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Website: www.jehp.net
DOI: 10.4103/jehp.jehp_963_22

# Health-promoting lifestyle and its determining factors among students of public and private universities in Iran

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Received: 06-07-2022  
Accepted: 21-09-2022  
Published: 29-07-2023

## Abstract:

**BACKGROUND:** Health-promoting lifestyle is one of the fundamental health-related components. The aim of this study was to determine the status of the health-promoting lifestyle and its determining factors among students of public and private medical universities.

**MATERIALS AND METHODS:** In this cross-sectional study conducted in 2018, 1000 students from different public and private universities of medical sciences were selected by a multi-stage, stratified random sampling procedure and were studied using health-promoting lifestyle, self-efficacy, and well-being questionnaires. Data were analyzed using t-test, Chi-square, Pearson's correlation coefficient, and backward regression model.

**RESULTS:** The health-promoting lifestyle was relatively acceptable in 775 people (77.5%); 649 (64.9%) had low self-efficacy, and 560 students (56%) had abnormal health conditions. The mean scores of health-promoting lifestyle, self-efficacy, and well-being in all students were  $130.74 \pm 22.14$ ,  $51.19 \pm 12.66$ , and  $15.22 \pm 5.43$ , respectively. There were statistically significant differences between the mean scores of most aspects of health-promoting lifestyle, self-efficacy, and well-being in public and private universities. There was a statistically significant relationship between well-being ( $r = 0.08$ ,  $P = 0.02$ ) and self-efficacy ( $r = -0.19$ ,  $P < 0.001$ ) with health-promoting lifestyle.

**CONCLUSION:** Students' well-being, self-efficacy, and physical activities of students were not at an acceptable level. Moreover, the health-promoting lifestyle of students was moderate. Implementing of health-related educational, developmental, and psycho-social programs for promotion and encouraging students to promote healthy behaviors is necessary.

## Keywords:

Health-promoting lifestyle, nutrition, physical activity, self-efficacy, stress management, well-being

## Introduction

Lifestyle refers to the health-impacting ways of people's lives<sup>[1]</sup>, and it can be considered healthy or unhealthy depending on the choice of behaviors.<sup>[2]</sup> The health-promoting lifestyle refers to actions that people take to improve and promote their health, and it is one of the most important determinants of health status.<sup>[1,3,4]</sup> In fact, this type of lifestyle is characterized by health-promoting behaviors that in part form a healthy lifestyle.<sup>[5]</sup> Health-promoting

behaviors are those techniques and ideas that people use to prevent disease, maintain their health, lead a happy life, and improve the quality of their life and.<sup>[6-8]</sup>

There is ample evidence of the dramatic and long-term impact of lifestyle on disease and mortality. Lifestyle not only improves health but also reduces the negative effects of chronic and non-communicable diseases.<sup>[4,8-10]</sup> Non-communicable diseases are a major cause of death worldwide, especially in developing countries. The World Health Organization states that 60% of afflictions

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**How to cite this article:** Amiri M, Raei M, Sadeghi E, Keikavoosi-Arani L, Khosravi A. Health-promoting lifestyle and its determining factors among students of public and private universities in Iran. J Edu Health Promot 2023;12:239.

by and deaths from non-communicable diseases are related to behavioral factors and lifestyle.<sup>[11]</sup> According to the World Health Organization, four of the most prominent non-communicable diseases (cardiovascular disease, cancer, chronic lung disease, and diabetes) are largely due to the four factors of smoking, unhealthy diet, inadequate physical activity, and alcohol use which are results of economic problems, urbanization, and the twenty-first-century lifestyle changes.<sup>[12]</sup>

Moreover, one of the main strategies for health promotion is to encourage people to promote healthy behaviors and adopt a healthy lifestyle to prevent non-communicable and chronic diseases,<sup>[13,14]</sup> and this is one of the international priorities and major challenges for healthcare providers in recent and even future decades.<sup>[15]</sup> The health-promoting lifestyle has six dimensions of spiritual growth and self-fulfillment, health responsibility, interpersonal relationships, stress management, physical activity, and nutrition.<sup>[16]</sup> This lifestyle, in addition to maintaining and strengthening the level of health and well-being, causes a sense of self-efficacy, satisfaction, individual self-fulfillment, and organizational success.<sup>[16,17]</sup>

To be more successful, healthcare organizations, like other organizations, need employees who have good well-being and high self-efficacy. Self-efficacy is a constructive ability by which human cognitive, social, emotional, and behavioral skills are effectively organized to achieve different goals and is an important factor for the successful performance of the individual and the basic skills needed to do things.<sup>[18,19]</sup>

