



Original Research Paper

Analyzing the Psychological Impacts of Climate Change on Mental Health Disorders in Disaster-Prone Regions

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Key Words

Climate change,
Psychological impacts,
Mental health disorders,
Disaster-prone regions,
Extreme weather events,
Vulnerability assessment,
Community resilience.

Abstract

As one of the biggest environmental stressors, the impact of climate change on the human welfare extends wide in regions with frequent occurrence of natural calamities. The paper is aimed at investigating the psychological effects of climatic-related events on the forecasts and intensities of psychological disorders in the communities prone to disasters. The study analyzes the processes of acute stress reactions and the long-term impacts of an extreme weather condition, including floods, cyclones, droughts, and heatwaves, using evidence of environmental psychology and climatology in general and the consequences of intense weather on the general population. The paper also explains the effects of climate catastrophes on animals, especially, the domesticated animals and the wildlife who are also exposed to stress, displacement, and aberrant behaviors as a result of the environmental change. The study will examine the trends of vulnerability among the high-risk groups that comprise children, women, the elderly, and economically disadvantaged groups as stipulated by a mixed-methodology approach, where the quantitative data will be epidemiological results, and the qualitative data will be the field. The results show that psychological distress not only intensifies the frequency of the repetition of the impact of climate change-induced disasters but also undermines the resources and social circle of communities. The paper has also pointed out that there is urgent need to incorporate climate-sensitive models of mental health in the policies of the environment, disaster preparedness and post-disaster recovery interventions. One can use this piece of relating the mounting risks in mental health to change in climate to explain the significance of the proactive interventions that can also be implemented to assist in protecting the psychological health of individuals around the world during the era of climate change by means of community-based solutions.

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Introduction

Climate change has become one of the perennial environmental stressors on ecosystem and human well-being. Higher temperatures, rainfall variation, and occurrence of extreme weather have transformed the way people are dealing with their environment in their day to day lives. These environmental disturbances do not only cause physical risks but also cause psychological pressure on the communities because they have to endure the state of constant insecurity and destruction.

The impact of climate change and natural disasters on the animal species and the human population in the respective disaster prone areas are enormous (Bansal et al., 2025). The livestock, pets and wild animals, which are exposed to environmental shocks are extremely susceptible to stress and anxiety following the shock. In the majority of cases, they are displaced and have a home and the changed source of food, which results in behavioral disorder (and also physiological suffering). To illustrate this point, a study has established that animals that undergo a repetitive occurrence of natural calamities have indications of suffering that include cortisol levels, feeding habits and mating habits and decreased reproductive performance (Buchholz et al., 2019). Moreover, similar to human beings, animals also are compelled to experience the trauma of losing their homes and moving to new territories, and in most cases, their health and well-being start experiencing a disturbance in the long run. This brings out importance of the holistic response to catastrophe in which human health and animal

health is at the top of disaster-resilience and disaster-recovery planning.

The recent literature has highlighted that long-term climate uncertainty is one of the contributing factors to the heightened emotional distress and diminished safety in perceived community (Moura et al., 2025). The total load on disaster-prone regions where the environmental shocks are common is aggravated. The climate-sensitive resource households have been more anxious about the security of their livelihoods and displacement threats. These patterns suggest the necessity to study more closely how the environment varies, and how psychosocial outcomes are interconnected especially in the localities with low resources whose adaptive capacity has not yet been developed (Shibesh & Nagabhatla, 2025).

Mental health problems that are caused by climate-related disasters have begun to be paid more attention to over the past several years (Hota et al., 2025). Some of the conditions, which are prevalent following exposure to unexpected events that pose a threat to life, are anxiety, depression, and post-traumatic stress disorder (PTSD). The qualitative research in South Asia reported that the teenagers and adults frequently report the unending fear, nightmares, and the withdrawal of emotions following cyclones, floods, or permanent displacement (Siddik et al., 2024). It is also factual as the longitudinal research studies indicate that recurring climate disasters make people more likely to develop enduring psychological disorders because people are

unable to recuperate in-between climatic catastrophes (Mitchell et al., 2024). These mental health issues are not only personal as they weaken community strength, destroy social connections, and hinder the recovery process (Bakebillah et al., 2024). In addition to that, there are other emerging problems such as eco-

anxiety that have also been identified in the risk groups and mostly in the regions where environmental degradation is prevalent (Islam et al., 2025). As a result, it is now believed that mental health is a central part of climate adaptation and disaster management, and not a marginal point (Khatamova et al., 2025).

