REVIEW ARTICLE

Disaster and Mental Health Preparedness in India: A Scoping Review

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Abstract

Background: Disaster and mental health preparedness are inseparable domains highlighted during all the major disasters in India. To build Disaster-Mental health Preparedness (Disaster MHP), one has to understand the existing strategies, systemic efforts, and ground-level implementation. In this scoping review, we have analyzed the mental health preparedness efforts during major disasters in India. **Methodology**: We followed the Peters MDJ et al framework for scoping review named 'Guidance for conducting systematic scoping reviews. This included the searching relevant articles on PubMed and google Scholar, and concept-context of the review. **Results**: The review identified major efforts taken during ten disasters in past 40 years and mapping of the potential areas for development of sustainable efforts towards Disaster MHP. **Conclusion**: This is the first systematic scoping review from India that provides insight into strength and sustainability of disaster mental health preparedness in India. The mapping of the review focuses on the models emerged from Bhopal, Odisha, Tamilnadu and NIMHANS for the future infrastructure, capacity building, and environment required for Disaster-MHP in India.

Keywords

Disaster; Mental Health; Preparedness; Capacity Building; Scoping Review.

Introduction

India is prone to numerous disasters due to its varied geographic conditions.(1,2) Though the country has witnessed several disasters (earthquakes, landslides, cyclones, etc.,), the importance of mental health during a disaster had surfaced for the first time after the chemical disaster of the Bhopal gas tragedy on 2nd December 1984.(1,3) The high burden of mental health problems and needs that emerge during a disaster has both short and long-term adverse effects on the individual, family, and the community when left unaddressed.(4) Traditionally, Mental Health and Psychosocial Support (MHPSS) services focusing on the response and recovery phases of disasters have been an integral part of disaster management models.(5,6) However, with the recent expansion of disaster management models to encompass proactive and upstream approaches towards the goal of disaster risk reduction (DRR), the concept of disaster mental health preparedness (MHP) focusing on disaster preparedness and prevention is gaining significant attention in recent years. In this light, the Disaster-MHP requires substantial understanding that may not be covered under the concepts of DRR and MHPSS.

Aim & Objective

To provide a systematic scoping review of the literature related to disaster mental health preparedness in India.

Material & Methods

We conducted a systematic scoping review to find out the Disaster-MHP associated measures undertaken at different levels during major disasters in India in the past forty years. The review followed Peters MDJ et al framework for scoping revie named 'Guidance for conducting systematic scoping reviews'.(7)

The research question of the review was 'Have we made a successful strategy or framework for Disaster-MHP in India? In this inquiry, we identified the major disasters associated with mental health literature in the last 40 years from India and examined the Disaster-MHP and its current status in the Indian context.

Inclusion Criteria: We included all the peer-reviewed studies (Original articles, narrative, and systematic reviews) published from India. Conference abstracts, non-peer-reviewed literature, unpublished data, and articles not on human subjects were excluded. Studies mentioning Disaster-MHP, those which were not from India, were excluded.

Concept: The concept of the review focused on obtaining the data related to MHP from major disasters in India and provide a meaningful understanding of disaster-MHP. The extension of the idea was to allow us to identify the existing challenges and opportunities concerning disaster-MHP in India. We restricted the scope of review on detailing the data from the articles about author, year of disaster, type of disaster, agencies/institutions involved in mitigation, response or preparedness, capacity or resilience building, and unique findings associated with disaster-MHP. Those disasters where Disaster-MHP were dismal, we defined Disaster-MHP as 'any effort geared towards addressing the mental health of victims among the major disasters as a preparedness step towards disaster-MHP for future disasters. The efforts put towards the sustainability of any such model were also challenged through the mapping of the findings.

Context: The context of the scoping review was limited to efforts towards disaster-related mental health preparedness in the Indian context. The review context included preventive strategies for depression, grief, post-traumatic stress disorder. The context also was extended to include psychological efforts such as counseling, therapies, and spiritual coping efforts towards preparedness. Since every kind of mental health intervention carried out had the potential to deliver MHP through sustainable efforts, we contextualized such efforts. All the major disasters including earthquakes, cyclone, tsunami, riots, chemical disasters, infectious or health disaster happened in India in past four decades were identified for possible developments towards MHP.

