Research article

Investigating the relationship between health-promoting lifestyle behaviors and hopelessness among medical and non-medical students

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Abstract

Background/Aim: Investigating the correlates of healthy lifestyle habits is essential to promote healthy behaviors in university students to be able to prevent developing non-communicable diseases in the long-term. The primary aim of this research was to investigate whether hopelessness is associated with health-promoting lifestyle behaviors among university students. Also, healthy lifestyle habits of medical students were compared with those of students from different fields of study.

Methods: Four hundred and thirty-five undergraduate students from the Faculties of Medicine and Science and Literature participated in a paper-based cross-sectional study. The data were collected with the demographic information sheet, Health-Promoting Lifestyle Profile II (HPLP II), and Beck Hopelessness Scale (BHS), and analyzed using SPSS 22 statistics software.

Results: There were significant negative correlations between BHS scores and HPLP II total (r=-0.39) and all subscale scores, including health responsibility (r=-0.22), physical activity (r=-0.18), nutrition (r=-0.17), spiritual growth (r=-0.53), interpersonal relations (r=-0.30), and stress management (r=-0.25; $P<0.001$ for all). In addition, medical students had higher physical activity (95% CI [0.64, 2.50], $t(406.03)=3.33$, $P<0.001$) and lower interpersonal relations (95% CI [-1.73, -0.10], $t(429.74)=-2.22$, $P=0.027$) scores than their non-medical counterparts.

Conclusion: This study investigating the relationship between hopelessness and health-promoting lifestyle behaviors among medical and non-medical students revealed that negative expectations about the possible consequences of potential behaviors are associated with retention of activities that can improve health in the long-term. Considering their reported weakness in interpersonal relationships, medical education should provide support to the students in improving their social support network to enhance their health and well-being.

Keywords: Hopelessness, Healthy lifestyle behaviors, University students

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Introduction

A healthy lifestyle is conceptualized as the way individuals control every behavior that may affect their health and choose the behaviors that increase health through their day-to-day activities [1]. Therefore, behaviors that serve individuals to maintain and improve their own well-being are considered as healthy lifestyle behaviors. These include, but are not limited to, regular physical activity, a healthy diet, good quality sleep, stress management, and taking responsibility for protecting and improving one's health [2].

To be able to prevent the long-term effects of modifiable risk factors for developing non-communicable diseases (e.g. physical inactivity, unhealthy diet, and smoking), promoting healthy lifestyle habits in early years, especially during the university period, is essential [3, 4]. The constant stress leading to exhaustion among medical doctors, for example, can be determined by their health habits during medical education years [5]. Researchers [6] suggested that medical students are more likely to adopt a healthy lifestyle since they gain a significant level of knowledge on the importance of performing health behaviors compared to non-medical students. However, a growing body of literature also provides evidence against this argument [6-9], referring to the knowledge-behavior gap issue in behavior change area [10]. For instance, a study [8] performed with 2118 students from seven medical schools across Turkey has found that first-year students had higher scores in various domains of health-promoting behaviors compared to last year students. Studies revealed that during college years, experiencing difficulties in living conditions, lack of access to healthy food, lack of motivation, poor time management skills, low self-efficacy, and negative mood can make it difficult for students to acquire healthy living habits even if they are well-informed on the possible consequences of those behaviors [11].

In addition to these factors, researchers [12] suggested that hopelessness can inhibit an individual from engaging in healthy habits. Although there is no consensus about its definition, hopelessness mainly refers to having negative expectations and beliefs about the future [10]. Concerning the behavioral domain, being hopeless for the future can lead to being reluctant to obtain knowledge on the possible consequences of risky behaviors [13], determining goals to protect health in the long-term, and making plans to achieve these goals [10]. Given the important role it plays in encouraging people to develop and maintain health habits [14], hopeful thinking could predict health promotion habits for the students.

In the literature, few studies have attempted to investigate the links of hopelessness with physical activity [15] as well as physical health issues, such as metabolic syndrome [15], cardiovascular health [10, 16], and hypertension [17], among diverse samples. However, the research to date has not examined the relationship between hopelessness and acquiring healthy lifestyle habits among medical and non-medical students.

