

## Disaster mental health in India: a long journey ahead

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# Disaster mental health in India: A long journey ahead

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## ABSTRACT

India is vulnerable to catastrophic natural events due to its geo-climatic conditions and man-made disasters. There is a need to study the mental health consequences of the disasters and their intervention efforts. A comprehensive literature search was done regarding the mental health of the disaster survivors in India based on the epidemiological and interventional studies from electronic databases and manual searches. Large proportions of disaster survivors in India suffer from diagnosable psychiatric disorders, mostly depression, anxiety and posttraumatic stress disorders. While there are many studies following natural catastrophic events; there are an inadequate number of studies on industrial disasters, mass conflicts, and riots. Prevalence figures of psychiatric disorders have varied depending upon the disaster, exposure and methodology. Many post-disaster interventions have been tried; however the literature about the interventions is not robust. There is a need for studies related to the support for the mental health consequences of disasters in the community and their effectiveness. Culturally appropriate coping activities have been observed amongst the survivors, which need to be explored further as possible intervention methods. Mental health related assessments and interventions need to be prioritised in disaster related support activities and policies. Public education about dealing with disasters, their impact on mental health, self-care and opportunity for professional care are essential. There is a need for an appropriate system to be in place for immediate, short and long term mental health support for the disaster survivors.

## KEY WORDS

Disaster, India, mental health, psychiatry, psychological stress,

## INTRODUCTION

India is vulnerable to catastrophic natural events such as cyclones, floods, droughts, earthquakes and landslides due

to its geo-climatic conditions. In addition to these, there are reports of industrial disasters, mass conflicts, riots and terrorism occasionally. Recently the vulnerability of the country was clear in the face of the COVID-19 pandemic. The increased vulnerability of India to disasters is due to its huge population, the sheer number of people who get affected by disasters, the higher proportion of the economically compromised population, and the poor literacy level in many areas, which brings additional challenges for the preventive and ameliorative measures.<sup>[1]</sup> It is also known that disasters have more devastating effects in the developing regions compared to developed regions in the world.<sup>[2,3]</sup>

The disasters are frequent in India leading to loss of lives and livelihood. Recent major natural event related disasters in India include the 2019 Cyclone Fani, the 2018 Kerala floods and landslides, the 2014 Kashmir floods disaster, the 2013 Uttarakhand flash floods, the 2007 Bihar flood disaster, the 2004 Asian tsunami, the 2002 Indian heat wave, the 2001 Gujarat earthquake, the 1999 Odisha super-cyclone and the 1998 Gujarat cyclone, besides annual flooding in large parts of the country during the monsoon.<sup>[4]</sup> There was a major industrial accident: The Bhopal gas disaster in 1984; the impact of which is still being felt.<sup>[5]</sup> Along with these, India has always suffered from major public unrest, riots, and terrorism e.g. terror attack on 26th November 2008 in Mumbai, and the 1993 bomb blasts in Mumbai, which have affected huge number of people. To this list of disastrous incidences a virus pandemic COVID-19 in 2020 is now added.

Besides the traumatic experiences, the disasters are associated with many secondary stressors (personal injury, death or injury of family members, loss of job, damage to home, displacements, etc.) the impact of which continue long-term. The adverse psychological impact of disasters are well known, which are not just limited to during or immediately after the traumatic event, rather these continue long-term.

Support mechanisms for immediate need for rescue, support for food and water, interventions for physical injuries and practical help related to the damage and loss of livelihood are gradually improving in India. In 2005, the Government of India enacted the Disaster Management Act, and the National Disaster Management Authority (NDMA) was founded in 2006.<sup>[6]</sup> However the mental health support system for the mass survivors is not appreciably well placed. There have been many examples of mental health support following

major disasters but these seem minuscule in the face of a massive need; and these do not continue long enough. Most of the survivors suffering from mental health consequences do not seem to receive the support they deserve.

