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ORIGINAL PAPER

The Relationship Between International Students' Health Perceptions and Their Healthy Lifestyle Behaviors

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Abstract

This study was carried out to examine the relationship between international students' health perceptions and their healthy lifestyle behaviors. This descriptive and relational study was conducted with 216 international students studying at a university in Turkey. Study data were collected using the descriptive information form, the Perception of Health Scale (PHS) and the Health-Promoting Lifestyle Profile II (HPLP-II). Data were evaluated using descriptive statistics and Pearson correlation analysis. It was determined that the health perception and healthy lifestyle behaviors of the international students involved in this study were moderately positive. The study found a weak and positive relationship between PHS and the physical activity, nutrition and stress management subdimensions of HPLP, while a moderate positive relationship was identified between PHS and the spiritual growth and interpersonal relations subdimensions of HPLP. No relationship was observed between PHS and the health responsibility subdimension of HPLP. The fact that students have a positive perception of health reflects positively on their healthy lifestyle behaviors. It is important to disseminate education programs aimed at improving the health perception and healthy lifestyle behaviors of international students within the university.

Keywords International · Student · Perception · Healthy lifestyle · Health behavior

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Introduction

Internationalization in the field of higher education is increasing daily. While universities are trying to gain international identity worldwide and make their student profiles multinational in the globalizing world, students want to receive education as international students because doing so provides prestige in terms of ensuring a qualified education and providing different educational experiences (Enterieva & Sezgin, 2016). The number of international students in the world, which was approximately 800,000 in the 1970s, is expected to reach 8 million by 2022 (Council of Higher Education [CHE], 2017).

In recent years, there has been an increase in the number of international students in the higher education system in Turkey. While the number of international students in Turkey was 16,656 in the 2000–2001 academic year (CHE, 2017 p. 3), this number has increased tenfold in the last twenty years, reaching a total of 154,446 international students in the 2018–2019 academic year (Council of Higher Education [CHE], 2020). The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines international students as "persons who go beyond national or territorial borders for educational purposes and are enrolled as students outside their country of origin" (UNESCO Institute for Statistics, 2020). International students bring innovation to institutions and contribute to the country economy by increasing the cultural diversity of the host country or province.

University life is a dynamic process in which biological, psychological and social changes that direct the lives of young people are experienced intensely (Al-Qahtani, 2019). The health-related behaviors of young people may vary in this process. In this period, young people can adopt positive behaviors that improve their health, but they may also gain negative behaviors (Al-Qahtani, 2019). Healthy lifestyle behaviors (HLBs) can be defined as the implementation of behaviors that have a positive effect on health in daily life and the ability to control behaviors that have negative effects. Studies show that it is easier to acquire HLBs in youth compared to later periods (Sánchez-Ojeda & De Luna-Bertos, 2015). It has been reported that in the youth period, which coincides with the time that one attends university, information is more internalized and can be transformed into a lifestyle (Wang et al., 2013).

It is important to improve the perception of health in young people to have them acquire healthy lifestyle behaviors (Tuğut & Bekar, 2008). Studies conducted with university students demonstrate that students have a moderate level of health perception (Alkan et al., 2017; Khorshid & Efteli, 2016) and HLBs (Hacıhasanoğlu et al., 2011; Haddad et al., 2004; Karadeniz et al., 2008). Due to the pandemic, the perception of health has currently become an even more important issue. According to the World Health Organization (2020), the coronavirus outbreak has affected more than 107 million people and killed more than 2.4 million people worldwide.

The educational migration of international students for a better career not only offers opportunities, but also includes some threats. Studies support the hypothesis

that international mobility affects students' HLBs. A study conducted in the USA concluded that international mobility caused changes in students' health behaviors (Yan & FitzPatrick, 2016). A study conducted in Australia determined that international students' well-being was more negative than the well-being of national students (Skromanis et al., 2018). Research carried out with international students in Turkey centered on problems experienced by students with regard to education and language and problems in economic, psychosocial and cultural areas (Gökyer, 2017; Kumcağız et al., 2016). The health perceptions and health behaviors of individuals may differ from one another because they live in different circumstances in society (Alkan et al., 2017; Deasy et al., 2015). Based on this view, this study aimed to identify international students' health perceptions and healthy lifestyle behaviors and to examine the relationship between these two concepts.