Search strategy: The search terms included 'disaster', 'mental health', 'psychosocial', 'support', 'preparedness', 'mental health resilience', and 'India'. We used combinations of search terms in permutation and combinations to identify studies through comprehensive search from the following databases: PubMed, Embase, and Google Scholar. All databases were searched for English language entries on Sep 14, 2020 limited from Jan 1, 1980, to Apr 31, 2020, and the search result was updated on Feb 15, 2021. Additionally, references of selected articles were screened for inclusion of additional studies including websites of the government bodies and published guidelines. Two authors RS and AM independently screened the article titles and abstracts initially; for those whose relevance could not be determined by title and abstract, the full text was read for further inclusion. The reference list of primary retrieved articles was scrutinized to locate any relevant articles for inclusion in the analysis. The final inclusion of articles was based on a consensus of the third reviewer SA. Following MeSH terms were used for identifying the relevant literature: (("disaster"[All Fields]) AND ("mental health"[All Fields])) AND ("preparedness"[All Fields]), ((("disaster"[All Fields]) AND ("mental health"[All Fields])) AND ("preparedness"[All Fields])) AND ("india"[All Fields]), ((("disaster"[All Fields]) AND ("mental health"[All Fields])) AND ("preparedness"[All Fields])) AND ("psychosocial"[All Fields]), ((("psychosocial"[All Fields]) OR (mental health)) OR ("mental health resilience"[All Fields]))) AND ("disaster"[All Fields]), ((((("psychosocial"[All Fields]) OR (mental health)) OR ("resilience"[All Fields]))) AND ("disaster"[All Fields])) AND ("india"[All Fields]), (("disaster"[All Fields]) AND ("preparedness"[All Fields])) AND ("mental health"[All Fields]), (("disaster"[All Fields]) AND ("risk reduction"[All Fields])) AND ("mental health"[All Fields]). In addition, to complete the objective of the review i.e., major disasters and mental health preparedness, we included relevant official reports from state and central government agencies of India.

Results

Search results: Out of 793 records identified, we included 16 studies for the scoping review after the removal of studies not relevant to our objective (564) and duplicate studies (214) as shown in Figure 1 The major types of disasters identified during the review that were relevant to MHP were as follow: one chemical, one draught, four Earthquake, three cyclones, one riot, one tsunami, two floods, and one pandemic. The selected articles included were, four from Karnataka, one from Wolverhampton (UK), one from Maharashtra, one from Rajasthan, four from Odisha, and two from Delhi.

Extracting and charting the results: We included 10 studies (8-15) and six other resources including government guidelines and web pages from India (16-21) that discussed Disaster-MHP and associated domains meeting our review objectives. Major disasters revoking the concept of MHP in India included the Bhopal gas tragedy, Marathwada earthquake, Andhra Pradesh Cyclone, Odisha Super cyclone of 1999, Gujarat earthquake, Gujarat riots, Tamilnadu-Tsunami, Uttarakhand cloudburst, flood, landslide, Odisha Supercyclone (Fani) of 2019 and COVID-19 pandemic. The organizations and institutions actively involved in MHP in India were the Indian Council of Medical Research (ICMR), United Nations Children's Fund (UNICEF), World Health Organization (WHO), International Labor Organization (ILO), National Institute of Mental Health and Neuro-

