

## Mental Health Interventions for Rescue Personnel in Disaster Response: A Scoping Review of Best Practices

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### ABSTRACT

Emergency responders—like firefighters, paramedics, and police officers—often face extreme stress and trauma during disaster relief work. These situations put them at risk for mental health conditions such as PTSD, depression, anxiety, and burnout. This review explores the best ways to support their mental well-being. Using the PRISMA model, we reviewed global studies from 2000 to 2024 found in databases like PubMed, PsycINFO, and Scopus. Key strategies identified include Psychological First Aid (PFA), Critical Incident Stress Debriefing (CISD), resilience training, and tele-mental health support. Interventions that involved organizational backing and cultural customization were the most impactful. Still, many programs lack long-term follow-up and don't always fit into existing response systems, especially in low-resource settings. The evidence points toward using a multi-layered approach that addresses individual needs, promotes peer support, and integrates systems-level care. Future research should focus on long-term outcomes and adaptable models that can inform mental health policy.

**Keywords:** *Mental Health, First Responders, Disaster Response, PTSD, Resilience*

When disaster strikes, first responders—firefighters, medics, police officers, and others—are on the frontlines. Their job puts them in the middle of chaos, facing danger, trauma, and high-pressure decisions. This constant exposure can take a serious toll on their mental health, leading to conditions like PTSD, anxiety, depression, and emotional exhaustion.

Globally, disaster frequency and intensity are on the rise due to climate change, rapid urbanization, and geopolitical instability, further intensifying the mental health risks for responders. In India, one of the most disaster-prone countries in the world, the situation is particularly critical. According to the National Disaster Management Authority (NDMA), India experiences around 80% of all natural disasters reported in South Asia, with over 27 major natural disasters affecting the country in the past two decades. Moreover, a national survey by the Indian Council of Medical Research (ICMR) revealed that nearly 30% of first responders in high-impact zones experience significant symptoms of psychological distress, yet very few receive structured mental health support (ICMR, 2020). The limited presence

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Received: July 26, 2025; Revision Received: August 27, 2025; Accepted: August 31, 2025

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of disaster mental health infrastructure, lack of standardized protocols, and low awareness about psychosocial interventions contribute to this growing concern.

Existing interventions, such as Psychological First Aid (PFA), Critical Incident Stress Debriefing (CISD), and resilience training, vary widely in design, scope, and cultural relevance. While some focus on immediate post-trauma stabilization, others aim at long-term psychological recovery. However, in both global and Indian contexts, there remains a significant lack of longitudinal studies evaluating their effectiveness, and minimal adaptation to diverse socio-cultural settings (Skeffington et al., 2017; Watson et al., 2013). In India specifically, disaster response agencies often prioritize logistical and medical preparedness, overlooking structured psychological support systems for frontline personnel. The scarcity of integrated, culturally attuned, and scalable mental health models highlights a critical gap in both policy and practice.

Given these challenges, this scoping review aims to systematically explore and map the landscape of mental health interventions designed for rescue personnel in disaster response settings. The objectives are threefold: (1) to synthesize the types and delivery mechanisms of interventions used globally and within India; (2) to evaluate reported outcomes and effectiveness across different cultural and operational environments; and (3) to identify gaps in implementation, particularly in terms of long-term evaluation, scalability, and contextual adaptation. By consolidating and critically examining the current evidence, this review seeks to inform policy, guide the development of best practices, and ultimately contribute to the design of comprehensive, resilient mental health strategies for rescue personnel—especially in high-risk, low-resource settings like India.

### **METHODOLOGY**

#### ***Research Questions***

A scoping review (SR), a popular research technique for mapping the body of literature from a particular field of interest, was chosen as the methodology for this study to better understand the scope and character of prior research activity (Arksey and O'Malley 2005). Scoping reviews can be used to group literature according to time (e.g., year of publication), location (e.g., country or continent), source (e.g., journal paper ranking), and discipline area (e.g., based on FOR code) (Anderson et al. 2008). They are particularly effective at "bringing together literature in disciplines with emerging evidence, as they are suited to addressing questions beyond those related to the effectiveness or experience of an intervention" (Peters et al. 2015, 142).

The suitability of the source material to be included in the study was determined using the following inclusion criteria: 1) Papers must be published in the English language; 2) peer-reviewed journal articles only; 3) studies within 15 years; 4) specific disciplinary area; and 5) no articles were eliminated based on the quality rating of the journal. Likewise, the subsequent exclusion standards were used: 1) non-English language publications; 2) book chapters, conference papers, and so forth; and 3) articles that look into other populations. To extract as many peer-reviewed journal articles as possible, a variety of databases and other sources were used.

