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Disaster risk management challenges in military hospitals: A qualitative study

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Abstract:

BACKGROUND: Disaster can pose significant challenges to the health infrastructure in the community. Hospitals are the central unit for providing health services in the disaster response plan. With regard to the vital role of military hospitals in health response to disaster, this study was carried out with the aim of investigating the disaster risk management (DRM) challenges in military hospitals in Iran.

MATERIALS AND METHODS: The current study was qualitative research performed in 2020 in military hospitals in Iran. Participants consisted of 12 managers and staff of the military hospitals in Tehran and professionals in health in emergencies and disasters who were included in the study by the purposive sampling technique. Semistructured individual interviews based on the interview guide were exploited for the data collection, and a content analysis method was used to analyze them.

RESULTS: DRM challenges in military hospitals were explained in the form of six categories: "management and leadership, planning, prevention and mitigation, preparedness, response, and recovery" and 22 subcategories.

CONCLUSION: Managers' awareness of DRM challenges in hospitals, particularly military hospitals, and the design and implementation of solutions can lead to the promotion of hospital DRM and hospital preparedness to deal with disasters.

Keywords:

Disaster, hospital, management, military, risk

Introduction

Disasters and their outcomes can rapidly influence available resources and have highly destructive effects on the basic infrastructure of health care.^[1-3] Special consideration to the health sector in disaster management is essential since the first necessity and the most critical concern of people is health.^[4] At the time of the occurrence of disasters, demand for health systems typically increases considerably.^[5] As the main unit of service delivery, hospitals have a crucial role in disaster response; hence, they must

have the necessary preparedness for disaster response and their recovery.^[6-8] The World Health Organization has introduced preparedness as an important part of the sustainable development process and has insisted on the implementation of required activities.^[9] The results of numerous studies indicated that high vulnerability and lack of preparedness are the critical challenges for hospitals to deal with disasters.^[2,6,10,11] Enhancing the capability of hospitals for disaster response is the highest priority of disaster mitigation measures.^[12]

The disaster management program enables hospital staff to effectively react in the face of disaster.^[13] Enhancing the preparedness

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of military health-care personnel in disaster response can upgrade optimal performance for future missions of global health.^[3] The Strategic Document on Health, Relief, and Treatment of Iran’s Armed Forces explain the mission of military hospitals in rescue, transport, and treatment of casualties in disasters. Thus, the preparedness of military hospitals in disasters enjoys more importance compared to other hospitals.^[14] While carrying out their current tasks, hospitals in crisis situations must be able to respond to a high volume of patients and injured who have been imposed upon them as a result of disasters.^[15] The results of a study revealed the preparedness of Iranian hospitals at a moderate level (40%–60%) and a low level (13%).^[16] Frequent assessment and monitoring to identify weaknesses and challenges and proper planning can contribute to improving hospital preparedness.^[17]

The attention of hospitals to the place of risk management is essential.^[18] A comprehensive hospital disaster management plan should take into account all risks, all phases of DRM, and all levels of the hospital.^[19] Implementing DRM accreditation standards is a solution to promote the preparedness of hospitals. The care quality improvement and continuous review of DRM standards on the basis of hospital management challenges are one of the important factors in the promotion of hospital preparedness in health response to disasters.^[14] The review of the previous studies did not show investigating the DRM in military hospitals. Due to the increasing occurrence of disasters and with respect to the vital role of military hospitals in disaster health response and the necessity to examine its challenges with focus on the promotion of DRM in these hospitals, this study was conducted to investigate the DRM challenges in military hospitals.

Materials and Methods

Study design and setting

This research was a qualitative study with a content analysis approach using in-depth semi-structured interviews that were conducted in 2020.

Study participants and sampling

Participants included 12 military hospital managers and health specialists in disasters and emergencies. The purposive and snowball sampling method was performed [Table 1] and sampling was continued until saturation point.

Data collection tool and technique

Semi-structured individual interviews based on the interview guide were exploited for data collection. The interview process and the purpose of the study were explained to the interviewees from the beginning.

