

## Non-Communicable Diseases and Disasters

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### Abstract

Nowadays NCDs (non-communicable diseases) are known as an important and growing threat to public health. A threat that is magnified during emergencies. Developing countries are often affected by both disasters and NCDs compared to high-income countries. While natural disasters can exacerbate the existing non-communicable diseases. Poor management during and after disasters not only has immediate impacts on health, but may also have social and health consequences. Notwithstanding, non-communicable diseases are less addressed by humanitarian organizations in the acute phase of disasters and emergency responses. Hence, this study seeks more integration and coordination in the provision of health services during and after emergencies for the purposes of more support for and awareness about NCDs and disasters, and to analyze health challenges arising from non-communicable diseases in emergencies and disasters, and to develop technical manuals in clinical management of NCDs during and after emergencies.

**Keywords:** Non-Communicable Diseases; Disaster; Chronic Illness

### Introduction

In the 21<sup>st</sup> century, we are living in a world that is constantly affected by emergencies, which is often facing severe local and regional health consequences [1]. NCDs are considered as a major threat to public health in the world. These diseases, also known as chronic diseases, account for half of the global disease burden [2, 3]. As defined by WHO, these diseases include, in the first place, four major diseases i.e. cardiovascular and respiratory diseases, cancer and diabetes [2]. NCDs are recognized as the main cause of mortality with a rate of %65.5 of deaths and %54 cause of disability and the years of life lost globally [4,5]. Also, NCDs are considered as a barrier to economic development leading to financial and social stresses [6-8]. Due to increasing emergencies and disasters, this vulnerable population is increasingly subject to crowd exposure, poor sanitation, improper shelter, insufficient food supply, and interruptions in healthcare [9,10].

There may be synergistic relationship between such factors leading to an increase in the epidemic of neurological disorders and the progression of existing diseases. Thus, NCDs are a catalyst for the poverty cycle and exacerbated in disasters. Disasters can damage the basic infrastructure of public health and the necessary social protection systems for vulnerable populations. Disasters also affected people with NCDs, including loss of medicines, interruption of regular medical treatment and damage to hospitals [11-13]. Patients with chronic illnesses such as cardiovascular patients, diabetes, respiratory conditions, and patients with cancers are one of the most vulnerable groups in the disastrous situations and encountered with various problems after natural or technological disasters [13]. After disasters, inadequate care, resources, and lack of continuity of care for chronic diseases such as cardiovascular diseases, asthma, diabetes, renal diseases led to increased symptom exacerbation that resulted in increased morbidity and mortality among these populations [14].

A significant gap exists in understanding NCDs in emergency settings with few studies providing estimates of NCD burden in displaced populations or the effect of emergencies on access to care [15]. Although these issues are of importance, there has been little discussion on already existing chronic diseases that become exacerbated following natural crisis [16]. Guidelines for the acute phase of disasters are mainly focused on communicable diseases such as diarrhea and measles; and according to the author's investigations and reviewing the literature; there are very limited research articles on NCDs management at the time of natural disasters [17]. This paper aims to highlight the need to increase research on the complications of and mortality from non-communicable diseases in and after emergencies, enhance awareness, identify challenges of NCDs during and after disasters, develop technical manuals regarding the clinical management of non-communicable diseases in and after emergencies.

## Conclusion

During disasters, health systems may be endangered and development of health policies may be disrupted [18]. At this time, health needs of the population increases and humanitarian needs to provide emergency services emerges [19,20]. Majority of developed manuals focus on the acute phase of incidents and on communicable diseases including diarrhea and measles in the first place [21].

Few researches on short-term, long-term impacts and management of NCDs during disasters. In emergency policies and manuals, lack of attention to NCDs is evident, for example: The Inter-Agency Standing Committee (IASC) has no guidelines for NCDs. There is only a guideline, where the medication adherence of patients with chronic diseases is addressed. The Public Health Emergency Committee coordinated with WHO, has considered limited drugs like insulin for patients with chronic diseases [22]. As a result, the chronic conditions may not be tackled and patients with chronic diseases suffer severe complications and experience increased mortality and a poor long-term prognosis. For instance, the disruption in dialysis for patients with chronic kidney disease following 2005 Kashmir Earthquake lead to considerable health consequences in these patients [9,20,23]. Therefore, any disruption in treatment, care, equipment, water and food essential for patients with NCDs may cause the exacerbation of their conditions [10,18]. Such risk is evident with 47% increase in proportion of deaths in patients with NCDs one year after the Catherina Hurricane.

## Issues in Developing Countries

Developing countries are facing the highest pressure from global and regional conflicts as well as the increasing vulnerability to the impacts of climate change and natural disasters. Moreover, the double burden of disease helps to a multiple impact of NCDs and emergencies [24]. Integration of NCDs into policies, standards and resources available in NCD emergencies must be included in journals and operating guidelines and operational resources such as the sphere handbook and health emergencies [25-27]. These manuals are easily accessible to those working in emergencies. Disaster risk reduction plans, aiming at preventing and reducing the risk adverse consequences through preventive activity and measures and preparedness, must be added as the important role of NCDs as a risk factor for the vulnerable population. Accordingly, the Hyogo framework for Action to reduce disaster risk must consider NCDs as a threat to reach the expected outcomes in casualty reduction.

