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- Afet Yönetimi / Araştırma -

Determining The Climate Change Anxiety Levels of University Students

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ABSTRACT

The Paris Agreement goes into great detail on the topic of climate change, which has been called out as one of the major issues affecting the planet. In this study, it is aimed to determine the climate change anxiety levels of university students who are expected to have a high awareness of climate change and have the potential to contribute positively to social governance, and to present solutions to minimize the negative consequences of climate change in line with the results obtained. In the study; 96% of the participants were between the ages of 18-23, between age and anxiety score (r=0.080; p=0.041), between age and helplessness score (r=0.087; p=0.026), and between age and climate change anxiety scale total score. It was determined that there was a statistically significant positive and very weak relationship between the two (r=0.086; p=0.029). A statistically significant difference was found between the median scores of anxiety and helplessness scores according to gender and 59.9% of the participants were women (p<0.001). Considering the significance level of the relationship between climate change anxiety levels and age, it can be thought that young people's anxiety about this issue may be a motivating factor in combating the negative consequences of climate change and ensuring social cohesion.

Keywords: Climate Change, Social Awareness, Climate, Climate Policies and Management.

Üniversite Öğrencilerinin İklim Değişikliği Endişe Düzeylerinin Belirlenmesi

ÖZ

İklim değişikliğinin, dünyayı tehdit eden önemli sorunlardan biri haline geldiği ve bu konuya Paris Anlaşması'nda geniş bir şekilde yer verildiği belirtilmiştir. Bu çalışmada, iklim değişikliği konusunda farkındalık algısının yüksek olması beklenen ve toplumsal yönetişime pozitif katkı sunma potansiyeli bulunan üniversite öğrencilerinin iklim değişikliği endişe düzeylerinin belirlenmesi ve elde edilen sonuçlar doğrultusunda iklim değişikliğinin olumsuz sonuçlarını en aza indirmeye yönelik çözüm önerilerinin sunulması amaçlanmıştır. Çalışmada; katılımcıların %96'sının 18-23 yaş aralığında olduğu, yaş ile kaygı puanı arasında (r=0,080; p=0,041), yaş ile çaresizlik puanı arasında (r=0,087; p=0,026) ve yaş ile iklim değişikliği endişe ölçeği toplam puanı arasında istatistiksel olarak anlamlı pozitif yönlü zayıf bir ilişki olduğu saptanmıştır (r=0,086; p=0,029). Katılımcıların %59,9'unu kadınlar oluşturmakta ve cinsiyete göre kaygı, çaresizlik puanı ortanca değerleri arasında istatistiksel olarak anlamlı bir fark bulunmuştur (p<0,001). İklim değişikliği endişe düzeylerinin yaş ile ilişkisinin anlamlılık düzeyi göz önüne alındığında, genç kişilerin bu konuya yönelik kaygı duymalarının, iklim değişikliğinin olumsuz sonuçlarıyla mücadele etmede ve toplumsal uyumun sağlanmasında motive edici bir faktör olabileceği düşünülebilir.

Anahtar Kelimeler: İklim Değişikliği, Toplumsal Farkındalık, İklim, İklim Politikaları ve Yönetim.

1. Introduction

It has been stated that climate change has become one of the important problems threatening the world and this issue has been extensively mentioned in the Paris Agreement. According to the literature records, it can be considered that scientists generally focus on concerns about climate change-related problems. In addition, it can be said that it is important to find an answer to the question whether sense of anxiety and responsibility affect attitudes towards reducing the negative aspects of climate change (Jakučionytė-Skodienė & Liobikienė, 2022). The consequences of human-induced climate change, one of the biggest problems facing the world, vary widely in different parts of the world (Holmes, 2020). In fact, climate change is a scientific phenomenon associated with triggering the anxiety levels of future generations in terms of social and environmental aspects. Scientists evaluate future situations through the

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models they have developed as a result of various researches, and in this direction, they emphasize the importance of community participation in order to contribute to reducing the negative consequences of climate change (Anderson, 2010). The majority of communities and nations have committed to reaching zero emissions and enhancing climate resilience, and almost all of them have implemented climate policies (Christensen & Serrano Velarde, 2019).