Medical students have a significant role in educating community members, patients, and in improving their lifestyle in various fields and promoting the health of the community. Therefore, they should have a healthy lifestyle and a high sense of self-efficacy and well-being. Some studies showed poor<sup>[20,21]</sup> and moderate<sup>[1,2,4-6,8,9,22-30]</sup> health-promoting lifestyles among these students. Studies also showed low,<sup>[4]</sup> moderate,<sup>[23]</sup> and high<sup>[29]</sup> self-efficacy and normal well-being of this group of students.<sup>[29,31]</sup> Education level of parents, stress control, residential area, and parents' job are among correlate factors of student's lifestyles.<sup>[4]</sup> Studying at university is one of the most critical periods of youth. During this period, students are no longer dependent on their parents and are responsible for managing their own health. Unhealthy behaviors that occur during this period may lead to increased health risks in later life.<sup>[32]</sup> On the other hand, this period of growth is a unique period for gaining information that leads to the prevention of diseases,<sup>[33]</sup> increasing organizational commitment, quality of life, and the promotion of health.<sup>[34]</sup> Therefore, it is very important

to evaluate and be aware of the lifestyle status that promotes students' well-being. Therefore, the present study was conducted to determine the status of the health-promoting lifestyle and the factors affecting it in students of public and private medical universities in Shahroud (northeast Iran). The results of this study can be used for planning of educational, developmental, and psycho-social programs for promotion and encouraging students to promote healthy behaviors.

## Materials and Methods

### Study design and setting

This study is an applied one that was conducted in a cross-sectional method in 2018.

### Study participants and sampling

The study population included all students of medicine, nursing, anesthesia, and laboratory sciences. In this study, 500 public university students and 500 private university students were selected by multi-stage random sampling. First, from the list of students in each field in different semesters, 30% of the classes in each field were selected as clusters. Individuals were free to participate in the study voluntarily. Guest students, graduates, and those who had defended their dissertations were excluded from the study.

### Data collection tool and technique

A health-promoting lifestyle questionnaire was used in this study. The questionnaire consisted of three parts. The first part solicited demographic information and also included the 52-item Health-Promoting Lifestyle Profile (HPLP-II) developed by Walker and colleagues.<sup>[16]</sup> The validity and reliability of the Iranian version of this questionnaire for students have already been validated and confirmed in Iranian population.<sup>[29,35]</sup> The Cronbach's alpha coefficients were 0.82 for the total scale and ranged from 0.64 to 0.91 for subscales, and confirmatory factor analysis showed a six-factor construct with an acceptable fit.<sup>[35]</sup> This questionnaire includes 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) on a four-point Likert scale ranging from 1 (never) to 4 (always), and the total score on the profile ranged between 52 and 208.<sup>[29,35]</sup> The scores obtained in each domain were divided into three categories. For each domain and the whole questionnaire, if individuals had a score equal and less than 49% of the top score, they were included in the poor group; if they achieved a score between 50% and 74% of the total score, they were assigned to the moderate group, and a score equal or above 75% of the total score was used to assign the students to the good group.<sup>[29]</sup>

The second part of the questionnaire consisted of the 17-item Sherer's Self-Efficacy Scale.<sup>[36]</sup> To score the self-efficacy questionnaire, each item was given a score ranging from 1 (strongly disagree) to 5 (strongly agree). For items 1, 13, 8, 9, 3, and 15, the score increased from left to right on the scale (i.e., the items were scored normally), but for other items, the score for each item increased from right to left on the scale (i.e., these items were scored in reverse). Higher scores indicate stronger self-efficacy, and lower scores indicate weaker 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 below 58 indicates a low sense of self-efficacy. The validity and reliability of this questionnaire have already been examined and confirmed.<sup>[29,36]</sup> The third part of the questionnaire was the World Health Organization's Well-being Index. This index contains five items that are scored on a six-point scale which ranges from 0 to 5, and the overall score can range between zero and 25. Scores below 13 indicate a health disorder, and scores equal or above 13 indicate good well-being. The validity and reliability of the Iranian version of the questionnaire have been examined and confirmed in a study by Khosravi.<sup>[37]</sup>

The questionnaires were self-administered to the students, and after completion, they were collected and analyzed using SPSS16 software with ANOVA and Chi-square, t-tests, Pearson's correlation coefficient, and backward regression model at a significant level of 0.05.

