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Capabilities and limitations of crisis management in the Teaching Hospitals of Hormozgan University of Medical Sciences, 2010

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Various communities continuously try to manage the unexpected events. In this context, hospitals by providing quick and timely health care services has transformed to the most pragmatic unit of health system. Planning and preparation of them should be a strategic policy of health system. This paper aimed to investigate the capabilities and limitations of crisis management in teaching hospitals of Hormozgan University of Medical Sciences. The present study is descriptive-analytical research. Research statistical population included all directors, senior managers, nurse managers, official and financial managers, and managers of crises committee of hospitals, totally 34 persons. Data gathering tool is a questionnaire in eight areas based on a Likert scale of five options in addition to demographic data. After determining the validity and reliability of questionnaire, data were compiled. Collected data entered to SPSS and analyzed by descriptive and inferential statistics. Generally the research population readiness in dealing with crises as 50% is moderate. Preparedness rate in managerial policies (44.1%), structural and non-structural safety (41.2%) and registration, and information systems (47%) domains were in moderate level. In this regard HEICS (32.3%), maneuvers (55.9%) and use of relative technologies were in very low grade. Between preparedness rate with crises committee function, training and maneuvers holding there were meaningful relationship (P < 0.05). The appropriate management of crises will be feasible by written planning, coordinating the necessary internal and external corporations, strengthening the human resources by appropriate organizing and delivering of training and periodical maneuvers to them.

Key words: Capability, limitation, crises management, teaching hospitals.

INTRODUCTION

Humans since the beginning of creation, always deal with a variety of disasters that the frequently financial and criminal damage have entered to them (Hosein and Laleh, 2009). Each year about 200 million people involved in disaster and hundreds are lost as well (Green et al., 2003). During the past 20 years, more than 800 million people have been damaged in disasters and three million people have died (Hamedani and Farrokh, 2003).

In the context of these factors, disaster prone countries incur moderate equivalent to 3% of its GDP annually (Green et al., 2003). Iran due to size, geographic location and climate variability is the component of disaster prone countries and devoted the tenth ranking of world to it. Also, 90% of the population exposed to risks of floods and earthquakes (Ghahroudi, 2009). In recent decades, about 950 earthquakes occurred in Iran so about 53,300

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people affected and 37,600 people were killed. Generally in this decade, the country has been imposed over 2,157 billion rials caused by natural disasters (Eraghizade et al., 2003).

Crisis equals dangerous opportunity, that is, a combination of "threats" and "opportunity" or as the moment of decision in the absence or lack of decision condition (Khazaie, 2004). Organizations faced with different critical situations and each of the various types of crises somehow affects them differently (Nasiripour et al., 2007). Storms, floods, wars, the ground-Valdez tanker in 1989 that contaminated 1600 km of beautiful coast of Alaska, the explosion of Union Carbide chemical factory in Bhopal, India in 1984, which caused 2500 deaths and 200 thousand people injury, the Mad Cow disease in England (Sistanei et al., 2008), Pandemic influenza H1N1 disease in the world (Centers for Disease Control and Prevention: www.cdc.gov/h1n1flu, 2010) and many other important events in the world, are the examples of the crises that have always threatened humanity in different areas of the world (Sistanei et al., 2008).

Different communities cautiously discover and develop strategies to be able to control or minimize the damages caused by the disasters. On the other hand, manage the events and crises (Hosein and Laleh, 2009). Crisis management is the systemic effort by organization members with outside stakeholders in order to prevent or manage effectively crises in the time of their occurrence (Balaghaffari and Aligolbandi, 2008). One crisis is like no other, But understanding the key similarities to address plan for mitigating the adverse impacts is essential (Yazdan, 2009).

Crises always have significant effect on general health and welfare of the affected population and in this area, health care come into the main survival factors. So if health care organizations deal with the crises due to unprogrammed, in addition to the organization itself, the whole community will see conflict losses (Sajjadi et al., 2006; Zaboli et al., 2006). Because so often service systems on crisis rely on health and treatment, management of these centers is very effective in success and continued work of other social systems. Moreover hospitals as frontline of treatment are one of the most centers providing health care services (Hajavi et al., 2006) that with attracting the most therapeutic unit investment of the country have become the most pragmatic unit of health system (Green et al., 2003). The main purpose of developing crisis management plans for hospitals is rapid and timely health care providing to reduce mortality and complications of disasters (Gupta and Kant, 2004). In critical situations, many injured victims are flooded to the hospitals to benefit from health services (Zaboli et al., 2006), which increased of disasters in recent years, disaster planning and preparation should be considered as an important part of policies and strategic objectives of health care system (Nasle and Dargahi, 2004).

