

# Preparedness Assessment for Disaster Management Among Dhahran Al Janoub General Hospital Staff During Hazm Storm Support 1436/2015

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## Abstract

**Background:** The hospital staff needs to be capable of utilizing the resources and training to cope up with an emergency situation.

**Objective:** The study has aimed to assess the knowledge of hospital staff of Dhahran Al Janoub General Hospital regarding the disaster management during Hazm Storm Support 1436/2015.

**Design:** A quantitative research design has been incorporated to assess the disaster management of hospital staff. An observational study was conducted to examine the aim of the study.

**Methods:** Quantitative research approach has been opted and 84 individuals have been recruited from Dhahran Al Janoub General Hospital, which included physicians, nurses, technicians, officers, and housekeepers. Frequencies and percentages have been evaluated. Chi-square test has been applied to the data for the analysis of results by using SPSS.

**Setting:** Participants were given a questionnaire to fill, through which their knowledge about management of disaster was assessed.

**Main outcome Measures:** The obtained data was analyzed using Statistical Package of Social Sciences SPSS (version 20.0).

**Results:** The staff (including all job categories) was aware that the hospital has an emergency response and awareness plan related to disasters. There was no statistically significant relationship identified between different job categories in the hospital and the level of knowledge about presence or absence of the emergency response plan.

**Conclusion:** The hospital staff with fewer years of experience had lesser knowledge about the disaster as compared to the experienced employees.

**Limitations:** The study measured the level of knowledge about emergency preparedness among the staff members of Dhahran Al Janoub General Hospital only.

## Introduction

Disaster is considered as an unpredicted, sudden, and overwhelming event, which results in significant physical change, destruction, drastic environmental change, and loss of life [1]. Moreover, it causes disruptions in the functioning of a society or community through widespread human, economic, and environmental losses. It decreases the ability of affected society or community to cope up by utilizing the available resources. 95% of the deaths, caused by disasters, were recorded among developing countries [2].

Preparedness for disaster management is critical for businesses, household, and communities. A mass disastrous event requires local coordination, individual responsibility, and effective planning to recover from major trauma. The concept of disaster preparedness aims to enhance the life safety during the disaster. It may include spills of hazardous materials, protective actions during the earthquake, and terrorist attacks. The preparedness for disasters includes different actions that are designed to enhance the ability for overcoming the emergency situation, protecting property, managing the disaster damage and disruption, and engaging in post-disaster restoration.

Natural disasters generally affect the communities, people, and healthcare systems. Therefore, nurses and other healthcare professionals play an imperative role in the healthcare system, and ought to be prepared for the suitable response in the case of disaster. The industrial and technological advancements may increase the toll of man-made and natural disasters [3]. The disasters, causing losses

and casualties, include high population density, oil and reservoir tank explosion, and presence of factories. 202 disasters were reported in 2014; alone in Asia, injuring 10,107 people [4].

The health-care system plays a significant role in assisting and helping different communities from disasters. The previous training and nurses' experiences affect the preparedness and increase their self-confidence, skills, and awareness in disaster response and lessen the susceptibility to impulsive events [5,6]. Different studies have shown that most healthcare professionals are not ready to manage mass casualties; and their skills, education, and preparedness are not sufficient for a suitable response [7,8]. Therefore, it is the foremost duty of the management to fulfill the training requirement of emergency department personnel as the front line responders.

Heavy damage and destruction are caused by the infrastructure of health-care and management system, resulting in the higher extent of

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injuries and mortality [9]. A timely and efficient response is required from the healthcare system to manage the consequences in affected areas. Therefore, nurses need to prepare for appropriate responses towards any disastrous condition. However, a study revealed that majority of the nurses is not trained to manage mass casualties. Moreover, the preparedness, education, and skills of nurses are not satisfactory for an adequate response for a disastrous condition [6].

Training of medical professionals is prioritized for providing care to the victims of the disaster. However, course developments for training the medical personnel through standardized and well-accepted core competencies are severely lacking, which are required to develop disaster training courses [6]. Appropriate training of medical personnel, on basis of core competencies, ensures that they are prepared to treat patients and address different consequences during the catastrophic event.

