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Research Article

Trauma And Community Impact of Flood Disasters: A Study of The Uttarakhand Floods

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Abstract

Floods in India, particularly in the Himalayan state of Uttarakhand, have caused severe disruption to lives and livelihoods. Beyond physical destruction, these disasters have long-lasting psychological consequences, particularly trauma and post-traumatic stress disorder (PTSD). This study aims to examine the psychological impact of the 2025 Uttarakhand floods, focusing on trauma symptoms, associated factors, and community coping strategies. A mixed-methods approach is proposed, including standardised survey instruments and open- ended interviews, to capture both the prevalence of trauma and the lived experiences of survivors. The findings are expected to guide policy, clinical practice, and disaster management interventions for vulnerable communities.

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1. INTRODUCTION

Natural disasters are sudden, extreme events in the natural environment that cause widespread damage to life, property, and the functioning of societies. These events often overwhelm the ability of communities and governments to cope, leading to both immediate destruction and long-term consequences. Globally, the most common natural disasters include floods, earthquakes, hurricanes, cyclones, droughts, tsunamis, wildfires, and landslides. While each type of disaster has unique characteristics, all share the ability to disrupt human lives at a massive scale. According to the United Nations Office for Disaster Risk Reduction (UNDRR), the frequency and intensity of natural disasters have increased significantly in the last few decades. Climate change has played a major role, with rising global temperatures leading to unpredictable rainfall, glacial melting, and extreme weather patterns. Urbanization and human activities, such as deforestation, mining, and unregulated construction, have further increased vulnerability by destabilizing ecosystems. For example, the Himalayan region, once considered ecologically stable, is now facing recurrent floods and landslides due to unplanned road building, hydropower projects, and rapid tourism development.

Natural disasters affect societies at multiple levels:

1. **Physical impact** – Destruction of homes, roads, bridges, hospitals, and agricultural land
2. **Economic impact** – Loss of livelihoods, unemployment, and disruption of local and national economies.
3. **Social impact** – Displacement of communities, separation of families, and weakening of social structures.
4. **Psychological impact** – Trauma, stress, anxiety, and long-term mental health disorders among survivors.

In India, natural disasters are not rare occurrences but annual events. The country is among the most disaster-prone nations in the world due to its diverse geography. The Himalayas face earthquakes, avalanches, and cloudbursts; the Indo-Gangetic plains are flood-prone due to heavy monsoons; the western deserts face recurring droughts; and coastal regions are highly vulnerable to cyclones and tsunamis. Each year, millions of Indians are displaced due to disasters, creating cycles of poverty and vulnerability.

Importantly, disasters do not impact all groups equally. Vulnerable populations such as women, children, the elderly, and the economically disadvantaged often suffer the most. For example, during floods, families from lower-income groups who live in poorly constructed houses near riverbanks are more likely to lose their homes and livelihoods. Similarly, children exposed to disasters are at greater risk of developing long-term psychological issues like post-traumatic stress disorder (PTSD) and separation anxiety. While much attention is often given to the visible aspects of disasters—the destroyed buildings, flooded streets, and casualty figures—the invisible wounds are often overlooked. Survivors carry memories of fear, helplessness, and grief long after the disaster has ended. For instance, many survivors of the 2004 Indian Ocean tsunami reported being afraid of the sea for years afterward. Similarly, in Uttarakhand, survivors of the 2013 Kedarnath floods described persistent nightmares, anxiety during the monsoon season, and difficulty concentrating on work.

In this sense, natural disasters are not just physical events but psychosocial crises. They disrupt not only the material well-being of individuals and communities but also them emotional stability, sense of safety, and cultural identity. Recognizing this broader impact is essential, especially in countries like India where the risk of disasters is high and mental health services are often limited. Thus, the study of natural disasters must include both their physical consequences (infrastructure and economic damage) and their psychological consequences (trauma, grief, resilience, and community recovery). Only by acknowledging this dual impact can effective disaster management and recovery programs be designed.

FLOODS IN INDIA

Floods are among the most common natural disasters in India, particularly due to the country's dependency on monsoon rains and the presence of several major river systems. On average, floods affect about 30 million people annually, causing both economic damage and human suffering. States such as Bihar, Assam, Kerala, Punjab, and Uttarakhand are among the most flood-prone regions.

In the past decade, India has experienced multiple large-scale floods that drew international attention. The 2018 Kerala floods displaced over a million people and created a widespread mental health crisis. The 2014 Jammu and Kashmir floods left entire towns submerged, with survivors reporting nightmares, flashbacks, and severe anxiety for years after the event. In Punjab, the 2023 and 2025 floods caused agricultural devastation and highlighted the challenges of managing river systems during heavy monsoon rains. These events demonstrate that floods not only destroy infrastructure and crops but also leave long-lasting scars on communities.

The psychological consequences of floods are particularly severe in India because disaster survivors often face additional stressors such as poverty, unemployment, displacement, and lack of access to healthcare. Research from flood-affected areas like Kerala and Assam shows a strong correlation between exposure to floods and higher prevalence of PTSD and depression among survivors. Therefore, floods in India must be studied not only as environmental and social events but also as public health crises with significant psychological implications.

