

Predictors of climate anxiety: a systematic review article

Abstract

Climate Anxiety refers to the feelings of distress and worry that many people experience due to the climate change crisis. This includes fears about the future, a sense of helplessness in the face of the situation, sadness about the damage caused to the environment, emotional and physical stress. Climate Anxiety can interfere with quality of life and, in some cases, lead to inaction or exhaustion from environmental concerns, so it is essential to identify the causes that can predict climate anxiety in order to implement appropriate interventions to address the aforementioned impact. The main objective of this study is to conduct a systematic review using the PRISMA methodology (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) to synthesize the existing evidence on predictors of anxiety about climate change. The results have revealed specific predictors that can increase climate anxiety, such as those related to age, gender, and exposure to information about climate change, among others.

Keywords: climate anxiety, predictors, sustainability, climate change, PRISMA

Volume 15 Issue 6 - 2024

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Received: October 25, 2024 | **Published:** November 05, 2024

Introduction

Climate change is now recognized as one of the major threats to human life and survival.^{1,2} Academic literature has widely documented the connections between increasing and progressing global warming and various impacts on human health.³ In addition, recent research has pointed out the effects of the ecological crisis on mental health, evidencing phenomena such as stress, trauma, sleep problems, anxiety, depressive symptoms, and post-traumatic stress, among others.⁴⁻⁹

These effects impact mental health in multiple ways and can be grouped into direct and indirect effects. These effects are not isolated from each other, but span a continuum, so one must think holistically about the ways in which climate change affects mental health. While direct effects are based on personal experience of climate events, indirect effects arise through knowledge or witnessing of ecological problems.¹⁰ Rising levels of anxiety about the repercussions of ecological crises generate growing concern, which has given rise to the concept of eco-anxiety. This term captures experiences of anxiety related to environmental crises^{11,12} and is described as a constant fear of environmental degradation and the general perception that the ecological foundations of existence are in a state of collapse, thus establishing a connection between eco-anxiety and worry, fear or anxiety in general.^{13,14} On this basis, the emergence of anxiety associated with the perception of climate change specifically, known as Climate Anxiety (CA), is highlighted.¹⁵ Asgarizadeh, Gifford and Colborne¹⁶ consider that it can be influenced by the complex interaction of a series of factors. Therefore, identifying predictors of CA is of great importance given its potentially significant impact on mental health.

Predictors are variables or measures used to estimate the probability of future events based on existing data.¹⁷ In this study, the detailed statistics of the factors influencing CA are not being analyzed, but rather the focus is on the demographic data of individuals who experience it. Therefore, the term “predictor” is used in a descriptive sense to refer to demographic characteristics that could be related to the presence of climate anxiety in the population examined.

CA shows variations between individuals and can be triggered by various factors, which is why it is important to have a systematic synthesis of the existing evidence to identify variables that may help inform prevention strategies and in the development of interventions for those who may benefit.

Goals

The aim of this study was to synthesize scientific evidence on possible predictors of Climate Change Anxiety, also known as Climate Anxiety.

Method

To achieve the objective, the PRISMA protocol, Preferred Reporting Items for Systematic Reviews and Meta-Analyses,¹⁸ was used, due to its replicability and rigor in the systematization of the search and quality assessment of the articles. PRISMA is a methodology accepted by peers. The guidelines for searching for information, selecting information, and extracting and analyzing data were followed. As a requirement, it was proposed that, in the studies to be selected during the search, the concept of “predictors” should appear in the title or in the abstract of the article.

Selection strategy

A systematic search was conducted using the search strategy “Climate Anxiety” AND “Predictors”, combining keywords with Boolean operators. Academic articles published in scientific journals were included, excluding book chapters, theses and symposia. The results were filtered by time criteria (published in 2019-2023), and by language (Spanish and/or English). Six databases were prioritized, which yielded the following results: Google Scholar ($n = 514$); Redalyc ($n = 829$); ScienceDirect ($n = 91$); PEP-web, Psychoanalytic Electronic Publishing ($n = 21$); Scopus ($n = 116$) and Microsoft Research ($n = 22$). Articles that related closely to the research objective were selected, considering the exclusion criteria (language, publication date, type of research).