This study aimed to seek answers to the following questions:

*What are international students' PHS levels?
*What are international students' HPLP levels?
*Is there a relationship between international students' PHS and HPLP levels?

Method

Aim of the Study and Study Design

This descriptive and relational study was performed to determine the relationship between international students' perceptions of health and their HLBs.

Sample of the Study

Data from the 2018–2019 were used to determine the population of the study (CHE, 2020). The population of the study was composed of 314 international students attending undergraduate education in a university located in the Western Black Sea Region during the 2018–2019 academic year. Sample selection was not made, which means that the entire target population was approached in the study. At the university, there is a community called the "International Students Community" that was established by foreign students. Through these community members, foreign students who were or were not members of the community were contacted. Students were invited to participate in the research. The study was completed with 216 students who volunteered to participate in the study. The participation rate in the study was 69%.

Data Collection Tools

The research data were collected between April and June 2019 using a personal information form prepared by the researchers, the Perception of Health Scale (PHS) and the Health Promoting Lifestyle Profile II (HPLP II) scale.

In order to collect data, the members of the "International Student Community" at the university were contacted. The data were collected with the help of this community from foreign students who are members of this community or not. Questionnaire forms were delivered to international students by the researchers in a sealed envelope, and the forms were received from the students in a sealed envelope.

Personal Information Form

The form consists of 16 questions used to determine international students' sociodemographic and individual characteristics (age, gender, marital status, country of origin, income, faculty/college/class, smoking, alcohol use, etc.).

Perception of Health Scale (PHS)

The scale was developed by Diamond et al. (2007), and the Turkish validity and reliability study of the scale was carried out by Kadıoğlu and Yıldız (2012). The scale consists of 15 items about center of control (e.g., Good health is a matter of good luck), certainly (e.g., I would like to be healthier, but I just can't get myself to do what is necessary), importance of health (e.g., I'm willing to spend extra money on things that are healthy for me) and self-awareness (e.g., It is up to me whether I am healthy or not). The Cronbach's alpha value of the scale is 0.77 (Kadıoğlu & Yıldız, 2012). The lowest score that can be obtained from the scale is 15, and the highest score is 75. High scores indicate that one's perception of health has increased in a positive way. The Cronbach's alpha value of the scale was found to be 0.53 in this study.

Health Promoting Lifestyle Profile II (HPLP II)

The scale was developed to evaluate health-promoting behaviors in relation to the healthy lifestyle of the individual (Walker et al., 1987). A Turkish validity and reliability study was carried out by Bahar et al. (2008). The 4-point Likert-type scale consists of 52 items and six subdimensions: health responsibility (HR), physical activity (PA), nutrition (D), spiritual growth (SG), interpersonal relations (IR) and stress management (SM). The lowest score that can be obtained from the scale is 52, and the highest score is 208. High scores on the scale indicate a high level of healthy lifestyle behaviors. In Bahar et al. (2008) study, HPLP II Scale the Cronbach's alpha internal consistency coefficient was calculated as 0.92 and it was found to be 0.90 in this study.

Analysis of the Research Data

The Statistical Package for Social Sciences (SPSS) 22.0 package program was used in data analysis. The suitability of the data for normal distribution was examined with skewness and kurtosis values. Skewness and kurtosis values between + 2.5 and − 2.5 indicate that the data show a normal distribution. The data showed a normal distribution in this study (PHS: skewness 0.674, kurtosis 0.451; HPLP: skewness 0.230, kurtosis 0.446). Accordingly, number, percentage, mean and standard deviation were used as descriptive statistics in the study, and the relationship between the variables was examined by Pearson correlation analysis. According to the literature, the strength of the correlation coefficient was high (0–0.29 poor, 0.30–0.64 moderate, 0.65–0.84 high, 0.85–1 very high) (Ural & Kılıç, 2013). The relationship between the variables was interpreted based on this definition in the study.

