

Investigating the Preparedness of Hospitals of Gachsaran City in Disasters in 2018

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Abstract

Introduction: incidents and disasters impose many casualties and financial losses to governments and nations each year. Iran is among the top 10 countries in the world in terms of natural disasters and many incidents occur in all parts of it each year. In these situations, the facilities and human resources are planned and organized more purposefully and accurately. The current research was conducted with the aim of evaluating the preparedness of hospitals in coping with disaster in Gachsaran city. **Methods:** This descriptive cross-sectional research was conducted on 150 healthcare and non-healthcare staff in Shahid Rajaie Hospital, Besat Hospital and Bibi Hakimeh Hospital in Gachsaran, Iran. **Results:** The research results revealed that the mean of managers' knowledge of the disasters in Besat Naft, Bibi Hakimeh and Shahid Rajaei hospitals was 3.72, 3.00 and 2.74, respectively. **Discussion and Conclusion:** The results revealed that the structural part status of Gachsaran City hospitals in coping with disaster is good at Bibi Hakimeh Hospital, moderate at Besat hospital, and poor in Rajaei Hospital. With regard to the status of medical and non-medical equipment, the results showed that Besat Hospital is at a good level and Rajaei and Bibi Hakimeh hospitals are at poor level. The level of knowledge of hospital managers in coping with disasters is good at the Besat hospital, while it is moderate at the Bibi Hakimeh hospital and poor at the Shahid Rajaei hospital.

Key words: disasters, preparedness, hospital, level of managers' knowledge

Introduction

Nowadays, the physical and financial loss caused by natural and non-natural disasters has a huge and undeniable impact on the lives of millions of people around the world (Amerion and Ghaedol Amini, 2009). Disasters refer to a set of severe events leading into death, financial and physical harms and loss. They cannot be controlled effectively by conventional methods and resources, so external helps are required. Crisis management includes planning, preparation and leadership, and control of incidents. Therefore, effective preparedness in hospitals is significantly important. At the individual level, this preparedness requires knowledge, improving attitudes and acquiring the necessary skills at the local level to formulate the program, providing resources and specifying the structure of the management. At the national level, it requires codifying policies, instructions and functional guidelines (Kimberly, 2003).

Having a successful crisis management system can be one of the most important factors in reducing or increasing the casualties in the event of a natural disaster (Amerion and Ghaedol Amini, 2009). Among the various components of crisis management in coping with unexpected events and incidents, healthcare and medical systems, especially hospitals, play the most important role; so, a proper preparation for coping with disasters enjoys a great importance (Mirzaei et al., 2013; Zong et al., 2004).

Methodology

In this research, the knowledge of managers of Gachsaran City hospitals is investigated including Shahid Rajaei Hospital, Besat Naft Hospital, and Bibi Hakimeh Khatoon Hospital. The present study is descriptive-analytical and cross-sectional and qualitative and quantitative type of research study. This research is applied research in terms of objectives and can be used by policy makers in the healthcare sector. The research population included 150 people consisting of the internal managers of hospitals, nursing office authorities, officials of departments, supervisors, quality improvement officials, and nursing care staff, including midwife and operative

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room staff of Gachsaran, who were selected randomly ($n = 150$). It should be noted that all staffs in each hospital were 50 people. A total of 150 people filled out the questionnaires.

In order to measure the validity of the questionnaire, the relevant experts are used; to this end, a number of experts, professors of the university, the managers and officials who are expert in the subject of the research, expressed their views and the designed questionnaire scored on a Likert scale was examined by them. Then, the corrected questions were again provided to them so that it finally was confirmed by them after confirming the validity of the questionnaire. In this research, Cronbach's alpha coefficient was used to analyze the reliability of the questionnaires.

Statistical Analysis

Data collection tool: The questionnaires were provided to 150 subjects by the researcher and collected after completing them by subjects.

Data analysis: In this research, SPSS 24 software was used to analyze the data. In addition, descriptive analysis, quantitative variables, standard deviations and other descriptive indicators were calculated.