Table 1: The demographic characteristics of the participants (n=12)

Demographic profile	n
Gender	
Male	7
Female	5
Age	
30-40	4
41-50	6
>50	2
Education level	
Bachelor degree	1
Master degree	2
General practitioner	2
PhD	7
Work experience (years)	
<10	2
10-20	5
>20	5

By obtaining written consent and observing ethical considerations, the interviews were conducted and recorded with a recorder.

Face-to-face interviews were conducted in a quiet environment with participants’ opinions. Concerning the circumstances and interests of the participants, the duration of the interviews lasted from a minimum of 60 min to a maximum of 90 min. The number of interviews continued until new data was not added to the previous data and information saturation was achieved. With respect to the objective of the study, general questions entitled “What are the disaster risk management (DRM) challenges in military hospitals?” “What challenges does your hospital face in DRM?” was asked at the beginning of the interview; then, according to the answers of the participants, the questions continued. The other methods for data collection were field notes and unstructured observations, which were considered in data analysis.

Interviews were transcribed verbatim very soon. For data analysis, the qualitative content analysis with a conventional approach was employed. The researchers conducted data collection, coding, and data analysis simultaneously. Constant comparison was performed in all analysis processes and differences and similarities between the initial codes were detected. Identical codes were set up and conceptualized in a similar category. MAXQDA 10.0 R250412 computer software was exploited to facilitate data analysis and classification.

The techniques used to enhance the precision of the results were as follows: Proper communication with participants, long-term involvement with the phenomenon, consecutive interviews, full immersion in

the data, reviewing the findings with the participants, using several methods for data collection and accurate recording and reporting all the stages of the research.

Ethical consideration

This study was approved by the Research Ethics Committee (No. IR.AJAUMS.REC.1398.251). at the beginning of each interview, the aim of research, interview method, information privacy, and optional participation in the study were explained for the participants and the participants were asked to be recorded. Moreover, written satisfaction was obtained before the interview.

Results

Table 1 shows characteristics of 12 people participated in this study. The result of the data analysis was 234 codes and 22 primary category [Table 2]. After classification of the data and with the reduction of classes, it emerged as six main categories. These categories included

“management and leadership,” “planning,” “prevention and mitigation,” “preparedness,” “response,” and “recovery.”

Category 1: Management and leadership

This main category included the seven subcategories of “Commitment,” “Support,” “Participation,” “Culture,” “Coordination and communication,” “Organizing,” and “Rules and Regulations.”

Commitment, support and participation

The participants, in their remarks, considered the insufficient commitment of some managers and staff to the organization, inadequate support of upstream organizations from the hospital and inadequate participation of managers and staff in decisions as critical challenges of military hospital DRM (HDRM). In this case, one of the participants explained, “I think one of the biggest challenges is the lack of accountability of some, of course, a small number of managers, which unfortunately causes a series of problems” P5.

Table 2: Extracted categories and subcategories as disaster risk management challenges in military hospitals

Main categories	Subcategories	Important cods
Management and leadership	Commitment	Insufficient commitment of some managers Insufficient commitment of some staff
	Support	Inadequate support of upstream organizations
	Participation	Inadequate participation of managers and staff in decisions
	Culture	Lack of development of risk management culture
	Coordination and communication	Inadequate interaction of the armed forces hospitals and their managers with each other Protective constraints for communication with civilian relief organizations
	Organizing	Multi-occupancy of the members of the committee on DRM in hospitals Difference in salaries and benefits of the hospitals staff difference in credits of the hospitals compared with together
	Rules and Regulations	Nonrevision of old military regulations Insistence on bureaucracy based on these rules Working based on relations rather than legislative work
Planning	Program development	Lack of a comprehensive, and targeted plan
	Program implementation	Long distance between decision-making to implementation
	Program evaluation	Inadequate supervision, and monitoring of program progress
Prevention and mitigation	Structural safety	Old, and worn-out structure of the hospital
	Nonstructural safety	Lack of fixed equipment in wards
	Functional safety	Lack of manpower, and firefighting equipment
	Environmental safety	Insufficient number of fire alarm sensors The need to rebuild elevators
Preparedness	Training and drill	Insufficient knowledge, expertise, and skills of managers & staff
	Surge capacity	Inadequate equipment support Lack of timely provision of equipment
	Injured management	Lack of a proper evacuation program Inadequate facilities to discharge patients
Response	Staff management	Retirement of formal staff and staff burnout
	Volunteer management	limited acceptance of volunteers
	Resource management	limited financial resources and lack of funds
	Information management	Restrictions on the use of novel technologies in the hospital information systems
Recovery	Sustainable development	Necessity to evaluate the strengths and weaknesses of previous crises Lack of proper documentation of the previous experiences

