



Assessing Climate Change Worry among Undergraduate Nursing Students in Sindh, Pakistan: A Cross-sectional Study

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Authors' Contribution

All authors equally contributed to the study and approved the final manuscript

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ABSTRACT

Background: Climate change is increasingly recognized as a significant threat to mental health globally. This study investigates the prevalence and nature of climate-related worry among undergraduate nursing students in Sindh, Pakistan, and explores differences between public and private institutions. **Methods:** A cross-sectional survey was conducted from March to May 2025 across public and private nursing colleges in Sindh. A total of 291 students participated, completing a 10-item Climate Change Worry Scale (CCWS) alongside demographic questions. Descriptive statistics characterized the sample and mean CCWS scores. A one-sample t-test determined whether the mean worry score was significantly above the neutral midpoint (score = 3.0). Mann-Whitney U tests compared item-level responses between public and private college students. **Results:** Participants (75.3% male; 72.5% aged 21–30; 60.1% rural; 78% Sindhi) exhibited a mean CCWS score of 3.25 (SD = 0.65), significantly above neutral ($t(290) = 5.24, p < 0.001$). Many frequently worried about the future (54.6%), loved ones (62.1%), and felt “paralyzed” by their concern (48.1%). Public vs. private institution comparisons revealed significant differences in worry intensity and proactive engagement for four items: self-comparative worry ($p = 0.001$); future-oriented anxiety ($p = 0.006$); personal impact ($p = 0.025$); and suggesting solutions ($p = 0.004$). **Conclusions:** Climate-related worry is significantly present among nursing students in Sindh, particularly when considering emotional impact and engagement. Differences between institutional groups suggest the influence of educational or contextual factors. Results underscore the need to integrate climate-related mental health content into nursing education and to develop longitudinal and interventional research to support adaptive coping and resilience in future healthcare professionals.

INTRODUCTION

Climate change has emerged as a critical global challenge with far-reaching consequences for human health. The Intergovernmental Panel on Climate Change (IPCC) reports that climate disturbances driven by human activity are becoming increasingly severe and widespread, affecting billions of people worldwide¹. Similarly, the World Health Organization (WHO) recognizes climate change as one of the most significant and dangerous threats to public health. The visible signs, rising temperatures, frequent floods, heat waves, and ecological disruptions are threatening fundamental resources such as clean air, safe drinking water, and food security².

These environmental changes are closely linked to adverse mental health outcomes, especially persistent concerns about climate-related risks, often referred to as climate change worry. Recent studies indicate that this psychological response is growing in prevalence and may significantly impair mental well-being³. Long-term climate stressors such as droughts, sea-level rise, and extreme

weather can destabilize agriculture, damage infrastructure, disrupt economies, and contribute to increased psychological distress. In Turkey, where 60 % of land is vulnerable to degradation, 2021 heat waves led to heightened emotional distress in impacted communities⁴.

Pakistan, too, has faced increasingly frequent and severe climate-related disasters. These include glacial melting, riverine and flash floods, landslides triggered by intense rainstorms, forest fires, droughts, and extreme weather events. The catastrophic floods of 2022 alone affected approximately 33 million people and resulted in over 1,500 deaths, 12,000 injuries, widespread displacement, and economic damages amounting to billions of dollars⁵. Sindh province, in particular, has been among the most affected regions, where public health challenges reflect broader global concerns related to the health consequences of climate change. The emotional impacts of such environmental disasters are well documented. Among flood-affected Pakistanis, 20 % were diagnosed with depression, 28 % with anxiety, and 36 %

with PTSD; in Sindh after the 2010 floods, prevalence was even higher (depression 54 %, PTSD 59 %)⁷. A 2023 study in Hyderabad, Sindh reported rates of depression (68 %), anxiety (62 %), and PTSD (55 %) among adults following the 2022 floods⁸. The stress and uncertainty caused by these events are associated with anxiety, mood disorders, trauma symptoms, and even suicidal ideation⁸.

