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# RISK PERCEPTION AND EMOTIONAL REGULATION IN FLOOD-PRONE REGIONS

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**Abstract**

Areas that are at risk of flooding face an increasing and constant risk not only to their infrastructure but also to the mental and emotional state of the residents. This research looks at how people manage their emotions and perceive risks of flooding in the context of such regions. This paper focuses on the interplay of risk perception and emotional regulation to demonstrate important psychological and sociocultural determinants that shape actions during floods and in their aftermath. The results focus on the need to provide community education and also stress the need to provide integrated psychological assistance in preparation for the disaster.

**Keywords**

Flood-prone regions, risk perception, emotional regulation, disaster preparedness, psychological resilience, coping strategies, and flood anxiety.

## I. INTRODUCTION

### 1.1. Overview of Regions Prone to Flooding

Flood-prone areas are geographical regions that are susceptible to seasonal or unseasonal flooding due to specific factors like topography, nearness to water bodies, poor drainage systems, or flooding caused by climate change (Rahim, 2024). Such areas are more prone to floods in South Asia, Southeast Asia, Sub-Saharan Africa, and certain regions of Latin America (Lukić, 2023). There are recurring patterns of destruction and recovery of critical infrastructure, causing severe psychosocial stress. Research indicates that permanently living in regions prone to frequent natural disasters trains people to become either desensitized or overly fearful (Saxena& Menon, 2024).

### 1.2. Why It Is Important to Analyze Psychological Responses

Culturally based perceptions combined with psychological components usually result in a shortage of community preparedness, even though flood risk maps and structural mitigation approaches have been mapped out and put in place (Chia-Hui et al., 2025). These psychological dimensions can be defined as perception regarding the community's risk (Shetty& Kapoor, 2024). Psychological dimensions can either be proactive community resilience or community panic. Ineffective psychological coping can result in trauma, anxiety, and irrational decisions that greatly increase vulnerability (Huy, 2018).

### 1.3. Objectives of the Research

This research investigates two interrelated psychological components, risk perception alongside emotional regulation (Vasilievich et al., 2025). In particular, the research objectives include determining the factors that shape the residents' perception of flood risk (Javaherian et al., 2017).

•Dealing with emotions while experiencing a flood and the coping mechanisms employed;

•How perception and regulation work together and how this interplay affects actions;

•Goals about flood-prone areas that focus on disaster readiness and policy innovation.

## II. LITERATURE SURVEY

### 2.1. Factors Influencing Risk Perception

Personal history shapes risk perception (John&Ghate, 2024). In flood-prone regions, factors such as previous floods, proximity to rivers, trust in government guidance, media exposure, and even earning potential in related jobs shape perception. (Pillai & Bhatia, 2024)highlights risk perception as critically emotional, driven by fear and dread, and shaped by prior experience. (Verma & Pillai,2023). also emphasizes that trust in social authorities alongside social narratives shapes risk perception on a broad range, changing how such dangers are perceived and internalized under different contexts.

### 2.2. Management of Feelings and Disaster Psychology

Emotional regulation, as a specific concept of coping with stress, describes the ability of someone to adjust and modify emotions and feelings to specific events or situations. Gross and John (2003) proposed two dominant coping strategies: cognitive reappraisal and expressive suppression. Acute cleaning stress, depression, and anxiety are commonplace in floods, especially with loss or uncertainty (Chopra& Patil, 2025). Mental health regulation involves proactive strategies aimed at aiding psychological well-being. Poor proactive strategies lead to mental health problems. Strategies that help automatically aid recovery and build resilience are considered positive (Bonanno et al., 2010).

### 2.3. Interlinks, Gaps, and Interdependencies

While the literature covers flood vulnerability and emergency behavior extensively, there is a noticeable lack of focus on the interplay between emotional regulation and risk perception (Yadav et al., 2025).

As an example, overstated risks can cause an individual to become emotionally overwhelmed, while emotional numbness can lead to an underestimation of risk (Khazayi& Lotfi, 2017). There seems to be a lack of research that focuses on combining psychological factors with dedicated emergency-preparedness activities, which is something this research aims to fill (Correa et al. 2025).

## III. METHODOLOGY

### 3.1. Research Design

The current study used a mixed-methods approach in order to quantitatively and qualitatively examine the psychological factors associated with flood preparedness and response. This approach was selected to achieve both contextual depth and numerical rigor. As part of the quantitative component, participants' risk perception and emotional regulation were measured through surveys employing validated psychological instruments, yielding quantifiable data for correlation and trend analysis throughout the sample population. Concurrently, the qualitative component consisted of in-depth, semi-structured interviews in which participants narrated their personal experiences with flooding, the associated emotional difficulties, coping mechanisms, and decisions. The combination of both qualitative and quantitative methods allowed for data triangulation, which enhanced the validity and interpretability of the results. This approach is especially effective in behavioral disaster research, where human responses to disasters are driven by both quantifiable factors and personal stories.

