

An Updated Narrative Review of Disaster Management in Hospitals

Seyed Amir Mohammad Fatemi ¹, Faezeh Rahmani ², Hooman Esfahani ³, Ali Tanian ^{4*}

¹ Organizational Behavior Management Semnan University, Semnan, Iran

² Faculty of Management, Accounting & Economics, Payamnoor University of Tehran, Tehran, Iran

³ Department of Emergency Medicine, School of Medical, Shahrekord University of Medical Sciences, Shahrekord, Iran

⁴ Department of Management, Kerman Branch, Islamic Azad University, Kerman, Iran

* **Corresponding Author:** Ali Tanian, Department of Management, Kerman Branch, Islamic Azad University, Kerman, Iran. E-mail: Alitanian@yahoo.com

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Abstract

Disasters are becoming increasingly prevalent across the world with the increased amount of damage that human beings have imposed on the nature or potential threats of emerging diseases as well as the evolution of new infectious agents. The most essential facility that must be prepared to respond successfully to any mass-casualty incident and disaster is hospitals. Hospitals and healthcare providers are directly involved in disasters and crises. Hospitals as permanent and specialized centers for providing medical services, with facilities and experienced staff are one of the important components of the process of responding to emergencies. This is why many researchers are interested in hospital resilience, and as a result, several models for forecasting disaster reactions, calculating risks and hazards, and various other models of risk management in disaster situations have been offered in the literature. Many studies have focused on human resources preparedness; while some evaluate the structural resources at hospitals. Based on our narrative review, different countries have developed their own models of predicting risks of disasters and their management. Some nations have adopted the strategies of leading countries in their work environments. However, the point is that all models, in some way, address the role of healthcare personnel, as well as structural, non-structural, and functional components.

Keywords: Disaster, Management, Hospitals

Introduction

Nowadays, the increasing production of greenhouse gases has caused global warming and destructive and unexpected climate and ecological changes have emerged on the earth as well as severe storms, tsunamis, destructive snow and rain, landslides, etc. Furthermore, frequent earthquakes occur as a result of the youth of some layers and parts of the earth, as well as their numerous geological activities, and the combination of these disasters creates dangerous conditions for mankind.^{1,2} Every year, the negative consequences of disasters affect human beings around the world. Also, there are biological threats like emerging infectious diseases, such as the COVID-19 which emerged from 2019.³

Disaster conditions refer to the dysfunction of society due to damage to human beings, the economy, and the environment. So in a disaster situation, proper control of the contributing situation is beyond the

ability of that society and needs external help. A crisis is the result of a combination of risks, vulnerabilities, and the limited capacity of a society to mitigate the negative consequences of those risks.⁴ Appropriate strategies for mitigating and controlling the crisis has been defined by various administrative organizations. Meanwhile, the hospital is considered as a center of gravity and a valuable axis of disaster management activities. The readiness of hospitals to overcome the destructive consequences of crises is the most critical point that could not get hidden from anyone.^{5,6}

Hospitals and healthcare providers are directly involved in disasters and crises.^{7,8} Hospitals as permanent and specialized centers for providing medical services, with facilities and experienced staff are one of the important components of the process of responding to emergencies. The mission of hospitals is to protect the lives and health of the injured people in

crisis situations.⁹ Hospitals to deal effectively with crisis situations caused by disasters, an action plan must be developed in advance. Lack of such a plan will increase disorder and confusion in affairs.^{9,10} In fact, effective health care management in times of crisis, with appropriate and rapid anticipation of events before their exacerbation and determination of needs and potential problems are very important factors in saving human lives. When unexpected events occur, working conditions in hospitals completely change. These changes include all activities and the adaptation of the hospital situation to the existing conditions.¹¹ It should be done according to pre-determined plans the entire treatment system should be reviewed to be able to accept and treat patients who have been injured in an accident. Therefore, the way hospitals are organized during normal times and in case of unexpected events is absolutely different.

