Does health literacy affect attitudes towards healthy eating and health anxiety in young adults?

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Abstract

Objective: The purpose of this study was to investigate the relationship between young people's health literacy, healthy eating attitudes, and health anxiety.

Material and methods: The data of this cross-sectional and descriptive study were collected by face-to-face interviews with students studying in the department of nursing, nutrition and dietetics and health management at the health sciences faculty of a university located in the Central Anatolia region of Turkey. The sample of the study consisted of 599 students who volunteered to participate in the study. In collecting the data of the study, Individual Descriptive Information Form, Turkish Health Literacy Scale (THLS-32), Attitudes towards Healthy Eating Scale (ASHN), Health Anxiety Inventory (Short Version) (HAI) used.

Results: It was determined that the total mean score of the students on the THLS-32 scale was 33.57±8.41, the mean total score of ASHN was 70.57±10.87, and the mean total score of HAI was 19.67±7.43. There was a positive relationship between students' health literacy and their attitudes towards healthy eating (r=0.258, p=0.000), a negative relationship between health anxiety (r=-0.171, p=0.000) and their attitudes towards healthy eating and health anxiety (r= -0.166, p=0.000).

Conclusion: It is important that this study is the first to examine health literacy, attitudes towards healthy eating, and health anxiety together. It is thought that improving the health literacy and healthy eating attitudes of students who will be health care professionals and reducing their health anxiety will provide significant benefits individually and socially.

Key words: health literacy, healthy eating attitude, health anxiety

Introduction

The World Health Organization defined health literacy as "cognitive and social abilities that determine an individual's motivation to acquire, interpret, and apply information for the promotion and protection of health" in 1998 [1]. Health literacy means knowing the factors that affect one's own health, the health of family and society, and how these factors affect one's health. Individuals with a sufficient level of health literacy take responsibility for their own health as well as family and community health. Moreover, having the knowledge, abilities, and motivation to choose and apply the best health practices is a component of health literacy [2].

Nutrition that is adequate and well-balanced is crucial for preserving health and leading a healthy life [3]. The fact that people's levels of health literacy vary also changes their eating habits [4]. Individuals with adequate health literacy are expected to have advanced attitudes for healthy eating, such as having basic nutritional knowledge, reading the food label, being able to control portion sizes, understanding information about nutrients and food groups, choosing and preparing healthy food [5].

Health anxiety is the concern that individuals constantly have a serious illness even though they do not have any health problems. According to the

biopsychosocial model, health anxiety is influenced by normal physiological, psychological, sociological and environmental processes. As people acquire negative information about health and illness, they perceive the changes in their bodies as symptoms of serious illnesses and their anxiety about these changes increases. People with health anxiety are always worried about their health, they are greatly affected by any news about health or illness, and they breathe and breathe. They are obsessed with their diet, heartbeat, and any minor discomfort [6].

The majority of the young population, including university students, lives far from their families and their eating habits are changing. In this period, gaining healthy eating habits, attitudes towards healthy eating and increasing health literacy levels are very important for the protection and development of health [7]. The foundations of healthy lifestyle behaviors are laid in the family; they grow in society and then change and develop with education. Health workers have a great influence on the development of these behaviors. Therefore, first of all, health professionals should review their own lifestyles and they should fix it. Health professionals set an example and are expected to be a model for the society in terms of improving health behaviors and changing behaviors that help development. In a study examining the relationship between healthy lifestyle, including healthy nutrition, and health anxiety of students studying in the health department, it was observed that as students' health anxiety increased, healthy lifestyle behaviors decreased [8]. According to a different study evaluating the relationship between healthy eating obsession and health anxiety, it was found that as healthy eating obsession increases, health anxiety also increases [9]. Health professionals, who will inform and guide individuals about healthy living behaviors, should implement every health-related knowledge and skill they have acquired and share them with patients. Considering the importance of working in a multidisciplinary environment, health science students have an important role in both individual and social level in developing health literacy and healthy eating attitudes and reducing health anxiety. However, when the literature is examined, no study has been found on the relationship between health literacy, attitudes towards healthy eating and health anxiety of young individuals studying in the health department. The aim of this study is to determine the relationship between young people's attitudes towards healthy eating, health anxiety and health literacy.

Materials and methods
Type of research
This research is cross-sectional and descriptive.

