

Disaster Management among El-Monira Hospital Health Providers

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Abstract

Background: Disasters are unexpected events since it is unknown when, where, and how health providers will occur. Health providers create chaos, risk of injury or illness, and loss of life or property. When disasters occur, there is often a mismatch between resources and needs, magnifying the chaos, risks, and losses. In addition, the number and distribution of victims over time or location can vary **Aim:** The study was aimed to assess Disaster Management among El Monira Hospital Health Providers. **Design:** descriptive analytical design was utilized in this study. **Setting:** The study was conducted at El-Monira General Hospital. The study subject was included a representative sample of 30% (194 health providers) of total health providers working at El-Monira General Hospital by simple random sample. **Tool:** The data collection tool consisted of one tool with three parts **part 1:** Demographic characteristic data of health providers, **part 2:** Health providers knowledge assessment questionnaire regarding hospital disaster management, **and part 3:** Health providers' reported practices regarding hospital disaster management **Results:** more than half of the studied sample aged between 20- < 30 years with mean age 30.1 ± 6.77 years, the most of them were females, had bachelor degree, and the majority was married. The majority of the studied sample had satisfactory knowledge regarding types of different disasters and patient categories and priorities, most of them had satisfactory knowledge regarding all definitions of hospital disaster, and less than three quarter of them had satisfactory knowledge regarding effect and dangerous of hospital disaster on health care providers and more than two third of the studied sample had satisfactory practice regarding disaster hospital. **Conclusion:** less than three quarter of the health care providers had satisfactory knowledge and achievement practice significant relation regarding hospital disaster management in El-Monira hospital and there was a highly statistically significance between health providers knowledge and their practice regarding hospital disaster management, **Recommendation:** Health care providers must be provide with periodically educational classes regarding hospital disaster management in El-Monira hospital

Keywords: Disaster management, El Monira hospital, Health providers.

Introduction

Hospitals are powerful symbols of social progress with the World Disaster Reduction Campaign on Hospitals Safe from Disasters Campaign referring to them as 'a prerequisite for stability and economic development' having 'symbolic social and political values which contribute to a community's sense of security and wellbeing (Zhong, et al., 2014)

The emergency and disaster situations in a hospital setting can be

triggered by events occurring primarily inside the hospital (such as a fire in the hospital) or primarily outside the hospital (such as a sudden influx of patients into the hospital associated with a mass casualty incident from a vehicular accident) (Zhong et al., 2014).

Mulyasari et al., (2013) illustrated four disaster management phases often called disaster management cycle, disaster management encompasses all aseptic planning for and responding to disasters Including hazards analysis

vulnerability reduction (preparedness) prevention mitigation response recovery and rehabilitation it may refer to the management of both the risks and consequences of disasters.

The disaster management cycle includes the shaping of public policies and either modify the causes or mitigate their effects on people, property, and infrastructure it has four disaster management phases include **mitigation** which means minimizing the effects of disaster, **preparedness** means planning how to respond, **response** means efforts to minimize the hazards created by disaster, and **recovery**, means returning the community to normal (**Wisner, et al., 2012**).

The role of nurses during disasters has expanded from simply caring for the sick and injured to development of the ability to react to a disaster in terms of preparedness, mitigation, response, recovery and evaluation Nurses need to have the knowledge and skills to employ an effective approach to respond to critical situations (**Kulig et al., 2017**).

The World Health Organization has also recommended the preparation of a detailed management plan for all potential disastrous happenings that could arise at a national level. There is no doubt about the global need for all healthcare workers to be prepared for disaster response and management, as well as for the public to be educated about how to protect themselves when disasters strike (**Ibrahim, 2014**).

