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CLIMATE ANXIETY AS A PREDICTOR OF PSYCHOLOGICAL DISTRESS AMONG FLOOD-AFFECTED INDIVIDUALS IN PAKISTAN

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ABSTRACT

*Climate-related disasters, particularly flooding, have emerged as a significant threat to psychological well-being by increasing climate anxiety and psychological distress among affected populations. This correlational quantitative study investigated the relationship between climate anxiety and psychological distress among flood-affected individuals Using a purposive sampling technique, data were collected from 265 flood-affected adults, with the required sample size determined a priori using G*Power 3.1, ensuring adequate statistical power (1 −β = .95).The study employed the Urdu versions of the Climate Change Anxiety Scale (Maqsood & Javaid, 2026) and the K6 Psychological Distress Scale (Kessler et al., 2002). The measurement model demonstrated excellent internal consistency, with Cronbach's alpha coefficients of **.97** for the Climate Change Anxiety Scale and **.91** for the K6 Psychological Distress Scale. Data were analyzed using descriptive statistics, Pearson product–moment correlation, and simple linear regression. The findings revealed a strong positive and statistically significant relationship between climate anxiety and psychological distress. Furthermore, climate anxiety significantly predicted psychological distress, indicating that individuals experiencing higher levels of climate anxiety were more likely to report elevated psychological distress. These findings emphasize the need for early psychological screening, evidence-based mental health interventions, and resilience-building strategies to reduce the adverse psychological impacts of climate-related disasters among vulnerable populations.*

Keywords:
Climate anxiety, psychological distress, flood-affected individuals, climate change, mental health

INTRODUCTION

Climate change is a big problem that we are dealing with today. It is affecting the environment, our health and the way we live. Scientists have proven that the bad things people are releasing into the air are making the Earth get warmer. This is causing bad weather rising sea levels and more natural disasters like floods and storms. These changes are affecting the way animals and plants live. They are also affecting peoples lives. A lot of people are losing their homes their jobs and their families are suffering.

Climate change is not an environmental issue it is a big problem that affects everything. It affects our health the food we eat the economy and the way we feel. The World Health Organization says that climate change is one of the threats to our health. It is causing a lot

of problems like illnesses, diseases and mental health issues. As the weather gets worse we need to understand how it is affecting people not physically, but also emotionally. One of the bad things that is happening because of climate change is floods. Floods are happening often and they are causing a lot of damage. The rain is getting heavier the glaciers are. The weather is getting weirder. This is causing floods that destroy homes, roads and buildings. It is also affecting peoples' lives causing them to lose their jobs their homes and their families.

Floods are not a one-time problem they can cause problems for a long time. People who are affected by floods often have to deal with a lot of stress, anxiety and emotional problems. So floods are not just disasters they are also big public health problems. We need to pay attention to how floods are affecting peoples mental health and well-being. Climate change and floods are climate change problems that we need to take. We need to do something, about climate change and floods to protect the environment, our health and our lives.

Exposure to climate-related disasters significantly raises the risk of negative mental health outcomes, according to recent research. When compared to non-exposed populations, those who are directly impacted by floods often report higher levels of anxiety, depression, PTSD, emotional exhaustion, sleep disturbances, and overall psychological distress (Goldmann & Galea, 2014; Hayes et al., Charlson et al., 2019 2021).

Crucially, the psychological effects of climate-related disasters are frequently prolonged because survivors continue to face financial instability, social relationship disruption, uncertainty about future environmental threats, and worries about being exposed to similar events again. People's perceptions of environmental risks and assessments of their capacity to handle future disasters are gradually influenced by such experiences. As a result, scholars have stressed that in order to comprehend the psychological impact of climate change, it is necessary to look beyond conventional psychiatric outcomes and investigate new emotional reactions that are specifically linked to environmental deterioration and future climate uncertainty.

Concern about climate change may promote protective behaviors and adaptive environmental awareness, but excessive and ongoing climate anxiety may overwhelm people's coping mechanisms and lead to more serious mental health issues, especially in

Populations that are frequently exposed to climate-related disasters. Continuous exposure to environmental uncertainty, property loss, displacement, and socioeconomic disruption may exacerbate climate-related anxieties in flood-affected communities and ultimately lead to an increase in psychological distress, a multifaceted indicator of emotional suffering marked by symptoms of anxiety, depression, hopelessness, and impaired daily functioning. Although these psychological effects are becoming more widely acknowledged, little empirical research has looked at whether climate anxiety is a significant predictor of psychological distress among flood victims in developing nations like Pakistan. Developing evidence-based mental health interventions, bolstering disaster preparedness plans, and influencing climate adaptation policies that give vulnerable populations' psychological resilience top priority all depend on closing this gap.

Climate Anxiety

One of the most dominant psychological responses to the escalating climate crisis is climate anxiety, defined as persistent emotional distress connected to current andexpected environmental changes. Climate anxiety is defined as a chronic fear, concern, and emotional distress resulting from knowledge of climate change and its present and future impacts (Clayton, 2020), whereas generalized anxiety usually involves excessive worry about several areas of life. Climate anxiety does not qualify as a psychiatric disorder in the main classification systems, such as the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR), but it is increasingly considered a valid emotional response to a demonstrably worsening environmental crisis (Pihkala, 2022).

People with climate anxiety often describe persistent fears about environmental destruction, uncertainty about the future, feelings of power lessness, ecological grief, guilt, and reduced hope for the wellbeing of future generations (Hogg et al., 2021). As such, climate anxiety has emerged as an important construct in environmental and health psychology providing insight into the emotional consequences of living in an era of accelerating climate change.

