

INVITED EDITORIAL

Disaster Management: Learning from Experience for Public Health ProfessionalsVikas Bhatia¹, Dinesh Prasad Sahu²

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India is highly vulnerable to natural disasters; losing about 2% of the GDP every year. India has a coastline of around 7516 kilometers surrounded by the Bay of Bengal and the Arabian Sea. As the surface temperature is more than that of the Arabian Sea, Bay of Bengal generates more severe cyclones. As per the data of India Meteorological Department (IMD), India weathered as many as 305 cyclones of severity severe and above in last 126 years.(1) An estimated 1.9 million deaths are caused by tropical cyclones worldwide.(2) Nine out of the top ten devastating tropical cyclones hit the coast of Bangladesh and India.(3) The Bhola Cyclone is deadliest in the list causing maximum damage to Bangladesh on 11th November 1970 claiming around 5,00,000 lives and producing massive destruction.(4) The deadliest one of the list hitting the coast of India was in 1999, the super cyclone in Odisha which struck the state of Odisha on 29th October 1999 claiming around 10,000 lives and leaving millions homeless and extensive damage to property and environment.(4) The condition is only likely to get worse as climate change increases the sea surface temperature.

Health system usually faces a stiff task to recover suddenly after any natural disaster as it leads to high morbidity as a result of injury and infectious diseases. The cyclone has an impact on public health, social, cultural, and psychological aspect of human being and also affects human development in general. Common morbidities during cyclones include injuries, gastro-intestinal & respiratory illness and various skin conditions. Probability of epidemic after the cyclone and increased risk of communicable diseases is due to change in pre-existing level of disease,

altered ecology, population displacement, overcrowding in temporary shelters, disruption of public utilities (safe drinking water facility) and interruption of basic public health services.(5) Previous instances have shown a delayed risk in the incidence of enteric fever, gastroenteritis, infectious hepatitis and measles after 1979 Hurricane.(6) After 6 weeks of 1991 cyclone of Bangladesh also there was a huge increase in diarrhoeal disease.(7) Incidence of vector-borne diseases like dengue, malaria, animal bites and stings due to disrupted environmental condition is also a big challenge.

To cope with this deadly situation, the institutionalization of the disaster management has been started in the nineties under the Ministry of Agriculture following the declaration of the "International Decade for Natural Disaster Reduction" (IDNDR) by United Nations general assembly. (8) A holistic approach towards disaster was developed after a series of natural disaster in India like Latur Earthquake (1993), Malpa Landslide (1994), Orissa Super Cyclone (1999) and Bhuj Earthquake (2001). A high-powered committee after Gujarat earthquake, for making recommendations on the preparation of disaster management and mitigation plan leads to the evolution of National Disaster Management Authority. But before the genesis of National Disaster Management Authority, Odisha state disaster management authority (OSDMA) an autonomous organization by Government of Odisha was established on 28th December 1999 aftermath of the Super-cyclone with the aim to reduce the disaster risk and increase the wellbeing and safety of the people of the state.

How the authority tackled cyclone Fani

Disaster management includes the three stage warning system. Pre-cyclone-alert: at the time of cyclogenesis, cyclone alert: 36 to 48 hours in advance of the commencement of adverse weather and cyclone warning: 24 hours in advance of cyclone landfall. Secondly, district-wide warnings not to go for fishing, and warning about winds, tidal waves, storm surges, evacuation. Thirdly, preparedness and mitigation: state level and district level meeting at the beginning of cyclone season and regarding co-ordination with IMD at the time of disaster and relief and rehabilitation after disaster. Fourthly, Long term planning: adequate cyclone shelter centers to accommodate during evacuation. (9)

The government's zero casualty policy for natural disasters and accuracy of the IMD's early warning system helped to keep the death toll to just 64 during cyclone Fani that hit the coast of Odisha on 3rd March 2019 as compared to ten thousand in 1999 super cyclone. Around 1.2 million people were evacuated during the deadly cyclone whose wind speed reached 125 miles per hour which blew off roofs, damaged power lines and uprooted millions of trees. Odisha's disaster management plan worked around four activities namely, relief infrastructure, the accuracy of the early warning system, clear communication and effective coordination.