DRM=Disaster risk management

Culture

Lack of development of risk management culture in hospitals is one of the fundamental challenges in implementing DRM in military hospitals. One of the participants stated, "One of the problems is that we do not intend to have long-term planning in terms of culture that this includes the hospitals" P2. Another participant expressed that "Hospital managers are looking to generate revenue, and since crisis management is not revenue-generating, it is seen as an overtime work to the issue of crisis management" P8.

Coordination and communication

In the view of the participants, the inadequate interaction of the armed forces hospitals and their managers with each other and the lack of appropriate and reasonable sharing of the workforce between hospitals in times of crisis, existence of protective constraints for communication with civilian relief organizations and inadequate intra-organizational and extra-organizational coordination were among the challenges of DRM in military hospitals. One of the participants said, "To manage the COVID-19 crisis, I thought it would be better to share personnel between armed forces hospitals. Thus, hospitals like ours, which has the potential to provide services to COVID-19 patients, can operate with all its potential, provided it has sufficient staff" P4.

Organizing

Inadequate organizational structure at strategic military levels and insufficient budget allocation to health systems and departments related to DRM, multi-occupancy of the members of the Committee on DRM in the hospital, occupying the table of organizational jobs with inefficient workers, assigning a portion of hospital revenues to upstream organizations, lack of sufficient decision-making power for the appointed successors in times of crisis and the difference in salaries and benefits of the hospital staff and credits compared to other hospitals of the armed forces were some of the statements of some participants in the field of organizing. One of the participants said, "In the organizational chart of the military, health care is at the bottom of the chart. The mission of military systems is not health care, but military operational forces are at higher priority. Hence, there is no priority for the allocation of sufficient and appropriate budgets to hospitals" P4.

Rules and regulations

Existence of strict rules in the military system, nonrevision of old military regulations and insistence on bureaucracy based on these rules, working based on relations rather than legislative work, the failure to meet the needs and demands quickly due to the lengthy process of bureaucracy to provide the funding and spending was the statement of some participants in the field of laws

and regulations. Said one of the participants, "The process of spending money to meet a need is lengthy. Funding may also be available, but a long administrative process should be spent, which is usually done faster in an emergency" P5.

Category 2: Planning

This main category included the three subcategories of "program development," "program implementation," and "program evaluation."

Program development, program implementation, and program evaluation

From the viewpoint of participants, poor planning and lack of a comprehensive and targeted plan, as well as nonoperational plans and long distance between decision-making to implementation, inadequate supervision and monitoring of program progress and compliance with standards were among the challenges of DRM in military hospitals related to planning. One of the participants explained, "The HDRM committee has now carried out a hospital risk assessment, identified and prioritized risks. However, in practice, how much did they spend on it? What is their plan? What percentage should we advance per year? Is the program advanced? Otherwise, I will write on paper, for example, fire is the first danger of the hospital, and for example, this number of capsules must be prepared, replaced or installed, or staff must be trained and other measures. Hence, how much of this have we done now?" P6.

Category 3: Prevention and mitigation

This main category included the four subcategories of "Structural safety," "Non-structural safety," "Functional safety," and "Environmental safety."

Structural safety, nonstructural safety, functional safety, environmental safety

The old and worn-out structure of the hospital and the nonstandard structure, especially in the face of fire, were among the statements of the participants in the field of structural safety of the hospital. Participants also noted the aging of infrastructure and the inadequacy of hospital facilities and the lack of fixed equipment in some wards of the hospital, which placed under the subcategory of nonstructural safety. Lack of equipment and manpower to deal with chemical, biological, radiological, and nuclear incidents as well as the lack of manpower and firefighting equipment were some of the challenges posed by participants in the field of functional safety. Other challenges raised by the participants were the insufficient number of fire alarm sensors in the hospital, the failure of fire extinguishing systems in warehouses, the need to rebuild elevators, electrical boards and food warehouses, which were placed in the environmental safety category. In this respect, one of the participants

explained, "Although the hospital building is old, it has fairly good resistance. Our problem is mostly associated with infrastructures, such as the sewerage system, electrical system, and fire extinguishing system. Of course, we are gradually solving the problems, a noticeable and full budget is not allocated to upgrade the infrastructure and facilities, and therefore, they will be overcome based on the problems that appear, and the problems will not be solved essentially" P7.