Sciences (NIMHANS), King George's Medical University (KGMC), National Disaster Management Authority (NDMA). The details of the Mental health responses as MHP to subsequent disasters are given in Table 1. Most of the disasters had been responded to by the local and central government very efficiently and made an effort in capacity building through urgent training of medical officers, health care workers, disaster volunteers, NGOs. After the chemical disaster of the Bhopal gas tragedy, the Bhopal Memorial Hospital and Research Centre was established but the establishment of the department of Psychiatry took 15 long years in the hospital. (89) A strikingly innovative involvement of religious discourses for psychosocial wellbeing was observed during the aftermath of the Tamilnadu Tsunami in 2004.(8) These aspects indeed manifested in the absence of structured Disaster-MHP across India. Training of the special group of volunteers such as Snehakarmis was appreciated during the Odisha cyclone, 1999.(10) The capacity building for disaster response worked as a stepping stone for Disaster-MHP in the subsequent Odisha supercyclone of 2019, wherein District Mental Health Program (DMHP) was utilized for training and transfer of training through medical officers.(17,18) Finally, the recent pandemic of COVID-19 has observed the situation of extreme anxiety in the absence of a structured framework for MHP. Though the Task force for mental health and online counseling were offered and psychosocial-support manuals were prepared in no time, it was a challenging task to adapt them to local needs and these were in response to disaster.

MHP involving emotional first aid, counseling sessions and therapies for acute mental health concerns, self-help groups in subsequent disasters, especially after the Orissa super cyclone and the Gujarat earthquake was feasible because of sustainable efforts of the trained workers and mental health professionals.(8) The strengthening of MHP, and enduring work to establish internal harmony through group meditation and yoga camps during the interim period is evident through governmental and non-governmental collaboration strikingly observed after the Indian ocean tsunami.(8) The development of the high-power committee and its recommendations with the national disaster management plan-2000 after the Orisha super cyclone are examples of sustainable but fragmented preparedness efforts.(17,18) In a nutshell, India has observed a leap in terms of response and crisis intervention but the findings suggest the absence of structured, systematic and replicable MHP initiative.

Map of the outcome measured by the review: We extracted ten salient domains under three themes that emerged in the context of disaster-MHP in India that would help us to conceptualize the idea of Disaster MHP in the Indian context. The review broadly classified them as Infrastructure, Training and capacity building, and Supportive environment in synchronization with national guidelines for Preparedness for PSSMHS. Considering significant efforts carried out by NIMHANS in terms of psychological mitigation and the government of Odisha in terms of infrastructure required for disaster preparedness, a dedicated disaster mental health institution can be contemplated with collaborations of the two mentioned resources. An extension of such training facility into state centers can be thought of in the next phase. Efforts should be channelized to develop the training manual and training courses in disaster MHP for sustainable development of manpower. Further, measuring the mental health resilience could be attempted through structured development of Disaster mental health tools. As highlighted from the review, the systematic use of NMHP and DMHP for disaster MHP for the Capacity-building Programs including NGOs, volunteers, Religious/spiritual organizational to enable the development of a supportive environment for citizens and healthcare workers. Additionally, the utilization of the Taskforce development for mental health concerns during the COVID pandemic can develop sustainable Disaster MHP in India as shown in Figure 2.

Discussion

The review findings highlight the lack of conversion of organized efforts initiated during the response phase to the sustainable transfer of knowledge, skills, resources in developing systemic MHP. The absence of structured MHP was strikingly observed during the COVID-19 pandemic. (22-25) The National Institute of Disaster Management (NIDM) of India came up with a National Disaster Management Plan in 2009, with minimal focus on Disaster-MHP. The development of a multispecialty hospital after the Bhopal gas tragedy has not been geared in delivering specialized training courses in the last 20 years despite the establishment of the Department of Psychiatry. Few satellite clinics were run after the Bhopal gas tragedy but there is a lack of evidence supporting their sustainability and availability for routine disaster-associated services. In a nutshell, uniform and standardized training for MHP could not be implemented across the country as the MHP was not in a prime focus among the health sector. This is also true because of disproportionately low numbers of hospital beds (0.7/1000 people) and a low doctor-population ratio (1:1800) to cater routine mental health services in the country. Considering the low percentage of GDP spent on health in India, along with the wide disparity between the allocation of mental health resources, the concept of disaster MHP is a serious challenge in the absence of a strong framework.(26,27) The rescue teams have outperformed in the aftermath of a disaster; however, no attention has been paid to the viability of these teams for delivering disaster-MHP and associated training in the country. Instillation of trust, hope, mental resilience, and community participation are key elements of disaster-

MHP, the work that was initiated but not continued by a few religious organizations and NGOs, the country in dire need of the same.