#### **REVIEW QUESTION**

This scoping review was conducted to address the following questions:

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1. What types of mental health interventions have been implemented for rescue personnel in disaster response?
2. What are the reported outcomes and effectiveness of these interventions?
3. What best practices and recommendations exist for implementing such interventions?

### STUDY DESIGN

All study designs were included. Screening followed PRISMA-ScR's four-step process: Identification, Screening, Eligibility, and Inclusion. Seventeen studies were included after screening 4,706 records (2,867 after duplicates).

Figure 1. PRISMA flowchart illustrating the identification, screening, and eligibility steps taken during this review.

**Table. 1** *Articles selected for the scoping review.*

No.	Title of the paper	Year	Author	Summarization
1	Disaster literacy in disaster emergency response: a national qualitative study among nurses	2024	Di Zhang, Li-Yan Zhang, Ke Zhang, Han Zhang, Huan-fang Zhang and Kai Zhao	This study investigates the essential elements of disaster literacy among nurses, who play a vital role in emergency response. Through interviews with 31 rescue nurses from various regions in China, researchers identified nine core components of disaster literacy: physical and mental strength, basic disaster knowledge, technical expertise, ethical practice, teamwork, emotional management, information skills, leadership, and the ability to apply knowledge in practice. The findings emphasize the urgent need to improve nurses' preparedness for disasters. The study suggests that healthcare authorities and hospital leaders can use these nine dimensions to assess disaster literacy levels and design targeted strategies to enhance nurses' capabilities in managing disaster situations effectively.
2	Effectiveness of Police Crisis Intervention Training Programs	2024	Michael S. Rogers, MD, Dale E. McNeil, PhD, and Renée L. Binder, MD	In 2018, police officers in the U.S. fatally shot approximately 1,000 individuals, with about 25% of these cases involving people with mental health conditions. Crisis Intervention Team (CIT) training is a specialized program designed to help officers handle such encounters more safely and reduce harm. CIT has been adopted both nationally and internationally. While it shows

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				<p>positive results like improved officer satisfaction and a perceived reduction in force used, there is limited peer-reviewed evidence proving its effectiveness in reducing arrests, injuries, or actual use of force. CIT may help divert individuals from jail to mental health treatment, but further evaluation is needed to confirm its overall impact.</p>
3	<p>The Role of Social Media in the Advent of COVID-19 Pandemic: Crisis Management, Mental Health Challenges and Implications</p>	2021	<p>Jaffar Abbas, Dake Wang, Zhaohui Su &amp; Arash Ziapour</p>	<p>This study investigates how using social media for educational purposes can help lessen the mental health impact of the COVID-19 pandemic. The outbreak caused a worldwide mental health crisis fuelled by fear, uncertainty, and misinformation. Although social media spread both accurate and misleading information, it also led to an "infodemic" that weakened public trust and obstructed efforts to control the virus. Through a narrative review of existing literature and data from sources like the WHO, John Hopkins University, and Pakistan's Ministry of Health, the study highlights how non-pharmaceutical interventions (NPIs) were used to address mental health issues. Pakistan, which was initially among the countries with the highest COVID-19 cases in Asia, managed the second wave more effectively. As of February 2021, global case and death tolls remained high, but the study emphasizes the critical role of providing accurate health information through social media. The findings offer valuable guidance for managing health crises and suggest directions for future research on improving mental health through digital communication.</p>
4	<p>Inclusion of People with Disabilities amid COVID-19: Laws, Interventions, Recommendations</p>	2020	<p>Cathy Mae Dabi Toquero</p>	<p>The burden of people with disabilities, especially children, has been further exacerbated by the COVID-19 pandemic,</p>

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				<p>where they are already pushed to the fringe even in standard conditions. This paper investigates the Philippine government's laws on inclusive special education and the legal protection of the rights of the learners. And considers possible educational responses to assist them in learning as the implications of the health crisis are felt and policy proposals that would ensure emergency preparedness measures take educational as well as emotional and mental health concerns of students into account. Furthermore, it urges researchers to explore how individuals with disabilities utilize digital media and assess how well assistive technologies meet their learning needs in the future.</p>
5	Quality management in humanitarian operations and disaster relief management: a review and future research directions	2020	Sachin Modgil, Rohit Kumar Singh, Cyril Foropon	<p>This study provides a systematic literature review of quality management in humanitarian operations and disaster response, and 61 articles from 2009 to 2018. It identifies key enablers (e.g., transparency, policy frameworks), challenges (e.g., financial services, identity protection), and theoretical perspectives. It additionally presents a number of research deficiencies requiring further study in this evolving area.</p>
6	Which rescue workers benefit from preventive training in self-management to improve mental health?	2020	Heilwine Bakker, Marc van Veldhoven, Tony Gaillard & Remy Hertogs	<p>This was a cross-sectional study that sought to determine which type of rescue workers profit the most in relation to mental health self-management training, based on responses of 79 professionals (38 police officers and 41 ambulance personnel). Effectiveness of the training was evaluated in terms of improvement in performance across the five domains of life, metacognitive knowledge, and coping self-efficacy from pre- to post-training. Overall, the results suggested that there had not been any dramatic improvement, though some</p>