Around 900 cyclone relief centers were built. Clear protocols are in place for carrying out relief operations which were successfully used earlier in managing cyclone Phailin in 2013(10) and cyclone Hudhud in 2014. Accurate prediction of the timing of formation of cyclone and landfalling enables the state to be disaster-ready and minimizes loss of lives. Before cyclone Fani, around 2.6 million text messages were sent to locals and regular official updates were given. The preparatory phase was seen with the involvement of several government agencies, local community groups and volunteers. Disaster response forces were pre-positioned in vulnerable locations with food packets ready for airdropping by air force helicopters. As many as 81 NDRF teams were deployed. Senior state officials and police forces coordinated the efforts of various agencies. Free cooked food was made available at cyclone relief centers for 15 days after cyclone. The United Nation's office for Disaster Risk Reduction (UNISDR) and other organizations hailed the government and volunteer efforts that ensured the levels of destruction to a minimum.

What is our role as Public Health Specialists?

Public health strategies and health system requires special attention during disaster management activities due to the vital functions they perform. The fundamental obligations of the public health towards disaster are to prevent epidemics and the spread of diseases, protect

against environmental hazards, prevent injuries, promote and encourage healthy behaviors and mental health, respond to disasters and assist communities in recovery, and assure the quality and accessibility of health services. (11)

Public health professionals should be a part of planning for disaster preparedness to ensure resources availability. Adequate training and capacity building of the professionals and the system in dealing with the situations should be taken care. The job responsibilities of professionals should be well-defined. During the disaster, public health professionals should ensure supply chain management, epidemic management, deputation of rapid response teams, ensuring safe drinking water and integrated vector management. Hospitals should be ready to deal with the increasing outflow of the patients and to provide emergency care. In the post-disaster situation, public health professionals should also be ready to deal with malnutrition, mental health and psychological stress of the affected communities.

Undergraduate and Post graduates must be trained and the curriculum must include skill based competencies so that we prepare public health emergency managers, frontline responders, planners, policy influencers and practitioners.

References

1. Cyclone Hazard Proneness of Districts of India. Regional Specialized Meteorological Centre, Lodhi Road, New Delhi; 2012.
2. Nicholls RJ. Coastal Megacities and Climate Change. *Geo J*. 1995;(37):369–79.
3. Historical Perspective. Regional Specialized Meteorological Centre for Tropical Cyclones over North Indian Ocean. Indian Meteorological Department. Ministry of Earth Sciences, Government of India. 2013.
4. Dolce C, Donegan B. The Deadliest Tropical Cyclone on Record Killed 300,000 People [Internet]. *Hurricane Central*. 2019 [cited 2019 Dec 1]. Available from: <https://weather.com/storms/hurricane/news/2019-05-01-deadliest-tropical-cyclone-bhola-cyclone-bay-of-bengal-bangladesh>
5. Western K. Epidemiologic surveillance after natural disaster. Washington DC: Pan American Health Organization; 1982.
6. Bissell RA. Delayed - impact infectious disease after natural disaster. *J Emerg Med*. 1983;1:59–66.
7. UNICEF Cyclone Evaluation Team. Health effects of the 1991 Bangladesh cyclone: report of a UNICEF evaluation team. *Disasters*. 1993;17:153–65.
8. The U.N. General Assembly, in December 1987, declared the 1990s as the International Decade for Natural Disaster Reduction.
9. Government of India (GOI) (2002). – Agricultural statistics at a glance. Department of Agriculture and Cooperation, Ministry of Agriculture, GOI, New Delhi.
10. India Meteorological Department. Very Severe Cyclonic Storm, PHAILIN over the Bay of Bengal (08-14 October 2013): A Report. [Internet]. 2013 [cited 2019 Dec 12]. Available from: <http://www.imd.gov.in/section/nhac/dynamic/phailin.pdf>.
11. Shoaf KI, Rottman SJ. The Role of Public Health in Disaster Preparedness, Mitigation, Response and Recovery. *Prehosp Disaster Med*. 2000;15(4):18–20.