India has witnessed severe floods in multiple states. For instance, Punjab, situated along major rivers like the Sutlej and Beas, often experiences large-scale flooding during heavy monsoon rains. In recent years, floods in Punjab have damaged crops, displaced villagers, and disrupted the rural economy. These disasters bring hardship to thousands of farming families whose lives depend entirely on agriculture. However, while floods in Punjab affect livelihoods and agricultural stability, the floods in Uttarakhand present a different and more complex challenge. The psychological effects of floods are profound. Survivors frequently report post-traumatic stress disorder

(PTSD), depression, anxiety, and sleep disturbances. For those who witnessed deaths or lost family members, the trauma may be even more intense. Displacement into relief camps adds another layer of stress, especially when communities are uprooted from their social and cultural networks. Children and elderly people are particularly vulnerable, as they have fewer coping resources and may feel helpless in the face of uncertainty.

Research from both India and abroad confirms that natural disasters leave behind lasting psychological scars. Studies conducted after the 2013 Uttarakhand floods showed that many survivors continued to struggle with PTSD and depression years after the event. Similar findings have been reported in other flood-affected states like Bihar, Kerala, and Punjab, though the mountain context of Uttarakhand makes the challenges unique. Unlike the plains of Punjab where water eventually recedes and agricultural recovery can begin; Uttarakhand's hilly terrain makes rebuilding physically and emotionally far more difficult.

Despite this evidence, mental health remains one of the most neglected aspects of disaster management. Relief efforts typically prioritize immediate survival needs such as food, shelter, and healthcare, while emotional and psychological well-being is addressed much later, if at all. Yet without addressing trauma, communities may find it harder to fully recover, leaving survivors vulnerable to chronic distress and impaired functioning.

FLOODS IN UTTARAKHAND

Uttarakhand, often called the "Devbhumi" or "Land of the Gods," is a Himalayan state in northern India known for its spiritual heritage, pilgrimage centers, and breathtaking natural beauty. Yet, beneath this serenity lies a deep ecological fragility. The state's geographical location and topography make it highly prone to natural disasters, particularly floods, landslides, and cloudbursts. The region's steep slopes, fragile mountains, melting glaciers, and heavy monsoon rains combine to create conditions where floods are both sudden and devastating.

The Himalayan state of Uttarakhand is one of the most disaster-prone regions in India due to its fragile ecology, steep terrain, and unpredictable weather conditions. Seasonal monsoons, combined with glacial melt and cloudbursts, often trigger flash floods and landslides. The tragic Kedarnath floods of 2013 left thousands dead and missing, with entire communities swept away. Later events, such as the Chamoli disaster of 2021, again exposed the vulnerability of the state's mountain villages and pilgrimage routes. Most recently, the flash floods of 2025 have once more highlighted the destructive potential of natural forces in Uttarakhand, displacing families, destroying homes, and stranding pilgrims and tourists.

Geographical Vulnerability

Uttarakhand lies within the geologically young and unstable Himalayan range. The mountains here are prone to erosion, and rivers like the Ganga, Alaknanda, Bhagirathi, Mandakini, and Yamuna flow with unpredictable force during the monsoon season.

Additionally, the state has more than 1,500 glaciers, many of which are melting due to global warming. This increases the risk of glacial lake outburst floods (GLOFs) a phenomenon where melting glaciers cause lakes to overflow suddenly, leading to catastrophic flooding downstream. Rapid urbanization, deforestation, hydropower projects, and road construction for tourism and pilgrimage have further destabilized the region, making it more vulnerable to extreme weather events.

Major Flood Events in Uttarakhand-

1. **The 2013 Kedarnath Disaster**

In June 2013, heavy rainfall and cloudbursts triggered flash floods and landslides across Uttarakhand, particularly in the Kedarnath valley. The disaster claimed more than 5,000 lives, washed away villages, and left tens of thousands stranded. It is remembered as one of India's worst natural disasters of the 21st century. Survivors reported extreme psychological distress, with many losing entire families in the tragedy. Studies after the disaster documented widespread trauma, anxiety, and depression among survivors.

2. **The 2021 Chamoli Glacier Burst**

On February 7, 2021, a glacier in the Chamoli district broke off, causing a massive flood in the Rishiganga and Dhauliganga rivers. The flood destroyed two hydropower projects and caused over 200 casualties. Beyond the infrastructural damage, the disaster highlighted the risks of unregulated development in ecologically sensitive regions. Many survivors and rescue workers experienced trauma due to the sudden and overwhelming nature of the event.

3. **The 2025 Uttarakhand Floods**

Most recently, in July and August 2025, Uttarakhand faced devastating floods and landslides due to incessant rainfall. Flash floods submerged several districts, displacing thousands of families and damaging infrastructure. Reports described roads cut off, villages isolated, and houses buried under mud and debris. Doctors noted unusual physical symptoms among victims, such as mud and stones lodged in lungs and airways, reflecting the sheer intensity of the flooding. Mental health experts were deployed to provide psychosocial support, as survivors reported insomnia, acute stress, nightmares, and deep fear whenever it rained.

Socioeconomic and Cultural Impact

Floods in Uttarakhand have consequences that extend beyond immediate loss of life and property. The state's economy relies heavily on agriculture and tourism. Floods often destroy farmland, leaving farmers without a source of income. The Char Dham Yatra (pilgrimage to Kedarnath, Badrinath, Gangotri, and Yamunotri) is a lifeline for the state's economy, but recurring floods disrupt pilgrimage routes, affecting thousands of locals who depend on tourism. This adds financial distress to the already existing trauma of disaster survivors.