The rise in climate anxiety has been attributed to a growing number of extreme weather events, persistent scientific warnings about climate change, extensive media coverage ,and direct experience of climate-related disasters. New evidence shows that those who have experienced flooding, drought, hurricanes and wildfires are far more likely to see climate change as an immediate and uncontrollable threat, thus increasing emotional

vulnerability and long-standing climate-related fears (Clayton & Karazsia, 2020; Ogunbode et al., 2022). Such experiences add to a feeling of uncertainty about future safety, financial security and environmental security leading often to increased psychological stress. Repeated exposure to climate-related hazards may also gradually undermine people's sense of control and confidence in their ability to adapt, thereby increasing climate anxiety and reducing psychological resilience. The findings suggest that climate anxiety is not only a product of awareness of global environmental problems, but also of personal experience of climate-related adversity.

Recent studies have defined climate anxiety as a multidimensional construct that includes cognitive, emotional, physiological, and behavioral aspects of climate change (Hogg et al., 2021). Mentally, people might have recurring intrusive thoughts about environmental degradation and apocalyptic future scenarios. Psychologically, climate anxiety is marked by fear, sadness, anger, grief, guilt and hopelessness about losses related to climate change. Physiological responses include sleep problems, fatigue, tension and difficulty concentrating, while behavioral responses may include avoidance and emotional withdrawal, or increased participation in pro-environmental behaviors (Pihkala, 2022).

Moderate climate change worry may serve as a motivation for adaptive coping and environmental action while high and/or persistent climate anxiety can drain psychological coping resources, impair emotional regulation, and negatively impact overall mental health. This distinction reflects the continuum of climate anxiety where adaptive concern may gradually shift into maladaptive psychological functioning if the environmental threats are perceived as chronic and uncontrollable .

A growing body of empirical evidence indicates that climate anxiety is also highly associated with negative psychological outcomes in various populations. Multinational studies have consistently found that those who report higher levels of climate anxiety also report greater symptoms of generalized anxiety, depression, stress, emotional exhaustion, and lower levels of psychological well-being (Ogunbode et al., 2022; Wullenkord et al., 2021). Likewise, Hogg et al. (2021) found that high climate anxiety was associated with impaired emotional functioning and increased psychological vulnerability, particularly among those directly exposed to environmental hazards. The results suggest that climate anxiety is not only concern about the environment, but a meaningful psychological risk factor for broader mental health problems

Repeated exposure to environmental uncertainty and disaster-related losses within flood-affected populations may further amplify climate anxiety. Climate anxiety is an important psychological mechanism thru which climate-related experiences shape emotional suffering and psychological distress. Hence, it is necessary to examine climate anxiety among disaster-exposed communities to understand the overall mental health impacts of climate change and to inform evidence-based psychosocial interventions.

Psychological Distress

Psychological distress has been well-established in the literature as an extensive measure of emotional distress in response to individuals' incapacity to cope with stress and difficult life situations. In contrast to particular psychological

diseases, psychological distress is characterized as a broad range of negative emotional experiences that include anxiety symptoms, depressive symptoms, hopelessness, nervousness, unstable emotions, and impaired psychosocial functioning (Kessler et al., 2002). Psychological distress has been described as an important public health issue since chronic psychological distress affects not only emotional state but also causes serious mental health problems when proper psychological assistance is lacking (Drapeau et al., 2012). As a result, psychological distress has become one of the most often studied mental health variables in epidemiology, disaster psychology, and environmental psychology studies.

Among the most effective stressors that can induce psychological problems, environmental disasters can be mentioned. Natural phenomena, such as floods ,hurricanes, forest fires, droughts, and heat waves, make people experience several stressful situations at once, including the death of relatives, destruction of houses, relocation, poverty, cessation of studying and working, and disruption of supportive social environment (Goldmann & Galea, 2014; Cianconi et al., 2020). Contrary to acute stressful events, which could possibly pass, climate-related disasters often create an atmosphere of permanent uncertainty about one's future safety, survival, and additional natural disasters. This constant exposure to adversity can gradually deplete the coping abilities of people emotionally and provoke the development of permanent feelings of anxiety, sadness, emotional fatigue, disturbed sleep, and general psychological distress (Charlson et al., 2021).

This suggests that the psychological consequences of climate-induced disasters may persist past any initial shock to affect one's psychological adjustment and well-being later on in life.

The Kessler Psychological Distress Scale (K6) is one of the most validated screening tools to measure psychological distress in general, among clinical and non-clinical samples (Kessler et al., 2002). This screening tool measures the frequency of occurrence of six basic emotions in the last month: nervousness, hopelessness, restlessness, feeling worthless, sadness, and that daily activities take an inordinate amount of energy. Due to its brevity, high psychometric performance, and cross-cultural validity, the K6 scale has been widely used in population-based studies and in disaster psychology to find those who have elevated psychological distress after their experience (Prochaska et al., 2012). The extensive use of this construct has made it possible for researchers to study the wider psychological implications of environmental difficulties and make comparisons in various cultures and regions.

There is a considerable number of empirical studies that indicate that psychological problems are especially common among people who have been affected by climatic disasters. There are many longitudinal and cross-sectional studies showing that people who have survived floods and other natural calamities have much more emotional problems compared to the rest of the population, with their symptoms sometimes lasting even long after the event has happened (Lowe et al., 2019; Charlson et al., 2021). The experience of uncertainty of the environment, socioeconomic instability, and fear about future climate events can lead to increased emotional vulnerability and make one vulnerable to long-term psychological distress. In flood-stricken communities, such constant stressors are often accompanied by climate worries and uncertainties, which indicate that the emotional reaction to climate change might be an important determinant of psychological distress. Thus, it is critical to identify psychological determinants of distress in order to design effective interventions aimed at improving resilience.

Theoretical Foundation

This research is based on the Theory of Transactional Model of Stress and Coping (TMSC) as postulated by Lazarus and Folkman (1984). This model of psychology is among the most well-known theoretical approaches used in explaining the psychological

Reactions of people whenf aced with stress ful occurrences intheenvironment.Inthis

model, psychological consequences are not just a

function of stressful occurrences, but also a result of how an individual cognitively evaluates such occurrences and his/her ability to cope with them. According to Lazarus and Folkman (1984), stress is a process where there is a relationship between the person and the environment through cognitive evaluation and coping processes. In this way, people who encounter the same environmental stimuli can show diverse psychological responses based on how they perceive the stimuli and their ability to cope with them. It is important in terms of climate-related disasters because natural hazards, like floods, do not affect everyone equally but rather psychologically depend on people's subjective views of them and their coping skills.