There have been many epidemiological studies in the post-disaster period mapping the magnitude of mental health issues. These have covered many different types of disasters: super-cyclones, earthquakes, tsunamis, etc. This has highlighted that there is a huge proportion of survivors in the general public who would need and benefit from psychological support. Although most of these studies have been comparatively small, they have provided an adequate understanding of the mental health impact of the disasters in India.

Mental health interventions have also been studied and suggestions provided; and there are some evaluation studies about their efficacy. However, the reach of mental health care to the affected masses has been limited. Some intervention models can be suggested from the epidemiological and interventional studies, but these need to be tested out in the community involving the survivors. There are many culture based coping strategies (e.g. during the 1999 super-cyclone in Odisha, devotional music was used as a way of expressing distress and finding hope)<sup>[7,8]</sup> have been observed, which need to be further explored and incorporated in the intervention options and their efficacy need to be studied.<sup>[9]</sup> There is a great scope for developing disaster mental health care involving assessment, support and research in India. Clearly there is more that needs to be done.

## Initiatives

Compared to the frequency and magnitude of disasters in India and their impact on mental health, the information about mental health morbidity, the interventions and the long term consequences is limited. The first major disaster to be studied systematically was the Bhopal disaster of 1984.<sup>[5]</sup> Earlier to this the Bangalore circus tragedy in 1981 and the cyclones in Andhra Pradesh were reported. Similarly, the consequences of Latur<sup>[10]</sup> and Gujarat earthquakes<sup>[11]</sup> were studied and documented systematically. In 1999, Odisha experienced a super-cyclone with a massive loss of lives. Lack of preparedness in many fronts, and inadequate post-disaster support in the situation of massive resource loss due to the super-cyclone made the vulnerabilities bare. A team from the National Institute of Mental Health and Neurosciences (NIMHANS) headed by Prof R Srinivasa Murthy set to explore the extent of the mental health issues. The epidemiological work done at that time in Odisha was perhaps the major epidemiological work that was undertaken at that time.<sup>[7,8]</sup> The findings provided the ground realities in the post-disaster scenarios;<sup>[7]</sup> and the magnitude of psychiatric concerns in adults,<sup>[12]</sup> children and adolescents were available.<sup>[13,14]</sup> In addition, these epidemiological studies highlighted the risk factors for stress related disorders, self-harm and suicidality.<sup>[15]</sup> These studies could reflect on the mental health support needs of the disaster survivors in the community.

Many psychosocial interventions were provided following the super-cyclone which included counselling by local voluntary

organisations; and these volunteers were provided trainings on counselling the disaster survivors.<sup>[7,8,16]</sup> There was support from visiting professionals to the lay counsellors. However, the short and long-term effectiveness of interventions remained unclear due to a lack of longitudinal studies. These however gave the indications about feasibility of interventions in the post-disaster scenarios in the affected areas and a future reference plan. It also helped to understand the process.

Following these, there were many studies conducted in the subsequent disasters. Some of the examples are: the 2019 Cyclone Fani, Odisha;<sup>[17]</sup> the 2018 floods and landslides, Kerala;<sup>[18,19]</sup> the 2015 earthquake, Nepal;<sup>[20]</sup> the 2015 floods, Tamil Nadu;<sup>[21]</sup> the 2004 tsunami, Tamil Nadu.<sup>[2,22-24]</sup> There are few other studies available about floods.<sup>[25-28]</sup> The knowledgebase about the mental health impact of disasters have grown over the years particularly about anxiety, depression and posttraumatic stress disorder (PTSD). These studies provided not only the prevalence figures but also the risk factors which were specific to affected Indian population. This helped in finding the more vulnerable groups and prioritising the support efforts. Some examples of the studies conducted in recent disasters in India providing prevalence and risk factors are given in Table 1.