Culturally, floods leave a lasting scar on communities. Many survivors describe the disasters not only in terms of physical destruction but also as spiritual trials. Losing temples, shrines, and sacred sites has a profound psychological impact, as these places represent faith and hope. The Kedarnath temple itself, though miraculously surviving the 2013 floods, became a symbol of resilience for the community. However, the constant cycle of disaster and recovery has created a sense of vulnerability and insecurity among residents.

Psychological Consequences of Uttarakhand Floods

The trauma caused by repeated floods in Uttarakhand is deep and multi-layered. Survivors often experience:

- **Acute stress reactions** such as fear, shock, and confusion immediately after the event.
- **Long-term trauma** including PTSD, depression, phobias (especially fear of rain or mountains), and survivor's guilt.
- **Community trauma** where entire groups share a sense of grief and collective loss.
- **Disrupted coping systems**, as displacement separates families and destroys social support networks.

Studies conducted after the 2013 disaster (Kar & Bastia, 2015; Math et al., 2015) documented significant levels of PTSD and psychiatric disorders in survivors. Children and adolescents were particularly vulnerable, displaying separation anxiety, nightmares, and behavioral issues (NIMHANS, 2015). In the aftermath of the 2025 floods, media reports and health workers once again highlighted the urgent need for mental health interventions in disaster relief programs.

The 2025 floods in Uttarakhand provide an urgent context to revisit these issues. Thousands of people have been displaced, villages destroyed, and communities fractured. There is limited research capturing the current psychological impact on survivors, especially using standardized methods alongside personal narratives. This study therefore seeks to bridge that gap by focusing on trauma in Uttarakhand flood survivors, while acknowledging the broader flood-related challenges in states like Punjab. By combining surveys and open-ended interviews, it aims to document both the measurable prevalence of trauma and the lived human experiences of survivors.

The significance of studying the Uttarakhand floods lies in the recurring nature of such disasters. Communities in the region live with the constant fear of another flood or landslide. This creates a cycle of trauma, recovery, and re-traumatization. Understanding the psychological impact of these floods is critical for designing long-term support systems and improving disaster preparedness in vulnerable regions.

PSYCHOLOGICAL IMPACT OF FLOODS AND TRAUMA-

Floods are sudden and overwhelming events that can disrupt every aspect of life. For survivors, the psychological impact can be just as damaging as the physical destruction. In the immediate aftermath, many experience shock, disbelief, fear, and confusion. These acute stress reactions may later develop into long-term mental health conditions such as PTSD, depression, or anxiety disorders. Survivors often relive the traumatic event through nightmares, intrusive memories, or flashbacks, making it difficult to move on with daily life.

Indian studies provide strong evidence of the mental health consequences of floods. Kar and Bastia (2015) reported significant PTSD symptoms among survivors of the Uttarakhand disaster. Math et al. (2015) also found high levels of psychiatric disorders, including depression and substance abuse, in affected populations. Research from Kerala's 2018 floods highlighted that many survivors required long-term counseling and community-based interventions to rebuild their mental well-being. Flood-related trauma is not limited to individuals. Communities as a whole may experience what is known as collective trauma—a shared sense of grief, loss, and insecurity. Displacement, unemployment, and disruption of social support networks worsen this situation. In India, where mental health stigma remains strong, many survivors may not seek formal counseling, instead relying on family and community support. While these traditional coping systems provide some relief, they are often insufficient for addressing severe psychological disorders.

Community and Social Dimensions of Trauma

Trauma in disaster-affected populations is not only an individual issue but also a community concern. When entire villages are washed away, families are separated, and livelihoods are lost, the social fabric of a community is torn apart. Survivors face both personal grief and collective struggles. In Uttarakhand, many families rely on agriculture and tourism for income, both of which are disrupted by floods. The resulting unemployment and poverty add to psychological stress. However, Indian communities also display remarkable resilience. Cultural and spiritual practices, such as prayer, rituals, and collective mourning, often serve as coping mechanisms. Volunteers, NGOs, and religious organizations frequently provide immediate support, creating a sense of solidarity. Yet, this resilience does not eliminate the need for professional mental health care. Survivors may outwardly appear strong but silently carry deep trauma. Addressing trauma therefore requires a balance between community-based approaches and formal psychological interventions.

2. REVIEW OF LITERATURE

Borah, G., and Saikia, N. (2025). Effect of 'losses and other secondary stressors on the association between flooding and psychological health outcomes: A cross-sectional study in Bongaigaon District, India. The study aimed to examine the prevalence and risk factors of PTSD, anxiety, depression, and their comorbidity among flood-affected populations compared to non-flooded groups. Using a cross-sectional design, 866 participants (450 from flood- affected and 416 from non-flooded households) were surveyed six to seven months after the August 2021 floods. Standardized tools such as PHQ-4 for anxiety and depression and PCL-5 for PTSD were administered. Results showed that flood exposure was significantly associated with adverse psychological outcomes,

with flood victims having four times higher risk of PTSD, five times higher risk of anxiety, three times higher risk of depression, and 21 times higher risk of comorbid conditions compared to non-flooded participants. Secondary stressors such as longer duration and deeper floodwater inside homes, house damage, lower education, chronic illness, and female gender further increased vulnerability. The study concluded that flood-related losses intensify mental health burdens, emphasizing the urgent need for psychosocial interventions, disaster preparedness, and targeted support in resource- constrained settings.