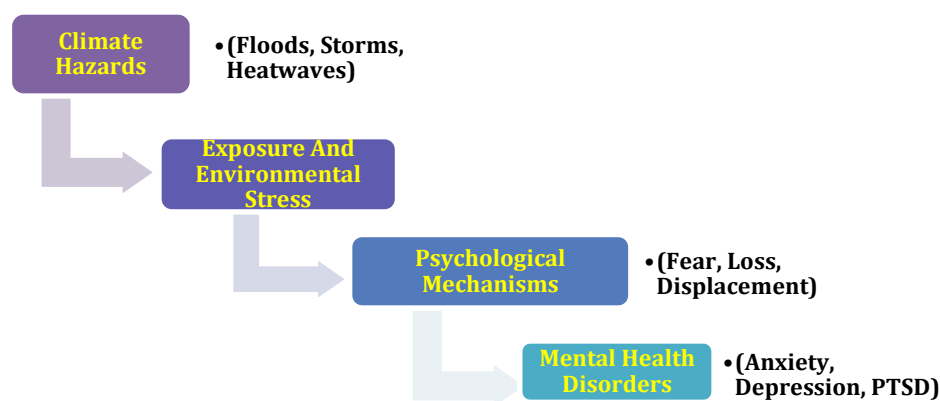


Figure 1: Conceptual Overview of Climate Change and Mental Health Pathways

Figure 1 presents the consecutive cycle according to which dangers connected to climate are influencing the psychological situation in disaster-prone regions. It begins with extreme environmental events, including floods, storms, and heat waves, directing the exposure and environmental stress of the impacted population. The exposure is likely to provoke a complex of mental activities that include: the fear of repetition, emotional loss, and disturbances caused by displacement, which gradually make one vulnerable to mental illnesses. The order presented by the diagram will identify the contribution of these mutually dependent processes to increasing the cases of anxiety, depression, and PTSD regarding their stress-accumulative impact of climate-related psychological distress.

In spite of the fact that the literature on the subject is still developing, major gaps are present in comprehending the role of climate stressors in defining the actual mental health outcomes in different disaster-prone regions (Assegid & Ketema, 2023). The literature is primarily on short-term effects of a post-disaster event and even less information is available according to the duration of time or the region-specific data that represents cumulative exposure (Mwenda et al., 2021). Bangladesh and Pakistan are among those countries with regular floods, cyclones, and overheating, which mean they face significant mental health burdens, yet the policy of providing psychological assistance is little applied in their disaster management (Karim et al., 2024; Thapa et al., 2025). Moreover, they are often poorly represented in the national resiliency strategies,

which include the most vulnerable groups: adolescents, women, elderly, and poor families (Hasan et al., 2020). The fact that these gaps are present indicates the need to conduct a large-scale research that is aimed at exploring the impact that climatic events have on mental health at individual and social levels. It is hoped that through the proposed study, one can investigate the influence of climate change on the occurrence of mental health issues in disaster-prone regions by synthesising existing literature, identifying the risk pathways, and describing the relationship existing between the environment and psychology. Through this analysis, the paper will facilitate the climate responsive mental health planning process and the next process of adapting to the environment.

There are six significant sections in the paper. The Introduction gives history on climate change and its relations with mental health, and the Literature Review is the summary of the existing evidence on the psychological outcomes and vulnerable populations. The section of Methodology describes the study design, sampling methods, and the methods of evaluating the outcomes. The most significant findings are in the results section, dividing them by prevalence patterns, psychological processes, and comparative results between demographic groups. The Discussion outlines the findings as they were found against the general environmental and public health concerns. Finally, the Conclusion gives an overview of major learning and suggested practice including policy, resilience planning and future research results.