Few studies in preparation of different hospitals in dealing with the crises took place (Eraghizade et al., 2003; Nasiripour et al., 2007; Hojat et al., 2008; Malekshahi and Mardani, 2007; Khankeh, 2007; Zaboli et al., 2009; Abolghasemi et al., 2002; Setayesh et al., 2007; Akhavan et al., 2005) as such study has been done in hospitals of Tehran for investigating of readiness of this centers based on areas of equipments, manpower, physical space, structure and protocols that overall results indicate the readiness of centers as been moderate (Hojat et al., 2008). Also in the study of the readiness of border hospitals of Kermanshah province, six areas as Crisis Management Information System, Command System, related educations, organizing of human resources, equipment and maneuvers holding were evaluated and the results indicate that border hospitals in Kermanshah, despite Having the desirable equipment and facilities, do not have readiness to deal with the crises (Nasiripour et al., 2007).

According to the Hormozgan province it is from disaster prone provinces of the country, carrying out research in this area in their hospitals seems to be essential and that in this research, capabilities and limitations of crisis management in the teaching hospitals of Hormozgan University of Medical Sciences are examined. The results of this study can provide information to managers for planning and preparing hospitals to prevent or mitigate the effect of unpredictable crises and with this way identify strengths and weaknesses of these organizations and they can offer next steps for crisis management.

METHODOLOGY

Present study applied descriptive analytical type that was conducted in 2010. The study population included all directors, senior managers, nurse managers, official and financial managers and managers of crisis committee of three teaching hospitals affiliated Hormozgan University of Medical Sciences. They were 34 persons. Data gathering tool was a questionnaire with 24 questions based on a Likert scale of five options in addition to demographic information, which is related to eight areas including Crisis Committee, Hospital Emergency Incident Command System (HEICS), related training to crisis management, holding maneuvers, being safety of buildings; equipments and facilities, management policies and support affairs, registration; Information and communication system and use of new technologies for use in the crisis management.

Validity of the questionnaire identified was based on content validity by studies and received expert opinions. Reliability of the instrument was evaluated through test- retest that was confirmed with coefficient correlation 0/85. The questionnaire was given to research population and the collected data were entered by SPSS software and with the use of descriptive and inferential statistics of Pearson correlation analysis were interpreted. Investiture for each area was based on Likert scale as too much option, 5 points; much option, 4 points; the moderate option, 3 points; low option, 2 points; and very low option, 1 point. In interpretation of results in each area, the total scores of related questions was calculated based on 100 and based on following range, the overall situation of that area was determined. Investiture to determine the overall readiness of

Table 1. Safety rate of studied hospitals in non-Structural dimensions in dealing with crises

Non-structural dimensions	Too much		Much		Moderate		Low		Very low	
	N	P	N	P	N	P	N	P	N	P
Immunize the Vital Networks	1	2/9	4	11/8	9	26/5	7	20/6	13	38/2
Alarm Systems	1	2/9	3	8/8	6	17/6	7	20/6	17	50
Being identified Emergency Exit Locations with Specific Emblems	0	0	0	0	6	17/6	4	11/8	24	70/6
Secure the Equipments	1	2/9	1	2/9	9	26/5	8	23/5	15	14/1

the study population was based on scores given to each option, the total scores of each questionnaire was calculated and based on the following range and the overall readiness was determined.

Very Weak Weak Moderate Good Very Good

0---------- 20 ---------- 40 ---------- 60 ---------- 80 ---------- 100

RESULTS

The study population was in age average 42±9. The study population comprised of Women, 88/2% and men, 11/8%. People experience range was 19±6 years. Of Education degree, 2/9% had associate degree, 88/2%, bachelor's degree and 11/8% of people have had a master's degree or higher.

All hospitals have a crisis committee, but only in 33/3% of them have considered specific physical location for this committee. 11/8% of respondents were member of the hospital crisis committee. At 38/2%, activity rate of crisis committee has been moderate. At 2/9%, hospitals announced the existence of adopted action plan and executive guidelines in areas such as continuing education programs, holding maneuvers, and forming regular meetings for crisis committee. Also, the instructions of committee were delivered to the departments on the moderate 23/5% Performed Pearson correlation demonstrated significant correlation between the performance of the Crisis Committee and hospital readiness in dealing with crises (p= 0.000). On the other hand, with increasing activity of Crisis Committee, the readiness of hospitals in crisis increases too.