Category 4: Preparedness

This main category included the two subcategories of "Training and drill" and "Surge capacity."

Training and drill

Participants in their statements considered insufficient knowledge, expertise and skills of managers and employees due to not caring about the subject of training, inadequate training systems, lack of targeted training and incorrect determination of target groups, as well as insufficient experience of staff, acting on the basis of personal experiences and insufficient practice of the hospital response program to deal with disasters as DRM challenges in military hospitals. One of the participants said, "I have a question. What percentage of hospital staff have ever taken a crisis management course? The army has the most crisis management. We did most of the crisis management work in the military, but look at what percentage of hospital staff have ever received crisis management training?" P11.

Surge capacity

Weak support systems, inadequate equipment support, and lack of timely provision of equipment to deal with the crisis and lack of facilities for maneuvering are other challenges of DRM in military hospitals placed in the category of surge capacity. One participant said, "Hospital equipment backups are not enough to deal with a crisis, and when there is not sufficient equipment in times of crisis and it needs to be offered at the moment, it takes a long time to be provided to the system" P7.

Category 5: Response

This main category included the five subcategories of "Injured Management," "Staff Management," "Volunteer Management," "Resource Management," and "Information Management."

Injured management

The special design of some hospital building poses problems for the rapid and appropriate discharge of patients. Moreover, the lack of a proper evacuation program P5 and the lack of adequate facilities to discharge patients P7 were among the challenges raised by participants in the field of injured management.

Staff and volunteer management

The problem of labor force shortage in crisis, especially during the COVID-19 crisis, was one of the major challenges of DRM in military hospitals. Retirement of formal staff and increase of contract staff, nonuse of qualified personnel in job positions, shortage of specialists in crisis management, staff burnout, limited acceptance of volunteers, and the lack of a suitable program for the attendance of volunteers in military hospitals were the other challenges of DRM from the perspective of participants. One of the participants said, "If anyone wants to come to the hospital from abroad as a volunteer, they will not be accepted due to military conditions and security restrictions. If they want to provide from anywhere else, it has its own process" P6.

Resource management

From the viewpoint of participants, limited financial resources and lack of funds, nontimely provision of funds, declining hospital revenue in times of crisis, especially COVID-19 crisis, improper prioritization of spending, lack of full and incomplete funding, inadequate and untimely provision of equipment and burnout of hospital systems and capital equipment, were among the posed challenges of DRM in military hospitals in the field of resource management.

Information management

The existence of security considerations in the hospital causes restrictions on the use of novel technologies in the hospital information systems. One of the participants said, "Unfortunately, we do not have the possibility to exploit and use modern technology, and licenses must be issued from numerous places. For example, we have many limitations to access to the Internet relative to other hospitals" P5.

Category 6: Recovery

This main category included the one subcategory "Sustainable Development."

Sustainable development

The necessity to evaluate the strengths and weaknesses of previous crises and the lack of proper documentation of the earlier experiences of disaster management administrative processes was among the crucial issues raised by the participants. One of the participants said, "I think we need to look at the pathology of every disaster that is responded and its experiences should be seen as a lesson" P2.

