

## The Characteristics of University Students on Environmental Attitude and Environmental Literacy Level: Example of Faculty of Nursing

### Üniversite Öğrencilerinin Çevresel Tutum ve Çevre Okuryazarlığı Düzeyine İlişkin Özellikleri: Hemşirelik Fakültesi Örneği

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#### Abstract

Environmental health problems are increasing day by day and threaten public health. It was aimed to determine the characteristics of nursing students on environmental literacy and environmental attitudes. In this descriptive and cross-sectional study, data were collected from 388 nursing students through Environmental Literacy Scale for Adults and Environmental Attitude Scale between March and June 2021. Descriptive statistics, independent t-test, one way ANOVA analyzes were used to evaluate data. It was found that 47.9% of the students participating in study were in the first grade and 96.6% of students were not members of an environmental organization. A statistically significant difference was found between mean scores of total mean scores of scales in terms of environmental education status of students, the effect of university education and the effect of pandemic process on environmental awareness. It was determined that environmental literacy level of nursing faculty students was high and environmental attitude level was moderate. It was demonstrated that education level of mother was effective on environmental literacy level of students, and that education level of father was effective on environmental attitude. It may be suggested that issues of awareness and positive environmental attitude development of parents should be included in future studies.

**Keywords:** Attitude, environment, literacy, nursing

#### Özet

Çevre sağlığı sorunları her geçen gün artmakta ve halk sağlığını tehdit etmektedir. Bu çalışmada hemşirelik öğrencilerinin çevre okuryazarlığı ile çevre tutumları arasındaki ilişkinin incelenmesi amaçlanmıştır. Tanımlayıcı-kesitsel tipteki bu çalışmada, Mart-Haziran 2021 tarihleri arasında 388 hemşirelik öğrencisinden Çevre Okuryazarlığı Ölçeği ve Çevresel Tutum Ölçeği aracılığıyla veri toplanmıştır. Verilerin değerlendirilmesinde tanımlayıcı istatistikler, independent t-testi, one way anova analizleri kullanılmıştır. Araştırmaya katılan öğrencilerin %47,9'unun birinci sınıf öğrencisi olduğu, %96,6'sının çevre örgütü üyesi olmadığı belirlenmiştir. Öğrencilerin çevre eğitim durumu, üniversite eğitiminin çevre bilincine etkisi ve pandemi sürecinin çevre bilincine etkisi açısından ölçeklerin toplam puan ortalamaları arasında istatistiksel olarak anlamlı bir fark bulunmuştur (p<0,05). Hemşirelik fakültesi öğrencilerinin çevre okuryazarlık düzeylerinin yüksek, çevreye yönelik tutum düzeylerinin ise orta düzeyde olduğu belirlenmiştir. Öğrencilerin çevre okuryazarlık düzeyleri üzerinde annenin eğitim düzeyinin, çevreye yönelik tutum üzerinde ise babanın eğitim düzeyinin etkili olduğu ortaya konmuştur. Bu sonuca dayalı olarak ileride yapılacak çalışmalarda ebeveynlerin farkındalık ve olumlu çevresel tutum geliştirme konularına yer verilmesi önerilebilir.

**Anahtar Kelimeler:** Çevre, hemşirelik, okuryazarlık, tutum

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## 1. Introduction

Increased environmental problems in the world have become one of the significant factors that threaten public health. According to the data of the World Health Organization (WHO, 2022), 24% of the total deaths in the world every year are caused by environmental problems (WHO, 2022). Every citizen should seek to understand ecology, care about the environment and take action in order to evaluate environmental problems (Szczytko et al., 2019). Individual behaviors are in need of changing to create a sustainable environment. Changing behaviors requires changing attitudes, knowledge and value judgments (Ozyurek et al., 2019). Environmental education is accepted as an important factor in increasing the environmental literacy of individuals so as to create a conscious society (Goldman et al., 2017).

