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Hope, Emotions, and Adaptation in the Context of Climate Change: A Systematic Review

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Abstract

Climate change represents one of the most critical global challenges of our time, with far-reaching impacts on the environment, infrastructure, and human emotions. This systematic review investigates hope and emotional responses to climate change, incorporating regional insights from South Asia while maintaining global relevance. Searches were conducted across multiple academic databases, including Google Scholar, ResearchGate, Academia, Wiley, MDPI, and PubMed. Of the 92 articles reviewed, eight were selected based on inclusion criteria and thematic relevance. Key terms for the current review of l included "climate change," "climate change anxiety," "eco-anxiety/ecological anxiety," "hope," "mental health," and "emotions." The study found a range of emotional reactions to climate change, from uncertainty, powerlessness, anger, frustration, and guilt to hope, optimism, contentment, and calm. Negative emotion such as guilt and anger were common, especially among people impacted by climate-induced disasters like floods, droughts, and cyclones, as observed in Pakistan, India, and Bangladesh. On the other hand, collective climate action and adaptation projects—including interventions including reforestation efforts and renewable energy initiative led to rise to positive feelings such hope and optimism. Young people and children were identified vulnerable populations because of their exposure to climate-related issues, which caused detrimental emotional and mental health consequences. The results highlight the interaction between emotions and climate action; guilts identified as positive emotion serving as driving force in pro-environmental actions. Particularly in areas that are marginalized due to limited resources and access to information, denial and skepticism was more prevalent. Emphasizing the need of fair worldwide cooperation and local projects to handle the unequal load borne by low- and middle-income nations (LMICs), this study advocates more investigation on the emotional aspects of climate change. Fostering resilience, improving climate adaptation plans, and motivating significant action at regional and worldwide scales all depend on an awareness of these emotional dynamics.

Keywords: *Climate Change, Mental Health, Emotions, Hope, Systematic Review*

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1. Introduction

Climate change is becoming a phenomenon of great importance. Climate change is rapidly happening all around the globe and people are experiencing extreme weather conditions. Extreme weather conditions have had drastic effects on the lives of people including the spread of vector-borne diseases, fatalities and injuries from events like floods, storms and cyclones, heatwaves. The risk of water-borne infection spread due to floods and thermal changes in coastal waters, and a decrease in regional crop yields that not only results in food safety and security but also leads to malnutrition in the vulnerable economies and all these can be attributed to global climate change (Lipp et al., 2002; Pilkey & Cooper, 2004; McMichael et al., 2006).

The extreme weather conditions have instilled anxiety and mental health issues among the masses regarding global climatic changes. Scientists all around the world are trying to understand and propose adaptive and mitigative measures to combat climate change. The most disadvantaged and marginalized global populations, children, and future generations would suffer the most, including the children population roughly around a billion living across the 33 nations are most likely to experience several climatic shocks (UNICEF, 2021). Due to natural calamities individuals experience different disorders such as PTSD, mood, and anxiety disorders (Hrabok et al., 2020).

Climate change has a profound effect on the mental health of individuals. Different terms have been used in the field of Environmental Psychology such as climate change anxiety, eco-anxiety, eco-guilt, and eco-grief. The term climate anxiety is one of them which means the anxiety caused by anthropogenic activities, or the aftermath by humans which cause pollution and leads to climate change (Panu, 2020).

Scientific research has recently shifted its attention to the newly recognized phenomenon of mental health distress stemming from climate change (Tam et al., 2023). Climate change anxiety encompasses fear, distress and nervousness (Clayton, 2020). One of the most frequent ways in which people respond to the emotional facet of climatic changes is through climate change anxiety (Clayton & Karazsia, 2020).