**Table 1: Mental health morbidity and risk factors in some recent disasters in India**

Year, Event, place	Prevalence	Risk factors
1999, Super-cyclone, Odisha <sup>[12]</sup>	Probable psychiatric disorder: 80.4%, PTSD 44.3%; anxiety disorder 57.5%, and depression in 52.7%. comorbidity in 63.4%	Children and adolescents, elderly, lower SES, lower education, unemployment, physical injury, degree of exposure, need for evacuation, death in the family, fear of imminent death during the event, hopelessness, increased stress before disaster and past psychiatric history
1999, Super-cyclone, Odisha <sup>[13]</sup>	Adolescents: Around one year after, PTSD 26.9%, depression 17.6%, and GAD 12.0%, any diagnosis 37.9%. Comorbidity 39.0%	Middle SES, Prolonged periods of helplessness and lack of adequate post-disaster psychological support and the severity of the disaster.
1999, Super-cyclone, Odisha <sup>[14]</sup>	Children: PTSD 30.6%, sub-syndromal PTSD 13.6%. Parents or teachers reported mental health concerns in 7.2%, which is only 12.8% of children with any diagnosis. Depression was significantly associated with PTSD.	High exposure, lower educational level and middle SES significantly predicted PTSD. Extreme fear and perceived threat to life during disaster, death in family, damage to home, stay in shelters were not significantly associated with PTSD in children.
1999, Fire in urban slum area of Delhi. <sup>[29]</sup>	Survivors v controls: prevalence of psychiatric disorders 7.8% v 2.2% and psychological ill health 23.2% v 5.0%. Common disorders: depression, substance use disorders, generalised anxiety disorder and somatoform disorders. The commonest symptoms of psychological ill health were suggestive of depression.	Age and participation in relief work were strong predictors, and physical injuries were weak predictor of mental health morbidity.
2004, Tsunami, Andaman and Nicobar <sup>[22]</sup>	Children and Adolescents: adjustment disorder 13.5%, depression 13.5%, panic disorder 10.8%, PTSD 10.8%, schizophrenia 2.7%, other disorders 43.2%. Subclinical syndrome in the majority.	Only a few required intensive individual psychiatric interventions; a majority required community-based group interventions.
2004, Tsunami, Tamil Nadu <sup>[24]</sup>	PTSS was 15.1%	Traumatic grief, female gender, physical injury, death of children and financial losses, but not functional disability
2004, Tsunami, Tamil Nadu <sup>[2]</sup>	4.5 years after the tsunami: psychiatric morbidity 77.6%, anxiety 23.1%, depression 33.6%, PTSD 70.9% and comorbidity 44.7%	Direct exposure, lack of formal education, perception of disaster as highly stressful, damage to home and loss of livelihood and livestock.
2004, Tsunami, Tamil Nadu <sup>[30]</sup>	Prolonged grief disorder (PGD): 14.2% of tsunami survivors v 25.9% of bereaved survivors	Spousal bereavement, extensive damage to homes, fewer years of education, and absence of tsunami-related physical injury associated with PGD
2015, Earthquake, Nepal <sup>[20]</sup>	Adolescents: PTSD 43.3%, depression 38.1%.	More affected areas, females, joint family, financial problems, displacement, injury or being trapped in the earthquake, damage to livelihood, and fear of death significantly associated with PTSD

2018, floods and landslides, Kerala	At 6 weeks post landslide, PTSD 46%. Positive predictive value of PTSD screening at day 3 was 64.3% for PTSD at week 6.	Damage to property was, associated with the risk of having PTSD. Early screening was considered essential.
2018, Flood and landslide, Kerala <sup>[19]</sup>	Adolescents: probable PTSD 34.9%. Deterioration in academic performance in 45.9% who were screened positive for PTSD.	Male, higher age, damage during floods, presence of morbidity, camp stay and loss of pets significantly associated with PTSD.
2018, Flood and landslide, Kerala <sup>[18]</sup>	Surviving a moderate amount of risk is perhaps necessary for better psychological wellbeing and that too many or too few risks in life are detrimental to good psychological health.	Learned helplessness was found to be high among survivors who were affected by the flood twice rather than once.
2019, Cyclone Fani, Odisha <sup>[17]</sup>	Probable PTSD: 42.9%, severe anxiety: 36.7%, moderately severe depression: 16.5% and severe: 3.8%. Suicidal cognitions: 14%. Comorbidity was common.	Damage of house and displacement with PTSD; evacuation and displacement with moderate and severe depression; and displacement with severe anxiety.