Rawat, A. S., Naithani, V. D., and Semwal, M. M. (2024). After disaster strikes: A comprehensive analysis of post-disaster impacts in Rudraprayag District of Uttarakhand. This study aimed to analyze the socio-economic, psychological, and political consequences of recurring natural disasters in Rudraprayag, one of the most disaster-prone districts in Uttarakhand. Using both qualitative and quantitative approaches, data were collected from affected communities, official records, and interviews to assess post-disaster livelihood changes, migration patterns, and well-being outcomes. Findings revealed that disasters such as the Kedarnath floods of 2013 and recurrent landslides have caused long-term economic disruptions, loss of agricultural land, displacement of families, and significant psychological impacts, particularly among women who lost male family members and became vulnerable to exploitation. The study also highlighted the role of migration as both a coping strategy and a stressor, with many households facing entrapment due to lack of resources. Politically, the findings pointed toward gaps in disaster management policies and the urgent need for sustainable development strategies. The authors concluded that disaster management must integrate technological interventions, sustainable infrastructure, and community-based approaches to build resilience in fragile Himalayan ecosystems.

Yadav, P., & Kumar, S. (2023). Causes, impacts & mitigation measures for flash floods in Indian Himalayan region examined the increasing vulnerability of the Indian Himalayan Region, with a specific focus on Uttarakhand, to flash floods driven by climatic, geological, and anthropogenic factors. Using a descriptive and case study–based methodology, the authors reviewed past disasters such as the Kedarnath flood of 2013 and the Chamoli flood of 2021 to highlight the devastating impacts on human life, infrastructure, and livelihoods. Their findings indicated that while natural triggers like glacial lake outburst floods (GLOFs) and cloudbursts remain critical, human activities such as deforestation, hydropower development, and unplanned tourism significantly exacerbate disaster risks. The study concluded that structural measures (e.g., embankments, reservoirs) and non-structural measures (e.g., early warning systems, community participation, and flood plain zoning) must be integrated with climate change adaptation strategies for sustainable disaster management in the Himalayan region.

Devnarayan and Ajmera (2022), in their study titled Effectiveness of Virtual Teaching Tool to Minimize Post-Traumatic Stress Disorder among Adolescents in Flood-Prone Areas: A Quasi-Experimental Study, aimed to evaluate the impact of a virtual teaching tool (VTT) on reducing PTSD symptoms among adolescents in flood-affected regions of Uttarakhand. The study adopted a quasi- experimental design and purposively recruited 400 adolescents aged 10–19 years from Rudraprayag and Uttarkashi districts. Data were collected using the PTSD Checklist for DSM-5 (PCL-5) along with socio-demographic details, and the intervention involved administering a VTT comprising yoga, squat exercises, lifestyle guidance, stress minimization, and environmental care practices. Results indicated a significant reduction in PTSD scores from pre-test to post- test, with 17% of participants initially scoring above the threshold for PTSD compared to only 2% after the intervention. The study concluded that VTT is an effective non-pharmacological strategy for minimizing PTSD among adolescents in flood-prone areas, highlighting the importance of innovative, accessible, and community-based interventions in post-disaster mental health care.

Joy, Ramachandran, and George (2021), in their study titled Learned Helplessness, Psychological Wellbeing, and Proenvironment Care Behavior among Victims of Frequent Floods in Kerala, aimed to examine whether repeated exposure to floods leads to learned helplessness and decreased psychological wellbeing, and whether it influences proenvironment care behavior among affected populations. The study involved 374 heads of families in Kerala, categorized into three groups: once flood-affected (OFA), twice flood-

affected (TFA), and never flood-affected (NFA), selected through quota sampling. Key variables were measured using the Learned Helplessness Scale, Psychological Wellbeing Scale, and Environmental Behavior Scale, and data were analyzed using the Kruskal–Wallis test. The findings revealed that learned helplessness was highest among the TFA group, while psychological wellbeing and proenvironment care behavior were higher among the OFA group compared to the others. The NFA group showed higher learned helplessness and lower wellbeing compared to the OFA and TFA groups. The study concluded that moderate exposure to risk may enhance psychological wellbeing, whereas too much or too little risk can be detrimental, underscoring the need for targeted psychological interventions and support for communities frequently exposed to natural disasters.

Golitaleb, Mazaheri, Bonyadi, and Sahebi (2022), in their study titled Prevalence of Post-traumatic Stress Disorder After Flood: A Systematic Review and Meta-Analysis, aimed to investigate the prevalence of post-traumatic stress disorder (PTSD) among flood survivors. The authors conducted a systematic review and meta-analysis by searching multiple databases, including PubMed and Scopus, for studies published between 2015 and 2021 that reported PTSD prevalence in flood-affected populations. Using a random effects model and assessing study quality with the AXIS tool, they analyzed data from 23 cross-sectional studies. The

results showed that the overall prevalence of PTSD among flood survivors was 29.48%, with high heterogeneity across studies, and concluded that timely interventions and support are essential to mitigate mental health consequences in disaster- affected populations.