### Ethical consideration

This study was approved by the ethics committee of Shahrood University of Medical Sciences and the Islamic Azad University of Shahrood with the code of IR.SHMU.REC.1396.06.

## Results

The results showed that 62% (n = 620) of participants were females; 32.7% (n = 327) were local students, and 58.5% (n = 585) of them were single. Moreover, 20.9% (n = 209) of students were also engaged in economic activities while studying. In addition, 36.7% (n = 367) were fresh persons or sophomores, and others were juniors or higher-level students.

The mean scores of health-promoting lifestyle, self-efficacy, and well-being in all students were  $130.74 \pm 22.14$ ,  $51.19 \pm 12.66$ , and  $15.22 \pm 5.43$ , respectively. The mean scores of different dimensions of health-promoting lifestyles were  $19.53 \pm 4.35$  for nutrition domains,  $16.88 \pm 5.29$  for physical activity,  $32.15 \pm 7.22$  for health responsibility,  $12.11 \pm 2.93$  for stress management,  $22.18 \pm 4.22$  for interpersonal

relationships, and  $28.08 \pm 5.66$  for spiritual growth. The findings showed that 64.9% (n = 649) of students had low self-efficacy and 56% (n = 560) had abnormal well-being status. Health-promoting lifestyle was poor in 10.3% (n = 103), moderate in 77.5% (n = 775), and good in 12.2% (n = 122) of students.

The results of comparing the mean scores of health-promoting lifestyle and its dimensions, sense of self-efficacy, and well-being in public and private universities are presented in Table 1. As indicated in the table, there was a statistically significant difference between the mean scores of most domains of health-promoting lifestyle, self-efficacy, and well-being in public and private universities ( $p \leq 0.05$ ).

The relationships between health-promoting lifestyle and type of university, locality of students, student's current place of residence, semester, type of college, and father's job were significant ( $p \leq 0.05$ ). There were also significant relationships between the levels of self-efficacy and all demographic factors except gender and father's job ( $p \leq 0.05$ ). However, there was only a significant relationship between health levels and the type of university ( $P \leq 0.05$ ) [Table 2].

The relationship between general well-being and self-efficacy was not statistically significant ( $r = -0.03$ ,  $P = 0.25$ ), but there was a statistically significant relationship between general well-being ( $r = 0.08$ ,  $P = 0.02$ ) and self-efficacy ( $r = -0.19$ ,  $P < 0.001$ ) with a health-promoting lifestyle.

**Table 1: Comparison of the mean scores of health-promoting lifestyle dimensions, sense of self-efficacy, and well-being in public and private universities**

Variable/University		Mean±SD	t	P
Spiritual growth	Public	27.35±5.24	-4.12	0.001
	Private	5.97±28.81		
Health responsibility	Public	6.45±31.60	-2.44	0.015
	Private	7.80±32.71		
Interpersonal relations	Public	3.91±21.59	-4.51	0.001
	Private	4.42±22.78		
Stress management	Public	2.64±11.73	-4.03	0.001
	Private	3.17±12.47		
Physical activity	Public	5.50±16.57	-0.63	0.53
	Private	5.07±16.79		
Nutritional habits	Public	4.20±18.63	-6.78	0.001
	Private	4.30±20.45		
Health-promoting lifestyle	Public	19.78±127.47	-4.72	0.001
	Private	23.85±134.01		
Self-efficacy	Public	8.61±60.71	36.14	0.001
	Private	8.05±41.66		
Well-being	Public	5.65±16.03	4.78	0.001
	Private	5.09±14.41		

**Table 2: Relationships between health-promoting lifestyle, self-efficacy, and well-being with some demographic variables**