Healthcare professionals, particularly nurses, should be equipped with knowledge and skills for disaster prevention, and contingency plans should be established so that faster access to services can be triggered during a disaster. All nurses should increase their profession's ability to provide adequate healthcare services before and after a disaster by their participation in

prevention, mitigation, preparedness and relief operations (**Labrague, et al., 2016**).
Significance of the study

There is a rise in the number and frequency of disasters globally. SARS, Ebola, Avian flu, polio, HIV and TB are some of the diseases that have led to health crisis including acts of terrorism. The leading cause of injury deaths is motor-vehicle accidents globally, then suicide, homicide, drowning, war-related injuries, falls, burns and poisoning. Through the work in El Monira Hospital, Ministry of Health and population the international committee of the Red Cross selected El Monira Hospital as "Hospitals Safe from Disasters" at 2014 which have structural resilience of health facilities, and have health facilities and are able to function in the aftermath of an emergency or disaster, and provide primary health care services. Therefore it necessary to assess Disaster Management among El Monira Hospital health providers.

Health providers as the largest group of health care providers need to be competent in order to deal with a disaster. As nurses are the major work force in the health care settings they need to update their knowledge and skills in disaster management to function efficiently in order to save lives at the time of any disaster within the hospital setting (**Dong, Gui, and Liu, 2011 & Magnaye et al., 2011**).

The nurse should maintain emergency practice and alertness of the overall situation and observe the environment for subtle changes in conditions. When a disaster occurs suddenly, nurses need to quickly react and assess the scene, promptly take appropriate treatment measures, and treat the wounded. The nurse should focus on adequate preparation, on-site first aid, transit safety and treatment coordination, attend to special populations, and offer effective psychological intervention and

other aspects of the emergency protocol (Long, Hu & Liu, 2010).

Aim of the study:

The aim of this study is to assess Disaster Management among El Monira Hospital Health Providers through the following:

- Assessing health providers' level of knowledge regarding disaster management.
- Assessing health providers' level of practices regarding disaster management.

Research questions

- What are the levels knowledge and practices of health providers regarding disaster management?
- Is there a relation between health providers' knowledge and their practices regarding disaster management?

Subjects and Method

Research design:

descriptive analytical design was utilized in this study.

Setting:

The study was conducted at El-Monira General Hospital. It is one of the largest public hospitals in Cairo, and because the ministry of health and population the international committee of the Red Cross chose it to implement the disaster management.

Subjects:

Study subjects were included representative sample 30% (194 health providers) of total health care providers working at El-Monira General Hospital. The study subjects were selected by simple random from all units and departments (400 physician, 70 pharmacist, 16 technicians, and 160 staff nurses)

	Total number of health providers	30 % of health providers
Physician	400	120
Pharmacist	70	21
Technician	16	5
Nurses	160	48
Total	646	194

Inclusion Criteria

- Not less than one year of work experience

Tool of data collection:

Data collected through the following tool to achieve the aims of this study. The questionnaire sheet it quoted and developed by the researcher in simple Arabic language to be simple for the understanding of the studied subjects and after review the related literature, it was divided into three parts:

Part 1: Demographic characteristic data of health providers such as age, gender, marital status, level of education, department, and years of work or experience.

Part 2: Health providers knowledge assessment questionnaire regarding disaster management which includes definition of disaster, risks (consequences), the definition of disaster management, types, phases, steps, responsible person, patient categories and priorities, effect and dangerous of hospital disaster, management of hospital disaster, Challenges effect on facing of hospital disaster, and Appropriate solution to face hospital disaster (Moabi, 2008; Seroney, 2014; Basnet, et al., 2016; Shabbir, et al., 2017).

❖ Scoring system of health providers knowledge:

The correct answer was scored one and incorrect answer was scored zero. These scores were summed up and converted into percent score: (score from < 50 %) referred to unsatisfactory knowledge, (score from > = 50%) referred to satisfactory knowledge

Part 3: Health providers' reported practices questionnaire regarding disaster

management which includes pre-disaster, during the disaster, and after the disaster (Moabi, 2008; Seroney, 2014; Abdelghany, 2014; Shabbir, et al., 2017).