In Instance of Hospital Emergency Incident Command System (HEICS), two hospitals have this system, but not in complete form. In this area, existing of approved organizational chart were 58/8% at low level, and being specified duties and responsibilities of individuals based on the organizational chart was just 14/7% at high level.

Associated with trainings related to crisis management, these courses are held at 88/2% as low. Also, the hospitals 14/7% as high rate have communications to the organizations such as the Red Crescent and firefight centers to train their staff before the crisis occurred. In this context only 14/7% of the staffs have awareness of how to use the capsules fire. Correlation between the amount of training courses with the readiness of hospitals against the crisis, is positive and relatively significant, and statistically, the relationship between these two variables is significant (p= 0.000). In other words, increasing training to deal with the crises, the readiness of hospitals against crises increases too.

In the context of preparation maneuvers holding, findings showed that the research populations declared the holding preparation maneuvers at 91/2% to very low levels. Based on Pearson correlation test, there is statistically a significant relationship between two variables readiness rate and preparation maneuvers holding (p= 0.002).

From constructional dimension, 32/4% of respondents announced hospital resistance in too low position. Table 1 shows the safety rates of hospitals in dealing with crises.

In management policies and support affairs, identify types of potential crises with 84%, and the possibility of rapid evacuation of hospitals in critical situations with 17/6%, respectively, are allocated to highest and lowest levels. Others include introduction to raise critical points in hospitals with 73/5%, possibility of increasing the units capacity (adding beds, operating room, staff ...) in Crises with 41/2%, identification of safe places in hospital with 35/3%, and the financial and support policies for crisis management with 35/3%.

At 41/2 and 32/4%, respectively, hospitals have admission and registration system of victims, and connect to organizations such as Firefight and Red Crescent. In this context, only 2/9% has mentioned the existence of a program to inform the media and the public (the available right information, determine the individual as a spokesperson ...) at the time of the crises in the high level.

Hospitals use moderate from new technologies in crises management at 29/4%.

Hospital readiness based on discussed topics is shown in Table 2. Generally research population readiness in dealing with crises as 50% was moderate. Readiness at 41/2% as weak and 8/8% has been good.

DISCUSSION

Based on the findings, all hospitals have a crisis committee, but only one hospital has specific physical location for the committee. In this context, the results of Zaboli's et al. (2006) study also indicate the existence of

Table 2. Hospital readiness based on any of the discussed topics.

Discussed topics	Too much		Much		Moderate		Low		Very low		Readiness
	P	N	P	N	P	P	N	P	N	P	
Crisis Committee Situation	6	17/6	10	29/4	10	29/4	8	23/6	0	0	Weak - medium
HEICS	11	32/3	8	23/6	10	29/4	5	14/7	0	0	Very weak
Educations/ Trainings	2	5/9	18	52/9	10	29/4	4	11/8	0	0	Weak
Holding Preparedness Maneuvers	19	55/9	12	35/3	3	8/8	0	0	0	0	Very weak
Secure buildings; Equipments and Facilities	5	14/7	13	38/2	14	41/2	2	5/9	0	0	Medium
Administrative policies and support affairs	0	0	12	35/3	15	44/1	7	20/6	0	0	Medium
Registration system; Information and Communication	2	5/9	7	20/6	16	47	8	23/6	1	2/9	Medium
Use of new technologies	15	44/1	10	29/4	9	26/5	0	0	0	0	Very weak

specific physical place in small number of hospitals. Furthermore, in the present study, small numbers of people that have had important role in the management of the hospital or different parts of it were the crisis committee members. Avaze in this field has expressed hospitals readiness against disaster being possible only in the form of teamwork and partnership of all key components of the hospital (Zaboli et al., 2006). Participation rate of subjects in Crisis Committee in the Malekshahi and Mardani (2007) Malekshahi study was about 66/7%.

Only in some cases, such as continuing education programs, hospitals had an approved operational plans and operational guidelines, which is somewhat consistent with Malekshahi and Mardani (2007) study results that indicate lack of pre-developed and comprehensive operational plan in hospitals Malekshahi had studied. Also, the instructions of committee moderately 23/5% of cases were notified to the units that in the Malekshahi' study, this amount is about 62/5% and were as manual version (Malekshahi and Mardani, 2007). So, given the importance and role that crisis committee can have in managing the crises before, during and after their occurrence, the hospitals must provide areas for further activities of this committee.

