INDIAN ASSOCIATION OF EPIDEMIOLOGISTS

Epidemiology International
Volume 9, Issue 4 - 2024, Pg. No. 5-9
Peer Reviewed & Open Access Journal

Review Article

# Preparing the Community for Managing Public Health Disasters

Jugal Kishore[1], Sunanda Gupta[2], Sneha Kumari[3]

[1]Director Professor & Former Head, [2]Senior Resident, [3]Assitant Porfessor, Department of Community Medicine, Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi, India.
**DOI:** https://doi.org/10.24321/2455.7048.202408

## INFO

**Corresponding Author:**
Jugal Kishore, Department of Community Medicine, Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi, India.
**E-mail Id:**
jk@drjugalkishore.com
**Orcid Id:**
https://orcid.org/0000-0001-6246-5880
**How to cite this article:**
Kishore J, Gupta S, Kumari S. Preparing the Community for Managing Public Health Disasters. Epidem Int. 2024;9(4):5-9.

*Date of Submission:* 2024-09-21
*Date of Acceptance:* 2024-10-29

## ABSTRACT

Public health emergencies and disasters have increased in number in the last few decades. Climate change and extreme weather events are partly responsible for many such disasters. Many a time a single disaster escalates the series of events and causes multiple disasters. It affects mental, physical, and socio-economic consequences. To understand the awareness and preparedness of the community for public health issues in disaster management, a review study was carried out. It was found that there was poor awareness of the community for proper disaster management. Neglect of public health was associated with high morbidity and mortality. It is realised that public health must be forefront sector with other departments to manage such multiple disasters. Active community involvement is core to any public health action. Community involvement is possible without any extra financial implication on the district or state.

**Keywords:** Multiple Disasters, Public Health Emergencies, Community Resilience

## Introduction

Any disease or event, whether accidental or deliberate, that can threaten a community on a large scale and have a catastrophic impact on the health of that community either due to their scale, timing, or unpredictability can be termed a public health threat. These events may be natural, biological, chemical, or radio-nuclear disasters. They may be disasters, complex emergencies, or other events.[1,2]

Among these 'threats', natural disasters are of particular importance. They are catastrophic events that may have serious consequences on the health of the affected community. They include earthquakes, landslides, extreme weather events such as floods or droughts, volcanic eruptions, heat waves, etc.[3]

There were more than 11,000 reported disasters attributed to hazards such as weather, climate, and water-related hazards globally, with just over two million deaths and $ 3.64 trillion in losses - killing 115 people and causing $ 202 million in losses daily, according to a comprehensive new report from the World Meteorological Organization (WMO). More than 91% of the deaths occurred in developing countries.[4]

Irrespective of the nature of the hazard, all disasters exert the "7D effect":

- Death
- Disability
- Disease & injuries
- Distress
- Damage to health services
- Damage to the economy & development of the country
- Damage to the environment including animals and agriculture


*Copyright (c) 2024: Author(s). Published by Advanced Research Publications*
CC BY NC

Disasters cause short-term and long-term effects on physical and mental health, and can directly or indirectly affect health and wellbeing. These effects are due to evacuation, social disruption, financial loss, lifestyle change, damage to healthcare facilities, damage to the supply chain of medicine, and changes to the wider political and socio-economic environment. One type of disaster is becoming the cause of other disasters such as the triple disaster of Japan where an earthquake led to a tsunami and nuclear disaster[5] that require comprehensive and integrated public health intervention.

Developing countries like India are disproportionately affected by such disasters due to a lack of resources in terms of both infrastructure and services, leading to an underdeveloped disaster-preparedness system.[3]

Earthquakes strike at any time and increase the death toll not only by direct trauma but also by the associated increase in infectious diseases. Besides this, they disrupt medical facilities by destruction of and damage to the existing infrastructure. Disease transmission may continue for months after the day of the earthquake and lead to an increased burden on the relief measures.[6]

The current review was undertaken to explore the existing research about the importance of the role of the community in disaster preparedness as well as highlight any shortcomings, if any, in their disaster preparedness which, if addressed, may enable its people to combat such emergencies more effectively.

## Methodology

The review was done electronically as well as manually. Articles were searched in various journals from PubMed and Google Scholar. The following keywords were used: 'disaster preparedness', 'community resilience', 'earthquake preparedness', and 'disaster mitigation'. The review explores the topic under the following heads: public health and emergency preparedness (a) community resilience, (b) bridging community resilience and public health; the changing role of public health; challenges and the way forward, and conclusion.

