

# Assessing the level of preparedness for confronting crisis such as flood, earthquake, fire and storm in some selected hospitals of Iran

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## Abstract

**Aims:** Medical centers, especially hospitals need readiness in order to fulfill their mission in disasters as the most important settings for treatment of wounded and injured people. Therefore, this study was performed to assess the readiness level of some selected hospitals of Iran.

**Methods:** This cross-sectional descriptive study was carried out in 30 selected hospitals of Iran in year 2009. Data was collected by a validated 220 questions checklist taken from a master degree thesis. Reliability of the checklist was confirmed with Kappa test. Data was analyzed by SPSS 15, using descriptive statistics and a five-section Likert scale.

**Results:** Mean scores of 10 units of hospitals such as admission, safety, evacuation and transport, staffing, communication, traffic, emergency, training, logistic, and management were respectively 21, 45, 49, 44.5, 54, 49, 64.5, 68.5, 70, and 80%. Generally, the average readiness score for all hospitals was 54.5%.

**Conclusion:** The readiness level of studied hospitals is good in emergency, training, logistic and management units. Readiness level is medium in safety, evacuation and transport, staffing, communication and traffic and is weak in admission, according to Likert scale.

**Keywords:** Readiness, Hospital, Crisis

## Introduction

The happening of natural disasters such as flood, earthquake, hurricane, etc have often left destructive effects on human societies and impose casualties on their inhabitants. These disasters impose broad social and economical complications on societies and countries by destroying the buildings and social infrastructures [1]. By focusing on historical evidences and the available experience, natural disasters and unexpected formidable events happen frequently at high rate, high intensity, and broad dispersion in Iran [2]. Moreover, based on the conducted researches, the earthquake threats Iran and especially Tehran more than other events [3].

In different cities around the world, the large scale of damage and casualties resulted from natural disasters have caused researchers to conduct broad applicable investigations on optimizing the immunization, increasing the inventions in designing and finding the best policies and the most economic methods and technologies [4].

This happens while the experts believe that in Iran all the management decisions and planning are made without using the information of this domain due to the lack of sufficient protocols and coordination between organs and state and private relief groups in this field [5].

In the United States as well, by examining the

preparation level of hospitals at the time of crisis, in a study in 2003, Murphy [6] showed that the four-fifths of the hospitals in the United States do not have any plan to cooperate with other hospitals. Overall, only 22% of the studied hospitals had sufficient preparation for confronting the crisis [6].

However, regardless of the lack of a comprehensive tool to analyze the preparation level of hospitals, the upgrading of hospitals preparation is a vital need [7]. In this regard, the effective medical relief and rescue management at the time of crisis, by the proper and in time anticipation of disasters, before the intensifying and determining the probable needs and problems is considered as a highly important factor in saving people's lives [8]. Therefore, the health and treatment sector, as the active organization in the crisis management and hospitals as well as the first and the most important centers of casualties' treatment should be completely ready to be able to present the health care by the best and the quickest reaction at the time of disaster [9, 10].

The present study was done to assess the hospitals' preparation level to confront crisis.

## Methods

This descriptive- sectional study was performed in the 2009. The study population was 30 selected hospitals of Iran that were selected through the purposive

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sampling method (in the article 10 hospitals are named by letter "A", 1 by letter "B", and the rest 10 by letter "C").

The data was collected using a 220-question (Yes/No) check list. The mentioned checklist has been prepared by the overview study of 12 questionnaires and interior checklist and 8 questionnaires and exterior checklist based on aims and research questions of thesis. The questions were in ten separate parts and related to each ten parts of the hospital (reception, security, evacuation and transforming, staffing, communication, traffic, emergency, training, support, and management). It includes the condition of staffing, equipments, physical condition, structure and organization, protocols and related instructions. In pointing the choices Likert Scale 5 parts was used. In the way that one considered till relative point 20 as very poor, between 20-40 as poor, between 40-60 as average, between 60-80 as good and more than 80 as very good (excellent). In order to determine the scientific validity as the formal and content validity, one handed in the checklist to 35 professors of medical universities of Tehran and then the data was reviewed by the collecting their corrective comments. One analyzed the stability of tools by doing the retest on one of the research domains based on Kappa test as (0.8) which was acceptable [11].

Having received the necessary coordination and the license, the researchers presented in the research area and stated their aims for performing this research to the officials of studied wards and following their cooperation through direct observation, proceeded to complete the related checklist. The collected data analyzed by descriptive statistics (frequency table, average, etc).

