

University students' sustainable and healthy eating behaviors, along with their environmental literacy: A cross-sectional study

Üniversite öğrencilerinin sürdürülebilir ve sağlıklı beslenme davranışları ile çevre okuryazarlığı: Kesitsel bir çalışma

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ABSTRACT

Aim: This analytical study aimed to assess the sustainable and healthy eating (SHE) behaviors and the level of environmental literacy among first-year university students.

Materials and Methods: The study included 959 students. Data was collected using a socio-demographic questionnaire, the SHE behaviors scale, and the Environmental Literacy for Adults (ELSA) scale. Socio-demographic characteristics were analyzed using Student's t-test, one-way ANOVA, and LSD post-hoc tests. The relationship between SHE behaviors and ELSA scores was evaluated using Pearson correlation. A p-value <0.05 was considered significant.

Results: Only 35.8% of students reported being familiar with sustainable nutrition, and just 29.7% could accurately define it. Female students scored higher than male students on both the Sustainable and Healthy Eating (SHE) behaviors scale and the Environmental Literacy for Adults (ELSA) scale. Additionally, students who lived with their families, lived in rural areas, followed a healthy diet, and prepared their own food had higher SHE scores. Students who knew the term "sustainable nutrition" scored significantly higher on SHE behaviors. Believers in and those concerned about climate change also had higher SHE scores. A positive and significant correlation was observed between SHE behaviors and ELSA scores.

Conclusion: Promoting education on sustainable and healthy eating among university students supports both personal and environmental health, contributing to achieving United Nations Sustainable Development Goals.

Keywords: Environmental literacy, Students, Sustainability, Sustainable and healthy eating, Universities

ÖZ

Amaç: Bu analitik çalışma, üniversite birinci sınıf öğrencilerinin sürdürülebilir ve sağlıklı beslenme (SHE) davranışlarını ve çevre okuryazarlıklarını değerlendirmeyi amaçlandı.

Gereçler ve Yöntemler: Çalışmaya 959 öğrenci dahil edildi. Veriler sosyo-demografik bir anket, SHE davranışları ölçeği ve Yetişkinler için Çevre Okuryazarlığı (ELSA) ölçeği kullanılarak toplandı. Sosyo-demografik özellikler Student's t-testi, tek yönlü ANOVA ve LSD post-hoc testleri ile analiz edildi. SHE davranışları ile ELSA puanları arasındaki ilişki Pearson korelasyonu kullanılarak değerlendirildi. P-değerinin <0.05 olması anlamlı kabul edildi.

Bulgular: Öğrencilerin sadece %35,8'i sürdürülebilir beslenme hakkında bilgi sahibiydi ve %29,7'si bu kavramı tanımlayabiliyordu. Kız öğrenciler hem SHE davranışlarında hem de ELSA'da erkek öğrencilerden daha yüksek puan aldı. Daha yüksek SHE puanları aile ile yaşama, kırsalda ikamet etme, sağlıklı beslenme ve gıda hazırlama ile ilişkilendirildi. "Sürdürülebilir beslenme" terimini bilen öğrenciler SHE davranışlarında anlamlı derecede daha yüksek puan aldı. İklim değişikliğine inananlar ve iklim değişikliği konusunda endişe duyanlar da daha yüksek SHE puanlarına sahipti. SHE davranışları ile ELSA puanları arasında pozitif ve anlamlı bir korelasyon gözlemlendi.

Sonuç: Üniversite öğrencileri arasında sürdürülebilir ve sağlıklı beslenme konusunda eğitimin teşvik edilmesi hem kişisel hem de çevresel sağlığı destekleyerek sürdürülebilir kalkınma hedeflerine ulaşılmasına katkıda bulunabilir.