## Development of Technical Manuals in Clinical Management of NCDs in Emergencies and Disasters

We must consider manuals with practical problems with non-communicable diseases in emergencies [27]. These manuals may include partnerships and protocols for medicines supply stated by International Diabetes Federation for insulin supply in emergencies and disasters.

## Further Integration and Coordination in Health Services during and After Emergencies

Integration of non-communicable diseases in providing emergency care during and after disasters is essential. Collaboration of existing health infrastructure, health system and humanitarian aid must be strengthened [28]. For instance, investments must be made for health clinics and supply chains to prevent excessive suffering and pain of patients with NCDs during disasters [29].

## Considering NCDs in Practical Trainings of Emergency Personnel and Health Systems during Disasters

High quality training courses on capacity building at the level of society, government and organization for non-communicable disease prevention and control during and after emergencies, and on planning for the reduction of risks in such vulnerable individuals are essential. These courses have to be practical and evidence-based. States and societies can properly manage the exacerbation of NCDs in incidents by risk assessments based on epidemic prevention models [30]. Utilizing technologies such as geographic information systems to capture and store the spatial data and location of patients with NCDs in order to identify and respond promptly to these individuals in emergencies. Also, it is necessary to develop and implement national laws, policies and strategies in order to strengthen preventive measures, control and manage NCDs in emergencies.

## Demand Reduction

There must be a focus on the individual's health system readiness for NCDs. Individual's readiness plans including access to resources, medications; medical record and medical equipment are required. To access patients' medical record, check access to medical electronic record, list of medicines, drug intolerance and locations of high risk patients, data exchange platforms have to

be strengthened. Applications such as Empower may be used for identifying and evacuating the vulnerable population before the incident or for their quick rescue. Advanced smart devices may be used for training and controlling patients with NCDs to prevent the disease exacerbation during disasters.

## Discussion and Conclusion

To manage chronic diseases after disasters, there must be a focus on demand reduction, capacity building through better access to medicines, medical goods, and medical records, provision of good services and quick identification of patients. It is essential to include emergency medicines and required materials for patients with chronic diseases in emergency health centers, like providing patients with consultation for self-care practices and emergency evacuation in a critical condition. Investigating and monitoring impacts of disasters on NCDs and analyzing short-term and long-term impacts on emergency responses to patients and their needs assessment before, during and after disasters facilitate services to such vulnerable patients.

Healthcare personnel, societies and governments must know, understand, study and discuss more about structural determinants of NCDs in emergencies. It is necessary to discuss about non-communicable diseases especially for the purpose of global emergency response and allocation of appropriate funds for patients with chronic diseases.

One convenient option may be to develop a coordinated international database focusing on the epidemiology of non-communicable diseases during and after world disasters. Thus, as natural disasters are increasing in frequency and severity and the prevalence of NCDs and disabilities is growing globally, it is essential to forecast and realize the preparation and prevention of complications and mortality from non-communicable diseases, in response to incidents and disasters. Patient with non-communicable diseases are vulnerable during and after disasters. One of the most important findings of this study is inadequate disaster preparedness and management for chronic patients. Natural disasters can exacerbate the symptoms and complications of chronic diseases.

This indicates the vulnerability of chronic diseases, especially the elderly, to natural disasters. Studies have shown that service providers try to manage chronic diseases in disasters, but have not received special training before the crisis. However, an interdisciplinary approach to the responsibilities and preparedness of individuals, local communities, and relief organizations is needed. One of the important issues in this field is the readiness of health care workers in the pre-hospital emergency system. This team should have sufficient knowledge and understanding of chronic diseases and their complications in disasters and meet the needs of these patients in terms of facilities and equipment. Disaster preparedness is critical to responding to chronic patients because it enables an organized and participatory process that leads to positive health outcomes.

The most important solutions

- Health care providers' awareness and preparedness for managing chronic diseases in disasters.
- Equipping the pre-hospital emergency system to provide services to chronic patients in disasters.
- Paying attention to the needs of these patients in disasters such as medication, diet, laboratory services, imaging services.
- Educate patients about pre-crisis self-care.
- Determining safe places for chronic patients to gather during disasters.
- Appropriate communication and cooperation between respondents and organizations.
- Existence of pre-planning and preparedness of organizations in dealing with disasters and managing chronic patients in disasters.
- Consider a separate budget for the management of these patients in disasters.

## Limitations

A limitation of this research focused on four diseases: cardiovascular, respiratory, cancer, and diabetes. This approach was selected to ensure consistency with the four major disease groupings for NCDs by the World Health Organization. However, other NCDs may be impacted more significantly by a disaster.

## Recommendations

According to the findings of our research study, the lack of disaster preparedness for individuals with chronic diseases continues to be a concern. Having communication and collaborative efforts among all levels of disaster organizational levels proved to yield positive health outcomes for the disaster victims as well as a positive experience for the disaster responders. Further research is needed to explore the barriers that hinder consistent communication and collaborative strategies among the organizational levels in disaster preparedness and management of chronic diseases. Knowing the barriers that exist could potentially inform disaster planners and allow for the development of Strategies that could eliminate the barriers and foster communication and collaboration among disaster responders.

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