Parel and Balamurugan (2021), in their study titled Psychological Issues of People affected with Flood: A Systematic Review, aimed to determine the psychological impact of floods on affected populations by systematically reviewing quantitative studies conducted globally between 2006 and 2020. The authors searched multiple databases including MEDLINE, PsycINFO, PubMed, EMBASE, CINAHL, The British Nursing Index, and the Cochrane Central Register, and included 15 studies conducted in six countries such as China, the United Kingdom, India, Australia, and Pakistan. The review synthesized findings from a total of 44,575 participants, using diverse tools like the DSM IV criteria, Harvard Trauma Questionnaire, Hopkins Symptom Checklist, PTSD checklists, and other diagnostic scales. The results revealed that post-traumatic stress disorder (PTSD) was the most prevalent condition (80%), followed by anxiety (67%) and depression (60%) among flood survivors. The study concluded that floods have a significant and sustained psychological impact across diverse populations, emphasizing the need for initial psychological interventions and targeted support, particularly for vulnerable groups such as infants, the elderly, and pregnant women.

Teijlingen (2019), in their study titled Post-Traumatic Stress Disorder among the Flood Affected Population in Indian Subcontinent, aimed to explore the prevalence and risk factors of post-traumatic stress disorder (PTSD) among individuals affected by floods in India and neighboring regions. The authors conducted a literature-based analysis highlighting existing research from various natural disasters, such as cyclones, tsunamis, and earthquakes, and reviewed epidemiological data to assess psychological impacts. They emphasized that factors such as age, gender, socioeconomic status, and pre- existing mental health issues influence PTSD vulnerability. The study concluded that PTSD prevalence varies significantly depending on the severity of the disaster, social support systems, and cultural factors, and stressed the urgent need for population-based studies and tailored psychosocial interventions to address mental health challenges in flood-affected communities.

Bijalwan (2016), in his study titled Understanding status of Post-traumatic stress disorder case in the selected disaster affected area in Uttarakhand, aimed to assess the prevalence and severity of post-traumatic stress disorder (PTSD) and related psychological symptoms among disaster-affected populations in selected districts and blocks of Uttarakhand. The researcher selected districts such as Dehradun and Tehri, and blocks including Chamba, Chakrata, and Jonpur, where PTSD programs had been implemented, and conducted a survey using a structured questionnaire pre-tested and simplified as per respondents' feedback. Data collection was carried out during PTSD outreach clinics with randomly selected participants, and analysis was performed using SPSS. The findings indicated that between 50% and 90% of the population had been exposed to traumatic events, but most did not develop PTSD. Among 131 respondents, 87% showed no signs of acute or post- traumatic stress disorders, while small proportions exhibited mild (6%), severe (4.9%), or full PTSD symptoms (2.1%). The study concluded that although trauma exposure is widespread, not all individuals develop PTSD, and factors such as early symptom severity and underlying vulnerabilities influence risk, underscoring the need for early psychiatric support and mental health services in disaster-prone regions.

Yadav (2016), in her chapter Gender Differentiated Impact of 2013 Flash Flood on Health and Livelihood in Rudraprayag, investigated the specific vulnerabilities and coping strategies of women in disaster-affected areas of Uttarakhand. Using a mixed-method design combining household surveys and ethnographic techniques, the study examined 46 women respondents across two villages severely affected by the 2013 floods. Findings revealed that women faced disproportionate challenges, including food insecurity, livelihood disruption, and compromised health outcomes. About 78.3% reported
reducing meals to cope with scarcity, 74% faced hygiene and sanitation problems, and over half (54.3%) experienced post-disaster stress. The disaster also heightened risks of domestic violence, reproductive health complications, and increased workloads, underscoring the compounded burden women carried during recovery. The study concluded that gender plays a crucial role in shaping disaster impacts, and highlighted the need for gender-sensitive policies, improved health access, and long-term livelihood support to strengthen women's resilience in mountainous disaster-prone regions.

Chandran, Roopesh, Devar, Channaveerachari, Joshi, Paramita, Somanathan, Kasi, and Badamath (2015), in their study titled Psychosocial impact of the Uttarakhand flood disaster on elderly survivors, aimed to examine the psychosocial and psychological effects of the Uttarakhand flood on elderly individuals during the first three months following the disaster. The researchers selected a sample of 62 elderly people aged 60 years and above from four flood-affected districts in Uttarakhand and assessed them for medical and psychiatric morbidity using structured interviews and ICD–10 criteria. The study investigated various domains including loss of livelihood, property, disturbed sleep, flashbacks, restlessness, and vague bodily complaints. The findings revealed a high prevalence of physical illness exacerbation, significant socio-economic challenges, and psychological symptoms such as sleep disturbances, recurrent flashbacks, and concerns about the future. The study concluded that elderly survivors face substantial physical and psychosocial burdens after a disaster and highlighted the need for targeted disaster preparedness and mental health interventions. Srivastava, et al. (2015), in their study titled Posttraumatic stress disorder symptoms in the population of Uttarkashi, Tehri, and Pauri Garhwal India in

reference to Uttarakhand flood – June 2013, aimed to assess the prevalence and severity of posttraumatic stress disorder (PTSD) symptoms among populations affected by the 2013 Uttarakhand floods, one year after the disaster. The researchers conducted a cross-sectional, community-based survey involving 1,651 participants (mean age ~41 years) from the districts of Uttarkashi, Tehri, and Pauri Garhwal. They applied both the PTSD Checklist – Civilian Version (PCL-C) and DSM-IV-TR diagnostic criteria to identify PTSD symptoms, with data collection carried out between July and October 2014. The findings revealed that 70.93% of the participants met the PTSD symptom criteria when both tools were applied together, with women reporting significantly higher symptoms than men across all districts. The study also highlighted that PTSD symptoms persisted even one year after the floods and were prevalent among individuals with both high and moderate levels of disaster exposure. The authors concluded that PTSD is a chronic condition in post-disaster settings, that gender differences influence vulnerability, and that mental health interventions must target all affected groups while being integrated into disaster management policies to ensure long-term psychological care.

