

THE IMPACT OF NATURAL DISASTERS ON HOSPITALS AND INCREASING NEED OF DISASTER MANAGEMENT

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ABSTRACT

The purpose of this research is to study and explore the importance of hospitals in natural disaster events and identifying some impacts on the hospitals in natural disaster events. A disaster is an unforeseen event, which can overwhelm the capacity of the affected people to manage its impact.

KEYWORDS: *Natural Disaster, Geo-Climatic Conditions, Disaster Management.*

Introduction

India has been traditionally vulnerable to the natural disasters on the account of its unique geo-climatic conditions. Natural disasters in India, many of them related to the climate of India, cause massive losses of life and property. Therefore, through disaster management, we can prevent hazards from being turned into disasters.

Review of Literature

The disaster has been defined by many researchers; for example, it is identified by:

In fact, (**Ardalan, 2013**) says disasters can happen abruptly and can be classified as a dangerous and calamitous incident, which overwhelms and disrupts infrastructures. From a different perspective, it can be described on a household scale, where a disaster can cause major sickness and social calamity, or an essential economic catastrophe (**Shaluf, 2007**).

However, there are two common points in all of the aforementioned descriptions, which are time and location; indeed, **Al-Dahash et al. (2016)** confirm that disasters are defined based on time and space. Also, **Alexander (2003)** described the disaster as a combination of vulnerability, lack of measures, and hazards that require the implementation of appropriate measures for planning, and the use of appropriate resources in order to mitigate the adverse impacts.

Research Methodology

This research is based on secondary data analysis that aims to explain and define disaster impacts on hospitals. This study used journals, books, and databases to gather information regarding the context, the local pre-disaster availability of hospitals and health facilities, and the sudden impact of natural disasters on the hospitals. This research is a qualitative study, which was conducted by variety literature in terms of natural disasters and impact of those events on hospitals. In this study researcher concentrate on the impact of natural disasters on hospitals, hence two types of disasters such as earthquake and flood are considered. At this point, the primary data collection and analysis has not yet been completed, which will be collected by semi-structured interviews with some relevant expert views regarding hospital disaster management. Thus this qualitative research is purely adopted a qualitative data collection strategy, and consider a variety of secondary sources accessed through the Internet and academic databases.

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What is Natural Disaster Management?

Natural Disaster Management refers to how we can protect or preserve maximum number of lives and property during a naturally caused disaster. Disaster management occupies an important place in this country's policy framework as the worst affected people are poor one and our country mainly comprises of them. The main aspects included in disaster management are:

- Organization and management of resources and responsibilities
- Co-ordination, command and control, rapid assessment of damage
- Dealing of all humanitarian aspects of emergencies
- Taking essential measures so that hazards cannot take the form of disasters
- Arrangements for drinking water and food material, setting up of temporary shelters, sanitation and hygiene identification

Requirement of Disaster Management

Natural disasters, such as hurricanes, cyclones, earthquakes, mudslides, floods, wildfires, volcanic eruptions and weather events like extreme droughts and monsoons are likely increasing in frequency due to climate change. These events bring with them a host of issues, including humanitarian, public health, environmental and infrastructural problems. Natural disasters cause additional problems that last after the disaster is done, including problems with infrastructure, the environment, public health and humanitarian issues. Some of them are:

- **Humanitarian Crises**

Natural disasters have created a large migrant population, called climate refugees or environmental migrants. These people can be forced out of their homes by an abrupt natural disaster, like a tsunami, or a slower-moving natural disaster, like a relentless drought. In any case, the area where they formerly lived is no longer habitable for one reason or another or the standard of living has dropped so drastically that the uncertain future of migration looks more promising.

- **Environmental Problems**

Natural disasters, from tsunamis to wildfires, can cause wide-ranging and long-term consequences for ecosystems: releasing pollution and waste, or simply demolishing habitats.

- **Infrastructural Damage**

One of the most immediate and economically devastating concerns with natural disasters is the damage to both public and private infrastructure. Therefore, Disaster Management is an essential and frequent step taken by Indian government to prevent the economy and people being devastated by disasters.

Challenges for Hospitals during Disaster Management

In terms of the importance of hospitals in disaster events, there are some barriers that work against disaster managers when trying to manage such events. There are internal and external barriers that disaster managers must face.

- Some internal barriers for hospitals include:
- lack of encouragement and motivation between hospital and management staff
- lack of a universal language between staff
- the high cost of implementation of emergency equipment for incident events
- lack of competitive atmosphere for the excellence and progress involvement of administrative managers in daily activities
- lack of recognition amongst staff for the need for crisis management
- lack of knowledge about dealing with natural disasters in hospitals
- Also there are some external barriers that disaster managers must face
- lack of commitment amongst managers and a lack of managers with sufficient authority to oversee the plan's implementation
- the absence of statutory requirements, the involvement of different decision making authorities
- lack of appropriate administrative culture for managing crises
- weak communication and coordination of crisis teams
- lack of an emergency incident command system in the country at a higher level.

