## Original Article

# The Association Between Climate Change Awareness and Psychological Flexibility in Nursing Students

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**Abstract**

**Background:** Climate change-aware health professionals can emphasize the interrelationships of climate change and health, advocate for environmentally sustainable delivery of health services. Evidence suggests that psychological resilience can be useful in mitigating distress caused by climate change.

**Methods:** This study aims to determine the association between climate change awareness and psychological flexibility in nursing students. The sample of the study consisted of 411 nursing students. The data were gathered using the Personal Information Form, Climate Change Awareness Scale, and Psychological Flexibility Scale. Independent samples t-test and linear regression test were used in this study.

**Results:** The participants' total Climate Change Awareness Scale score was 217.72±20.30, and the total Psychological Flexibility Scale score was 121.84±16.86. Students who discussed climate change with their relatives, followed the news on this subject, believed that individuals could create impact climate change on its own, and thought that this issue should be included in the nursing curriculum were found to have higher awareness. The total score for psychological flexibility had a statistically significant effect on the total score for climate change awareness.

**Conclusions:** Nursing students' climate change awareness and psychological flexibility were above average. It is recommended that integrating the roles and responsibilities of nurses in this regard climate change into the nursing education curriculum, encouraging students to participate in scientific activities on this issue, supporting students to carry out studies/projects on climate change, and research on the effect of therapeutic interventions to increase psychological flexibility on climate change anxiety.

**Keywords:** Climate change; awareness; psychological flexibility; nursing students

## Introduction

Climate change (CC) has major consequences for human health, affecting people worldwide, with a specific emphasis on disadvantaged populations and economically disadvantaged countries (Haines et al., 2006). The consequences of CC are diverse and include concrete effects such as heat-related ailments, infections transmitted by vectors, illnesses caused by contaminated water and food, respiratory and allergy conditions, starvation, violence, and mental health

disorders (Levy & Patz, 2015). In addition, CC can lead to secondary health effects such as forced migration, mental illnesses, atmospheric pollution, the proliferation of disease-carrying organisms, inadequate access to food, and malnourishment (Yang et al., 2018). Hence, it is imperative to promote CC awareness in order to ensure that individuals and communities comprehend the pressing and grave nature of the situation, cultivate a feeling of accountability, and stimulate efforts to mitigate its consequences.

CC awareness encompasses comprehending the various aspects associated with CC, such as its origins, impacts, and possible remedies. Encouraging behavioral changes that are capable of minimizing the impacts of CC is paramount (Halady & Rao, 2010; Kousar et al., 2022). CC awareness is seen as crucial to improve the understanding and knowledge of CC among different populations, including farmers, students and communities (Ajuang et al., 2016; Mwanza et al., 2023; Ng'ombe et al., 2020). The Climate Action target, a key objective of the United Nations (UN) "Sustainable Development Goals", underscores the necessity for deliberate planning of research and awareness-raising activities (United Nations, 2023). Educational activities, specifically aimed at the younger generation, play an essential part in improving understanding of CC and can have a good impact on emotional and social well-being, as well as future prospects (Abdulqadir et al., 2022). Discussing CC awareness in the educational curriculum and promoting environmental activities can effectively raise awareness among lecturers and students (Dorji et al., 2021).

The objective of nursing education is to develop an educational and training program that addresses the worldwide need for action and promotes a skilled nursing workforce (Stănesu-Yadav & Lillekroken, 2023). Incorporating CC awareness into nursing education is essential for equipping nursing students with the necessary information and skills to effectively address the health consequences of CC. It is imperative that nursing students understand the fundamental link between CC and health, as well as the ecological impacts of healthcare (Richardson et al., 2017). Adding CC education into nursing curriculum can enable students to identify the detrimental health impacts of CC and equip them to tackle these impacts through policy advocacy and professional practice (Leffers et al., 2017; Tahkol & Ozturk Haney, 2024). Nurses play a vital part in addressing the health effects of CC. Hence, it is imperative that nursing education integrates sustainability and CC information into both the curriculum (Amerson et al., 2022). It is essential to increase nursing students' understanding of CC in order to safeguard public health from the negative impacts of CC and to encourage efficient management of resources in healthcare (Incesu & Yas, 2024). According to Yang et al. (2018), understanding the reasons behind CC was found to be a strong predictor of heightened awareness regarding the adverse impacts of CC among students. Research has indicated that nursing students possess a satisfactory level of knowledge and concern regarding the health consequences of CC. However, they feel that their education does not adequately prepare them to effectively address or mitigate CC. This sentiment has been supported by various studies conducted by other studies (Aronsson et al., 2023; Ergin et al., 2021; Sayan & Kaya, 2016; Tuna et al., 2022). Furthermore, research conducted by Incesu and Yas (2024) revealed that participating in meetings focused on environmental matters proved to be a successful method for enhancing nursing students' understanding of CC (Incesu & Yas, 2024).

Psychological flexibility is a fundamental psychological construct that plays a crucial role in individuals' responses to various challenges, including CC awareness. Psychological flexibility is "a broad construct that describes an individual's ability to respond appropriately to environmental demands and internal experiences in service of his or her goals" (Williams et al., 2012). Psychological flexibility is the central objective of Acceptance and Commitment Therapy (ACT). In ACT, the goal is to increase psychological flexibility, which consists of six components, by accepting emotions, thoughts, and past events without trying to change them, being aware of the present moment, and engaging in value-consistent behaviors (Hayes et al., 2006).

These six components are “acceptance”, “defusion”, “present moment awareness”, “self-as-context”, “committed action” and “values”. Acceptance involves acknowledging and making space for uncomfortable thoughts and feelings. Defusion focuses on distancing oneself from unhelpful thoughts. Present moment awareness emphasizes being fully engaged in the present. Self-as-context involves recognizing the fleeting nature of thoughts and emotions. Committed action is actively pursuing objectives that hold significance, whereas values encompass the process of identifying what is genuinely significant and purposeful in one's life (Hayes et al., 2006). These components work synergistically to enhance psychological flexibility, enabling individuals to adapt to challenging circumstances, manage stress effectively, and participate in actions that align with their principles and objectives. By cultivating these components, individuals can improve their mental health, well-being and overall quality of life (Chong et al., 2021; Ding & Zheng, 2022).

Positive mental health outcomes are linked to psychological flexibility (Guerrini Usubini et al., 2021; Lucas & Moore, 2020; Pyszkowska & Rönnlund, 2021) and resilience (Bryan et al., 2015). Therefore, those who possess elevated degrees of psychological flexibility are more likely to effectively handle the emotional difficulties associated with CC awareness. This, in turn, results in decreased psychological distress and enhanced mental health outcomes (Gloster et al., 2017). According to Feather and Williams (2022), those who exhibit higher levels of psychological inflexibility may be more susceptible to experiencing distress symptoms associated to CC. This is especially true for those who express larger levels of concern about CC (Feather & Williams, 2022). While there is evidence suggesting that psychological flexibility can be beneficial in reducing CC suffering (Seth et al., 2023), there is a lack of research exploring its connection with CC awareness.