In instance of Hospital Emergency Incident Command System (HEICS), two hospitals have this system, but in incomplete form of approved organizational chart and identifying the duties and responsibilities of human resources. Today, HEICS is considered as one of the newest and most effective system in crisis managing of hospitals. Several experiences in the world and Iran has shown that confusion and chaos is the most common problem when hospitals are faced with crises that with existence of an efficient management system such as HEICS and with creating a logical management structure, describing the responsibilities and making the clear reporting channels can minimize these negative effects and can achieve the most efficient services with the use of lowest facilities and minimum human resources. HEICS has 49 Position in its chart (Akhavan et al., 2005; Jagminas and Bubly, 2003). Status of this system has been reported adverse (Zaboli et al., 2006). Also Malekshahi and Mardani (2007) demonstrated that 66/7% of people in the form of the command system have awareness from their responsibilities during crises. Also the results of the present study had consistent findings of Nasiripour et al. (2007) and Amjadi (2006) studies, but do not match with Safari et al. (2002) findings. Therefore, considering the positive effects of using this system, rationalization and commitment of senior managers about the necessity and benefits of it, considering HEICS in operational programs of crisis committee and training its members in this area, also matching the current job positions with HEICS chart is an inevitable necessity.

In related trainings to crisis management, in this study, holding educational courses and communicating with the organizations such as Red Crescent and Firefight centers for training personnel prior to the crisis that happened was low. In this context, only 14/7% of cases - staffs were aware of how to use fire capsules. Training of personnel is the major actions before crises occurring (Shojaie and Maleki, 2009). Finding of this study is consistent with Hojjat et al. (2008) findings in this area, but inconsistent with findings of Karimi (2004). Also, Nassiripour in his study has evaluated, border hospitals of province Kermanshah in holding of training courses in the moderate level (Nasiripour et al., 2007). Findings of Zaboli also indicate lack of attention to staff training in the hospitals that in this area can increase staff preparedness with providing suitable training (Zaboli et al., 2006). Kavary has expressed training programs to deal with the crises in the teaching hospitals affiliated to Shiraz University of Medical Sciences in large number (Kavari and Keshtkaran, 2006). Malekshahi and Mardani (2007) expressed the awareness of staff how to use fire capsules in the desirable (95%) level.

In holding preparation maneuvers, findings showed that willingness to hold maneuvers was of very low level. Malekshahi and Mardani (2007) declared the participation of research populations in maneuvers 58/3% with very low rate of present study is not comparable. Continuing education and holding maneuvers at least annually can be useful in evaluating and improving the quality of crises

management programs (Malekshahi and Mardani, 2007). Of course educations should not be limited to attending workshops or congresses, but hospitals should evaluate their hospital and employee's readiness by simulation and create artificial crisis situations, with this channel, staffs will gain experience to deal with crises when they occurr.

Based on findings from the structural dimension, the resistance of the hospitals is low. Public expectations are the design of hospitals in a way that they have ability to deal with any crises (Zaboli et al., 2007). In this area, retrofitting buildings is considered the most important factors in reducing disaster risk (Jagminas and Bubly, 2003). So given a key role to hospitals in providing care and reducing the effects of damages, they should be founded according to standards of safety management and occupational health (Jagminas and Bubly, 2003; Zaboli et al., 2007). The results of Nasiripour et al. (2007) study showed that border hospitals of Kermanshah from resistance rate of structural and non structural condition are moderate.

Of a non-structural dimension, hospital administrators must obtain the necessary information to assess the status of infrastructure systems such as water and energy supplies and fuel and also discuss the possible weaknesses identified and plan properly the necessary actions to correct them. The key point in this field is using the alternative systems to provide electricity, water and gas, also alternative communication systems (Malekshahi and Mardani, 2007). One of the effects of devastating accidents is disrupting in communications systems that should be adopted the policies and procedures in maintaining the communication systems (Department of Health and Family Services, 2004).

