Original Article

Assessing the level of preparedness of Arak teaching hospitals for dealing with natural disasters and unexpected events in 2016

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ABSTRACT

Introduction and Objectives: Disasters and unexpected events are often uncontrollable accidents occurring in different parts of the world. Iran is no exception to this due to its geographical location. Therefore, preparedness for unexpected events is inevitable. One of the important issues in this regard is the continuous monitoring of preparedness of medical centres, which this study seeks to asses. Methods: This descriptive cross-sectional study was conducted on all public hospitals affiliated to Arak University of Medical Sciences in the city of Arak, Iran. The data collection tool was a 234-item checklist consisting of two parts. The first part includes the general profile of the hospital and the second part of the checklist incorporates various areas of preparedness for crisis. Findings: The findings showed that the level of preparedness was moderate at Amirkabir Hospital (50%) and Taleghani Hospital (50%), good at Amir Al-Momenin Hospital (67%) and very good at Vali-e-Asr Hospital (84%) and Khansari Hospital (94%). Conclusion: The level of preparedness of teaching hospitals in the city of Arak for unexpected events and disasters was estimated as 73.6%, which is considered as good. Despite the fact that the public hospitals in the city of Arak have a good general preparedness, they need improvements in management, training, admission and traffic dimensions; and appropriate measures are necessary to be taken in this regard.

Keywords: Preparedness, unexpected events, disasters, Hospital.

Introduction

Disasters and unexpected events are often uncontrollable accidents that occur in different parts of the world. [1] The World Health Organization considers disasters as sudden ecological phenomena which need extra-institutional assistance. [2] Experts have identified more than 40 types of natural disasters worldwide, at least 33 types of which have a history of occurring in Iran. [3] Annually, about a thousand natural and unexpected events occur in Iran. [4] The bitter memories of earthquakes in the cities of Guilan and Bam and the flood and earthquake in the city of Golestan and the Imposed War have not been forgotten yet, and reminding their casualties and financial consequences is striking. [5] Over the past 90 years, more than 180,000 people have died due to natural disasters and more have suffered from physical, psychological and social damages and lost their assets. [6] These figures indicate that there is a need for a comprehensive strategic plan to cope with and prevent crises. The health area has a special place among all other ones involved in disaster management as the first and most important concern of people is health. When unexpected events occur, hospitals are considered to be the most important centres admitting the injured and are among the first organizations that have to deal with the consequences of these events. Therefore, they are required to develop a plan for dealing with such accidents. [7, 8] Hospitals are complex and

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potentially vulnerable institutions. In the heart of an unexpected event, an interruption in standard communications or external support or supply services can disrupt the hospital's operations. Therefore, hospitals must be always prepared for emergency response to unexpected events. [9] The initiation to measure the response rate of hospitals was the September 11, 2001 attacks in which thousands of people were referred to hospitals in a matter of minutes. [10] In medical centre management, preparedness is one of the main dimensions of emergency management, which, in the simplest form, requires planning, personnel training, community training and practice and evaluation. This preparedness requires increasing knowledge, improving attitudes and acquiring necessary skills at an individual level; developing a program, providing resources and defining the structure of local management at a local level and formulating policies, regulations and operational guidelines at a national level. [6] This is while, according to experts, Iran is among the countries depriving safe hospitals and prepared emergency departments. [3] In their study, Daneshmandi et al. (2015) estimated the preparedness of one of the hospitals in Tehran in the face of crises as moderate. [11] In their study, Shayan et al. (2014) also reported the preparedness of the health centre in the city of Qazvin as good. [3] While research showed an estimated poor preparedness level for the city of Kermanshah. [12] Despite the fact that many efforts have been made in recent years to develop programmes to deal with unexpected events at medical centres, they have not been implemented due to their deficiencies and lack of compliance with medical centres. [13] Today, in advanced countries, the majority of the hospitals are required to design a programme to prepare themselves and improve their abilities for facing unexpected events. [14, 15] Therefore, due to the importance of the issue and lack of study in this area in Markazi province, this study was conducted with the aim of assessing the preparedness of teaching hospitals in the city of Arak in the face of disasters and unexpected events in 2016.

Methods:

This is a descriptive cross-sectional study. The research population consisted of 5 teaching hospitals affiliated to Arak University of Medical Sciences in the city of Arak, Iran. The data collection tool was a 234-item checklist consisting of two parts. The first part includes the general profile of the hospital covering 14 questions. The second part of the checklist includes dimensions of emergency department (30 questions), admission unit (23 questions), discharge and transfer (30 questions), traffic unit (15 questions), communication (16 questions), safety (18 questions), training (17 Question), support (28 questions), human resources (21 questions) and command and management (22 questions). The checklist was filled in through direct observation, available documents and interviews with the hospital head.