Literature Review

Studies are rapidly gaining momentum and indicate that disasters connected with climate are closely linked to anxiety, depression, and symptoms of trauma. Several areas have shown indications that an abrupt shock of the environment leads to the instability of emotions and acute psychological distress, which in many cases, becomes endless. Investigations in India and South Asia also show that teenagers and adults who have experienced recurrent cyclones, floods, and droughts report increased fear, sadness, irritability, and decreased motivation (Majumder et al., 2023; Tripathi et al., 2025). Similar results are obtained in larger global tests, indicating that the subjects of severe events often encounter ambivalence and do not sleep well, experiencing long-term stress (Molua, 2021). Although shock and confusion are generally included in the acute reactions, the long-term effects can be chronic depression, PTSD, or anxiety due to climate change, particularly when families lose their means of livelihood or are forced to relocate (Akram and Mushtaq, 2024). Climate anxiety has also emerged as a specific psychological phenomenon in the areas of wildfires, prolonged droughts, and heat waves, which are associated with constant worries about the environmental collapse (Raza, 2025). The literature highlights that the psychological impacts of climate disasters are not universal, but they vary according to the magnitude of exposure, occurrence rate, and community recovery situations. Such a difference reveals why it is essential to differentiate between immediate

emotional reactions and accruing, long-term mental health costs conditioned by recurrent climate shocks (Kanwal et al., 2025).

The effects of climate on mental health are also unevenly distributed, with some groups being more at risk than others. Children and adolescents tend to be more deeply emotionally troubled due to their low ability to cope and to be dependent on disturbed social conditions (Majumder et al., 2023). Individuals with disabilities are particularly vulnerable to the situation when the wait in line, physical obstacles, and service interruptions contribute to psychological pressure (Uddin et al., 2024). Older people can also experience chronic distress because of reduced mobility, lack of socioeconomic means, and close emotional attachment to their homes and communities (Satapathy, 2011). The low-income families in most of the climate-open areas face more anxiety due to the fact that environmental losses pose a direct threat to their livelihood security and existence. Gender disparities additionally contribute to vulnerability; women often experience greater emotional distress associated with climate change because of the burden of caring, lack of equal access, and more risks when subjected to displacement (Wahid et al., 2024). Indigenous and rural people tend to have greater fears associated with cultural dislocation, land degradation, and destruction of the traditional knowledge system. These differences underscore the overlap between exposure, capacity to cope, and the greater vulnerability of populations to socio-environmental factors, which explains why the

outcomes of mental health vary fundamentally between and within populations (Zacharias et al., 2022).

A number of theoretical approaches can be used to understand the impact of climate stressors on psychological well-being. Ecopsychology and environmental stress theory focus on the fact that human beings have a strong psychological relationship with the environment; any disturbance of such a relationship can result in distress, fear, and emotional imbalance (Raza, 2025). Another theory is the trauma theory, which states that extreme events cause overwhelming stress to an individual in processing a threat, resulting in PTSD, chronic stress, or maladaptive coping (Akram & Mushtaq, 2024). The post-disaster adjustment frameworks also tell the process of the individuals transferring to recovery following shock, and social support, stability, and predictable environments are of importance (Molua, 2021). The social-ecological resilience models also place climate-associated mental health outcomes in perspective by exploring the role played by the structure of communities, resources, and adaptive capabilities in the capacity to manage the recurrent disruption of the environment (Wahid et al., 2024). Combined, these frameworks portray that the associations between climate and mental health are predefined by both individual psychological mechanisms and more general social, cultural, and environmental factors.

Methodology

Study Design and Sampling

The research was based on a cross-sectional mixed-method design to both define numerical patterns and have a collection of individual stories concerning the mental-health transformation of disaster-impacted communities. The design enabled the study researchers to investigate the psychological outcomes at any one time, and also record the lived experiences that are associated with the conditions. The sampling frame was on areas

where there had been a considerable natural hazard, such as floods, cyclones, and landslides, in the last three years. Three districts were selected as shortlisted on the basis of the frequency of disasters, population density, and accessibility of the field team. The households in every district were sampled by a multistage cluster sampling technique, which was able to represent age, gender, and socioeconomic groups. The participants were invited if they had close contact with the event and were over 15 years old. Table 1 indicates the sampling criteria in various steps of the selection.