Research Ethics

This research was carried out in conformity with the principles of the Helsinki Declaration. Ethics committee approval to conduct the research was obtained (protocol number 2019/117). The purpose of the study was explained to the students who participated in the study. Written and verbal consent was obtained, and the participants were told that they could leave the study at any time they wished. To use the scales, permission was obtained from the researchers who conducted the validity and reliability study.

Results

Table 1 presents the descriptive characteristics of international students participating in this study. A total of 41.7% of the students were female, 58.3% were male, their mean age was 22.12 ± 2.83 years, and 92.1% were single. One-third of the students came from African countries (Togo, Mali, Nigeria, etc.) and the majority (69.5%) lived within the province. A total of 68.5% of the students stated that their income was equal to their expenses, 74.1% of them stayed in a dormitory, and 1/4 of the participant group received training in the field of health. The mean body mass index (BMI) was 23.6 ± 3.29, and 1/3 of the students were mildly obese (32.0%) based on BMI. Almost all (97.2%) of them reported having no chronic disease (Table 1).

Figure 1 displays students' lifestyle behaviors. Approximately 1/5 of the students smoked, and 1/10 used alcohol. The rate of students engaged in physical activity was 45.4%. Half of the students were members of the student community, 82.4% of them stated that they socialized by meeting with friends, and 43.5% of them socialized via social media (Fig. 1).

Table 2 presents the participant group's PHS and HPLP mean scale scores. The students' mean PHS score was 47.55 ± 6.49, and their mean HPLP total score was

Table 1 Descriptive characteristics of international students ($N=216$)

Characteristic	*n*	%
Gender		
Female	90	41.7
Male	126	58.3
Age (mean ± SD)	22.12 ± 2.83	Range (18–30)
Marital status		
Unmarried	199	92.1
Married	17	7.9
Nationality		
Europe	9	4.2
Asia	50	23.1
Africa	157	72.7
Longest lived place		
Province	150	69.5
Town	43	19.9
Village	23	10.6
Grade		
1st	95	44.0
2nd	61	28.2
3rd	40	18.5
4th	20	9.3
Profession		
*Health and sports sciences	54	25.0
**Other than health profession	162	75.0
BMI		
Low (under 18.5)	5	3.4
Normal (18.5–24.9)	90	61.2
Slightly obese (25–29.9)	47	32.0
Obese (30 and over)	5	3.4
BMI (mean ± SD)	23.68 ± 3.29	Range (16.53–35.11)
Income		
Income more than expenses	31	14.4
Equal income and expenses	148	68.5
Income less than expenses	37	17.1
Place of residence		
Dormitory	160	74.1
Student house	41	19.0
Family-relative	15	6.9
Chronic disease		
Yes	6	2.8
No	210	97.2

BMI body mass index, *SD* standard deviation

*Faculty of Health Sciences, Faculty of Medicine, Faculty of Sports Sciences, Faculty of Dentistry

**Faculty of Arts and Sciences, Faculty of Education, Faculty of Engineering and Architecture, Faculty of Economics and Administrative Sciences