❖ Scoring system of health providers:

Reported practices regarding disaster management: each item has been scored as one for yes, zero for no. The scores of the items were summed up and the total divided into the number of the items. These scores were converted into a percentage score; accordingly, they were categorized as follows: achievement reported practices 50% and more. – non achievement reported practices less than 50%

Ethical consideration:

The research approval was obtained from the faculty ethical committee before starting the study. Approval to conduct the study was obtained from the dean of the Faculty of Nursing, Ain Shams University, Hospital manager and heads of departments at El Monira Hospital. Before conducting in the study, a clear simple explanation was given to health care providers who participate in the study. They secured that all the gathered data was confidential and used for research purpose only, health providers was informed that they are allowed to choose to participate or withdraw from the study at any time

Pilot study:

The aim of pilot study was to test the practicability of data collection tool to estimate time to fill each part. A pilot study was conducted on 10% (19 health care provider) of total number of health providers. They were chosen randomly in order to test feasibility and applicability of constructed tool of the clarity of the included questions as well as to estimate the average time needed to complete all questions.

Validity and reliability:

Content validity was ascertained by a group of the experts in field of community health nursing department regarding the format, layout, consistency, accuracy and relevance of the tool. The internal consistency measured to identify the extent to which the items of the tool measure the same concept and correlate with each other by Cronbach's alpha test were 0.70 and 0.869 respectively for knowledge and practice of health providers.

Field work:

To carry out the study, an official letter approval was obtained from the Dean of Faculty of Nursing at Ain Shams University to the manager of El- Monira Hospital then to the Head of each department, asking for permission to collect data and verbal consent was taken from health providers. Interview was conducted with the available health providers who agreed to participate into the study to explain the aim of the study. Data collection was done in 2 days per week, by the investigator from 9.00 A.M to 2.00 P. M (6 – 8 health providers/ week). Each health providers took 35 – 45 minutes nearly to complete the interview. Data collection started from 1st August to the end of November 2019 and then based on data collection health providers' level of knowledge and practices was determining.

Administrative design:

Approval to carry out this study was obtained through on issued letter from the dean of the Faculty of Nursing, Ain Shams university to directors of El-Monira Hospital. The investigator explained the purpose and the methods of the data collection.

Statistical design:

Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation, and chi square tests. Quantitative data were expressed as mean \pm SD. Qualitative data were expressed as

frequency and percentage. Tests by IBM SPSS statistics for windows, version 25.0 Armonk NY: IBM Corp.

The following test were done:

- Chi- square test of significance was used in order to compare proportions between two qualitative parameters.
- The confidence interval was set to 95.0% and the margin of error accepted was set to 5%. so, the P – value was considered significance as the following:
 - P – value < 0.05 was considered significant,
 - P – value < .001 was considered as highly significant,
 - P – value > .05 was considered non-significant.

Results:

Table (1): shows that, 59.3% of the studied sample aged between 20- < 30 years with mean age 30.1 ± 6.77 years . regarding their gender, 81.9% of them was female, 76.8% of them had bachelor degree, and 87.1% were married. Concerning job title, 61.9% of the studied sample was physician, 35.0% of them their experiences in specialty ranged between 5 - < 10 years with mean 9.3 ± 5.0 , and 74.7% of them their experience in current place less than 5 years with mean 4.9 ± 3.8 years.

Table (2): shows that, 95.4% of the studied sample had satisfactory knowledge regarding all definitions of

hospital disaster, 87.6% of them had satisfactory knowledge regarding types of different disasters, 80.9% of them had satisfactory knowledge regarding patient categories and priorities and 71.6% of them had satisfactory knowledge regarding effect and dangerous of hospital disaster on health care providers.

Figure (1): illustrates that, 71.1% of the studied sample had satisfactory knowledge regarding disaster hospital and 28.9% of them had unsatisfactory level

Table (3): clarify that 72.9% of the nurses compared to 91.7% of physician, 61.9% of pharmacist and 60.0% of technician had complete practice regarding during hospital disaster management.

Figure (2): illustrates that 56.2%, 82.0% , 66.5% of the studied sample had complete practice regarding disaster hospital management before, during and after disaster and 43.8, 18.0%, 33.5% of them had incomplete practice regarding it respectively.

Figure (3): illustrates that, 68.0% of the studied sample had satisfactory practice regarding disaster hospital and 32.0% of them had unsatisfactory level.