### 3.2. Sampling and Participants

Participants were sourced from three districts classified as high-risk flood zones by the National Disaster Management Authority (NDMA) based on their low elevation, proximity to rivers, and history of annual flooding. A stratified random sampling method was employed to gather 300 adult participants for the quantitative component. Stratification included diversity in gender, socioeconomic standing, and flood-experience to improve representativeness and reduce selection bias. The final sample consisted of urban and peri-urban slum dwellers and rural residents.

For the qualitative component, 30 in-depth interviews were carried out with a purposefully chosen subset. This subset consisted of multi-flood experience contacts as well as local informants that included community leaders, active bystanders, educators, and public health officials. These interviews were critical to the understanding of emotional

and cultural attitudes and readiness behaviors during flood events. Ethical approval was granted and consent was obtained from all participants.

**3.3. Instruments Used**

To maintain methodological rigor, two established psychometric tools were adapted for the study context:

**3.3.1 Risk Perception Scale (RPS):**

Customizing the RPS to incorporate 10 Likert-scale items on the perceived severity, likelihood, personal risk, and potential impacts of flooding was created. It was then tested by Wachinger et al. (2013). Each of the flooding items was scored from 1 (strongly disagree) to 5 (strongly agree). Trust (in early warning systems and government actions) was measured with sub-items. Contents of the items were pilot tested with small groups for context.

**3.3.2 Emotion Regulation Questionnaire (ERQ):**

A self-report measure for the study of emotional management in the course of stressful situations was created by Gross and John in 2003. Such self-report ERQ is one of the most widely used tools for emotional regulation. It consists of two subscales:

Cognitive Reappraisal (6 items): Measures reframing of stress by the subject for the reduction of emotional impact.

Expressive Suppression (4 items): Measures the subject's control over the expression of emotion.

All items were scored using a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). The ERQ has demonstrated high internal consistency in prior works in the field of disaster psychology and was translated into the local language for accessibility.

Both instruments were applied in the vernacular language with the help of trained enumerators who assisted to lower literacy respondents, and data was later converted to digital form for further examination.

**3.4. Flow of Methodology**

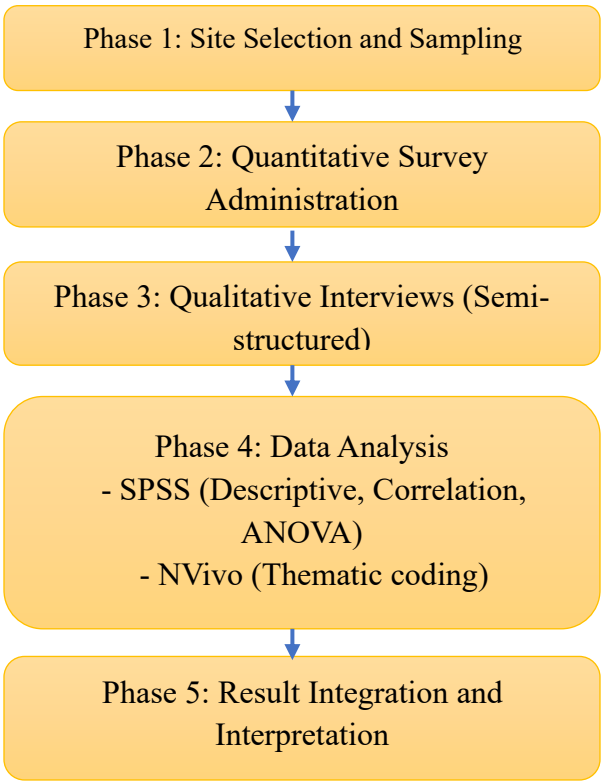


**Figure 1: Process of Mixed-Method Study**

As shown in Figure 1, this is a mixed-method study and has been carried out in a sequence. The first part is choosing the districts that are prone to flooding as well as recruiting participants from those areas, which is done using stratified random sampling. The second part is the distribution of standardized surveys aimed to measure as well as gauging the level of emotional control. At the same time, semi-structured interviews were done to provide a further qualitative

dimension to the research. The third stage is the interpretation of the survey data, which was done using SPSS for the statistical part and using NVivo for the thematic analysis of the interview transcripts. In the last stage, the quantitative and qualitative findings were merged to provide a more holistic interpretation of the psycho-analytic patterns which govern behaviors in the regions prone to flooding.