The primary aim of this research was to investigate whether hopelessness is associated with health-promoting lifestyle behaviors among college students. Also, healthy lifestyle habits of medical students were compared with those of students from different fields of study.

Materials and methods

Instruments

Demographic Information Sheet (DIS): DIS was used to obtain participants' sociodemographic information including their age, gender, year of study, faculty and department, perceived socioeconomic status, living conditions, weight and height to calculate the Body Mass Index (BMI), smoking status, and existing physical and psychological health issues.

Health Promoting Lifestyle Profile II Scale (HPLP II): The 52-item scale was developed by Walker, Sechrist, and Pender [18] and adapted into Turkish by Bahar et al. [19]. The scale consists of 5 subscales, which include health responsibility (HR; 9 items), physical activity (PA; 8 items), nutrition (N; 9 items), spiritual growth (SG; 9 items), interpersonal relations (IR; 9 items), and stress management (SM; 8 items). Each item is rated on a 4-point Likert scale ranged from 1 (never) to 4 (routinely), and higher scores show higher levels of having a healthy lifestyle. The scale's Cronbach's alpha reliability was found .90 in this study.

Beck Hopelessness Scale (BHS): The scale was developed by Beck, Weissman, Lester, and Trexler [20] to measure the magnitude of negative expectations about the future. The Turkish adaptation of BHS was performed by Durak and Palabiyikoglu [21]. The 20 items are rated on a binary Likert scale as Yes or No, and some items are reverse scored. Higher total scores obtained from BHS show higher levels of hopelessness. The Cronbach's alpha reliability of the scale was found .88 in the present study.

Study design and participants

The present research adopted a cross-sectional design. In this study, participants were selected by convenience sampling, which is a nonprobability sampling technique [22]. The 435 undergraduate students from the two faculties, Faculty of Medicine (FoM) and Faculty of Science and Literature (FoSL), of Kirsehir Ahi Evran University participated in the study. The data were anonymously collected through distributing the paper-based questionnaires in classes. An informed consent form was signed by each participant prior to data collection.

This study was conducted in accordance with the Declaration of Helsinki. The ethical board approval was obtained from Kirsehir Ahi Evran University, Social Science and Humanities Scientific Research and Publication Ethics Committee (Number: 2020-01/06).

Statistical analysis

The data were analyzed using IBM SPSS 22 statistical analysis software and expressed as mean (standard deviation). A P-value of less than 0.05 was considered statistically significant. To handle the missing data in the scales HPLP II and BHS, missing values were replaced with series means. Pearson correlation coefficients were calculated to check for the association between all studied parameters. Differences were tested by independent samples t-test and multivariate analysis of variance. Nonparametric tests were used when the normality of data was violated.

Results

In total, 435 university students from Kirsehir Ahi Evran University participated in study. Majority of participants

were women (68.8%) and the mean age was 20.59 (SD=1.43) years (range: 18-27 years). The sociodemographic profile of the participants is given in Table 1.

Table 1: The sociodemographic profile of participants

		n	%
Gender	Female	300	68.8
	Male	136	31.2
Faculty	Medicine	209	47.9
	Science and Literature	227	52.1
Class	1st year	117	26.8
	2nd year	106	24.3
	3rd year	136	31.2
	4th year	77	17.7
Socioeconomic status	High	8	1.8
	Upper-middle	127	29.1
	Middle	280	64.2
	Lower-middle	15	3.4
	Low	4	0.9
	Missing	2	0.5
Smoking	Yes	85	19.5
	No	350	80.3
	Missing	1	2.0
Total		436	100

Multiple comparisons were performed based on participants' demographic characteristics. The results are presented in Table 2. The normality of distribution was violated for BHS scores as assessed by Shapiro-Wilk's test ($P<0.001$). A Mann-Whitney U test was run to determine if there were differences in hopelessness scores between categorical groups. Hopelessness score was not statistically significantly different between males (Mdn=4.00) and females (Mdn=4.00; U = 19,408, z=0.914, P=0.361), and FoM (Mdn=3.00) and FoSL (Mdn=4.00; U=23,360.50, z=1.634, P=0.102). Distribution of hopelessness scores for smokers (Mdn=5.00) and non-smokers (Mdn=4.00) was significantly different (U=11,665.50, z=-2.216, P=0.027).