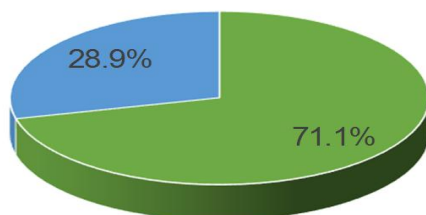
Table (4) shows that, 85.5% of the studied sample had satisfactory knowledge regarding hospital disaster had complete practice regarding disaster management with statistically significance differences P value ≤ 0.0001

Table (1): Sociodemographic characteristics of the studied subjects (n= 194).

Sociodemographic data		No.	%
Age / year			
	20- <30	115	59.3
	30- < 40	59	30.4
	40 – ≤ 50	20	10.3
	Mean ± SD	30.1 ± 6.77 Years	
Gender			
	Male	35	18.1
	Female	159	81.9
Educational level			
	Diploma	35	18.1
	Bachelor	149	76.8
	Master	10	5.1
Marital status			
	Single	25	12.9
	Married	169	87.1
Job title			
	Nurse	48	24.7
	Physician	120	61.9
	Pharmacist	21	10.8
	Technician	5	2.6
Years of experience in specialty			
	Less than 5 year	47	24.2
	5- < 10 year	68	35.0
	10- < 15 year	44	22.7
	15- ≤ 20 year	35	18.1
	Mean ± SD	9.3 ± 5.0	
Years of experience in current place			
	Less than 5 year	145	74.7
	5- < 10 year	29	14.9
	10- < 15 year	10	5.2
	15- ≤ 20 year	10	5.2
	Mean ± SD	4.9 ± 3.8	
Pervious attend training regarding hospital disaster			
	Yes	120	61.9
	No	74	38.1
No. of training courses (n = 120)			
	One	54	45.0
	Two	66	55.0

Table (2): Health provider's total and subtotal knowledge regarding hospital disaster management (n= 194).

Items	Satisfactory		Unsatisfactory	
	No.	%	No.	%
Definitions of disaster	185	95.4	9	4.6
Types of different disasters	170	87.6	24	12.4
Stages and steps of hospital disaster	126	64.9	68	35.1
Patient categories and priorities	157	80.9	37	19.1
Effect and dangerous of hospital disaster on health care providers	139	71.6	55	28.4
Management of hospital disaster	135	69.6	59	30.4
Challenges effect on facing of hospital disaster	59	30.4	135	69.6
Appropriate solution to face hospital disaster	133	68.6	61	31.4



■ Satisfactory level (n=138) ■ Unsatisfactory level (n=56)

Figure (1): Health provider's total knowledge regarding hospital disaster management (n= 194) according to question one

Table (3): Health provider's total and subtotal practices regarding hospital disaster management (n= 194).

Items	Nurses (n=48)				Physician (n= 120)				Pharmacist (n= 21)				Technician (n= 5)			
	Achievement		Non-achievement		Achievement		Non-achievement		Achievement		Non-achievement		Achievement		Non-achievement	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Before	31	64.6	17	35.4	85	70.8	35	29.2	14	66.7	7	33.3	2	40.0	3	60.0
During	35	72.9	13	27.1	110	91.7	10	8.3	13	61.9	8	38.1	3	60.0	2	40.0
After	32	66.7	16	33.3	50	41.7	70	58.3	15	71.4	6	28.3	4	80.0	1	20.0

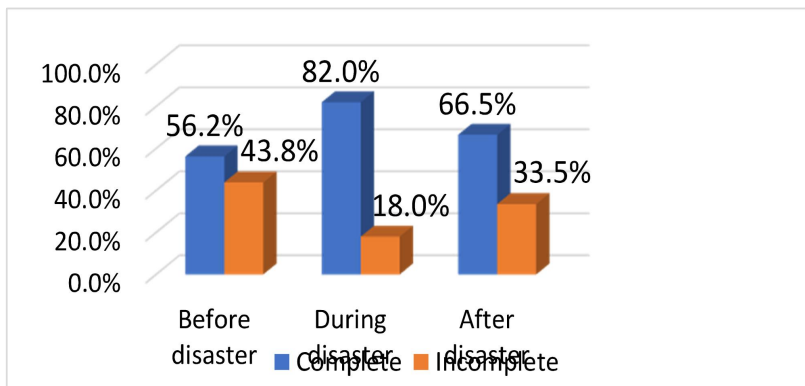


Figure (2): Health provider's total practices regarding hospital disaster management (pre, during, and after disaster (n= 194).