These mental health effects are particularly concerning for university students, especially those enrolled in demanding academic programs like nursing. The combination of academic pressures and climate-related anxieties may impair learning capacity, cognitive functioning, and preparedness for future roles in healthcare⁹. As a vulnerable group, nursing students may face significant psychological burdens that can hinder academic success and reduce resilience in the face of future public health emergencies¹⁰.

Therefore, it is essential to move beyond basic climate change awareness and establish support systems to help students cope with climate-related psychological distress. Assessing climate worry among nursing students is an important step, as is identifying interventions to address their emotional and psychological needs¹⁰.

International research has shown that young adults (16–25 years) report high levels of climate worry: 84 % at least moderately worried, with 45 % stating it negatively affects daily life, and 75 % finding the future frightening³,⁴. Despite growing international interest, there is a lack of local evidence from Pakistan—especially among undergraduate nursing students. While global studies have explored climate-related psychological distress in youth, little is known about its prevalence and impact in Pakistani academic settings. Exploring climate change worry in this group is crucial for understanding their emotional needs and guiding responsive educational and mental health strategies.

This research is timely and significant, aiming to provide the first local evidence on climate change worry among undergraduate nursing students in Pakistan. The findings could inform educators, mental health professionals, and policymakers in developing targeted support mechanisms within nursing curricula. By addressing this understudied yet growing concern, the study may contribute to improved mental well-being, academic performance, and the development of a more climate-resilient future healthcare workforce.

Aim

To determine the level of climate change worry among undergraduate nursing students.

Objectives

1. To assess the level of climate change worry among undergraduate nursing students using a validated self-report scale within a three months period.
2. To examine the association between selected demographic variables (e.g., age, gender, year of study) and the level of climate change worry among undergraduate nursing students.

Hypotheses

- **H₀:** There is no significant presence of climate change-related worry among undergraduate nursing students in Sindh, Pakistan.

- **H₁:** There is a significant presence of climate change-related worry among undergraduate nursing students in Sindh, Pakistan.

METHODS

Research Design

This study employed a cross-sectional research design, which is appropriate for collecting numerical data from a defined population at a single point in time. It allows for the assessment of prevalence and associations between variables within a specific time frame.

Study Setting

The study was conducted among undergraduate nursing students enrolled in Public and Private Nursing Colleges across Sindh, Pakistan.

Study Population and Sampling

Target Population: All undergraduate nursing students currently enrolled in nursing programs across Sindh, Pakistan.

Sampling Technique: A stratified cluster random sampling method was employed due to its feasibility, cost-effectiveness, and accessibility to a dispersed student population.

Sample Size: A total of 291 undergraduate nursing students were included in the study. The sample size was calculated using the formula: $n = z^2 pq / e^2$. Final participation was determined after excluding incomplete responses and refusals.

Study Duration: The study was conducted over a three-month period, from March to May 2025, in both public and private nursing colleges in Sindh.

Inclusion and Exclusion Criteria

Inclusion Criteria

- Currently enrolled undergraduate nursing students in Sindh.
- Willing to provide informed consent.
- Able to understand and complete the questionnaire in English, Urdu, or Sindhi.

Exclusion Criteria

- Students unwilling to provide informed consent or who withdrew during the study.
- Students on academic leave or suspension at the time of data collection.
- Individuals with diagnosed psychological disorders that may impair participation.

Research Variables

Independent (Descriptive) Variables:

Age (categorized)

Gender (Male, Female)

Ethnicity (Sindhi, Punjabi, Baloch, Saraiki, Pathan)

Geographic Location (Urban, Suburban, Rural)

Dependent Variable:

Level of climate change worry, as measured by the Climate Change Worry Scale (CCWS)

Data Collection Instrument

The primary data collection tool was a structured, self-administered questionnaire, consisting of two sections:

Demographic Information

This section collected data on participants' age, gender, ethnicity, year of study, and geographic location.