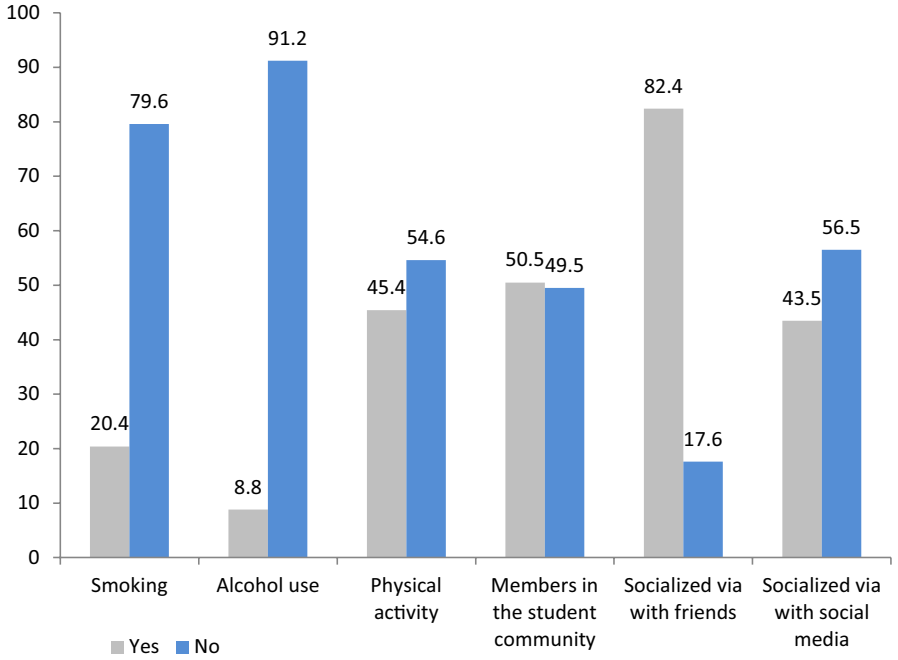


Fig. 1 Lifestyle behaviors of international students

Table 2 Mean scale scores of international students' perception of health and health-promoting lifestyle behaviors ($N=216$)

Scales	Mean ± SD	Recieved score (Min, Max)	Expected score (Min, Max)
Perception of health scale	47.55 ± 6.49	34–68	15–45
HPLP II and subscales			
Health responsibility (HR)	20.82 ± 4.06	11–35	9–36
Physical activity (PA)	19.06 ± 3.83	11–32	8–32
Nutrition (N)	21.47 ± 3.78	11–31	9–36
Spiritual growth (SG)	23.24 ± 4.65	12–35	9–36
Interpersonal relations (İR)	22.45 ± 4.32	11–34	9–36
Stress management (SM)	19.57 ± 3.37	10–30	8–32

HPLP-II health-promoting lifestyle profile II, *HR* health responsibility, *PA* physical activity, *N* nutrition, *SG* spiritual growth, *IR* interpersonal relations, *SM* stress management

126.65 ± 18.58. The mean scores for the HPLP subdimension were as follows: HR: 20.82 ± 4.06, PA: 19.06 ± 3.83, D: 21.47 ± 3.78; SG: 23.24 ± 4.65 and IR: 22.45 ± 4.32; SM: 19.57 ± 3.37.

Table 3 The relationship between international students' perception of health and health-promoting lifestyle behaviors ($N=216$)

HPLP-II	Perception of health	
	r	*p*
Health responsibility (HR)	0.076	0.266
Physical activity (PA)	0.215**	0.001
Nutrition (N)	0.162*	0.017
Spiritual growth (SG)	0.369**	0.000
Interpersonal relations (İR)	0.328**	0.000
Stress management (SM)	0.269**	0.000
Total HPLP scores	0.311**	0.000

HPLP-II health-promoting lifestyle profile II, *HR* health responsibility, *PA* physical activity, *N* nutrition, *SG* spiritual growth, *IR* interpersonal relations, *SM* stress management

*$p<0.05$ **$p<0.01$

Table 3 examines the relationship between students' health perceptions and their HPLP. A weak, positive relationship was found between students' health perceptions and the physical activity ($r=0.22$, $p<0.01$), nutrition ($r=0.16$, $p<0.05$) and stress management ($r=0.26$, $p<0.001$) subdimensions of the HPLP. A moderate, positive and significant relationship was found between students' health perception and the spiritual growth ($r=0.37$, $p<0.001$) and interpersonal relations ($r=0.33$, $p<0.001$) subdimensions of HPLP. However, there was no relationship between health perception and the health responsibility subscale of the HPLP ($p>0.05$).