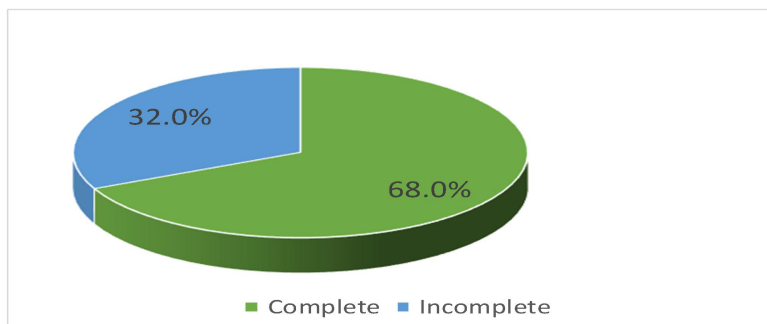


Figure (3): Health provider's total practices regarding hospital disaster management (n= 194) according to question one.

Table (4): Relation between health providers knowledge and their practice level regarding hospital disaster management (n=194) according to question two.

	Satisfactory (n= 138)		Unsatisfactory (n = 56)		X ²	P – value
	No.	%	No.	%		
Total practice level						
Complete (n=132)	118	85.5	14	25.0	67.068	.0001**
Incomplete (n= 62)	20	14..5	42	75.0		

** highly significance P – value < .001

Discussion

Regarding the Socio-demographic characteristics of the studied s **Tasubjectsble (1)**, the current study showed that, more than half of the studied sample aged between 20- < 30 years with mean age 30.1 ± 6.77 . The current result were confirmed by (Nofal, et al., 2018), who assessed knowledge, attitudes, and practices of emergency department staff towards disaster and emergency preparedness at tertiary health care hospital in central Saudi Arabia, stated that near two third of the studied sample were less than 30 years. Also (Gundran, 2015) reported the same result.

This result didn't come in the line with (Al-Ali & Abu Ibaid, 2015) who studied" Health-care providers' perception of knowledge, skills and preparedness for disaster management in primary health-care centers in Jordan" and reported that the mean age of participants was 39.8 [standard deviation (SD) 10.8] years, range 22–65 years. This result come in agree with (Putra, Petpichetchian, & Maneewat, 2011) who reported that most of the subjects were less than 30 years old (61.1 %) with the mean age being 30 years old (SD=6.0). This result might be attributed to that a lot of health providers in the last years in El Monira Hospital changed their career by completing another study to be appointed in other departments inside their hospital. While, other nurses choose travelling

abroad because of unsuitable working conditions and inadequate salaries.

Concerning the gender of the studied, the current study showed that the most of them were females, had bachelor degree, and the majority was married. The current result were confirmed by (Nofal et al., 2018), who stated that the most of the studied subjects were female and (Al-Ali & Abu Ibaid, 2015) who stated that the most of the studied subject were female.

This result differ with (Gundran, 2015), who studied " Knowledge, Attitudes and Practices of the Department of Emergency Medicine Employees Regarding Disaster Planning and Preparedness at UP-Philippine General Hospital" and reported that the majority Of the respondents were male.

Concerning job title, the present study illustrated that less than two third of the studied subject was physician, more than one third of them their experiences in specialty ranged between 5 - < 10 years with mean 9.3 ± 5.0 , and more than two third of them their experience in current place less than 5 years with mean 4.9 ± 3.8 years. This result were come inconsistent with (Nofal et al., 2018), who stated that the most of the studied subject were nurses and more than half of them their experience in current place more than 5 years. This result didn't come in the line with (Al-Ali & Abu Ibaid, 2015) who mentioned that the most of participant were nurses.

Regarding the health provider's total knowledge regarding disaster hospital **Figure (1)**, the current study illustrated that, more than two third of the studied subject had satisfactory knowledge regarding disaster hospital. This result come in the line with **(Nofal et al., 2018)** who mentioned that Overall, physicians and nurses' revealed a satisfactory level of knowledge in disaster preparedness 6.2 ± 2.5 . Moreover, the mean knowledge scores were significantly different in relation to overall experience and service at the institution.