Results

In this research, the F-Fisher test or ANOVA test was used to compare the status of the structural part of hospitals in Gachsaran city in coping with disaster

Table 1- Descriptive statistics

Statistical indicators of hospital	n	mean	SD	95% confidence interval for mean	
				Lower bound	Upper bound
Shahid Rajaei	50	2.48	0.58	2.31	2.64
Besat Naft	50	3.11	0.71	2.89	3.34
Bibi Hakimeh Khatoon	50	3.34	0.78	3.13	3.54
Total	150	2.98	0.78	2.85	3.10

Table above presents the number, mean, standard deviation, confidence interval for each of three hospitals, according to the structural part status in coping with disaster. The mean of the structural disaster status in Bibi Hakimeh Hospital (3.54) is higher than that of other hospitals. Given the mean (according to the ANOVA test), three hospitals are not at the same level with regard to structural component status in coping with disaster.

Table 2: One-Way Variance Analysis (ANOVA)

Statistical indicators	Source of variations	Sum of squares	df	Mean of squares	F	Significance level
structural component status in coping with disaster	Intra-group	20.034	2	10.017	20.275	0.001
	Inter-group	72.628	147	0.494		
	total	92.662	149	10.514		

According to the table 2, the status of the structural part of the hospitals of Gachsaran is presented in coping with disaster by F (Fisher test). Based on the results of the table, significance value is 0.001 and is less than 0.05, so there is a significant difference among three hospitals with regard to the status of the structural part in coping with disaster. All three hospitals are not at the same level regarding to the status of the structural part in coping with disaster. After variance analysis (one-way analysis of variance), the Tukey post hoc test was used to find out which the hospitals have significant difference with each other.

Table 3- Tukey test

Age group	n	Subsets at the significance level of 0.05	
		1	2
Shahid Rajaei	50	2.48	
Bibi Hakimeh Khatoon	50		3.34
Besat Naft	50		3.11
sig		1.000	0.244

Table (3) shows no significant difference between the two hospitals of Naft Besat and Bibi Hakimeh Khatoon in terms of the status of the structural part in coping with disaster. However, the status of the structural part of coping with disaster in Shahid Rajaei Hospital is significantly different in comparison with others.

F-Fisher test (one-way ANOVA) was used in this research to compare the status of medical and non-medical equipment among the hospitals of Gachsaran in coping with disaster.

Table 4- descriptive statistics

Hospital statistical indicator	n	mean	SD	Confidence interval for mean	
				Lower bound	Upper bound
Shahid Rajaei	50	2.27	0.69	2.07	2.46
Besat Naft	50	3.13	0.86	2.88	3.37
Bibi Hakimeh Khatoon	50	2.82	0.71	2.61	3.02
Total	150	2.74	0.83	2.60	2.87

Table (4) presents the number, mean, standard deviation, confidence interval for each of three hospitals according to the status of medical and non-medical equipment in coping with disaster. The mean of the medical and non-medical equipment status in Besat Naft Hospital (3.5437) is higher than other studied hospitals. Given the mean (according to the ANOVA test), three hospitals are not at the same level with regard to the medical and non-medical equipment status in coping with disaster. The F (Fisher) test was used to examine the significant difference among three hospitals according to the status of medical and non-medical equipment in coping with disaster.

Table 5. One-Way Variance Analysis

Statistical indicators	Source of variations	Sum of squares	df	Mean of squares	F	Significance level
status of medical and non-medical equipment in coping with disaster	intragroup	18.976	2	9.493	16.418	0.001
	intergroup	84.996	147	0.578		
	total	103.982	149	10.071		

Table displays the status of medical and non-medical equipment of the hospitals of Gachsaran in coping with disaster by F (Fisher) test. Based on the results of table, significance value is 0.001 and is less than 0.05, so there is a significant difference among three hospitals with regard to the status of medical and non-medical equipment in coping with disaster. All three hospitals are not at the same level in with regard to the medical and non-medical equipment status in coping with disaster.

After variance analysis (one-way analysis of variance), the Tukey post hoc test was used to find out which hospitals have significant difference with each other.