Anahtar Kelimeler: Çevre Okuryazarlığı, Öğrenciler, Sürdürülebilirlik, Sürdürülebilir ve sağlıklı beslenme, Üniversiteler

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INTRODUCTION

Sustainable and healthy eating behaviors, together with environmental literacy, are key determinants that influence individuals' ability to lead a healthy life and contribute to the sustainability of environmental health. While nutritional behaviors play a critical role in the growth and development processes of young generations, environmental literacy includes the skills to understand, evaluate and solve environmental health problems. The interaction between these two important issues can determine not only the individual's contribution to their personal well-being, but also to the sustainability of our planet. Global population growth and the accelerating impact of increased consumption of animal-based foods on climate change have highlighted the importance of promoting sustainable and healthy eating behaviors in society (1-3). Healthy dietary choices among individuals not only ensure an enhancement in their quality of life and life expectancy but also act as a shield against non-communicable chronic diseases. While defining environmental health as a significant factor influencing human well-being (4, 5) the increasing prevalence of unsustainable food production and consumption patterns adversely affects environmental health and, consequently, human health (6). Recent scrutiny highlights that modern eating behaviors and food production systems are not sustainable for humanity's future (5, 7). Social initiatives addressing climate change have gained prominence, emphasizing the pivotal role of environmental education in enhancing knowledge and sensitivity, thereby contributing to a more sustainable and healthier society (8).

To effectively promote environmentally sustainable and healthy eating behaviors, it is crucial to understand the perspectives of university students – the educated and professional candidates of society. This understanding is essential for developing effective teaching and learning arrangements (9-11). Previous studies conducted among university students have reported insufficient knowledge levels regarding "sustainable nutrition" and its practical application in daily life (2, 12). The initial year at university often marks the first-time young adults are tasked with planning their own diets and making independent choices about what to eat. Assessing university students' knowledge levels regarding sustainable and healthy eating behaviors during this formative period is crucial, as these choices and preferences are likely to evolve into habits. This study aims to examine the sustainable and healthy eating behaviors of university students in relation to their environmental literacy.

MATERIALS AND METHOD

Study sample

This cross-sectional study was conducted with 959 first-year students of Erciyes University in the 2022-2023 academic year. Data was collected between October and December in 2022. The sample size was calculated using G*power 3.1 (13). A two-tailed hypothesis was established for the calculation of the study sample, and the minimum sample size was calculated as 782 students with a small effect size, $\alpha=0.05$, 80% power according to a bivariate correlation

analysis. Considering the possibility of missing or incorrect questionnaires, it was decided to include 25% more than the minimum sample size (978 students). Further, to represent the university, the number of students of faculties providing education in different scientific fields was taken into consideration: Medicine and Pharmacy from the health field, Economics and Administrative Sciences and Theology from the social field, Engineering students from the science field were included in the study. The sample of the study was designed to include equal number of students from each scientific field (326 students from each scientific fields). Twelve students from various faculties were excluded from the study due to incomplete questionnaires (7 Medicine, 5 Pharmacy, 1 Theology and 5 Engineering). The study included only those students who volunteered, completed the questionnaire fully, and were present on the day of the survey. Students who did not provide voluntary consent, were absent on the day of data collection, or submitted incomplete or invalid questionnaires were excluded from the study.

Ethical procedure

Ethics committee approval was obtained for this study from Erciyes University Ethics Committee (Date/Approval No: 14.09.2022/618). The procedures followed were according to the ethical standards of the responsible institutional ethics committee and the Helsinki Declaration. The researchers visited the students in their classrooms and explained the purpose of the study. After the verbal consent of the students who wanted to participate in the study was obtained, the questionnaire form was shared with the students who volunteered for the study. The students were given 20 minutes to complete the questionnaire form and the questionnaire form was collected at the end of the time.

Data collection instruments

The data collection instruments consist of three components: the first part, developed by the researchers, includes questions on students' socio-demographic characteristics and opinions about sustainable nutrition, and environmental health; the second part includes the Sustainable and Healthy Eating (SHE) Behaviors Scale; and the third part includes the Environmental Literacy Scale for Adults (ELSA). The SHE behaviors scale, developed by Zakowska-Biemans et al. (14) and with a Turkish validity and reliability study conducted by Köksal et al. (15) was used to assess SHE behaviors. The Turkish version of the SHE behaviors scale consists of 7 subscales and a total of 32 items. These 7 subscales are: "healthy and balanced diet", "quality labels (local and organic)", "reducing meat consumption", "local food, low fat, avoiding food waste", "animal health" and "seasonal food". The items in the scale were rated on a Likert scale and participants were asked to mark each item as "never", "very rarely", "rarely", "sometimes", "often", "very often" or "always" ("never" scores 1 and "always" scores 7) (15). The lowest score that can be obtained from the total scale score and each factor is "1" and the highest score is "7". The factor scores of the subscales are calculated by averaging the scores given to the items in that factor (min 1-max 7). The total scale score is calculated by averaging all factor scores. An increase

in the total score obtained from the scale is associated with healthier and more sustainable eating behaviors (15).