A systematic review has evaluated hospital preparedness for disasters in Iran. Based on the results, Iran has a moderate level of hospital readiness. Authors suggested optimal resource control and the application of models of disaster management in the area of healthcare care to strengthen hospital disaster preparedness;¹² while in developed countries of the world, most hospitals should contain a disaster management model in their program in order to

prepare and improve their capabilities in the face of unexpected events.¹³ Another study by Hojat et al., showed varying levels of hospital preparedness in various parts of Tehran city.¹⁴ The program must be configured to determine who, when, and how the program is activated and deactivated. The hospital's transfer and evacuation strategy should be clear. Actually it's important to think about communication and information management. The program must be constantly updated, and all crisis intervention staff must be sufficiently familiar with the program to be able to play their role well. The hospital should include the issue of crisis management in its strategic planning, train its staff, and adopt proper management in this regard. So, having a comprehensive view of the models of disaster management is important for care settings and this review tries to assess various aspects of the available models of disaster management in hospitals.^{2,10}

Concept of Disaster Management

Crisis management is defined as the process of reducing disaster risk by using anti-crisis resources in efficient and effective ways.^{9,15,16} Crisis management has four stages, each of which is designed and implemented for its own purposes. These stages have been presented in Table 1.

Table 1. General Model of the Crisis Management System

Stage	Objective
Prevention	Reducing the probability of crisis occurrence
Preparedness	Planning, education and research
Confrontation	Providing emergency services immediately after the crisis
Reconstruction	Returning society to a normal condition

A hospital crisis management committee is often established to resolve disputes and crises and external issues related to patients and their family, medical specialties and other practices. An effective crisis management system prevents the crisis from getting worse.^{16,17} Performing crisis simulation maneuvers, identifying weaknesses in the proposed planning, clarifying roles and responsibilities, ensuring the capabilities of the project, strengthening cooperation within and outside the sector, and observing how to use equipment and resources are responsibilities of a hospital crisis management committee.¹⁷

Human Resources Preparedness

It is believed that hospitals should be able to cope

with any type of crisis. Therefore, the presence of knowledgeable and well-trained personnel in this field is essential. In healthcare organizations, the human aspect is a major issue in the adequate, ongoing planning for emergencies or disasters. Doctors can be hesitant to engage in such preparation due to a lack of medical staff, an overload of current work, an increasing volume of paperwork, and the fulfillment of a variety of required rules and procedures. Forcing employees to become familiar with paperwork, operational processes, and contingency preparations for mass-casualty incidents and crises can be difficult. Since individuals may not see an imminent danger in periods of sustained safety, they do not have a deep desire to plan for crisis scenarios in the majority of cases.¹⁸

Hsu et al., listed comprehension in the review study as seven essential skills for effective performance in times of crisis. One of these skills is to assess the knowledge and professional skills of the personnel regarding critical events and to assess their awareness.¹⁹

Due to the nature of activities related to the role of health care in the treatment and rehabilitation of patients and the control of public health, the health sector is sensitive and strategic.⁵

A survey was undertaken in Poland to examine how responsive hospitals and medical staff are to mass-casualty events. It was discovered that assessing disaster response preparedness and efficiency is a technique of detecting and correcting any flaws or weaknesses in a hospital's management model during mass-casualty events.²⁰ To ensure the safety of patients and employees, the healthcare provider must implement a disaster management plan, familiarize the entire healthcare providers with it, and conduct a routine disaster maneuvers.²¹

Among hospital staff, nurses have the most contact with patients and provide the most care. Therefore, their high knowledge and awareness about dealing with the crisis will lead to faster recovery of the injured and increase the efficiency of the system in improving the health of the community. The nurse will be judged as a member of the medical team based on his or her attitude. Some key issues for disaster response for health care personnel are the protection of the organization's facilities, equipment, and resources in the event of a disaster.^{22,23}

Structural/Non-Structural Resource Management

Since in the health sector, building safe hospitals that can maintain their efficiency and performance in the event of a crisis is of great importance, determining the current level of safety of the hospital is an important step in reducing risk strategies.^{24,25} In this regard, the Hospital Safety Index (HSI) is a tool developed in the field of crisis management in the health sector.²⁴ This is while the ability of this system to respond to major disasters and emergencies is questioned in various researches. In a systematic review of a total of 89 papers and recommendations, a variety of factors were found to influence hospital resilience, and further research was suggested to be undertaken to develop models or methods for quantifying hospital resilience in various countries and contexts

using an all-hazards method. However, it provides the necessary information to policymakers and decision-makers.^{24,25} There has been a considerable amount of testing done to further explain how hospitals react to emergencies, with some researchers using a method or tool like the HSI as a rapid, accurate, and cost-effective analytical method for analyzing the security of hospital facilities, vital structures and appliances, supply availability, and emergency/disaster management capabilities.