Environmental literacy is the whole of habits such as understanding, skills, attitudes and thoughts about the environment. Environmental literacy starts with seeking to understand the relationship between environmental risks and health. Environmental literacy is a definition formed by the combination of health literacy, risk communication, environmental health science and safety culture subgroups (Finn and O'Fallon, 2017). Studies on environmental literacy are a process that should start from pre-school and continue throughout life. Although this kind of education concerns all individuals in the society, the younger generation is the most important segment that needs to be brought into awareness and sensitivity. One of the goals of universities is to enable all students, regardless of their field of study, to become environmentally literate. The first step to achieve this goal is to determine the current environmental literacy levels of university students (Ozyurek et al., 2019).

When the studies on environmental attitudes and environmental literacy in our country and in the international literature are examined, it is observed that they are conducted with primary school students and again mostly with university students studying at the faculty of education and engineering (Ozyurek et al., 2019; Goldman et al., 2017; Cetin et al., 2020; Gunes et al., 2019; Karatekin and Aksoy, 2019). It is vital for future development that university students, who are considered as the leading generation of the future, are responsible and equipped for social problems (Duarte et al., 2017). However, nurses are the largest group in the field of health, especially in terms of establishing one-to-one relationships with the society and improving the environmental attitudes of the society, and it is necessary for the nursing students to be prepared in this regard. It is crucial for nursing academicians to provide education on the environment while training health professionals of the future (Wasco, 2019). To minimize the negative effects of the environment on health to change and use the full potential of nurses upstream- and downstream-oriented policies are needed (Leffers and Butterfield, 2018). The power of nurses in this field should be demonstrated with studies to be carried out. If it is known which characteristics of students are effective in environmental attitudes, the number of individuals with high environmental awareness can be increased.

## 2. Method

### 2.1. Aim of the Research

In this descriptive and cross-sectional study, it was aimed to determine the characteristics of nursing students on environmental literacy and environmental attitudes.

### 2.2. Research Questions

Research questions:

- What is the environmental literacy level of nursing students?
- What are the environmental attitudes level of nursing students?
- Is there a difference in environmental literacy according to the sociodemographic characteristics of nursing students?
- Is there a difference between environmental attitudes of nursing students according to their sociodemographic characteristics?
- Is there a relationship between environmental literacy and environmental attitudes of nursing students?

### 2.3. Population and sample of the Research

This study was conducted on undergraduate nursing students of the Faculty of Nursing of a university located in the west of Turkey. Sampling inclusion criteria were determined as follows: being a nursing student and voluntarily agreeing to participate in the study. Exclusion criteria from the sample were determined as follows: students who did not agree to participate in the study. It was carried out between March and June 2021 with first-, second-, third-, and fourth-year nursing students studying at the Faculty of Nursing of a state university. The study was completed with 388 students who agreed to participate in the study without using the sample selection method. The highest number of students who agreed to participate in the study was in the 1st year students. It was determined that 47.9% of the students participating in the study were in the first grade, 13.7% were in the second grade, 16.8% were in the third grade, and 21.6% were in the fourth grade.

### 2.4. Data collection and Data collection forms

Research data were collected from students via Google Forms due to the COVID-19 pandemic and the implementation of distance education. Link addresses were directed to the students, who were ensured to participate in the study when they were ready. In the link where the study would be conducted, there was a button stating that he/she agreed to participate in the study first. The purpose and content of the study were included in this section. If this statement was not approved, other questions would not be answered.

#### *2.4.1. Sociodemographic Characteristics Form*

It is a data collection form consisting of 9 questions, which includes information about the sociodemographic characteristics of the students, such as grade, family type, and the place where they have lived the longest.

#### *2.4.2. Environmental Literacy Scale for Adults*

The Environmental Literacy Scale for Adults (ELSA) was developed by Yigit et al. in 2014 to measure the environmental literacy of adults (Yigit et al.,2014). The final version of the scale consists of 20 items and of three sub-dimensions, including 'environmental consciousness (3,10,11,12,13,15,16,17,19)', 'environmental anxiety (1,2,4,5,7,8) and 'environmental awareness (6,9,14,18,20)'. Scale items are scored in a 5-point Likert-type in line with the statements '1-strongly disagree, 2-disagree, 3-undecided, 4-agree and 5-strongly agree'. Items 3 and 16 in the scale are reverse scored. The scores to be obtained from the scale are interpreted as low level environmental literacy between 20-46 points, medium level environmental literacy between 47-73 points and high-level environmental literacy between 74-100 points. Cronbach's alpha values of the scale were found to be .882 for the total scale, .801 for environmental consciousness sub-dimension, .76 for environmental anxiety, and .714 for environmental awareness. In this study, it was determined that the Cronbach's alpha values of the scale ranged between .780-.825 and the total score of the scale was  $85.92 \pm 8.70$ .