Climate Change Worry Scale (CCWS)

A validated 10-item scale measuring various aspects of climate change worry. Each item was rated on a 5-point Likert scale (Never, Rarely, Sometimes, Often, Always). Higher scores indicated greater worry related to climate change. It was pilot-tested, yielding a Cronbach's alpha of 0.85. The questionnaire was administered in English and Urdu, with clarification provided in Sindhi where needed. Completed forms were collected directly by the researcher.

Data Analysis Plan: The collected data were coded, entered, and analyzed using Statistical Package for the Social Sciences (SPSS), Version 25. The following analyses were performed:

Descriptive Statistics: Frequencies and percentages were calculated for all demographic variables (e.g., age, gender, ethnicity, geographic location) to summarize the sample characteristics.

Inferential Statistics: To assess differences in Climate Change Worry Scores between undergraduate nursing students from public and private institutions, the Mann-Whitney U test (a non-parametric alternative to the independent samples t-test) was used due to the ordinal nature of the data or non-normal distribution.

Significance Level: A p-value < 0.05 was considered statistically significant for all inferential analyses.

RESULTS

This section presents the findings of the study on climate change-related worry among undergraduate nursing students in Sindh, Pakistan. A total of 291 participants completed the Climate Change Worry Questionnaire.

Table 2

Students' Responses to Climate Change Worry Survey

Statement	Never	Rarely	Sometimes	Often	Always
I worry about climate change more than other people.	6.9%	19.2%	25.4%	22.3%	26.1%
Thoughts about climate change cause me to worry about the future.	4.8%	15.8%	24.7%	38.1%	16.5%
I seek out climate change information in the media.	4.8%	21.0%	26.8%	27.5%	19.9%
I worry so much that I feel paralyzed about acting.	12.7%	19.6%	19.6%	27.1%	21.0%
I worry I might not cope with climate change.	12.4%	17.5%	27.8%	24.1%	18.2%
I notice I have been worrying about climate change.	7.2%	16.2%	20.6%	33.7%	22.3%
I find it difficult to stop worrying once I start.	16.8%	20.3%	23.7%	23.0%	16.2%
I worry about how climate change may affect people I care about.	8.9%	10.7%	18.2%	27.4%	34.7%
I worry even if the effects may take time to manifest.	5.8%	17.2%	30.2%	22.7%	24.1%
I worry that severe weather events are a result of climate change.	6.5%	18.2%	18.2%	35.7%	21.3%

Suggestions for Controlling Climate Change

Participants were asked to choose one recommendation they believe would help mitigate climate change. The distribution of responses is shown in Figure 1. It demonstrates a predominant preference among nursing students for nature-based solutions, particularly planting more trees, which was endorsed by 84.9% of respondents. In contrast, fewer participants proposed more systemic or lifestyle changes: 8.9% suggested reducing industrial activities, 2.7% population control, and 1.7% each recommended adopting vegetarianism or indicated no known solution.

Descriptive statistics were used to summarize demographic characteristics and overall patterns of worry, while inferential analysis using the Mann-Whitney U test was performed to identify significant differences in climate change worry responses between groups (e.g., public vs. private institutions).

Demographic Characteristics of Study Population (n = 291)

A total of 291 undergraduate nursing students participated. Most students were male (75.3%) and aged 21–30 years (72.5%). Geographically, 60.1% were from rural areas, with 23.0% URBAN and 16.5% semi-urban. Sindhi ethnicity was the most represented (78.0%), followed by Baloch (11.3%), Saraiki (4.5%), Punjabi (3.8%), and Pathan (2.4%).