The search yielded the following results: Google Scholar ($n = 187$); Redalyc ($n = 57$); ScienceDirect ($n = 91$); PEP-web, Psychoanalytic Electronic Publishing ($n = 21$); Scopus ($n = 116$) and Microsoft Research ($n = 22$), resulting in a total of $n = 494$. Due to the high volume of articles obtained through Google Scholar, it was decided to use a systematic method to delimit and narrow the sample selected on this platform. Every result that appeared on the first ten results pages produced by each database were included. The title and abstract of results on subsequent pages were reviewed by two researchers and included where it was considered they met the inclusion criteria as mentioned above.

Once the search and selection from databases was complete, the next step was to eliminate duplicate articles ($n = 87$), and then to evaluate whether the remaining articles ($n = 407$) were relevant to the research question. This evaluation was carried out by two researchers, who carefully reviewed whether the title and/or the abstract of each article were related to the objectives of the study. This process was carried out with Rayyan,¹⁹ a collaborative web application which allows authors to create, share and manage review projects. This last evaluation discarded articles that were unrelated to the goals of the current study ($n = 382$), retaining those that were considered pertinent ($n = 25$). Finally, a detailed review of each of the articles was carried out using the MMAT, Mixed Methods Appraisal Tool.²⁰ This process excluded a further 6 articles, leaving 19 included in the final review

(see Figure 1). The MMAT tool is useful to apply when reviewing studies using varied designs, to classify them and lead to a complete and integrative review.²¹ It has emerged as a valuable tool for researchers seeking to critically evaluate studies of different types of design, which can be quantitative, qualitative, and mixed methods. In the context of evidence synthesis, where the integration of qualitative and quantitative research is increasingly recognized as fundamental in reaching a comprehensive understanding, the MMAT stands out as a rigorous means to evaluate the methodological quality of various types of study. Its use guarantees a systematic approach to evaluating the strengths and weaknesses of studies with different methodologies, thus increasing the credibility and reliability of the synthesized evidence. With its structured criteria and clear guidelines, the MMAT enables researchers to discern the strength of the qualitative and quantitative components of a study, facilitating informed decision-making in evidence-based practice. Its method involves an examination of key aspects such as study objectives, data collection methods and data analysis techniques. The MMAT categories are designed according to the type of study (qualitative, quantitative descriptive, quantitative non-randomized, quantitative randomized, and mixed) and allow for the assessment of methodological rigor. This methodological clarity not only improves the reliability of the assessment of studies, but also encourages greater transparency and reproducibility in the synthesis of evidence, which improves the quality and credibility of research in interdisciplinary fields.