**Table 1-**The preparedness point of each ward according to the hospital

Hospitals Group → Ward ↓	A		B		C		Mean score percent
	Score	Score percent	Score	Score percent	Score	Score percent	
<b>Emergency</b>	22	76.6	24	80	11	36.6	64.4
<b>Admission</b>	4	16.6	5	20.8	6	25	20.8
<b>Discharge and transfer</b>	27	96.6	2	6.6	13	43.3	48.8
<b>Traffic Unit</b>	7	46.6	5	33.3	10	66.6	48.8
<b>Communication unit</b>	4	25	12	75	10	62.5	54.2
<b>Security unit</b>	11	70.5	6	35.3	5	29.4	45
<b>Education</b>	11	76.5	16	94.1	6	35.3	68.6
<b>Support Unit</b>	21	75	19	67.8	19	67.8	70.2
<b>Human resources</b>	6	28.5	11	52.3	11	52.3	44.3
<b>Management</b>	19	86.3	17	77.2	17	77.2	80
<b>Total score</b>	132	59.8	118	54.2	108	49.5	54.5

## Results

The emergency of hospitals "B" got more points in preparation than other hospitals. In the evacuation and transportation wards, the hospitals "A" received the most point. On the average of points in staffing ward, hospitals "B" and "C" were at the same status. The traffic ward of hospitals "C" had more preparation with 10 points (Table 1).

Overall, the relative average of preparation to confront with crisis was calculated as 54.5%, based on which these hospitals were placed in the average preparation level.

## Discussion

Despite the conducted research, no inner and outer similar research on the research issue in military medical centers was obtained which is due to the security reasons. Therefore, this research was compared to similar researches in other state hospitals. Of course, one should mention that there is no difference in service providing between military or non-military medical centers at the time of crisis.

Based on the achieved results, the preparation level of hospitals emergencies was analyzed as good based on the Likert analysis (64.4%). In this field, Vahed parast et al. [12] as well in a study under the title of "the preparation level of hospitals affiliated to Bushehr University of medical sciences in disasters" have analyzed the emergency preparation in a good level. However, the study of Hojat et al. [11] in which they have analyzed the preparation rate of confronting disasters in hospitals subordinating by Tehran University of medical sciences, the preparation rate have been analyzed average.

One of the reasons for catching a good preparation level in medical centers in this study may be the valuable experience of executives and officials of these centers in different crisis including management in military medical centers of Holy Defense [11, 12].

The results show that the reception wards of studied hospitals had the least level of preparation (20.8%) that is reported as poor based on the considered criterion. These results despite of passing time have had no difference with the results of Hojat et al. study (38.3%) and in comparison with Ameriyoun et al., study [10] has been in a lower place (average) regarding the level of preparation. Nobody has forecasted the space and organizational structure in the reception ward and different instructions for staff duties.

In our study, the preparation level of evacuation and

transportation ward has been analyzed in average (48.8%). In the study of Kovari and Panahi in Shiraz in which they had studied the rate of preparation level of training hospitals dependent to Shiraz University of medical sciences from the viewpoint of crisis management, they analyzed the preparation level of this part 50%. Lack of emergency evacuation training program is the major defect of this ward of hospital [13].

Another engaged ward in crisis in a hospital is the traffic ward, which had an average level of preparation in this study (48.8%). In Mosadegh-Rad's study [14] the preparation level of traffic ward was analyzed 53% by studying the preparation level of Isfahan hospitals in order to reply the wounded and injured from disasters. Because of the importance of traffic control and commuting at the time of crisis and the importance of preventing the wounded' transportation problems, giving instructions to use the parking lots at the time of crisis and to use the equipment of traffic control outside the hospital and communication equipment of staff that control the traffic seems necessary [14].

The communication ward in hospitals had an average level of preparation (54.2%), which was similar to the results of Hojat et al study (52.14%). Lack of forecasting a substitute place for telecommunication and organizational structures of crisis and lack of preparing the instruction of staff communication with family is among the major defects of communication ward. Regarding the importance of communication system and information in crisis and regarding the passing of time, planning for upgrading the level of preparation of this ward seems to be necessary [11].

The rate of preparation of security ward of hospitals was analyzed as average (45%) which seemed different in comparison with the study of Hojat's et al. in which this rate was good (61.19%). Moreover, this result had a higher level in comparison with the study of Mosadegh-Rad [14].