Population and sample of the research
The universe of this research consisted of 1040 students studying in the department of nursing, nutrition and dietetics and health management in the faculty of health sciences of a university located in the Central Anatolia region of Turkey. In the power analysis made in cases where the population size is certain, the required sample number was found to be 281, based on 5% error and 95% confidence level. In the study, it was tried to reach the students in the universe without using any sampling method. The sample of the study consisted of 599 students aged over 18 who volunteered to participate in the study. Students who needed a special diet program (eating disorders such as pica and anorexia nervosa, celiac, gout and cystic fibrosis, etc.) and who agreed to participate in the study but wanted to leave voluntarily were excluded from the study. The students participating in the research constituted 57.6% of the population.

Data collection method
Research data were collected by the researchers between December 2022 and February 2023. By interviewing the class representatives of the students, a suitable time for the students was determined and data collection tools were applied. Before the data collection tools were filled, the students were informed about the face-to-face study and were asked to sign informed consent if they agreed to participate in the study. It was explained to the students that they have the right to leave at any stage of the study, and it was stated that participation in the study was on a voluntary basis. It has also been stated that no fees will be charged and/or no fees will be paid from the students for research purposes. It was explained to the students that the results of the study would not affect the course grades. There is no conflict of interest between researchers and students. In collecting the data of the study, Individual Descriptive Information Form (10 questions), Turkish Health Literacy Scale (THLS-32) (32 items), Attitude Scale for Healthy Nutrition (ASHN) (21 items), Health Anxiety Inventory (Short Version) (HAI) (18 items) used.

Individual introductory information form
This form was prepared by the researchers by scanning the relevant literature. It includes questions about students' socio-demographic characteristics (age, gender, department, income status, family structure, where they live), height, weight and smoking status.

Turkish Health Literacy Scale-32 (THLS-32)
It is a 32-item scale developed based on the HLS-EU Study Conceptual Framework (HLS-EU CONSORTIUM, 2012 [10]. Turkish validity and reliability were done by Okyay and Abacıgil (2016) [11]. The scale includes two health-related dimensions ("healthcare" and "disease prevention and health promotion") and four processes of information acquisition (access, understand, appraise, and apply) related to health relevant decision-making and practices. Each item is rated as very easy, easy, difficult, very difficult, and no idea. Values between 0-50 can be taken from the scale. Health literacy level is evaluated in four categories:

0-25: inadequate health literacy,
>25-33: problematic/limited health literacy,
>33-42: adequate health literacy,
>42-50: excellent health literacy [11].

Attitude Scale for Healthy Nutrition (ASHN)
Consisting of 21 items, this scale evaluates individuals' attitudes towards healthy eating. The scale has a 4-factor structure. These factors are: Information on Nutrition (IN), Emotion for Nutrition (EN), Positive Nutrition (PN), and Malnutrition (MP). The scale is 5-point Likert type and includes reversed items. The score that can be obtained from the scale is 21-105. The scores obtained from the scale are explained as having an attitude for healthy eating with 21 points very low, 23-42 points low, 43-63 points medium, 64-84 points high, and 85-110 points ideally high. ASHN is a valid and reliable measurement tool that can be used to measure the attitudes of university students towards healthy eating [12].

Health Anxiety Inventory (Short Version) (HAI)
The scale, which was validated and reliable in Turkish by Aydemir et al. (2013), consists of 2 factors and 18 questions. The scale is a 3-point Likert type and as the score obtained from the scale increases, the level of health anxiety increases [13].

Analysis of data

The data obtained from the research were evaluated in the Statistical Package for the Social Sciences (SPSS) 21.00 package program. Skewness and Kurtosis values were examined to ensure that the data were suitable for normal distribution, and the data between -1.5 and +1.5 were considered to be normally distributed [14]. It was observed that the obtained data had a normal distribution. Descriptive statistics are shown as mean ± standard deviation due to the normal distribution of the variables. Pearson Correlation coefficient was used in the study to examine the relationship between two variables. The t-test was used to evaluate the difference between the means of two groups, and the One-Way ANOVA test was used to evaluate the difference in the means of three or more groups. Post-hoc analyzes were evaluated with the Scheffe test when homogeneity was achieved, and with Tamhane's T2 test when homogeneity was not achieved. Confidence interval was accepted as 95.0% and significance level as $p<0.05$ in all statistical tests.

