Reflection of Nursing Students' Climate Crisis Awareness on Climate Change Anxiety

Hemşirelik Öğrencilerinin İklim Krizi Farkındalığının İklim Değişikliği Anksiyetesine Yansıması

Emine Karacan[1*], Emine Karacan[2], Zeynep Güngörmüş[3]

[1]Gaziantep Islam Science and Technology University, Health Services Vocational School, Department of Health Care Services, Elderly Care Program, Gaziantep, Türkiye.

[2]Iskenderun Technical University, Dörtyol Health Services Vocational School, Department of Medical Services and Techniques, Medical Documentation and Secretarial Program, Hatay, Türkiye.

[3]Gaziantep Islam Science and Technology University, Faculty of Health Sciences, Department of Nursing, Gaziantep, Türkiye.

ABSTRACT

Purpose: This study was conducted to evaluate the reflection of nursing students' climate crisis awareness on climate change anxiety.

Methods: The universe of the descriptive and correlational type study was composed of students studying in the nursing department of a university (400 students). The sample of the research consisted of 106 students. Data were collected using the Descriptive Characteristics Form, Global Climate Change Awareness Scale (GCCAS) and Climate Change Anxiety Scale (CCAS). The data obtained from the study were evaluated with the SPSS 23 package program.

Results: Students participating in the study 94.3% knew the concept of climate change, 92.5% were concerned about the future regarding climate change, 63.2% wanted to participate in social responsibility activities aimed at preventing the climate crisis, and 95.3% wanted to increase the efforts to prevent the climate crisis. The total score of the GCCAS was statistically significantly higher in those who wanted to increase the measures to prevent the climate crisis (73.36±16.78), and the total score of the CCAS was statistically significantly higher in those who thought that our country could find a solution when the climate crisis intensified (30.36±12.13) ($p<0.05$).

Conclusion: As a result, almost all of the nursing students knew the concept of climate change, were concerned about the future regarding climate change, and wanted to increase the efforts to prevent the climate crisis. In addition, it was determined that the students' awareness of the climate crisis was high and their anxiety was at a moderate level.

Keywords: Nursing, Student, Climate crisis, Awareness, Anxiety

ÖZET

Amaç: Bu çalışma, hemşirelik öğrencilerinin iklim krizi farkındalığının iklim değişikliği anksiyetesine yansımasını değerlendirmek amacıyla yapıldı.

Yöntem: Tanımlayıcı ve ilişki arayıcı tipte yürütülen araştırmanın evrenini, bir üniversitenin hemşirelik bölümünde eğitim gören öğrenciler (400 öğrenci) oluşturdu. Araştırmanın örneklemi ise, 106 öğrenci oluşturmuştur. Veriler; Tanıtıcı Özellikler Formu, Küresel İklim Değişikliği Farkındalık Ölçeği (KİDFÖ) ve İklim Değişikliği Anksiyetesi Ölçeği (İDAÖ) kullanılarak toplandı. Araştırmadan elde edilen veriler SPSS 23 paket programıyla değerlendirildi.

Bulgular: Çalışmaya katılan öğrencilerin %94.3'ü iklim değişikliği kavramını bilmekte, %92.5'i iklim değişikliği konusunda geleceğe dair endişe taşımakta, %63.2'si iklim krizini önlemeye yönelik sosyal sorumluluk çalışmalarına katılmak istemekte, %95.3'ü iklim krizini önlemeye yönelik çalışmaların arttırılmasını istemektedir. KİDFÖ toplam puanı iklim krizini önlemeye yönelik önlemlerin arttırılmasını isteyenlerde (73.36±16.78), İDAÖ toplam puanı ile iklim krizi şiddetlendiği zaman ülkemizin buna çözüm bulabileceğini düşünenlerde (30.36±12.13) istatistiksel olarak anlamlı derecede daha yüksektir ($p<0.05$).

Sonuç: Sonuç olarak hemşirelik öğrencilerinin tamamına yakını iklim değişikliği kavramını bilmekte, iklim değişikliği konusunda geleceğe dair endişe taşımakta ve iklim krizinin önlenmesine yönelik çalışmaların artırılmasını istemektedir. Ayrıca öğrencilerin iklim krizi farkındalıklarının yüksek, anksiyetelerinin ise orta düzeyde olduğu saptanmıştır.