## Public Health and Emergency Preparedness

For decades, the perceptions of our policymakers have been influenced by the deaths and diseases after a disaster and the role of the physician in addressing them. Much effort has been put into catering to a disaster-hit community as compared to efforts in improving the 'resilience of a community'.[3] For a long time, the link between 'Public Health' and 'Emergency Preparedness' has been underestimated. Public health is the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of communities and individuals. Therefore, it is more preventive than rehabilitative in nature.

## Community Resilience

Community resilience comprises preparedness that begins at the individual level and is subsequently organised and contextualised at the community level, by mutually supportive and synergistic interventions that augment one another.

It is important to note that individual preparedness is as integral to community resilience as establishing a supportive social context is vital to it, so that by empowering individuals and families, in effect entire community is prepared for mitigation of, and response to disasters.

Thus a 'supportive social context' in a community is very crucial as it forms a bridge between the individuals and their role in community resilience.[7–9] It is important to note, however, that community resilience is much more than simply the summation of individual resiliencies.[10]

Chetry et al. conducted a study in an urban slum in Delhi and found that awareness and preparedness for disasters was poor. Only 68% of respondents stated that they had first-aid kits in their homes.[11] Overall awareness about disasters and the preparedness and skills required in first aid and life-saving are always lacking in the community.

Community resilience is a phenomenal concept that highlights a drastic change in the perspective. While it can be simply defined as the sustained ability of a community to withstand and recover from adversity, in effect, it represents a paradigm shift in emergency preparedness by emphasising an assessment of community strengths also and not simply describing the vulnerabilities.[10,12]

## Bridging Community Resilience and Public Health

A study that bridged disaster preparedness with public health by Chandra et al. reported the core components and levers for the action of community resilience. The study provides an insight into the linking of everyday 'public health practice' with 'public health emergency preparedness and response' leading to a resilient community.[13] Table 1 presents the core components integral to community resilience and the levers for action. As is evident, most of these levers, if not all of them, can be influenced by public health practitioners.

**ISSN: 2455-7048**
**DOI: https://doi.org/10.24321/2455.7048.202408**

**Table 1.Determinants and Attributes of Community Resilience[12,13]**

| Core Components | | Levers for Action | |
|---|---|---|---|
| 1 | Physical and psychological health | 1 | Wellness |
| 2 | Social and economic equity and well-being | 2 | Access |
| 3 | Effective risk communication | 3 | Education |
| 4 | Integration of organisations (governmental and non-governmental) | 4 | Engagement |
| 5 | Social connectedness | 5 | Self-sufficiency |
| - | | 6 | Partnership |
| - | | 7 | Quality |
| - | | 8 | Efficiency |

While the core components describe the essential aspects of a good resilient community, the levers are cues for us to design our programmes and then monitor, assess, and evaluate them.[13,14] These levers are common to conventional public health practice and disaster preparedness and thus form the bridge.

A literature review of household emergency preparedness by Levac et al. highlighted better infrastructure in terms of physical aspects such as better housing or social aspects such as insurance, promoted better response to disasters as compared to socially weak or economically marginalised communities.[8] Thus, it is evident that disaster preparedness needs a much broader and more holistic approach. While for conventional public health-related awareness, diseases that are a public health burden are focused upon, with disaster management such a focused approach is counter-productive. To complement the 'WHO Toolkit for assessing health-system capacity for crisis management', a qualitative analysis of literature was done titled 'Developing a health system approach to disaster management'. It concluded that Ministries and Departments of Health within countries should consider prioritising preparedness for their most likely threats, and yet plan for an all-hazards approach to disasters.

Making disaster preparedness integral to public health also makes disaster risk management a bottom-up approach instead of top-down. A paper presented at The Asia and Pacific Forum on Poverty organised by the Asian Development Bank, titled: 'Disaster Risk Management and Vulnerability Reduction: Protecting the Poor' by Dr Suvit Yodmani recognised the failures of a top-down management approach. This approach was unsuccessful in addressing the needs of vulnerable communities. As a result, a new strategy directly involving vulnerable people themselves in the planning and implementation of mitigation measures gains importance. In such a bottom-up approach, considered communities are the best judges of their vulnerability and can make the best decisions regarding their well-being.[14]

## Attitude of the Community towards Local Health Departments

Of the various triggers that promote community participation, a first-hand or second-hand encounter with disasters is an important external factor. A study by Wood et al. concluded that the response to personal preparedness messages was greater in people who have experienced disasters.[15]

A study done in 2011–12 by the Los Angeles Department of Public Health titled 'Local Health Department Capacity for Community Engagement and its Implication for Disaster Resilience' pointed out a few key factors that affect community participation.[16] These are as follows:

## Attitude of the Health Department and Government

Understanding the importance of community participation alone can lead to the government taking it up as a professional duty. Only when this is achieved, can the community be provided with a safe and significant platform to assist, or rather co-create, the public health strategies tailor-made for that community, thus maximising the efficacy.