Lapčević et al., assessed the HSI in comparison to their newly developed method named “rapid safety assessment of primary health care centers (PHC)”. They showed that this tool can be tweaked and applied to primary care clinics. In the event of a crisis, the assessed PHC is likely to function better than HSI. HSI discovered bugs were addressed in their model. The majority of changes are needed in the areas of emergency power and water supply.²⁵

Risk Management Evaluation

Accreditation is one of the most important areas in the evaluation of health services, which is defined as the confirmation of the achievement of an organization providing health services to predetermined standards by an independent outer judgment team from the same organizational level.²⁶

A good hospital emergency risk management policy saves lives, reduces property loss, and assures that hospital services are of high quality. The aim of Arab et al.'s study was to create and test a concept for Hospital Disaster Risk Management Evaluation (HDRME). They developed a rigorous methodological scheme for assessing hospital emergency risk analysis which was fully validated. Standards and quantitative elements can be incorporated into this formal model to assess a hospital's emergency preparedness and, as a result, disciplinary measures can be taken to improve the hospitals' disaster response.²⁷

While accreditation should be based on a country's needs and expectations, the techniques and models employed in these systems should be based on recognizing and utilizing the experiences of other nations. Therefore, each country with an organization that wants to launch an accreditation program, should use one or more large and leading organizations in this field to use the experiences of others, prevent waste of resources, and create compatibility.^{28,29}

Localization is a model of adopting new models to national laws and cultural, social, political, and religious requirements specific to that country, which is a critical and important stage in the process of developing standards, and this is what all leading countries do. For example, the JCI, unlike its national branch, the Joint Commission for Accreditation Healthcare (JCAH), has removed US national laws and requirements from its international standards to comply with international standards.³⁰

Ireland is modeled on the accreditation of the Canadian Council on Health Services Accreditation (CCHSA), in the Eastern Mediterranean Regional Organization (EMRO), Egypt and Lebanon accreditation programs originate from the United States Agency for International Development (USAID) and the World Bank, respectively. For this purpose, Tabrizi and Gharibi conducted a systematic review to identify the best models in the world and the region for optimization modeling. The purpose of accreditation in health organizations was mentioned in their study to be the improvement of the quality of health services, improvement of integration in health service management, creation of an organized health services database, increasing the safety and reducing the risks for patients and staff, providing training and counseling for health service organizations, reducing costs with a focus on increasing the efficiency and effectiveness of services.³¹

Models of Disaster Risk Management in Iran and other Countries

The evaluation system of hospitals and health service organizations in Iran in the field of evaluation, has major problems such as non-standard questions, ambiguity and subjectivity of standards, non-standard and heterogeneity of the evaluation process and data collection and registration system, lack of adequate training of evaluators and there are issues such that the performance of this system concerning crisis management is no exception to this rule.

The evaluation of leaders in such circumstances as hospital crisis management and active engagement, complete hospital preparation, and having well-written and successful strategies to cope with the issue might be the topic of the model established in the field of crisis management. Society in the field of crisis management and using a multi-part approach, identifying, evaluating, and modifying possible risks by the

hospital, maintaining the main communication of the hospital during critical situations and coordination in the main activities, having a proper approach to return the patient to the hospital and Continued quality improvement in activities related to crisis management.

The US Joint Commission International (JCI) model, despite being considered the best role model, has obvious weaknesses and shortcomings in crisis management, and only makes brief references to this standard. This model requires more attention to crisis management and embedding weighty and practical standards in the structure of its standards.^{32,33}

Of all the accreditation models suggested in the literature, the Canadian accreditation model has the most comprehensive standards for crisis management and includes a wide range of functionalities in this area.²⁷ There is no doubt that the use of this model in hospitals and other health care providers will improve their readiness in the event of an emergency.

Limitations

There are many variables involved in assessing the readiness of hospitals in disasters. Also, the non-uniformity of data collection tools in literature makes data pooling impossible. So, qualitative meta-analysis studies are needed for further summarizing the massive literature.

Conclusion

Many surveys have concentrated on human resource readiness, although others have evaluated hospital institutional capabilities. Different countries have built their own frameworks for forecasting catastrophe threats and managing them based on our narrative analysis. Any nation has adopted the practices of leading countries in their work environments. However, the argument is that most models approach strengthening the role of the healthcare workers, structural ,non-structural and functional components.

Conflict of Interest

The authors declare that they have no conflicts interest.

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