The current level of Mental Health Preparedness stands on the edge as brought forward by this scoping review. While a lot previously has been focused mainly on the supply side of mental health services i.e. relief, rehabilitation, and reconstruction, the demand-side of Disaster- MHP has mostly been undermined.(28) A systematic review conducted earlier has mentioned the unavailability of a special team to tackle the concern of disaster- MHP in India.(29) The findings of this scoping review are similar to a recent narrative review and a case example study on disaster risk reduction.(30,31) COVID-19 pandemic is the most recent example that has highlighted several gaps and unpreparedness not barring even the health professionals(32) along with general population.(33,34,35) Though considerable mental resilience was observed during the COVID-19 pandemic, a more structured and systematically delivered MHPSS under the MHP framework could have greatly helped India.(36)

The scanty number of mental health professionals in the country and their uneven distribution across different states in India demand a shift in the concept of MHP through strategic community participation.(37,38) This scoping review makes us emphasize to re-look at the indigenous and western models and adapt them for a country like India.(39-48) Identifying and training key persons in the community could bridge this gap with minimal effort and resources.(49,50) MHP plans and strategies for any disaster need to be a part of the national mental health programs (NMHP) to ensure cohesiveness between the disaster preparedness plan and the county's mental health system. These disasters have also helped to understand that community participation through DMHP has worked earlier and hence recommended to reduce the risk of mental morbidity in the future.(51)

Terming the current situation as a wake-up call may not be an exaggeration (52,53) because investing in MHP carries magnificent potential to avoid mental health morbidity.(54) For this to happen, grounded approaches will be crucial for the development of possible leadership in public, private, and NGO settings that can turn the tables around for developing disaster resilient societies and revamping the disaster mitigation system.(55-57) Nonetheless, the implementation of Disaster-MHP is largely influenced by the available resources, political will, multi-sectoral coordination, larger community participation, and cultural composition.(58) Further, with a multiplicity of actions and stakeholders involved, the framework of MHP necessitates clearly defined roles, and responsibilities, with in-built monitoring and evaluation mechanism in the future. A standardized training model is feasible under the MOHFW and institutions of national importance (INIs) in collaboration with NIDM, NMHP, and DMHP.

Conclusion & Recommendation

The findings of the review suggest commendable efforts in terms of disaster response but minimal efforts directed towards Disaster-MHP in India. Future research must focus on developing models while keeping in mind the resilience of Indian communities and sustainable use of existing infrastructure. Now, the next logical step would be proposing a framework for disaster-MHP and to field test it, and if found feasible and cost-effective, the same should be implemented under the overarching NMHP.

Limitation of the study

Limitations: This is probably the first scoping review attempted to map the required disaster-MHP in India. However, there are certain limitations of the review in terms of the dearth of availability of literature on existing MHP-models limiting the review mapping. Further, since the review was conducted without going through the manuals published in local languages, it can be considered selective. Since the review has focused only on published literature on major disasters, efforts made in the direction of MHP by states of India and central agencies during smaller disasters may have been found helpful and maybe more than what is described in the review. Further, what constitutes Disaster-Mental health Preparedness is questionable as multiple efforts directed towards disaster risk reduction and psychosocial support development could have connotated similar meaning. Although most of the studies involving such keywords were screened by authors and did not find any models on mental health preparedness for disaster. The findings of the review simply cannot be ignored and have implications in understanding the existing gaps of MHP and promote the area of Disaster-MHP through community participation.

Relevance of the study

In doing so, the goals of this research are to assess the disaster mental health intervention strategies that have been adopted so far in the context of major disasters in India, mapping the gaps in existing MHP and scope for future recommendations. We defined major disasters as ‘any calamity with the toll of more than 100 lives requiring significant efforts and attention of available resources of States, local governments, and disaster relief organizations in mitigation’.