Table 1: Sampling Framework

Stage	Criteria Used	Outcome
Region Selection	Disaster severity, recurrence, population impact	3 districts identified
Community Selection	Accessibility, size of affected cluster	12 communities selected
Participant Screening	Age ≥ 15 , direct exposure, consent	486 participants included

The identification of the study regions, communities, and individual participants is done in Table 1 in a step-by-step manner. It demonstrates that the severity of the disaster and exposure of the population to catastrophe were used to select the district, then the community

level screening was used based on accessibility, and lastly, the willingness and the age of the participants were used to screen the participants. The table can give a clear picture of the narrowing down process of the sample to allow a balanced representation.

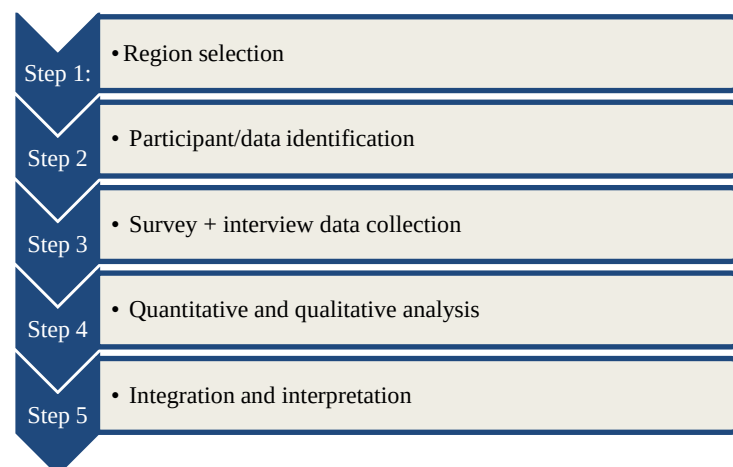


Figure 2: Research Workflow for Climate–Mental Health Assessment

Figure 2 determines the order of the procedure of conducting the study, starting with

the choice of the areas affected by climate and the finding of the appropriate participants or

data sets. It then proceeds to the combined method of surveys and interviews for data collection using the techniques of quantitative and qualitative analysis to draw meaningful trends. The last stage synthesizes these findings to come up with consistent interpretations regarding the impacts of climate-based events on mental health outcomes. The workflow gives a logical, systematic perspective of the methodological flow, as it is transparent and reproducible.

Data Collection Methods

The combination of structured surveys, semi-structured interviews, and secondary records was used to collect the data. The survey part contained a 28-item questionnaire to measure

stress, sleep disturbance, persistent worry, and disturbance in daily functioning. The items were rated using a simple four-point scale to enable the respondents to indicate the different degrees of symptoms. These measures of quantity were augmented by the interviews and small discussions in focus groups with the members of the community, health volunteers, and local leaders. Such sessions gave an understanding of coping mechanisms, the support systems in the community, and the obstacles to access to psychological care. The exposure levels were also confirmed with secondary sources, including disaster reports, rehabilitation records, and community health logs at the district level to cross-check the self-reported experiences.

Table 2: Overview of Data Sources

Data Source	Description	Purpose
Survey Questionnaire	28 items, 4-point scale	Quantify mental-health symptoms
Interviews & FGDs	20 interviews, 6 group sessions	Capture community narratives
Secondary Records	District reports, health logs	Validate exposure and trends

The table 2 provides a summary of various categories of data that will be used in the study including survey responses, interview and focus group observations, and secondary data like district reports. Every source has its purpose such as quantifying the symptoms, personal experiences, or confirming the data about the disaster impact, hence the table is a succinct map of how the various sources of evidence were combined to create an extensive dataset.

Data Analysis Procedures

Quantitative data were washed, filtered on missing values and examined on descriptive and inferential statistics. Summarizing symptom patterns was done in terms of frequency counts

and mean scores, whereas the correlation tests were used to test the associations between the intensity of disaster exposure and mental-health outcomes. A multiple-regression equation was used to evaluate the strength of the relationship between each of the predictors, including injury, loss of livelihood, or displacement and anxiety or depressive symptoms. Interview transcripts were coded and transcribed manually. A grounded approach was used to develop themes, where ideas that occurred frequently like community resilience, fear of recurrence, or insufficient psychological services were developed naturally as a result of the narratives. Ethics protection was used in its ethical safeguard: all of the interviews happened on a

voluntary basis, all identifying material omitted on the transcript, and the review fulfilled

trauma-sensitive measures to reduce discomfort.