Table 1

Demographic Characteristics of Participants

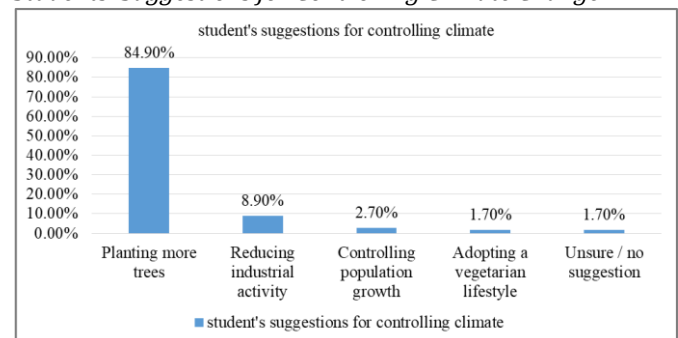
Variable	Category	n (%)
Gender	Male	219 (75.3)
	Female	72 (24.7)
Age Group	< 20 years	72 (24.7)
	21–30 years	211 (72.5)
	31–40 years	8 (2.7)
Geographic Location	Rural	175 (60.1)
	Urban	68 (23.0)
	Semiurban	48 (16.5)
	Sindhi	227 (78.0)
Ethnicity	Punjabi	11 (3.8)
	Saraiki	13 (4.5)
	Pathan	7 (2.4)
	Baloch	33 (11.3)

Climate Change Worry among Students

Students' responses to the ten items on the Climate Change Worry Scale (CCWS) are summarized below. Overall, a significant portion indicated moderate to high levels of concern about climate change, especially regarding its impact on loved ones and the future.

Figure 1

Students' Suggestions for Controlling Climate Change



Inferential Statistics

One-Sample t-Test for Overall Climate Change Worry

A one-sample t-test was conducted to determine whether the mean score on the Climate Change Worry Scale (CCWS) differed significantly from the neutral midpoint value of 3 on the 5-point scale (where 1 = Never and 5 = Always). Results are presented in Table 3. The mean CCWS score was 3.25 (SD = 0.65), which was significantly above the neutral midpoint, $t(290) = 5.24$, $p < 0.001$, indicating a statistically significant presence of climate-change-related worry among undergraduate nursing students in Sindh. This finding supports the alternative hypothesis (H_1), rejecting the null hypothesis (H_0).

Table 3

One-Sample t-Test for CCWS Mean Score

Measure	Value
Mean CCWS Score (\pm SD)	3.25 (\pm 0.65)
Test Value (Midpoint)	3.00
t (Degrees of Freedom = 290)	5.24
pValue	< 0.001*

*The one-sample t-test confirms that students' average level of climate-change worry is significantly higher than a neutral response, validating the hypothesis that this group experiences climate-related worry. This justifies further analysis into how this worry manifests in behaviors and perceptions.

Mann-Whitney U Tests for Comparisons between Public and Private College Students

Mann-Whitney U tests were utilized to compare climate-change worry responses between public and private college students. Results are summarized in Table 4 below.

Table 4

Mann-Whitney U Test Results: Public vs. Private College Students

Statement	UValue	pValue	Significant
Worry more than others compared to peers	3,100	0.001*	Yes
Thoughts about climate change causing future worry	3,450	0.006*	Yes
Sought information or changed media habits	4,025	0.066	No
Talked to others or made lifestyle changes	5,340	0.789	No
Believe severe weather is climate related	4,820	0.237	No
Felt personally affected by climate change	3,600	0.025*	Yes
Worry about societal change due to climate	5,150	0.646	No
Concern about personal behavior affecting climate	4,875	0.234	No
Started changing habits due to climate worry	4,550	0.335	No
Concern over media portrayal of climate change	4,950	0.421	No
Suggested solutions to address climate change	3,300	0.004*	Yes

DISCUSSION

The present study found that undergraduate nursing students in Sindh experience significant climate-change worry, with a mean Climate Change Worry Scale score notably above the neutral midpoint ($M = 3.25$, $SD = 0.65$; $t(290) = 5.24$, $p < 0.001$). Mann-Whitney U tests revealed significant differences between public and private college

students in four items related to emotional intensity and proactive engagement. These results confirm the alternative hypothesis (H_1), demonstrating that climate-related worry is both present and meaningfully expressed within this student population.