Variable		Health-promoting lifestyle <i>n</i> (%)			Self-efficacy <i>n</i> (%)		Well-being <i>n</i> (%)	
		Poor	Moderate	Good	Low	High	Abnormal	Normal
University	Public	52 (10.4)	407 (81.4)	41 (8.2)	160 (32)	340 (68)	260 (52)	240 (48)
	Private	51 (10.2)	368 (73.6)	81 (16.2)	489 (97.8)	11 (2.2)	300 (60)	200 (40)
		<i>P</i>			0.001		0.01	
Gender	Male	32 (8.4)	293 (77.1)	55 (14.5)	245 (64.5)	135 (35.5)	224 (58.9)	156 (41.1)
	Female	71 (11.5)	482 (77.7)	67 (10.8)	4.4 (65.2)	216 (34.8)	336 (54.2)	284 (45.8)
		<i>P</i>			0.10		0.83	
Marital status	Single	88 (10.3)	665 (77.5)	105 (12.2)	542 (63.2)	316 (36.8)	482 (56.2)	376 (43.8)
	Married	15 (10.6)	110 (77.5)	17 (12)	107 (75.4)	35 (24.6)	78 (54.9)	64 (45.1)
		<i>P</i>			0.99		0.005	
Locality of students	Local	28 (8.6)	243 (74.3)	56 (17.1)	250 (76.5)	77 (23.5)	192 (58.7)	135 (41.3)
	Non-local	75 (11.1)	532 (79)	66 (9.8)	399 (59.3)	274 (40.7)	368 (54.7)	305 (45.3)
		<i>P</i>			0.003		0.001	
Student's current place of residence	Dormitory	63 (11.6)	439 (80.6)	43 (7.9)	254 (46.6)	291 (53.4)	298 (54.7)	247 (45.3)
	Rental	24 (11)	159 (72.6)	36 (16.4)	203 (92.7)	16 (7.3)	122 (55.7)	97 (44.3)
	Personal	15 (7.1)	157 (74.8)	38 (18.1)	170 (81)	40 (19)	127 (60.5)	83 (39.5)
	Relatives' house	1 (3.8)	20 (76.9)	5 (19.2)	22 (84.6)	4 (15.4)	13 (50)	13 (50)
		<i>P</i>			0.001		0.001	
Economic status (\$)	≤50	3 (10.7)	23 (82.1)	2 (7.1)	14 (50)	14 (50)	10 (35.7)	18 (64.3)
	50-100	1 (3.6)	25 (89.3)	2 (7.1)	12 (42.9)	16 (57.1)	14 (50)	14 (50)
	100-150	9 (15.8)	44 (77.2)	4 (7)	31 (54.4)	26 (45.6)	28 (49.1)	29 (50.9)
	≥150	90 (10.1)	683 (77)	114 (12.9)	592 (66.7)	295 (33.3)	508 (57.3)	379 (42.7)
		<i>P</i>			0.39		0.005	
Academic activity along with education	Yes	11 (5.3)	159 (76.1)	39 (18.7)	149 (71.3)	60 (28.7)	117 (56)	92 (44)
	No	92 (11.6)	616 (77.9)	83 (10.5)	500 (63.2)	291 (36.8)	443 (56)	348 (44)
		<i>P</i>			0.001		0.03	
Parental place of residence	City	88 (10.2)	678 (78.3)	100 (11.5)	545 (62.9)	321 (37.1)	479 (55.3)	387 (44.7)
	Village	15 (11.2)	97 (72.4)	22 (16.4)	104 (77.6)	30 (22.4)	81 (60.4)	53 (39.6)
		<i>P</i>			0.24		0.001	
Level of education	Associate	3 (7.7)	31 (79.5)	5 (12.8)	20 (51.3)	19 (48.7)	22 (56.4)	17 (43.6)
	Bachelor's	54 (9.3)	444 (76.3)	84 (14.4)	374 (64.3)	208 (35.7)	341 (58.6)	241 (41.4)
	Medicine	39 (11.9)	261 (79.8)	27 (8.3)	215 (65.7)	112 (34.3)	171 (52.3)	156 (47.7)
	Master's and higher	7 (13.5)	39 (75)	6 (11.5)	40 (76.9)	12 (23.1)	26 (50)	26 (50)
		<i>P</i>			0.16		0.08	
Semester	1-4	44 (12)	294 (80.1)	29 (7.9)	162 (44.1)	205 (55.9)	200 (54.5)	167 (45.5)
	5 and higher	59 (9.3)	481 (76)	93 (14.7)	487 (76.9)	146 (23.1)	360 (56.9)	273 (43.1)
		<i>P</i>			0.004		0.001	
School	Health	7 (7)	91 (91)	2 (2)	26 (26)	74 (74)	58 (58)	42 (42)
	Allied Medical Sciences	21 (8.2)	208 (80.9)	28 (10.9)	203 (79)	54 (21)	159 (61.9)	98 (38.1)
	Nursing	28 (10.6)	179 (67.5)	58 (21.9)	166 (62.6)	99 (37.4)	148 (55.8)	117 (44.2)
	Medicine	47 (12.4)	297 (78.6)	34 (9)	254 (67.2)	124 (32.8)	195 (51.6)	183 (48.4)
		<i>P</i>			0.001		0.001	
Father's job	Unemployed	2 (10)	15 (75)	3 (15)	12 (60)	8 (40)	9 (45)	11 (55)
	Private	53 (12.6)	331 (78.4)	38 (9)	259 (61.4)	163 (38.6)	250 (59.2)	172 (40.8)
	Public	48 (8.6)	429 (76.9)	81 (14.5)	378 (67.7)	180 (32.3)	301 (53.9)	257 (46.1)
			<i>P</i>			0.04		0.11