Anahtar Kelimeler: Hemşirelik, Öğrenci, İklim krizi, Farkındalık, Anksiyete

*Corresponding author: Emine Karacan, E-mail: emine.karacan@gibtu.edu.tr , ORCID: 0000-0001-5953-219X

Introduction

Climate change is the changes in the climate that occur as a result of activities that directly or indirectly disrupt the composition of the global atmosphere (1). Climate change, which is one of the most important environmental problems in the world, is an alarming situation and the most important public health problem faced by humanity in the 21st century (2, 3).

The problem of climate change, which occurred within the framework of nature's own dynamics in the past and was regulated in the natural flow; Today, it is formed as a result of human activities. Urbanization, industrialization and excessive use of fossil fuels, which have increased rapidly since the industrial revolution, cause the order of the climates to deteriorate (1, 4). As a result; problems such as temperature changes, melting of glaciers, rise in sea level, drought, decrease in agricultural lands, disruption in seasonal cycles, floods, storms, forest fires, loss of livability in some regions, water and food insecurity, higher prevalence of disease, mass migrations and ultimately the emergence of a global security problem are expected (1-6). On the other hand, the uncertainty and stress brought about by change can also cause people to experience psychological problems such as trauma, fear, substance abuse, depression and anxiety (5, 7-9). It is possible to define climate change anxiety as not being sure about the future of the world and all living things in it and worrying about ecological disasters that may occur due to the climate crisis (10). These problems caused by the climate crisis, and especially the state of anxiety, can be prevented from becoming a crisis by increasing the consciousness and awareness levels of individuals. As a matter of fact, the increase in the level of consciousness and awareness about climate change points to the most promising point in reaching a solution (11). If consciousness and awareness cannot be achieved, people's sensitivity to climate change will decrease and the destructive effects of the climate crisis will increase (12). In addition, when people who act consciously develop sensitivity to climate change, this awareness will be combined with hope and optimism to reduce the level of anxiety (10).

If awareness is supported and nurtured by knowledge, change can be created. Therefore, it is necessary for all people living in the world to be aware of the dangers, consequences and solutions of the issue. In order to achieve the necessary transformation, it should be ensured that individuals understand this process well and have the necessary equipment. Nurses, who have important responsibilities in protecting and maintaining the natural environment from depletion, pollution, deterioration and destruction, are people who have scientific equipment and communication skills in providing health education (13). For this reason, nurses have important duties in raising public awareness about climate change, raising awareness, creating behavior change and initiating climate action, protecting and maintaining physical and mental health. It is important to evaluate the awareness of climate change in future nurses studying in nursing schools and to be able to instill this awareness. However, there is only one study (2) examining climate awareness in nursing students in our country, and there is no study determining the anxiety levels of nursing students. This study, which we think will make important contributions to the literature, was conducted to examine the reflection of nursing students' awareness of climate crisis on climate change anxiety.

Research questions; Nursing students,

1. Is there a difference between sociodemographic characteristics and climate change awareness and anxiety?
2. What is the level of climate change awareness?
3. What is the level of climate change anxiety?
4. What is the relationship between climate change awareness and anxiety?.

Materyal ve Metot (Materials and Method)

Type of Research

This research was conducted in a descriptive and relationship-seeking type.

Place and Date of the Study

The research was conducted between June 2023 and February 2024 at Gaziantep Islam Science and Technology University (GISTU) Faculty of Health Sciences, Department of Nursing.

Universe and Sample of the Study

The population of the study consists of 1st, 2nd and 3rd year students studying in the Department of Nursing, Faculty of Health Sciences, GISTU (400 students in total). The sample of the study was calculated with the G*Power 3.1.9.program (Franz Faul, Universitat Kiel, Germany) with reference to the study titled "Evaluation of teachers' awareness of global climate change (2023) (14)" and the sample size was determined as 106 people (α=0.05, 1-β= 0.80, effect size d= 0.48). Students who volunteer in the study, study in the nursing department, have a smartphone and internet, and speak Turkish will be included. Students who do not want to participate in the study will be excluded from the research.

