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Systematic Review

PSYCHOSOCIAL INTERVENTIONS FOR MENTAL HEALTH OUTCOMES FOLLOWING FLOOD EXPOSURE IN SOUTH ASIA: A SYSTEMATIC REVIEW

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ABSTRACT

Flooding is associated with psychological and psychosocial consequences, yet intervention evidence from South Asia remains limited. This systematic review synthesized studies evaluating psychological or psychosocial interventions for mental-health outcomes among flood-affected populations in South Asia. PubMed and OpenAlex were searched for English-language studies published between January 2010 and August 2026. Eligible studies evaluated an intervention and reported mental-health outcomes in populations affected by floods in South Asia. Study characteristics, interventions, outcomes, and findings were extracted; methodological quality was assessed using the Cochrane Risk of Bias 2 tool. Two randomized studies met the eligibility criteria: a cluster trial of Group Problem Management Plus in Nepal and a yoga intervention among flood survivors in India. Group PM+ reduced psychological distress and depressive symptoms, while yoga was associated with reduced self-rated sadness. Findings were heterogeneous. Evidence is scarce and preliminary, highlighting the need for rigorous, culturally adapted intervention research.

I. INTRODUCTION

Climate change is increasingly recognized as a major threat to human health, with consequences extending beyond gradual changes in temperature and environmental conditions to increasingly frequent and intense extreme weather events. Floods, storms, heatwaves, droughts, and other climate-sensitive hazards can result in injury and mortality while also disrupting livelihoods, health services, housing, food and water security, and social support systems. The health consequences of climate change are particularly concerning in low- and middle-income countries, where limited infrastructure and health-system capacity can increase population vulnerability (World Health Organization [WHO], 2024). The Intergovernmental Panel on Climate Change (IPCC) has also reported increases in the frequency and intensity of heavy precipitation in several regions, including parts of Asia, and has identified human influence as an important contributor to the observed intensification of heavy precipitation globally (IPCC, 2021).

The consequences of floods extend beyond physical health and economic loss to include substantial psychological and psychosocial effects. People exposed to flooding may experience psychological distress, anxiety, depression, sleep problems, and post-traumatic stress symptoms, with some difficulties persisting long after the immediate disaster has ended. In a systematic mapping review of flooding and mental health, Fernandez et al. (2015) identified post-traumatic stress disorder, depression, and anxiety as the principal mental-health outcomes reported across the literature. The review further suggested that secondary stressors, including loss of property,

disruption of livelihoods, and prolonged displacement, may contribute to longer-term psychological difficulties. More broadly, the WHO recognizes floods and other climate-related extreme events as important contributors to psychological distress, anxiety, depression, and post-traumatic stress (WHO, 2024).

The psychological consequences of flooding are particularly relevant in South Asia, a region highly exposed to climate-sensitive hazards. South Asian countries experience recurrent flooding associated with monsoon rainfall, river overflow, extreme precipitation, cyclones, and other environmental processes. The IPCC has reported that the frequency of heavy precipitation and flood events has increased across several areas of South Asia in recent decades, while future changes in extreme precipitation are expected to further influence flood risks across the region (IPCC, 2021). High population density, dependence on climate-sensitive livelihoods, poverty, displacement, and uneven access to health services can further increase vulnerability to the consequences of flooding. Recent evidence from Bangladesh, for example, indicates that natural disasters are associated with a range of mental-health difficulties, including depression, anxiety, stress, post-traumatic stress disorder, and sleep disturbances (Karim et al., 2024). These findings reinforce the importance of addressing psychological health alongside the physical and socioeconomic consequences of disasters.

The evidence gap may be particularly important in South Asia, where recurrent flooding affects large populations but mental-health resources and psychosocial services remain unevenly available. Interventions developed or implemented in the region may also need to account for cultural context, community structures, socioeconomic constraints, and the realities of disaster recovery. Evidence generated from South Asian flood-affected populations can therefore provide contextually relevant information for disaster-response planning, yet intervention-specific evidence has not been clearly synthesized. A focused review is needed to determine what psychosocial interventions have been evaluated following floods, which populations and settings have been studied, what mental-health outcomes have been assessed, and what findings have been reported. Therefore, this systematic review aimed to identify and synthesize available evidence on psychosocial interventions targeting mental-health outcomes among populations affected by floods in South Asia. Specifically, the review examined the characteristics and settings of the identified interventions, the populations receiving them, the mental-health outcomes assessed, and the findings reported by the available studies. By focusing on intervention evidence rather than solely describing the mental-health burden associated with flood exposure, this review seeks to clarify the current state of psychosocial intervention research in South Asian flood-affected populations and highlight priorities for future research, clinical practice, and disaster mental-health planning.