High concern over global warming was associated with more responsibility for the problem's solution and acts that would increase awareness. Because of this, climate change is a public issue that necessitates personal accountability (Choon et al., 2019; Yilmaz & Can, 2020). In this context, it can be considered that one of the steps to be taken in order to realize behavioral change to reduce the negative consequences of climate change is to make people aware of their concerns or awareness about climate change (Aitken et al., 2011). The concern about climate change can be the trigger for people's positive behavior towards reducing the negative consequences of climate change. In short, it is important to what extent individuals are concerned about climate change. Because this situation can sometimes encourage individuals to display positive attitudes, and sometimes prevent them from displaying positive attitudes (Bord et al., 2000). The attitude of the public is as guiding as the attitudes of policy makers in reducing the negative consequences of global climate change (Fairbrother, 2017). Therefore, it can be accepted that awareness of the phenomenon of climate change is effective in protecting individuals and societies against the negative consequences of climate change, ensuring social adaptation to climate change policies, protecting vulnerable groups against negative consequences, preventing the emergence of new problems or preventing the exacerbation of existing problems (Levy & Patz, 2015). The purpose of this study was to assess the climate change anxiety levels of university students, who are expected to have a high degree of awareness on a variety of subjects, including climate change and social activities, and who have the ability to positively contribute to social governance.

Climate change is seen as a worldwide concern. Knowing the climate change awareness, attitudes, and sensitivities of university students, the future leaders, can help produce mindful and effective climate change solutions. As a result, it is expected that examining university students' climate change anxiety levels in terms of various variables will make significant contributions to the literature in terms of exhibiting climate-friendly behaviors and laying the groundwork for climate change education and awareness studies.

2. Method

In this part of the study, the model of the research, data collection tools, scope and sample, ethical aspect, data collection process and data analysis are included.

2.1. Population and Sampling

The scope of the study consisted of students enrolled in universities in Turkey in the 2021-2022 academic year. Sample selection was not performed, and it was aimed to reach the quorum for the study on the population. Individuals aged 18 and over were invited to the study on a voluntary basis. The study included 651 volunteers. There is no conflict of interest between the participants and the researcher that will affect the study.

2.2. The Model of the Research

In this study, the general survey model was used as it was aimed to determine the climate change anxiety levels of university students. In general survey models, it is aimed to reveal the existing situations by examining the whole or a certain part of the scope (Creswell, 2012; Karasar, 2022).

2.3. Data Collection Tool

The "Climate Change Concern Scale" developed by Stewart, (2021) and adapted to Turkish culture by Gezer & İlhan, (2021) was used to determine the climate change anxiety levels of the participants. The data collection tool consists of two parts, including socio-demographic information (10 items) and items related to the climate change anxiety scale (10 items). In the socio-demographic part; 10 questions were included to provide information about gender, age, marital status, grade level, type of education, type of

program enrolled, cumulative grade point average, place of residence, education status on climate change and if education received, institution information. The climate change anxiety scale consists of 10 items in total and two sub-dimensions, feeling of helplessness and anxiety, in the Turkish adaptation part. A five-point scale ranging from never (1) to always (5) was adopted in the scale (Gezer & İlhan, 2021).

2.4. Data Collection

The questionnaire form prepared by the researcher online (Google Forms) was delivered to the participants via social media (WhatsApp). In the first part of the questionnaire, the purpose of the study, obtaining consent and voluntary participation were mentioned. It was seen that 651 people participated in the survey. Since the questions after consent and voluntary participation are the parts that need to be answered, it was determined that there was no missing data and 651 questionnaires were included in the analysis. Data were collected online between 21.09.2022 and 07.10.2022. The sample size was found to be 385 participants when the 95% confidence interval and 5% margin of error were evaluated. Therefore, in the study, it was accepted that reaching 651 people was sufficient. Convenience sampling method was preferred in data collection (Cohen et al., 2002).

2.5. Data Analysis

The package application IBM SPSS V23 was utilized to analyze the research data. The online replies were first downloaded in Excel format, and then they were imported into the SPSS software tool. The Kolmogorov-Smirnov test was used to determine if data conformed to the normal distribution. Whitney Mann The data that were not normally distributed in terms of matched groups were examined using the U test. In order to investigate the association between age and non-normally distributed scale scores, Spearman's rho correlation coefficient was utilized. For quantitative data, the analysis's findings are shown as mean, standard deviation, and median (minimum to maximum). A significance threshold of p 0.050 was used.