Data Collection Tools

1. Introductory Features Form

The introductory characteristics form prepared by the researchers contains a total of 15 questions, 9 questions questioning the sociodemographic characteristics of the students and 6 questions questioning their knowledge about the climate crisis.

2. Global Climate Change Awareness Scale (GCCAS)

The scale developed by Deniz et al. (2021) determines the awareness levels of university students regarding global climate change. The scale is a 5-point Likert-type scale consisting of 21 items (I am not aware at all: 1 - I am fully aware: 5). The scale, which consists of 4 sub-dimensions (Awareness of the Effects of Global Climate Change on Natural and Human Environments (items 1-9), Awareness of Global Organizations and Agreements (items 10-15), Awareness of the Causes of Global Climate Change (items 16-18) and Awareness of the Energy Consumption of Global Climate Change (items 19-21)), does not contain reverse items. All dimensions of the scale can be added. In total, the scale scores between 21-105. The Cronbach alpha coefficient of the scale is 0.82. The Cronbach alpha coefficient of the scale sub-dimensions varies between 0.72-0.87 (15). In this study, the Cronbach alpha coefficient of the scale is 0.94.

3. Climate Change Anxiety Scale (CCAS)

The Turkish validity and reliability of the scale developed by Clayton and Karazsia (2020) (8) was conducted by Cebeci et al. (2022). The scale is a 5-point Likert type (1: Never – 5: Almost always) consisting of 13 items and 2 sub-dimensions. Items 1-8 constitute the "Cognitive Impairment" sub-scale; items 9-13 constitute the "Functional Impairment" sub-dimension. In total, the scale scores between 13-65. The Cronbach Alpha value of the scale was determined as 0.94 (3). In this study, the Cronbach alpha coefficient of the scale was 0.96.

Data Collection

The data for the study were collected by the researchers in a separate room via face-to-face interviews using questionnaires and scales in 15-20 minutes. The purpose of the study was explained to the participants in detail, and it was stated that the study was conducted with the approval of the hospital administration and ethics committee. In addition, the data were collected after obtaining the informed consent form and verbal approval from the participants.

Evaluation of Data

The data obtained from the study were analyzed using the Statistical Package for the Social Sciences (SPSS) version 23.0 (IBM Corp., Armonk, NY, USA) program. Descriptive statistical methods used were mean, standard deviation, number and percentage calculations. T-test was used to compare two independent groups that were found to be normally distributed with Skewness (-0.770 - 1.125) and Kurtosis (0.232-0.750) values, variance analysis (ANOVA) was used to compare more than two groups, and Pearson correlation analysis was used to test the relationship between variables. $p < 0.05$ was accepted for significance.

Ethical Aspects of the Research

Approval was obtained from the ethics committee of a state university to conduct the research (Decision Date: 16.06.2023, Decision No: 248.26.04, Protocol No: 2023/248). During the research process, the necessary research and publication ethics principles were followed in accordance with the Declaration of Helsinki.

Before starting the study, written and verbal permissions were obtained from the institution where the data would be collected. In addition, participants were informed about the purpose, duration and scope of the research and their informed consent form and verbal approvals were obtained.

Results

The average age of the participants participating in the study is 20.96±2.54, the average number of siblings is 4.50±2.28. In addition, 87.7% of the participants are female, 36.8% of their mothers and 37.7% of their fathers have primary school education, 72.6% of their income is equal to their expenses, 94.3% of them know the concept of climate change, 92.5% of them have concerns about climate change in the future, 81.1% of them think that our country is taking precautions against the climate crisis, 48.1% of them think that our country can find a solution when the climate crisis intensifies, 63.2% of them want to participate in social responsibility activities to prevent the climate crisis, and 95.3% of them want to increase the precautions to prevent the climate crisis (Table 1).

The total score of the GCCAS is statistically significantly higher in those who want to increase the measures to prevent the climate crisis (73.36±16.78), in those who do not think that our country will be able to find a solution when the climate crisis intensifies with the cognitive impairment sub-dimension score (19.45±7.67), in those with high expenditures with the functional impairment sub-dimension score (12.60±4.13), and in those who do not think that our country will be able to find a solution when the climate crisis intensifies with the CCAS total score (p<0.05) (Table 1). The total score of the GCCAS was 72.64±16.99, the mean of the Cognitive Impairment sub-dimension was 16.05±7.10, the mean of the functional impairment sub-dimension was 9.31±4.936 and the total score of the CCAS was 25.21±11.55 (Table 1).