Ethical aspect of research

The ethics committee approval of the research was obtained from the ethics committee with the letter dated 09.11.2022 and numbered 99332, and the institutional permission was obtained from the faculty where the research was conducted. Informed consent principle by explaining the goal of the study's to the voluntary participations in the research, the principle of respect for autonomy by their voluntary participating in research, by ensuring the confidentiality of the information obtained, attention was paid to the principle of protecting confidentiality and confidentiality.

Results

Data on the socio-demographic characteristics of the students included in the study are in Table 1.

When the mean scores of the sub-dimensions of the THLS-32 scale of the students participating in the study were examined, the highest average score was found in the access health-related information component of the healthcare sub-dimension (36.31±9.96); it was determined that the lowest mean score was in the appraise health-related information component of the healthcare sub-dimension (29.61±10.92). When the ASHN sub-dimensions were examined, it was found that the lowest average score was found in the emotion for nutrition sub-dimension and the highest average score was in the information on nutrition sub-dimension (Table 2).

It was determined that 34.2% (n=185) of the students had problematic-limited health literacy. 62.3% (n=373) of the students have a high attitude for healthy nutrition (Figure 1).

It was detected that the total mean score of the students included in the study on the THLS-32 scale was 33.57±8.41, the mean score of the ASHN was 70.57±10.87, and the mean total score of the HAI was 19.67±7.43 (Table 3).

The difference between the mean scores of the THLS-32 scale according to the gender (t=2.360, p=0.019) and income status (F=3.414, p=0.034) of the students is statistically significant. This difference in income status stemmed from the fact that students whose income is less than their expenses and those whose income is more than their expenses have different levels of health literacy (p=0.034, Scheffe's test). ASHN total score averages differed significantly according to the department the students studied (F=13.728, p=0.000), and it was determined that the students of the nutrition and dietetics department had a significantly higher score than the nursing and health management students (p=0.000, p=0.008, Scheffe's test). A statistically significant difference was found between the total

Table 1	Socio-demographic characteristics of the students (n=599)		
Socio-Demographic Characteristics		**Mean±SD**	**Min-Max**
Age (year)		20.63± 1.81	18-36
		n	**%**
Gender	Female	479	80.0
	Male	120	20.0
Income Status	Income less than expenses	211	35.2
	Income equals expense	306	51.1
	Income more than expenses	82	13.7
Family Structure	Nuclear family	517	86.3
	Extended family	64	10.7
	Scattered family	18	3.0
Department	Nursing	291	48.6
	Nutrition and Dietetics	224	37.4
	Healthcare Management	84	14.0
Grade	First year	197	32.9
	Second year	132	22.0
	Third year	116	19.4
	Fourth year	154	25.7
Living Place	State dormitory	454	75.8
	Private dormitory	20	3.3
	Home	125	20.9
If at Home with Whom	Alone	26	20.8
	With Friend	25	20.0
	With Family	70	56.0
	With Relatives	4	3.2
BMI	Underweight (<18.50)	96	16.0
	Normal Weight (18.50-24.9)	403	67.3
	Overweight (25-29.9)	85	14.2
	Obese (>30)	15	2.5
Smoking Status	Yes	110	18.4
	No	489	81.6

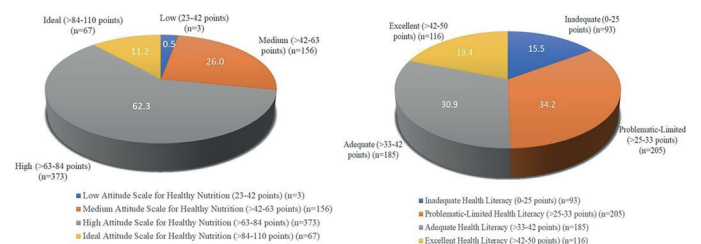Mean±SD: Mean± Standard deviation, Min.-Max.: Minimum-Maximum Score

Figure 1 - Percentage Ratios of Students' ASHN and THLS-32 Categorical Score (n=599) ASHN: Attitude Scale for Healthy Nutrition, THLS: Turkey Health Literacy Scale

Table 3	Distribution of students' TSOY-32 Scale, SBITO and SAE mean scores (n=599)	
Scales	Mean±SD	Median (Min-Max)
THLS- 32	33.57±8.41	33.33 (4.17-50.00)
ASHN	70.57±10.87	70.00 (33.00-103.00)
HAI	19.67±7.43	19.00 (4.17-50.00)

ASHN: Attitude Scale for Healthy Nutrition, HAI: Health Anxiety Inventory, Mean±SD: Mean±Standard deviation, Min.-Max: Minimum-Maximum Score, THLS: Turkey Health Literacy Scale.