### PTSD prevalence in India:

Researches have reported the existence of PTSD following disasters in the Indian culture; validating concepts of PTSD and keeping pace with changing concepts of PTSD.<sup>[31]</sup> There are now further research about PTSD in India.<sup>[32]</sup> The ground work in the epidemiological studies provided information about post-disaster mental health, the magnitude of the problems; and this information could be used for designing and providing adequate support. These studies have also suggested risk factors for PTSD in the survivor groups whose support needs to be prioritised. This also led to other research in subsequent disasters from various angles.

### Supportive public education materials:

There were many supportive materials produced in the forms of booklets, training manuals, and information booklets or other publications to support the general public and professionals about disasters, their effects, how to prepare for these and how to take care of self in stressful situations.<sup>[33-36]</sup> Some examples there were Information Manuals on 'Disaster Mental Health Care by Medical Officers from NIMHANS. It is encouraging to note that many information books are now available in the local languages in different states of India.

### Involvement of voluntary organisations in the post-disaster mental health support:

There has been increased participation of local voluntary organisations in mental health care following disasters; besides well-known organisations such as UNDP, Red Cross and ActionAid etc. The local voluntary organisations are providing support for disasters survivors through counselling. This helps to a great extent as local volunteers talk in common language and understand local cultural issues better than outside professionals. Training local volunteers of the organisations is a faster way of disseminating the knowhow or mental health care for the large mass of disaster survivors. Many governments and other voluntary organisations have

taken steps in this regard.

### Interventional studies:

The interventional studies are limited in the disaster mental health research in India. A study on psychosocial care instituted by NIMHANS for adult, children and women survivors of the 2004 Tsunami showed effectiveness based on the impact of event scale scores.<sup>[37,38]</sup> Qualitative studies on group counselling have been reported following the tsunami disaster in Tamil Nadu and the bomb blast in Assam which highlight effectiveness of group interventions in the management of disaster traumas.<sup>[39]</sup> There have been studies involving yoga after the Bihar floods with positive outcomes.<sup>[40]</sup> Post-disaster community-based group interventions were reported to be easy to implement using local resources and effective in psychosocial rehabilitation. It has been suggested to start these as early as possible, involving all children and adolescents affected by disaster.<sup>[22]</sup>

### Preventive capabilities of the interventions:

It can be hoped that once appropriate support can be provided, many of the stress symptoms would recede and would not develop into syndromal disorders. It is important to highlight the role of appropriate screening, early identification of the population at risk and timely interventions (starting with psychological first aid) having preventive capabilities for avoidable stress related disorders.

### Challenges

Although people and authorities were aware of mental health issues following disasters and impact of stress; however what was not clear to many in the past was the magnitude of these problems, and the massive need for interventions. Authorities and professionals realised that a considerable proportion of survivors suffer from diagnosable mental illnesses and would require treatment, without which their functional capabilities and quality of life would remain impaired; besides the

continued suffering. In spite of the increasing evidence base, there is still a sense of inaction in many quarters about the support need; and mental health of the survivors has not been prioritised to the extent it needs to be. There is a need to emphasize this area to health authorities so that support systems can be adequately bolstered to take care of the increasing demand for mental health care following major stressful events. There should be support for interventions for those in need and grants for ongoing researches in the field, primarily interventional studies. There is a perception that the political will has shifted in positive direction in India as the NDMA is actively supporting disaster related work; however mental health care still needs to get prioritised.