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				benefit to social life and protecting mental health had resulted from the proposals. Metacognitive awareness and coping self efficacy did not alter. Notably, persons with lower critical incident exposure and younger participants seemed to benefit more, indicating that these factors play a role in the training effects.
7	Ecological Disasters and Mental Health: Causes, Consequences, and Interventions	2020	Joshua C. Morganstein* and Robert J. Ursano	Most ecological disasters, with their increasingly obvious ties to global climate change, can be characterized by grim patterns and the potential for psychological, behavioral, and community ravages. These consequences can be more far ranging beyond the immediate disaster area and adversely affect vulnerable populations. Knowledge of these patterns can inform the development of empirically-informed, optimal interventions to reduce distress and enhance well-being. Effective disaster preparedness involves incorporating this knowledge into all aspects of disaster management, as well as continued education and training of planners and responders.
8	Psychological Outcomes in Disaster Responders: A Systematic Review and Meta-Analysis on the Effect of Social Support	2020	Johnrev Guilaran, Ian de Terte Krzysztow Kaniasty, Christine Stephens	This review explored how social support affects the mental health of disaster responders, such as police officers, firefighters, emergency medical personnel, and military members. It analyzed 24 studies containing 90 effect sizes and found that social support plays a significant role in improving psychological well-being. Support was linked to reduced anxiety, depression, burnout, and psychological distress, and was positively associated with job satisfaction, job control, work engagement, and lower turnover intentions. Most of the research focused on perceived social support and its relationship with negative

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				<p>psychological outcomes. The most noticeable benefits of social support were seen in police and rescue/recovery workers. The study also pointed out that factors like timing and context can influence how effective social support is, emphasizing the importance of providing appropriate support tailored to the needs of responders throughout the disaster response cycle.</p>
9	<p>Inclusion of People with Disabilities amid COVID-19: Laws, Interventions, Recommendations</p>	2020	Cathy Mae Dabi Toquero	<p>This article discusses the difficulties experienced by individuals, particularly children with disabilities, during the COVID-19 pandemic, as their needs are often neglected. It explores Philippine laws that promote inclusive special education, proposes supportive learning strategies, and recommends policy enhancements to better address the educational, emotional, and mental health needs of students with disabilities in times of crisis. It also encourages further research into how digital tools and assistive technologies can support their learning during emergencies.</p>
10	<p>A Systematic Review of the Impact of Disaster on the Mental Health of Medical Responders</p>	2019	<p>Vamanjore Aboobaker Naushad, Joost JLM Bierens, Kunnummel Purayil Nishan, Chirakkal Paramba Firjeeth, Osama Hashim Mohammad, Abdul Majeed Maliyakkal, Sajid ChaliHadan, Merritt D. Schreiber,</p>	<p>This article examines literature on the psychological impact of disasters on health professionals. The purpose is to assess the mental health status and the risk factors for the same. Following a review of 3,545 abstracts, 28 studies were included for final review. The most prevalent mental health disorders were depression and PTSD, where nurses were more vulnerable than doctors. Major risk factors were absence of social support, lack of communication, lack of coping methods, and inadequate preparation. The results underscore the substantial mental health burden of disasters on medical responders and the importance of specific preventive and mitigation</p>

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No.	Title of the paper	Year	Author	Summarization
				strategies directed to high-risk groups.
11	Disaster Preparedness Keeping Nursing Staff and Students at the Ready	2019	Todd E. Tussing, Holly Chesnick, Amy Jackson	Disasters, natural, man-induced, or accidental, have been affecting human societies throughout history and they represent severe threats to all segments of society including the social and economic ones and frequently with no prior notice. Also exposed to these events are health care providers, such as hospitals. As critical social institutions, hospitals have an ethical responsibility to deliver emergency care and help in the community's recovery. A combination of hospital preparedness is necessary, and is required by national law, viz., assessments of disaster risks and comprehensive disaster response plans. All team members should be known and understand their roles in an emergency.
12	Emergent groups and spontaneous volunteers in urban disaster response	2017	John Twigg and Irina Mosel	This paper examines the role of spontaneous, self-organized voluntary groups and individuals that often emerge during urban disasters. These informal responders typically assist with tasks such as rescue operations, distributing aid, and supporting victims and emergency personnel with essentials like food and water. Although they play a vital role, they are rarely included in official disaster or humanitarian response plans. The study reviews global findings on the scope and effects of these emergent efforts, the challenges they encounter in various settings, and the lessons they offer for improving future