The emergency staff members at hospitals are the first service providers that render their services after an emergency or disaster. Therefore, it is necessary that the staff has appropriate knowledge about the emergency preparedness [7]. It is integral to the undergraduate nursing education that the nurses are well prepared for participating in planning and responding to a disastrous situation. The collaborative learning model needs to be used for teaching the undergraduate nursing students, regarding the preparedness of disaster management. The nurses employed in the military, public health, and emergency department are being entrusted to attend and manage the victims of disasters.

Preparedness assessment for disaster management is considered as a critical competency, which is required by the experienced nurses as well as fresh graduates. According to Slepski [10], preparedness for disaster management is termed as the knowledge, abilities, and skills, which are required for preparing and responding towards worst situations; such as nuclear or explosive incidents, man-made incidents, and natural disasters (flood, drought). The American Association of Colleges of Nursing has identified, that the nurses need to be prepared for attending and managing victims of bioterrorism and different mass casualty events.

The nursing for disaster victims needs to purview towards emergency department nurses and military nurses. However, the preparedness has gained a requisite competency in the undergraduate nursing programs [11]. Even, if the nurses are well trained in the community health education on natural disasters, they are still not efficient in managing bioterrorism and mass emergency events. However, Stanley [12] stated that the nurses have basic knowledge and skills to manage a mass casualty incident. The assessment of training requirements is a significant step towards the implementation of specific training programs for the nurses.

A study was conducted by Lanzilotti et al. [13] for determining the ability of physicians and nurses to identify and treat the victims, who are exposed to chemical and biological agents. The results revealed that the ability of physicians and nurses, to diagnose and treat the consequences of being exposed to chemical agents, was very low (<8%). The majority of nurses were least willing to manage the victims, exposed to radiological incident [13].

### **Aim of the Study**

This study has assessed the knowledge regarding disaster man-

agement during Hazm Storm Support 1436/2015 by recruiting employees of Dhahran Al Janoub General Hospital.

### **Methodology**

Quantitative research design has been employed to study the assessment regarding disaster management during Hazm Storm Support 1436/2015. An observational study was conducted to inspect the preparedness assessment for disaster management. Random sampling approach has been utilized to recruit the participants of the study. The time period consumed for the data collection process was six months, from January 2016 to June 2016. A total of 100 questionnaires were distributed among the staff members of the Dhahran Al Janoub General Hospital including physicians, nurses, technicians, officers, and housekeepers. 84 questionnaires were received from the staff members with complete information out of 100, so the sample size considered for the study was 84. The participants were recruited to assess the preparedness of the hospital in case of disaster during the events of Hazm Storm Support 1436/ 2015. The sample size for the study is small because only Dhahran Al Janoub General Hospital was considered for the survey from Saudi Arabia. The questionnaires were distributed among the employees, seeking information regarding the emergency response plan, awareness about disaster, design, and policy of the hospital to control the disaster, security management plans, and other patient care information. The questionnaire included questions regarding different factors, which include command and control, communication, safety and security and infection control measures of the hospital. The questionnaire was based on 3 response options i.e. trichotomous (Yes, No and unknown).

The demographic profile of the participants has also been incorporated, including years of experience and qualification. However, the experience years were not recorded for the housekeepers and officers. The acquired data were analyzed using the Statistical Package of Social Sciences SPSS (version 20.0). Chi-square test has been applied to examine the significance of the variables included in the study (command and control, communication, safety and security and infection control measures), as this statistical test is effective to observe the differences between variables [14].

### **Results**

The study has recruited 84 participants from Dhahran Al Janoub General Hospital, which included individuals from different professions. Table 1 shows the number of individuals recruited from different professions including physicians, nurses, officers, technicians, and housekeepers. The demographic profile of the respondents was also obtained, which is presented in table 2.

There was no statistically significant association between different job professions in the hospital and level of awareness about the emergency response plan. The results showed that there was a statistically significant association between different job professions and their level of awareness about presence or absence of hospital command centers (Table 2). More than 90% of the hospital staff including individuals from each profession was well-aware about the hospitals' emergency response plan (Figure 1). Moreover, the majority of the hospital staff was well-aware about the presence of hospital command center (Figure 2). The survey showed that inexperienced hospital staff was mainly not aware of emergency response plans; although, the differences among the results were statistically insignificant.