World Health Organization based on a study stating that one reason for the destruction of hospitals in front of factors such as earthquakes is using of construction materials that are not allowed in physical structure (Rainhorn, 1996). In planning programs all aspects of hospitals should be noted. Hospital construction should suit with geographical climate and be economic. Status of hospitals in structural vulnerability in the Zaboli et al. (2009) study was moderate. Research result of structural factors in 100 hospitals of Ecuador country represent that 16 hospitals do not have suitable conditions that must participate in the retrofit programs and reduce their vulnerability (Pan American Health Organization, 2000). A study showed that the cost of non-structural elements was allocated 60% of building maintenance and administrative costs (Zaboli et al., 2009). Zaboli's research results showed that non-structural factors in hospitals had a high vulnerability, which they must not try to use as existing standards in order to increase the safety of hospitals such as fixing the animated equipments (Zaboli et al., 2009). The possibility of using the healthy and safe water tank, electric power and telecommunications in crisis in Khorramabad hospitals of about 37/5% was expressed (Malekshahi and Mardani, 2007). The results of hospitals in Peru Martinez also indicated that many non-structural factors such as equipment layout and corridors should be changed (Bellido and Garcia, 2009).

The moderate scores of items related to management policies and support affairs in dealing with the crisis in studied hospitals are 47/8%. Zaboli et al. (2006) study results showed that 33/3% of hospitals necessary predictions done in capacity assessment of hospital's admissions during the outbreak of a crisis, also 60% of the cases were possible to increase the number of operating rooms. Schultz (2003) also stated that a combination of problems such as lack of surgical beds, and staffing and funding shortages are the most problems of hospitals in critical conditions caused by disasters (Schultz et al., 2003). In Hojat et al. (2008) study, hospitals condition have been evaluated in unloading and transporting in the crises at weak level and in support affairs at well level. Kavari and Keshtkaran (2006) study estimated the situation of Shiraz hospitals in this area at good level. Since the rapid and appropriate evacuation and transfer of patients to appropriate locations reduce traffic casualties in times of crises, hospitals should be having a basic planning in this field.

Identifying safe places in hospitals is the first step that must be made in crises as the crisis command centers. For this purpose, hospitals can cooperate with technical authorities to identify the safe places of the hospitals from point of construction and facilities and identified them with emblems of informing staffs and patients (Malekshahi and Mardani, 2007).

At 41/2 and 32/4%, respectively, hospitals have been moderately a registration and admission system of victims and connect with organizations such as Firefight and Red Crescent. In this context, only 2/9% of cases have mentioned the high level of existence of a program to inform the media and public at the time of the crisis. Zaboli et al. (2006) state the information and communication systems situation and also, injury and mortality registry systems of hospitals are undesirable. Effective communication is one important part of crisis management programs in health institutions. To achieve this, improving the main communication skills, how to establish emergencies, oral communications, improving systems and communicational equipments, personnel training and use of technology as a communication tool is required (Shojaie and Maleki, 2009; Bruno and Olivier, 2000). Needed resources to increase the readiness and development of hospital communication systems include coordination with relevant public health agencies such as Firefight, medical emergency services, Red Crescent and other hospitals, and planning for increased workload or interrupted communications systems (Shojaie and Maleki, 2009).

Zong et al. (2004), after initial assessment of 10 hospitals in Taipei (2004), in the field of communications

systems concluded that in all hospitals, created networks, but none of them did not have a good relationship with the media. Media presence at the incident scene or in places like hospitals that they are original respondents in accidents and crises, in order to inform the community of issues related to the incident is undeniable. Thus determining the person or persons responsible for notification and answer to questions is essential (Shojaie and Maleki, 2009).

Studied hospitals moderately use 29/4% of cases from new technologies for crisis management. Type of technologies is Geographic Information System or GIS that by creating a stable structure on different data, protection, update, dissemination and development of the database can organize information correctly and manage the natural hazards. Of recent developments, network-based GIS allow sharing of geographical data through the design and creating of metadata. The goal of this systemic model is prevention, reduction or remission, preparedness, relief, reconstruction and services development related to crises management and disasters (Ghahroudi, 2009).

Conclusions

Base on the results, most problems of hospitals confronting crises include weakness of crisis committee activities, lack of system to organize the manpower, lack of training courses and preparation maneuvers, as well as, lack of using the new technologies. Proper management of the crises will be possible with written crisis management planning, providing the necessary coordination within and outside the organization in events, especially by new technologies, identifying the facilities to deal with the crises, strengthening the workforces by appropriate organizing of them and performing the necessary training and periodic maneuvers in hospitals.

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