There is an apparent disconnect between the existing system and the services during the disasters, as soon after the relief work is over, many such disaster related work disappears from the community, leaving the survivors to fend for their mental health care themselves, through the usual, existing channels. Most of the time, they do not seek help, and if they do the clinical support remains limited to only medicinal support. Psychological support is mostly unavailable in the community. There is a need to increase the effectiveness of the existing workforce by training them with psychological support skills while they are involved in the care of the survivors. Gradually but certainly there is a need to increase the workforce, so that the counsellors, clinical psychologists, social workers, and primary care physicians are available in the community within easy reach of the survivors should they need them.

Challenges of conducting research post-disaster: In spite of frequent disasters in India, it has been observed that there is limited preparedness about mental health response for assessment, intervention and research, due to lack of infrastructure, language and cultural differences and unavailability of long-term services. Lack of policy, poor co-ordination of services, lack of trained researchers and limited resources are the main challenges which have been reported.<sup>[41]</sup>

Most of the post-disaster research has been led by premier institutes such as NIMHANS and some interested researchers. However considering the locales and number of people affected and the need for various interventional and long-term follow up studies, it is essential for teams local to disasters to get involved and continue prospective research. This should involve not only prevalence based studies but also interventional studies, cultural aspects of coping, long-term outcomes etc. It appears there are issues related to financial and structural support, besides the willingness for these projects. Understandably there is a need to have multidisciplinary research teams locally collaborating with central, state or national level institutes for continued support.

The difficulty in conducting research in the community, in a resource scant scenario, and that too if it is interventional and long term, challenges the motivation of the researchers. These factors need to be considered and supported adequately. Major health, psychology and social care departments in medical colleges, institutes and universities should take up these initiatives and responsibilities.

## Lessons learnt

It is obvious that disasters in India, especially catastrophic natural events affect large number of people; so existing systems or the usual clinic-based psychiatric services can not be able to support mental health needs. As a result mental health issues of most survivors are missed and they do not get any psychological support. It would require pre-planned well designed strategies to deal with the trauma. There are improvements in the rescue, rehabilitation and finance support, but mental health support system is not adequately visible. While major psychiatric institutes and departments are doing specific work, large scale support for the people in the community is the need which does not seem to have been met.

While some post-trauma interventions have been conducted, there are no specific actions on preventive measures following traumatic experiences. Some of the stress reactions may be prevented the developing into syndromal psychiatric disorders; and certainly many post-disaster suicide attempts. Practical support, timely counselling regarding trauma and its effects, stress management and coping strategies may help. However these need to be systematically implemented and their effectiveness studied.

In the general population, the awareness of stress related disorders is limited, especially about the interventions and the support systems available. While most people continue to suffer without knowing, many who are aware do not seek help, for various reasons especially financial, struggle to find appropriate care as mental health professionals are mostly available in cities, and last but not least, stigma. Sometimes it is due to the perception of partiality in the relief distribution, attitude and behaviour of the disaster workers while dealing with a demanding distressed public in a situation of scarcity. These may lead to lack of trust in the supportive system early during the post-disaster situation. Supportive disaster workers should see that the needs assessment and reliefs are available to the survivors appropriately, which may improve the trust upon the system; and avoid feelings of being let down. Increasing public awareness, through regular information through various media from reliable sources is important. Mental health support should be part of larger community or public health measures and run alongside other supportive activities.

Public unrest, riots and terrorism are still reported occasionally in India; and they affect the lives of many people. These lead to considerable psychiatric problems in the survivors;<sup>[42]</sup> and need specific focus related to assessment, intervention and research. In addition, there are fire and industrial disasters. Surprisingly there are very few in depth studies about the mental health impact following these kinds of disasters. For example, following the 2008 Mumbai terror attack, a study reported that 30% hospitalised victims had acute stress reaction,<sup>[43]</sup> one provided psychosocial framework for understanding psychological distress among survivors<sup>[44]</sup> and another evaluated distress dimensions in children and adolescents.<sup>[45]</sup> It is important that these kind of man-made events are evaluated for their immediate and long-term mental health impact, effectiveness of the interventions provided if any, to develop strategies to deal with them.

