

# Disaster and its impact on mental health: A narrative review

Nikunj Makwana<sup>1</sup>

<sup>1</sup>Research Scholar, Centre of Social Medicine and Community Health, Jawaharlal Nehru University, New Delhi, India

### ABSTRACT

The purpose of this study is to understand the linkages between disaster and its impact on mental health. To fulfil this objective, an attempt has been made to examine the existing qualitative literature on disaster and mental health. In this paper, disaster and mental health as a concept has been used in a holistic sense. Based on the review of literature, the following broad themes have been identified: natural disaster and its impact on mental health, man-made disaster and its effect on mental health, effects of industrial disaster on mental health. It examines the post-disaster behavioural and psychological symptoms associated with an impairment in functioning. By this review, various protective factors, including resilience and other coping strategies which amplified the individual's capacity while encountering negative situations, have been identified. The effectiveness of post-disaster intervention techniques is also highlighted. Better preparedness and community empowerment can improve the condition of the vulnerable population affected by the disaster. Thus, efforts should be given for holistic rehabilitation of the affected population.

**Keywords:** Disaster, mental health, review, protective factors, post-disaster intervention, rehabilitation

### Introduction

Disasters are a complex global problem; it is an inevitable truth of our life. Every year individuals and communities are being affected by disasters, which disrupts their mental health and well-being. Economic and social development throughout the world is frequently interrupted by natural disasters<sup>[1]</sup>.

The United Nation International Strategy for Disaster Reduction (UN-IDSRR)<sup>[2]</sup> defines disaster as a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources. World Health Organization (WHO) defines disaster as a sudden ecologic phenomenon of sufficient magnitude to require external assistance.

**Address for correspondence:** Dr. Nikunj Makwana, Research Scholar, Centre of Social Medicine and Community Health, Jawaharlal Nehru University, New Delhi, India. E-mail: dr.nikunj@yahoo.co.in

Received: 01-03-2019 Revised: 30-06-2019 Accepted: 12-07-2019

Disasters are mainly of two types - Natural and Man-made<sup>[3]</sup>. Natural Disasters are the result of natural causes, for example cyclones, earthquakes, tsunamis and tropical cyclones. Man-made disasters are brought about by human actions, including military conflicts, terrorism, political unrest and industrial accidents. He further argues that there is a superficial conceptualization of disaster in terms of natural and man-made. However, research suggests that both natural and social factors cause disasters, e.g. flooding might be the result of the combination of deforestation and climate change<sup>[3]</sup>.

### Rationale

Developing countries are more prone to disasters or hazards due to the various challenges like poverty, lack of resources, lack of educational opportunities, poor infrastructure, and lack of trained manpower, lack of awareness and knowledge of disaster mental health<sup>[4]</sup>. Mental health issues, in general, have been considered as a neglected subject especially in India as it is considered as a stigmatised problem. Mental health issues caused by disasters are even more neglected area. Thus, in order to fulfil this gap, there is a need to understand this study.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

**How to cite this article:** Makwana N. Disaster and its impact on mental health: A narrative review. J Family Med Prim Care 2019;8:3090-5.

#### Access this article online

##### Quick Response Code:



Website:  
www.jfmprc.com

DOI:  
10.4103/jfmprc.jfmprc\_893\_19

India is vulnerable to natural disasters and other types of disasters which leads to a significant loss in the affected population. The aftermath of disasters has a significant impact on the socio-economic and mental state of the victims. Apart from the government interventions, which focuses on the socio-economic condition, the psychosocial interventions are also being emphasized. It comprises of acceptance as a coping skill, which helps the victims to maintain social relationships positively and also protect and enhance their well-being. The interventions also include the awareness programme which helps the victims to practically visualize the situation and adopt effective measures to inculcate patience and resiliency in them. Thus, it helps the victims to adapt to the changes they experience post-disaster. These interventions assist the victims in normalising their mental health despite their loss. The victims who might develop psychotic symptoms are guided with the help of psycho-education and are encouraged to lead a better and positive life.