The results of fitting the regression model showed that after entering all variables of university type, age, gender, marital status, degree, locality, student's current place of residence, family economic status, economic activity with education, parental residence, semester and year of study,

school, father's job, sense of self-efficacy, and well-being, only the variables of father's job, degree, semester, health, sense of self-efficacy, parental residence, and student's economic activity with education were predictors of health-promoting lifestyle [Table 3].



**Table 3: Linear regression for determining variables influencing health-promoting lifestyle**

Variable	Unstandardized coefficients <i>B</i>	SE	Standardized coefficients <i>Beta</i>	<i>t</i>	<i>P</i>
Gender	-2.61	1.45	-0.06	-1.80	0.07
Father's job	2.88	1.27	0.07	2.26	0.02
Level of education	-4.20	1.08	-0.12	-3.89	0.001
Semester	3.76	1.55	0.08	2.42	0.02
Well-being	0.33	0.13	0.08	2.63	0.009
Self-efficacy	-0.23	0.06	-0.13	-3.66	0.001
Parental place of residence	1.97	0.85	0.08	2.33	0.02
Economic activity with education	-3.89	1.74	-0.07	-2.24	0.03
(Constant)	141.78	7.73	-	18.35	0.001

## Discussion

The results showed that most students (64.9%) had a low sense of self-efficacy. The mean score of self-efficacy was  $51.19 \pm 12.66$ , which indicates a low sense of self-efficacy of the participants. The results of a study at Babol University of Medical Sciences also indicated a low sense of self-efficacy<sup>[4]</sup> among students, which is consistent with the results of our study. Some studies have shown a moderate<sup>[23]</sup> and high<sup>[29]</sup> sense of self-efficacy among students, which is not consistent with the results of the present study. It seems that due to the motivational role of self-efficacy in the performance of individuals, special attention to this issue in public and private universities, and holding necessary workshops to empower students in this domain can improve students' academic performance in the university and future career performance.

The results showed that 56% of students had abnormal health status. In other studies, conducted in Iranian public medical universities, 34% of students and 66.7% of the participants did not have normal health status,<sup>[29,31]</sup> which is not consistent with the present results. The mean health score in this study was  $15.22 \pm 5.43$  which indicated the relatively normal health status of the students. This is consistent with the results of some studies.<sup>[23,29,31]</sup> Since the lack of perfect health can affect the optimal provision of a service and proper and quality performance, it is necessary for the educational authorities in the studied universities to pay very serious attention to this issue.

The health-promoting lifestyle of the students was moderate. Some studies have reported a poor level of health-promoting lifestyle among the students,<sup>[20,21]</sup> which is not consistent with the results of this study. The moderate level of students' health-promoting lifestyle in the present study is consistent with the results of some

studies conducted in Iran and the world.<sup>[1,2,4-6,8,9,22-30]</sup> Given the direct impact of some variables in this study including well-being, sense of self-efficacy, physical activity, stress management, and nutrition on health-promoting lifestyle, it seems that interventions in these areas can improve the lifestyle of the students.

The highest scores in the domains of health-promoting lifestyle were respectively obtained by students in spiritual growth, interpersonal relationships, health responsibility, nutrition, stress management, and the lowest score belonged to physical activity. These findings are consistent with the results of some studies conducted in Iran and the world,<sup>[4,5,13,23,29]</sup> but they are not in line with the results of some other studies.<sup>[8]</sup> In studies in South Korea and Hong Kong, the highest score belonged to spiritual growth and the lowest score was in health responsibility followed by physical activity, which is consistent with some of the results of the present study.<sup>[22,30]</sup> The results of another study among nursing students at Hong Kong universities showed that the highest score was in interpersonal relationships and the lowest score was in physical activity, which is consistent with some of our results.<sup>[1]</sup> In another study in Saudi Arabia, the highest score belonged to nutrition and the lowest score belonged to physical activity, the latter of which is consistent with the results of our study.<sup>[2]</sup> The differences in the results seem to stem from geographical and cultural differences in the studied environments. However, taking necessary measures to inform students of the benefits of exercise and creating the necessary opportunities for sports exercises in universities and dormitories and facilitate access to these facilities as well as taking intervention measures in stress management and nutrition can improve the well-being and lifestyle of the students in the studied universities.