Environmental Literacy Scale for Adults (ELSA) developed by Atabek-Yiğit et al. (16) used to determine the environmental literacy levels. Twenty items in the scale consist of 5-point Likert-type statements defined as “strongly agree” (5), “agree” (4), “undecided” (3), “disagree” (2) and “strongly disagree” (1), with scores corresponding to the values in brackets. Items 3 and 16 were reverse coded. For scoring, 20-46 is considered as “low level”, 47-73 as “medium level” and 74-100 as “high level” environmental literacy (16).

Data analysis

The normality test was evaluated with the number of data, coefficient of variation, histogram, Q-Q plot, and Skewness-Kurtosis. For ELSA, Skewness = -0.916 (Std. Error = 0.079) and Kurtosis = 0.865 (Std. Error = 0.158); for SHE behavior, Skewness = 0.085 (Std. Error = 0.079) and Kurtosis = 0.353 (Std. Error = 0.158). The results were accepted to be in accordance with the normal distribution. Data was analyzed using SPSS 24.0 (SPSS Inc., Chicago, IL) package program. The normality test was evaluated with the number of data, coefficient of variation, histogram, Q-Q plot and the reliability of the scales used was calculated and Cronbach's alpha results were 0.902 for environmental literacy and 0.919 for sustainable nutrition. Numbers and percentages were presented in the frequency table. The students' SHE behaviors subscale and total scores and socio-demographic characteristics were analyzed using Student t-test in paired groups and one-way ANOVA test in multiple groups. Results were evaluated using post-hoc LSD test in multiple groups. The relationship between SHE behaviors with environmental literacy was evaluated using Pearson correlation test. $p < 0.05$ was considered significant.

RESULTS

The mean SHE behaviors score of the students was 3.78 ± 0.82 (Table 1). The highest mean score between SHE behaviors subscales was “seasonal foods and avoiding food waste” (4.19 ± 0.95) and the lowest one was reducing meat consumption (3.05 ± 1.42) (Table 1).

Table 1. The mean scores of the total and the subscales of SHE behaviors

The subscales of SHE behaviors scale	$\bar{X} \pm SD$
1. Quality marks	3.69 ± 1.16
2. Seasonal foods and avoiding food waste	4.19 ± 0.95
3. Animal health	3.35 ± 1.32
4. Reducing meat consumption	3.05 ± 1.42
5. Healthy and balanced nutrition	3.97 ± 0.95
6. Local food	3.18 ± 1.42
7. Low fat	3.90 ± 1.41
Total	3.78 ± 0.82

SHE: Sustainable healthy eating. Descriptive statistics are presented as mean $\pm$ SD.

The relationship between students' characteristics and SHE behaviors scores was presented in Table 2. Of the students, 33.4% were enrolled in the Faculty of Engineering and 50.2%

were male. Additionally, 45.2% of the students resided in dormitories, and 33.1% reported having good family economic status. The mean SHE behaviors score of the female students (3.88 ± 0.81) was higher than those of the male students (3.68 ± 0.82) ($p < 0.001$). The mean SHE behaviors score of the students who lived in rural settlement a decade before starting university ($p < 0.001$) and who lived with their families were significantly higher ($p = 0.006$).

Among the students, familiarity with the concept of sustainable nutrition was reported by 35.8%, while 29.7% indicated the ability to define sustainable nutrition (Table 3). The mean ELSA score of the students was 74 ± 14.27 (high level). When the distribution of ELSA scores of the students was analyzed, it was found that 4.6% ($n = 44$) were at low level, 32.7% ($n = 314$) were at medium level and 62.7% ($n = 601$) were at high level (Table 3).