## Conceptualisation

We cannot understand disaster as a standalone issue. Borrowing the conceptualisation of Quarentelli<sup>[5,6]</sup>:

1. A disaster affects the social structure, and it creates an immense barrier on the usual functioning of the society. The disaster does not have physical consequences only, but it also encompasses the other domains such as the psychological and psychosocial dimensions.
2. The impact of disasters can be neutralized with the help of some variables like the willingness for positive psychological adjustment of the victims, the ability of the community to adapt to the environment.
3. There is no universal definition of disaster. The definition varies from context to context.
4. The coping mechanism helps to minimize the negative impact of disasters on mental health.

## Methodology

Using qualitative literature the paper attempt to understand the linkages between disaster and its impact on mental health. In this study, disaster and mental health as a concept has been used in holistic sense. For this review, different permutation and combinations of certain keywords such as ‘mental health’, ‘psychological health’, ‘disaster management’, ‘disaster effects’, ‘disaster impact’, etc., have been used to identify the relevant literature. Since the study uses a narrative review method, no typical criteria for inclusion and exclusion have been pre-defined. On the basis of review of literature, certain themes were developed and elaborated accordingly.

## Psychological Effects of Disaster

Disasters and mental health are related to a large extent; the effects of disasters might have a negative impact on the affected population. Along with the social and economic losses, the

individuals and communities experience a mental instability which might precipitate Post Traumatic Stress Disorder (PTSD), Anxiety and Depression in the population. Generally, the disasters are measured by the cost of social and economic damage, but there is no comparison to the emotional sufferings a person undergoes post-disaster.

Psychological distress is common in the victims, along with socio-economic distress. The psychological interventions have helped the victims to improve over time, but the most common mental disorders such as depression and anxiety are expected to increase as a result of negative impact on mental health<sup>[7]</sup>.

Disasters are mostly unpredictable, which leaves the victims in a state of shock. The victims tend to deny the loss and try to escape from reality. Being in a denial state makes the victims more vulnerable to stress, anxiety and other different maladaptive reactions. Home is a place which provides safety and security to the people. But, when the unavoidable situations induced by disaster, damage home, properties other valuable assets, it leads to a feeling of insecurity in the victims. Death of a closed one also leaves the victim in a state of insecurity because the sense of love, attachment and belongingness is deprived. There were various factors which lead to the psychological vulnerabilities of the sufferers such as the displacement of the family, death of a loved one, socio-economic loss, environmental loss, and lack of mental preparedness for disaster, disruption in the family bond, lack of social support and negative coping skills<sup>[8]</sup>.

The psychological effects of the disaster are more drastic among children, women and dependent elderly population. After any sudden disaster or chronic disaster, they become the most vulnerable population. Thus, they have special needs, which needs to be taken care. Peek<sup>[9]</sup> stated that there are various behavioural, psychological and emotional issues and instabilities observed in older children and adolescents after the disaster. The psychological impact on children due to disasters can be in the form of PTSD (post-traumatic stress disorder), Depression, Anxiety, Emotional Distress, and Sleep Disorders.

## Effect of natural disasters on mental health

In this section, the impact on mental health post-natural disaster has been emphasised. Thus, the mental health consequences of natural disaster such as hurricane, floods and tsunami have been highlighted.

Hackbarth *et al.*<sup>[9]</sup> state that disasters may put the victims in a state of despair and shock. This traumatic experience disrupts the fully-functioning life of the victims and brings loss for individuals, families and communities. Families experiencing natural disasters faced a loss of their identity by losing the work they have been engaged. Also, there is a lack of hope and a disturbance of their roles in the respective community post-disaster. The loss of resources, loss of daily routine, lack of control over one's own possessions and loss of social support

was associated with elevated levels of acute psychological distress following Hurricane Hugo [10]. These mental health outcomes developed various psychological symptoms such as severe stress after the traumatic experience, uncontrollable stress, and feelings of grief and sadness for a prolonged period of time, substance dependency, and adjustment problems which affects the proper functioning of the individual as well as the community resulting in family conflicts.