Significance of Disaster Management in Hospitals

The significance of hospitals and health centers is well recognized in terms of their importance in providing services to patients at any time; indeed, hospitals are arguably powerful symbols of social progress. They are a prerequisite for stability and economic development and have symbolic social and political values that contribute to a community's sense of security and well-being. It is crucial that hospitals remain safe and functional during and after disaster events, and it is recognized that hospitals at any size need high attention in the case of natural disasters, as they must continue patient treatment and provide care for persons injured by the event. Hospitals are expected to be ready to play an essential role in reducing death and injury, and hospital readiness have been defined as the ability to effectively maintain hospital operations, sustain a medically safe environment, and adequately address the increased and potentially unexpected medical needs of the affected population.

Over the past years a number of hospitals around the world have been affected by disaster events; for instance, between 2001 and 2011, 119 natural hazard events were recorded in 25 provinces of Iran (11.9 hazards per year) that affected the primary health care centers and threatened the lives and safety of health staff.

One of the key criteria for hospital readiness also involves having a comprehensive disaster plan, which begins with a comprehensive risk assessment and hazards vulnerability assessment to identify the most likely threats to a particular hospital. Readiness continues to mitigation, preparedness, and response and recovery phases. To avoid the impact of disasters on hospitals, it is vital that they have appropriate disaster management strategies to mitigate the adverse impacts. The goals of a comprehensive hospital disaster plan are to: enable the hospital to effectively manage a disaster, provide continuity of basic societal functions, minimize the physical damage to a hospital, as well as minimize loss of life, injury or illness of hospital personnel and human suffering of the persons affected.

A comprehensive hospital disaster plan includes all hazards, all disciplines/phases, and all levels/related organizations in the disaster management process. Nevertheless, it is important not to regard the plan as the entire essence of emergency preparedness, but rather as one essential element in a spectrum of activities. Having a disaster plan does not equal complete preparedness. However, a comprehensive disaster plan is considered the backbone of a hospital's preparedness. One important aspect of a comprehensive disaster plan is an all-hazards approach, which refers to the consideration of any incident or event that could pose a threat to human life, property or the environment. An all-hazards approach does not literally mean being prepared for any and all hazards that might manifest in a particular community, including a hospital. Instead, it means that there are common needs and responses that are required in disasters, such as the need for the treatment and triage of victims that can be addressed in a general plan; this type of plan can provide the basis for responders to prepare for these types of unexpected events. The plan provides a basic framework for responding to various types of disaster.

Another aspect of a comprehensive disaster plan is to consider all phases of the disaster management cycle. An effective hospital disaster management plan must be constructed in four stages of emergency management, which are:

- Mitigation,
- preparedness,
- response, and
- recovery

For example, the hurricanes of 2004 that struck Florida provide useful insights into what can go wrong even when such a type of event has been taken into account. Hurricane Charley, a weak Category 4 storm, made landfall in Charlotte County along the western coast of Florida. A regional medical center located in the area sustained significant damage to its roof and windows, resulting in rainwater infiltration into patient rooms and other medical service areas. As the storm passed through the area, the hospital lost its main power, resulting in the activation of its emergency power generators. .

The Impact of Natural Disasters on Hospitals

According to WHO, hospitals play critical roles in disaster events in that they provide communities with essential medical care. However, when dealing with the impact and nature of disasters, the demand for health care services can rapidly increase and can overwhelm the functional capacity and safety of hospitals. There are different impacts that can be seen in disaster events, such as the

impairment to hospital functions, the direct impact on patients and health equipment, and the physical damage to hospital buildings. In disaster events, patient documents and medicine can be affected and it is particularly important to protect these in an incident. Also, supplying food and necessary medicine, especially in the early hours of the disaster, is crucial and must also be considered by disaster managers.

In terms of the time period, disasters can have two different impacts on hospitals. The first was identified by the Disease Control Priorities Project (2007) which noted a range of damage and loss, such as the loss of health equipment, a failure in a hospital's energy resource, a lack of staff, difficulty in accessing patients' documents (for example, medical records), and issues in accessing the hospital building. For example, the earthquake that struck Mexico City in 1985 resulted in the collapse of 13 hospitals. In just three of the hospitals' buildings, 866 people died, 100 of whom were health personnel, and nearly 6,000 hospital beds were lost across the city's metropolitan facilities. Furthermore, as a result of Hurricane Mitch in 1998, the water supply systems of 23 hospitals in Honduras were damaged or destroyed, and 123 health centers were affected.