Comparison of responses to questions on 'sustainable diets' by gender was presented in Table 3. The rates of female students hearing about the concept of sustainable nutrition, knowing what sustainable nutrition means, thinking that global climate change is happening, thinking that they have an impact on global climate change, and paying attention to behavior to reduce their impact on global climate change were higher than male students (Table 3).

Comparison of the SHE behaviors scores based on students' responses to relevant questions was presented in Table 4. The students stated that they had heard the term of “sustainable nutrition” before and knew what it meant had significantly higher SHE behaviors score ($p = 0.001$). The mean score of those who dieted to eat healthily was significantly higher than those who dieted to gain weight and those who did not diet ($p = 0.007$). The students who prepared their own food at home had significantly higher SHE behaviors scores. ($p < 0.001$).

The students who reported that they had heard the term of “sustainable nutrition” before and knew what it meant had higher SHE behaviors scores ($p = 0.001$). The SHE behaviors score of students who followed a diet for healthy eating was higher than those who dieted to gain weight and those who did not diet ($p = 0.007$). The students who prepared their own food at home had the highest SHE behaviors score ($p < 0.001$). Among the students, the mean SHE behaviors scores were significantly higher among those who believed that global climate change was happening, those who paid attention to their behaviors to reduce climate change, and those who were not concerned about global climate change. ($p < 0.001$, for all). Furthermore, positive, and moderately significant relationship was found between SHE behaviors scores and ELSA scores. The relationship between SHE behaviors scores and ELSA scores was shown in Figure 1 ($R^2: 0.090$ (95% CI: 0.058 - 0.127), $p < 0.001$) (Figure 1).

DISCUSSION

Within the aim of the study, sustainable and healthy eating behaviors, and environmental literacy of 959 university students were evaluated. The average scores of the SHE behavior scale for students were 3.78 ± 0.82 (male: 3.68 ± 0.82 , female: 3.88 ± 0.81).

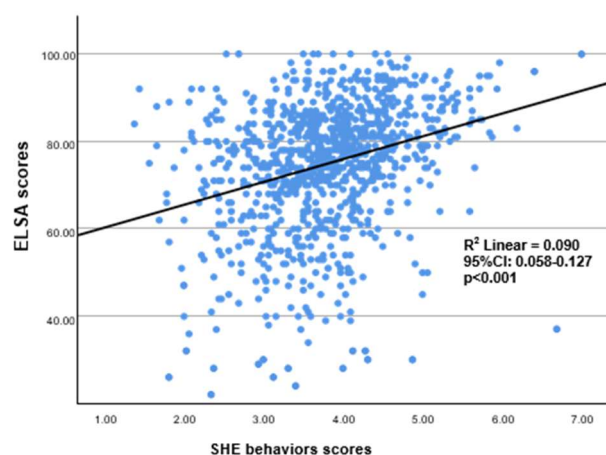


Figure 1. The relationship between SHE behaviors scores and ELSA scores

In another study conducted among university students in Turkey using also the SHE behavior scale, male and female students, respectively, in the Nutrition and Dietetics department had scores of 5.06 ± 1.48 and 4.83 ± 0.76 , while students in other faculties had scores of 4.23 ± 1.16 and 4.29 ± 0.92 (17).

The lowest scores obtained by students from subscales were related to the sub-dimension concerning reducing red meat consumption. Although the amount of red meat consumed per capita in Turkey is low, red meat is used as the main source of animal protein (18). Meat consumption in the world increased by 54% between 1998 and 2018, and this increase is 85% in developing countries. It has been observed that as the income level increases, the interest in meat consumption increases more (19). Turkey is one of the developing countries and has cultural habits where meat consumption is considered important in individual terms. For this reason, the fact that the least attention is paid to reducing meat consumption in sustainable nutrition is consistent with this.