The checklist content was based on the studies conducted in this field verifying its validity and reliability. [3] Additionally, the checklist was approved by the faculty members of Emergency Medicine of Arak University of Medical Sciences. The questions were scored as follows: score 2 for strong evidence (Yes), score 1 for poor evidence (to some extent) and score 0 for no evidence. The project was approved by the Ethics Committee of Arak University of Medical Sciences. Descriptive statistics was used to analyse the data. The total score obtained by each hospital on the checklist was reported as a percentage and the total score of 0-50% was considered as poor, 75-50% as moderate and 76-100% as desired.

Findings:

The findings showed that the level of preparedness was moderate at Amirkabir Hospital (50%) and Taleghani Hospital (50%), good at Amir Al-Momenin Hospital (67%) and very good at Vali-e-Asr Hospital (84%) and Khansari Hospital (94%).

The level of preparedness of teaching hospitals in the city of Arak for unexpected events and disasters was estimated as 73.6%, which is considered as good.

Table 1: Demographic information of teaching hospitals in the city of Arak

Variable	Amir Al-Momenin	Vali-e-Asr	Taleghani	Amirkabir	Khansari
Number of Beds	258	285	98	220	110
Percentage of Beds occupied	105	98	78	74	98
Admission capacity in times of crisis	30	38	10	30	5
Number of Ambulances	3	3	2	4	2

The results of analysing the data obtained from the checklist were as follows: authorities and managers' perceptions: 70%; meeting the needs of the injured: 67.8%; training: 70.6%; support and procurement: 68%; human resources: 76.2%; discharge and transfer: 69.6%; and communication: 68%.

The results of ANOVA showed that among the above-mentioned variables, meeting the needs of the injured and training were different in different hospitals. In admission dimension, Vali-e-Asr Hospital, and in training one Vali-e-Asr and Khansari Hospitals showed the highest averages.

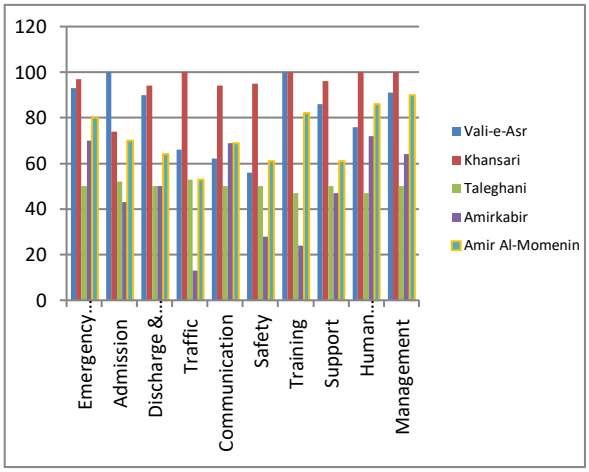

Diagram 1: Comparison of preparedness levels of teaching hospitals of the city of Arak in different dimensions (in percentage)

Discussion:

Today, in advanced countries, the majority of hospitals are required to design a programme to prepare themselves and improve their abilities for facing unexpected events. [15] Given the high vulnerability of Iran to natural disasters and resulting crises, it is possible to minimize the vulnerability of hospitals in the face of these crises through collecting up-to-date information and formulating a systematic program. [13] The preparedness of the hospitals studied in this research was 78% in terms of emergency department dimension, which is at a good level. This figure was reported as 64.4% in the study of Daneshmandi et al. (2015) [11] and as 77.8% in the study of Salari et al (2010), which are approximately compatible with the results of this study.

The preparedness of the hospitals in this study was 67.8%, which has been reported as 64/1% in the study of Salari et al. (2010) [13] and as 38.3% in the study of Hojjat et al. [12] The results of this study are compatible with those of the study of Salari et al. (2010) but not with those of Hojjat et al. In order to improve the patient's admission process, there should be enough space for patient admission in order to improve services during crises. In admission unit, patients should be transferred, after triage, according to the need for treatment, hospitalization, discharge or referral to other units. [12] The hospitals' preparedness for transfer and discharge was 69.6%, which is considered as good. It was incompatible with the results of the study of Salari et al (2010) as 44.6% [13] and moderate level of 48% in the study of Daneshmandi et al. (2015). [11] Problems existing in this dimension include lack of a systematic programme for moving and transferring patients and deficiency of facilities, vehicles such as ambulances, stretchers and beds. Also, insufficient human resources in times of crisis has weakened this dimension of preparedness of hospitals. [12, 14]