Table 2	Students' THLS-32 and ASHN Sub-Dimensions Index Scores Mean (n=599)		
	Sub-Dimension	Mean±SD	Min-Max
THLS-32	Healthcare		
	Access health-related information	36.31±9.96	12.50-50.00
	Understand health-related information	34.58±10.18	8.33-50.00
	Appraise health-related information	29.61±10.92	4.17-50.00
	Apply health-related information	36.03±10.20	4.17-50.00
	Disease prevention and health promotion		
	Access health-related information	34.98±10.79	4.17-50.00
	Understand health-related information	35.42±10.59	4.17-50.00
	Appraise health-related information	31.96±11.28	16.67-50.00
	Apply health-related information	29.69±12.00	12.50-50.00
ASHN	Information on nutrition	20.34±4.03	5.0-25.0
	Emotion for nutrition	16.09±4.49	6.0-30.0
	Positive nutrition	16.63±4.31	5.0-25.0
	Malnutrition	17.51±4.76	5.0-25.0

ASHN: Attitude Scale for Healthy Nutrition, Mean±SD: Mean± Standard deviation, Min.-Max: Minimum-Maximum Score, THLS: Turkey Health Literacy Scale

Table 4	Comparison of the mean scores of THLS-32, ASHN and HAI according to the socio-demographic characteristics of the students (n=599)		
Socio-Demographic Characteristics	THLS-32	ASHN	HAI
	Mean±SD	Mean±SD	Mean±SD
Gender			
Female	33.97±8.21	70.50±10.98	19.73±7.29
Male	31.95±9.02	70.85±10.48	19.47±8.00
	t=2.360 p=0.019	t=-0.308 p=0.758	t=0.337 p=0.751
Income Status			
Income less than expenses	32.54±9.10	69.32±11.21	7.97±0.54
Income equals expense	33.82±7.99	71.26±10.54	7.16±0.40
Income more than expenses	35.27±7.84	71.23±11.05	6.98±0.77
	F=3.414 p=0.034	F=2.156 p=0.117	F=1.236 p=0.291
Family Structure			
Nuclear family	33.82±8.14	70.60±10.86	19.68±7.29
Extended family	31.99±8.95	69.98±11.27	20.01±7.62
Scattered family	31.91±12.99	71.72±10.16	18.44±10.51
	F=1.706 p=0.183	F=0.196 p=0.822	F=0.313 p=0.731
Department			
Nursing	33.08±8.65	68.65±10.10	20.42±7.60
Nutrition and Dietetic	33.89±8.17	73.50±10.97	18.91±7.24
Healthcare Management	34.40±8.23	69.41±11.57	19.14±7.18
	F=1.060 p=0.347	F=13.728 p=0.000	F=2.873 p=0.057
Grade			
First year	32.47±8.63	69.04±10.02	20.64±7.48
Second year	31.74±8.18	69.06±10.36	19.68±7.27
Third year	34.20±8.48	72.50±11.91	18.99±7.50
Fourth year	36.07±7.68	72.38±11.12	18.94±7.38
	F=4.893 p=0.002	F=8.239 p=0.000	F=1.955 p=0.120
Living Place			
State dormitory	33.49±8.17	70.55±10.56	19.53±7.12
Private dormitory	30.88±11.58	65.65±14.10	23.05±8.47
Home	34.28±8.66	71.42±11.28	19.68±8.26
	F=1.491 p=0.226	F=2.443 p=0.088	F=2.153 p=0.117
BMI			
Underweight (<18.50)	34.38±8.10	71.20±11.24	18.88±6.90
Normal Weight (18.50-24.9)	33.30±8.31	70.59±11.03	19.85±7.65
Overweight (25-29.9)	33.33±8.77	70.04±9.87	20.08±7.11
Obese (>30)	36.97±10.77	68.93±10.18	17.80±6.34
	F=1.279 p=0.281	F=0.289 p=0.834	F=0.840 p=0.472
Smoking Status			
Yes	32.20±9.91	66.82±11.05	18.77±8.36
No	33.88±8.02	71.41±10.66	19.88±7.20
	t=-1.895 p=0.059	t=-4.052 p=0.000	t=-1.417 p=0.157