The participants were also inquired about the presence of any poison center during the chemical incident. The results revealed that there was a significant association between different job professions in the hospital and their level of awareness about the presence of poison center during an emergency chemical incident (Table 3). Majority of the hospital staff agreed that there is an appropriate communication plan (Figure 3); moreover, almost all of the hospital staff (97.60%) agreed for the presence of the blue team in the hospital to initiate rapid response for the management of an emergency situation (figure 4). The participants, who were not aware of these communication centers, were not experienced, professionals.

The hospital staff was further questioned about hospitals' ability to receive the contents of protection (heavy gloves, glasses, heavy shoes, and chemical protective suits) during chemical incidents. The results revealed that there was a significant association between the hospital staff and their level of awareness about the hospital's ability to get access to protection during chemical incidents. Considering the presence of department for biological, radioactive, and chemical decontamination, the results showed that there was a positive association between the hospital staff and their level of knowledge about the importance of biological, radioactive, and chemical decontamination department in the hospital (Table 4).

Profession	Frequency	Percentage
Doctor	34	40.5 %
Nurse	31	36.9 %
Technician	11	13.1 %
Officer	4	4.8 %
House keeper	4	4.8 %
Total	84	100 %

Table 1: Frequencies and percentages showing number of individuals recruited from each profession.

Awareness among hospital staff about emergency response plan						
Response	Job Profession					p-value
	Doctor	Nurse	Technician	Officer	House keeper	
Yes	30	27	10	3	2	
No	1	2	0	1	0	p = 0.1
Unknown	3	2	1	0	2	
Total	34	31	11	4	4	

Awareness about presence of absence of hospital command center among the hospital staff						
Response	Job Profession					p-value
	Doctor	Nurse	Technician	Officer	House keeper	
Yes	33	28	9	3	1	
No	0	1	1	1	1	p = 0.004
Unknown	1	2	1	0	2	
Total	34	31	11	4	4	

Table 2: Responses of hospital staff regarding the preparedness awareness of disaster management.

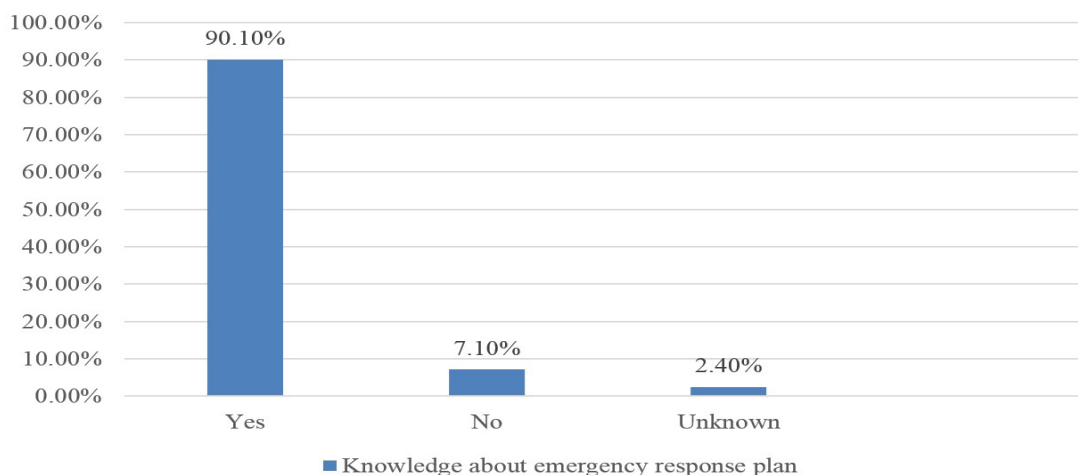
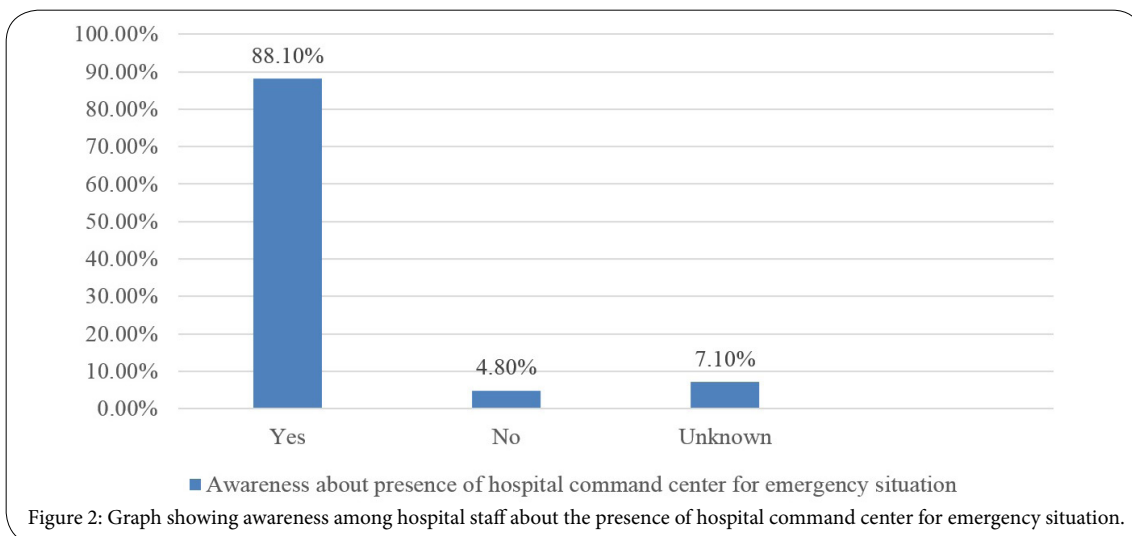