The average level of preparedness of Arak public hospitals in traffic dimension is 57%, which is considered as moderate. This item was also reported in other studies, including the study of Daneshmandi et al. (2015) reporting 48.9% and the study of Salari et al. (2010) reporting 48.9%. [14] The problems of most hospitals in this dimension included lack of a specific organizational structure for traffic control team, lack of a specific responsible individual to control traffic inside and outside the hospital and not providing the equipment required for controlling the traffic. Considering the importance of controlling traffic during a crisis and preventing the emergence of problems during transfer of the injured, providing instructions for using parking lots in times of crisis and providing traffic control equipment outside the hospital and communication equipment for traffic controller staff seems to be necessary. [13]

The average preparedness of public hospitals in the city of Arak in communication dimension was 68.8%, which was reported in other studies such as that of Daneshmandi et al. (2015) as 54.2% and in the study of Hojjat et al. as 52.1%. So, the level of the hospitals in this dimension in this study was higher than those of other studies. The problems in this dimension include the interruptions in communications in times of crisis, such as floods and earthquakes, which requires development of an integrated local wireless and radio system in hospitals. [16]

The hospitals' preparedness in the safety dimension was 58%, which is considered as moderate. The figure was reported as 45% in the study of Daneshmandi et al. (2015) [11] and as 52.1% in the study of Hojjat et al, which the former is compatible with the result of this study. The problems of most hospitals in this regard were lack of specific rules and regulation to protect the safety of patients, equipment and personnel during earthquake, failure to codify the process of dealing with unauthorized people in hospital and lack of required equipment to control and maintain hospital's safety. To solve this problem, comprehensive rules must be laid down.

The preparedness of the studied hospitals in the training dimension was about 70.6%, which was at a good level. The level of preparedness in this dimension has been reported as 68% in the study of Daneshmandi et al. (2015) [11], as 66% in the study of Hojjat et al [12] and as 61.5% in the study of Salari et al. (2010) [13], which all are compatible with the results of this study. Today, one of the important dimensions of hospitals' survival is education and research, so that if a hospital has nothing to say in scientific areas, it cannot keep the pace with science development and is doomed to failure. Training courses should include the training needs of personnel such as triage process, dealing with various unexpected events, psychological support in crises, infection control in disasters, crisis management, work prioritization, etc. By organizing briefing workshops, job descriptions will be individually described for members of each unit. Then, through limited operational manoeuvres, the level of individuals' and units' familiarity with and preparedness for carrying out assigned tasks is assessed.

The hospitals' preparedness was 68% in support dimension, which was at a good level. The preparedness level in this dimension has been reported as 63.7% in the study of Salari et al. (2010). [13]

The hospitals' preparedness in human resources dimension was 76/2%, which was at a good level. This figure was reported as 71.7% in the study of Salari et al. (2010) [13], as 44.3% in the study of Daneshmandi et al. (2015) and as 43% in the study of Hojjat et al, which the former is compatible with the results of this study, but the latter ones are not. Human resources are crucially important for the workflow of a system and medical staff should manage well-trained and skilled personnel in order to achieve the goal of promoting community health. [13] Work stress, personnel shortage and lack of task specialization can harm human resources seriously. [12] There should be a programme to standardize the financial units and manage the personnel workload so that they will be willing to continue working in the health system.

Hospitals preparedness in management dimension was 70%, which was at a good level. The preparedness level in this dimension was reported as 80% in the study of Daneshmandi et al. (2015) [12], as 48% in the study of Hojjat et al [12] and as 69.1% in the study of Salari et al. (2010). [13] Since crisis management programmes should be formulated by the heads of hospitals, hospitals' heads responsibilities in relation to planning for dealing with unexpected events include cooperation in and approval of planning, monitoring of and participation in planning and determining budget and working time for preparatory efforts. [13, 15] The tasks of a hospital head are to form a crisis group (physicians, nurses, technicians, paramedics, support staff), to communicate with other medical centres, to lead and monitor required afforts and affairs and to avoid confusion.

In general, the level of preparedness of public hospitals in the city of Arak for dealing with unexpected events was 73.6%, which was at a good level. This figure was also reported at a good level in the studies of Salari et al. (2010). [13] In a study conducted by Van Remmenin the Netherlands, 74% of public hospitals were not fully prepared to deal with unexpected events. [16]. Hospitals' preparedness was moderate in the study of Hojjat et al [12].

One of the most authoritative systems for hospital management in times of crisis is Hospital Emergency Incident Command System (HEICS). Using this system in hospitals, along with appropriate assignment of human resources and management responsibilities and establishment of a unified command improves management of unexpected events and incidents in a hospital [12]. Furthermore, promoting the current efficiency and holding training classes and safety courses tailored to each occupation in the hospital can enhance personnel's knowledge and performance in times of crisis.

Conclusion:

Despite the fact that they have a good overall preparedness, the public hospitals in the city of Arak need to be improved in management, education, admission and traffic dimensions and appropriate measures are required to be taken in this regard.

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