Sharma, S., Sharma, S., Chandra, M., Mina, S., Balhara, Y. P. S., and Verma, R. (2015). Psychological well-being in primary survivors of Uttarakhand disaster in India. This study aimed to evaluate the acute psychological impact and risk factors among primary survivors of the 2013 Uttarakhand floods. Conducted one month after the disaster, the cross-sectional study included 86 participants directly exposed to the floods. Assessment instruments used were the Impact of Event Scale-Revised (IES-R), Depression Anxiety Stress Scale (DASS-21), and Life Orientation Test-Revised (LOT-R), administered through structured interviews due to low literacy levels in the population. Results revealed that 58% of survivors scored above the cut-off for PTSD, while severe levels of depression, anxiety, and stress were present in 45.3%, 57%, and 44.2% of subjects respectively. Loss of a family member and existing physical illness were strongly associated with higher psychopathology, while LOT-R scores showed negative correlation with PTSD and distress levels, indicating pessimistic outlooks. The study concluded that psychological morbidity in the immediate post-disaster period is high, with increasing age, low education, bereavement, and pessimism emerging as significant risk factors.

Math, S. B., Nirmala, M. C., Moirangthem, S., and Kumar, N. C. (2015). Disaster management: Mental health perspective. This paper aimed to provide a comprehensive overview of disaster management with a focus on mental health consequences and interventions. It utilized a narrative review methodology, compiling evidence from past disasters in India and globally to highlight the psychiatric morbidity that follows natural and man-made disasters. The review emphasized that disasters lead to high prevalence rates of PTSD, depression, anxiety disorders, and substance use problems, with children, women, and the elderly being particularly vulnerable. It further outlined the importance of preparedness, psychosocial first aid, community- based interventions, and long-term rehabilitation strategies for effective mental health management. The authors concluded that integrating mental health into disaster preparedness and response policies is crucial, calling for training of professionals, inter-sectoral coordination, and culturally sensitive approaches to reduce psychological morbidity post-disaster.

Abdullah, S., Sipon, S., Nik Nazli, N. N. N., and Puwasa, N. H. (2015). The relationship between stress and social support among flood victims. The aim of this study was to examine the relationship between depression, anxiety, stress, and social support among flood victims in Johor, West Malaysia. A cross-sectional survey was conducted on 300 respondents selected from the districts of Mersing and Segamat, using the Depression, Anxiety, and Stress Scale
(DASS-42) and a modified Social Support Inventory, both demonstrating high reliability. The results showed significant positive correlations among depression, anxiety, and stress, while social support was strongly related to these psychological factors, indicating its role as a protective buffer. The study concluded that social support is essential in reducing psychological distress among flood victims and highlighted the need for community and government- based support systems to aid in post-disaster recovery.

Chaturvedi (2015), in the article The Typology of Disasters in Contemporary India: A Critique of the Disaster Management Authority, critically analyzed the disaster management framework in India with a focus on recurrent natural disasters, including floods. Using a qualitative approach rooted in policy analysis, the study examined the institutional structures, classifications, and responses of the National Disaster Management Authority (NDMA). The findings revealed gaps in preparedness, coordination, and mitigation strategies, particularly in addressing vulnerable populations in disaster-prone areas such as the Himalayan region. The critique highlighted that disaster management policies often remain reactive rather than preventive, with insufficient integration of local community knowledge and gender-sensitive approaches. The study concluded that a more holistic and inclusive disaster management system is essential, emphasizing resilience-building, decentralized governance, and proactive interventions to minimize the socio-psychological and economic impacts of disasters.

3. METHODOLOGY

Research Approach

The present study adopted a qualitative research approach to explore the psychological
trauma and community-level impact of floods among survivors in Uttarakhand. Qualitative methodology was considered most appropriate as trauma is a deeply subjective experience that cannot be fully understood through quantitative measures alone. This approach allowed for an in-depth exploration of survivors' lived experiences, emotional responses, coping strategies, and meanings attached to the disaster.

Research Design
An exploratory and descriptive research design was used in the study. Since limited contemporary research has documented the psychological impact of the recent Uttarakhand floods from the survivors' perspectives, an exploratory design helped identify key patterns of trauma and community response. The descriptive component enabled detailed documentation of emotional, social, and psychological consequences following flood exposure.

Sample Size
The sample consisted of 10 adult flood survivors who were directly affected by the Uttarakhand floods.

Sampling Method
Purposive sampling was used to select participants who met the inclusion criteria. This technique was chosen to ensure that participants had first-hand experience of the flood disaster and could meaningfully contribute to the research objectives.