Authors Contribution

RS: conceptualized the study, all contributors designed the study, took part in definition of intellectual content and reviewed the final manuscript. RS & PS: conducted the literature search, RS, AM & PS: did the data acquisition. RS, AM, SA, PS & VS: took part in manuscript editing and review.

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Tables

TABLE 1 MAJOR DISASTERS AND MENTAL HEALTH PREPAREDNESS IN INDIA

.	Year of disaster	Type of disaster	Agencies and health institutions involved	MHP Capacity building/ Manpower trained/ resilience building	Specific mental health response
1	1984	**Bhopal gas tragedy** (8,9)	ICMR, UNICEF, WHO, ILO, NIMHANS, Bangaluru and KGMC, Lucknow	Training of medical officers in handling mental health concerns	▪ 1st phase: Recognized and treated clinically diagnosable mental disorders among those who visited health facilities; started after the disaster. ▪ 2nd phase: Around 10 clinics were targeted within disaster-affected zone by the team of psychiatrist, clinical psychologist, and a social worker to screen mental health morbidity by using self-reporting questionnaire (SRQ). Training manual developed based on experiences of medical officers at NIMHANS, Bengaluru. ▪ 3rd phase: Department of Psychiatry set up at Bhopal Memorial Hospital and Research Centre (BMHRC) in 2000 targeting gas victims. ▪ 4th phase: National Institute for Research in Environmental Health (NIREH) set up in Bhopal; helped develop training manual for medical officers (9)
2	1993	**Marathwada earthquake**(1)	ICMR, government hospitals, Maharashtra Institute of Mental Health (MIMH), Pune, and non-governmental organizations (NGO)professionals	Training of health personnel, NGO workers by government psychiatrists	▪ Psychologists integral component of relief team for the first time, reached the site within 2-3 days of disaster. Mental health camp set up by a team of psychiatrists ▪ Counseling of groups and individuals at hospitals immediately post disaster; carried out by government, NGOs, and professionals. ▪ Pharmacotherapy and counseling by psychiatrists
3	1996	**Andhra Pradesh Cyclone**(8)	Indian Red Cross Society		▪ State government provided support ▪ Mental health professionals involved in a bigger way in comparison to the previous disasters in terms of service provision and undertaking research.
4	1999	**Odisha Supercyclone**(8,10)		Trained community workers with support from mental health professionals Disaster volunteers trained by mental health professionals regarding assessment of psychological manifestations and post-disaster counseling	▪ Innovations in providing services, greater mental health research, and focus on capacity building programs to provide psychosocial support ▪ Various trained disaster volunteers (Sneha-karmis) spent most of their time amidst the victims
5	2001	**Gujarat earthquake**(16)	More than 200 NGOs along with national and state government		▪ Emergency mental health service psychosocial support provision.
6	2002	**Gujarat riots**(11,12,13)	NIMHANS, NGOs	Capacity building of NGO staff and community volunteers done to help them understand	▪ Mental health professionals from NIMHANS provided psychosocial support for the riot survivors. ▪ Psycho-social interventions carried out using play and art forms among children.