Table 1: Comparison of the descriptive characteristics of nursing students and the total scores and sub-dimension means of GCCAS, Cognitive Impairment Sub-Dimension, Functional Impairment Sub-Dimension and CCAS

Introductory Features (n=106)		n (%)	GCCAS (21-105 point)	CCAS		
				Cognitive Impairment (8-40 point)	Functional Disorder (5-25 point)	Total (13-65 point)
Age X±SD (Min-Max)	20.96±2.54 (Min:18-Max:42)					
Number of siblings X±SD (Min-Max)	4.50±2.28 (Min:0-Max:12)					
Gender	Woman	93 (87.7)	72.36±17.33	16.06±6.89	9.21±4.79	25.05±11.22
	Man	13 (12.3)	74.61±14.86	16.00±8.80	10.00±6.01	26.38±14.18
Statistical Analysis (t/p)			-0.445/0.65	0.031/0.976	-0.535/0.594	-0.387/0.699
Mother's education status	Not literate	22 (20.8)	68.31±15.80	15.95±7.63	9.54±4.62	25.72±11.86
	Literate	20 (18.9)	73.15±13.41	14.50±4.53	7.95±2.85	22.25±6.82
	Primary school	39 (36.8)	73.84±18.23	16.82±8.11	9.92±5.88	26.30±13.44
	Middle school	11 (10.4)	70.36±21.81	16.90±8.19	9.81±6.06	26.72±13.62
	High school and above	14 (13.2)	77.14±16.33	15.64±5.79	8.78±4.00	24.42±9.58
Statistical Analysis (F/p)			0.696/0.597	0.396/0.811	0.602/0.662	0.481/0.750
Father's education status	Not literate	5 (4.7)	74.80±4.49	11.60±3.36	6.00±1.22	17.60±4.09

		N (%)				
	Literate	10 (9.4)	65.80±13.39	16.10±5.91	9.10±4.45	25.20±10.25
	Primary school	40 (37.7)	71.10±17.30	16.55±7.29	9.82±5.27	25.95±11.91
	Middle school	17 (16.0)	73.23±21.24	19.00±9.05	10.64±5.74	29.94±14.00
	High school and above	34 (32.1)	75.85±16.32	14.64±6.10	8.58±4.41	23.11±10.29
Statistical Analysis (F/p)			0.810/0.522	1.642/0.169	1.178/0.325	1.610/0.177
Income status	Income ↑	14 (13.2)	72.28±18.10	16.28±6.99	8.85±5.62	25.14±12.48
	Income= Expense	77 (72.6)	72.77±16.11	15.64±7.18	8.75±4.75	24.35±11.51
	Expense ↑	15 (14.2)	72.26±21.27	17.93±6.93	12.60±4.13	29.73±10.53
Statistical Analysis (F/p)			0.009/0.991	0.652/0.523	**4.113/0.019**	1.371/0.258
Knowing the concept of climate change	Yes	100 (94.3)	73.32±16.39	16.13±7.12	9.31±4.96	25.28±11.58
	No	6 (5.7)	61.33±24.16	14.83±7.38	9.33±4.76	24.16±12.12
Statistical Analysis (t/p)			1.199/0.282	0.432/0.666	-0.011/0.991	0.228/0.820
Concern about future climate change	Yes	98 (92.5)	73.63±15.93	16.42±7.11	9.45±4.97	25.72±11.60
	No	8 (7.5)	60.50±25.16	11.50±5.50	7.50±4.34	19.00±9.50
Statistical Analysis (t/p)			1.453/0.187	1.910/0.059	1.081/0.282	1.594/0.114
I think our country is taking precautions against the climate crisis problem.	Yes	20 (18.9)	69.10±16.62	17.95±6.51	10.15±4.38	28.10±10.24
	No	86 (81.1)	73.46±17.07	15.61±7.20	9.11±5.05	24.54±11.79
Statistical Analysis (t/p)			-1.035/0.303	1.328/0.187	0.843/0.401	1.242/0.217
When the climate crisis intensifies, do not think that our country can find a solution to it	Yes	11 (10.4)	68.90±16.29	16.92±8.27	10.90±5.26	26.88±13.50
	No	51 (48.1)	71.01±17.89	19.45±7.67	10.03±5.52	30.36±12.13
	Indecisive	44 (41.5)	75.45±16.02	14.20±4.76	8.06±3.83	22.00±7.69
Statistical Analysis (F/p)			1.102/0.336	**3.264/0.042**	2.605/0.079	**3.482/0.034**
Wanting to participate in social responsibility activities to prevent the climate crisis	Yes	67 (63.2)	74.34±14.70	15.77±7.03	8.77±4.76	24.56±11.36
	No	39 (36.8)	69.71±20.22	16.53±7.29	10.23±5.15	26.33±11.95
Statistical Analysis (t/p)			1.356/0.178	-0.531/0.597	-1.472/0.144	-0.757/0.451
Requesting increased efforts to prevent the climate crisis	Yes	101 (95.3)	73.36±16.78	16.19±7.11	9.34±4.96	25.38±11.58
	No/Indecisive	5 (4.7)	58.00±16.17	13.20±7.12	8.60±4.61	21.80±11.71
Statistical Analysis (t/p)			**2.001/0.048**	0.920/0.360	0.329/0.743	0.675/0.501
	X±SD (Min-Max)		72.64±16.99 (21-105)	16.05±7.10 (8-38)	9.31±4.93 (5-25)	25.21±11.55 (13-63)