Inclusion Criteria
- Adults aged 18 years and above
- Individuals who directly experienced flood-related loss (e.g., damage to home, livelihood, displacement, injury, or death of family members)
- Residents of flood-affected areas of Uttarakhand
- Willingness to participate and provide informed consent

Exclusion Criteria
- Individuals with severe cognitive impairment or active psychosis
- Participants unwilling or emotionally unable to continue the interview

The sample included both men and women from diverse occupational and socio-economic backgrounds, such as farmers, daily wage workers, homemakers, shopkeepers, and individuals dependent on tourism-related livelihoods.

Data Collection Method- Research Tool
Data were collected using a semi-structured interview guide developed by the researcher
based on existing literature on disaster trauma and psychosocial impact. The interview guide included open-ended questions focusing on:
- Personal experiences during the flood
- Emotional and psychological reactions
- Losses faced (personal, economic, social)
- Changes in daily life after the disaster
- Coping strategies and sources of support
- Perceived needs for psychological or community support

The semi-structured format allowed flexibility, enabling participants to express their experiences freely while ensuring consistency across interviews.

Data Collection Procedure
Participants were approached through local community contacts and non-governmental organizations (NGOs) working in flood-affected areas. After explaining the purpose of the study, informed consent was obtained from each participant.
Interviews were conducted face-to-face, lasting approximately 40–60 minutes. Interviews were carried out in Hindi or the local dialect, depending on participant preference, to ensure comfort and clarity of expression. With participants' permission, interviews were audio- recorded. In cases where recording was not permitted, detailed field notes were taken.
The researcher maintained a supportive and empathetic stance throughout the interviews to minimize distress and encourage open sharing.

Data Analysis
The collected data were analyzed using thematic analysis, following the framework proposed by Braun and Clarke (2006). The analysis involved the following steps:
1. **Familiarization with data** – Repeated reading of interview transcripts to gain an overall understanding.
2. **Initial coding** – Meaningful segments of data were coded manually.
3. **Searching for themes** – Related codes were grouped to form preliminary themes.
4. **Reviewing themes –** Themes were reviewed for coherence and relevance to the research objectives.
5. **Defining and naming themes** – Final themes and subthemes were clearly defined.
6 **Producing the report** – Themes were supported with verbatim excerpts to maintain authenticity.

Manual coding was used to ensure close engagement with the data and contextual sensitivity.

Trustworthiness and Rigor
To enhance the credibility and rigor of the study, the following measures were adopted:
• **Credibility:** Use of verbatim quotes to support themes
• **Dependability:** Clear documentation of research procedures
• **Confirmability**: Reflexive notes were maintained to minimise researcher bias
• **Transferability:** Rich descriptions of context and participants were provided to allow readers to assess applicability to similar settings

Ethical Considerations
Ethical principles were strictly followed throughout the research process:
• **Informed Consent:** Participants were informed about the purpose, procedures, and voluntary nature of the study.
• **Confidentiality:** Personal identifiers were removed, and participants were assigned codes (P1–P10).
• **Emotional Safety:** Interviews were conducted sensitively, and participants were allowed to pause or withdraw at any point.

• **Referral Support:** Information about local mental health or support services was provided if participants experienced distress.
• **Cultural Sensitivity:** Local customs, language, and beliefs were respected throughout the study.

Statistical Tools
As the study employed a qualitative design, statistical analysis was not applied. Instead,
Thematic analysis was used as the primary analytical framework to interpret narrative data.

4. RESULTS
The study included 10 flood survivors from flood-affected districts of Uttarakhand, selected through purposive sampling. Participants ranged in age from 21 to 60 years, including 6 males and 4 females. All participants had directly experienced flood-related losses such as damage to homes, loss of livelihood, displacement, or death of family members. Interviews were conducted in Hindi and local dialects, later translated into English for analysis.
Participants' identities were anonymized using codes (P1–P10).

THEMATIC ANALYSIS
Thematic analysis of interview transcripts revealed five major themes reflecting the psychological and community impact of the Uttarakhand floods.

Theme 1: Experiences of Acute Fear, Helplessness, and Shock
Almost all participants described intense fear and helplessness during the floods. The
suddenness of the event left them with little time to react, creating feelings of shock and loss of control.
Participants reported fear of death, confusion, and inability to make decisions during the disaster.
*"*The water came so fast that we didn't understand what was happening. I thought this was my last day." (P3)
"There was no warning. One moment everything was normal, the next moment our house was gone." (P7)
This acute fear mirrors trauma responses commonly seen in disaster survivors and reflects the overwhelming nature of flash floods in mountainous regions.

Theme 2: Persistent Trauma Symptoms and Psychological Distress
Many participants reported long-term psychological effects, even months after the floods. Common symptoms included nightmares, intrusive memories, sleep disturbances, anxiety, and fear during rainfall.
*"*Even now, when it rains at night, I cannot sleep. I feel the same fear again." (P1) "I see the flood in my dreams. I wake up sweating and scared." (P9)
Some participants also expressed emotional numbness, sadness, and loss of interest in daily activities, indicating symptoms associated with PTSD and depression.

Theme 3: Loss, Grief, and Survivor's Guilt
Participants who lost family members, neighbours, or homes expressed deep grief and, in some cases, survivor's guilt.
*"*My neighbour died, but I survived. Sometimes I ask myself why I was saved." (P5) "Everything we built in our lifetime was destroyed in one night." (P2)
The grief was not limited to human loss but also included loss of land, livestock, and cultural spaces such as temples and ancestral homes, which held emotional and spiritual significance.