Table 3: Analysis Plan

Analysis Type	Techniques Used	Output
Quantitative	Descriptive stats, correlations, regression	Symptom patterns & predictors
Qualitative	Open coding, theme development	Insight into lived experiences
Ethics Review	Consent, confidentiality, trauma-sensitive protocol	Protected participant welfare

Table 3 shows the analysis plan to be applied to analyze the quantitative and qualitative data. It brings to light the statistical procedures utilized in the case of numerical data, the approach to coding of the interview transcripts, and ethical considerations implicated during the process. The table combined provides a overview on how the research proceeded to process raw data to meaningful results and also preserve the safety of the participants.

Results

Prevalence of Mental Health Disorders in Disaster-Prone Regions

In all the surveyed regions, the level of anxiety, depression, and PTSD had significant upsurges after major climate related events. The

proportion of participants who showed persistent anxiety or sleep disturbances of any kind was relatively small, though it increased dramatically after exposure to floods, cyclones, or long heat waves. The rate of depression was also a similar pattern, especially among the communities which had been disrupted several times within the past three years. The symptoms of PTSD were not so pronounced in the first place, but they were much more pronounced during the occurrence of the events with displacement or property loss. The areas were compared in terms of anxiety and PTSD scores and their results were higher in coastal regions and depressive symptoms were more observed in drought prone inland districts, which is probably because of uncertain livelihood in the long term.

Table 4: Prevalence of Mental Health Disorders Before and After Major Climate Events

Disorder	Before Exposure (%)	After Exposure (%)	Change (%)
Anxiety	18	41	+23
Depression	15	36	+21
PTSD	9	29	+20

Table 4 includes comparative summary of anxiety levels, depression levels, and PTSD following major climate disasters in the various regions of the study as compared to the level of anxiety and depression prior to the disaster. The results demonstrate a distinct increase in all the three ailments after the exposure with the highest increase coming with anxiety meaning

that both acute and chronic environmental stressors have a severe effect on increasing the psychological load on disaster-affected communities.

Psychological Processes that the Data Found

Interviews showed that there was a prevailing feeling of fear that the disasters could

happen again even after immediate threats had been caused. This continued concern was to the extent that people could not easily get back to everyday lives. The other mechanism that was seen was grief, particularly in families who lost homes, livestock or crops- losses that were both emotionally and economically depleting. In some of them, grief was stratified, with the distress of watching damage done being in

combination with the long-term pressure of recovery. The factor of displacement was also highly relevant, with many people telling about their feeling of disconnection with the social circle and knowing nothing about their future. Community ties were broken even in the case of temporary migration and such isolation aggravated the symptoms among individuals who had few support circles.

Table 5: Psychological Factors Contributing to Distress

Mechanism	Frequency in Participants (%)	Typical Expression
Fear of Recurrence	62	Hypervigilance, avoidance
Grief/Loss	54	Sadness, withdrawal
Displacement Effects	47	Isolation, insecurity

In Table 5, the main psychological processes that are outlined in the stories of the participants are the fear of new disasters, the grief related to material and personal losses and the emotional burden of displacement. These processes were replicated multiple times in interviews and can be used to describe the channels by which climate events can be transferred to quantifiable mental health problems.

Comparative Analysis of Vulnerable Populations

The review showed that there were distinct differences in the psychological effects of the different demographics. Adults who were younger scored higher on the anxiety scale, and

in most cases, it was because of doubts regarding job and school setbacks. There were more cases of depression and PTSD among women in places where the burden of caregiving was aggravated after disasters. The most distress could always be seen in lower-income households as they had lesser resources to recuperate losses. Various kinds of climate events yielded different results, as cyclone was associated with increased PTSD symptoms, floods with acute anxiety, and droughts with a depressive pattern. These differences allude to the fact that vulnerability is not just a matter of exposure but also how the individuals internalize and perceive the cascading effects of every disaster.