Objectives

1. The objective of this systematic review was to identify and synthesize the available evidence on psychosocial interventions targeting mental-health outcomes among populations affected by floods in South Asia.
2. The review sought to describe the characteristics of the interventions evaluated, the populations and settings in which they were implemented, the mental-health outcomes assessed, and the findings reported by the available studies.

II. METHOD

Participants

This systematic review was conducted to identify and synthesize available evidence on psychosocial interventions targeting mental-health outcomes among populations affected by floods in South Asia. The review was designed and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement, which provides guidance for transparent reporting of systematic reviews (Page et al., 2021). The review focused specifically on intervention-based evidence rather than studies examining only the prevalence or association of mental-health outcomes following flood exposure. The review process comprised literature searching, removal and identification of duplicate records, title and abstract screening, full-text assessment, and final inclusion of eligible studies. The included evidence was subsequently synthesized narratively because of the limited number and methodological heterogeneity of eligible studies.

Measures

Studies were eligible if they evaluated a psychological or psychosocial intervention and reported empirical mental-health outcomes among people affected by floods in South Asia. Studies were required to involve participants who had experienced or been affected by flooding and to evaluate an intervention addressing their psychological or psychosocial needs. Study protocols without reported intervention outcomes were excluded. Studies were excluded if they were conducted outside the specified South Asian countries, published in a language other than English, or published outside the specified time period. Studies were also excluded if they did not involve flood exposure, did not include a psychological or psychosocial intervention component, or focused exclusively on physical, environmental, or socioeconomic outcomes without a relevant psychological or psychosocial intervention. Observational studies examining mental-health outcomes following floods without an intervention component were excluded. Reviews, systematic reviews, meta-analyses, editorials, commentaries, letters, and conference abstracts lacking sufficient information to assess eligibility were also excluded.

Procedure

A systematic literature search was conducted in two electronic databases, PubMed and OpenAlex, to identify studies examining psychological or psychosocial interventions among populations affected by floods in South Asia. The search covered studies published between January 2010 and August 2026 and was restricted to publications available in the English language. The search strategy was developed using key concepts related to flooding, psychological and psychosocial interventions, and mental-health-related outcomes. Relevant keywords and, where applicable, controlled vocabulary were combined using Boolean operators (AND and OR). In PubMed, Medical Subject Headings (MeSH) terms and free-text keywords were used to improve the sensitivity of the search. The search strategy was adapted for OpenAlex according to its search structure while maintaining the core concepts of the review. The geographical criterion was not applied as a database-level search restriction. Instead, the search was intentionally kept broad to maximize the identification of potentially relevant studies, and geographical eligibility was assessed during the screening process. Studies conducted in Pakistan, India, Nepal, Bangladesh, Bhutan, and Afghanistan was considered eligible according to the predefined inclusion criteria. All records identified through the two databases were exported for screening and subsequently managed using Rayyan, an online tool for systematic review screening. Duplicate records were identified and removed before the screening of titles and abstracts. Records that appeared potentially eligible on the basis of their titles and abstracts were retrieved for full-text assessment. The final selection of studies was based on the predefined eligibility criteria. The complete search strategies used in PubMed and OpenAlex, including the exact search terms and Boolean operators, and the date of the final search in each database should be supplied in the supplementary material to support transparency and reproducibility.

III. RESULTS

The database searches identified 116 records, including 77 records from PubMed and 39 records from OpenAlex. Ten duplicate records were identified and removed before screening, leaving 106 records for title and abstract screening. Of these, 96 records were excluded based on the predefined eligibility criteria, and 10 reports were sought for retrieval. All 10 reports were successfully retrieved and assessed for eligibility. Eight reports were excluded following full-text assessment because they did not meet the predefined inclusion criteria, including studies that were not intervention-based, involved a different disaster or context, or were pilot studies that did not meet the eligibility criteria. Two studies met the predefined eligibility criteria and were included in the final qualitative synthesis. The study-selection process is presented in the PRISMA 2020 flow diagram (Figure 1).