## Material and Method

**Type and Purpose of the Research:** The study was carried out as a cross-sectional study. The objective of this study was to determine the association between CC awareness and psychological flexibility in nursing students.

**Samples and Settings:** The study population comprised students who were enrolled in the public university located in Istanbul (N: 1020). The study sample was calculated using a process that calculates the sample size based on a 99% confidence interval and a 5% margin of error. The study was planned to occur with the participation of at least 403 students. The study was conducted with the involvement of 411 students, aged 18 and above, who were currently enrolled in the Nursing Faculty during the 2023-2024 academic year at specific institutions. These students willingly engaged in the study.

**Measurements**

**Personal information form:** The form was produced through a comprehensive literature review conducted by the researchers (Akay et al., 2020; Er et al., 2024; Ergin et al., 2017; Gok & Firat Kilic, 2021; Kucuk Bicer & Acar Vaizoglu, 2015; Uzun, 2021) and contains a total of 15 questions.

**Climate change awareness scale (CCAS):** Atakli and Kuran (2022) devised a scale to measure individuals' level of awareness on climate change. The scale comprises 52 items and encompasses 5 subscales. The scale utilized in this study is a four-point likert scale, with a score range of 52 to 260. High scores indicate a strong level of awareness regarding climate change. The Cronbach's alpha coefficient was found to be 0.92 in Atakli and Kuran (2023) and 0.94 in this study.

**Psychological flexibility scale (PFS):** The scale was developed by Francis, Dawson and Golijani-Moghaddam (2016) to evaluate the psychological flexibility level of individuals. Turkish validity and reliability study was carried out by Karakus and Akbay (2020). The Turkish scale comprises 28 items and encompasses 5 subscales. The scale is a 7-point likert scale. The range of the scale scores is from 28 to 196. High scores reflect high level of psychological flexibility. Items numbered 2, 3, 5, 6, 8, 14, 18, 20, 22, 23, 24 and 25 are reverse scored. The Cronbach's alpha coefficient was found to be 0.79 in Karakuş and Akbay (2020) and 0.81 in this study.

**Data analysis:** The statistical analysis was done using the SPSS (IBM Statistical Package for Social Sciences v.28 NY, New York) software. The frequency (n) and percentage (%) values obtained from the descriptive statistics were examined. An examination of the normal distribution involved assessing the kurtosis and skewness values (Shao, 2002). The study included independent samples t-test and linear regression analysis. The statistical significance level was determined as a 95% confidence interval and $p<0.05$.

**Ethical consideration:** The study received permission from the ethics committee **of Cerrahpasa University** (Date: 19.09.2023, 785913), and the necessary institutional approvals were obtained from the university (Date: 10.10.2023, 805864). In addition, participants provided their consent.

## Results

Upon analyzing the descriptive data of the participants, it was found that the mean age of the participants was 20.48±2.59 years, and 84.2% of them were female. All participants reported that they did not have any information about CC before their higher education and that they did not take any courses on CC during their higher education. All participants stated that they embraced in the term of CC, and 52.3% indicated that they had a belief at a high level that individuals could create impact CC on their own. It was found that 72.3% of the participants discuss CC and its consequences with their family and/or friends, and 85.2% followed news and information about CC at a moderate level in daily life. It was determined that 89.9% of the participants were not known about the convention related to CC and 62.8% of them did not participate in any scientific activities related to CC. 67.4% of the participants thought that the CC and its effects should be included in the nursing curriculum. In addition, 77.4% of the participants believed that the health consequences of CC could be reduced by nursing interventions (Table 1).

The participants' mean scores of CCAS subscales were found 32.83±4.41 for "climate change awareness", 19.47±3.16 for "perception of the problem", 39.59±4.77 for "information on climate change causes", 48.16±5.61 for "climate change anxiety", and 77.65±7.98 for "behaviors and expectations from policies". The participants' total scores on the CCAS ranged from 116 to 260, with an average of 217.72±20.30 (Table 2). The participants' mean scores of PFS subscales were found 49.77±9.57 for "behavior in line with values", 31.54±8.07 for "instant", 17.68±5.32 for "acceptance", 11.69±3.47 for "contextual self", and 11.15±3.38 for "dissociation". The participants' total scores on the PFS ranged from 57 to 178, with an average of 121.84±16.86 (Table 2).

Table 3 presents the difference between the descriptive features of the students their level of awareness regarding CC. Participants who stated that they reported discussing CC and its consequences with their family and/or friends had a higher total score on the CCAS. These students have statistically higher scores on the subscales of "climate change awareness", "perception of the problem", "climate change anxiety", "behaviors and expectations from policies" ($p<0.05$). Participants who follow the news and information about CC in daily life had a higher total score on the CCAS. Furthermore, these students have statistically higher scores on the subscales of "climate change awareness", "perception of problem", and total score of the CCAS ($p<0.05$). The participants who strongly believe that individuals may independently produce an impact on CC have considerably higher scores on both the total and subscales of the CCAS compared to those who hold a moderate belief ($p<0.05$). Participants who knew about the convention and participated in scientific activities related to CC had a higher total score on the CCAS. In addition, these students have statistically higher scores on the subscales of "climate change awareness" and "perception of the problem" ($p<0.05$). Participants who think the course of CC and its effects should be included in the nursing curriculum had a higher total score on the CCAS. These students have statistically higher scores on the subscales of "climate change awareness", "information on climate change causes", "climate change anxiety", "behaviors and expectations from policies" ($p<0.05$). Participants who believe that the health consequences of CC can be reduced by nursing interventions had a higher total score on the CCAS. In addition, these students have statistically higher scores on the subscales of

"climate change awareness", "information on climate change causes", "climate change anxiety", and "behaviors and expectations from policies" ($p<0.05$) (Table 3).

Table 4 shows the difference between the descriptive parameters of the participating students and their level of psychological flexibility. The mean "instant" subscale score and total score of psychological flexibility of the participants who stated that they discussed CC and its consequences with their family and/or friends and believed that the individual could create impact CC on their own were significantly higher ($p<0.05$). There is a statistically significant difference between the participants' behavior in line with "values" subscale and the psychological flexibility scores according to think the course of CC and its effects should be included in the nursing curriculum and believe that the health consequences of CC can be reduced by nursing interventions ($p<0.01$). The mean score of the participants who answered yes is significantly higher than the average value of the participants who answered no (Table 4).According to the results of the linear regression analysis shown in Table 5, the model was found to be significant ($F=6.841$; $p=0.009$) and the effect of psychological flexibility total score on climate change awareness was 1.4% (Adjusted $R2=0.014$; $p=0.009$).