## IV. RESULTS

### 4.1. Demographic Overview of Participants

**Table 1: Demographic Profile of Respondents**

| Variable | Frequency | Percentage |
|---|---|---|
| Gender (Male/Female) | 162/138 | 54% / 46% |
| Age (Mean ± SD) | - | 39 ± 11 |
| Region | A: 102, B: 98, C: 100 | - |
| Flood Experience (Yes) | 265 | 88.3% |

The demographic data of the study participants has been summarized in Table 1. Among 300 respondents, 54% identified as male and 46% as female, and the average age was 39 years. Participants were located in three flood-affected districts, of which 88.3% reported having experienced at least one major flood. These attributes were helpful in understanding the psychological responses described in the later sections.

### 4.2. Influence of Experience on Perceived Risk

**Table 2: Risk Perception Scores by Flood Experience**

| Experience with Flood | Mean Risk Perception Score (out of 10) |
|---|---|
| Yes | 8.2 |
| No | 5.9 |

Table 2 shows the difference in average risk perception scores for respondents based on their experience with flooding. Respondents with prior experience of flooding scored significantly higher (mean = 8.2) on perceived risk of flooding when compared with those without such experience (mean = 5.9). This may indicate that direct experience greatly increases both the awareness of, as well as the sensitivity to, the risk of floods.

### 4.3. Emotional Regulation Strategies Used

**Table 3: Types and Effectiveness of Emotional Regulation Strategies**

| Strategy | % Reporting Use | Mean Effectiveness (1–5) |
|---|---|---|
| Cognitive Reappraisal | 63 | 4.1 |
| Avoidance | 48 | 3.2 |
| Social Support | 71 | 4.3 |

Table 3 illustrates the various emotional regulation techniques utilized by respondents along with their assessed effectiveness. The most prominently utilized strategy as well as the most effective one was social support (71% usage, 4.3 effectiveness) followed by cognitive reappraisal. The method avoidance was cited by 48% of the individuals however its effectiveness rating was low suggesting that there is a need for improved mental health interventions in flood areas.

### 4.4. Correlation Between Variables

**Table 4: Correlation Matrix of Key Variables**

| Variables | Risk Perception | Emotional Regulation |
|---|---|---|
| Flood Experience | 0.67 | 0.41 |
| Cultural Beliefs | 0.45 | 0.32 |
| Age | -0.21 | 0.12 |

The correlation values between the main variables of interest are displayed in Table 4. As for the flood experience, it significantly correlated with both risk perception (r = 0.67) and emotional regulation (r = 0.41) showing a strong positive correlation. Cultural beliefs were related to perception and coping behaviors. These data support the reflection that psychological factors are complex and, in flood-prone areas, preparedness behavior is affected significantly.

## V. DISCUSSION

The data shows a strong relationship between risk perception due to heightened threat and having experienced a flood event. This points to the fact that exposure to certain stimuli can cause threat sensitization. This can lead to proactive measures like evacuating the area in advance or reinforcing the infrastructure. However, heightened risk does not always guarantee proactive measures; without proper emotional governance, fear can lead to inaction and maladaptive behaviors.

Some of the communities perceived floods as a form of divine punishment or fate. Such cultural and religious beliefs do not evoke a sense of urgency, and fatalism can lower the urgency to act and prepare, and invest resources to mitigate the threat.

Emotion regulation strategies like seeking social support and cognitive reappraisal are strongly associated with emergency preparedness. On the contrary, avoidance of such strategies, which is very common, is linked to lower preparedness.

It is implied that risk perception and emotion regulation stand in a bidirectional relationship, such that managing one influences the other. Helping anxious community members can dial down exaggerated risk perceptions as well, and encourage sensible plans.

## VI. CONCLUSION

This research demonstrates the connection of emotion and risk in flood-prone areas and offers insightful analysis for academic and practical fields. The analysis underscores how experiencing past floods influences perceptions of future flood risk—those exposed to floods exhibit greater awareness and preparedness. Another finding indicates that effective emotional regulation, including social support and cognitive reappraisal, mitigates panic and facilitates the calm, reasoned decision-making necessary to navigate crises. The study also illuminated the impact of social and cultural contexts, especially regarding the perceptions of risk and emotional response, in emphasizing the need for localized perspectives in disaster risk reduction.

To address the long-term effectiveness of coping mechanisms, future studies should look into the psychological coping over time, employing longitudinal studies. Risk reduction programs can be boosted by addressing cultural misperceptions of flooding. In contrast, the emotional and psychological preparedness programs need to pay deliberate attention to the vulnerable groups of children and the elderly, whose psychological resilience is taken for granted.

From a practical and policy perspective, integrating emotional support into disaster management plans remains a crucial requirement.

Education programs that are based in the community and utilize local stories or culturally specific methods can help to build better attendance and trust within the community. In addition to this, community emergency responders should be trained to provide psychological first aid and empathetic communication so that the people in need can be helped physically and emotionally. All of these efforts will help create stronger and more psychologically resilient communities that can deal with emotional strain after recurrent flooding events.

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