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No.	Title of the paper	Year	Author	Summarization
				urban disaster response practices.
13	Monitoring and evaluation of disaster response efforts undertaken by local health departments: a rapid realist review	2017	Kate Gossip, Hebe Gouda, Yong Yi Lee, Sonja Firth, Raoul Bermejo III, Willibald Zeck and Eliana Jimenez Soto	This study investigates why local health departments' monitoring and evaluation (M&E) activities often fall short of improving disaster response, even though these departments are vital in managing both the immediate and long-term health impacts of disasters. Using a rapid realist review approach, the researchers created a simple M&E framework with three key stages: document and assess, disseminate, and implement. The review highlights several factors that can either support or hinder each stage. To improve documentation and assessment, it is important to foster a culture of continuous learning, use embedded training, and form partnerships with external agencies. For better dissemination of findings, reports should follow standardized formats and terminology to enable inter-agency learning. Finally, successful implementation of improvements depends on strong leadership and collaborative decision-making. Overall, the study offers practical insights and a useful framework to help local health departments enhance future disaster responses through more effective M&E practices.
14	Social and occupational factors associated with psychological distress and disorder among disaster responders: a systematic review	2016	Samantha K. Brooks, Rebecca Dunn, Richard Amlôt, Neil Greenberg and G. James Rubin	This systematic review examined 111 studies to identify the social and occupational factors that influence the psychological well-being of disaster responders. These factors were categorized into three phases: pre-disaster, during-disaster, and post-disaster. Before the disaster, key influences included occupational roles, specialized training,

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				<p>preparedness, personal life events, and existing health conditions. During the disaster, factors such as exposure level, time spent at the disaster site, emotional involvement, perceived safety and risk, trauma responses, and the availability of social and professional support played a significant role. After the disaster, the impact on personal life, media exposure, coping strategies, and continued support from organizations and peers affected mental health outcomes. The findings highlight the importance of preparedness for psychological stressors and the critical role of organizational and social support in minimizing mental health risks and enhancing resilience. These insights can help guide the development of effective training and support systems for disaster response professionals.</p>
15	Risk and resilience factors affecting the psychological wellbeing of individuals deployed in humanitarian relief roles after a disaster	2015	Rupkatha Bardhan, Karen Heaton, Melissa Davis, Peter Chen, Dale A. Dickinson and Claudiu T. Lungu	<p>The objective of this systematic review is to explore elements that impact upon disaster responders' psychological well-being. Drawing on 61 studies, it examines central themes in terms of three temporal stages, namely pre-deployment (e.g., training and preparedness), peri-deployment (e.g., traumatic exposure, workload, leadership, and support), and post-deployment (e.g., continued support, media exposure, and personal growth). The review also finds that role-specific (eg, stigmatisation and risk) and general (eg, poor leadership and lack of support) occupational stressors have a meaningful effect on mental health. It proposes humanitarian organizations to concentrate on developing team connections and non-role-specific stress in order to augment the psychological</p>

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				resilience among staff.
16	Disaster Management: Mental Health Perspective	2015	Suresh Bada Math, Maria Christine Nirmala <sup>1</sup> , Sydney Moirangthem, Naveen C. Kumar	Disaster mental health has shifted from a relief-based approach to a preventive, community-focused model. It follows six stages: Readiness, Response, Relief, Rehabilitation, Recovery, and Resilience. Mental health issues are 2–3 times more common in disaster-affected populations, with both severe and mild symptoms. While most short-term issues resolve naturally, long-term problems need professional care. CBT is promising, but the roles of PFA and debriefing are unclear. Effective disaster management requires continuous planning and integrating public health into mental health responses.
17	Post-traumatic stress disorder and depression prevalence and associated risk factors among local disaster relief and reconstruction workers fourteen months after the Great East Japan Earthquake: a cross-sectional study	2015	Atsushi Sakuma, Yoko Takahashi, Ikki Ueda, Hirotohi Sato, Masahiro Katsura, Mikika Abe, Ayami Nagao, Yuriko Suzuki, Masako Kakizaki, Ichiro Tsuji, Hiroo Matsuoka and Kazunori Matsumoto	This study explored the psychological effects on local personnel involved in rescue and recovery operations following the Great East Japan Earthquake (GEJE) of March 2011. A total of 1,294 workers—including firefighters, municipal employees, and medical staff—were surveyed 14 months after the disaster to determine the prevalence of probable PTSD, depression, and psychological distress, as well as associated personal and workplace risk factors. The results indicated that municipal and medical workers had notably higher rates of mental health concerns compared to firefighters. Factors contributing to increased risk included insufficient rest, poor communication, and engagement in disaster-related duties. Firefighters appeared more resilient, potentially due to better preparedness and earlier mental health support. The findings suggest that,