Various studies have explained the physical and psychological health effects of the flood [11]. For instance, during and after flood situation people suffering from physical health effects like cold, cough, flu, sore throat, or throat infections and headaches, skin rashes, gastrointestinal illness, chest illness, high blood pressure, asthma which results in psychological stress [12].

Anxiety while rainfall was the most common psychological impact after the flood. Other psychological health effects such as increased stress levels, disturbance in sleeping, dependency on alcohol and other drugs and depression have been observed.

Jenkins and Meltzer [13] explain the mental health impact of the Indian Ocean tsunami, 2004. The survivors showed a wide range of symptoms related to anxiety, depression and PTSD. The displaced victims, however, reported the symptoms to a great extent as compared to the non-displaced victims. Unnecessary fear and adjustment problems were common. The feeling of hopelessness and a constant state of despair was also seen in the victims. There were a lot of mental health issues in the survivors from the Nordic countries. The most commonly reported problems were persistent grief, a state of shock and fear, maladjustment and dysfunctionality. Several victims were diagnosed with mental disorders comprising of the symptoms such as avoiding a specific situation with a fear of being rejected or humiliated; a state of constant sadness and uncertainties; failing to understand the causes and reasons behind the grief; fear of socializing and persistently avoiding social situations.

### Effect of man-made disasters on mental health

Nilamadhav Kar [14] states that after the Mumbai riots in 1992-93, the victims were found to be in a state of fear, shock and helplessness. The psychological and behavioural symptoms observed were anger (especially of the females who tried to attempt suicide seeing the mangled bodies of their husbands), unnecessary fear, state of suspiciousness, paranoia, obsessed thoughts and sexual inactivity.

Kar [14] further says that within ten days of a bomb blast in a bus in 1996 at Dausa, Rajasthan, which was the result of terrorist activity, people reported severe stress, state of helplessness, severe mood swings and forgetfulness. The most commonly reported symptoms were not being able to feel one's own self, lack of awareness of the reality, lack of sleep, guilt, loss of interest, fear

of encountering situations, emotional flatness, self-blame, suicidal ideations and consistent worry about future.

Man-made disasters significantly cause PTSD than natural disasters. Serious injury or death of someone close was also a significant predictor. Being displaced by the disaster, serious injury to the victim and the victims witnessing death further aggravate the problem.

Jenkins and Meltzer [13] explain that the oil spill in the Gulf of Mexico in 2010 had a significant impact on mental health because of its continuation for three months. The intervention focused on four areas; the people who provided safety to the workers, the toxicity of the oil spill which affected the workers, the visitors who came to analyse the disaster and also tried to help the victims, socio-economic and mental health interventions. The victims reported psychological symptoms which had a negative impact on their behaviour and mental health. The social, personal and professional life of the victims were affected, resulting in a disturbance in their functioning.

### Effect of industrial disasters on mental health

The biggest industrial disaster in human history is the Bhopal gas leak disaster. Murthy [15] explains that the Bhopal disaster is an important landmark for understanding the mental health dimensions of disasters. There was an increase in the psychopathological symptoms leading to dysfunction in the day to day activities. Clinical help and care were needed for the people who had acute psychotic symptoms viz., confusional states, anxiety-depression reactions, reactive psychoses and grief reactions. The long term care was needed for the psychological problems which resulted from disabilities, uncertainties of future, broken social units and rehabilitation issues. The victims who had direct and indirect experiences of the disaster showed prolonged behavioural and cognitive symptoms for which psychological rehabilitation was needed.