Table 2: Distribution of Health-Promoting Lifestyle Profile II, Beck Hopelessness Inventory, scores according to faculty, gender, year of study, socioeconomic status, living conditions, and smoking status (n=435)

Descriptive feature	Health responsibility	Physical activity	Nutrition	Spiritual growth	Interpersonal relations	Stress management	HPLP II Total
Faculty							
Medicine	19.48 (4.40)	17.14 (5.33)	19.12 (4.38)	22.98 (4.38)	24.89 (4.35)	18.88 (3.70)	122.49 (18.75)
Sci. and Lit.	19.23 (4.23)	15.57 (4.44)	19.28 (3.72)	23.31 (4.43)	25.80 (4.27)	18.88 (3.84)	122.08 (18.10)
t	0.60	3.33	-0.47	-0.78	-2.22	0.13	0.23
P-value	0.552	0.001*	0.640	0.436	0.027*	0.990	0.817
Gender							
Female	19.59 (4.35)	15.28 (4.36)	19.06 (3.72)	23.08 (4.38)	25.58 (4.38)	18.88 (3.76)	121.46 (18.05)
Male	18.83 (4.18)	18.61 (5.37)	19.53 (3.70)	23.32 (4.46)	24.89 (4.19)	18.90 (4.19)	124.08 (19.07)
t	1.73	-6.34	-1.24	-0.52	1.56	-0.06	-1.35
P-value	0.085	<0.001*	0.216	0.605	0.120	0.955	0.178
Year of study							
1st year	19.95 (4.62)	16.81 (4.70)	19.65 (3.81)	23.08 (4.80)	25.49 (4.31)	19.20 (3.93)	124.19 (19.66)
2nd year	19.04 (4.63)	16.33 (5.18)	18.32 (3.80)	23.20 (4.40)	25.38 (4.52)	19.06 (3.95)	121.34 (19.96)
3rd year	19.36 (3.73)	16.21 (4.96)	19.82 (3.47)	23.40 (4.12)	25.53 (4.16)	18.80 (3.66)	123.11 (15.77)
4th year	18.24 (3.76)	15.01 (4.63)	18.34 (3.72)	22.60 (4.36)	24.70 (4.39)	18.12 (3.49)	117.00 (17.53)
F	2.53	2.05	4.95	0.53	0.66	1.38	2.59
P-value	0.057	0.106	0.002*	0.660	0.575	0.249	0.053
Socioeconomic status							
Low	15.00 (2.10)	21.00 (2.44)	18.50 (1.86)	19.38 (2.20)	24.25 (2.15)	18.25 (1.89)	116.38 (9.13)
Lower-middle	17.57 (1.12)	14.63 (1.30)	16.87 (1.00)	22.57 (1.18)	25.81 (1.15)	18.21 (1.01)	115.66 (4.88)
Middle	19.06 (0.26)	15.91 (0.30)	19.22 (0.23)	22.97 (0.27)	25.00 (0.26)	18.61 (0.23)	120.76 (1.12)
Upper-middle	19.87 (0.38)	16.58 (0.45)	19.28 (0.34)	23.64 (0.40)	26.02 (0.40)	19.32 (0.35)	124.71 (1.67)
High	20.75 (1.49)	19.50 (1.72)	19.75 (1.32)	23.25 (1.56)	25.50 (1.52)	20.75 (1.34)	129.50 (6.45)
F	2.62	2.66	1.45	1.27	1.28	1.37	1.82
P-value	0.035*	0.032*	0.216	0.280	0.278	0.242	0.126
Smoking status							
Smoker	18.57 (4.39)	16.83 (5.15)	18.98 (3.81)	22.23 (5.20)	25.81 (4.89)	18.25 (4.08)	120.66 (20.39)
Non-smoker	19.54 (4.28)	16.21 (4.89)	19.26 (3.70)	23.36 (4.16)	25.24 (4.28)	19.02 (3.67)	122.64 (17.90)
t	-1.84	1.00	-0.61	-1.87	1.05	-1.61	-0.82
P-value	0.068	0.317	0.541	0.065	0.297	0.110	0.413

*P-value is significant at 0.05. Sci. and Lit.: Science and Literature, HPLP II: Health-Promoting Lifestyle Behaviour Scale II.