### Culture

Some cultures are more proactive and promote active participation in the community. While this may be an attitude integral to a particular culture, the socio-economic well-being of the target community is also an important determinant for the same.

### Resources (Staff and Funds)

Direct and consistent interaction with the community involves a lot of legwork making it a staff-intensive work. Not to mention, a highly motivated staff is required and not just a bigger staff.

ISSN: 2455-7048
DOI: https://doi.org/ 10.24321/2455.7048.202408

### Social and Technical Expertise

Interestingly, it was highlighted that many out-reach workers believe that they require better skills in social as well as technical expertise. Some public health workers believe they need to know 'how' to participate in the community and that improving social skills would enhance the performance of the department as a whole.

### Relationships Between Local health Department and Community

Working relationships between the local health department and the community is vital and may be difficult to achieve sometimes especially due to ethnic and cultural differences between the community and the health care provider.

### Changing Role of Public Health

While for a long time, the role of public health was considered separate from that of emergency preparedness and was primarily limited to post-disaster relief, now the approach has changed. The role of public health practitioners as well as that of the targeted public has evolved into a more active, preparative role to limit the impact of a disaster with minimal and more effective interventions that empower the people and share the responsibility of a community's health instead of waiting for them to become victims and be passive recipient of extraneous help. It has been realised that community resilience is an effective approach to not only public health emergency preparedness but also to first response.

### Challenges and the Way Forward

Even though much evidence has been collected about the importance of community participation in disaster preparedness, the potential of the community is still untapped. Various factors could be responsible for this, as already outlined in the review. However, we must look into the specific target areas that could enhance the receptivity of the community towards interventions aiming at promoting disaster preparedness.

We need a holistic, active, and multi-faceted intervention that, without adding to the expenditure on health care, can generate maximum returns.

## Cultural Facet

In India, especially, the community with which a public health practitioner interacts would invariably be distinct from his or her community of residence, owing to the vast diversity. The cultural factors become even more significant in such cases as simple endeavours such as talking in a particular tone or language can improve the receptivity of the community and hence, the trust that they place in the source of information. It is required that placement of health care workers, doctors, and paramedics, be such that different cultures get to mingle in a way that is mediated via local leaders so that no particular community exists in seclusion and still better communication is established.

## Resource-Related Facet

Since India has a high prevalence of many infectious as well as noninfectious diseases, it is only logical that a lot of funds are focused on combating those. However, disasters of all kinds are also very prevalent and are often not thought of as something preventable by the common public. Smart integration of disaster preparedness-related activities is required at the level of primary health centres so that with minimum extra expenditure, not only the public could be provided with a reliable source of information but also better relationships could be established between the public health care practitioners and the target community thus aiding in better compliance and awareness of other ongoing programmes as well. This would lead to optimal utilisation of our already existing infrastructure and also promote disaster preparedness.

## Social and Technical Facets

Soft skill development is the need of the hour not only in the field of public health but in all other clinical and para-clinical fields as well. Intervention promoting this could begin right at the school level where spoken language should be given importance. Programmes and workshops inculcating better social skills are required such that students learn actively via role-plays etc. Targeted workshops equipping public health workers with the necessary skills to be able to better engage the community as well as maintain that relationship could also be devised.

### Legislative Facet

The administration must be sensitised to the immense potential lying with the huge army of Public Health Care workers and in community participation so that necessary alterations in perspective may be brought about and improving community participation can be elevated from the status of an informal approach to that of a formal target. Disaster Management Act 2005 suggests the District Management Authority to spread awareness, establish warning signals, and train the community in first aid and as a first responder.[17] After the COVID-19 pandemic, this has become very clear that disaster management must include public health interventions. We underscore the relevance of public health implications of multiple disaster exposures. As we all are aware that there is an increase in extreme weather events owing to climate change, there is a pressing need to become better equipped to address public health in settings of multiple disasters.[18] The Epidemic Disease Act 1897 needs amendment taking the current scenario of public health emergencies into account.

ISSN: 2455-7048
DOI: https://doi.org/10.24321/2455.7048.202408

### Challenges Unique to a Developing Economy

While community participation cannot accommodate for individualisation of interventions or activities very well, the health department needs to realise that 'one size doesn't always fit all' and necessary alterations may be required depending upon the socioeconomic and cultural background of a community. Interest in disaster preparedness will depend heavily upon the availability of the more basic social security and thus, overall development is a necessary foundation.