#### *2.4.3. Environmental Attitude Scale*

The Environmental Attitude Scale (EAS) developed by Uzun et al. (2006) to measure the environmental attitudes of secondary school, high school and university students consists of 40 items and of 3 sub-dimensions that are 'environmental behaviour (13 items)', 'environmental opinion (11 items)' and 'environmental emotion (16 items)' (11). In the five-point Likert-type scale, the items in the sub-dimensions of environmental behaviour and environmental emotion include the statements '1-strongly disagree, 2-disagree, 3-undecided, 4-agree and 5-strongly agree'; and the items in the environmental behaviour sub-dimension include the statements '1-never, 2-very little, 3-sometimes, 4-often, 5-always'. The lowest score of the scale is 40, and the highest score is 200, and a high score indicates a positive environmental attitude. Cronbach's alpha values of the scale were .940 for the total scale; .912 for environmental behaviour sub-dimension, .821 for environmental opinion sub-dimension, and .946 for environmental emotion sub-dimension. In this study, it was determined that the Cronbach's alpha values of the scale ranged between .783-.887 and the total score of the scale was  $122.73 \pm 11.49$ .

#### *2.5. Ethical considerations*

After obtaining written permission from the Faculty of Nursing where the study would be conducted, ethics committee approval was obtained from a state university Non-Interventional Studies Ethics Committee (dated 01.03.2021 and decision number 2021/07-36).

## 2.6. Limitations

Due to the Covid-19 pandemic at the time of the study, training activities were carried out in a hybrid model. Therefore, it was difficult to reach all students. Another limitation of the study is; the study was conducted with the nursing students of only one university. Therefore, the results cannot be generalized to other nursing students.

## 2.7. Analysis of data

The data of the research were analysed with SPSS (22.0) program. The socio-demographic characteristics of the students were evaluated with percentage and mean. Regression analysis was used to determine the relationship between the total scores of the scales, and independent t-test and one-way ANOVA analysis of variance were used to compare the mean scores of the Environmental Literacy Scale and the Environmental Attitude Scale according to their sociodemographic characteristics; in case of difference, Schaffe test was used for further analysis.

### 2.7.1. Variables of the study

The independent variables of the study are the sociodemographic characteristics of the students, while the dependent variables are the environmental literacy scale sub-dimension and total score averages, and the environmental attitude scale sub-dimension and total score averages.

## 3. Results

It was determined at Table 1; 82.2% of our participants were in the nuclear family type and 41% lived in the city center. It was also determined that 52.8% of the students' mothers and 62.8%'s fathers were primary school graduates. It was found that 96.6% of the students were not members of an environmental organization and 55.4% did not participate in any educational program related to the environment. 79.6% of our students think that university education does not create environmental awareness, whereas 78.9% stated that the COVID-19 pandemic affects environmental awareness. When they scored from 1 to 5 how much Covid-19 affects environmental awareness, the average score was found to be  $3.94 \pm .81$ .

**Table 1.** Distribution of the Sociodemographic Characteristics of the Participants (n=388)

Features	n	%
<b>Type of family</b>		
Nuclear family	319	82.2
Extended family	69	17.8
<b>Where the participant lived the longest</b>		
Village	89	22.9
Count	140	36.1
City Center	159	41.0
<b>Education level of the mother</b>		
Illiterate	76	19.6
Literate	38	9.8
Primary School	205	52.8
High School or Higher	69	17.8