The Transactional Model entails two forms of cognitive assessment mechanisms known as primary appraisal and secondary appraisal, through which people develop emotional responses to stressors. During the primary appraisal process, people assess whether an event occurring in the environment is irrelevant, harmless, or a threat to their safety. In the case of climate change, floods are always regarded as threats since they put people's lives at risk, damage properties, interfere with one's way of life, and cause fear for future security .The fear ,uncertainty and concerns that result from threat assessments contribute to increased vulnerability to climate anxiety (Pihkala, 2022). Those who have suffered from floods on many occasions tend to feel that climate change is an impending threat for them, which causes them an extreme response other than fear; rather, it causes them climate change anxiety.

Once the person assesses his/her situation through primary appraisal, he/she moves to the secondary appraisal stage, where he/she evaluates whether he/she has enough personal, social, and environmental resources to deal with the threatening situation. These coping resources may include emotional coping, problem solving, financial resources, social resources, health resources, and disaster management systems (Folkman, 2013). If people feel that such resources are enough, they will use their adaptive coping strategies to handle the stress, hence no emotional distress. However, where there is the perception that the environmental pressure exceeds coping resources, individuals suffer from prolonged stress, emotional exhaustion and psychological vulnerability. In flood affected communities, frequent displacement, economic losses, breakdown of social networks and uncertainty about the next disaster may severely limit coping resources, thus individuals become vulnerable to climate-related anxiety and mental disorders.

Moreover, according to the Transactional Model, the long-term exposure to stress due to the presence of certain environmental threats that cannot be mitigated through effective coping may cause psychological dysfunctioning. In this regard, considering the present study, climate anxiety may be seen as the emotional outcome of individuals' assessment of threats associated with climate change, while psychological distress may be viewed as a more general psychological outcome caused by the continued presence of these threats in conditions where coping is insufficient. Thus, climate anxiety may serve as an intermediary psychological reaction that connects the exposure to floods with high levels of psychological distress. Thus, the Transactional Model of Stress and Coping provides a robust theoretical foundation for explaining the hypothesized predictive relationship between climate anxiety and psychological distress among flood-affected individuals in Pakistan.

Rationale of the Study

The issue of climate change has become an important health issue that has been affecting people's psychological well-being around the world through a variety of ways. Even though the studies have shown how the climate anxiety has a negative effect on people's mental health, little research has been done to examine the effect of climate anxiety in predicting the psychological distress caused by floods in developing countries. Furthermore, the evidence has been found more prevalent for developed countries than Pakistan (Clayton & Karazsia, 2020; Ogunbode et al., 2022).

There have been repeated and worsening cases of

floods occurring in Pakistan which have caused many disruptions, including psychological problems. However, despite the fact that Pakistan is highly vulnerable to climate change, there is still not much research done on the connection between climate anxiety and psychological distress of people affected by floods. Based on the Transactional Model of Stress and Coping developed by Lazarus & Folkman (1984), the current study attempts to bridge the research gap and see if climate anxiety predicts psychological distress in Pakistan. The results will contribute to the developing body of research on climate-induced mental health issues and offer empirical basis for designing specific psychological interventions and climate adaptation policies that foster greater resilience within vulnerable populations.

Objectives of the Study

- To explore the association between climate anxiety and psychological distress amongst flood-affected persons in Pakistan.
- To explore whether climate anxiety can predict psychological distress amongst flood-affected persons in Pakistan.
- To compare climate anxiety levels among different levels of education amongst flood-affected persons in Pakistan.

Conceptual Model (Figure 1)

Climate Anxiety **Psychological Distress**

(IV) **(DV)**

Literature Review and Hypothesis Development

The problem of climate change has gradually emerged as one of the top challenges for humanity, as it affects not only environmental sustainability but human health and psychological well-being as well. Early investigations into the issue of climate change were mostly concerned with the environmental impacts and effects on people's physical health, whereas modern research shows that climate change has a great psychological effect on people experiencing it firsthand. Natural environmental events, like flooding, drought, heat waves, and wildfires, are connected with a broad spectrum of negative psychological effects, including stress, anxiety, depression, and psychological distress (Charlson et al., 2021; Cianconi et al., 2020). In this literature, climate anxiety has become recognized as a unique psychological construct characterized by fears, worries, and emotions associated with the impacts of climate change currently taking place and expected in the future (Clayton & Karazsia, 2020).

Meanwhile, psychological distress is one of the most common mental health problems for those who have experienced climate-induced disasters, including anxiety, depression, emotions, and psychological dysfunction (Goldmann & Galea, 2014). This evidence demonstrates that the problem of climate change cannot be considered merely environmental but also a public mental health problem deserving scientific attention.

There is a growing empirical literature which has emphasized the significance of identifying the various determinants of climate-induced psychological effects. Climate Anxiety has become a subject of research due to its possible effects on the psychological well-being of people in terms of their emotional regulation and coping skills (Pihkala, 2022). Likewise, psychological distress has been repeatedly mentioned as one of the outcomes of climate adversities that people experience through repeated exposure to such events as floods and other natural disasters (Charlson et al., 2021).

Even though there have been many research studies that have proved the effects of climate change on people psychologically, very little has been done to find out the relationship between climate anxiety and psychological distress among the victims of disasters in developing countries. Moreover, socio demographic variables like education can affect the knowledge of a person regarding climate change. Therefore, considering the above literature review, the following hypotheses have been made.

elationship Between Climate Anxiety and Psychological Distress

In recent times, there have been many studies carried out on the correlation between climate

anxiety and psychological distress. This has been done in an effort to learn more about the mental impact of climate change. The concept of climate anxiety, which involves fear and worries of the existing and forth coming changes in the environment, has recently gained recognition as a critical mental issue resulting from the worsening climate problem (Clayton & Karazsia, 2020). While concern about the climate issues may lead to environmental adaptive behaviors in moderate situations, extreme cases of climate anxiety may make people emotionally overwhelmed, hence leading to psychological problems (Pihkala, 2022).As a result, climate anxiety is considered to be a major risk factor for psychological distress, especially in communities facing climate disasters firsthand.