Spectrum of positive emotions such as love, hope, and compassion and aversive emotions such as guilt, shame, fear, rage, resignation, and melancholy are witnessed as a response to climate change (Neckel, 2021). Emotions have become an integral part in the research of climate change in order to identify the related socio-economic indicators to advise adaptive measures. Emotions related to learned helplessness in contrast to hope, positivism are dominant feature of human experience. Emotions are an integral part when looking at the effects of climate change, so in order to comprehend affective factor people encounter during climate change it is important to understand its trajectory. A population or individuals' feelings or emotions after suffering through a climate related disaster or event effect their mental health. Painful cognitive-emotional responses are natural and rational modality to mitigate threat of global climate changes (Panu, 2020). Researchers have also given a theoretical understanding saying that eco anxiety and the fear about climate change pose a risk to the mental health of people (Doherty & Clayton, 2011; Panu, 2020).

It is crucial to keep a positive outlook when teaching about climate change since a lack of optimism breeds pessimism about the future and ultimately accomplishes little to stop climate change (Ojala, 2015). Having realistic, optimistic belief that a person's steps would be successful and having faith in their own performance and their life is labeled as hope, which gives a human being vital strength (Mind, 2009). Hope has an essential role in determining the phenomena of climate change whether people are going to act in a way which is eco-friendly or not (Ojala, 2014). It is also crucial for helping people to recognize their strengths and opportunities that can motivate them to take part in behavioral change (Mitchie et al., 2014). Hope is an important factor in mitigating climate change. In order to prepare for an effective response to the dangers of climate change both hope and emotions can play an important role so that individuals can cope up with it. The current systematic review focuses on how hope and emotions play a part in experiencing climate change.