### Conclusion

For a long time, policymakers have highlighted the role of health practitioners in combating trauma and the various diseases associated with disasters, largely overlooking their role in policymaking and planning in general and in building community resilience in particular. They can facilitate community participation, with very little added financial burden, and hence improve the overall resilience of the community leading to a decrease in vulnerability. Community empowerment through appropriate capacity building is possible and could be a cost-effective strategy for community resilience.

**Conflict of Interest:** None

**Declaration of Generative AI and AI-Assisted Technologies in the Writing Process:** Not used

### References

1. World Health Organization. Strengthening health-system emergency preparedness: toolkit for assessing health-system capacity for crisis management: part 1: user manual. World Health Organization: Regional Office for Europe; 2012. [Google Scholar]
2. Nelson C, Lurie N, Wasserman J, Zakowski S. Conceptualizing and defining public health emergency preparedness. Am J Public Health. 2007;97(Suppl 1):S9-11. [PubMed] [Google Scholar]
3. Watson JT, Gayer M, Connolly MA. Epidemics after natural disasters. Emerg Infect Dis [Internet]. 2007 Jan [cited 2023 Oct 27];13(1):1-5. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2725828/ [PubMed] [Google Scholar]
4. World Meteorological Organization [Internet]. World MWeather-related disasters increase over past 50 years, causing more damage but fewer deaths; 2021 Aug 31 [cited 2023 Oct 17]. Available from: https://wmo.int/media/news/weather-related-disasters-increase-over-past-50-years-causing-more-damage-fewer-deaths
5. Pescaroli G, Alexander D. Critical infrastructure, panarchies and the vulnerability paths of cascading disasters. Nat Hazards. 2016;82:175-92. [Google Scholar]
6. Dutton MA, Greene R. Resilience and crime victimization. J Trauma Stress. 2010;23(2):215-22. [PubMed] [Google Scholar]
7. Levac J, Toal-Sullivan D, O'Sullivan TL. Household emergency preparedness: a literature review. J Community Health. 2012 Jun;37(3):725-33. [PubMed] [Google Scholar]
8. Morrow BH [Internet]. Community resilience: a social justice perspective; 2008 [cited 2015 Sep 8]. Available from: http://www.resilientus.org/library/FINAL_MORROW_9-25-08_1223482348.pdf [Google Scholar]
9. Nuwayhid I, Zurayk H, Yamout R, Cortas CS. Summer 2006 war on Lebanon: a lesson in community resilience. Glob Public Health. 2011;6(5):505-19. [PubMed] [Google Scholar]
10. Chetry B, Charu, Guite NT, Gupta AK, Kishore J. Awareness and preparedness regarding disasters among residents of an urban slum in Delhi. Res Rev J Med. 2013;Sp Iss:63-6.
11. Chandra A, Acosta J, Howard S, Uscher-Pines L, Williams M, Yeung D, Garnett J, Meredith LS. Building community resilience to disasters: a way forward to enhance national health security. Rand Health Q. 2011 Mar 1;1(1):6. [PubMed] [Google Scholar]
12. Chandra A, Williams M, Plough A, Stayton A, Wells KB, Horta M, Tang J. Getting actionable about community resilience: the Los Angeles County Community Disaster Resilience Project. Am J Public Health. 2013;103(7):1181-9. [PubMed] [Google Scholar]
13. Docslib [Internet]. Disaster risk management and vulnerability reduction: protecting the poor SUVIT YODMANI; [cited 2023 Jan 12]. Available from: https://docslib.org/doc/5788559/disaster-risk-management-and-vulnerability-reduction-protecting-the-poor-suvit-yodmani
14. Wood MM, Mileti DS, Kano M, Kelley MM, Regan R, Bourque LB. Communicating actionable risk for terrorism and other hazards. Risk Anal. 2012;32(4):601-15. [PubMed] [Google Scholar]
15. Schoch-Spana M, Sell TK, Morhard R. Local health department capacity for community engagement and its implications for disaster resilience. Biosecur Bioterror [Internet]. 2013 [cited 2023 May 24];11(2):118-29. Available from: www.ncbi.nlm.nih.gov/pmc/articles/PMC3689171/ [PubMed] [Google Scholar]
16. National Disaster Management Authority, Government of India [Internet]. DM Act 2005; [cited 2023 Oct 14]. Available from: https://ndma.gov.in/dm-act-2005
17. Leppold C, Gibbs L, Block K, Reifels L, Quinn P. Public health implications of multiple disaster exposures. Lancet Public Health. 2022;7(3):e274-86. [PubMed] [Google Scholar]

ISSN: 2455-7048
DOI: https://doi.org/ 10.24321/2455.7048.202408