The empirical literature shows that there is a significant correlation between climate anxiety and psychological distress. According to the findings presented by Clayton and Karazsia (2020), people who suffer from high levels of climate anxiety are more likely to exhibit anxiety, depressive, and functional problems. In turn, Ogunbode et al. (2022) conducted a study across 32 countries and revealed the same results. Wullenkord et al. (2021) showed that climate anxiety was negatively correlated with psychological well-being and positively related to emotional vulnerability. In populations affected by floods, being exposed to uncertainty in the environment, financial losses, and displacement exacerbates the feeling of climate fear, which increases their vulnerability to Psychological problems (Charlson et al., 2021). From this theoretical and empirical basis, the following hypothesis is postulated:

Hypothesis (H1) : Climate anxiety is positively associated with psychological distress among flood-affected individuals in Pakistan

Climate Anxiety as a Predictor of Psychological Distress

Climate anxiety is now being seen as a major predictor of psychological distress apart from being linked with negative mental health outcomes. As per the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), people experiencing the situation of climate change as severe threats to their life with insufficient coping mechanisms are at a higher risk of prolonged emotional stress. Regular exposure to disasters caused due to climate change such as floods might lead to an increase in the feeling of fear, hopelessness, and uncertainty about the future. This unresolved emotional response over time leads to psychological problems such as anxiety, depression, emotional exhaustion, and psychological distress (Pihkala, 2022). The theoretical framework makes a good foundation for examining the importance of climate anxiety in predicting psychological distress among disaster-exposed populations.

Empirical research also supports the importance of climate anxiety in explaining psychological problems. Clayton & Karazsia (2020) established that climate anxiety was a significant predictor of emotional impairment, general anxiety, and depression. Similarly, Hogg et al. (2021) found that climate anxiety predicted poor emotional functioning and increased vulnerability to psychological problems. In addition, as noted by Charlson et al. (2021), frequent occurrence of climate disasters causes an increase in psychological distress risks, especially for the vulnerable populations with inadequate coping mechanisms. Also, in their study, Ogunbode et al. (2022) identified that climate anxiety played a critical role in poor psychological well-being among different people and, therefore, is an important factor influencing mental health. Overall, based on both the theoretical and empirical studies, it can be seen that climate anxiety is a key predictor of psychological distress.

Hypothesis (H2): Climate anxiety significantly predicts psychological distress among flood-affected individuals in Pakistan.

Education Level and Climate Anxiety

Education is one of the socio-demographic factors that could impact people's perception and reactions regarding climate change. Higher education is associated with higher awareness of climate change, access to scientific knowledge, and the ability to understand the impacts of

climate change on the environment and health in the long run (Lee et al., 2015). However, while higher awareness could result in environmental adaptations, it could also lead to worries about future climate impacts and thus contribute to climate anxiety (Clayton, 2020). On the other hand, education can play a role in psychological distress through its effect on people's coping mechanisms, problem-solving skills, as well as access to socio economic resources necessary for adaptation to climate change (Lazarus & Folkman, 1984).

There have been studies linking educational factors to the differences in climate-induced emotional and psychological responses. According to Ogunbode et al. (2022), there is a relationship between socio-demographic factors, which include education, and climate anxiety. Likewise, according to Pihkala (2022), people who have high awareness of climate change are likely to feel emotions more strongly as they understand the serious and long-lasting consequences of environmental challenges. In addition, research conducted on the topic of disaster mental health demonstrates that the level of education might affect psychological distress in relation to coping mechanisms and support services following environmental disasters (Goldmann & Galea, 2014; Charlson et al., 2021). Taking into account all of the above, it is essential to consider whether climate anxiety varies by educational level among people who have suffered from floods in Pakistan.

Hypothesis (H3): Climate anxiety differs significantly across educational levels among flood-affected individuals in Pakistan.

Method

Research Design

This study has used a quantitative cross-sectional correlational research methodology to explore the link between climate anxiety and psychological distress among flood victims in Pakistan. This is because quantitative methodology is deemed fit for measuring psychological variables objectively and analyzing the relationships between variables statistically. In a cross-sectional research design, the data was collected at one point in time only, thus helping measure the current psychological reactions of participants towards climate-induced disasters. Moreover, the correlational research design allowed the exploration of the link between climate anxiety and psychological distress and the predictive nature of climate anxiety without the manipulation of any of the variable sunder study. It is a common research methodology for studies in disaster and environmental psychology..

Participants and Sampling

The selected participants included adults affected by floods who were at least 18 years old, residing in various parts of Pakistan that were affected by floods. Participants who had suffered either direct impacts due to floods (such as displacement, loss of property or livelihoods), or indirect impact due to witnessing flood disasters in their environment were included in this study. The process of purposeful sampling was used to select those participants who met the inclusion criteria of the study.

A calculation of the required sample size was done using the G*Power software, version 3.1.The a priori power analysis for multiple regression test using a medium effect size(f^2 = .15), α = .05, power (1 $-\beta$) = .95, and one predictor revealed that the required sample size was at least 265 participants (Faul et al., 2009). For this reason, the data were collected from 265 flood victims so as to ensure the statistical power for this study. The data were collected through the administration of questionnaires face-to-face within the communities that had been affected by the floods. Before conducting the research, the objective of the research was clarified to the respondents, and their consent was sought.

Inclusion and Exclusion Criteria

The following inclusion criteria were used to select participants: being 18 years old and above, having been affected by flood-related disasters in Pakistan directly or indirectly, having the ability to read and comprehend the Urdu language, and willingly giving their consent to be a part of the study. People with major mental impairments that would affect their ability to complete the

questionnaire or who declined participation or did not submit a completed questionnaire were excluded from the study.