Discussion

International students' perceptions of health were found to be moderate in this study, and this result is similar to conclusions drawn in other studies conducted with university students in Turkey (Özdelikara et al., 2018; Yalnızoğlu-Çaka et al., 2017). However, another study determined that students' perceptions of health were negative (Çilingir & Aydın, 2017), and a qualitative study conducted with international students found that students evaluated their current health status more negatively than their health status in their home country (Babadağ et al., 2014). A study conducted in Korea found a positive relationship between positive interpersonal relationships and social environment, free time activities, participation in volunteer activities and health perception (Lee et al., 2015). Engagement in a sports-related activity group was found to create a sense of belonging and was found to be effective in reducing social anxiety (Wilcox et al., 2006). In this context, the fact that half of the students in this study were members of a student community, participated in sports activities and interacted with other international students may have positively affected their perception of health. However, the fact that students have a moderate level of positive health perception may suggest that they need support in raising their awareness of health promotion and transforming it into behavior.

International students' mean HPLP total score was determined to be 126.65 ± 18.58 in this study. Examining similar studies in the literature shows that students' mean HLB scores were higher than the value found in this study (Çıtak Bilgin et al., 2019; Gore et al., 2021). This result may be related to the effect of international mobility on students' lifestyles. A study conducted with Nigerian students studying at universities in the UK found that students had negative behaviors related to nutrition, stress and physical activity due to insufficient income (Alloh et al., 2018). A qualitative study conducted with graduate students in the USA concluded that the greatest reason for regular physical activity was the desire to lose weight. In the same study, students stated that they gained weight because of fast food-based unhealthy nutrition they got used to when they first came to the country, but then they started to exercise to lose this weight (Shuang & Zizzi, 2018). A survey conducted with national students in Turkey found that even changing provinces in the same country resulted in difficulties in adaptation, sociocultural problems and health problems (Kumcağız et al., 2016).

HLB increases well-being, individual satisfaction and productivity and prevents risky behaviors such as unhealthy nutrition, lack of physical activity and substance use. A study focusing on the subdimensions of the HLBS determined that international students' lowest mean scores were related to stress management and physical activity. The inability to manage stress may lead students to display risky behaviors (smoking/alcohol) and overeating. Limited physical activity and overeating may cause obesity. The growing obesity epidemic, generally in the West and especially in the USA, results in worsening health, early and preventable disease onset, and excessive healthcare costs (Anshel & Smith, 2014). Unhealthy nutrition habits and inadequate physical activity are common problems among university students (Almutairi et al., 2018). A study conducted in Ireland with national students identified that students had risky health behaviors such as unhealthy nutrition (26%), physical inactivity (26%) and smoking (17%) (Deasy et al., 2015). The findings regarding the insufficiency of physical activity in this study are similar to the results of national and international research (Almutairi et al., 2018; Gore et al., 2021; Hwang & Oh, 2020). Studies show that physical activity among students varies depending on many factors (gender, department of study, presence of chronic disease, etc.), as well as perception of health (Çıtak Bilgin et al., 2019; Hwang & Oh, 2020; Varela-Mato et al., 2012). In this study, 1/3 of the international students had a high BMI. Since the consequences of obesity and a lack of activity in international students can be very important, this factor should never be ignored.

This study concluded that international students' most positive behaviors regarding healthy lifestyle behaviors were observed in the spiritual growth and interpersonal relations subdimensions. This finding is similar to the conclusions of studies conducted with university students in Turkey (Çıtak Bilgin et al., 2019), India (Gore et al., 2021), Saudi Arabia (Al-Qahtani, 2019), Japan (Wei et al., 2012) and Korea (Hwang & Oh, 2020). This study also demonstrated that language and discourse do not create a barrier in communication. Spiritual growth determines individuals' life goals, to what degree they know themselves and their self-development skills. The finding in many studies that spiritual growth is the highest score for both national and international university students suggests that university students move toward their goals in a planned

manner by being aware of their strengths and the aspects that can be improved in their lives and that they continue their lives by taking responsibility in this context. It should also be considered that culture and belief systems are important in an international setting. In a study involving university students in Canada, it was determined that spirituality played a positive role in quality of life and health during the COVID-19 pandemic (Cherblanc et al., 2021).