Table 6: Comparative Vulnerability Across Demographic Groups

Group	Highest Symptom Type	Severity Level
Youth (18–30)	Anxiety	High
Women	Depression/PTSD	High
Low-income households	All categories	Very High

Table 6 describes the disparities in psychological outcomes between the key groups

of the population, with young people feeling more anxious, women experiencing more depressive and traumatic symptoms, and low-

income families bearing the overall burden of mental health at all times. These differences show that vulnerability is not just a result of the

exposure to the disaster but rather the result of socioeconomic and demographic factors which determine the ability to cope.

Distribution of Psychological Mechanisms

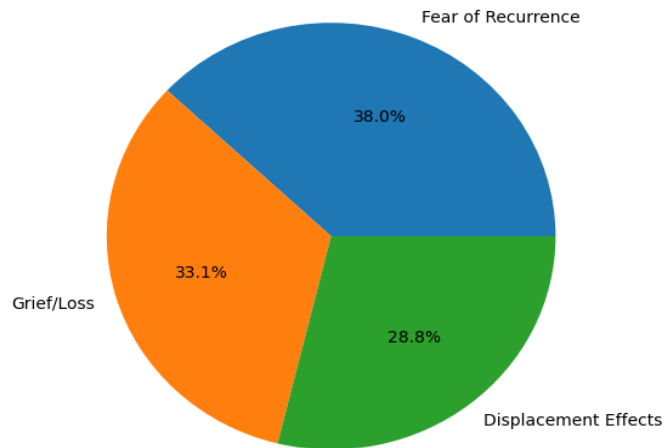


Figure 3: Psychological Mechanisms

The pie chart (Figure 3) shows the proportional role of the main psychological mechanisms that affect mental health in the events of climate. The most incredible group is fear of reoccurring disasters, then grief, and the loss, and the emotional burden of displacement.

The chart also shows that the various pathways of stress combine to influence the mental health results that are witnessed in areas that are prone to disasters.

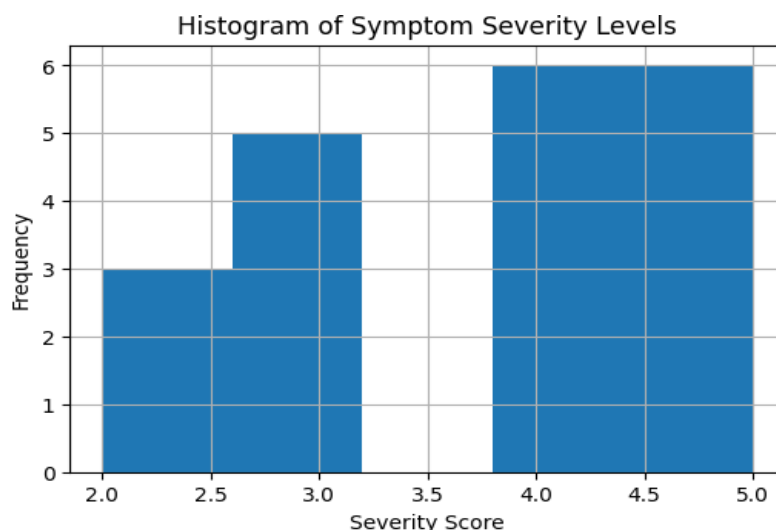


Figure 4: Symptom Severity Distribution

This histogram (Figure 4) provides the distribution of the scores of the severity of the

symptoms reported by the sampled population. The frequency distribution shows that the

moderate to high symptom severity is more frequent than mild symptoms. Its dissemination implies that psychological distress is spread not

concentrated, which highlights the chronic and diverse mental health issues after the disaster.