In this study as well, in line with previous research, the highest scores obtained by students from subscales were related to the one concerning avoiding food waste (14,17). Turkey is a developing country and the income level and women's participation in the labor force are increasing over time. Households spend nearly one-fifth of their expenditures on food (19). This situation brings with it food wastage, the world average of 74 kg per capita food waste is 93 kg for Turkey (19). However, it is below the West Asia average of 110 kg per capita (20). Most of the food waste in Turkey occurs at the production stage and less at the final consumption stage (21). In addition, in 2013, wastage was significantly reduced in campaigns carried out by official institutions to reduce food waste (22). In this study, the fact that seasonal food consumption and avoiding food waste received the highest score in sustainable eating behavior suggests that previous awareness raising activities were effective.

Table 2. The relationship between students' characteristics and SHE behaviors scores

Characteristics	n %	$\bar{X} \pm SD$	p	F / t
Faculty				
Engineering	320\33.4	3.77 ± 0.84	0.090	1.978
Economics and Administrative Sciences	219\22.8	3.78 ± 0.80		
Medicine	214\22.3	3.75 ± 0.84		
Theology	106\11.1	3.67 ± 0.83		
Pharmacy	100\10.4	3.97 ± 0.74		
Gender				
Male	481\50.2	3.68 ± 0.82	<0.001	3.834
Female	478\49.8	3.88 ± 0.81		
Settlement a decade before starting university				
Urban	903\94.1	3.76 ± 0.82	<0.001	3.774
Rural	56\5.9	4.13 ± 0.70		
Self-reported family' economic status				
Good	318\33.1	3.86 ± 0.80	0.080	2.599
Moderate	569\59.3	3.74 ± 0.82		
Bad	72\7.6	3.68 ± 0.90		
Accommodation				
Family's house ^a	337\35.1	3.85 ± 0.77	0.006	4.202
With housemate ^b	136\14.2	3.59 ± 0.85		
Dormitory ^{a, c}	433\45.2	3.80 ± 0.82		
Alone ^{b, c}	53\5.5	3.60 ± 0.94		
Mother's education status				
Below high school	545\56.8	3.77 ± 0.86	0.610	0.512
High school and above	414\43.2	3.80 ± 0.77		
Father's education status				
Below high school	342\35.7	3.77 ± 0.86	0.830	0.212
High school and above	617\64.3	3.78 ± 0.80		
Total	959\100.0	3.78 ± 0.82		

a, b, c: The difference between groups with different letters was found to be significant.

$\bar{X} \pm SD$: mean $\pm$ standard deviation. Comparisons were conducted using independent samples t-test (for two groups) and One-way ANOVA with LSD post-hoc test (for multiple groups).

Table 3. Comparison of responses to questions on 'sustainable diets' by gender

Questions about “sustainable nutrition”		Male		Female		Total		p
		n	%	n	%	n	%	
Have you heard of “sustainable nutrition” before?	Yes	150	31.2	193	40.4	343	35.8	0.003
	No	331	68.8	285	59.6	616	64.2	
Do you know what “sustainable nutrition” means?	Yes	129	26.8	156	32.6	285	29.7	0.049
	No	352	73.2	322	67.4	674	70.3	
Do you think global climate change is happening?	Yes	421	87.5	456	95.4	877	91.4	<0.001
	No	60	12.5	22	4.6	82	8.6	
Do you think you have an impact on global climate change?	Yes	421	87.5	456	95.4	877	91.4	<0.001
	No	60	12.5	22	4.6	82	8.6	
Would you pay attention to your behavior to reduce your impact on global climate change?	Yes	339	70.5	397	83.1	736	76.7	<0.001
	No	142	29.5	81	16.9	223	23.3	
How concerned are you about global climate change?	I am worried	170	35.3	95	19.9	265	27.6	<0.001
	I am not worried	311	64.7	383	80.1	694	72.4	
ELSA score	Low	27	5.6	17	3.6	44	4.6	<0.001
	Moderate	193	40.1	121	25.3	314	32.7	
	High	261	54.3	340	71.1	601	62.7	
Total						959	100.0	

ELSA: Environmental Literacy for Adults. Chi-square test was applied for categorical variables; Independent samples t-test was used for ELSA scores.