.	Year of disaster	Type of disaster	Agencies and health institutions involved	MHP Capacity building/ Manpower trained/ resilience building	Specific mental health response
				psychosocial problems of survivors.	
7	2004	**Tsunami**(8)	Many governmental organizations, NGO's, NIMHANS, WHO, Red Cross and Red Crescent Societies	Capacity building of health care workers of mentioned organizations in mental health provision	▪ Along with healthcare workers, numerous group activities like prayers and religious discourses by leaders contributed to psychosocial well-being of affected population. ▪ Spiritual institutions like Ramakrishna Mission and Vivekananda Yoga Institute helped the survivors for rebuilding their internal harmony through group meditation and yoga camps.
8	2013	**Uttarakhand cloudburst, flood, landslide**(14,15)	NIMHANS, NDMA		▪ Multidisciplinary team from NIMHANS comprising of psychiatrists, clinical psychologists and psychiatric social workers deputed to Uttarakhand; provided Psychosocial Support – Mental Health Services (PSS-MHS), assessed psychiatric/psychosocial morbidity. ▪ They found Uttarakhand had a non-functional National Mental Health Programme (NMHP) and had only a few de-addiction rehabilitation centers run by private and NGO sectors.
9	2019	**Odisha Supercyclone (Fani)** (17,18)	Government agencies, NGO's, NIMHANS		▪ Psychological counseling provided by team of psychiatrists, clinical psychologists, and psychiatric social health workers from Mental Health Institute, Cuttack ▪ District mental health teams formed for counseling support ▪ Mental health professionals from NIMHANS provided psycho-social support
10	2020	**COVID-19 pandemic** (19,20,21)	NIMHANS	Online training of psychologists across India for providing brief and basic telephonic psychological support by mental health professionals from NIMHANS	▪ NIMHANS set up a task force for mental health, developed round the clock helpline in collaboration with Ministry of Health and Family Welfare to provide psychosocial support by mental health professionals for the general public, issued guidelines on mental health care ▪ Mental Health awareness and support activities carried out by government through various social media platforms for promoting mental health in the form of creative audio-visual materials on managing stress and anxiety, stigma reduction and enabling supportive environment for citizens and healthcare workers ▪ Government and some other organizations created psychosocial help-lines.

Figures

FIGURE 1 PRISMA FLOWCHART

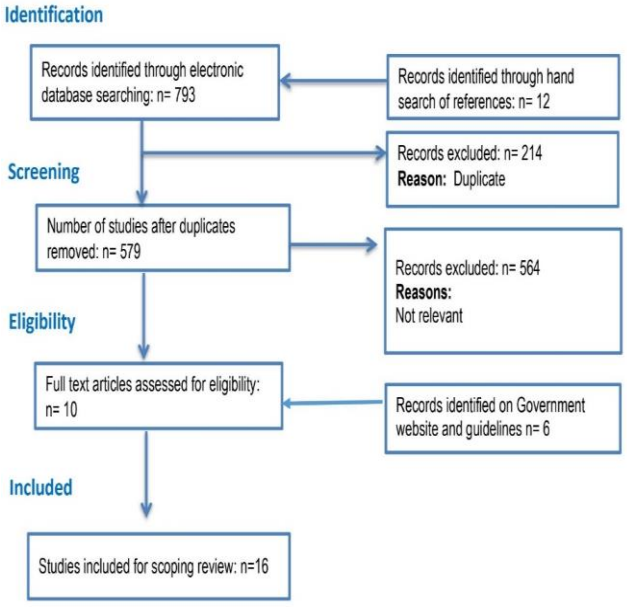
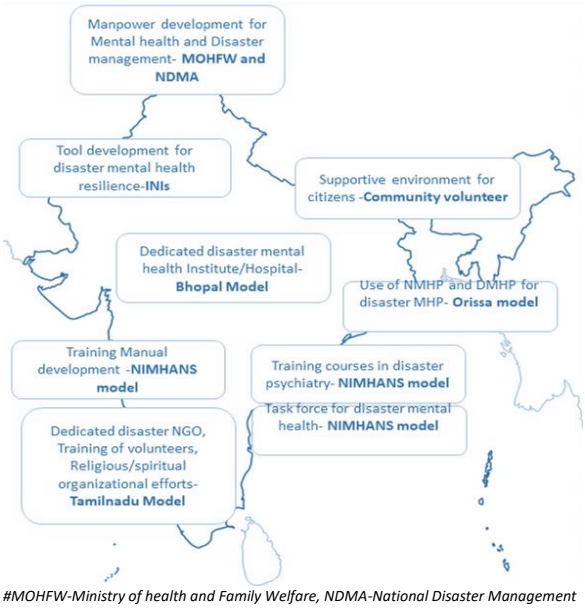


FIGURE 2 MAP OF THE DISASTER- MENTAL HEALTH PREPAREDNESS MEASURES



#MOHFW-Ministry of health and Family Welfare, NDMA-National Disaster Management Authority, INIs-Institute of National Importance, NIMHANS-National Institute of mental health and Neurosciences,