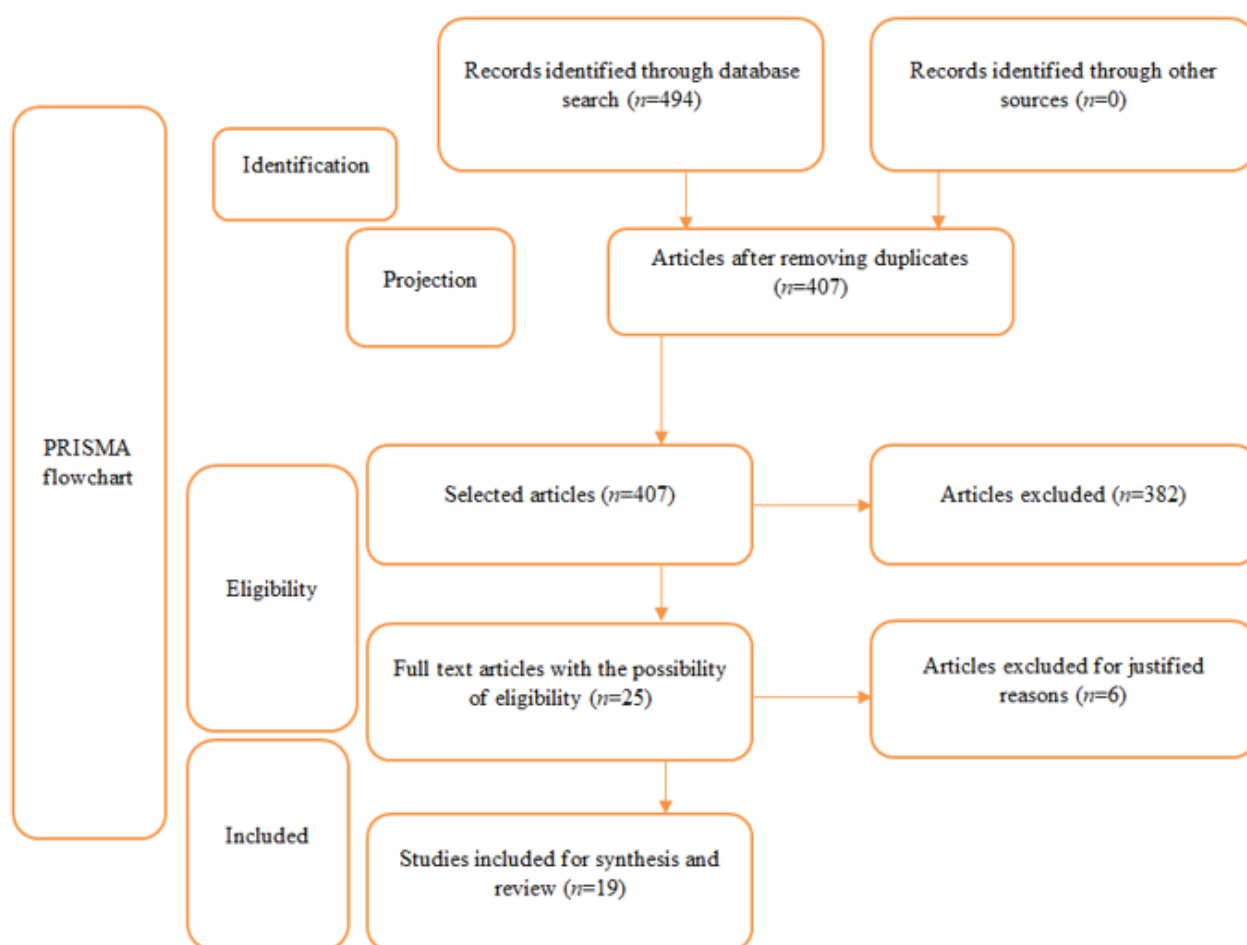


Figure 1 Article selection flowchart.

Using this tool, the selected studies have been classified into:

- a) Quantitative descriptive: 18 articles
- b) Non-randomized quantitative: 1 article

The studies were examined and selected by two reviewers. This process was carried out by reading their titles and abstracts, and then by thoroughly reading the full text and applying the MMAT criteria. Those articles that generated disagreements as to whether or not they should be selected based on the reading of their abstract were

resolved by involving a more experienced auditor, who provided a final decision.

Results

After reading and analyzing the articles, the following predictors of climate anxiety were classified according to their frequency of appearance, which indicates their greater relevance. Table 1 (see Appendix) presents a summary of the information from each of the selected studies. Figure 2 shows the percentage of papers reporting each of the predictors identified. The concepts are discussed below:

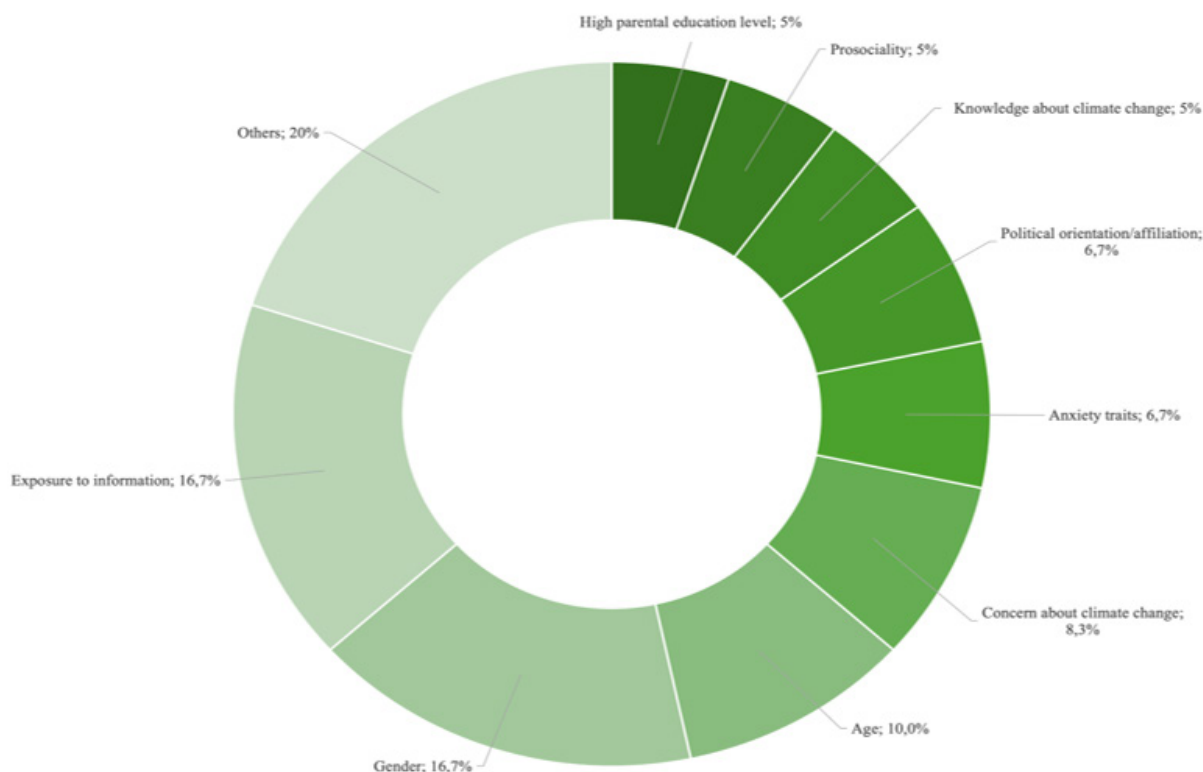


Figure 2 Percentage of papers reporting each of the Climate Anxiety predictors.

Exposure to information/attention to media sources and attention to information on climate change: A study from the review²² carried out two surveys with participants. The first asked them to indicate how often they read or listened to news about the impacts of climate change and the solutions that could be found to deal with it. In the second, participants were asked to indicate the amount of attention they paid to such information. The results show a significant relationship between attention paid to information about climate change and anxiety about it, but not between anxiety about climate change and inattentive exposure to the mentioned information.

Nine other studies^{16,22-29} also refer to the relationship between information in the media and other platforms about climate change, and anxiety related to it.

Gender: It was observed in nine studies that it is mainly women who suffer from anxiety symptoms generated by climate change.^{25,27-34}

Age/Generational group: Younger individuals are more affected by anxiety about climate change. Three studies reviewed referred

to being young as a predictor.^{24,25,32} Specifically, in one study,³⁰ high levels of anxiety were reported among young people between 16 and 25 years.

Concern about climate change: Five studies^{16,26,30,32,35} showed that people who feel more worried and perceive a higher risk related to climate change tend to experience higher levels of anxiety. They also report that climate concern affects the daily functioning of many young people. On the other hand, the authors also suggest that such concern can, in some cases, lead people to take pro-environmental measures.

Anxiety traits: Four studies in the review found that people with generalized anxiety traits are more likely to develop anxiety in relation to climate change.^{16,24,26,36}

Political orientation: It was observed in one study³⁶ that political affiliation can predict a higher level of concern, associated with symptoms of climate anxiety. In turn, two articles^{32,34} refer to belonging to a left-wing political orientation as a predictor.

Knowledge about Climate Change: In two studies, a negative relationship was found between knowledge about climate change and climate anxiety, suggesting that greater knowledge is associated with lower levels of anxiety, since having information about the problem may alleviate fears.^{16,37}

In contrast, other studies claim a positive relationship between climate change knowledge and climate anxiety. Ediz and Yanik³⁸ report that as climate change awareness increases, so does climate change anxiety. Awareness can refer to both theoretical knowledge and personal experience, and may lead to increased concern about climate change.²⁷

Prosociality: Findings mention that prosociality positively predicts climate anxiety. People with greater empathy may also experience greater anxiety, but such empathy may lead them to engage in pro-environmental activities that would help reduce the aforementioned anxiety.²⁷⁻²⁹

Parental education level: Higher parental education was found to predict higher levels of climate anxiety in children. This suggests that parental education may influence youth's perception and emotional response to changing environmental conditions.³³⁻³⁵

Other predictors with lower prevalence have also been found, which were pro-environmental activism,³⁸ personal experience of the impact of climate change,¹⁶ cognitive-emotional characteristics/emotional personality traits,^{36,39} perceived social norms,^{22,26} general concern,³⁹ being a student of environmental careers,²⁶ locus of control,²⁶ culture,³⁰ place of residence (living in rural areas can be a strong predictor of climate anxiety),³¹ frequent attendance at religious services³³ and working in extreme temperatures.³³