Cullinan *et al.* [16], after nine years of the disaster, conducted a study of a gas-exposed population. In this study some victims were subjected to detailed neurological testing including vestibular and peripheral sensory function and short-term memory tests. In this study, a high proportion of study participants were reported a wide variety of neuropsychiatric symptoms such as abnormal taste, an abnormal smell, abnormal balance, headache, faintness and difficulty to stay awake. The neurological examination showed that many study participants have central, peripheral and vestibular neurological diseases.

Kar [14] says that the Bhopal disaster was associated with a variety of severe form of mental disorders. Most of the patients were females, and the main diagnoses were neurotic symptoms with severe anxiety and adjustment problems with disturbance of emotions where depressive symptoms were common. The patients were not able to adjust with their immediate environment even after treatment; most of them showed psychotic symptoms and demanded consistent clinical help.

## Protective Factors

Wachinger G <sup>[17]</sup> examines the emotional domain as a protective factor. Various variables were studied as a field of emotional goals such as internal locus of control/motivation to get better and function well. Willingness to control the emotional extremes, self-regulation of one's emotions, inculcating hope and courage, positive attitude and acceptance of the situations, concern about oneself and family members and ability of the individual to prepare oneself for effect, could solidify the internal control. They investigated the cognitive domain and focused on the cognitions and its relatability to the post-disaster intervention. The cognitive aspect helped the individual in increasing awareness and remembering the risks related to past disaster experience. The psychomotor field has been emphasized by encompassing decision-making skills and stress management.

Wachinger G <sup>[18]</sup> further states that supportive strategies, including emotional and material strategies, act as an important help to deal with the post-disaster experiences. Emotional supportive strategies comprised programs focusing on stress reduction, transforming and modifying the maladaptive behaviours to the socially acceptable behaviours and informing people how to respond to the emotional stressful situations. Material supportive strategies include the policies introduced for maintaining harmony in the environment by providing the victims with proper distribution of resources, proper access to resources and by assisting the affected people in creating social and economic well-being and by highlighting the problems of the marginalized people and providing them with the maximum care and support.

Resilience promotes physical, social and emotional well-being and acts as an important protective factor <sup>[19]</sup>. Resilience is also considered as a key aspect of positive psychology which helps in the upliftment of oneself and enhances the quality of life to a great extent. Resilience can be understood in terms of the individual context (building resilience in people) or in terms of the community context (building resilient communities).

Folke *et al.* <sup>[20]</sup> study the inclusion of human and social factors which were important components of resilience. Resilience is not just the ability to deal effectively with negative situations and instantly recover from the negative impacts. But also, mental preparedness for future situations and vulnerabilities.

Rose and Liao <sup>[21]</sup> mention two components of resilience. The first component was inherent resilience where the damaged structure was substituted by building a stronger force of labour which reduced the economic impact of the disaster. The second component was adaptive resilience where there was a quick implementation of the economic policies, such as providing the necessary goods and services to the affected population.

A study conducted by Kar <sup>[14]</sup> found that the problems related to hyperactivity were reduced after the application of the appropriate intervention techniques. The children were largely

benefitted from the intervention and started appreciating positive emotions and its importance in maintaining positive well-being. They were also more likely to refrain themselves from any kind of addiction. The intervention was successful because of the pre-existing resilient children and the vulnerable children required special care. Coping strategies also act as a protective factor in determining one's quality of life after the disaster. The effective coping mechanisms help an individual to cope better with the stressors. Preparing oneself for the stressors, accepting the stressors and finding the means to overcome the sufferings is one of the best coping mechanisms. He further states that the survivors who valued their individuality in terms of the awareness of the social and spiritual self were reported to be more effective in coping with the aversive stimuli. The study also explored the importance of awakening of the spiritual self in order to deal with the external and internal negativity. Understanding the significance of one's own existence and fixing and nurturing of one's own self helped the survivors to enhance the quality of their well-being.