Instruments

Climate Change Anxiety Scale (CCAS)

Measurement of climate anxiety was done by utilizing the Urdu translation of the scale known as Climate Change Anxiety Scale(CCAS),which was initially developed by
Clayton and Karazsia (2020). The CCAS is an objective and structured self-report measure, whose purpose is the measurement of individuals' emotional, cognitive, and functional reactions to climate change. The scale consists of 22 questions, which are divided into two factors, including Cognitive-Emotional Impairment (14 items) and Functional Impairment (8 items).
Responses are measured using a 5-point Likert-type scale from 1 (Strongly Disagree) to 5 (Strongly Agree) with high ratings signifying more climate anxiety. The original instrument proved to have good psychometric characteristics, as its internal consistency values varied from α = .89 to .92 (Clayton & Karazsia, 2020). For the Urdu translation of the scale, good internal consistency was shown as well, with Cronbach's alpha of .97.

Kessler Psychological Distress Scale (K6)

Measure of psychological distress in the current study was based on Urdu translation of Kessler Psychological Distress Scale (K6)by Kessler et al. (2002).K6is a brief screening tool intended to measure the general psychological distress in the previous 30 days period. It is a six item scale measuring psychological distress in the form of nervousness, hopelessness, restlessness, depression, worthlessness and difficulty in accomplishing
things.Theparticipantswereaskedtorespondona5-point Likert type scale where higher score indicates higher level of psychological distress. K6 scale has shown adequate validity and reliability in various studies and is widely used as a screening instrument for the purpose of measuring psychological distress (Kessler et al., 2002). In the present study also, this scale exhibited excellent internal consistency (α=.91).

Procedure

A purposive sampling method was used for recruiting those who had been affected by the floods from the local community in various flooded areas of Pakistan. Prior to collecting data, the researcher made contact with eligible respondents and briefed them on the aims and importance of the study. The subjects were made aware that their participation in the study was purely voluntary and they could leave the study at any time without facing any consequences.
The data were collected using the method of personal interview with the help of a structured questionnaire that included demographic data sheet, Urdu language version of Climate Change Anxiety Scale (CCAS) and Kessler Psychological Distress Scale (K6). The participants filled out the questionnaire under calm and peaceful conditions and it
took about 15-20 minutes to fill out the questionnaire. In case participants found any problem in comprehending any item on the questionnaire, the researcher explained it to them without affecting their responses. All the questionnaires were later checked for consistency and reliability before proceeding for data analysis.

Data Analysis

The IBM SPSS Statistics Software Version 28 was used for statistical analysis of the data. Before conducting the actual analyses, the dataset was reviewed for missing values, incomplete data, outliers, and other data entry errors. Frequency distribution tables and other descriptive statistics such as means, standard deviations, and percentages were calculated for the demographic details and other variables in the study. Internal consistency reliability of the study tools was established by calculating Cronbach's alpha coefficient.
Pearson product-moment correlation analysis was employed in order to investigate the connection between climate anxiety and psychological distress. Moreover, simple linear regression analysis was used in order to test whether climate anxiety predicts psychological distress among people affected by floods. One-way analysis of variance (ANOVA) was carried out in order to

find out whether there were differences in climate anxiety according to education.

Ethical Considerations

The research was carried out in line with the ethical standards of psychological research. All subjects were briefed on the objectives and goals of the research and the voluntary nature of their participation before being asked to take part in the research. Each participant also signed a consent form before the data was collected.

Confidentiality of all information that will be provided was guaranteed. Moreover, no personal data were collected to ensure the anonymity of the participants. Filled-in questionnaires were kept securely, and access to them was allowed to the researcher only. All ethical aspects of conducting research, such as respecting participants, confidentiality, voluntariness of participants, and protecting their rights, were taken into account.

Results

The findings are presented under the section titled 'Results', where descriptive statistics, reliability test, Pearson correlation, simple linear regression, and ANOVA have been conducted. These statistics were conducted to determine the relationship between climate anxiety and psychological distress among people affected by floods. The table shave been constructed following the guidelines of the American Psychological Association (APA

Table :1 Socio-Demographic Characteristics of the Sample(N=265)

Demographic Variable	Category	Frequency(f)	Percentage(%)
Age(in years)	18 to 25	80	30.2
	26 to 35	73	27.5
	36 to 45	45	17.0
	46 to 55	67	25.3
Gender	Male	146	55.1
	Female	119	44.9
Education Level	Primary	45	17.0
	Matric	62	23.4
	Inter	37	14.0
	BS	61	23.0
	MS to highest	60	22.6
Marital Status	Single	71	26.8
	Married	133	50.2
	Divorced	31	11.7
	Widowed	30	11.3
Residence	Urban	21	7.9
	Rural	244	92.1
Occupation	Student	37	14.0

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	Employed	123	46.4
	Unemployed	105	39.6
Experienced Climate Disaster	Yes	264	99.6

Note. N = 265. Frequencies and percentages are derived from the valid responses of the collected dataset.

	No	1	0.4
Type of Loss due to Disaster	Displacement	28	10.6
	Life Loss	44	16.6
	Financial Loss	139	52.5
	Property Damage	54	20.4
Economic Status	Low	89	33.6
	Moderate	144	54.3
	High	32	12.1
Climate News Exposure	Rarely	112	42.3
	Sometimes	92	34.7
	Often	61	23.0

Table 1 presents the socio-demographic characteristics of the 265 flood-affected participants included in the study. The largest age group comprised participants aged 18–25 years(f=80,30.2%),followed by those aged26–35years(f=73,27.5%),46–55 years (f=67,25.3%),and36–45years(f=45,17.0%).The sample included146males (55.1%)and 119 females(44.9%).