Mental disorders are a reality after disasters and survivors need help. It has been convincingly established that stress related mental disorders are common in India; however most of them go unnoticed; and people suffer silently and do not get appropriately treated. As the disasters are quite frequent, and the impact continues long term, it is important that India should have a robust post-disaster mental health strategy incorporating stress management and other therapeutic interventions, the process of which should continue unabated. While apex institutes can design and guide, state level and local units should make this available for people at the community level. It is good to see that such systems are gaining roots from NIMHANS digital academy.

In addition, conducting research regarding disasters, following natural events, industrial accidents or riots is challenging considering the environmental factors, resources issues and lack of support. Adequate infrastructure, financial and organisational support and importance to research alongside the disaster work from the early stage are required.

### **Road ahead: the action plan**

It is certain that catastrophic natural events and other disasters including industrial accidents will continue to occur. As the climate changes, disasters may become more frequent and there would be more health related concerns.<sup>[46]</sup> In all probabilities the unrest, riots and terrorism incidences might continue too. It is quite possible that the disaster response from rescue to intervention will improve gradually. However the trauma of the experience and the associated stressors will affect many people in the community and there will be mental health issues. Improving preparedness of communities to the disasters, preventing man-made situations of conflict, war, migration and refugee situations, and integrating psychosocial interventions as part of relief operations are the key elements to consider.<sup>[47]</sup>

### **Community intervention models:**

As a huge number of people get affected, the support systems should be in the community primarily rather than in clinics or hospitals. For example, schools and community centres could be the bases for interventions alongside relief operations, with disaster workers, local volunteers and teachers coordinating care with the help of clinicians.

It is important to develop models and methods of community intervention and assess their effectiveness, in preventing and managing mental health issues. Public education, increasing disaster preparedness, and group interventions need to be incorporated in to the models. Public education should involve disaster related individual and family level preparedness, safety planning, life skills, rescue, coping, and other essential elements as needed. One of the aspects of public education would be about self-care during these crisis periods, when there is a lack of or limited health infrastructure and medical services. Self-care based on WHO guidelines<sup>[48]</sup> could play an important role to improve health-related outcomes in post-disaster situations.

There are many examples of group interventions, and online

psychological support which can be tried out for traumatic stress related disorders.<sup>[49]</sup> Psychoeducation and common psychotherapy techniques can be adapted to be used in community for the disaster survivors.<sup>[50]</sup> One of the methods could be to use technologies for group or mass intervention and remote care from mental health professionals. These options have been recently used during the COVID-19 pandemic and these can be stretched to disaster scenarios. Early psychosocial intervention may prevent the traumatic experience from developing in to syndromal psychiatric disorders; however the effectiveness of preventive strategies needs to be systematically studied. Mental health interventions can be provided through a planned way involving central monitoring units and local coordinating centres reaching out to people.

Among the survivors, research has identified more vulnerable groups and specific attention needs to be given to those, especially older adults, the disabled, people with existing illnesses, children and adolescents.<sup>[34,51-53]</sup> These vulnerable groups would require additional support. As disaster related interventions should be in place from the pre-disaster period to remote post-disaster periods, there are specific phase-wise suggestions and actions.<sup>[7,54]</sup> These can provide a strategy to follow in each disaster.

### **Training to improve manpower:**

Mental health outreach into the community needs to be strengthened to address the issues post-disaster. Developing manpower will be the key, besides having more mental health professionals such as psychiatrists, clinical psychologists, and mental health nurses, it is important to have clinicians with a special interest in mental health. For this to happen, training ground level health workers and primary health clinicians are essential who can identify and treat common mental health problems, and can refer to mental health professionals when indicated.

Training should involve other staff at Primary Health Care, Community Health Care centres, school teachers etc. Along with this mental health professionals should also be specifically trained regarding trauma focused psychotherapeutic interventions. Disaster related mental health support should happen side by side with the practical and other non-clinical support. To that effect all the disaster workers, should also receive training to increase their skills to support mental health in the post disaster scenarios. In many recent disasters in India, local volunteers from non-governmental organisations have been trained and they have supported the psychosocial interventions immensely.<sup>[8,55]</sup>

The training can be on psychological first aid, immediate support and identifying those at risk of severe illness, risk of self-harm or suicide and those who need professional care. Training on crisis management, stress management, problem-solving and psychological stress related care can be an integral part of the clinicians and disaster workers' annual appraisal.