*n= number, %= percentage*

**Table 1.** Distribution of the Sociodemographic Characteristics of the Participants (n=388) (continued)

<b>Features</b>	<b>n</b>	<b>%</b>
<b>Education level of the father</b>		
Illiterate	17	4.4
Literate	15	3.9
Primary School	244	62.8
High School or Higher	112	28.9
<b>Status of being a member of a voluntary organization related to the environment</b>		
Yes	13	3.4
No	375	96.6
<b>Participation in any course/training course/symposium related to the environment before</b>		
Yes	173	44.6
No	215	55.4
<b>Do you think that university education creates environmental awareness?</b>		
Yes	309	79.6
No	79	20.4
<b>Did the current pandemic process affect your environmental awareness?</b>		
Yes	306	78.9
No	82	21.1
<b>How much did the pandemic process affect your environmental awareness? (1-It had little effect...5- had a lot of effect)</b>		<b>Average ± SS</b>
		3.94 ± .81

*n= number, %= percentage*

Table 2 shows the comparison of the sociodemographic characteristics of our participants with The Environmental Literacy Scale sub-dimension and total score. A statistically significant difference was found between the mean scores of environmental awareness and environmental anxiety sub-dimensions in terms of the status of students being a member of an environmental organization and the effect of the pandemic process on environmental awareness ( $p < .05$ ).

A statistically significant difference was found between the mean scores of the environmental anxiety sub-dimension and the total mean scores of ELSA in terms of the environmental education status of the students, the effect of university education on environmental awareness, and the effect of the pandemic process on environmental awareness ( $p < .05$ ).

Table 3 shows the comparison of the sociodemographic characteristics of our participants with the Environmental Attitude Scale sub-dimension and total score.

Between the mean scores of the environmental behavior sub-dimension and the total mean score of the Environmental Attitude Scale; a statistically significant difference was found in terms of the status of students being a member of an environmental organization, the status of receiving environmental education, the effect of university education on environmental awareness and the effect of the pandemic process on environmental awareness ( $p < .05$ ).







Table 4 shows the comparison of the mean scores of the scales according to the descriptive characteristics of the students.

There was a statistically significant difference between the mean scores of environmental awareness, environmental behaviour and environmental emotion sub-dimension, and Environmental Attitude Scale total score and ELSA total score according to the class of the students ( $p < .05$ ). It was found that the difference was between the mean scores of the fourth grade and first grade students and the third and first grade students ( $p < .05$ ).

**Table 4.** The comparison of the scale scores of the students according to their descriptive characteristics (n=388)

Feature	Scale Dimension/ Sub-Dimension	F	p	Scheffe
<b>Grade</b>	Environmental consciousness	4.134	.007	4 <sup>th</sup> grade > 1 <sup>th</sup> grade
	Environmental anxiety	2.720	.044	4 <sup>th</sup> grade > 1 <sup>th</sup> grade; 3 <sup>rd</sup> grade>1 <sup>th</sup> grade
	Environmental awareness	5.764	.001	4 <sup>th</sup> grade > 1 <sup>th</sup> grade; 3 <sup>rd</sup> grade>1 <sup>th</sup> grade
	Environmental Attitude Scale total	5.285	.001	4 <sup>th</sup> grade > 1 <sup>th</sup> grade; 3 <sup>rd</sup> grade>1 <sup>th</sup> grade
	Environmental behaviour	4.531	.004	4 <sup>th</sup> grade > 1 <sup>th</sup> grade; 3 <sup>rd</sup> grade>1 <sup>th</sup> grade
	Environmental opinion	1.845	.138	
	Environmental emotion	5.778	.001	4 <sup>th</sup> grade > 1 <sup>th</sup> grade; 3 <sup>rd</sup> grade>1 <sup>th</sup> grade
	Environmental Literacy scale total	5.469	.001	4 <sup>th</sup> grade > 1 <sup>th</sup> grade; 3 <sup>rd</sup> grade>1 <sup>th</sup> grade
<b>Where the participant lives</b>	Environmental consciousness	8.765	.000	city>village; city>county;
	Environmental anxiety	4.644	.010	city >county
	Environmental awareness	9.865	.000	village>county; city>county
	Environmental Attitude Scale total	4.422	.013	city>county
	Environmental behaviour	5.115	.006	city>county
	Environmental opinion	3.278	.039	
	Environmental emotion	3.927	.021	city>county
	Environmental Literacy scale total	9.326	.000	city>county
<b>The mother's education level</b>	Environmental consciousness	2.626	.024	
	Environmental anxiety	1.839	.104	
	Environmental awareness	1.635	.150	
	Environmental Attitude Scale total	.293	.917	
	Environmental behaviour	.745	.590	
	Environmental opinion	2.454	.033	
	Environmental emotion	.598	.701	
	Environmental Literacy scale total	2.269	.047	illiterate>Primary school graduates
<b>The father's education level</b>	Environmental consciousness	1.182	.316	
	Environmental anxiety	1.800	.147	
	Environmental awareness	3.706	.012	
	Environmental Attitude Scale total	4.370	.005	illiterate>Primary school graduates
	Environmental behaviour	5.054	.002	illiterate>Primary school graduates
	Environmental opinion	.571	.634	
	Environmental emotion	1.668	.173	
	Environmental Literacy scale total	1.972	.118	