Regarding educational attainment, the largest proportion of participants had completed Matric education (23.4%), followed by BS (23.0%), MS or Higher (22.6%), Primary education (17.0%),and Intermediate education(14.0%). Most participants were married (f=133, 50.2%),while 71 (26.8%) were single, 31 (11.7%) were divorced, and 30 (11.3%) were widowed. The majority of the sample resided in rural areas (f = 244, 92.1%), whereas only 21 participants (7.9%) lived in urban areas.

With respect to occupation, 123 participants (46.4%) were employed, 105 (39.6%) were unemployed, and 37 (14.0%) were students. Nearly all participants (99.6%) reported having experienced a climate-related disaster. Among the reported disaster-related losses, financial loss was the most common (f = 139, 52.5%), followed by property damage (f = 54, 20.4%), life loss (f = 44, 16.6%), and displacement (f = 28, 10.6%). Regarding economic status, more than half of the participants reported a moderate economic status (f =144,54.3%),followed by low(f=89,33.6%)and high(f=32,12.1%)economic status. Finally, 42.3% of the participants reported rarely being exposed to climate-related news, 34.7% reported sometimes, and 23.0% reported

Table :2 Descriptive Statistics, Skewness,and Kurtosis for the Main Study Variables(N=265)

Variable	Min	Max	M	SD	Skewness(SE)	Kurtosis(SE)
Climate Anxiety	28	108	70.78	19.45	−.01(.15)	−.86(.30)
Psychological Distress	8	30	23.21	5.23	−.58(.15)	−.45(.30)

Note. Min = Minimum; Max = Maximum; M = Mean; SD = Standard deviation; SE = Standard error. Leading zeros are omitted in accordance with APA 7th edition guidelines.

Table 2 presents the descriptive statistics, skewness, and kurtosis values for the main study variables. The mean score for climate anxiety was **70.78** (*SD* = **19.45**), whereas the mean score for psychological distress was **23.21** (*SD* = **5.23**). The skewness and kurtosis values for both variables fell within the acceptable range for normality, indicating that the data were approximately normally distributed. These findings support the suitability of the data for subsequent parametric analyses.

Table: 3Reliability Analysis of the Study Measures (N =265)

Variable	Number of Items	Cronbach'sAlpha(α)
Climate Anxiety	22	.97
Psychological Distress	6	.91

Note. N =265. Cronbach's alpha coefficients indicate excellent internal consistency for both study measures..

Table 3 presents the reliability analysis of the study measures. The Climate Anxiety Scale demonstrated excellent internal consistency, with a Cronbach's alpha coefficientof**.97**across22items.Likewise,the Psychological Distress Scale exhibited excellent reliability, with a Cronbach's alpha coefficient of **.91** across 6 items. These findings suggest that both instruments possessed excellent internal consistency and were reliable for assessing climate anxiety and psychological distress among flood-affected participants.

Table:4 Pearson Correlations between Climate Anxiety and Psychological Distress(N=265)

Variables	1	2
Climate Anxiety	—	.735**
Psychological Distress	.735**	—

Note. N = 265. ***r*** = Pearson correlation coefficient. ***p*<** .01 (2-tailed). The correlation was statistically significant at the .01 level.

Table 4 presents the Pearson correlation analysis between climate anxiety and psychological distress among flood-affected participants. The findings revealed a strong positive and statistically significant correlation between climate anxiety and psychological distress, *r* = **.735, *p*<**.001**.** This finding indicates that participants reporting higher levels of climate anxiety also tended to report higher levels of psychological distress.

Table: 5 Simple Linear Regression Predicting Psychological Distress from Climate Anxiety (N = 265)

Predictor	B	SE	**B**	*T*	*P*
Constant	9.20	0.83	—	11.16	<. 001
Climate Anxiety	0.20	0.01	.74	17.60	<. 001

Model Statistics: R=.74, R^2=.54,Adjusted R^2=.54, $F(1,263)$=309.84,p<.001.

Note. *B*= Un standardized regression coefficient; *SE* = Standard error; *β*= Standardized regression coefficient; R^2 = Coefficient of determination.

Table 5 presents the results of a simple linear regression analysis examining whether climate anxiety predicts psychological distress among flood-affected participants. The regression model was statistically significant, $F(1, 263) = 309.84$, ***p*** **<**.001, explaining **54**% of the variance in psychological distress (R^2 = .54)**.** Climate anxiety

emerged as a significant positive predictor of psychological distress(B=0.20,β=.74,t=17.60,p <.001). These findings indicate that higher levels of climate anxiety were associated with higher levels of psychological distress among flood-affected participants.

Table: 6 Analysis of Variance for Climate Anxiety across Education Levels among Flood-Affected Participants (N = 265)

Variable	Groups	SS	Df	MS	F	P
Climate Anxiety	Between Groups	371.03	4	92.76	3.05	.018*
	Within Groups	7904.02	260	30.40		
	Total	8275.04	264			

Note. SS = Sum of Squares; df = Degrees of Freedom; MS = Mean Square; F = Fstatistic. p< .05.

Table 6 presents the results of a one-way analysis of variance (ANOVA) examining differences in climate anxiety across educational levels among flood-affected participants. The analysis revealed a statistically significant difference in climate anxiety across educational levels, F(4, 260) = 3.05, p = .018. As the assumption of homogeneity of variances was satisfied (Levene's test, p = .209), Tukey's HSD post hoc test was conducted. Although the overall ANOVA was statistically significant, Tukey's HSD post hoccomparisonsdidnotidentifystatisticallysignificantpairwisedifferencesbetweenany educational groups (all ps> .05).

Discussion

This current study investigated the association between climate anxiety and psychological distress among people who were affected by floods in Pakistan. In line with the aims of the study, the results have shown that there is a positive and significant association between climate anxiety and psychological distress. Moreover, people who had high levels of climate anxiety faced more emotional distress, showing that the impact of climate change on psychology goes beyond physical damage.

The above findings emphasize the emerging awareness about the fact that climate change is not just an environmental issue, but it is also a public mental health issue. These findings are very important especially for a country like Pakistan, which has been suffering from frequent floods and thus is continuously subjected to environmental unpredictability, socioeconomic chaos, and psychological stress. In general, the findings offer empirical evidence for the assertion that climatic psychological reactions are one of the determinants of mental well-being.