**Table 1 Participants' descriptive characteristics (N= 411)**

| | | Mean±SD | |
|---|---|---|---|
| **Age** | | 20.48±2.59 (min:17 max: 26) | |
| | | **n** | **%** |
| **Gender** | Female | 342 | 83.2 |
| | Male | 69 | 16.8 |
| **Grade** | 1st Grade | 140 | 34.1 |
| | 2nd Grade | 83 | 20.2 |
| | 3rd Grade | 111 | 27.0 |
| | 4th Grade | 77 | 18.7 |
| **Do you discuss climate change and its consequences with your family and/or friends?** | Yes | 279 | 72.3 |
| | No | 114 | 27.7 |
| **How often do you follow news and information about climate change in your daily life?** | Sometimes | 350 | 85.2 |
| | Often | 61 | 14.8 |
| **How much do you believe that individuals can create impact climate change on their own?** | Highly | 215 | 52.3 |
| | Moderate | 196 | 47.7 |
| **Do you know about the convention related to climate change?** | Yes | 66 | 16.1 |
| | No | 345 | 89.9 |
| | Yes | 153 | 37.2 |

| | | | |
|---|---|---|---|
| **Do you participate in scientific activities related to climate change?** | No | 258 | 62.8 |
| **Do you think the course of climate change and its effects should be included in the nursing curriculum?** | Yes | 277 | 67.4 |
| | No | 134 | 32.6 |
| **Do you believe that the health consequences of climate change can be reduced by nursing interventions?** | Yes | 318 | 77.4 |
| | No | 93 | 22.6 |

**Table 2: Descriptive statistics of climate change awareness scale and psychological flexibility scale**

| | **Mean ± SD** | **Min - Max** |
|---|---|---|
| **Climate Change Awareness** | **217.72±20.30** | **116.00-260.00** |
| Climate change awareness subscale | 32.83±4.41 | 15.00-45.00 |
| Perception of the problem subscale | 19.47±3.16 | 10.00-25.00 |
| Information on climate change causes subscale | 39.59±4.77 | 15.00-45.00 |
| Climate change anxiety subscale | 48.16±5.61 | 22.00-55.00 |
| Behaviors and expectations from policies subscale | 77.65±7.98 | 43.00-90.00 |
| **Psychological Flexibility Scale** | **121.84±16.86** | **57.00-178.00** |
| Behavior in line with values subscale | 49.77±9.57 | 15.00-70.00 |
| Instant subscale | 31.54±8.07 | 7.00-49.00 |
| Acceptance subscale | 17.68±5.32 | 5.00-33.00 |
| Contextual self subscale | 11.69±3.47 | 3.00-21.00 |
| Dissociation subscale | 11.15±3.38 | 3.00-21.00 |

*SD: Standard deviation, Min: Minimum values, Max: Maximum values*

**Table 3** The comparison of the Climate Change Awareness Scale scores according to the students' descriptive characteristics (N= 411)

| Variables | n | Climate change awareness subscale | | Perception of the problem subscale | | Information on climate change causes subscale | | Climate change anxiety subscale | | Behaviors and expectations from policies subscale | | Climate Change Awareness Scale | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean ± SD | t value<br>p | Mean ± SD | t value<br>p | Mean ± SD | t value<br>p | Mean ± SD | t value<br>p | Mean ± SD | t value<br>p | Mean ± SD | t value<br>p |
| **Do you discuss climate change and its consequences with your family and/or friends?** | | | | | | | | | | | | | |
| Yes | 279 | 33.59±3.98 | t=5.421 | 19.68±3.18 | t=2.109 | 39.72±4.55 | t=0.886 | 48.55±5.36 | t=2.265 | 78.35±7.57 | t=2.876 | 219.90±19.24 | t=3.566 |
| No | 114 | 30.83±4.85 | **p<0.001** | 18.94±3.07 | **p=0.036** | 39.25±5.31 | p=0.376 | 47.15±6.12 | **p=0.024** | 75.84±8.74 | **p=0.004** | 212.03±21.92 | **p=0.001** |
| **How often do you follow news and information about climate change in your daily life?** | | | | | | | | | | | | | |
| Sometimes | 350 | 32.24±4.29 | t=-6.760 | 19.27±3.20 | t=-3.185 | 39.43±4.85 | t=-1.628 | 47.85±5.72 | t=-2.687 | 77.38±8.02 | t=-1.656 | 216.19±20.43 | t=-3.712 |
| Quite Often | 61 | 36.18±3.52 | **p<0.001** | 20.65±2.66 | **p=0.002** | 40.50±4.21 | p=0.104 | 49.93±4.60 | **p=0.008** | 79.21±7.61 | p=0.099 | 226.49±17.20 | **p<0.001** |
| **How much do you believe that individuals can create impact climate change on their own?** | | | | | | | | | | | | | |
| Moderate | 196 | 31.76±4.35 | t=-4.826 | 19.06±3.30 | t=-2.526 | 38.79±5.14 | t=-3.261 | 47.09±6.03 | t=-3.742 | 76.18±8.07 | t=-3.618 | 212.90±21.10 | t=-4.709 |
| Very Much | 215 | 33.80±4.24 | **p<0.001** | 19.85±2.99 | **p=0.012** | 40.31±4.29 | **p=0.001** | 49.13±5.01 | **p<0.001** | 78.99±7.67 | **p<0.001** | 222.11±18.53 | **p<0.001** |
| **Do you know about the convention related to climate change?** | | | | | | | | | | | | | |
| Yes | 66 | 35.95±4.28 | t=6.588 | 20.69±3.32 | t=3.461 | 39.65±4.32 | t=0.112 | 49.07±5.46 | t=1.440 | 78.93±8.32 | t=1.429 | 221.31±19.99 | t=2.907 |
| No | 345 | 32.23±4.18 | **p<0.001** | 19.24±3.08 | **p=0.001** | 39.57±4.86 | p=0.911 | 47.99±5.63 | p=0.151 | 77.40±7.90 | p=0.154 | 216.45±20.14 | **p=0.004** |
| **Do you participate in scientific activities related to climate change?** | | | | | | | | | | | | | |
| Yes | 153 | 34.33±4.28 | t=5.495 | 19.92±3.03 | t=2.202 | 39.87±4.33 | t=0.930 | 48.60±5.24 | t=1.231 | 77.96±7.89 | t=0.611 | 220.70±18.57 | t=2.307 |
| No | 258 | 31.94±4.25 | **p<0.001** | 19.21±3.22 | **p=0.028** | 39.42±5.01 | p=0.353 | 47.90±5.81 | p=0.219 | 77.46±8.04 | p=0.541 | 215.94±21.10 | **p=0.022** |
| **Do you think the course of climate change and its effects should be included in the nursing curriculum?** | | | | | | | | | | | | | |
| Yes | 277 | 33.54±4.21 | t=4.809 | 19.72±3.16 | t=2.335 | 40.20±4.18 | t=3.789 | 48.85±5.10 | t=3.636 | 78.72±7.42 | t=3.980 | 221.05±18.31 | t=4.919 |
| No | 134 | 31.36±4.46 | **p<0.001** | 18.95±3.10 | p=0.020 | 38.32±5.62 | **p<0.001** | 46.73±6.31 | **p<0.001** | 75.44±8.65 | **p<0.001** | 210.82±22.44 | **p<0.001** |
| **Do you believe that the health consequences of climate change can be reduced by nursing interventions?** | | | | | | | | | | | | | |
| Yes | 318 | 33.17±4.33 | t=2.949 | 19.58±3.18 | t=1.317 | 39.84±4.56 | t=2.031 | 48.53±5.43 | t=2.459 | 78.27±7.65 | t=2.918 | 219.41±19.46 | t=3.163 |
| No | 93 | 31.65±4.50 | **p=0.003** | 19.09±3.10 | p=0.189 | 38.70±5.36 | **p=0.043** | 46.91±6.05 | **p=0.014** | 75.54±8.73 | **p=0.004** | 211.92±22.09 | **p=0.002** |