2.6. Ethical Aspect and Data Collection

Permission was obtained from the responsible author of the scale for the use of the Climate Change Concern Scale by e-mail. For the approval of the ethics committee, an application was made to the "Trabzon University, Social and Human Sciences Scientific Research and Publication Ethics Committee and ethics committee approval was obtained with the letter E-81614018-000-2200032163 before starting the study.

2.7. Limitations of the Study

The data was collected in the form of a Google online survey on a voluntary basis. Therefore, it should be considered that there may be participant declaration bias in the generalization of the results. It is possible to include social acceptance error as the data is based on participant statements only.

3. Results

In this section, the individuals' socio-demographic variables were principally studied. It has been determined that 59.9% of them are women and 40.1% are men in terms of gender distribution, and in marital status distribution, 98.5% of the participants are single and 1.5% are married according to the data in Table 1. The rate of students enrolled in the first year is 51% and the rate of students enrolled in the second year is 49% in terms of class distribution, 74% of the participants live in urban areas and 26% live in rural areas for the permanent residence distribution, 96.2% of the participants haven't and 3.8% have education for education status on climate change. It was determined that 33% first and emergency aid program, 28.1% civil defense and firefighting program, 15.7% Physiotherapy program, 10.3% elderly care and patient care program, 3.5% of them were emergency aid and disaster management program, 3.2% of them were emergency and disaster management program students according to department/program distribution. When the age distribution of the participants was examined, it has been recorded that the age range of 18-23 was 96%, 24-29 was 3.5% and the 30 years and over was 0.5%.

Table 1. Demographic Features

Demographic Features		*n*	%
Gender	Female	390	59.9
	Male	261	40.1
Marital Status	Single	641	98.5
	Married	10	1.5
Grade	First Grade	332	51
	Second Grade	319	49
Place of Permanent Residence	Urban	482	74
	Rural	169	26
Climate Change Education Status	Yes	25	3.8
	No	626	96.2
Department/ Program	First and Emergency Aid	215	33
	Emergency and Disaster Management	21	3.2
	Elderly Care	67	10.3
	Home Patient Care	40	10.3
	Physiotherapy	101	15.7
	Civil Defense and Firefighting	183	28.1
	Emergency Aid and Disaster Management	23	3.5
Age	18-23	625	96
	24-29	23	3.5
	30 and over	3	.5

Between the median anxiety score values for each gender, there was a statistically significant difference (p= 0.001). For men and women, respectively, the median anxiety score was 19, and it was 21. The median anxiety score according to grade did not differ in a statistically significant way (p=0.201). According to the location of residence, there was no statistically significant difference in the median anxiety score values (p=0.087) (Table 2).

Table 2. Comparison of Anxiety Scores According to Gender, Class, and Place of Residence

	Mean ± *SD*	Median (minimum-maximum)	*U*	*p**
Gender				
Male	19.41 ± 7.02	19 (7 - 35)	61106.0	**<0.001**
Female	21.57 ± 5.99	21 (7 - 35)		
Grade				
1st Grade	20.4 ± 6.58	20 (7 - 35)	56016.5	0.201
2nd Grade	21.02 ± 6.43	21 (7 - 35)		
Place of Residence				
Urban	20.94 ± 6.42	21 (7 - 35)	37130.5	0.087
Rural	20.04 ± 6.72	19 (7 - 35)		

**Mann Whitney U test*

There was a statistically significant difference in the median feeling of helplessness scores by gender (p 0.001). The median feeling of helplessness score for men was 8, but it was 9 for women. The median values of the feeling of helplessness score according to the grades did not differ in a statistically significant way (p=0.266). According to the location of residence, there was no statistically significant difference in the median values of the feeling of helplessness score (p=0.358) (Table 3).