ASHN: Attitude Scale for Healthy Nutrition, HAI: Health Anxiety Inventory, Mean±SD: Mean±Standard Deviation, THLS: Turkey Health Literacy Scale.

score averages of the THLS-32 (F=4.893, p=0.002) and ASHN (F=8.239, p=0.000) according to the grade level of the students. It was detected that the health literacy of the fourth-year students was higher than the first and second year students (p=0.001, p=0.000, Scheffe's test). In addition, in the further analysis, it was detected that the fourth-year students' attitudes for healthy eating were higher than the first-year students' (p=0.023, Tamhane's T2 test). A statistically significant difference was found between the attitudes of smokers and non-smokers towards healthy eating (t=-4.052, p=0.000) (Table 4). A statistically significant positive correlation was found between the age of the students and their health literacy (r=0.166, p=0.000) and their attitudes for healthy eating (r=0.180, p=0.000). A statistically significant negative correlation was found between age and students' health anxiety (r=-0.112, p=0.006).

A statistically significant correlation was determined between students' health literacy and their attitudes for healthy eating, in a positive direction (r=0.258, p=0.000), and between health anxiety in a negative direction (r=-0.171, p=0.000). A statistically significant negative correlation was found between their attitudes for healthy eating and their health anxiety (r=-0.166, p=0.000).

Discussion

Health literacy, which has a role in the protection of individual health and its contribution to the health system, and the improvement of health at the social level, is affected by demographic, psychosocial, cultural and past experiences [2]. In this study, in which health literacy was evaluated with the THLS-32, 50.9% of individuals had adequate or excellent health literacy. It was seen that the mean health literacy score of the individuals was 33.57±8.41 and the highest mean score was in the component of the healthcare sub-dimension of the process of accessing health-related information. In addition, it was determined that the mean health literacy scores of female individuals, the income being higher than the expenditure, and the 4th grade students were significantly higher. In a study conducted with health science students, 55.7% of the students had adequate or excellent health literacy and the mean health literacy score was 34.53; The component with the highest mean score is the component of accessing healthy information in the healthcare sub-dimension, similar to our study [15]. In a different study involving university students, it was found that the health literacy score was 26.48±16.54 and 40.1% had adequate or excellent health literacy. When the relationship with sociodemographic data is examined, it is stated that there are significant differences according to age, gender, income status, living place, chronic disease status, department and grade level [16]. In the study of Okur et al. (2021), in which health literacy levels were examined, the mean health literacy score was 35.98±5.83, while the highest mean score was seen in the component of apply health-related information in the healthcare sub-dimension. When the relationship with demographic data was evaluated, it was stated that the difference in health literacy scores was not significant [17]. In the study of Soykan and Şengül (2021), it was detected that the average health literacy score of the students was 36.20±7.66, while the rate of participants with adequate or excellent health literacy was 62.1%. When the sub-dimensions of health literacy were evaluated, it was determined that the highest mean score belonged to the component of accessing health-related information in the healthcare sub-dimension [18]. Although this relationship between health literacy and demographic data in our study is consistent with the literature, it is thought that the higher participation of female students in this study, the increase in the level of knowledge and

awareness with the health education received, and the economic difficulties experienced affect the health literacy score.