The results reveal that undergraduate nursing students in Sindh experience significant climate-related worry, with the mean CCWS score notably higher than the neutral midpoint (3.25 vs. 3.00; $t(290) = 5.24$, $p < 0.001$). This supports the alternative hypothesis and highlights that climate worry is not merely theoretical but tangibly experienced by future healthcare professionals.

Emotional intensity emerges strongly, over half of students report persistent worry about the future (54.6%) and concern for their loved ones (62.1%). Nearly half feel "paralyzed" by this worry (48.1%), a symptom consistent with ecoanxiety and ecological grief documented globally among youth¹⁰. Such responses echo findings that youth are significantly anxious about climate change, with substantial emotional impact affecting daily function and mental health.

Comparisons between public and private college students show that while general worry is prevalent across both groups, Public College Students exhibit greater emotional intensity and proactive engagement. They report higher comparative worry ($p = 0.001$), future-focused anxiety ($p = 0.006$), personal impact ($p = 0.025$), and suggest solutions more frequently ($p = 0.004$). These observations may reflect differences in educational emphasis, localized climate impacts, or institutional culture echoing broader evidence that setting and context shape climate-related emotional responses¹¹.

The overwhelming preference for tree planting (84.9%) over systemic solutions (e.g., only 8.9% suggested reducing industrial activity) indicates a limited awareness of structural approaches despite recognition of climate distress. This trend mirrors global studies showing a youthful preference for nature-based coping, even as deeper policy-level strategies remain under recognized^{13, 14}. It also aligns with research suggesting eco-anxiety can motivate individual action, but without broader policy engagement, its potential may remain untapped¹⁵.

Contextualizing regionally, Pakistan has experienced devastating floods and heat waves; these environmental upheavals have likely amplified mental health burdens, especially among youth in rural and climate vulnerable settings^{8,9}. The demographic profile predominantly young, rural, male, and Sindhi further suggests that local climate stressors, compounded by socio-economic vulnerabilities, intensify emotional responses.

Psychological research recommends transforming eco-anxiety into a catalyst for engagement rather than paralysis. Strategies include framing climate concern as a collective, systemic issue, promoting community-based actions, and fostering hope, especially within educational settings^{10,11}. For nursing students, structured curricula incorporating climate psychology, coping mechanisms, peer support, and hands-on environmental engagement could strengthen emotional resilience and professional readiness^{13, 14}.

In sum, nursing students in Sindh demonstrate meaningful climate worry with clear emotional and

behavioral dimensions. Although worry is largely shared, its intensity and manifestation vary by institutional context. These insights emphasize the need for nursing education to blend emotional validation with empowerment encouraging informed engagement as a pathway from anxiety toward climate resilience and advocacy.

CONCLUSION

The findings demonstrate that undergraduate nursing students in Sindh experience significant climate-related worry, with average CCWS scores meaningfully above the neutral midpoint ($t = 5.24$, $p < 0.001$). Emotional responses such as worry about the future and loved ones, and feelings of paralysis were pronounced, mirroring global patterns of youth eco-anxiety^{22, 23}. The study also revealed that while the majority advocated for adaptive, nature-based solutions (notably tree planting), there was limited awareness of systemic climate strategies like industrial reduction.

Notably, Public College Students exhibited higher emotional intensity and proactive engagement compared to private college counterparts. This suggests that institutional context may shape how deeply students internalize and respond to climate change as a personal stressor. These insights highlight the need to address climate worry not just emotionally, but educationally, as part of nurses' professional preparation.

While the study underscores an important gap in climate and mental health integration within nursing education, its cross-sectional design, use of self-report, and limited geographic scope suggest cautious interpretation. Additionally, the gender imbalance, with predominately male participants, may have influenced emotional response patterns. Nevertheless, the results support calls

for including climate change topics within nursing curricula and offering psychosocial support consistent with global recommendations for youth mental health and eco-anxiety interventions.