Hypothesis 1 posited that there was a positive relationship between climate anxiety and psychological distress in flood affected people. These findings proved Hypothesis 1 by indicating a very strong positive correlation between climate anxiety and psychological distress. This implies that people who feared and were worried about climate change experienced a higher level of psychological distress such as anxiety and hopelessness. These results imply that experiencing multiple instances of climate disasters can escalate environmental worries, which in turn become a source of growing psychological problems. For victims of flooding, the lack of certainty about future disasters, financial instability, uprooting, and disruptions in daily life activities can make the feeling of vulnerability more apparent, and thus, increase climate anxiety.

The current findings are aligned with earlier empirical studies showing a strong association between climate anxiety and poor mental health consequences. For instance, Clayton and Karazsia (2020) found that people with high climate anxiety demonstrated significantly more pronounced symptoms of anxiety, depression, and impairment in functioning. Likewise, Ogunbode et al. (2022), in a multinational study conducted in 32 countries, found that higher

climate anxiety was consistently linked with lower levels of psychological well-being and higher emotional distress. Similarly, Wullenkord et al. (2021) also stated that there existed a positive relationship between climate anxiety and emotional vulnerability while at the same time a negative relationship with psychological functioning. From the comparison of the current results with those of international research, it appears that the psychological effects of climate anxiety do not apply to certain cultures only but are more widespread.

These results are also consistent with disaster mental health research showing that recurring environmental disasters lead to increased distress in the affected populations. In previous research, flood victims often suffered from chronic uncertainty, loss of means of earning a living, disruption of their social network, and worries about future environmental threats (Charlson et al., 2021; Cianconi et al., 2020). In the case of Pakistan where floods have been recurrently affecting communities that are vulnerable, such stresses will tend to heighten the concerns about climate changes and increase psychological distress. As such, the relationship that has been found in the current study clearly indicates the psychological stress that has been caused by floods on affected people, and shows the need to consider climate anxiety as a serious mental problem.

From a theoretical point of view, these findings have added some weight to the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984). This theory suggests that people's psychological reactions will be significantly determined by how they will assess the environmental stressors and how much coping resources they will feel that they have. The flood survivors who feel that climate change is an inevitable and uncontrollable environmental problem and also that they do not have enough coping resources will feel greater climate anxiety. In this way, the findings from the current research further substantiate the idea that cognitive appraisal of environmental threats is critical to determining the emotional state of an individual. The current connection between climate anxiety and psychological distress thus expands the existing body of theoretical knowledge by applying the Transactional Model to climate disasters in Pakistan.

The second hypothesis postulated that climate anxiety would predict psychological distress among flood victims in Pakistan. The results proved this hypothesis to be correct as it showed that the climate anxiety was found to be a statistically significant positive predictor of psychological distress. From the regression model, it was seen that climate anxiety accounted for 54% of the variance (R^2 = .54) in psychological distress, implying that the emotions related to climate were found to be an important psychological determinant of the mental health of the people affected by floods. Thus, it is clear from the above that with an increase in individuals' concern, fear, and worry about climate change, the probability of suffering from psychological distress also increased. The predictive function of climate anxiety could be interpreted in light of the long-term and accumulativeimpactofclimatedisasterevents.Incontrasttoone-timestressorsthatareexperienced only once and gradually fade away, recurrent floods are associated with a continuous experience of uncertainty, financial strain, relocation, and disruption of one's daily routines. It is possible that such repetitive experiences will be seen as indicative of the inevitability of climate hazards, thus transforming one's initial worries into the long-term climate anxiety. Continuous stress could wear out people's emotional capacity ,make them less resilient, and unable to cope with environmental adversity, which will eventually result in psychological problems. Therefore, climate anxiety should not be considered just a personal feeling in response to climate change, butrather as a significant psychological process of how environmental stressors negatively affect people's well-being.

The current findings are in agreement with the earlier empirical literature showing that climate anxiety is a significant predictor of various negative psychological consequences. In particular, Clayton and Karazsia (2020) showed that the higher rates of climate anxiety were

associated with impaired emotions, generalized anxiety, and depressive symptoms among adults. Likewise, Hogg et al. (2021) found that people with elevated climate anxiety were characterized by impaired emotional well-being and higher vulnerability to psychological problems. Moreover, Ogunbode et al. (2022) showed that climate anxiety was a significant contributor to poor psychological well-being of people from diverse cultures. Thus, the congruence of the current results with international research allows one to state that climate anxiety is not only a problem that has something to do with emotions but rather is a factor that predicts more serious psychological issues. In addition, the link between these factors has been proved by disaster mental health literature, according to which repeated exposure to environmental threats makes individuals susceptible to the development of various psychological disorders. For instance, the people who have survived a flood are likely to have continuous worries about recovering economically, finding a new place to live, their unemployment, and other climate disasters (Charlson et al., 2021; Cianconi et al., 2020).

In Pakistan, for instance, where climate change has brought about floods on a more regular basis, this problem is further complicated by the lack of mental health services, economic inequalities, and disaster recovery facilities. As a result, climate anxiety can persist and cause even more stress for vulnerable people. This research proves that climate anxiety should be seen as one of the psychological consequences of environmental disasters and taken seriously. Based on the theory, the research results lend additional credence to the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984). According to the theory, people suffer from psychological distress because of their assessment of events in the environment as threatening and their inability to use coping resources to deal with such threats. In the current research, flooding is likely to increase people's assessments of the danger as social with the environment and decrease the degree to which people can cope with future disasters. This gap causes people's climate anxiety and results in general psychological distress. The current study thus extends the usage of the Transactional Model by establishing the importance of climate anxiety as a psychological determinant of distress among individuals affected by floods. The results therefore lend empirical evidence to the theoretical assumption that cognitive appraisal of climate threats is an important determinant of the psychological impact of environmental hazards.