A Kruskal-Wallis test was performed to determine if there were differences in Hopelessness scores between four groups of participants in different years of study and with different SES. Distributions of BHS scores were similar for all groups, as assessed by visual inspection of a boxplot. Median BHS scores were not statistically significantly different between classes (H(3)=2.004, P=0.572) and SES groups (H(4)=7.364, P=0.118).

The correlation analyses were performed to investigate the associations between BHS and HPLP II total and subscale scores. Preliminary analyses showed the relationship to be linear with all variables except BHS, as assessed by Shapiro-Wilk's test ($P>0.05$). A Spearman's rank-order correlation was performed to assess the relationships between BHS scores and HPLP II total and subscale scores, and a Pearson's correlation coefficient was calculated to determine the associations between all other variables.

All results were in the expected direction (see Table 3). There were significant negative correlations among BHS scores and HPLP II total and subscale scores. In addition, HPLP II total and subscale scores were positively intercorrelated ($P<0.001$).

Table 3: The correlations among and descriptive statistics for variables

Var.	n	M	SD	1	2	3	4	5	6	7	8
1. Age	432	20.59	1.43								
2. BHS*	414	5.41	4.71	-.04							
3. HPLP	436	122.28	18.39	-.11	-.39						
4. HR	436	19.35	4.31	-.07	-.22	.74					
5. PA	436	16.32	4.94	-.04	-.18	.70	.40				
6. N	436	19.20	3.72	-.05	-.17	.66	.49	.44			
7. SG	436	23.16	4.40	-.01	-.53	.78	.41	.41	.36		
8. IR	436	25.36	4.33	-.06	-.30	.70	.47	.25	.26	.59	
9. SM	436	18.88	3.76	-.07	-.25	.76	.44	.44	.39	.61	.44

*Spearman's rank order correlation was run. Significant correlations in bold have $P<0.001$. BHS: Beck Hopelessness Inventory, HPLP: Health-Promoting Lifestyle Profile II Scale, HR: Health responsibility, PA: Physical activity, N: Nutrition, SG: Spiritual growth, IR: Interpersonal relations, SM: Stress management

Discussion

Unhealthy behavioral habits adopted in the early years are among the significant risk factors for developing non-communicable diseases. Therefore, barriers to and facilitators of making healthy lifestyle choices should be determined to promote health behaviors in younger populations. The transition from high school to university period and college years are suggested as critical periods in health behaviors to become habitual [11]. Since medical doctors are more likely to be under constant stress in their professional life compared to other professions, acquiring a healthy lifestyle as early as possible is vital for protecting their health and well-being [5]. Hopelessness has been shown as one of the significant factors of performing healthy behaviors; however, research has yet to systematically investigate its link with health-promoting lifestyle behaviors in the university student population. This study examined the relationship between hopelessness and adopting a health-promoting lifestyle among university students. Besides, medical students were compared with their peers from the Science and Literature faculty in terms of hopelessness and health-related behaviors.

The data from 435 university students showed that hopelessness was negatively associated with all domains of healthy lifestyle and smoking. Participants who were less active in their lives, smoking, and had less healthy food choices reported higher levels of hopelessness. These findings provide evidence on the direct relationship between hopelessness and

modifiable risk factors for developing diseases although the magnitudes of these links were relatively small.

The most substantial relationship of hopelessness was with spiritual growth. Participants who had more positive expectations about the future consistently reported higher feelings of having a meaningful life and being more motivated to work towards their long-term objectives. Researchers claim that if a person feels hopeful for the possible outcomes, they are more likely to continue to perform a behavior [23]. Therefore, as a significant domain of a healthy lifestyle, the negative relationship of spiritual growth with hopelessness is compatible with the literature.