Solomon and Laufer <sup>[22]</sup> in a study have identified a group of factors leading to effective coping mechanisms in an individual. The group of factors, including a commitment to the ideologies of the group, maintaining group cohesiveness through inclusion of the religious beliefs, have protected the communities and individuals which were highly exposed to terrorist attacks. Property damage, physical injuries and loss of loved ones, were the causal factors for behavioural and emotional problems in the victims. The support from the communities and personal resiliency have helped them to cope better.

Nan Zhang *et al.* <sup>[23]</sup> identified two levels of psychological intervention. The first was the basic level or the routine psychological interventions that consist of psychological education, support and relaxation techniques, are applied as a part of psychological intervention process in many situations. Psychological education means learning of the virtues and personal capabilities that an individual possesses. Support means the immediate support group that was available in the surrounding. The support was direct or indirect, but the effect depended on the genuine support that the affected communities or individuals received from their loved ones, neighbours, friends and other people willing to counsel them, help them and empathize with their emotional aspect. The relaxation techniques focused on the physiological relaxation of the body which helped in the normal regulation of the body. Along with the psychological domain, the physiological domain required a lot of balance and the relaxation techniques have helped the individuals to balance and regulate their body in a proper way.

The second was the high-level psychological intervention which worked with emotions, characteristics, economic change and other factors. This intervention technique was based on specific individuals and specific communities. Different techniques were responsible for different individuals and communities, depending on the personal resilience and social system resilience. The

high-level intervention was effective because of the application of individual-based techniques. The strategies were effective and have helped the victims to overcome the trauma as soon as possible. The victims were able to regain hope, had an emotional control on themselves and inculcated environment adaptability, which improved their mental health.

## Discussion and Conclusion

Emotional instability, stress reactions, anxiety, trauma and other psychological symptoms are observed commonly after the disaster and other traumatic experiences. These psychological effects have a massive impact on the concerned individual and also on communities. Resilience plays a vital role and acts as an effective measure. Most affected individuals recover with time, with the help of effective post-intervention techniques and their individual strengths. In some cases, recovery is incomplete leading to a number of persistent psychotic symptoms which are often severe in nature. PTSD is the most frequently encountered along with anxiety, depression and other behavioural and psychological abnormalities. PTSD often comorbid with a variety of psychiatric symptoms like unnecessary fear, hopelessness, worthlessness and helplessness and other physical symptoms which leads to the deterioration of their mental health.

The provided information suggests that there are a number of factors affecting different groups of population in their adaptability. Awareness about the importance of post-intervention techniques and their applicability in the affected population has helped the victims in their recovery. The supportive methods included the individual strengths and capabilities and community-based approaches consisting of the institutions like education, health, local and national governments.

So to conclude, Disaster, not only disrupts the quality of life but also creates a significant burden of mental health conditions on an individual and the community. Effective interventions should be given pre, peri and post-disaster period to improve the adverse mental health effects of the disaster. The psycho-social education and clinical interventions are expected to provide better outcomes because of the integration of various effective measures. Rehabilitations plans should be made by keeping in mind the cultural context of the community and the needs of the affected population. So that community is empowered in a holistic way to cope with future disasters.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## References