Table 6- Tukey test

Age group	n	Subsets at the significance level of 0.05	
		1	2
Shahid Rajaei	50	2.27	
Bibi Hakimeh Khatoon	50		2.82
Besat Naft	50		3.13
sig		1.000	0.110

According to the table (6), no significant difference between the two hospitals of Besat Naft and Bibi Hakimeh Khatoon was observed, in terms of the status of medical and non-medical equipment in coping with disaster. However, the status of the medical and non-medical equipment in coping with disaster in Shahid Rajaei Hospital is significantly different in comparison with others.

Table 7- Descriptive statistics of three types of hospitals given the managers' knowledge status of coping with disaster

Statistical indicators of hospital	n	mean	SD	95% confidence interval for mean	
				Lower bound	Upper bound

Shahid Rajaei	50	2.74	0.59	2.57	2.91
Besat Naft	50	3.72	0.52	3.56	3.87
Bibi Hakimeh Khatoon	50	3.00	0.64	2.82	3.18
total	150	3.15	0.71	3.04	3.27

Table 7 presents descriptive statistics related to the status of managers' knowledge of coping with disaster for each hospital. Based on the results of the two tables, the Besat Naft Hospital and Shahid Rajaei hospitals with the mean of 3.72 and 2.74, respectively, have the highest and lowest level of managers' knowledge on coping with disaster.

Table 8. One-way variance analysis of managers' knowledge status among Gachsaran hospitals in coping with disaster

Statistical indicators	Source of variations	Sum of squares	df	Mean of squares	F	Significance level
managers' knowledge status in coping with disaster	Intragroup	25.431	2	12.715	36.637	0.001
	Intergroup	51.018	147	0.347		
	Total	76.449	149	13.062		

Table (8) shows the status of managers' knowledge of hospitals of Gachsaran in coping with disaster by F (Fisher) test. Based on the results of the table, significance value is 0.001 and is less than 0.05, so there is a significant difference among three hospitals with regard to the status of the managers' knowledge in coping with disaster. All three hospitals are not at the same level with regard to the status of managers' knowledge in coping with disaster. After variance analysis (one way analysis of variance), the Tukey post hoc test was used to find out which hospitals have significant difference with each other.

Table 9- descriptive statistics

Statistical indicators of hospital	n	mean	SD	95% confidence interval for mean	
				Lower bound	Upper bound
Shahid Rajaei	50	3.54	0.56	2.38	2.71
Besat Naft	50	3.46	0.69	3.27	3.66
Bibi Hakimeh Khatoon	50	3.00	0.68	2.81	3.20
total	150	3.00	0.74	2.88	3.12

Based on the results of the table (9), the mean of human resources in coping with disaster in Shahid Rajai Hospital is more than other hospitals, (3.54) using F (Fisher) test. In addition, the status of human resources of the three hospitals in coping with disaster is not at the same level.

Table 10- One-way analysis of variance

Statistical indicators	Source of variations	Sum of squares	df	Mean of squares	F	Significance level
The status of human resources in coping with disaster	Intragroup	21.160	2	10.580	24.940	0.001
	Intergroup		147	0.42		
	total	83.520	149	11		

Table (10) shows the status of human resources among three hospitals in Gachsaran city in coping with disaster examined by F (Fisher) test. The level of significance is 0.001 and less than 0.05, so there is a significant difference among three hospitals. As a result, the human resources status in coping with disaster is not at the same level in three hospitals.

After variance analysis test's significant (one-way ANOVA), Tukey post hoc test was used to determine that which hospital has a significant difference in comparison with other hospitals.

Table 11- Tukey Test

Age group	n	Subsets at the significance level of 0.05		
		1	2	3
Shahid Rajaei	50	3.54		

Bibi Hakimeh Khatoon	50		3.00	
Besat Naft	50			3.46
sig		1.000	1.000	1.000

Table (11) shows the significant difference among three hospitals in terms of human resources status in coping with disaster as paired items.

Discussion and Conclusion

The results showed that the mean of structural part of Gachsaran hospitals in coping with disaster was obtained 2.48, 3.34, and 3.11, in Shahid Rajaei, Bibi Hakimeh and Besat Naft companies, respectively. The Bibi Hakimeh Hospital and Shahid Rajaei Hospital, respectively, had the highest and the lowest mean. The research results suggest that the status of the structural part in Gachsaran hospitals is generally at moderate level, but it is at low level in Shahid Rajaei Hospital. Thus, it seems that this hospital can cause many problems in the future; also, in the event of natural disasters, it might cause irreparable losses. In this regard, it is necessary for managers of Rajaei Hospital to give priority of reconstruction of worn out tissues.