RECOMMENDATIONS

Based on our findings and the broader literature, the following strategic actions are recommended:

- Curriculum Integration:** Incorporate modules on climate psychology, eco-anxiety, and systemic climate solutions into nursing education. Programs in Europe are already doing this by embedding climate-health content across medical curricula¹¹, and similar approaches should be adapted for nursing in Pakistan.
- Mental Health Resources:** Develop accessible support services tailored to climate-related stress, including peer-led groups and counseling—recognizing that validation of emotional responses and fostering hope through collective action can significantly reduce distress²⁶.
- Awareness & Engagement Campaigns:** Promote student-led awareness initiatives that balance nature-based actions (e.g., tree planting) with systemic education (industrial policy, sustainability, climate justice). Empowering agency through informed engagement is key to transforming anxiety into proactive resilience.
- Targeted Research:** Conduct longitudinal studies to examine eco-anxiety trajectories, qualitative research to understand emotional and coping narratives, and intervention trials to assess the impact of climate-focused educational and mental health programs. Special focus should be placed on gender-balanced and geographically diverse samples to enhance applicability.

REFERENCES

- Abousoliman, A. D., Ibrahim, A. M., Abualruz, H., Magdi, H. M., Zaghmir, D. E., Alhowimel, A., El-Monshed, A. H., El-Gazar, H. E., & Zoromba, M. A. (2024). Exploring the relationship between nursing students' knowledge and attitudes towards climate change and their psychological distress: A cross-national investigation. *BMC Nursing*, 23(1). <https://doi.org/10.1186/s12912-024-01927-8>
- Álvarez-Nieto, C., Richardson, J., Navarro-Perán, M. Á., Tutticci, N., Huss, N., Elf, M., Anåker, A., Aronsson, J., Baid, H., & López-Medina, I. M. (2022). Nursing students' attitudes towards climate change and sustainability: A cross-sectional multisite study. *Nurse Education Today*, 108, 105185. <https://doi.org/10.1016/j.nedt.2021.105185>
- Shariff, Y., Mushtaq, M., Shah, S. M., Malik, H., Abdullah, M., Jamil, M. U., Rehman, A., Hudaib, M., Manahil, Ahad, A. U., Mughal, S., & Eljack, M. M. (2024). Insight into the environmental health consciousness of medical students regarding the perceived impacts of climate change on human health. *Environmental Health Insights*, 18. <https://doi.org/10.1177/11786302241310031>
- Soomro, S., Zho, D., & Charan, I. A. (2024). Investigating associations between climate change anxiety and mental health impact on vulnerable populations: A qualitative analysis. *African Journal of Reproductive Health*, 28(8), 108-121. <https://doi.org/10.29063/ajrh2024/v28i8.11>
- Karacan, E., & Güngörmüş, Z. (2025). Reflection of Nursing Students' Climate Crisis Awareness on Climate Change Anxiety. *GISTU Journal of Health and Biological Sciences*, 1(1), 1-8. <https://dergipark.org.tr/en/download/article-file/4828952>
- Ediz, Ç., & Yanik, D. (2023). The effects of climate change awareness on mental health: Comparison of climate anxiety and hopelessness levels in Turkish youth. *International Journal of Social Psychiatry*, 69(8), 2157-2166. <https://doi.org/10.1177/00207640231206060>
- Roy DN, Thompson S, Rees G, Marsh H. Perceptions of medical and public health professionals on climate change and emerging health challenges in Pakistan: a multiscale approach. *BMC Med Educ*. 2025;25:665.
- Ahmad U, Uvais AH, Mughal S, Eljack MMF. Climate change and mental health in Pakistan: a regional perspective. *Clim Dev*. 2023;15(7)
- Baykara Mat, S. T., & Yilmaz, B. N. (2024). Is awareness of climate change a predictor of eco-anxiety? Research within the scope of nursing students. *Nurse Education Today*, 140, 106274. <https://doi.org/10.1016/j.nedt.2024.106274>
- Tavolacci, M., & Ladner, J. (2024). Eco-anxiety: An additional burden for university students? *European Journal of Public Health*, 34(Supplement_3). <https://doi.org/10.1093/eurpub/ckae144.1352>