Hopelessness was also negatively correlated with interpersonal relations and stress management skills, while these two lifestyle domains were positively intercorrelated. Research showed that individuals with high social hopelessness carry more negative beliefs and expectations about their interpersonal relationships. Also, social hopelessness was associated with daily stress [24]. Although the BHS does not differentiate social and achievement hopelessness from general hopelessness, the findings of the present study support the literature.

This study also sought to investigate how medical students were distinguished from other university students studying different subjects in terms of behaviors that promote healthy lifestyle, and hopelessness. The findings showed that these two groups were significantly different regarding only two domains of health-promoting lifestyle: Physical activity and interpersonal relations.

Considering the range of scores obtained from physical activity subscale of HPLP II, both groups were moderately active with average scores of 17.14 (5.33) among medical and 15.57 (4.44) among non-medical students. However, medical students were found physically more active than their non-medical counterparts. This finding is consistent with the previous studies comparing these two student groups [25].

Interpersonal relations domain of healthy lifestyle is about building strong relationships with others through expressing thoughts and emotions, and related to communication skills and opportunities of individuals. In this study, medical students reported lower levels of a social life than students from other areas of study. The intensity of medical education and excessive workload requires adopting a socially isolated lifestyle compared to the other fields of education [5, 26]. Although IR scores were strongly associated with a healthy lifestyle in general, similar to the findings regarding physical activity, IR does not appear to be the sole determinant of lifestyle as medical and non-medical students had similar health-promoting lifestyle profiles.

When the domains of health-promoting lifestyle were examined in terms of other demographic variables, a few differences were detected in health responsibility, physical activity, and nutrition.

Health responsibility (HR) is the individual's active sense of responsibility for their own well-being. Taking care of one's own health includes being informed on health and seeking professional help when necessary [19]. Therefore, HR can be expected to be linked with the field of education since students reading health sciences should be well-informed on how to protect and improve health and well-being [9]. However, in the current study, there was no significant difference between medical and non-medical students in terms of HR. This finding can be explained by students' perceived SES levels considering our findings showing that HR scores tended to increase with SES levels, and most students reported being from middle SES.

Compatible with the literature [27-29], male students reported adopting a more active lifestyle compared to female students. An active lifestyle also seemed to be related to perceived socioeconomic status as students who perceived themselves as having very high and low SES tended to report being physically more active than those from the other SES groups. This finding could be related to the measurement method of physical activity. The PA subscale of HPLP II fails to differentiate mild, moderate, and vigorous exercise: Walking, for example, can be equally scored with regular gym sessions. Therefore, the similarity between very high and low SES groups' activity levels could be misleading.

Having a healthy diet was linked with the years of study. The students seem to be making healthier food choices as they continue their educational path. This result may be related to better adaptation to regular life conditions in time —the insignificant differences between SES groups in terms of the nutrition and hopelessness support this argument.

In terms of spiritual growth and stress management skills, none of the groups were significantly different. This finding is in the anticipated direction since there are more significant factors related to these two domains, rather than gender, smoking status, or field of education. It is well-documented that dispositional factors, such as personality traits, temperament, and genetic influences, can also determine one's ability to cope with stressful situations [30].

Limitations

This study suffers from some limitations. Since the present study adopted a cross-sectional design, establishing a causal relationship between hopelessness and healthy lifestyle behaviors is beyond its scope. Therefore, the findings can only have correlational implications. In addition, this study was not multicenter, which prevents the generalization of the findings.

Conclusion

This study set out to examine the relationship of hopelessness and health-promoting lifestyle domains among medical and non-medical university students. Negative expectations about the possible consequences of future behaviors appear to be associated with retention of activities that can improve health in the long-term. However, a systematic understanding of how despair contributes to health behaviors is still lacking. Further research testing the mediational models to discover the possible mechanisms is needed. As a final remark, considering the workload of medical students and the significant association found between hopelessness and poor interpersonal relationships, providing support to medical students to build stronger social connections is essential to improve their health-related behaviors and well-being.

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