Lari et al (2011) conducted a case study entitled "Analyzing the Hospital Safety Index (HSI)" in coping with crisis in one of the social welfare hospitals in Tehran. The results are consistent with those of this study. Nezam Zadeh et al. (2014) studied the level of preparedness to cope with unexpected accidents in one of the selected hospitals in Tehran, which the results were in line with those of this study. With regard to the status of medical and non-medical equipment among Gachsaran hospitals in coping with disaster, the results showed that the mean of medical and non-medical equipment was 2.27, 3.13, and 2.82, in the Shahid Rajaei, Besat Naft, and Bibi Hakimeh hospitals, respectively. The results showed that medical and non-medical equipment varies among hospitals, so that the mean of the medical and non-medical equipment is at the lowest level in Besat Hospital and at maximum level in Shahid Rajaei Hospital.

The results of this research revealed that there is no proper planning system in the preparation, repair, construction, training and cost of medical equipment. In explaining the research results, it can be stated that medical and non-medical equipment is very effective in coping with disasters, because medical equipment plays a major role in the diagnosis, treatment and medical education. Every year, a considerable number of medical devices in hospitals are defected technically and lose their efficiency so that a significant share of the costs of hospitals is allocated to preparation and repair of these devices, resulting in significant scientific and economic losses to the healthcare system of the country. Nezam Zadeh et al. (2009) examined the level of preparedness to cope with the crisis in one of the selected military hospitals in 2009 and the results showed that the preparedness was at the level of moderate, which is consistent with the results of the present study. Khanke et al (2011) examined the safety status of the selected hospitals affiliated to Shahid Beheshti University. The results showed that the safety was at the moderate level and they are consistent with those of present study.

The knowledge level of managers among hospitals in Gachsaran city in coping with disaster was 2.74, 3, and 3.72, in Shahid Rajaei, Bibi Hakimeh, and Besat hospitals, respectively; Thus, managers' knowledge level varies among hospitals. The results showed that the managers' knowledge level in coping with disaster is high in Besat Hospital, moderate in Bibi Hakimeh hospital, and poor in Shahid Rajaei. Hence, as major part of healthcare services is provided in Shahid Rajaei Hospital, managers of this hospital need to be more prepared to cope with disasters. Generally, based on the results and the need for all managers to be prepared in coping with disaster, the re-training of managers in all areas, including environmental health, reduction of building risks, hospital discharge and field treatment, and hospital planning for coping with disaster are essential. Daneshmandi et al (2014) evaluated the level of preparedness to deal with incidental accidents in one of the selected hospitals in Tehran and reported that the level of hospital preparedness is moderate, which is consistent with the results of the present research. Kaviani Nejad et al (2016) also achieved the similar results. Mirzaei et al (2014) examined the safety and preparedness of the Ilam Hospital and achieved the results in inconsistent with this research results. Based on the results, human resources status in coping with disaster is 3.54, 3, and 3.46 in Shahid Rajaei Hospital, Bibi Hakimeh Hospital, and Besat Naft Hospital, respectively.

Thus, the mean of human resources is at maximum in Shahid Rajaei Hospital and at the minimum level in Bibi Hakimeh Hospital. In general, in explaining the findings of this study, we can say that human resources are considered as an effective factor in handling the natural disaster and trained and qualified people in the event of natural disasters can reduce the number of injuries and casualties. Shahid Rajaei Hospital is at a high level in terms of human resources which is due to being old and managers' attention paid to this matter. It is recommended that managers of Bibi Hakimeh Hospital, which is a newly established hospital, pay much attention to this issue and be vigilant about human resources to control disasters as it can be effective in maintaining the peace of mind and reducing loss. Zung et al. (2004) achieved similar results by examining the hospitals' preparedness. In addition, Amerion and Ghaedol Amini (2010), Mirzaei et al. (2013) found the similar results.

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