11. Brophy, H., Olson, J., & Paul, P. (2022). Eco-anxiety in youth: An integrative literature review. *International Journal of Mental Health Nursing*, 32(3), 633-661. <https://doi.org/10.1111/inm.13099>
12. Sharpe, I., & Davison, C. M. (2021). Climate change, climate-related disasters and mental disorder in low- and middle-income countries: A scoping review. *BMJ Open*, 11(10), e051908. <https://doi.org/10.1136/bmjopen-2021-051908>
13. Cruz, J., Alshammari, F., & Felicilda-Reynaldo, R. (2018). Predictors of Saudi nursing students' attitudes towards environment and sustainability in health care. *International Nursing Review*, 65(3), 408-416. <https://doi.org/10.1111/inr.12432>
14. Cunsolo, A., & Ellis, N. R. (2018). Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change*, 8(4), 275-281. <https://doi.org/10.1038/s41558-018-0092-2>
15. Clayton, S., Manning, C., Speiser, M., & Hill, A. N. (2023). Mental health and our changing climate: Impacts, inequities, responses. *PsycEXTRA Dataset*. <https://doi.org/10.1037/e504872023-001>
16. Ojala, M., Cunsolo, A., Ogunbode, C. A., & Middleton, J. (2021). Anxiety, worry, and grief in a time of environmental and climate crisis: A narrative review. *Annual Review of Environment and Resources*, 46(1), 35-58. <https://doi.org/10.1146/annurev-environ-012220-022716>
17. Pihkala, P. (2020). Anxiety and the ecological crisis: An analysis of eco-anxiety and climate anxiety. *Sustainability*, 12(19), 7836. <https://doi.org/10.3390/su12197836>
18. Hogg TL, Stanley SK, Ojala M. Climate change helplessness and the (de)moralization of individual energy behavior. *J Clim Change Health*. 2021.
19. Cunsolo, A., Harper, S. L., Minor, K., Hayes, K., Williams, K. G., & Howard, C. (2020). Ecological grief and anxiety: The start of a healthy response to climate change? *The Lancet Planetary Health*, 4(7), e261-e263. [https://doi.org/10.1016/s2542-5196\(20\)30144-3](https://doi.org/10.1016/s2542-5196(20)30144-3)
20. Tavalacci M, Ladner J. Ecoanxiety in university students: epidemiology, health correlates and coping. *Int J Public Health*. 2023.
21. Natalia, M., Ullah, W., Khan, A. R., Wahid, A., Mehmood, M. S., & Naz, M. (2023). Investigation among students' and teachers' perception of climate health awareness regarding low carbon ecofriendly practices. *Frontiers in Environmental Science*, 11. <https://doi.org/10.3389/fenvs.2023.1177952>
22. Abdel Nabi, E., Shafik, S. A., & Saad, A. M. (2023). Assessment of nursing students' awareness regarding climate change. *Helwan International Journal for Nursing Research and Practice*, 2(3), 69-82. <https://dx.doi.org/10.21608/hijnrp.2023.201614.1068>
23. Brophy, H., Olson, J., & Paul, P. (2022). Eco-anxiety in youth: An integrative literature review. *International Journal of Mental Health Nursing*, 32(3), 633-661. <https://doi.org/10.1111/inm.13099>
24. Écological grief and anxiety among indigenous populations: systematic review. *J Clim Change Health*. 2022;N/A.
25. Tavalacci, M., & Ladner, J. (2024). Eco-anxiety: An additional burden for university students? *European Journal of Public Health*, 34(Supplement_3). <https://doi.org/10.1093/eurpub/ckae144.1352>