*F= One Way ANOVA*

A statistically significant difference was found between the mean of the Environmental Attitude Scale sub-dimension and the total score, and the ELSA sub-dimension and total score according to the place where the students lived ( $p < .05$ ).

There was a statistically significant difference between the environmental awareness sub-dimension, environmental thought sub-dimension and total ELSA total score averages according to the maternal

education level of the students ( $p < .05$ ). It was determined that the difference was between the mean scores of illiterate mothers and primary school graduate mothers ( $p < .05$ ). There was a statistically significant difference between the environmental awareness sub-dimension and the environmental attitude scale total score, and the environmental behavior sub-dimension mean score according to the father's education level of the students ( $p < .05$ ). It was found that the difference was between the mean scores of illiterate fathers and primary school graduate fathers ( $p < .05$ ).

In Table 5, simple linear regression analysis was conducted to explain the effect of environmental literacy on environmental attitudes of students.

Considering the significance level corresponding to the F value, it is seen that the established model is statistically significant ( $F = 238.639$ ;  $p < 0.01$ ). Considering the t value and significance level of the Beta coefficient of the independent variable, it is seen that the environmental literacy level of the students has a statistically significant effect on the environmental attitude ( $p < 0.01$ ). It was found that environmental literacy level was a 40.1% predictor of students' environmental attitudes ( $F = .401$ ).

**Table 5.** The relationship between Environmental Literacy Scale and Environmental Attitude Scale Mean Scores (n=388)

		$\beta$	t	p	Beta	VIF	F	Model (p)	R <sup>2</sup>	Durbin Watson
The Environmental Literacy Scale	Environmental attitude scale	.836	16.082	0.000	.633	1.000	258.639	0.000	.401	1.906

#### 4. Discussion

In this study, it was determined that the environmental literacy level of the nursing faculty students was high, and the environmental attitude level was moderate. In studies in which environmental attitudes of nursing students were evaluated using different scales, it was found that students had moderate/high environmental attitudes and were in line with our findings (Cetin et al., 2020; Bakan et al., 2020; Bodur ve Tasocak, 2013). In the literature, unlike the field of nursing, it is often seen that the environmental literacy and environmental attitude levels of university students in educational sciences are similarly medium/high (Koc et al., 2018; Demirtas et al., 2018; Fettahlioglu, 2018; Durkan, 2020; Acungil, 2020). In addition, in our study, it was displayed that the environmental literacy and environmental attitude levels of the students increased as the grade level increased. Similarly, there are studies in the literature in which students exhibit positive environmental attitudes and behaviors as the grade level increases, and there are also studies showing that the class variable has no effect (Bakan et al., 2020; Acungil, 2020). The difference between the findings may be due to the environmental-friendly practices of the students at the university where they are studying.

In our study, it was determined that being a member of an environmental organization and having received an environmental education before had a positive effect on environmental attitude and environmental literacy. Similar to our finding, in the study conducted with Nursing and Medical Faculty students, environmental attitudes of students who were interested in the environment, talked about the environment in their families, and thought that health workers should be sensitive to the environment

were found to be higher (Cetin et al., 2020). The studies on nursing students in our country found that the environmental sensitivity of the participants who participated in environmental activities was higher (Sayan and Kaya, 2016; Gök and Kılıç, 2021). Liang et al. (2018), reported that environmental behavior, environmental awareness, and environmental awareness dimensions are higher in students who are members of an environmental organization. In a study conducted by Yapıcı et al. (2017), in a nursing faculty located in the south of our country, it was found that the environmental risk perception of students participating in environmental activities is higher. Similarly, in a quasi-experimental study evaluating the effectiveness of environmental education given to university students in China, it was pointed out that environmental knowledge and attitudes of students who received environmental education increased (Gao, 2018). Unlike our findings, Veisi et al. (2019), in a study of theirs, indicated that previous environmental education experiences did not cause a significant difference between students' environmental literacy levels. The difference between students' awareness and attitudes may be due to the theoretical teaching of environmental lessons and the limited environment-friendly practices in daily life.