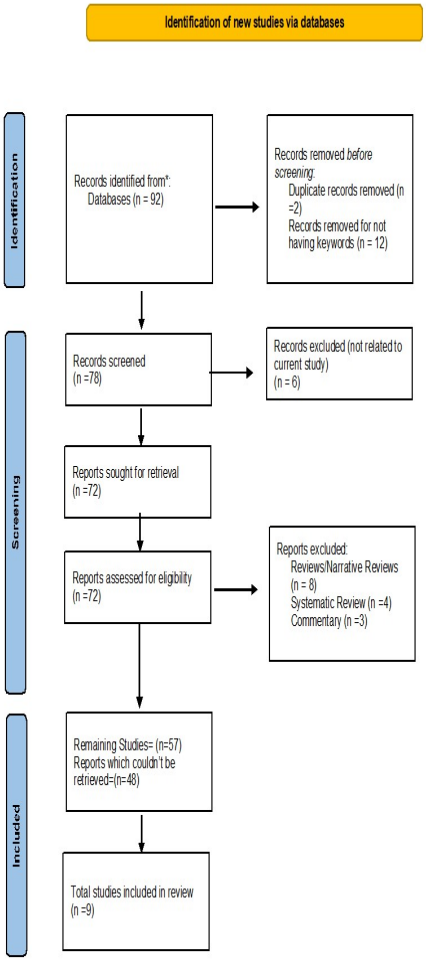

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Table 1

Summary Table of the Researches included in the Systematic Review

Authors	Title	Year and type	Sample	Results
Iniguez-Gallardo, V., Lenti Boero, D., & Tzanopoulos, J.	Climate Change and Emotions: Analysis of People's Emotional States in Southern Ecuador	2021, mix-method study	400 sample size, 57% males, and 43% females. Age range 18-40 years old	-The five emotions which were selected the most by the participants were confusion, powerlessness, concern, anger, and guilt. -Different causative agents were identified for the emotions experienced by the participants.
Baker, C., Clayton, S., & Bragg, E.	Educating for resilience: parent and teacher perceptions of children's emotional needs in response to climate change	2020, quantitative research	Sample size was 191 which was collected in two phases, 3.9% teachers and 68.1% parents	-Most of the parents and educators who took part in this study stated that kids are moderately stressed or anxious about climate change. -The adults participating in this study reported that the feel more stress than their children -14-17 year olds experienced more stressed than other age groups below them
Wang, S., Leviston, Z., Hurlstone, M., Lawrence, C., & Walker, I.	Emotions predict policy support: Why it matters how people feel about climate change	2018, qualitative research	n=44 scientists, n=94 students, and n=205 general population	- Climate scientists displayed more emotions regarding the effects of climate change as compared to students and the general population.
Ratinen, I., & Uusiautti, S.	Finnish Students' Knowledge of Climate Change Mitigation and Its Connection to Hope	2020, quantitative research	n=950, 49% girls and 51% boys	-Students considerable knowledge about climate change - A significant positive relationship was found between positive hope, denying of hope, mitigation of information, and optimism of adaptation
Marlon, J. R., Bloodhart, B., Ballew, M. T., Rolfe-Redding, J., Roser-Renouf, C., Leiserowitz, A., & Maibach, E.	How Hope and Doubt Affect Climate Change Mobilization	2019, mixed-method approach	In study 1 n=674 males 48.7% and females 51.3%. In study 2 n=1,310 males 47.1% and females 52.9%	- (23%) of participants either lacked hope or were unable to think of any causes for hope. - Content analysis revealed that the participants also had false hope
Ogunbode, C. A., Pallesen, S., Böhm, G., Doran, R., Bhullar, N., Aquino, S., ... & Lomas, M. J.	Negative emotions about climate change are related to insomnia symptoms and mental health: Cross-sectional evidence from 25 countries	2021, quantitative research	In phase I n= 10,143, males 33.7%, and females 63.4%. In phase ii N=1,015, males 47.7% males, and females 52.3%.	- All 25 countries covered in the cross-national study revealed a positive correlation between sleeplessness symptoms and negative climate-related emotions. - The regression showed that negative climate-related emotions both negatively and favorably predicted symptoms of sleeplessness and mental wellbeing.
Ojala, M.	Regulating worry, promoting hope: How do children, adolescents, and young adults cope with climate change?	2012, mixed-method approach	Children in intermediate level n= 90 with 43% boys and 57% girls, senior high school students n= 146 with 35% boys and 64% girls, and university students n=112 with 32% men and 68% women.	- Different strategies were used by youth to cope with climate change - When it came to managing worry, emotion-focused coping was more prevalent (39.2%) than hope promotion (6.1%), but meaning-focused coping was more prevalent (78.2%) than hope promotion (13.2%). Also, compared to how frequently it was used to foster optimism (13.1%), problem-focused coping was employed more frequently in connection to the control of distress (31.1%).
Haltinner, K., Ladino, J., & Sarathchandra, D.	Feeling skeptical: Worry, dread, and support for environmental policy among climate change skeptics	2021, mixed method approach	n=1000 (for surveys) n=33 (for interviews) from climate change skeptics	-Individuals who are politically conservative, and believe that climate change is a hoax experience less dread and worry related to climate change.
Ratinen, I.	Students' Knowledge of Climate Change, Mitigation and Adaptation in the Context of Constructive Hope	2021, quantitative research	n=950 elementary and secondary school students. There were 49% girls and 51% boys	- Students had variable knowledge about climate change - The positive hope of students in regards to climate change was well forecasted by their knowledge of the issue of climate change, its reduction, and adjustment.

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Discussion

Impacts of Climate Change on Natural Disasters

Climate change has increased the frequency and severity of natural catastrophes such floods, droughts, glacier melting, and cyclones, hence causing great infrastructure destruction and impairing life functioning (Bouchard et al., 2023; Acevedo & Novta, 2017). Recent results from the 2023 IPCC Report underline that human-induced global warming has spurred unparalleled changes to the Earth's climate, including rising sea levels and extreme weather occurrences.

In South Asia, countries such as Pakistan, India, and Bangladesh face acute impacts of these changes. Pakistan experienced catastrophic floods in 2022 that submerged one-third of the country, displaced over 30 million people, and inflicted immense economic and psychological damage. Similarly, India has faced recurrent droughts and heatwaves, with temperatures reaching record highs in 2022, affecting agricultural productivity and increasing water scarcity. In Bangladesh, frequent cyclones such as Amphan in 2020 devastate coastal communities, destroying homes, crops, and livelihoods, further compounding vulnerabilities in one of the most densely populated nations in the world. These events illustrate the urgent need for targeted adaptation measures and international cooperation.