Table 4. Comparison of the SHE behaviors scores based on students' responses to relevant questions

Questions about “sustainable nutrition”	n \ %	$\bar{X} \pm SD$	p	F / t
Have you ever heard of “sustainable nutrition” before?				
Yes	343\35.8	3.90±0.82	0.001	3.490
No	616\64.2	3.71±0.82		
Do you know what “sustainable nutrition” means?				
Yes	285\29.7	3.91±26.0	0.001	3.259
No	674\70.3	3.72±26.2		
Are you currently on any diet?				
Yes, to lose weight ^a	214\22.3	3.92±0.81	0.007	4.01
Yes, to put on weight ^b	90\9.4	3.71±0.85		
Yes, to eat healthy ^{a, b, c}	27\2.8	4.02±0.93		
No ^{b, c}	628\65.5	3.73±0.81		
Where do you eat most of your meals?				
In cafeterias ^a	413\43.1	3.77±0.81	<0.001	13.069
In restaurants and fast-food chains ^b	158\16.5	3.49±0.88		
At home, I cook for myself ^c	145\15.1	4.07±0.77		
At home, somebody cook for me ^a	243\25.3	3.80±0.77		
Do you think global climate change is happening?				
Yes	877\91.4	3.80±0.83	0.020	2.388
No	82\8.6	3.57±0.76		
Do you think you have an impact on global climate change?				
Yes	742\77.4	3.83±0.83	<0.001	3.507
No	217\22.6	3.61±0.77		
Would you pay attention to your behaviors to reduce your impact on global climate change?				
Yes	736\76.7	3.85±0.81	<0.001	4.533
No	223\23.3	3.56±0.82		
How concerned are you about global climate change?				
I am worried	265\27.6	3.56±0.80	<0.001	5.102
I am not worried	694\72.4	3.87±0.81		

^{a, b, c}: The difference between groups with different letters was found to be significant.

$\bar{X} \pm SD$: mean $\pm$ standard deviation. Independent samples t-test and One-way ANOVA with LSD post-hoc test were applied.

In the study, it was observed that there was no significant difference in the mean scores between the faculties where students were enrolled and the scores, they obtained from the SHE scales. However, in the studies conducted by Yolcuoğlu and Kızıltan (17) with university students in the 3rd and 4th grades, it was found that the average scores of students studying in the Department of Nutrition and Dietetics were higher than the average scores of students in other departments on the SHE scales. The difference between the studies may be attributed to the inclusion of first-year university students in our study. In this context, it is believed that education related to nutrition can contribute to the development of healthy and sustainable dietary behaviors.

It has been observed that individuals who spent most of their pre-university lives in rural areas scored higher on the SHE scales compared to those who spent their lives in urban areas. The urban lifestyle, characterized by competition and a fast-paced environment, coupled with the easy accessibility and enticing presentation of unhealthy foods, has the potential to influence and alter traditional dietary cultures. The traditional dietary culture predominant in rural areas is more sustainable and conducive to a healthy eating style (17). While individuals who spent most of their pre-university years in rural areas seem to maintain their rural dietary habits in the first year of university, these habits may undergo changes over time.

In the study, when comparing the accommodation statuses of the students with the mean of the SHE behavior score, it was observed that students living with their families had higher mean SHE behavior scores than others. Similarly, Yolcuoğlu and Kızıltan's (17) study indicated that the mean for the subscale of choosing seasonal food was higher among students living with their families. In the traditional family structure prevalent in Turkish culture, preparing meals for the family is typically the responsibility of the mother, that is, a woman. Therefore, this result can also be explained by the fact that women are generally more conscious about sustainable and healthy eating (17, 18).

Three quarters of the students thought that they had an impact on climate change and stated that they paid attention to their behavior to reduce their impact on climate change, but the lack of sufficient behavior in sustainable nutrition suggested that students did not have sufficient knowledge about their impact on the environment. In the research conducted by the International Food Council, the impact of sustainability on consumers' preferences was found to be 27% in 2019, 34% in 2020 and 31% in 2021 (23). Although food systems have a serious impact on carbon emissions, the fact that people do not associate their nutritional preferences with this reveals the need for consideration and new studies (24).