A positive and high magnitude relationship was found between the CCAS and the Cognitive (r=0.973) and Functional (r=0.903) Disorder Sub-dimensions (p<0.005) (Table 2).

Table 2: Examination of the relationship between GCCAS, CCAS and sub-dimensions

Scale and Sub-Dimensions		1	2	3	4	5	6	7	8
Correlations									
1. Impacts on Natural and Human Environment	r	1							
2. Awareness of Global Organizations and Agreements		,337**	1						
3. Causes That Cause It		,349**	,504**	1					
4. Energy Consumption Relationship		,699**	,237*	,236*	1				
5. GCCAS		,848**	,677**	,601**	,670**	1			
6. Cognitive Impairment		-,102	,249*	,120	-,166	,052	1		
7. Functional Disorder		-,168	,295**	,216*	-,214*	,052	,820**	1	
8. CCAS		-,136	,254**	,158	-,205*	,043	**,973****	**,903****	1

p<0.005

Discussion

The climate crisis, as one of the greatest threats of our time, deeply affects not only environmental balances but also the psychological health of individuals. Young people, in particular, are more vulnerable to the negative effects of climate change than adults due to their immature physiological systems, dependence on adults, and repeated exposure to climate events (16, 17). In this context, our study aims to examine the effects of climate crisis awareness levels on climate change anxiety in a young group of nursing students.

The research findings reveal that the vast majority of students (95.3%) have a high level of awareness about climate change and the climate crisis and have serious concerns about the future. The fact that participants demand increased measures against the climate crisis clearly demonstrates young people's sensitivity to environmental problems and their desire to produce solutions. In addition, this finding indicates that nursing students have the potential to lead in environmental health and sustainability issues in the future. In fact, in a survey conducted by the Australian Institute for Disaster Resilience (AIDR) with the participation of 1477 Australian youth (10-24 years old), the vast majority of participants stated that they were aware of climate change and were concerned about this situation, which supports this sensitivity (18).

On the other hand, despite the high awareness levels of students, a certain segment of society has been observed to have serious levels of climate change anxiety. Higher levels of cognitive impairment and climate change anxiety were found in individuals who were concerned about climate change and did not believe that the country could solve this problem when the climate crisis intensified. This situation shows that concerns and hopelessness about the future have negative effects on individuals' mental health. Similarly, Chiw and Ling's (2019) study on Australian youth aged 7-24 revealed that 96% of participants viewed climate change as a serious problem and 89% were concerned about its effects (19). The finding that pessimistic expectations about environmental problems can increase individuals' anxiety levels and negatively affect their cognitive functions indicates that climate change awareness may not always produce positive results. These results clearly emphasize that environmental concerns have significant effects not only on physical health but also on mental health.