Emotional Spectrum: Negative and Positive Responses

A spectrum of emotions is evident in response to climate change, with negative emotions—such as uncertainty, powerlessness, and guilt—imposing significant psychological burdens (Clayton, 2018). Powerlessness stems from feelings of vulnerability and the inability to address the scale of climate change (Iniguez-Gallardo et al., 2021), whereas confusion about shifting weather patterns and societal inertia further exacerbates these emotions (Iniguez-Gallardo et al., 2021).

Conversely, hope emerges as a powerful emotional response when individuals observe collective action to combat climate change (Marlon et al., 2019). In South Asia, initiatives such as reforestation programs in India, which aim to restore mangrove forests along the Sundarbans (shared by India and Bangladesh), offer tangible examples of resilience. Similarly, Pakistan's Ten Billion Tree Tsunami program has gained international recognition for its ambitious efforts to mitigate environmental degradation. Positive attitudes, particularly among students, reflect optimism rather than denial of hope (Ratinen & Uusiautti, 2020).

Guilt as a Motivational Force

Individuals who feel their lifestyles or inaction is contributing to climate change often feel guilt, a major emotion. Agoston et al. (2022) classified eco-guilt into eight categories, therefore stressing positive kinds of guilt—like self-blame and self-criticism—that motivate pro-environmental action.

This feeling is particularly relevant in South Asia. Urban people in India and Pakistan, for instance, feel guilty about waste mismanagement, especially in relation to single-use plastics, which add to environmental degradation. Community-led projects in Bangladesh aiming to reduce waste and clean riverbanks despite limited resources demonstrate how guilt can be transformed into constructive deeds.

Anger and Hope: Contrasting Emotional Drivers

Anger is often directed at authority figures and a sense that governing bodies are doing too little, whether that is governmental indifference or social negligence (Iniguez-Gallardo et al., 2021). Increased anger is indicated in urban populations, including scientists currently trying to mitigate climate change (Wang et al., 2018).

While the emotions reported in response are predominantly negative, there remains a place for hope, optimism about technology improvements and social accountability fostering positive emotions of contentment and calm (Iniguez-Gallardo et al., 2021; Marlon et al., 2019). For example, in Bangladesh, innovations like floating farms have provided sustainable solutions to flooding in low-lying areas. Similarly, India's solar power initiatives, particularly the International Solar Alliance, have fostered optimism about transitioning to renewable energy sources while addressing global energy challenges.

Climate Change and Mental Health

Negative feelings which are correlated with climate change adversely impact the mental health of individuals, and also correlate with issues related to sleep such as insomnia, which in turn impact the psychological well-being of individual's (Ogunbode et al., 2023; Harvey et al., 2011). Mental health challenges are also linked to climate change and become causal factors for increased anxiety and depression due to adverse weather events, and environmental degradation as reported by the 2024 State of the Climate Report.

Due to limited access to mental health resources in South Asia, these kind of challenges increase the severity. In Pakistan, children affected by floods have reported symptoms of trauma and anxiety. In Pakistan, symptoms of trauma and anxiety are reported in those children who have been affected by floods. Furthermore, the farmers in India have been witnessing crop failures because of droughts, meanwhile individuals living in coastal areas in Bangladesh are facing emotional distress due to cyclones. Addressing these intersecting issues requires integrating mental health services into climate adaptation strategies.

Concerns for Future Generations

Concerns about climate change often relate to future generations, environmental changes, and inadequate pro-environmental actions (Iniguez-Gallardo et al., 2021). Australian children report stress stemming from extreme weather events, future uncertainty, and environmental harm to animals (Baker et al., 2021). Scientists also express concerns for planetary futures, emphasizing the need to safeguard upcoming generations (Wang et al., 2018).

In South Asia, these concerns are magnified due to vulnerabilities such as inflation, political unrest leading to more campaign in promoting pro-environmental behaviours. For example, in India, school-based climate education programs aim to empower young people to understand and combat climate issues, while in Bangladesh, initiatives like resilient farming techniques are being taught to children to prepare them for future challenges.

Students and Younger Generations: Knowledge and Coping

Students and younger generations are disproportionately impacted by climate change, with their responses often being more cognitive than emotional. Knowledge about climate change strongly correlates with adaptive strategies and positive attitudes (Ratinen & Uusiautti, 2020). Pro-environmental behaviors—such as preferring public transportation—demonstrate students' optimism regarding mitigation (Ratinen, 2021).