Figure 1: Graph showing knowledge among hospital staff about emergency response plan.

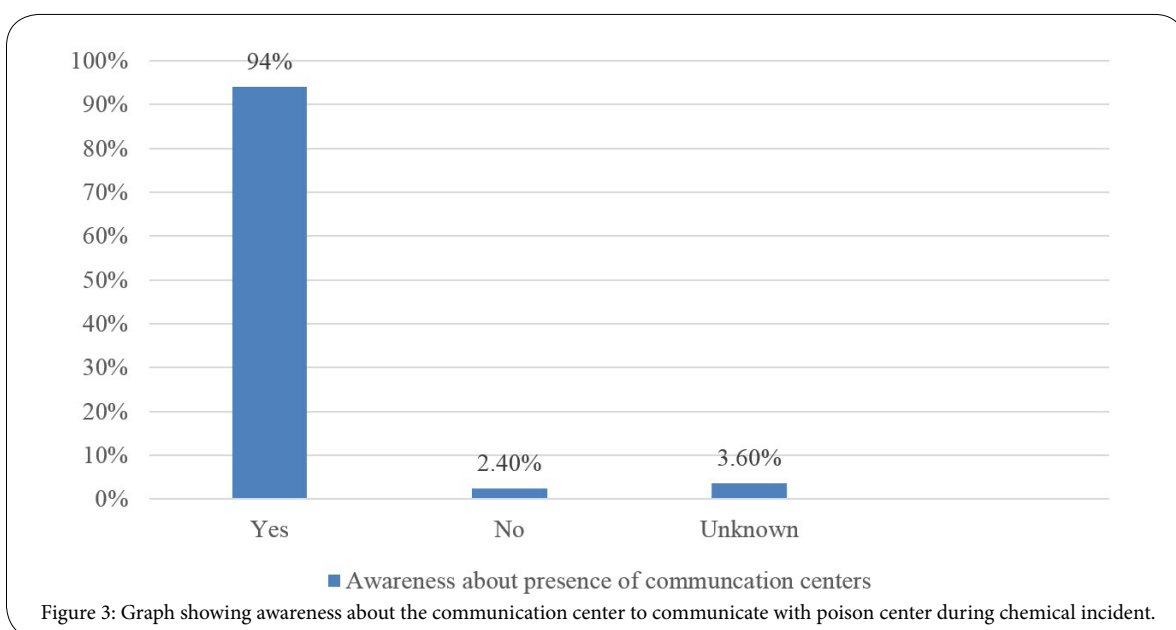


Awareness about communication center to communicate with poison center in chemical incident						
Response	Job Profession					p-value
	Doctor	Nurse	Technician	Officer	House keeper	
Yes	30	28	9	3	2	
No	2	2	1	0	0	p = 0.137
Unknown	2	1	1	1	2	
Total	34	31	11	4	4	

Awareness about presence of code blue team in hospital for rapid response						
Response	Job Profession					p-value
	Doctor	Nurse	Technician	Officer	House keeper	
Yes	31	27	9	3	2	
No	1	2	1	0	0	p = 0.21
Unknown	2	2	1	1	2	
Total	34	31	11	4	4	

Table 3: Responses of hospital staff about presence of communication centers and code blue team in the hospital for in an emergency situation.