Acquiring healthy eating habits and attitudes towards healthy eating in young adulthood, a period in which eating habits change and develop, are of great importance in the protection and development of health [7]. For this reason, it is thought that it is important to determine the attitudes of university students towards healthy eating in the age group. In this study, in which the attitude for healthy eating was evaluated, the average attitude score of the individuals was 70.57±10.87, while the highest average score was seen in the information on nutrition sub-dimension when the sub-dimensions were examined. 73.5% of the participants have an attitude for high or ideal healthy eating. When the association between the attitude score for healthy eating and demographic profile is examined, the average scores of nutrition and dietetics students, fourth-year students, and non-smokers are significantly higher. In a different study examining the scores of attitudes for healthy eating, similar to our study, it was determined that the average sub-dimension with the highest score was the dimension of information on nutrition [19]. In a study that included midwifery and nursing department students, the mean ASHN score was 75.5±8.8 and no significant differences were found with gender, department, income level and smoking variables [20]. In a study evaluating the attitude for healthy eating, it was stated that the average attitude score was 75.57±10.31, 87.0% of the participants had high or ideal attitudes, and the highest average sub-dimension score was in the positive nutrition sub-dimension. When the relationship between the attitude score for healthy eating and the variables is examined, it is stated that there is a significant difference according to marital status, occupation and duration of social media use, but there is no significant difference according to gender, education level and BMI values [5]. In the study of Göral and Yıldırım (2022), it was found that male students' ASHN scores were higher, and it was stated that the sub-dimension with the highest score was the dimension of knowledge about nutrition, similar to our study [21]. In a study conducted with the participation of students from the faculty of medicine and sports sciences, it was stated that the scores of attitudes for healthy eating differ significantly according to gender, activity, smoking and the department of education [22]. Although the findings in our research are compatible with the literature, it is an expected result of the research that the students of the nutrition and dietetics department have higher attitude scores for healthy nutrition, and the higher level of knowledge and attitude of the senior grade students due to the increase in the nutrition education and education level. Smoking is an important risk factor for an unhealthy life, together with inadequate and balanced nutrition and lack of physical activity. With the behavior change interventions recommended for a healthy life, awareness and education level are increased, providing both smoking cessation and improving nutrition and physical activity [23]. In the current study, it was determined that the attitudes of smokers for healthy eating were lower.

Health anxiety is a health problem that causes individuals to worry excessively about health and cause both personal and interpersonal problems even though they do not have a serious health problem [6]. In our study, the mean health anxiety score of individuals was 19.67±7.43, and no significant correlation was found between demographic variables. In a study examining health anxiety of health students, it was found that results were similar to our study, health anxiety score was 17.85±6.36, and demographic data had no effect on health anxiety [24]. In studies examining health anxiety with university students, it was determined that the health anxiety score showed similar

results with our study and there was no significant difference in the health anxiety score according to demographic variables [8,24,25].

A positive relationship was found between students' health literacy and their attitudes for healthy eating. There are studies reporting that health literacy is important for maintaining a certain level of quality of life in individuals receiving diet therapy for diseases and in case of illness [26,27]. In addition, with the increase in the level of health literacy, reading the food label, which greatly affects the choice of healthy food, gains importance [28]. It has been determined that individuals who read the food label pay attention to their regular meal consumption and consume less unhealthy foods, while they consume more healthy foods [29]. In the study of Arslan et al. (2022) examining the food label reading behavior of university students; It has been determined that students studying in the field of health pay more attention to some nutritional information (calories, total fat, sugar) written on the label [30]. It is thought that increasing the level of knowledge about health contributes to a healthy diet.

When the relationship between students' health literacy and health anxiety was evaluated, it was found that as health literacy level increased, health anxiety decreased. Smith et al (2013) found a substantial correlation between high health literacy and low anxiety, similar to our study [31]. In the specialization study, the effect of health literacy on health anxiety, conducted in Turkey, it was found that as the level of health literacy increased, the level of health anxiety decreased [32]. It is thought that the low health anxiety of people with high health literacy is due to the fact that individuals use the ability to read, understand and apply more when making decisions about health as their level of health-related knowledge increases. In addition, it will be beneficial for individuals with adequate or excellent health literacy level to better understand and transform the education (nutrition, exercise, stress, etc.) given by health professionals into behavior. There are not enough studies in the literature examining the association between health literacy and health anxiety. The fact that this study is the first to examine health literacy and health anxiety in young adults is important in terms of contributing to the literature.

A significant inverse correlation was found between students' attitudes for healthy eating and their health concerns. Health anxiety; it adversely affects nutrition-related factors such as individuals' eating habits, meal order, healthy and balanced diet planning, and diet quality [33]. Individuals who have a health-related problem in their family or in themselves can exhibit healthy eating behaviors in order to solve the health problem or prevent the disease itself [34]. In line with this information, it is an expected result of the research that individuals with high attitudes for healthy eating have low health anxiety.

Conclusion and recommendations

This study is significant since it is the first to jointly investigate attitudes toward healthy eating, health literacy, and health anxiety. In the study, it was shown that there is a association between demographic characteristics, health literacy, healthy eating and health anxiety, and some demographic data have an effect on these variables. The increase in the health literacy of individuals in young adulthood causes a positive effect on other health-related behaviors. In addition, considering the importance of health science students working in a multidisciplinary environment, it is thought that improving health literacy and healthy eating attitudes and reducing health anxiety will provide an important benefit both at the individual and social level.

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