Perception of health is related to individuals' assessment of the effect of their well-being on their physical, mental and social functionality (Anshel & Smith, 2014). According to the health belief model, perception of health status affects health behaviors and health responsibility. For this reason, the perception of health is closely related to the process of promoting healthy living, which aims to ensure that individuals acquire and maintain healthy lifestyle behaviors (Karaca & Aslan, 2019; Özdelikara et al., 2018). A study of 13,179 people who responded to the National Health Interview Survey found that people who pray for their health have a lifestyle that includes many behaviors that have the potential to improve their health (Harrigan, 2011). The present study identified that international students' perception of health was positively associated with physical activity, nutrition, stress management, spiritual growth, and interpersonal relations. This finding is consistent with the literature. It has been reported that students' positive evaluation of their health positively affects their understanding of health and social life in future (Çilingir & Aydın, 2017). Having a positive perception of health is important in maintaining, improving and motivating health (Hwang & Oh, 2020; Tuğut & Bekar, 2008). A qualitative study conducted with international students determined that compared to the general student population, international students received less medical support for their diseases and ailments, used more traditional methods of treatment and experienced cultural insensitivity in regard to health care (Collins, 2001). In this context, it can be argued that international students' positive perceptions of health are directly related to the promotion of healthy lifestyles.

University life is a period in which individuals take more responsibility for health-related decisions (Özdelikara et al., 2018). Individuals who care about their health are expected to be sensitive in regards to health responsibility and to be able to demonstrate preventive and health-promoting behaviors that are appropriate for their health. Unlike the literature, this study found no relationship between health perception and health responsibility. It is known that perceived benefits and barriers to preventive and protective health behaviors affect health responsibility. It can be argued that socioeconomic status and psychosocial adaptation problems also affect students' behaviors aimed at protecting and maintaining their health, even for students who care about their health.

Study Limitations

The study was conducted with international students enrolled in a university and cannot be generalized to all students. However, reaching 69% of the target population in the study is a good outcome. Acculturation also has an impact on health

behavior, but it is not clear how the health behaviors of students are affected by the host culture. In this study, the Cronbach's alpha value of the PHS was 0.53, and this value is one of the study limitations.

Suggestions

Taking the necessary measures, providing guidance services and collecting information about international students are among the obligations of the institutions where international students study so that international students can continue their education successfully (Ministry of National Education, 1983). It is imperative to evaluate international students' perceptions of health first while attempting to determine their healthy lifestyle behaviors. For this reason, studies should be carried out to identify the perception of health and health responsibility for students who are continuing their education and training at universities and those who aim to start their education and training at universities. In the literature, it is stated that international students face acculturation stress due to sociocultural differences (Schartner, 2015). Therefore, education programs related to stress management should be planned, and international students should be included in these programs. In addition, the relationship between health perception and healthy lifestyle behaviors should also be examined through qualitative studies. Morover, studies can be planned to compare the health perceptions and healthy lifestyle behaviors of Turkish and international students.

Conclusion

Determining the health perceptions and health behaviors of international students is crucial in terms of making decisions about health services that will be offered and in terms of establishing relevant policies in internationalization activities for the future. This research concluded that the health perceptions of international students in Turkey were at a moderate level. It was identified that a positive perception of health reflects positively on healthy lifestyle behaviors.

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Declarations

Conflict of interest The authors declare that they have no financial or non-financial conflict of interest with any organization related with the contents of this paper.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors. All procedures performed in this study including data collection from the participants were in accordance with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

Informed Consent All the research participants were informed about the objectives and procedures of the study. Informed consent was obtained from all individual participants included in the study.

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