Table 3. Comparison of The Sense Feeling of Helplessness Score According to Gender, Class, and Place of Residence

	Mean ± *SD*	Median (minimum-maximum)	Test Statistic	*p**
Gender				
Male	8.42 ± 3.23	8 (3 - 15)	61114.5	**<0.001**
Female	9.45 ± 2.94	9 (3 - 15)		
Grade				
1st Grade	8.93 ± 3.17	9 (3 - 15)	55605.5	0.266
2nd Grade	9.14 ± 3.03	9 (3 - 15)		
Place of Residence				
Urban	9.1 ± 3.09	9 (3 - 15)	38807.5	0.358
Rural	8.86 ± 3.15	9 (3 - 15)		

**Mann Whitney U test*

The median values of the overall score on the climate change anxiety scale were shown to differ statistically significantly by gender (*p* 0.001). Males had a median total score on the climate change anxiety scale of 28, while females had a total score of 30. The median values of the climate change anxiety scale total score according to grades did not differ statistically significantly (p=0.256). According to the respondents' places of residence, there was no statistically significant difference in the median values of the climate change anxiety scale total score (p=0.153) (Table 4).

Table 4. Comparison of Climate Change Anxiety Total Score According to Gender, Class, and Place of Residence

	Mean ± *SD*	Median (minimum-maximum)	Test Statistic	*p**
Gender				
Male	27.83 ± 9.97	28 (10 - 50)	61507.0	**<0.001**
Female	31.02 ± 8.56	30 (10 - 50)		
Grade				
1st Grade	29.34 ± 9.37	29.5 (10 - 50)	55677.0	0.256
2nd Grade	30.16 ± 9.17	30 (10 - 50)		
Place of Residence				
Urban	30.03 ± 9.2	30 (10 - 50)	37725.0	0.153
Rural	28.9 ± 9.47	29 (10 - 50)		

Age and anxiety score have a statistically significant but extremely small link (r=0.080; p=0.041). Age and feeling of helplessness score have a statistically significant but extremely small link (r=0.087; p=0.026). Age and the overall score on the climate change anxiety scale have a statistically significant positive and very weak connection (r=0.086; p=0.029) (Table 5).

Table 5. Examination of the Relationship Between Age and Scale Scores

	Age	
	r	*p*
Anxiety Score	0.080	**0.041**
Feeling of Helplessness Score	0.087	**0.026**
Concern Scale Total Score on Climate Change	0.086	**0.029**

r: Spearman's rho correlation coefficient

4. Discussion

In this study, university students' climate change anxiety levels were assessed according to their gender, age, location of residence, and grade level.

In current study, 96% of the participants in the current study were between the ages of 18 and 23. It was found that age and anxiety score (r=0.080; p=0.041), feeling of helplessness score (r=0.087; p=0.026),

and climate change anxiety scale total score (r=0.086; p=0.029) all had statistically significant but very weak relationships with age. According to a study on climate change anxiety, young individuals exhibit greater levels of the condition than those of other ages (Clayton & Karazsia, 2020). In a research done in the UK, it was shown that the topic of climate change had a favorable impact on young people's personal growth in the realization of worthwhile studies such ecologically responsible activities. The same study noted that it can help individuals adjust to the process of forming their identities, but more research on this topic has to be done (Lawrance et al., 2022). According to a research performed in the United States, 63% of participants think that there is global warming and 47% think that humans are to blame for it; the percentages differ by state (Howe et al., 2015). In a study conducted on university students, it was stated that motivating texts were read to the participants about taking action on climate change, and in the evaluation made after the texts read, there were statistically significant changes in the attitudes of the participants on climate change and their willingness to take action (Sinatra et al., 2012). In a study conducted in Italy, anxiety and self-efficacy beliefs of adults exposed to climate change through media or social media were investigated, and it was mentioned that other negative emotions, including anxiety, were related to self-efficacy beliefs (Maran & Begotti, 2021). When it comes to climate change, young people might feel a wide range of emotions, including anger, fear, impotence, and hopelessness (van Nieuwenhuizen et al., 2021). In the study conducted with young people in Australia, it has been revealed that young people are worried about the future effects of climate change and they feel powerless because they cannot change this situation (Chiw & Ling, 2019). Climate change can have negative effects on people's mental health (Clayton, 2021). According to a research done with teenagers in the US between the ages of 13 and 17, young people feel "fear," "desperation," "anger," and "anxiety" over climate change (Hamel et al., 2019). In our study, it was observed that there was a statistically significant difference between age, anxiety, and feeling of helplessness scores. In the literature, it was stated that anxiety and other emotions related to climate change were associated with age. Therefore, in terms of the results of the relationship between climate change anxiety levels and age, it can be said that the data of our study and the literature data are consistent.