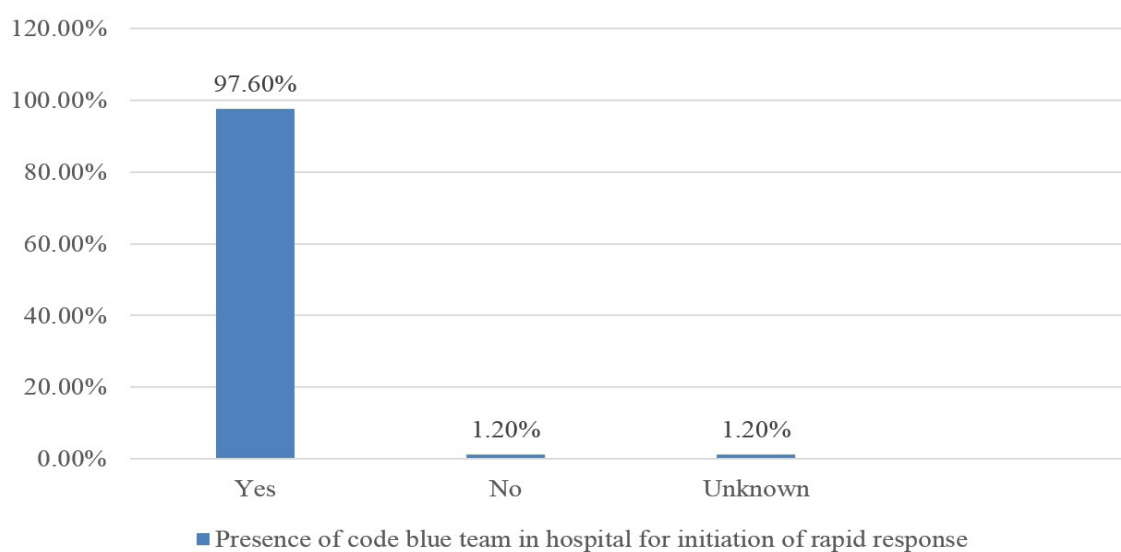


Figure 4: Graph showing the presence of code blue team in the hospital for rapid response in an emergency situation.

Access to contents of protection during chemical incidents						
Response	Job Profession					p-value
	Doctor	Nurse	Technician	Officer	House keeper	
Yes	32	27	9	3	1	
No	1	2	1	0	1	p = 0.03
Unknown	1	2	1	1	2	
Total	34	31	11	4	4	
Awareness about presence of code blue team in hospital for rapid response						
Response	Job Profession					p-value
	Doctor	Nurse	Technician	Officer	House keeper	
Yes	32	28	8	4	2	
No	1	2	2	0	0	p = 0.013
Unknown	1	1	1	0	2	
Total	34	31	11	4	4	
Presence of designated trauma resuscitation room in the hospital						
Response	Job Profession					p-value
	Doctor	Nurse	Technician	Officer	House keeper	
Yes	32	28	9	4	1	
No	1	1	0	0	1	p = 0.014
Unknown	1	2	2	0	2	
Total	34	31	11	4	4	
Presence of designated separate exposure and suturing wound department in the hospital						
Response	Job Profession					p-value
	Doctor	Nurse	Technician	Officer	House keeper	
Yes	32	27	9	3	1	
No	1	3	1	1	1	p = 0.009
Unknown	1	1	1	0	2	
Total	34	31	11	4	4	

Table 4: Responses of hospital staff regarding the access and presence of emergency departments in the hospital.

The results also showed that association between different job professions in the hospital and their level of knowledge about the presence of designated trauma resuscitation room was statistically significant. It mainly included a source of oxygen, focused abdominal sonography, pulse oximetry, chest tube, and portable x-ray. Moreover, there was a positive and significant association between the hospital staff and their level of knowledge about the importance of designated separated exposure and suturing wound department (Table 5).

The hospital staff was questioned about the presence of infection control program in the hospital. The results depicted that there was a significant relationship between hospital staff and their knowledge about the presence of infection control program in the hospital. Moreover, there was a positive relationship between the hospital staff and their training regarding the control of different infections (Table 6).