*t=Independent samples t test, p<0.05*

**Table 4 The comparison of the Psychological Flexibility Scale scores according to the students' descriptive characteristics (N= 411)**

| Variables | n | Behavior in line with values subscale | | Instant subscale | | Acceptance subscale | | Contextual self subscale | | Dissociation subscale | | Psychological Flexibility Scale | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean ± SD | t value<br>p | Mean ± SD | t value<br>p | Mean ± SD | t value<br>p | Mean ± SD | t value<br>p | Mean ± SD | t value<br>p | Mean ± SD | t value<br>p |
| **Do you discuss climate change and its consequences with your family and/or friends?** | | | | | | | | | | | | | |
| Yes | 279 | 50.21±9.33 | t=1.509 | 32.24±8.13 | t=2.890 | 17.69±5.39 | t=0.076 | 11.79±3.47 | t=0.921 | 11.14±3.43 | t=-0.138 | 123.08±16.71 | t=2.427 |
| No | 114 | 48.62±10.12 | p=0.132 | 29.70±7.64 | **p=0.004** | 17.64±5.15 | p=0.940 | 11.43±3.46 | p=0.358 | 11.19±3.28 | p=0.890 | 118.60±16.88 | **p=0.016** |
| **How often do you follow news and information about climate change in your daily life?** | | | | | | | | | | | | | |
| Sometimes | 350 | 49.87±9.29 | t=0.536 | 31.52±8.18 | t=-0.084 | 17.68±5.31 | t=0.041 | 11.70±3.46 | t=0.092 | 11.18±3.35 | t=0.430 | 121.97±16.77 | t=0.382 |
| Quite Often | 61 | 49.16±11.09 | p=0.592 | 31.62±7.46 | p=0.933 | 17.65±5.41 | p=0.968 | 11.65±3.53 | p=0.927 | 10.98±3.59 | p=0.668 | 121.08±17.49 | p=0.703 |
| **How much do you believe that individuals can create impact climate change on their own?** | | | | | | | | | | | | | |
| Moderate | 196 | 48.86±9.60 | t=-1.833 | 30.41±7.85 | t=-2.729 | 17.68±5.10 | t=0.027 | 11.63±3.44 | t=-0.310 | 11.25±3.36 | t=0.538 | 119.85±14.56 | t=-2.293 |
| Very Much | 215 | 50.59±9.49 | p=0.068 | 32.57±8.14 | **p=0.007** | 17.67±5.53 | p=0.978 | 11.74±3.51 | p=0.757 | 11.06±3.41 | p=0.591 | 123.65±18.56 | **p=0.022** |
| **Do you know about the convention related to climate change?** | | | | | | | | | | | | | |
| Yes | 66 | 50.42±10.53 | t=0.604 | 30.53±8.25 | t=-1.112 | 17.56±5.39 | t=-0.201 | 11.34±4.03 | t=-0.880 | 10.90±3.58 | t=-0.645 | 120.77±20.73 | t=-0.563 |
| No | 345 | 49.64±9.39 | p=0.546 | 31.73±8.03 | p=0.267 | 17.70±5.31 | p=0.841 | 11.75±3.36 | p=0.380 | 11.20±3.35 | p=0.519 | 122.04±16.04 | p=0.574 |
| **Do you participate in scientific activities related to climate change?** | | | | | | | | | | | | | |
| Yes | 153 | 50.05±10.35 | t=0.458 | 31.55±8.10 | t=0.025 | 17.67±5.24 | t=-0.024 | 11.57±3.46 | t=-0.531 | 11.00±3.29 | t=-0.687 | 121.86±15.29 | t=0.017 |
| No | 258 | 49.60±9.09 | p=0.647 | 31.53±8.07 | p=0.980 | 17.68±5.38 | p=0.981 | 11.76±3.48 | p=0.596 | 11.24±3.44 | p=0.492 | 121.83±17.75 | p=0.986 |
| **Do you think the course of climate change and its effects should be included in the nursing curriculum?** | | | | | | | | | | | | | |
| Yes | 277 | 50.53±9.21 | t=2.335 | 31.98±8.37 | t=1.616 | 17.85±5.33 | t=0.974 | 11.79±3.61 | t=0.845 | 11.00±3.28 | t=-1.310 | 123.18±17.85 | t=2.322 |
| No | 134 | 48.19±10.13 | **p=0.020** | 30.61±7.35 | p=0.107 | 17.31±5.31 | p=0.331 | 11.48±3.18 | p=0.399 | 11.47±3.58 | p=0.191 | 119.08±14.28 | **p=0.021** |
| **Do you believe that the health consequences of climate change can be reduced by nursing interventions?** | | | | | | | | | | | | | |
| Yes | 318 | 50.31±9.24 | t=2.148 | 31.91±8.13 | t=1.734 | 17.84±5.28 | t=1.137 | 11.67±3.44 | t=-0.187 | 11.16±3.28 | t=0.121 | 122.91±16.93 | t=2.401 |
| No | 93 | 47.90±10.44 | **p=0.046** | 30.26±7.76 | p=0.084 | 17.12±5.45 | p=0.256 | 11.75±3.58 | p=0.852 | 11.11±3.73 | p=0.904 | 118.17±16.18 | **p=0.017** |

*t=Independent samples t test, p<0.05*

**Table 5 The Effect of Psychosocial Flexibility on Climate Change Awareness (N= 411)**

| Dependent Variable | Independent Variable | $\beta_1$ | t | p | F | Model (p) |
|---|---|---|---|---|---|---|
| Climate Change Awareness Scale Total Score | **Constant** | 198.902 | 27.385 | <0.001 | | |
| | Psychological Flexibility Scale Total Score | 0.154 | 2.615 | 0.009 | 6.841 | 0.009 |

## Discussion

In this study, which examined the relationship between CC awareness and psychological flexibility in nursing students, it was found that there was a difference in terms of students' descriptive characteristics, and psychological flexibility had a significant effect on CC awareness.

When analyzing the descriptive characteristics of the students about CC, it was found that all of them had no information about CC before undergraduate education. Similarly, a study of 1387 medical students by Liao et al., (2019) found that the majority of the students did not have enough knowledge about the CC, especially in terms of interventions. In another study conducted by Uzun (2021) on 310 university students, it was found that more than half of the students had no information about CC before their undergraduate education. In this study, it can be said that nursing students' awareness of CC prior to undergraduate education is low. Nurses are in close contact with groups that are vulnerable to CC, such as infants, the elderly, people with chronic diseases, people living in hot climates and/or prone to endemic diseases. (Bowman et al., 2010; Er et al., 2024; Liao et al., 2019). As nurses play a key role in raising awareness of CC in society, it is considered important that nursing students have a high level of awareness. Therefore, undergraduate education should be seen as an opportunity to address CC and pro-climate behaviors.