There was a significant relationship between the levels of health-promoting lifestyle and the type of university, locality of students, students' current place of residence, semester, school, and father's job. But no significant relationship was observed with age, gender, marital status, educational level, family economic status, economic activity along with education, and parents' place of residence, which is consistent with a large part of the results of a study by Amiri and colleagues (except age, gender, and level of education).<sup>[29]</sup> In another study of dental students in Babol in Iran, a significant relationship was observed between the health-promoting lifestyle and the students' current place of residence, which is consistent with some of our results.<sup>[4]</sup> In a study in southern Iran, there was only a relationship between health-promoting lifestyle and gender, and there was no relationship with education level, years of study, marital status, locality, age, occupation, and students' current place of residence.<sup>[23]</sup> The results of studies in China,

Hong Kong, South Korea, and Saudi Arabia did not show a significant relationship between health-promoting lifestyle with gender, age, the field of study, economic activity along with education, family economic status, and parental level of education,<sup>[1,5,22,28,30]</sup> but there was a relationship with the semester<sup>[13,22]</sup> which is consistent with the present results. It seems that due to differences in study environments and cultural contradictions, the impact of social and demographic factors on lifestyle has been different.

The results showed significant relationships between the levels of self-efficacy and all demographic factors except gender and father's job, which is not consistent with the results of some studies.<sup>[23,29]</sup> Moreover, there was only a significant relationship between levels of well-being and the type of university, which is not consistent with the results of some studies.<sup>[22,29]</sup> Given the importance of these two factors in our study of the health-promoting lifestyle, more attention and intervention measures are required to improve the situation.

In the final model, the variables of father's job, level of education, semester, well-being, self-efficacy, parental place of residence, and student's economic activity along with education were predictors of health-promoting lifestyle. In contrast to our study, the results of other studies showed the variables of age, gender, level of education, place of residence, sense of self-efficacy and well-being,<sup>[29]</sup> gender, type of university, years of studying at university and family structure,<sup>[2]</sup> income,<sup>[1,13]</sup> years of studying at the university<sup>[8,13,22]</sup> were as a predictor of a health-promoting lifestyle, which is consistent with some of the results of the current study.

The results also indicated a statistically significant relationship between general well-being and self-efficacy with the health-promoting lifestyle. This finding is consistent with the results of another study in Iran.<sup>[29]</sup> In studies in Iran, there is a relationship between the feeling of self-efficacy and a health-promoting lifestyle, that is consistent with our results.<sup>[4,23]</sup> Studies in China and Hong Kong indicate the relationship between general well-being and the health-promoting lifestyle, which is consistent with the results of this study.<sup>[22,28]</sup> The similarity of the results in the above-mentioned studies can confirm the importance of these factors and the need for intervention measures to improve them.

### Limitations and Recommendation

Good study design with large sample size and the use of standard questionnaires are the strengths of this study. However, this is a cross-sectional study in which cause-and-effect relationships should be interpreted with caution. In addition, in this study, a specific group

of students (students of medical sciences) was studied, so the findings of this study cannot be generalized to all students.

### Conclusion

Students' well-being, self-efficacy, and physical activity did not show an acceptable level. Moreover, the health-promoting lifestyle of students was moderate. Given the impact of general well-being and sense of self-efficacy on health-promoting lifestyles, setting up or equipping sports centers, expanding counseling offices at universities, and reviewing educational curricula to improve well-being and student positive health behaviors can enhance the health-promoting lifestyle among students.

### Acknowledgments

Part of the information in this article is the result of research project 9605 of Shahroud University of Medical Sciences (Ethical Code: IR.SHMU.REC.1396.06), and hereby, the authors extend their gratitude to all students who participated in the study, and they also express their gratitude to Shahroud University of Medical Sciences and Islamic Azad University.

### Consent for publication

Not applicable. No individual details, images, or videos were included in the manuscript.

### Authors' contributions

Each author has made substantial contributions as follows: MA participated in analysis and interpretation of data and drafted the article; MR supervised the teamwork, participated in analysis and interpretation of data, and revised the article; AK was responsible for conception and design of the study and revised the article. EB, ES, and LK were responsible for acquisition of data and drafted the article. All authors have read the manuscript and approved the final version to be submitted.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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