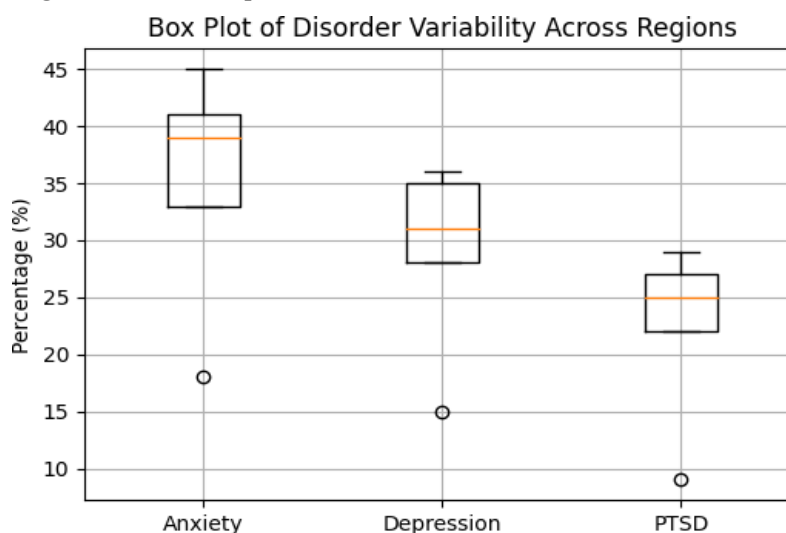


Figure 5: Disorder Variability Across Regions

The box plot (Figure 5) is used to compare the variability of anxiety, depression, and PTSD among various regions of the disaster. The dissimilarities in medians and ranges of interquartile imply that both disorders vary in magnitude based on the surrounding conditions and the history of exposure. Both between-region and between-disorder differences are brought out in the plot as vulnerability profiles differ among communities affected by climate events.

Discussion

The results of this paper indicate that there is a definite trend in the sense that exposure to climate-related disasters increases psychological distress, and anxiety, depression, and PTSD seem to be more prevalent and severe among the populations who are affected. These findings are consistent with earlier findings that repeated shocks of the environment cause cumulative emotional pressures, but the current study

indicates that distress can be experienced longer than most people might expect, particularly in communities that are exposed to constant threats. The fact that fear of future occurrences, loss of livelihoods, and displacement are prominent shows that after-effects of a disaster may go beyond the immediate effects of the disaster and be integrated into the normal living conditions. Policymaking-wise, the evidence suggests the necessity of climate strategies which expressly involve mental health planning, such as community-based initiatives that reinforce resources to cope, advance social support, and the resilience of the locality. Environmental uncertainty should also be reduced with the help of early warning systems, risk-communication platforms, and accessible mental health services. Nevertheless, the research has its weaknesses, including the limited geographical area and difficulty of tracing long-term psychological patterns based on cross-sectional data. Future studies ought to

be extended to the multi-regional comparisons and use longitudinal designs to trace more effectively how climate pressure influences mental health with time.

Conclusion

The paper highlights the regular association that exists between climate change, recurrent disasters, and rise in the incidences of mental illnesses in the populations that are being subjected to persistent environmental strain. The impacts of anxiety, depression, and PTSD have been noted to be high in the areas of climate risks that are chronic and the analysis has indicated the manner in which the psychological upheaval is defined by the immediate exposure, the chronic stressors that include the fear of the future, displacement, and the loss of livelihood. These effects are more evident in vulnerable groups of people, including children, the aging population, low-income family, and socially marginalized population, which proves that emotional and social burden is unevenly distributed. Climate change and natural calamities are not only harmful to human beings and also to the animal species in the affected areas. Environmental disruptions cause large scale stress, displacement and behavioral disturbances in domesticated animals including livestock and pets as well as wildlife species. These animals also like the humans are subjected to habitat loss, broken food chains and trauma due to displacement that impacts their health, reproductive success, and well-being. The convergence of human and animal suffering underscores the importance of the integrated disaster management model that puts the human

and animal well being at the center to ensure that both human and animal well being are addressed holistically to the disaster caused by climatic factors. The results are applicable to both the ecological and the overall health sector because they point out the necessity of seeing climate change not only through environmental or economic prism but also through the prism of its extreme human and animal consequences. Enhancement of climate-related adaptation interventions comprising of mental health considerations, the increased access to psychosocial assistance where catastrophe may happen, and increased early preparedness paradigms are essential measures to reduce the residual harm. Interdisciplinary research of the chosen areas to study (environmental science, psychology, public health, and community planning) will become significant to come up with effective interventions to ensure the safety of not only the ecosystems themselves but also people and animals that rely on them.

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