It was found that most of the students discussed CC and its consequences with their relatives and followed the news. When the studies conducted are examined, it is seen that individuals hear about CC from the internet or television (Akay et al., 2020; Demir et al., 2024; Er et al., 2024; Ergin et al., 2017; Kucuk Bicer & Acar Vaizoglu, 2015; Tahkol & Ozturk Haney, 2024). The media has an essential function in enhancing public awareness regarding CC (Akay et al., 2020; Kucuk Bicer & Acar Vaizoglu, 2015; Tahkol & Ozturk Haney, 2024). Media tools have an important responsibility to raise public awareness and facilitate access to accurate information (Demir et al., 2024). This result shows that social media and the internet can be used to increase knowledge about CC.

More than half of the students did not participate in scientific activities such as congresses, seminars, and conferences on CC. Similar studies show that students have low awareness of global organizations and conventions on CC and do not participate in scientific activities (Ergin et al., 2017; Yuce Yoruk & Varer Akpinar, 2023). In a study conducted with university students, high awareness of CC was associated with participation in scientific activities related to CC and with knowledge about CC (Filho et al., 2023). This study found that students who participated in scientific activities related to CC had higher levels of awareness. Participation in scientific activities related to CC is cited as an indicator of recognition of the problem and taking responsibility for what can be done individually (Uzun, 2021). In particular, given the health impacts of CC, it is important to protect public health and ensure that healthcare professionals can provide appropriate and high-quality services on the health impacts of CC (Akay et al., 2020). Considering the importance of participation in scientific activities in terms of awareness, it is important that activities and campaigns are organized by national

organizations and associations related to CC and environmental problems in universities. In this sense, it is recommended that universities plan discussion sessions on CC, its effects on health, and initiatives to combat it at the individual and societal levels and support the participation of students.

The majority of the students were found to be unaware of the conventions about CC. It is emphasized that in order to raise awareness in the society, it is necessary to increase the level of knowledge of young people, who will be in decision-making roles in the future, about global organizations and policies related to CC in order to prepare, implement and supervise the legal infrastructure (Wang et al., 2017; Yuce Yoruk & Varer Akpinar, 2023). International public health organizations are calling on healthcare professionals to take action to reduce the health sector's carbon footprint (Lavey, 2019). Strategies to reduce greenhouse gases and policies to reduce carbon footprints, particularly in hospitals, will be important. Nurses have a crucial role to play in raising awareness among policy makers and the public (Anderko, 2017). Thus, it is indispensable to motivate nurses to effectively carry out their professional responsibilities, including advocating for patients and actively participating in policy development (Ergin et al., 2021). This study found that students who were knowledgeable about the conventions on CC had a higher level of awareness. In this direction, it is important to plan activities at universities to increase knowledge and awareness about global organizations and conventions.

It was determined that all students embraced in the term of CC and more than half of them believed that individuals could create impact CC on their own. The results of the survey of university students show that most students believe in CC, that CC can be prevented or mitigated, and that individual action can be effective (Ergin et al., 2017; Filho et al., 2023; Kucuk Bicer & Acar Vaizoglu, 2015; Tahkol & Ozturk Haney, 2024; Uzun, 2021). Nurses have the ability to educate society regarding CC, its ramifications on health, and both individual and collective approaches to address CC. Additionally, they can collaborate with other healthcare professionals to formulate effective initiatives (Er et al., 2024). Nursing students who are sensitive and aware of environmental issues are more likely to warn people who pollute the environment (Gok & Firat Kilic, 2021). An important result of this study is that students believe they can influence CC through individual actions. The organization of seminars for students by national professional organizations on individual and societal action and the role of healthcare professionals in the fight against CC will help to raise awareness.

Furthermore, the majority of students expressed the view that the nursing curriculum should incorporate CC and its impacts. They also held the belief that nursing interventions have the potential to mitigate the health repercussions of CC. Students who take courses on CC as part of their higher education are more likely to embrace in the term of CC and have a higher level of awareness (Álvarez-Nieto et al., 2022; Uzun, 2021). It is also noted that healthcare professionals are not prepared to intervene and need training in this area (Akay et al., 2020; Liao et al., 2019). According to Álvarez-Nieto et al. (2022), the participation of nursing students in trainings resulted in a significant improvement in their awareness and attitudes towards environmental issues. Most CC courses offered in colleges are often found in the fields of engineering, social and natural sciences (Lavey, 2019). The National Core Nursing Education Program (HUÇEP) includes the basic subjects/skills that should be included in the educational programs of all schools providing nursing education in Turkey. One of the main topics in HUÇEP is the environment. In this context, "Participating in social responsibility projects related to the effects of the environment on human health" is stated as a basic skill (Council of Higher Education, 2023). A review of nursing curriculum in Turkey shows that there are courses related to environmental health and nursing, but courses directly related to CC and its impact on health are limited. In this study, all students reported that they had not taken any courses on CC during their university education. However, it is an important result that they believe that CC can be mitigated through nursing interventions. Integrating CC and sustainability into the nursing curriculum

facilitates the development of students into global citizens. Furthermore, there is a strong emphasis on incorporating CC and sustainability courses into the curriculum as a crucial step in enhancing students' awareness and transforming their attitudes (Álvarez-Nieto et al., 2022; Gok & Firat Kilic, 2021). In order to achieve this objective, nurse educators should have a proactive role in incorporating CC into the nursing curriculum.

In addition, students' CC awareness was above average. In a study conducted by Yuce Yoruk and Varer Akpinar (2023) determined that students' CC awareness was at a moderate level. Researchers commonly assess the amount of knowledge and awareness of CC as a combined measure. Among university students, the level of knowledge and awareness is higher than average (Álvarez-Nieto et al., 2022; Ergin et al., 2017; Incesu & Yas, 2024; Kucuk Bicer & Acar Vaizoglu, 2015; Tahkol & Ozturk Haney, 2024). This study revealed that prior to higher education, students possessed no understanding of CC. The majority of students were unaware of the conventions pertaining to CC, and over half of them did not engage in activities such as congresses, seminars, and conferences that revolved around CC. Nevertheless, it may be asserted that students possess knowledge regarding CC. This could be attributed to the fact that students enroll in university courses that specifically examine the influence of the environment on human health. Due to the possible ramifications of CC on health, it is crucial for nurses to possess a heightened level of awareness. University students are an important segment of society and efforts to address CC at their universities can have a significant impact on shaping individuals' awareness, attitudes, and behavior (Álvarez-Nieto et al., 2022; Filho et al., 2023; Gok & Firat Kilic, 2021; Tahkol & Ozturk Haney, 2024).