## National strategy:

It is important to incorporate and prioritise mental health intervention issues in the post-disaster scenarios in the national strategies. In recent years, there has been an appreciable change in the disaster management strategy at state and national level, which has led to decreased impact of the disasters. However, health care infrastructures, especially those for mental health are already stretched and struggle to cope with increased demands following disasters. There should be adequate funding for the mental health support needed for the survivors. The strategy should clearly mark out the roles and responsibilities starting from the first responders to all those involved in disaster work. The supportive care pathways from the community up to emergency services and the tertiary centres should be well-defined. Specific pathways of care and support for secondary stresses of the survivors should also be a part of the strategy. In addition, crisis support for practical issues, psychological stress and self-harm prevention are essential elements to be included. Rehabilitation of the survivors is a major issue which is often missed in the strategies; national strategies should include this with long-term support for the survivors beyond the immediate practical help.

## Research on interventions and outcomes:

Research in disaster related mental health problems, trends of change, effectiveness of interventions, short and long term outcomes should be systematically studied. Besides the continuous learning from the screening, and mental health support for the disaster survivors, to understand the trend; there is a specific need for further research on disaster impact on vulnerable and marginalised population and their support. These could include children and adolescents,<sup>[14,46,64]</sup> older adults,<sup>[65,66]</sup> pregnant women and young mothers,<sup>[67]</sup> third genders, displaced migrants,<sup>[68,69]</sup> and different types of disasters including epidemics and pandemics,<sup>[70]</sup> etc. Culture specific stress responses, coping strategies and resilience factors further,<sup>[52,71]</sup> barriers to accessing post-disaster care are other pertinent issues.<sup>[45]</sup> It is also essential to study the impact of catastrophic events on disaster responders e.g. search and rescue team, relief operators, community counsellors, clinicians and other professionals.

Focus of the research could be the specific intervention for the vulnerable groups identified in the epidemiological studies.<sup>[56]</sup> One of the areas of research which needs focus is the preventive capabilities of the early interventions, psychological first-aid and all those that are feasible in the community. Research should explore the cultural coping and resilience factors further,<sup>[47,57]</sup> including the role of Yoga in these scenarios which have been found helpful.<sup>[40,58]</sup> Exploring intervention approaches beyond medicinal and usual psychotherapies is essential, which can reach large number of survivors; e.g. yoga as an post-disaster intervention method have been helpful. Another area of research includes how to integrate the remote assessments and interventions following disasters when usually huge number of people are affected. This has been in practice for a long-time and its utility has increased exponentially during COVID-19 pandemic. There is also scope for research on the biological vulnerabilities of the survivors and the effectiveness of various medications in

preventing or managing post-disaster psychiatric sequelae. The findings will help in choosing appropriate methods of interventions and prioritising resources for those. It is important to have adequate funding for research considering the frequent and catastrophic disasters and the vulnerabilities of India. Research should continue side by side from the beginning right from the initial disaster warning and rescue phases.

## Summarising Insights

Disasters are frequent and will continue to happen. It is important that people need to remain prepared and try to prevent or decrease the impact of these disasters. Most of the impact can be buffered with adequate disaster preparedness and planning. At the same time, measures should be taken to prevent man-made disasters and improve response to natural events. A well laid strategy, public information about what to expect, and the support pathways may help mental health and provide hope to the affected people. In this connection, all the disaster work should be integrated with mental health support during and post disaster period and link into the existing infrastructure of health and social care. Besides health professionals, authorities and government should work together to provide holistic support for disaster survivors. Last but not least, continuing research on various aspects of mental health support for the survivors is essential to improve the intervention approaches and their effectiveness, and this research should be encouraged and supported.

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