In fact, this result is similar to the results of Maleki and Shojaei's study that had performed under the title of preparation of training hospitals of Iran University of Medical Sciences against disasters regarding security. The security planning for crisis, guarantee the staff and patients' safety and preventing the disturbance in the hospital. Nevertheless, the problems that had been observed in security ward were related to the instructions of patients, staff, equipment safety, and lack of security instructions and necessary equipment [15].

Based on the results of this study, the preparation rate of training ward was analyzed to be good (70%) that

had a better situation in comparison with the results of Ebrahimi et al. [16] and Baradaran et al. [17] that have been performed in provinces. Moreover, the results of this study are consistent with the results of Hojat et al. study (66.65%).

Despite the great importance of training in upgrading the level of knowledge and staff ability and other types of people in confronting with crisis, the organizational structure of training ward is not clear. In addition, nobody has published and installed training posters and brochures in the field of disasters, and there is no instruction for practicing to get the hospital preparation in crisis [16, 17].

Based on the results of this study, the hospitals support ward had a good preparation level (70%) that has a better preparation level in comparison with the results of Mosadegh-Rad's study [16], and has a similar situation in comparison with the results of Hojat et al. study with a preparation level of 69%. In this part, the wards requirements, the required drug supplement resources, how to distribute the required facilities of the wards and the responsibility of damage calculation resulted from the crisis are not clear yet. Moreover, nobody has prepared an instruction to prepare and distribute the required equipment, and to refer the unused materials and as well a program to collect the public assistance [11, 14].

Regarding the assessment of human resource, the level of preparation was average (44.3%). The study of Zaboli et al. [8] showed that the staff organizing has had an undesirable situation. On the other hand, in comparison with the study of Hojat et al. [11] that has analyzed the preparation of staffing approximately 44% and regarding the passing of time and done planning in crisis staff, no remarkable change has done yet. In this part the major problems relating to lack of editing the duties of the director of human resources and staff and instructions of employee counseling sessions and the support of their families with water, food and shelter. Moreover, the instruction of applying volunteers and authority of organizing them had not been clear in the time of crisis [8, 11].

Finally, the preparation level of crisis management ward was analyzed to be at a good level (80%), that the most preparation level was related to the crisis headquarter. This result was similar to the study of Safari et al. [18] with 85% of preparation, whereas based on the results of Hojat et al. study the management was at the average level (48%). The management wards did not determine any substitute place for crisis management and seating and cancelling the normal activities of hospital in crisis and did not prepare any uniforms for engaged staff.

The managers of medical centers should get the necessary information about crisis management to act properly at the time of disasters. Losing composure and the dangers of unorganized population at emergencies state the necessity for planning the management design of medical centers presentation [18, 19].

Overall, the average of studied hospitals preparation against disasters was analyzed to be approximately 54.5% that has placed in an average level of preparation. Moreover, in comparison to the results of Hojat et al. study that was performed in 13 selected hospitals of Tehran medical science universities (51.94%) and in comparison to the results of Hosayni-Shokoh et al. study [19] that have done in subordinating hospitals of Iran University of Medical Sciences had a similar situation [20].

Although there are criteria and different factors such as time, geographical situation, type of disaster, and probable number of visitors and hospitals mission and assessment tools in relation to the analysis the rate of preparation level of research units are in crisis, but achieving the least analysis point with the average preparation score in situations in which decision-making and normal activities is stopped will not respond to the mass volume of wounded and probable injured individuals and unpredictable events [19].

The preparation of hospitals is only possible by team work and the cooperation of all key wards [8]. Yet, having the hospitals and wards equipped to the basic tools against disasters, continuous training of staff at the heart of workshop, maneuver, etc and strengthening staff morale in a proper level, for a comprehensive cooperation can be placed at the heads of disaster committee of the hospitals.

The best way to stabilize and strengthen the preparation of these medical centers, is to determine the defects based on done research, resolving the fundamental defect, and then reanalyzing the preparation level of medical centers and doing preparation maneuver. Doing crisis maneuver provides an efficient understanding of vital and emergency condition while getting the staff familiar with real condition. Moreover, it aligned with the commitments and internal efforts and cause better and more proper preparation of medical centers by increasing the inter wards efforts [8].

## Conclusion

The studied hospitals were in a good condition in management and commanding, emergency, training, and supporting the preparation level. They were in the average level of preparation in parts of staffing,

security, evacuation and transportation, communication, and traffic. Finally, they were in a poor condition of preparation from the viewpoint of reception. Based on the done assessment in this research, the overall rate of hospitals preparation level was average based on the Likert scale.

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