The results revealed that students who discussed CC with their relatives, followed the news at a high level in their daily lives and believed that individuals can influence CC on their own had a profound levels of CC awareness. A study conducted by Tahkol and Ozturk Haney (2024) on 481 nursing students revealed that individuals who alerted others about environmental pollution, actively monitored news related to environmental issues, and made measures to combat CC exhibited more favorable attitudes towards sustainable development. According to this study, students who have a high level of awareness are more perceptive to the impact of CC on their daily lives. In addition, in this study, students who discussed CC with their relatives, followed the news and believed that individuals could influence CC had higher mean scores on the “perception of the problem” and “climate change anxiety” subscales. In a study conducted by Ramírez-López, Rosetti and Poma (2022) on 461 university students, it was found that individuals who spent more time reading CC news sites, had more information and engaged in environmental protection behaviors had CC anxiety. As with anxiety in general, CC anxiety was found to have an adaptive function (Feather & Williams, 2022). CC anxiety can serve as a catalyst for behavioral modification by inspiring individuals to adopt more ecologically responsible practices, such as trash reduction (Ojala et al., 2021). In this study, it can be said that students who are anxious about CC are highly aware and sensitive to CC. It is suggested that the emotions generated by CC should be framed in a way that motivates pro-environmental behavior (Er et al., 2024; Feather & Williams, 2022).

It was found that students who believed that CC and its effects should be included in the nursing curriculum had higher levels of CC awareness. It was also found that these students had higher mean scores on the subscales of “information on climate change causes”, “climate change anxiety” and “behaviors and expectations from policies”. Training on CC or courses integrated into the curriculum were found to increase students' knowledge and awareness (Álvarez-Nieto et al., 2022; Filho et al., 2023; Ramírez-López et al., 2022). In a study, it was found that students' attitudes and behaviors towards CC depend on their level of awareness and knowledge about CC (Akrofi et al., 2019). The literature suggests including CC courses into the curriculum to enhance awareness. Additionally, it advocates for students' active involvement in workshops, courses, campaigns, and environmental club memberships (Akrofi et al., 2019; Álvarez-

Nieto et al., 2022; Tahkol & Ozturk Haney, 2024). However, it is also stated that CC should not only be addressed at the level of knowledge and that the development of positive attitudes is important in raising awareness and consciousness. Awareness of CC is also expected to have a positive impact on individual behavior (Kucuk Bicer & Acar Vaizoglu, 2015). The nursing curriculum of many universities in Turkey includes courses on social awareness projects or project-based learning. In addition to opening courses on CC and nursing, it is recommended to support students to conduct studies or projects related to CC in project-based courses to raise awareness.

Moreover, students' level of psychological flexibility was above average and that the total score for psychological flexibility had a statistically significant effect on the total score for CC awareness. Psychological flexibility means that the individual is not stuck in the past and the future but is in touch with the present moment. At the same time, an individual's ability to behave in a way that is consistent with his or her values and to adapt to changing situations is an indicator of psychological flexibility (Karakus & Akbay, 2020). It is emphasized that psychological flexibility can play an important role in taking action against CC. Psychological flexibility may influence how individuals perceive and respond to CC (Feather & Williams, 2022). This study discovered that students who possessed a strong sense of psychological flexibility engaged in conversations on CC with their family members. Additionally, they held the belief that individuals have the power to impact CC and acknowledged that nursing interventions could mitigate the health effects of CC. CC awareness and its repercussions can induce anxiety in individuals, so impacting their mental health. While worrying about CC has an adaptive function, worrying too much and too often can lead to a pathologization of the situation. This can also prevent individuals from taking action to mitigate CC (Clayton, 2020; Feather & Williams, 2022). It is argued that meaning-focused coping and psychological flexibility should be enhanced to manage stress and anxiety related to CC (Seth et al., 2023). Psychological flexibility supports effective coping with the challenges of CC, including pro-climate behavior (Chapman et al., 2018; Koger et al., 2011; Seth et al., 2023). It was found that therapeutic practices, such as ACT, that enhance psychological flexibility may be effective in the reduction of CC anxiety (Feather & Williams, 2022). It is advisable to perform additional studies on this subject to comprehend the correlation between psychological flexibility and CC anxiety, and to foster a conducive setting for further discourse.

**Limitations and Strengths:** This study has several limitations. First, this study was conducted with nursing students enrolled in a public university. Therefore, the generalizability of the findings to their own population is limited. Conducting this research in institutions in different regions might increase the generalizability. Secondly, the results of the study are based on self-reports of the students. Thirdly, due to design of the study, it should be taken into account that the relationships between the scales do not demonstrate causality. However, this study has several strengths. It was observed that the number of studies investigating the level of awareness and its relationship with psychological flexibility among university students is limited. In this sense, the results of this study are considered to contribute to the literature. The results of the study are also important in terms of reflecting the level of CC awareness and the factors influencing it among nursing students, who will be the decision-makers of the future. In addition, these results may contribute to the understanding of individual differences in psychological flexibility in CC awareness.

**Conclusion:** The study concluded that nursing students had an above-average level of awareness regarding CC. In addition, students who discussed CC with their relatives, followed the news on this issue, believed that individuals could influence CC on its own, and thought that this issue should be included in the nursing curriculum were found to have higher awareness. The study found that the total score of psychological flexibility had a statistically significant effect on the total score of CC awareness. In order to enhance awareness of the potential health problems that are expected to arise from CC, it is advisable to incorporate courses on CC,

its impact on individual and community health, and the specific duties and obligations of nurses in relation to this issue into the nursing curriculum. Planning activities such as various seminars, congresses, conferences, symposiums, and discussion sessions on CC in universities and encouraging students to participate in them can help raise awareness. Facilitating students' engagement in CC studies/projects within project-based learning courses can contribute to increasing awareness and fostering constructive attitudes and behaviors. Additionally, it is advisable to strategically design experimental studies to examine the impact of therapeutic therapies aimed at enhancing psychological flexibility on CC anxiety and pro-climate behaviors.

## References


Abdulqadir, M. M. L., Muhammed, S. A., & Yusuf, J. (2022). Impact of Climate Change Awareness on Undergraduates' Socio-Emotional Well-Being in Nigeria. *International Journal of Emotional Education*, *14*(2), 53–67. https://doi.org/10.56300/gdue5169

Ajuang, C. O., Abuom, P. O., Bosire, E. K., Dida, G. O., & Anyona, D. N. (2016). Determinants of climate change awareness level in upper Nyakach Division, Kisumu County, Kenya. *SpringerPlus*, *5*(1), 1015. https://doi.org/10.1186/s40064-016-2699-y

Akay, D. S., Akca, G., Atik, A. D., & Erkoc, F. (2020). Is There Need For Further Education of Life Sciences Professionals for Climate Change and Health Effects? *The Journal of International Lingual Social and Educational Sciences*, *6*(1), 141–151. https://doi.org/10.34137/jilses.684622

Akrofi, M. M., Antwi, S. H., & Gumbo, J. R. (2019). Students in Climate Action: A Study of Some Influential Factors and Implications of Knowledge Gaps in Africa. *Environments, 6*(2), 12. https://doi.org/10.3390/environments6020012

Álvarez-Nieto, C., Álvarez-García, C., Parra-Anguita, L., Sanz-Martos, S., & López-Medina, I. M. (2022). Effectiveness of scenario-based learning and augmented reality for nursing students' attitudes and awareness toward climate change and sustainability. *BMC Nursing*, *21*(1), 245. https://doi.org/10.1186/s12912-022-01023-9

Amerson, R. M., Boice, O., Mitchell, H., & Bible, J. (2022). Nursing Faculty's Perceptions of Climate Change and Sustainability. *Nursing Education Perspectives*, *43*(5), 277–282.