The research findings reveal that the socioeconomic status of individuals has a significant impact on environmental anxiety levels. It has been observed that anxiety levels are higher in individuals with higher income levels, especially because they feel the effects of environmental problems more closely or have more information on these issues. This finding is consistent with the existing literature emphasizing the determining role of socioeconomic status on environmental anxiety and anxiety. For example, Strife's (2012) study of over 15,000 Australian youth aged 14–23 (20) and ReachOut's (2019) findings revealed that participants were concerned about their

socioeconomic status deteriorating due to environmental disasters such as food shortages, droughts, fires, and floods, and that they planned to have fewer children or not have children in line with these concerns (21). This suggests that environmental concerns have a serious potential to affect not only individual quality of life, but also community health and demographic trends.

In our study, it was determined that the students' cognitive and functional impairment levels were generally at moderate levels. It is understood that students with high awareness of global climate change do not experience this awareness in an extremely negative way in their daily lives. However, the strong positive relationship between cognitive impairment and climate change anxiety indicates that an increase in awareness may cause these psychological effects to become more pronounced. This situation reveals that in addition to raising students' awareness of environmental problems, the possible psychological effects of this awareness should also be taken into consideration. With increasing awareness levels, the importance of developing strategies for managing environmental anxiety is emphasized once again. These findings obtained in our study are parallel to other studies in the literature (22, 23).

Limitations and Strengths of the Study

The study's limitations include the collection of research data from a single university. However, being the only study in the literature that evaluates the reflection of nursing students' climate crisis awareness on climate change anxiety stands out as a strength that makes this study valuable.

Conclusion

As a result, almost all nursing students know the concept of climate change, are concerned about the future of climate change, and want to increase efforts to prevent the climate crisis. It was also determined that students' awareness of the climate crisis was high and their anxiety was at a moderate level.

According to these results; it has become clear that nurses need to be prepared to effectively combat not only health problems but also environmental threats. A more comprehensive education process on environmental health will enable nurses to be sensitive and prepared for environmental crises such as global climate change. In addition, the inclusion of anxiety and stress management strategies in this education process can help students cope with environmental concerns. In addition, nursing education should address environmental health and psychological health issues from a holistic perspective, which will enable health professionals to combat future global environmental crises more effectively.

Declarations

Ethical Approval Certificate
Ethics committee approval was received for this study from Gaziantep Islam Science and Technology University (Decision Date: 16.06.2023, Decision No: 248.26.04, Protocol No: 2023/248).

Author Contribution Statement
E.K and E.K: Concept, Design, Supervision, Sources, Data Collection and/or Processing, Analysis and/or Interpretation, Literature Review Writing, Critical Review.
Z.G: Sources, Critical Review.

Fund Statement

The authors declare that this study has received no financial support.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

1. Deniz M, İnel Y, Sezer A. Awareness scale of university students about global climate change. International Journal of Geography and Geography Education (IGGE). 2021;43:252-264.
2. Tümer A, İpek M, Ercan Z. Hemşirelik öğrencilerinin iklim değişikliğine ilişkin farkındalık, endişe ve umut düzeyleri: Kesitsel ve ilişkisel araştırma. Halk Sağlığı Hemşireliği Dergisi, 2024;6(1):29-38. https://doi.org/10.54061/jphn.1396915.
3. Cebeci F, Karaman M, Öztürk AF, Uzun K, vd. İklim değişikliği anksiyetesi ölçeği'nin Türkçe uyarlaması: Geçerlik ve güvenirlik çalışması. Ufkun Ötesi Bilim Dergisi. 2022;22(1):20-42. https://doi.org/10.54961/uobild.1129602.

4. Sezgin S. Türkiye'de vatandaşların iklim değişikliği anksiyetesinin değerlendirilmesi. Kent Akademisi. 2024;17(1):1-21. https://doi.org/10.35674/kent.1388925.

5. Özbay S, Alcı B. İklim değişikliği kaygı ölçeği: türkçeye uyarlama, geçerlik ve güvenirlik çalışması. R&S - Research Studies Anatolia Journal. 2021;4(3):183-193. https://doi.org/10.33723/rs.958016.