Previous studies showed that many factors such as age, education level, family type, family education level, and gender are effective in the development of individuals' behaviors and thoughts towards the environment (Cetin et al. 2020; Veisi et al., 2019; Amerigo et al., 2017). It is known that especially the family factor plays a significant role in the environmentally friendly attitudes and behaviors of individuals (Gronhoj and Thogersen, 2017). In our study, it was demonstrated that the education level of the mother was effective on the environmental literacy level of the students, and that the education level of the father was effective on the environmental attitude. Similar to our findings, Veisi et al. (2019) found in their study that the level of family education was determinant in environmental literacy, and it was found that as the level of family education increased so did the environmental literacy of the students. In our findings, it was determined that the difference in family education level was caused by the difference between illiterate parents, and parents who graduated from primary school. Agfar et al. (2018), in their study examining the environmental attitude and environmental knowledge levels of the society according to the education level, stated that the environmental literacy of individuals increased as the education level did so. Bakan et al. (2020), in their study with Nursing Faculty students in the east of our country, depicted that the level of education of parents was not effective on students' environmental awareness. In this context, our findings differ from the literature.

It is known that the pandemic process increases the environmental awareness of individuals (Rousseau & Deschacht, 2020). Similarly, a statistically significant difference was found in the mean scores of environmental attitudes and environmental literacy between the participants who stated that the Covid-19 pandemic increased their environmental awareness and those who said that it did not increase their environmental awareness.

In addition to socioeconomic factors, it is known that cultural factors also affect environmental behavior (Amerigo et al., 2017). In our findings, it was indicated that family type did not make any difference between environmental attitudes or environmental literacy levels on students, while environmental attitudes and environmental literacy levels of students living in the city were found to be higher in

general. Bakan et al (2020), in their study, determined that the fact that different settlements that students lived in did not make a significant difference between their perspectives on environmental problems.

In this study, it was determined that environmental literacy is a predictor of individuals' environmental attitudes and behaviors. In support of our finding, an experimental study showed that environmental knowledge acts as a mediator between action and environmental awareness, and that environmental knowledge is directly related to thinking skills (Surwayati et al.,2020). Additionally, it is known that increasing environmental knowledge among university students is the main point in the development of sustainable environmental management, especially in local and global issues (Kurupparachchi et al., 2021).

## **5. Conclusion**

In recent years, the number of studies on the knowledge, behavior, and attitude of university students towards social issues has been increasing. In this study, an example of Nursing Faculty students about environmental attitudes and environmental literacy, which is increasingly important in terms of public health, is presented. In the world, which is constantly renewing itself with the technological age, university graduates should be sensitive to environmental problems. When nurses graduate, they serve in many parts of the society and in different fields. Raising awareness about environmental problems in health education to be given to individuals and directing the society correctly will help nurses to show their presence in the field of public health. It has been revealed in this study that it is necessary to include topics related to environmental awareness and environmental attitudes in nursing curricula.

In addition, in this study, it was concluded that while the mothers' education level increased the awareness of the students, the fathers' education level was effective in developing positive attitudes of the students. In line with the results of this study, it may be suggested that courses on environmental education should be included and that applications to increase environmental awareness should be extended in universities, to evaluate community-based environmental literacy and to carry out studies to increase environmental literacy of the society. Based on this result, it may be suggested that the issues of awareness and positive environmental attitude development of parents should be included in future studies.

## **Authors Contributions**

Topic selection: BC, ZB; Design: BC, ZB; Planning: BC, ZB; Data collection: BC; Data analysis: BC, ZB; Article writing: BC; Critical review: BC, ZB.

## **Conflict of Interest**

The authors declare no conflict of interest.

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