Anderko, L. (2017). Climate Change and Public Health: Nurses Can Make a Difference. *Public Health Nursing, 34*(2), 99–100. https://doi.org/10.1111/phn.12316

Aronsson, J., Nichols, A., Warwick, P., & Elf, M. (2023). Nursing students' and educators' perspectives on sustainability and climate change: An integrative review. *Journal of Advanced Nursing*. https://doi.org/10.1111/jan.15950 (in Press).

Atakli, G., & Kuran, H. (2022). Development of climate change awareness scale. *Biological Diversity and Conservation*, *15*(2), 150–161. https://doi.org/10.46309/biodicon.2022.1079715

Bowman, T. E., Maibach, E., Mann, M. E., Somerville, R. C. J., Seltser, B. J., Fischhoff, B., Gardiner, S. M., Gould, R. J., Leiserowitz, A., & Yohe, G. (2010). Time to take action on climate communication. *Science, 330*(6007), 1044. https://doi.org/10.1126/science.330.6007.1044

Bryan, C. J., Ray-Sannerud, B., & Heron, E. A. (2015). Psychological flexibility as a dimension of resilience for posttraumatic stress, depression, and risk for suicidal ideation among Air Force personnel. *Journal of Contextual Behavioral Science*, *4*(4), 263–268. https://doi.org/https://doi.org/10.1016/j.jcbs.2015.10.002

Chapman, D. A., Trott, C. D., Silka, L., Lickel, B., & Clayton, S. (2018). Psychological perspectives on community resilience and climate change: Insights, examples, and directions for future research. In S. Clayton & C. B. T.-P. and C. C. Manning (Eds.), *Psychology and Climate Change: Human Perceptions, Impacts, and Responses* (pp. 267–288). Academic Press. https://doi.org/https://doi.org/10.1016/B978-0-12-813130-5.00011-4

Chong, Y. Y., Chien, W. T., Cheng, H. Y., Kassianos, A. P., Gloster, A. T., & Karekla, M. (2021). Can psychological flexibility and prosociality mitigate illness perceptions toward COVID-19 on mental health? A cross-sectional study among Hong Kong adults. *Globalization and Health*, *17*(1), 1–13. https://doi.org/10.1186/s12992-021-00692-6

Clayton, S. (2020). Climate anxiety: Psychological responses to climate change. *Journal of Anxiety Disorders*, *74*, 102263. https://doi.org/https://doi.org/10.1016/j.janxdis.2020.102263

Council of Higher Education. (2023).*Nursing National Core Education Program*. https://www.yok.gov.tr/Documents/Kurumsal/egitim_ogretim_dairesi/Ulusal-cekirdek-egitimi-programlari/hemsirelik_cekirdek_egitim_programi.pdf

Demir, R., Yalazı, R. O., & Dinc, A. (2024). The relationship between women's climate change awareness and concerns about climate change in Turkiye. *Public Health Nursing*, *41*(2), 215–220. https://doi.org/10.1111/phn.13269

Ding, D., & Zheng, M. (2022). Associations Between Six Core Processes of Psychological Flexibility and Functioning for Chronic Pain Patients: A Three-Level Meta-Analysis. *Frontiers in Psychiatry*, *13*(July), 1–18. https://doi.org/10.3389/fpsyt.2022.893150

Dorji, Y., Man, C., & Nidup, T. (2021). Climate Change Awareness Among the Teachers of Higher Secondary Schools. *Asian Research Journal of Arts & Social Sciences*, *15*(4), 12–22.

Er, S., Murat, M., Ata, E. E., Kose, S., & Buzlu, S. (2024). Nursing students' mental health: How does eco-anxiety effect? *International Journal of Mental Health Nursing*. https://doi.org/10.1111/inm.13320 (in Press).

Ergin, A., Akbay, B., Ozdemir, C., & Uzun, S. U. (2017). Medical faculty students' knowledge, attitudes and behavior about global warming and its health effects. *Pamukkale Medical Journal*, *10*(2), 172–180. https://doi.org/10.5505/ptd.2017.15428

Ergin, E., Altinel, B., & Aktas, E. (2021). A mixed method study on global warming, climate change and the role of public health nurses from the perspective of nursing students. *Nurse Education Today*, *107*, 105144. https://doi.org/10.1016/j.nedt.2021.105144

Feather, G., & Williams, M. (2022). The moderating effects of psychological flexibility and psychological inflexibility on the relationship between climate concern and climate-related distress. *Journal of Contextual Behavioral Science*, *23*(January), 137–143. https://doi.org/10.1016/j.jcbs.2021.12.007

Filho, W. L., Yayeh Ayal, D., Wall, T., Shiel, C., Paco, A., Pace, P., Mifsud, M., Lange Salvia, A., Skouloudis, A., Moggi, S., LeVasseur, T., Vinuesa Antonio, G., Azeiteiro, U. M., Ioannis, N., & Kovaleva, M. (2023). An assessment of attitudes and perceptions of international university students on climate change. *Climate Risk Management*, *39*, 100486. https://doi.org/https://doi.org/10.1016/j.crm.2023.100486

Francis, A. W., Dawson, D. L., & Golijani-Moghaddam, N. (2016). The development and validation of the Comprehensive assessment of Acceptance and Commitment Therapy processes (CompACT). *Journal of Contextual Behavioral Science*, *5*(3), 134–145. https://doi.org/https://doi.org/10.1016/j.jcbs.2016.05.003

Gloster, A. T., Meyer, A. H., & Lieb, R. (2017). Psychological flexibility as a malleable public health target: Evidence from a representative sample. *Journal of Contextual Behavioral Science*, *6*(2), 166–171. https://doi.org/https://doi.org/10.1016/j.jcbs.2017.02.003

Gok, N. D., & Firat Kilic, H. (2021). Environmental Awareness and sensitivity of nursing students. *Nurse Education Today*, *101*, 104882. https://doi.org/10.1016/j.nedt.2021.104882

Guerrini Usubini, A., Varallo, G., Granese, V., Cattivelli, R., Consoli, S., Bastoni, I., Volpi, C., Castelnuovo, G., & Molinari, E. (2021). The Impact of Psychological Flexibility on Psychological Well-Being in Adults With Obesity. *Frontiers in Psychology*, *12*(March), 1–7. https://doi.org/10.3389/fpsyg.2021.636933

Haines, A., Kovats, S., Campbell-Lendrum, D., & Corvalán, C. (2006). Climate Change and Human Health: Impacts, Vulnerability, and Mitigation. *The Lancet*, *367*(9528), 2101–2109. https://doi.org/10.1016/s0140-6736(06)68933-2

Halady, I. R., & Rao, P. H. (2010). Does awareness to climate change lead to behavioral change? *International Journal of Climate Change Strategies and Management*, *2*(1), 6–22. https://doi.org/10.1108/17568691011020229

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and Commitment Therapy: Model, Processes and Outcomes. *Behaviour Research and Therapy*, *44*(1), 1–25. https://doi.org/10.1016/j.brat.2005.06.006

Incesu, O., & Yas, M. A. (2024). The relationship between nursing students' environmental literacy and awareness of Global Climate Change. *Public Health Nursing*, *41*(1), 67–76. https://doi.org/10.1111/phn.13255