Discussion and conclusions

Climate Anxiety is not an anxiety disorder or a diagnosable category, as it is considered an understandable reaction to the severity of the ecological crisis. Nonetheless, there may be cases in which it is so intense that it requires professional intervention.⁴⁰⁻⁴²

Possible predictors of climate anxiety have been found in the reviewed studies. One predictor is concern about climate change,¹⁶ along with exposure to information disseminated in the media and other platforms, and specifically the extent to which attention is paid to such information.²²

Studies have reported ambiguous findings regarding the relationship between climate anxiety and informing oneself about climate change.²² On the one hand it is associated with positive attitudes, which include proactively taking action to mitigate environmental impact,²⁶ possessing the ability to be reflective and emotional^{36,39} and having prosocial traits.²⁷ On the other hand, informing oneself could be counterproductive, since it was observed in the present study that these characteristics are also important predictors of anxiety about climate change. This underlines the relevance of future research that can provide clearer and more specific evidence on which key factors have a causal impact on climate anxiety and pro-environmental behavior.

The studies reflect a contradiction regarding environmental knowledge or knowledge about climate change as a predictor of CA, since on the one hand a negative relationship is observed between both concepts, with authors such as Zacher and Rudolph,³⁷ and Asgarizadeh, Gifford and Colborne¹⁶ reporting that having concrete information about the environmental situation may help to alleviate fears and

consequently anxiety levels. However, on the contrary, authors such as Ramírez-López, Rosetti and Poma²⁷ and Ediz and Yanik³⁸ report a positive relationship between knowledge about climate change and CA. These studies found that as awareness of the environmental crisis increases, either in terms of theoretical understanding or through personal experience, concern and anxiety about climate change also increases. The latter could be associated with the finding that exposure to information about climate change is a strong predictor of CA.²²⁻²⁴

The current results suggest that CA experienced by people with prior experiences of climate related weather events and those who are concerned about climate change and its consequences may be exacerbated when they pay more attention to climate change information in the media. As a result, media stories about climate change should perhaps include warnings for people who have already experienced climate impacts, and perhaps could offer constructive directions on how to address the negative consequences of climate change.¹⁶ Gender and age discrepancies are also observed in the reviewed studies^{24,25,27-34} which are important indicators of vulnerability to climate change anxiety. Although gender differences were small, they remained constant, with female respondents showing higher levels of worry and negative emotions, while male respondents tended to be more optimistic. Small but significant correlations were found indicating that worry and negative emotions about climate change were more pronounced among younger respondents. It might be interesting to explore whether these more affected groups possess a higher level of empathy, as one study⁴³ found that this characteristic may be associated with experiencing greater anxiety, due to the concern that empathetic people have about the impact on others of both their own and other people's actions.

Of the predictive variables identified in the selected studies, 20.0% correspond to the "Other" category, suggesting the existence of multiple additional variables that could be influencing the appearance of CA. This underlines the need for a multidimensional approach in CA research.

Climate Anxiety is a complex phenomenon with multiple determinants and manifestations. This systematic review suggests that future research and work on development of interventions should focus on cognitive-emotional aspects and consider the possible influence of media exposure and social norms on climate anxiety and in the promotion of effective pro-environmental behaviors. Wullenkord et al.²⁸ highlight the importance of using clear scientific concepts when conducting research to enable us to develop constructive responses to the emotional challenges posed by climate change.

This systematic review article provides a comprehensive overview of the current literature on predictors of CA, identifying key factors for future research to develop effective intervention strategies. The findings suggest that CA need not be considered solely a negative effect of climate change or a maladaptive reaction to it, but that for some people it may serve as a motivating impetus to take action in response to this situation.

Limitations of the study

It is pertinent to mention that most of the studies analyzed come from countries that have been described as WEIRD (Western, Educated, Industrialized, Rich and Democratic). This term is used to describe a series of nations, mainly in the West, that have particular cultural, economic and social characteristics, which can lead to incorrect generalization of findings not applicable to other cultures.⁴⁴

We must therefore consider that predictors of climate anxiety may vary in other countries, depending on external factors, such as economy, culture, or academic background.

Another limitation to consider is that the search and review of articles began in November 2023 and ended in January 2024. It will therefore be missing any new research with updated information on these variables which has been published since.

Acknowledgments

None.

Funding

None.

Conflicts of interest

The authors declare that there is no conflict of interest.

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