Coping mechanisms among young individuals range from problem-focused strategies to emotion-focused approaches like distancing (Ojala, 2012). Positive hope and optimism toward adaptation strategies are strongly linked to climate change mitigation knowledge (Ratinen & Uusiautti, 2020). In Pakistan, youth-led initiatives such as climate action drives and environmental awareness campaigns have gained momentum, reflecting the proactive

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engagement of younger generations. Similarly, in India and Bangladesh, students are increasingly vocal in advocating for climate justice and local adaptation measures.

Vulnerability of Children

Children are highly vulnerable to the impacts of climate change, experiencing psychological disorders such as PTSD, anxiety, depression, and sleep disturbances from direct exposure (Garcia & Sheehan, 2015; Goldmann & Galea, 2015). Indirect exposure, such as news, elicits worry, fear, and sadness, requiring support from caregivers (UNICEF, 2018; Strife, 2011; Baker et al., 2021). Adolescents aged 14–17 report higher levels of climate anxiety compared to younger children (Baker et al., 2021).

In South Asia, children bear the brunt of disasters such as floods and cyclones. For instance, children displaced by the 2022 floods in Pakistan missed months of education and struggled with emotional recovery, while in Bangladesh, children in coastal communities face recurring displacement due to rising sea levels.

Denial and Skepticism

Climate change denial often arises from feelings of helplessness and inevitability. Skeptics repress climate-related emotions yet remain concerned about specific environmental issues, such as habitat destruction and species extinction (Haltinner et al., 2021; Norgaard, 2011).

In South Asia, denial may also stem from cultural narratives or limited access to reliable information. Addressing this requires tailoring communication strategies, such as leveraging local languages and traditional knowledge, to engage communities meaningfully.

Regional Research Disparities

Despite significant research on climate change and its psychological correlates in Western countries, studies focusing on its impact in Asian contexts remain scarce. Of the reviewed studies, 88% originated in Western nations, while only 12% were conducted in Asian countries, including China, Indonesia, Iran, Japan, and Pakistan. Negative emotions related to climate change were slightly more correlated with Western populations than non-Western ones (Ogunbode et al., 2023).

Highlighting South Asia's contributions to climate resilience, such as India's solar energy initiatives, Bangladesh's disaster risk management programs, and Pakistan's reforestation efforts, showcases the importance of integrating local knowledge into global climate strategies. This review aims to bridge these research gaps and advocate for equitable international collaboration.

Strengths and Limitations

The focus of the current systematic review was to look at the phenomena of climate change its relationship with emotions and psychological correlations. The work also identifies and highlights how emotions and hope affect the youth as well. It has both qualitative and quantitative research. The systematic review paper included articles from 2012 onwards till 2023. Inclusion criteria were kept restricted to understand the effect of climate change on human emotions. This field is relatively new, and a lot of groundbreaking research is needed. For future reference research in low socioeconomic countries, their strategic goals and awareness is needed.

Conclusion

Responding to climate change is becoming the need of time due to threat and evolution. The rapid change in climate has made the masses worried about the future of the planet. People experience different emotions regarding climate change. They experience both negative and positive emotions regarding climate change. Uncertainty, powerlessness, guilt, anger, frustration is one of the negative emotions experienced by people. The positive emotions which people experience are hopeful, optimism, happiness and calm.

Hope increases pro-environmental behaviors among the people. There are mixed reactions of people regarding climate change. Some feel hopeful about climate change and some people feel hopeless about climate change. There is also a belief in God meaning that people do not need to take any action towards climate change and God will take care of global warming. People also feel concern for the future generation as they will suffer more from the impact of climate change. Scientists also feel concern for the future generation. The young generation is also concerned about climate change and induces stress in them.

Climate change is becoming a phenomenon of global concern. There needs to be more research on the topics of hope, emotions and their relationship with climate change and how it impacts the mental health of the people. Once the relationship is identified more work can be done on how to deal with the climate change and what psychological strategies to employ.

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