Finally, Peru reported that nearly 10% of the country's health facilities suffered damage. According to (WHO, 2011) hospitals play critical roles in disaster events for providing communities with essential medical care. In terms of disasters and the nature of the disaster, health care services' demand can rapidly increase. Also, it can overwhelm the functional capacity and safety of hospitals. There are different impacts that can be seen in disaster events such as the ability of the hospital functions, direct impact to the patients and health equipment, physical damage to hospital buildings. In disaster events, documents of the patients and medicine can be affected and it is significantly important to keep these well in the incident situation.

Also, supplying food and necessary medicine, especially in the early hours of the disaster, are crucial, which must be considered by disaster managers. Disasters can have two different impacts on hospitals in terms of time period. Regarding Disease control Priorities Project (2007) some damages and losses such as losing the health equipment, failure in energy resource of hospitals, lack of staff, chaos in patient's document, and access to the building happen. The earthquake that struck Mexico City in 1985 resulted in the collapse of 13 hospitals. In just three of those buildings, 866 people died, 100 of whom were health personnel. Nearly 6,000 hospital beds were lost in the metropolitan facilities. As a result of Hurricane Mitch in 1998, the water supply systems of 23 hospitals in Honduras were damaged or destroyed, and 123 health centers were affected.

Discussion

As identified, hospitals can suffer a range of damage to equipment, utility supplies, patient documentation, staff and patients through natural disaster events, and all of these impacts can decrease or prevent the treatment of injured people by the health service. For instance, the continued operation of healthcare facilities after earthquakes depends on the available utility systems as the majority are supplied from main grids and networks, such as electric power, water supply, and telecommunications.

Direct damages refer to the loss of materials, hospital beds, medicines, and destroyed health equipment; thus it refers to damage that is the immediate consequence of a disaster and usually remains for a long period after a disaster event. Natural disasters can cause serious damage to health facilities, water supplies, and sewage systems, and as such, have a direct impact on the health of the population dependent on these services. In the case of structurally unsafe hospitals and health centers, natural disasters jeopardize the lives of hospital occupants and limit the capacity to provide health services to disaster victims. There are important lessons to be learned from past natural disasters. Hospital administrators must first have a clear and complete understanding of the types of disaster that can affect their facilities, specifically the magnitude and probability of an occurrence. Given these exposures, they must identify the vulnerable areas of the hospital complex, particularly those parts that provide essential support to the facility: namely, the electrical rooms, air handling equipment, fire protection systems, medical gasses, and communications. Finally, once exposures and vulnerabilities are identified, they must establish a cost-effective mitigation plan to minimize the risks.

Several methods are available to determine the optimal amount of funding to invest in order to reduce the risks posed by natural hazards. Such an investment in mitigation aims to ensure that a hospital is able to fulfill its essential role as a provider of critical care to victims following a natural disaster.

Therefore, the type and magnitude of a natural disaster determine the impact on a hospital, in terms of their water and food supplies, sewage systems, access to buildings, access to patient documentations, and medical supplies. The immediate health burden depends on the nature of the hazard. In the aftermath of a major disaster, authorities must meet extraordinary demands with resources that may not even begin to meet basic health needs, and that often have been drained by the immediate emergency response. Although disasters related to natural events may affect the transmission of pre-existing infectious disease, the imminent risk of large outbreaks in the aftermath of natural disasters is often overstated.

Conclusion

Disasters are not likely to decrease in the foreseeable future; thus, a sustained effort is needed to minimize risk by reducing vulnerability through prevention and mitigation and by increasing capacity through preparedness measures. In previous experiences, such as earthquakes, floods, or tsunamis, the importance of hospitals have been critically important. Previous strategies employed by health authorities and relief groups to reduce further morbidity and mortality following natural disasters may be helpful in similar future events; however, this must be comprehensively evaluated for each disaster plan. Due to the geographical and geological situation of these previous incidents, it could be argued that further disaster events are inevitable. Nevertheless, many lessons should be learned from previous natural disaster events and how planning could be applied to future incidents. Therefore, planning for natural disasters depends on the type and magnitude and its consequent impact on hospitals' water and food supplies, sewage systems, access to buildings, access to patients' documents, and medical supplies. The immediate health burden depends on the nature of the hazard. In the aftermath of a major disaster, authorities must meet extraordinary demands with resources that might not begin to meet even basic health needs and that often have been drained by the immediate emergency response. Disasters related to natural events may affect the transmission of preexisting infectious disease, but the imminent risk of large outbreaks in the aftermath of natural disasters is often overstated. Therefore, comprehensive and effective disaster management is highly important for hospitals and health centers. During a disaster, it may become necessary to evacuate non-ambulant and ambulant patients; thus the response to disaster including evacuation procedures should be well established. Nevertheless, this research can contribute to the existing knowledge for managing better health centers during disasters, and mitigate the impact of natural disasters in hospitals.

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