Theme 4: Disruption of Community Life and Social Support
Floods severely disrupted community structures. Displacement to relief camps led to loss of privacy, dignity, and social stability. Many participants spoke about weakened community bonds and prolonged uncertainty.
*"*Our whole village was scattered. We are together, but not really connected like before." (P6)
However, some participants also highlighted community solidarity, mutual help, and support from local volunteers and NGOs.
"People helped each other. Without that, survival was not possible." (P4)
This reflects the dual nature of disasters—both social breakdown and collective resilience.

Theme 5: Coping Mechanisms, Faith, and Resilience
Despite significant trauma, participants demonstrated resilience through cultural, spiritual, and social coping strategies. Faith in God, prayer, and acceptance were commonly
mentioned.
*"*We believe God tested us. Prayer gave us strength to survive." (P8)
Others relied on family support, sharing experiences, and hope for rebuilding life. "Talking to others who faced the same thing helped me feel less alone." (P10)
While these coping mechanisms provided emotional relief, several participants expressed the need for professional mental health support, which was either unavailable or inaccessible.

SUMMARY OF THEMES

Theme	Description
Acute fear and shock	Immediate emotional response during floods
Trauma symptoms	PTSD-like symptoms, anxiety, nightmares
Loss and grief	Death, livelihood loss, survivor's guilt
Community disruption	Displacement, broken social networks
Coping and resilience	Faith, social support, acceptance

5. DISCUSSION
The present study explored the psychological trauma and community-level impact of floods among survivors in Uttarakhand using a qualitative approach. The findings highlight that flood disasters in this region result in profound and long-lasting psychological distress, affecting not only individuals but also the collective social fabric of communities.

One of the central findings of the study was the experience of intense fear, helplessness, and shock during the disaster, which participants described as overwhelming and life-threatening. This aligns with trauma theories that identify exposure to sudden, uncontrollable events as a major risk factor for post-traumatic stress reactions. Similar findings were reported in studies conducted after the 2013 Uttarakhand floods, where survivors experienced acute stress reactions due to the sudden onset and severity of the disaster (Kar & Bastia, 2015).

Another significant theme was the presence of persistent trauma symptoms, including nightmares, intrusive memories, anxiety, and fear triggered by rainfall. These symptoms are consistent with core features of post-traumatic stress disorder (PTSD) as described in the DSM-5-TR. Previous research from flood-affected regions in India, such as Kerala and Assam, has also reported long-term psychological distress among survivors, particularly heightened anxiety during monsoon seasons (Math et al., 2015). The recurrence of floods in Uttarakhand may further intensify these symptoms by creating a constant sense of threat and re-traumatization. The study also revealed deep experiences of loss and grief, extending beyond material damage to include loss of loved ones, livelihoods, and a sense of stability. For many participants, the destruction of homes and sources of income resulted in feelings of hopelessness and uncertainty about the future. These findings support earlier research indicating that disaster-related trauma is closely linked with secondary stressors such as displacement, unemployment, and financial insecurity, which compound psychological distress over time.

At the community level, the findings highlighted collective trauma and disruption of social structures. Displacement and fragmentation of villages weakened traditional support systems that are central to coping in Indian rural communities. However, alongside this breakdown, participants also described strong instances of mutual support, shared suffering, and solidarity. This dual experience reflects the complex nature of disaster impact, where trauma and resilience coexist. Community bonding and shared cultural practices, particularly faith and spiritual beliefs, emerged as important protective factors, echoing findings from previous Indian disaster studies.

Despite the presence of informal coping mechanisms, participants consistently expressed the absence of structured mental health services in post-disaster settings. Mental health support, when available, was often limited, short-term, or focused primarily on physical survival needs. This gap highlights the need for integrating mental health and psychosocial support into disaster response frameworks, especially in disaster-prone and ecologically fragile regions like Uttarakhand.

6. CONCLUSION

The present study provides an in-depth understanding of the psychological and community impact of flood disasters in Uttarakhand. The findings demonstrate that floods lead to severe emotional distress, long-term trauma symptoms, and disruption of social and community life among survivors. Trauma was not experienced solely at an individual level but was deeply embedded within collective experiences of loss, displacement, and uncertainty.

At the same time, the study highlights the resilience of affected communities, with survivors drawing strength from faith, family bonds, and mutual support. However, reliance on informal coping mechanisms alone is insufficient to address the complex psychological consequences of repeated disasters. The lack of accessible and sustained mental health services remains a critical gap in disaster management efforts.

The study underscores the importance of adopting trauma-informed, culturally sensitive, and community-based mental health interventions as part of disaster preparedness and recovery programs. Policymakers, mental health professionals, and disaster management authorities must recognize psychological trauma as a core component of disaster impact, rather than a secondary concern. Integrating mental health services into relief and rehabilitation efforts can significantly contribute to long-term recovery, resilience, and well-being of flood-affected communities in Uttarakhand.

While the study is limited by a small sample size and qualitative design, it provides valuable insights into the lived experiences of flood survivors and highlights areas for future research. Further studies using larger samples and mixed-method approaches are recommended to strengthen evidence-based disaster mental health interventions in India.

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