Karakus, S., & Akbay, S. E. (2020). Psychological Flexibility Scale: Adaptation, Validity and Reliability Study. *Mersin University Journal of the Faculty of Education*, *16*(1), 32–43. https://doi.org/10.17860/mersinefd.665406

Koger, S., Leslie, K. E., & Hayes, E. D. (2011). Climate change: Psychological solutions and strategies for change. *Ecopsychology*, *3*(4), 227–235. https://doi.org/10.1089/eco.2011.0041

Kousar, S., Afzal, M., Ahmed, F., & Bojnec, S. (2022). Environmental Awareness and Air Quality: The Mediating Role of Environmental Protective Behaviors. *Sustainability (Switzerland)*, *14*(6), 1–20. https://doi.org/10.3390/su14063138

Kucuk Bicer, B., & Acar Vaizoglu, S. (2015). Determination of Awareness and Knowledge of Nursing Students About Global Warmness/Climate Change. *Journal of Hacettepe University Faculty of Nursing*, *2*(2), 30–43. https://dergipark.org.tr/en/pub/hunhemsire/issue/7859/103407

Lavey, W. G. (2019). *Teaching the health impacts of climate change in many American higher education programs*. *20*(1), 39–56. https://doi.org/10.1108/IJSHE-04-2018-0062

Leffers, J., McDermott-Levy, R., Nicholas, P. K., & Sweeney, C. F. (2017). Mandate for the Nursing Profession to Address Climate Change Through Nursing Education. *Journal of Nursing Scholarship*, *49*(6), 679–687. https://doi.org/10.1111/jnu.12331

Levy, B. S., & Patz, J. A. (2015). Climate change, human rights, and social justice. *Annals of Global Health*, *81*(3), 310–322. https://doi.org/10.1016/j.aogh.2015.08.008

Liao, W., Yang, L., Zhong, S., Hess, J. J., Wang, Q., Bao, J., & Huang, C. (2019). Preparing the next generation of health professionals to tackle climate change: Are China's medical students ready? *Environmental Research*, *168*, 270–277.

https://doi.org/https://doi.org/ 10.1016/ j.envres.2018.10.006

Lucas, J. J., & Moore, K. A. (2020). Psychological flexibility: positive implications for mental health and life satisfaction. *Health Promotion International*, *35*(2), 312–320. https://doi.org/10.1093/heapro/daz036

Mwanza, E., Mubanga, K. H., & Sichimwa, C. (2023). Effectiveness of Climate Change Awareness among Youths in Luanshya District, Zambia. *European Journal of Development Studies*, *3*(2), 38–47. https://doi.org/10.24018/ejdevelop.2023.3.2.236

Ng'ombe, J. N., Tembo, M. C., & Masasi, B. (2020). "Are they aware, and why?" Bayesian analysis of predictors of smallholder farmers' awareness of climate change and its risks to agriculture. *Agronomy*, *10*(3), 376. https://doi.org/10.3390/agronomy10030376

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. In *Annual Review of Environment and Resources, 46,* 35-58. https://doi.org/10.1146/annurev-environ-012220-022716

Pyszkowska, A., & Rönnlund, M. (2021). Psychological Flexibility and Self-Compassion as Predictors of Well-Being: Mediating Role of a Balanced Time Perspective. *Frontiers in Psychology*, *12*, 671746. https://doi.org/10.3389/fpsyg.2021.671746

Ramírez-López, A. S., Rosetti, M. F., & Poma, A. (2022). Gender, Exposure to News, Knowledge About Climate Change, and Prosociality Predict Climate Anxiety Scores in Mexican Students. *Ecopsychology*, *15*(2), 184–192. https://doi.org/10.1089/eco.2022.0049

Richardson, J., Grose, J., Bradbury, M., & Kelsey, J. (2017). Developing Awareness of Sustainability in Nursing and Midwifery Using a Scenario-Based Approach: Evidence From a Pre and Post Educational Intervention Study. *Nurse Education Today*, *54*, 51–55. https://doi.org/10.1016/j.nedt.2017.04.022

Sayan, B., & Kaya, H. (2016). Assessment of the environmental risk perceptions and environmental attitudes of nursing students. *Contemporary Nurse*, *52*(6), 771–781. https://doi.org/10.1080/10376178.2016.1254051

Seth, A., Maxwell, J., Dey, C., Feuvre, C. Le, & Patrick, R. (2023). Understanding and managing psychological distress due to climate change. *Australian Journal of General Practice*, *52*(5), 263–268. https://doi.org/10.31128/AJGP-09-22-6556

Shao, A. T. (2002). *Marketing research: An aid to decision making*. South-Western/Thomson Learning.

Stănesu-Yadav, D.-N., & Lillekroken, D. (2023). Nurse preceptors' experiences of promoting and teaching fundamental care to undergraduate nursing students: A qualitative study. *Journal of Advanced Nursing*, *79*(3), 1094–1106. https://doi.org/10.1111/jan.15372

Tahkol, D., & Ozturk Haney, M. (2024). Determinants of Turkish nursing students' attitudes towards sustainable development and knowledge of climate change: A descriptive and correlational study. *Public Health Nursing*, *41*(2), 221–232. https://doi.org/10.1111/phn.13270

Tuna, P. T., Molu, B., & Keskin, A. Y. (2022). Determination of Nursing Students' Awareness of the Health Effects of Climate Change. *International Journal of Caring Sciences*, *15*(2), 1149–1156. https://www.internationaljournalofcaringsciences.org/docs/29. tuna.pdf

United Nations. (2023). *Goal 13: Take urgent action to combat climate change and its impacts*. https://www.un.org/sustainabledevelopment/climate-change/

Uzun, S. (2021). Determination of Awareness on Climate Change of University Students: The Case of Düzce University Related Groups. *Anatolian Journal of Forest Research*, *7*(2), 161–174. https://doi.org/10.53516/ajfr.1013243

Wang, B., Shen, Y., & Jin, Y. (2017). Measurement of public awareness of climate change in China: based on a national survey with 4,025 samples. *Chinese Journal of Population Resources and Environment*, *15*(4), 285–291. https://doi.org/10.1080/10042857.2017.1418276

Williams, K. E., Ciarrochi, J., & Heaven, P. C. L. (2012). Inflexible Parents, Inflexible Kids: A 6-Year Longitudinal Study of Parenting Style and the Development of Psychological Flexibility in Adolescents. *Journal of Youth and Adolescence*, *41*(8), 1053–1066. https://doi.org/10.1007/s10964-012-9744-0

Yang, L., Liao, W., Liu, C., Zhang, N., Zhong, S., & Huang, C. (2018). Associations between knowledge of the causes and perceived impacts of climate change: A cross-sectional survey of medical, public health and nursing students in universities in China. *International Journal of Environmental Research and Public Health*, *15*(12), 1–14. https://doi.org/10.3390/ijerph15122650

Yuce Yoruk, E. A., & Varer Akpinar, C. (2023). Global Climate Change Awareness of Students at a University. *Osmangazi Tıp Dergisi*, *45*(4), 471–479. https://doi.org/10.20515/otd.1278028