## Discussion

It is believed that framing a complete and comprehensive strategy for disaster response must evaluate training requirements of individuals [8,11]. The knowledge of nurses concerning the disaster preparedness was observed by Wisniewski et al. [15], who evaluated lower knowledge among nurses than expected. Although, nurses were aware of triage, but had the lowest acquaintance about communication. These results were also supported by Garbutt et al. [11], Sharma et al. [2] observed the hospital staff, who was found sensitive towards the disaster management, but had a low level of awareness about it. Nurses were observed to be more informed as compared to other staff members; whereas, doctors were observed to have the positive attitudes towards managing the disaster situations.

A study conducted by Miller [7] revealed that the hospital staff was more skilled in basic first aid and triage. However, they scored low, when they were asked about specific questions that included the application of antidotes to the biological agents. Therefore, the study stated that more educational programs should be conducted for management of emergency situations [7]. There is a need for workshops, maneuvers for staff, and annual training courses for the nurses to train them for emergency situations [4]. Regarding the

preparedness and perceived competence of nurses in managing the disaster, a study showed that the majority of nurses got confused when there was an emergency situation. The nurses were not confident in their abilities to give a rapid response to a major disaster event. However, the nurses, who were confident in their abilities, had an experience in shelters and disasters [16].

There is an increasing toll of natural and man-made disasters globally. Nurses are required to understand the cycle of national disaster management as they comprise of the highest percentage of medical and health workforce [17]. A study by Ibrahim [18] targeted to assess the attitudes and familiarity concerning emergency and disaster preparedness among nurses in Saudi Arabia. The results suggested highly significant differences for the practice, attitude, and familiarity concerning natural disaster preparedness. The study reported lack of knowledge and emergency preparedness practices among nurses. Moreover, awareness and training regarding emergency situations must be conducted to enhance the nursing quality and practices to deal with an emergency. It has been observed that school faculties are unable to provide disaster preparedness curriculum in the nursing education [19].

A study by Shalhoub, et al. [20] assessed the emergency or disaster preparedness for mass casualty situation in different private hospitals of Saudi Arabia. Many weaknesses were reported, particularly in the monitoring, training, and education of the hospital staff for the disaster emergency events. Few hospitals were found to conduct exercises with casualties, few had trained the staff in last twelve months; and none of the hospitals was observed to announce any exercise in the last year. Another study Bajow & Alkhalil [21] shed light on the emergency disaster preparedness in the hospitals of Saudi Arabia, considering its increasing importance in the country. It was observed essentially for the hospitals in the country to understand many of the hospital disaster preparedness practices. Disaster and emergency plan; particularly in information, committee, preparedness and hazard map are required.

The study was motivated to find the disaster management preparedness among Dhahran Al Janoub General Hospital Staff during Hazm Storm Support 1436/2015. The results have provided novel insights related to suggestions. The hospital staff plays an important role in mitigation and recovery after the global increase in

Presence of infection control program in the hospital						
Response	Job Profession					p-value
	Doctor	Nurse	Technician	Officer	House keeper	
Yes	32	27	9	4	1	
No	1	2	0	0	1	p = 0.02
Unknown	1	2	2	0	2	
Total	34	31	11	4	4	
Awareness about training of infection control among the hospital staff						
Response	Job Profession					p-value
	Doctor	Nurse	Technician	Officer	House keeper	
Yes	31	27	9	4	1	
No	2	2	1	0	1	p = 0.04
Unknown	1	2	1	0	2	
Total	34	31	11	4	4	

Table 5: Response of hospital staff regarding the presence of infection control program in the hospital and their training about the control of different infections.

natural as well as human-induced disasters. The study concluded that the knowledge of emergency preparedness among the hospital staff was moderate. All the hospital staff should be involved in different aspects of disasters that include mitigation, planning, response, and recovery from any disastrous situation. The hospital should actively participate and seek opportunities to manage a disastrous event. Although, the attitude of the hospital staff was good and satisfactory, but their practices regarding the regularity of updating the emergency response need to be groomed. Moreover, the administrators should encourage and support the disaster preparedness education of all the hospital staff for the promotion of hospital readiness in providing community care delivery in an emergency situation. The study was limited to Dhahran Al Janoub General Hospital Staff only; whereas, future studies may focus on other hospitals and recruit larger sample size to have more effective results.

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### Competing Interests

The author declare no competing interests.

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