Discussion

The results of this study suggested the existence of six main challenges of "management and leadership," "planning," "prevention and mitigation,"

“preparedness,” “response,” and “recovery” in the field of DRM in military hospitals. Multiple studies have pointed to some of the HDRM challenges that are in line with the results of this study. Successful disaster response requires coordination between all hospital departments and coordination with out-of-hospital organizations. On the basis of the results of some investigations, poor communication and coordination in the crisis team are among the most critical challenges of HDRM.^[20-22] Nekoie, in his study, noted the importance of hospitals’ need for a well-established structure for DRM, such as the DRM Committee, Incident Command System, and Hospital Command Center, and establishment of proper communication with community relief organizations.^[23] Another study has considered the hospital’s ability to provide the best services to disaster casualties depending on effective coordination with other organizations and service providers.^[24,25] Hendrickx in his study believed that many of the problems of HDRM are caused by a lack of co-ordination rather than a lack of resources.^[20]

Some studies have identified the age of the hospital building and its deterioration as a significant challenge to HDRM.^[26,27] In his research, Montejano considered the nondefinition of evacuation routes and safe areas in the hospital for emergencies as one of the challenges for the failure of HDRM because of lacking proper planning.^[27] In other studies, the multiplicity of decision-makers^[21] and the lack of appropriate and well-documented programs in disasters response are noted.^[26,28,29] In another study, the necessity of a hospital disaster preparedness written plan and its operationalization, as well as a review and reevaluation of disaster programs, were insisted on.^[20]

Numerous studies reveal that lack of financial resources is a major obstacle to adequate preparedness for disasters.^[30] As the results of some studies represented that hospitals in many cases do not have sufficient financial resources.^[27,31] This can lead to disruption in HDRM by creating adverse consequences.

Training and drill enhance the knowledge and skills of health professionals.^[22] Hospitals will not have adequate response capacity without effective training.^[32] In some studies, the lack of sufficient knowledge in managers^[21,28] and the lack of experienced and qualified managers^[21] were listed as among the essential reasons for the lack of proper HDRM. Hence, employing specialized and trained people in the field of HDRM^[22] and appointing qualified managers,^[21] is an essential measure. Lack of commitment and motivation in managers and staff^[21,27] and shortage of personnel^[33] were other challenges of HDRM raised in some studies.

Proper planning before the occurrence of disasters and efficient coordination and resource allocation for

successful disaster response are crucial.^[8] In their study, Amiri insisted on the lack of proper planning as one of the important reasons for the lack of preparedness of hospitals to deal with disasters.^[34] In some investigations, the existence of bureaucracy and rapid change of officials,^[27] constant change of regulations,^[21] and lack of commitment of managers^[21,31] and lack of support from authorities^[21] were raised as HDRM challenges.

Other studies have emphasized the lack of a risk mitigation culture^[21,27] and the lack of development of the disaster risk reduction and management culture^[33] as noticeable challenges in HDRM. In the majority of Iranian hospitals, risk management is not carried out in a scientific way.^[28] The absence of scientific and academic programs on disaster management^[35] and lack of scientific evidence in connection with DRM in long-term development plans^[31] are other reasons for the deficiency of HDRM, which pointed out in the studies. Given that increasing knowledge and skills is important and effective in disaster prevention and mitigation of their impacts,^[36] Thus, necessary training in conjunction with the development and implementation of risk management programs need to be provided to managers so that a new attitude in this regard to be created among them.^[28]

Limitation and recommendation

The occurrence of COVID-19 disease pandemic, the limitation of conducting interviews due to the busy and having managerial jobs of most participants and the limitation in collecting information due to the leveling of information in military hospitals were significant limitations in this study.

The researchers recommend conducting further researches aimed at investigating strategies to improve the HDRM, especially in military hospitals and examining the impact of the implementation of strategies for upgrading the HDRM.

Conclusion

The recognition of the HDRM challenges could be beneficial to develop roadmaps and strategies to promote DRM in hospitals. With regard to the essential role of military hospitals in health response to disasters and the necessity to improving disaster preparedness and risk management in these hospitals, identifying the challenges of DRM in military hospitals is critical so that policymakers and managers can codify and execute promotion strategies. The strategies for improving military HDRM resulting from this study can be included increasing commitment, support, participation, and communications and coordination. Also improving organizing, attitude, culture, and increasing knowledge

and skills, risk assessment, planning, surge capacity, and proper response management to disasters are other proposed strategies to improve the DRM in military hospitals. These strategies can be used in developing a comprehensive DRM program in military hospitals and lead to improving hospital preparedness for disasters.

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Conflicts of interest

There are no conflicts of interest.

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