1. Kreimer A. Social and economic impacts of natural disasters. *International Geology Review*. 2001 May 1;43 (5):401-5.
2. International Strategy for Disaster Reduction. Living with risk: A global review of disaster reduction initiatives. United Nations Publications; 2004.
3. Martin ML. Child participation in disaster risk reduction: The case of flood-affected children in Bangladesh. *Third World Quarterly*. 2010 Dec 1;31 (8):1357-75.
4. Math SB, Girimaji SC, Benegal V, Uday Kumar GS, Hamza A, Nagaraja D. Tsunami: Psychosocial aspects of Andaman and Nicobar islands. Assessments and intervention in the early phase. *International Review of Psychiatry*. 2006 Jan 1;18 (3):233-9.
5. Quarantelli EL. Evacuation Behavior and Problems: Findings and Implications from the Research Literature. OHIO STATE UNIV COLUMBUS DISASTER RESEARCH CENTER; 1980 Jul.
6. Quarantelli EL. Disaster crisis management: A summary of research findings. *Journal of management studies*. 1988 Jul; 25 (4):373-85.
7. Mental health in emergencies [Internet]. [cited 2019 Jun 20]. Available from: <https://www.who.int/news-room/fact-sheets/detail/mental-health-in-emergencies>
8. Peek L. Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience—An introduction. *Children Youth and Environments*. 2008 Jan 1;18 (1):1-29.
9. Hackbarth M, Pavkov T, Wetchler J, Flannery M. Natural disasters: an assessment of family resiliency following Hurricane Katrina. *Journal of Marital and Family Therapy*. 2012 Apr; 38 (2):340-51.
10. Freedy JR, Shaw DL, Jarrell MP, Masters CR. Towards an understanding of the psychological impact of natural disasters: An application of the conservation resources stress model. *Journal of Traumatic Stress*. 1992 Jul; 5 (3):441-54.
11. Tapsell SM, Penning-Rowsell EC, Tunstall SM, Wilson TL. Vulnerability to flooding: health and social dimensions. *Philosophical transactions of the royal society of London. Series A: Mathematical, Physical and Engineering Sciences*. 2002 May 24;360 (1796):1511-25.
12. Tunstall S, Tapsell S, Green C, Floyd P, George C. The health effects of flooding: social research results from England and Wales. *Journal of water and health*. 2006 Sep 1;4 (3):365-80.
13. Jenkins R, Meltzer H. The Mental Health Impacts of Disasters. Government Office of Science, UK. 2012.
14. Kar N. Indian research on disaster and mental health. *Indian journal of psychiatry*. 2010 Jan; 52(Suppl 1):S286.
15. Murthy RS. Mental health of survivors of 1984 Bhopal disaster: A continuing challenge. *Industrial psychiatry journal*. 2014 Jul; 23 (2):86.
16. Cullinan P, Acquilla SD, Dhara VR. Long term morbidity in survivors of the 1984 Bhopal gas leak. *The National medical journal of India*. 1996;9 (1):5-10.
17. Wachinger G, Renn O, Bianchizza C, Coates T, De Marchi B, Domènech L, Jakobson I, Kuhlicke C, Lemkow L, Pellizzoni L. Risk perception and natural hazards. WP3-Report of the CapHaz-Net Projekt. URL: <http://www.caphaz-net.org>. Synergien zwischen Naturschutz und Klimaschutz-Wasser/Gewässer (-Management). 2010 Sep.
18. Wachinger G, Renn O, Begg C, Kuhlicke C. The risk perception paradox—implications for governance and communication of natural hazards. *Risk analysis*. 2013 Jun; 33 (6):1049-65.

19. Aiena BJ, Baczwaski BJ, Schulenberg SE, Buchanan EM. Measuring resilience with the RS-14: A tale of two samples. *Journal of Personality Assessment*. 2015 May 4;97 (3):291-300.
20. Folke C. Social-ecological resilience and behavioural responses. *Beijer International Institute of Ecological Economics*; 2002.
21. Rose A, Liao SY. Modeling regional economic resilience to disasters: A computable general equilibrium analysis of water service disruptions. *Journal of Regional Science*. 2005 Feb; 45 (1):75-112.
22. Laufer A, Solomon Z. Posttraumatic symptoms and posttraumatic growth among Israeli youth exposed to terror incidents. *Journal of Social and Clinical Psychology*. 2006 Apr 1;25 (4):429-47.
23. Nan Z, Hong H, Jihong X, Yuntao L. Research on post-disaster psychological intervention and reconstruction model. In *IEEE Conference Anthology 2013 Jan 1* (pp. 1-4). IEEE.