students.

The mean score of physical activity was  $16.8 \pm 5.07$ , which was low. The findings of this study are consistent with the results of some studies conducted in Iran and the world [4, 11 - 14, 16, 41] but not consistent with some other studies [10, 15, 18, 19]. It seems that taking necessary measures to inform students, creating opportunities, and allocating appropriate space and facilities are required to encourage medical students to put physical activity in the daily routines.

The mean score of the feeling of self-efficacy was  $41.67 \pm 8.05$ , which indicates a low self-efficacy. The findings of this study are consistent with the results of some studies [31, 42] but inconsistent with some other studies [4, 24, 30]. It seems that teaching the skills needed to empower students and increasing their sense of self-efficacy can improve the situation.

There was no significant relationship between gender and self-efficacy, which is consistent with the results of some studies [24, 30]. Some studies have suggested a link between gender and self-efficacy that is not consistent with the present results [4, 42]. The results indicate the need to pay more attention to both genders in educational planning.

There was no significant relationship between the field of study, locality of the student, the place of residence, the economic status of the family, the semester and the student's

academic year, and the degree of self-efficacy. The findings of this study are consistent with the results of a previous study conducted in Shahroud [4]. Some of the findings of this study are inconsistent with the results of a study conducted in Mashhad [42]. Perhaps one of the reasons for the difference in study environments.

Furthermore, a significant relationship was observed between health-promoting lifestyle and self-efficacy, well-being, and age. The findings of this study are consistent with some of the results of studies conducted in Iran and the world [4, 12 - 14, 19, 24, 38, 41]. Due to the similarities in the relationship between these variables in different studies, it is necessary to pay more attention to the issue of self-efficacy and the well-being of students of medical sciences in Islamic Azad University.

Results also showed a significant relationship between health-promoting lifestyle and age. The findings of this study are consistent with the results of some studies conducted in Iran and the world [4, 14, 19, 24, 38, 41]. However, it is not consistent with the results of some studies [10, 16, 18]. Perhaps one of the reasons for the discrepancy is due to the heterogeneity of the ages of the people studied.

The relationship between health-promoting lifestyle and field of study was also found significant. This is consistent with the results of studies conducted in Tehran and Shahroud [4, 16]. However, there was no significant relationship between the health-promoting lifestyle and gender, which is consistent with the findings of some studies [12, 14, 16, 18, 19, 43, 44] and inconsistent with the findings of some others [4, 10, 13].

There was no significant relationship between health-promoting lifestyle and marital status. It is not consistent with the results of some studies [10, 12, 18, 45] but is consistent with the results of a previous study conducted in Shahroud [8]; neither was there a significant relationship between health-promoting lifestyle and economic status, which is not consistent with the results of some studies [10, 12, 44] but is in line with some others [4, 14].

Good study design and large sample size and use of standard questionnaires were the strengths of this study. The present study also had some limitations, including the cross-sectional study, data collection through a questionnaire which allows for social desirability, and a focus only on medical student and excluding students of other majors.

## CONCLUSION

More than 90% of students had low self-efficacy and more than 30 percent of them did not have satisfactory well-being. Moreover, the health-promoting lifestyle of students was moderate. Students with low capacity of well-being must be referred for psychological counseling. Emphasizing lifestyle influencing factors in curricula, paying more attention, and making the required interventions in the above areas can help

improve students' health-promoting lifestyles.

#### ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Prior to the commencement of the study, the proposal had been reviewed and approved by the Ethics Committee of Medical Sciences Research at the Islamic Azad University of Shahroud, Iran.

#### HUMAN AND ANIMAL RIGHTS

Not applicable.

#### CONSENT FOR PUBLICATION

Informed consent was obtained from all participants involved in the research.

#### AVAILABILITY OF DATA AND MATERIALS

The raw data and materials used to support the findings of this study are available from the corresponding author [M.R.] upon request.

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#### CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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