In this study, 59.9% of the participants were females and a statistically significant difference was found between the median values of anxiety and feeling of helplessness scores according to gender (p<0.001). It was obtained as the median anxiety score for males was 19, it was 21 for females; the median value of the feeling of helplessness score of males was 8, it was 9 for females. A statistically significant difference was found between the median values of the climate change anxiety scale total score according to gender (p<0.001). While the median value of the climate change anxiety scale total score for males was 28, it was 30 for females. In the study focused on Turkish people, it was stated that females showed lower levels of concern about climate change (Ergun & Rivas, 2019). In the study on gender and climate change, it has been stated that climate change anxiety in the context of gender has a strong relationship with economic development, that females and males living in economically rich countries have less climate change anxiety levels, but the level of anxiety for males is significantly lower than the females (Bush & Clayton, 2022). Many studies in the literature, it has been stated that females are more sensitive and effective than males in making decisions about reducing climate change (Schwerhoff & Konte, 2020), preparing environmental policies (Nielsen & Huse, 2010), implementing environmentally friendly strategies (Ben-Amar & McIlkenny, 2015), adapting to climate change studies and reporting (Bravo & Reguera-Alvarado, 2018). The World Health Organization (WHO) states that females are more vulnerable to the effects of climate change (World Health Organization, 2014). In the literature, it has been seen that females are more sensitive and effective towards climate change and environmental issues. In this study, it was determined that females had higher anxiety and feeling of helplessness scores than males. As in the literature, it can be evaluated that females' more sensitive approaches to environmental and climate change issues can be associated with this situation.

According to the participants' places of residence, there was no statistically significant difference in the median values of the total score on the climate change anxiety scale in this study (p=0.153). According to the location of residence, there was no statistically significant difference between the median scores for dejection (p=0.358) and anxiety (p=0.087). In the previous studies, it has been stated that the

environmental anxiety levels of those living in urban areas are similar even if their education levels are different, but the level of education has an effect on the perception of environmental anxiety in those living in rural areas, and the anxiety level of people with low education level in rural areas is lower (Liu & Mu, 2016). In our study, it can be said that there was no statistically significant difference in climate change anxiety levels by place of residence, which differs from the literature.

5. Conclusion and Recommendations

Women were found to have higher degrees of worry and helplessness than males did in the study looking at university students' anxiety levels related to climate change. There was a statistically significant difference in the median anxiety and helplessness scores by gender, with women being more likely to experience these feelings. It is believed that women, who are viewed as a sensitive group, should play an active part in battling the harmful effects of climate change or limiting these negative effects since they are more concerned about environmental issues and climate change than males. It is predicted that assigning more duties to women in this regard will contribute to the reduction of women's anxiety levels and at the same time increase social awareness about climate change. The age of the participants and their anxiety and helplessness ratings were shown to have a statistically significant positive and very weak association in the research. It may be hypothesized that young people's worry about this issue may be a motivating element in preventing the harmful effects of climate change and preserving social cohesiveness given the relevance degree of the link between climate change anxiety levels and age. It may be determined that raising awareness of climate change among educated and young people can benefit social governance and the execution of climate policy. There was no statistically significant difference between the median values of the total score of the climate change anxiety scale according to the place of residence of the participants. Unlike the literature, it can be said that the reason why there was no difference according to the place of residence in our study may be related to the fact that the participants were subject to university education and their awareness was high.

Araştırmacıların Katkı Oran Beyanı/ Contribution of Authors

Yazarların çalışmadaki katkı oranları Galip USTA %100 şeklindedir.
The authors' contribution rates in the study are Galip USTA %100 form.

Çıkar Çatışması Beyanı / Conflict of Interest

Çalışmada herhangi bir kurum veya kişi ile çıkar çatışması bulunmamaktadır.
There is no conflict of interest with any institution or person in the study.

İntihal Politikası Beyanı / Plagiarism Policy

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Bilimsel Araştırma ve Yayın Etiği Beyanı / Scientific Research and Publication Ethics Statement

Bu çalışmada Yükseköğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi kapsamında belirtilen kurallara uyulmuştur.
In this study, the rules specified within the scope of the Higher Education Institutions Scientific Research and Publication Ethics Directive were followed.

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