35.8% of the students stated that they had heard the term of "sustainable nutrition" before and 29.7% stated that they knew what it meant. In a similar study involving 889 students studying in Istanbul, 58.27% of the students stated that they had heard the term of "sustainable nutrition" before (2). In another study conducted in university students in Turkey, when the rate of hearing the term of "sustainable nutrition" before was examined, it was stated that although

the rate was slightly higher in Nutrition and Dietetics students (65.3%), more than half of the students had not heard the term of "sustainable nutrition" before (24.5% of medical students) (25). The reason why hearing the term of "sustainable nutrition" in both studies was higher than in our study may be that three-quarters of the participants in both studies were women. Since women are more protective than men, they are thought to be more protective of the environment and are more careful about sustainable consumption than men (26). In a qualitative study conducted in 10th grade students in Germany, it was shown that not understanding the term of "sustainable nutrition" was common among students (10). Also, the percentage of female students with high environmental literacy was higher than that of males. Other studies in the literature also support the idea that women tend to be more environmentally conscious (17). As a result of this study, it has demonstrated that women are more conscious and exhibit more accurate behaviors in health, environmental, and nutrition matters.

To the best of our knowledge, this study was the first study to reveal the relationship between sustainable and healthy eating behaviors and environmental literacy in university students. It was observed that there was a moderate positive significant relationship between SHE behaviors and environmental literacy (Figure 1).

Having the awareness that sustainable nutrition is an important component of protecting the environment is an important motivation in the development of SHE behaviors. When Health Sciences students were asked about the characteristics that sustainable nutrition should include, it was observed that the students (approximately one fourth) addressed the dimension of "low environmental impact" at the lowest rate (25). In a study conducted in Australian Nutrition and Dietetics major students, it was found that students were most familiar with the environmental aspects of sustainability (27).

Despite its contributions, this study has several limitations. First, its descriptive, analytical design prevents us from drawing causal inferences between sustainable and healthy eating (SHE) behaviors and environmental literacy. Second, the sample was limited to first-year students at a single university, which may reduce the generalizability of findings to students in other years, disciplines, or regions. Third, all data were collected through self-administered questionnaires, introducing the possibility of self-report bias and social desirability effects. Fourth, the uneven distribution of participants across faculties and the relatively small proportion of students from rural backgrounds may have influenced subgroup comparisons. Finally, data were gathered during a single academic semester, so seasonal or time-related fluctuations in dietary practices and environmental awareness could not be captured. Future studies using longitudinal designs, more diverse student populations, and objective behavioral measures are needed to validate and extend these results.

CONCLUSION

It was determined that although the environmental literacy of university students was high, they were not sufficient to gain sustainable and healthy eating behavior. Being female, living in rural a decade before starting university, having heard the term "sustainable nutrition" before and knowing its meaning were associated with significantly higher SHE behaviors scores. Dieting for healthy nutrition and preparing their own meals at home were also associated with significantly higher SHE behaviors scores. Additionally, believing in global climate change is happening, being aware of their impact on climate change, paying attention to their behaviors to reduce their impact on global climate change, and being worried about global climate change were associated with significantly higher SHE behaviors scores. The students' level of knowledge about sustainable and healthy eating was low. Initiatives to increase their level of knowledge will reinforce students' behavior in this regard. Sustainable and healthy eating behaviors were also associated with environmental awareness.

Organizing education and awareness activities related to sustainable and healthy nutrition for university students will not only contribute to individual health but also to environmental health. This, in turn, will support societies in achieving sustainable development goals.

Ethical Approval

Ethics committee approval was obtained for this study from Erciyes University Ethics Committee (Date/Approval No: 14.09.2022/618). The procedures followed were according to the ethical standards of the responsible institutional ethics committee and the Helsinki Declaration.

Conflict of Interest

No potential conflict of interest was reported by the authors.

Financial Disclosure

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Authors' Contributions

AB: Conceptualization, methodology, data analysis, writing - original draft, writing – reviewing and editing, visualization
HD: Conceptualization, methodology, Data analysis, writing – reviewing and editing. NÖ: writing - original draft, writing – reviewing and editing, visualization.

Data Sharing Statement

Data are not publicly available because this is an ongoing study. Data can be requested from the corresponding author.

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