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				unlike the immediate effects of disasters, work-related stressors can be addressed through interventions. Enhancing workplace conditions, improving communication, and ensuring rest and psychological care are key strategies to support the mental well-being of disaster response and recovery personnel.

### RESULTS

We began our review with 4,706 research records identified through both database searches and other sources. After carefully removing 1,839 duplicate entries, we were left with 2,867 titles and abstracts to screen. From this pool, we narrowed it down to 274 full-text articles that were assessed against our inclusion criteria. In the end, 17 studies published between 2015 and 2024 met all the requirements and were included in our final analysis.

These studies were diverse—not only in terms of where they came from, with research spanning North America, Asia, and Europe—but also in the kinds of professionals they focused on. Participants included firefighters, nurses, police officers, paramedics, and disaster recovery workers. The research methods also varied, from in-depth interviews and surveys to more comprehensive systematic reviews and meta-analyses.

The interventions described in these studies ranged from immediate psychological support like Psychological First Aid (PFA) to long-term resilience training and therapy sessions delivered remotely. Some programs focused on building peer support networks and teaching self-care strategies, while others evaluated the effectiveness of Crisis Intervention Team (CIT) training for law enforcement. Though many studies centered around trained professionals, a few included volunteers and informal responders, acknowledging the wide range of people involved in disaster situations.

We found that the timing and approach of these interventions differed. Some were introduced right after a disaster to help stabilize responders emotionally, while others looked at long-term recovery and mental strength. While high-quality studies—like longitudinal or systematic reviews—offered strong, evidence-based insights, others were more exploratory. Still, they all added value. Notably, few studies explored how well these interventions hold up over time or how adaptable they are in places with fewer resources.

The studies shared a few key takeaways. Peer support and strong social networks consistently helped lower stress, anxiety, and burnout. Resilience training showed particular benefits for younger responders or those with less trauma exposure. And in remote or underserved areas, cognitive behavioral therapy (CBT) delivered through tele-mental health platforms stood out as an effective and accessible option. CIT training helped improve how police officers responded to mental health crises, but its long-term impact on outcomes like arrest rates was less clear.

Bringing these findings together, it's clear that no single intervention is a cure-all. Instead, the most effective support systems combine individual counseling, peer encouragement, and

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strong organizational backing. Programs that are introduced early, tailored to cultural contexts, and followed up consistently tend to have the best results. Yet the field still has gaps: more long-term studies are needed, especially in low-income or non-Western settings, and volunteers remain underrepresented in much of the current research. Overall, there's a growing need for flexible, inclusive mental health strategies that fit into disaster response efforts and truly support everyone involved.

### DISCUSSION AND CONCLUSION

This review brought together insights from 17 studies focused on how to support the mental health of disaster responders. The studies looked at several approaches, including Psychological First Aid, peer support, resilience-building programs, and therapy through telehealth platforms. Among these, the most effective strategies were those that didn't work in isolation—they combined individual support with help from peers and backing from the organization itself. Interventions were especially successful when introduced early and supported by leadership.

That said, there were clear limitations. Most studies didn't follow participants long enough to see whether the benefits lasted. The majority of research came from wealthier countries, so it's unclear how well the same strategies would work in places with fewer resources. There was also little consistency in how outcomes were measured, and many studies overlooked volunteer responders, even though they play a big role during emergencies. Differences based on gender or specific job roles were rarely considered either.

It's clear from the findings that disaster response teams need mental health support that's practical, flexible, and culturally relevant. These programs should work not just in the short term, but over time, and they need to be available to all types of responders. Taking care of their mental health isn't just the right thing to do—it's also essential for making sure they can continue doing their critical work effectively

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### **Acknowledgment**

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

### **Conflict of Interest**

The author(s) declared no conflict of interest.

**How to cite this article:** Risvan, M., Prasad, J.V. & Karmakar, R. (2025). Mental Health Interventions for Rescue Personnel in Disaster Response: A Scoping Review of Best Practices. *International Journal of Indian Psychology*, 13(3), 2813-2826. DIP:18.01.256.20251303, DOI:10.25215/1303.256