Figure I: PRISMA 2020 Flow Diagram

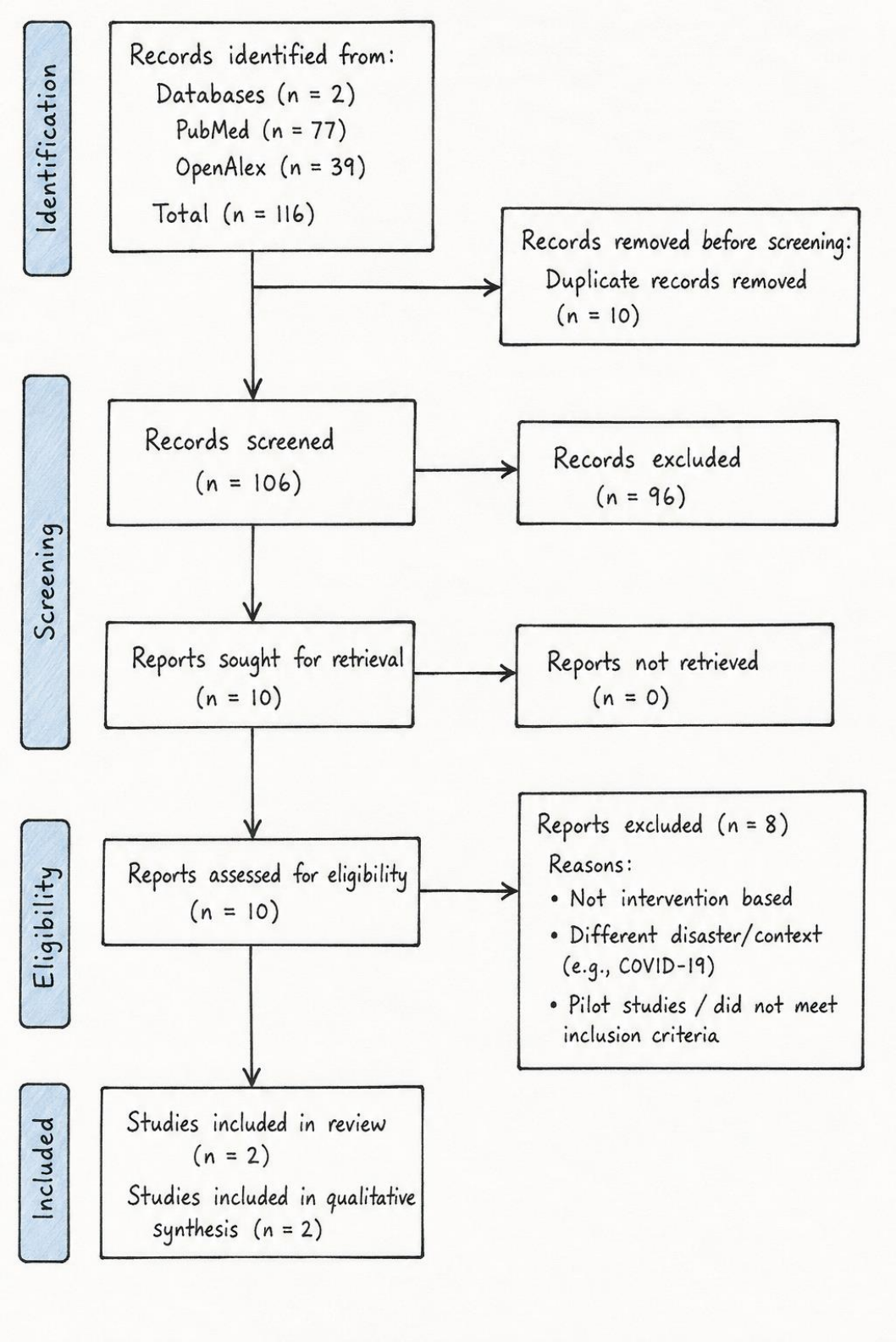


Table I: Characteristics of Included Studies

Study	Country	Study design	Sample	Disaster/flood context	Intervention	Comparator	Duration
Jordans et al. (2021)	Nepal	Cluster randomized controlled trial	611 adults; 319 Group PM+ and 324 enhanced usual care	Disaster-prone communities in eastern Nepal, including areas affected by flooding	Group Problem Management Plus (Group PM+)	Enhanced usual care	5 weekly sessions; approximately 2.5 hours/session
Telles et al. (2010)	India	Randomized controlled study	22 male flood survivors; 11 yoga and 11 control	Kosi River flood, Bihar	Yoga	Non-yoga wait-list control	1 hour/day for 7 consecutive days

Note. PM+ = Problem Management Plus

Table II: Intervention and Outcome Characteristics of Included Studies

Study	Intervention components	Target population	Mental-health outcomes	Assessment method/tool	Main findings
Jordans et al. (2021)	Problem-solving, stress management, behavioural activation, and strategies for accessing social support	Adults living in disaster-prone communities in Nepal	Psychological distress; depressive symptoms; PTSD symptoms; social support; somatic symptoms; functional impairment	GHQ-12 and additional standardized outcome measures	Group PM+ reduced psychological distress and improved depressive symptoms compared with enhanced usual care; no significant effect was observed for PTSD symptoms or functional impairment
Telles et al. (2010)	Yoga postures, loosening exercises, regulated breathing, and guided relaxation	Male flood survivors in Bihar, India	Sadness and anxiety; heart-rate variability and breathing rate	Visual analogue scales; heart-rate variability; breathing rate	Sadness significantly decreased in the yoga group, whereas anxiety increased in the control group; no significant changes were observed in heart-rate variability or breathing rate

Note. GHQ-12 = 12-item General Health Questionnaire; HRV = heart-rate variability; PTSD = post-traumatic stress disorder.