Hypothesis three hypothesized that there was a significant variation in climate anxiety with regard to educational levels among individuals affected by floods in Pakistan. The results supported this hypothesis by showing a significant overall difference in climate anxiety with regard to educational levels. Even though the one-way ANOVA was statistically significant as a whole, the Tukey's HSD post-hoc tests could not reveal any statistically significant differences between educational groups in terms of pair wise comparisons. Despite this, however, the overall trend points out to the possibility that educational status might affect people's perception and emotional responses to climate hazards. Indeed, people who have more education tend to be more knowledgeable about the climate problem due to the availability of scientific information and environmental awareness and the knowledge of the long-term effects of climate change.

The current results are supported by past literature which shows that education is a significant factor in determining how people perceive climate issues and their emotional responses. According to Lee et al. (2015), people who have high levels of education tend to be knowledgeable about climate change and are more aware of environmental risks. In the same manner, Pihkala (2022) stated that higher levels of awareness of climate change would cause higher emotions since people will realize the extent, uncertainty, and possible irreversibility of environmental destruction. Moreover, Ogunbode et al. (2022) found that socio-demographic factors such as education level can influence the levels of climate anxiety among different nations.

It can be argued that educated people come

across climate information more often from reports, internet sources, educational and professional spheres. Repeated access to information related to global warming, natural disasters, the extinction of living or genesis and future dangers to the environment can increase the feeling that climate change is an immediate and long-lasting danger to human life. While it is necessary to be aware of these threats in order to change one's environmentally harmful behavior, the same awareness may create additional stress if there are no ways to address the problem. Therefore, climate information creates a paradoxical situation: it increases environmental awareness along with climate anxiety.

Theorizing these findings, they further cement the Transactional Model of Stress and Coping (Lazarus & Folkman,1984). In the model emotions result from how an individual cognitively appraises threats in their environment instead of simply being exposed to the threats. The individual who has achieved higher educational levels will consider climate change a more serious and long-term threat since he/she has more knowledge about the impact of climate change in terms of environmental, economic, and health aspects. Such an appraisal of threats will raise the level of climate anxiety especially if coping mechanisms available are not adequate for dealing with future challenges related to climate change.

In general, the study results suggest that education is one of the significant socio-demographic variables affecting emotional reactions to climate change experienced by people affected by flooding. Instead of proving that education can shield people from climate change anxiety, the results show that the heightened awareness of climate change can make people more vulnerable psychologically. The results of this study have important implications for climate communication and disaster management initiatives. While educational programs are needed for the raising public awareness of climate change issues, they need to be designed in such a way as to include psychological resilience-building measures to prevent negative effects of growing awareness.

Conclusion

The current research study offers empirical evidence related to the psychological effects of climate disasters among individuals experiencing floods in Pakistan. The results revealed that there was a strong and positive relationship between climate anxiety and

psychologicaldistressandclimateanxietyemergedas asignificantpredictorofpsychological distress. Moreover, significant variations in climate anxiety were found based on education level, suggesting that education could affect how people react psychologically to climate change. Overall, these results contribute to the existing literature that climate anxiety plays a critical role in determining psychological well-being. The results also advance the use of the Transactional Model of Stress and Coping in that the cognitive appraisals of individuals about climate threats are found to be directly related to negative psychological impacts. With he climate change leading to the growing number and intensity of environmental disasters around the world, it is necessary to include psychological response such as climate anxiety as an integral part of disaster preparation, public health strategies, and climate adaptation plans. The integration of psychological assessments, mental health interventions, and resilience-building initiatives into disaster management can mitigate psychological impacts and enhance coping abilities of vulnerable communities to future climate risks.

In sum, the current study is a valuable contribution to the ever-growing literature on climate change psychology by providing context-specific data from Pakistan and by giving directions for how to help people become psychologically resilient in the face of climate change.

Practical Implications

- Climate anxiety needs to be acknowledged as a critical mental health issue in disaster-prone regions especially flood-affected people.
- Regular screening for climate anxiety and psychological distress needs to be added to the

list of disaster response and recovery programs.

• Mental health measures, such as psychological first aid, CBT therapy, and resilience programs need to be introduced for survivors of floods.

• Efforts to fight climate change must take psychological approaches in addition to environmental approaches.

• The government, including disaster management organizations, should integrate mental health services in the country's policies concerning climate adaptation and disaster risk reduction.

• There should be cooperation among psychologists, health care experts, policy makers, and humanitarians to offer a holistic psychosocial service to vulnerable populations.

• Mental health services in communities should be put in place to ensure good psychological welfare of people affected by frequent climate disasters..

Limitations

• First, cross-sectional research design was utilized; thus, it was not possible to determine whether there is causation between climate anxiety and psychological distress.

• Purposive sampling strategy was applied in the study; hence, the results cannot be generalized to the entire population of Pakistan.

• All data were collected from people who have suffered floods, implying that the study's results cannot be applied in other climate-based disasters, such as droughts, heat waves, and earthquakes.

• Lastly, the study used self-report questionnaires; thus, there was an influence of recall and social desirability bias.

• The study only considered one independent variable (climate anxiety); however, other factors, such as psychological and social factors that can cause psychological distress, were not taken into consideration.

• The study was carried out in the context of Pakistan; hence, there may be cultural differences in other countries.

Recommendations

•Mental health screenings for climate anxiety and psychological distress need to be part of disaster preparedness and post-disaster recovery initiatives.

•Psychologicalinterventionsatthecommunitylevelcanbecarriedouttoincrease resilience and reduce the psychological burden among those affected by floods.

•The climate awareness campaigns should incorporate psychological coping mechanisms and resilience building skills to help people cope with the emotional distress arising from climatic changes.

•Hope, embitterment, and socioeconomic status can be investigated in future research as mediators or moderators of the relationship between climate anxiety and psychological distress.

•Longitudinal and cross-cultural research is required to understand the long-term psychological impact of climate-induced disasters.

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