6. Biçer BK, Vaizoğlu SA. Hemşirelik bölümü öğrencilerinin küresel ısınma / iklim değişikliği hakkındaki bilgi ve farkındalıklarının belirlenmesi. HUHEMFAD. 2015;2(2):30-43.

7. Sütçü S, Demirel AC. Sosyal hizmet öğrencilerinin iklim değişikliği kaygı durumlarının çeşitli değişkenler ile incelenmesi. Korkut Ata Türkiyat Araştırmaları Dergisi. 2023;12:1216-1233.

8. Clayton S, Karazsia BT. Development and validation of a measure of climate change anxiety. Journal of Environmental Psychology. 2020;69:101434.DOI: 10.1016/j.jenvp.2020.101 434

9. Semenderoğlu A, Sanlı V, Arslan K. Buca Eğitim Fakültesi öğrencilerinin küresel iklim değişikliğine yönelik endişe düzeyleri. IGGE. 2024(53):39-58. https://doi.org/10.32003/igge.1550018

10. Duman D, Dal N, Aksakallı AT, Kaya MD. Üniversite öğrencilerinde iklim değişikliği anksiyetesi: umut ve psikolojik sağlamlığın yordayıcı rolü. Journal of Psychometric Research. 2024;2(2):31-39. https://doi.org/10.5281/zenodo.13865397.

11. Şıvgın B, Afacan S. İklim krizi ile küresel ve bireysel mücadeleye yönelik bir çalışma: Greta Thunberg Örneği. DSJOURNAL. 2020;1(2):141-158.

12. Bilbay ÖF. İklim krizi ve dijitalleşme. Yönetim Bilimleri Dergisi.2024;22:15441568. https://doi.org/10.35408/comuybd.1516721.

13. Ekici E. İklim değişikliklerinin etkilerinin azaltılmasında halk sağlığı hemşireliği. Halk Sağlığı Hemşireliği Dergisi. 2022;4(1):77-88. https://doi.org/10.54061/jphn.989135.

14. Karabulut N. Öğretmenlerin küresel iklim değişikliğine yönelik farkındalıklarının değerlendirilmesi. Ulusal Eğitim Dergisi. 2023;3(2). 265–294. https://uleder.com/index.php/uleder/article/view/175.

15. Deniz M, İnel Y, Sezer A. Awareness scale of university students about global climate change. International Journal of Geography and Geography Education (IGGE). 2021;43:252-264.

16. Sheffield PE, Landrigan PJ. Global climate change and children's health: threats and strategies for prevention. Environ Health Perspect. 2010;119:291–298.

17. United Nations International Children's Emergency Fund (UNICEF) Office of Research. The Challenges of Climate Change: Children on the Frontline. UNICEF Office of Research, 2014. https://www.unicef-irc.org/e-book/Climate-Ch-web-D215/files/assets/basic html/index.html#page1

18. Australian Institute for Disaster Resilience (AIDR). Our World Our Say: National Survey of Children and Young People on Climate Change and Disaster Risk. Australian Institute for Disaster Resilience, 2020. Erişim adresi: https://www.aidr.org.au/media/7946/ourworldoursay-youth-survey-report-2020.pdf.

19. Chiw A, Ling HS. Young people of Australia and climate change: Perceptions and concerns. Millennium Kids. 2019. https://www.millenniumkids.com.au/wp-content/uploads/2019/02/Young-People-and-Climate-Change.pdf.

20. Strife SJ. Children's environmental concerns: expressing ecophobia. J Environ Educ. 2012; 43(1): 37–54.

21. ReachOut. New survey by reachout and student edge reveals number of students anxious about climate change. ReachOut, 2019. https://about.au.reachout.com/blog/new-survey-by-reachout-and-student-edge-reveals-number-of-students-anxious-about-climate-chang

22. Albrecht G, Sartore GM, Connor L, Higginbotham N, Freeman S, Kelly B, et al. Solastalgia: the distress caused by environmental change. Australas Psychiatry. 2007;5:595–598.

23. Ojala M. Hope in the face of climate change: associations with environmental engagement and student perceptions of teachers' emotion communication style and future orientation. J Environ Educ. 2015;46:133–148.