Table III: Risk-of-Bias Assessment of Included Studies

Study	Randomization process	Deviations from intended interventions	Missing outcome data	Measurement of outcome	Selection of reported result	Overall risk of bias
Jordans et al. (2021)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Telles et al. (2010)	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns

Note. Risk of bias was assessed using the Cochrane Risk of Bias 2 (RoB 2) tool. Judgments were classified as low risk, some concerns, or high risk.

IV.DISCUSSION

This systematic review examined the available evidence on psychological and psychosocial interventions for mental-health outcomes following flood exposure in South Asia. The identified studies included a randomized controlled trial of Group Problem Management Plus (Group PM+) conducted in Nepal and a randomized controlled study of yoga among flood survivors in Bihar, India. The Nepal study evaluated a structured, low-intensity psychosocial intervention incorporating problem-solving, stress management, behavioral activation, and strategies for accessing social support (Jordans et al., 2021). The intervention was delivered through trained non-specialist facilitators and was designed to address common psychological difficulties among adults affected by adversity. The study reported reductions in psychological distress and improvements in depressive symptoms among participants receiving Group PM+ compared with enhanced usual care. However, significant effects were not observed for all assessed outcomes, including post-traumatic stress symptoms and functional impairment (Jordans et al., 2021). The Indian study evaluated a brief seven-day yoga intervention among flood survivors and reported a significant reduction in self-rated sadness among participants receiving yoga, whereas anxiety increased in the comparison group. These findings suggest that a short period of yoga practice may help reduce feelings of sadness following a flood; however, the study did not establish significant improvements across all measured outcomes (Telles et al., 2010). Taken together, these findings provide preliminary evidence that brief psychological and mind–body interventions may have potential value in supporting emotional recovery following flood exposure. However, the small number of eligible studies and substantial differences between the interventions and outcome measures prevent firm conclusions regarding their overall effectiveness.

The findings are broadly consistent with the wider literature on scalable psychosocial interventions delivered among populations affected by adversity. Evidence from research on PM+ suggests that low-intensity; transdiagnostic interventions can produce beneficial effects on psychological distress and other mental-health outcomes across humanitarian and adversity-affected settings (Mwangala et al., 2024; Schäfer et al., 2023). The Nepal trial also demonstrated that Group PM+ delivered by trained non-specialist providers can reduce psychological distress and depressive symptoms, although benefits were not consistent across all measured outcomes (Jordans et al., 2021). However, evidence derived from broader humanitarian settings should not automatically be assumed to have the same effectiveness following flood exposure in South Asia. The scarcity of eligible intervention studies is particularly noteworthy given the substantial need for scalable mental-health responses in South Asia. Disaster-affected communities in the region frequently experience barriers to accessing trained mental-health professionals, particularly in rural, remote, and economically disadvantaged areas. Interventions that can be delivered by trained non-specialists, embedded within community structures, and adapted to local languages and cultural practices may therefore have important practical advantages (Mwangala et al., 2024; World Health Organization, 2023).

At the same time, cultural adaptation should not be understood simply as translation of intervention materials. Psychological interventions delivered following floods need to account for local understandings of distress, family and community structures, religious and cultural coping practices, patterns of help-seeking, and the practical realities of displacement and livelihood disruption. Effective emergency mental-health and psychosocial support require coordination with local responders, engagement with affected communities, and the integration of locally available resources (World Health Organization, 2023). For South Asian countries, future interventions should combine evidence-based psychological skills with culturally appropriate delivery mechanisms. Community-based implementation, involvement of local stakeholders, flexible delivery formats, and appropriate training and supervision of non-specialist providers may improve accessibility and feasibility (Mwangala et al., 2024; World Health Organization, 2023). In addition, intervention research should distinguish between broad psychosocial support for affected populations and targeted interventions for individuals experiencing clinically significant psychological distress.

V. CONCLUSION

The available findings suggest that brief psychological and mind–body interventions may have potential to support psychological recovery following flood exposure. Group PM+ was associated with reductions in psychological distress and improvements in depressive symptoms, while the yoga intervention was associated with a reduction in self-rated sadness. However, the limited number of studies, methodological heterogeneity, and small sample size of the yoga study mean that the available evidence remains insufficient to establish the overall effectiveness of these interventions. The findings highlight an important gap in disaster-related mental-health research in South Asia. There is a need for adequately powered, methodologically rigorous intervention studies that are culturally appropriate, accessible, and feasible for implementation in flood-affected communities. Future research should also examine longer-term outcomes, intervention feasibility and acceptability, and the integration of psychological and psychosocial interventions into community-based disaster preparedness, response, and recovery systems. Strengthening this evidence base will be important for developing sustainable mental-health responses to the growing psychological consequences of recurrent flood-related disasters in the region.

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