This result come inconsistent with **(Ebrahim, 2015)** that recognized a gap in nurses knowledge, skills and preparedness for disaster, this study is also not consistent with the **(Naser & Saleem, 2018)** who studied "Emergency and disaster management training; knowledge and attitude of Yemeni health professionals- a cross-sectional study" study which founded that the overall knowledge status of Yemeni health professionals was insufficient with regards to emergency and disaster preparedness.

This result also contraindicated with **(Saidam & Eljedi, 2018)** who studied "The Role Perception and Preparedness of Emergency Nurses for Disaster Management at the Governmental Hospitals in Gaza Strip" and reported that less than one third of the studied subject had good knowledge, more than half had fair and less than fifth exhibited poor knowledge.

Regarding the health provider's total and subtotal knowledge regarding disaster hospital **table (2)**, the current study showed that, the majority of the studied subject had satisfactory level of knowledge regarding all definitions of hospital disaster, types of different disasters, most of them had satisfactory knowledge regarding patients categories and priorities and more than two third of

them had satisfactory knowledge regarding effect and dangerous of hospital disaster on health care providers.

This result comes in the line with **(Khalil, 2019)** who studied " Emergency nurses' Knowledge and Practice Regarding Preparedness of Disaster Management at a University Hospital. Egypt" and reported that all of the studied subject gave correct answer in the following items related to every hospital has a plan to cope with disasters, have internal guidelines, when confirm the occurrence of disaster, one of the disaster management barriers, moreover, more than three forth gave correct answer regarding types of disasters, on the other hand more than two third reported incorrect answer pertinent to the time for emergency nurse to use of personal protective equipment (hand washing, wear gloves, wear gown, wear protective head, wear protective boots and a face mask) finally less than quarter reported incorrect answer pertinent to types of disasters.

Also this result comes in accordance with **(AlHarastani et al., 2020)** who studied " Emergency and Disaster Preparedness at a Tertiary Medical City" and reported that the participants' levels of knowledge and overall familiarity toward emergency and disaster preparedness were satisfactory; however, participant attitudes and familiarity with where and how to access critical resources in the event of an emergency or disaster situations require reinforcement.

This result come in consistent with **(Al-Ali & Abu Ibaid, 2015)** who mentioned that the most of the participants perceived themselves as having a moderate knowledge of disaster management [mean 49.9 (SD 12.2)]. The mean scores of items in the knowledge subscale ranged from 3.34 to 4.48. In addition this result come inconsistent with **(Gundran, 2015)** who stated that there is

a low level of knowledge of the division of emergency management staff on disaster planning and emergency preparedness. While most have fair knowledge of the definition of disaster and disaster preparedness, only 1 out of 2 staff knew the definition of disaster plan, this result might be due to mean years of nurses experiences in El Monira hospital was 9.3 ± 5.0 years.

Concerning health provider's total practices regarding hospital disaster management pre, during, and after disaster, Figure (2): demonstrated that more than half, the majority, and two thirds of the studied subject had complete practice regarding disaster hospital management before, during and after disaster respectively. This result come in the line with **(King, Spritzer, & Al-Azzeh, 2019)** who studied "Perceived Knowledge, Skills, and Preparedness for Disaster Management Among Military Health Care Personnel" and reported that the studied subject had moderate levels of perceived disaster preparedness among military healthcare personnel, and this result was confirmed by **(Ulfat et al., 2015)** who studied and reported that the of majority of participants have faced problem during disaster management and a little number of participants were did not. Also, **(Putra et al., 2011)** who reported that nurses perceived ability to practice post disaster was at a moderate level. This result might be due to more than half of health providers in El Monira hospital had two training courses regarding hospital disaster management.

Regarding the health provider's total practices regarding disaster hospital, **Figure (3), the current study** illustrated that, more than two third of the studied subject had satisfactory level of practice regarding disaster hospital. This result comes in accordance with **(AlHarastani et al., 2020)** who studied "Emergency and Disaster Preparedness at a Tertiary Medical City" and reported that the

participants' levels of practices, and overall familiarity toward emergency and disaster preparedness were satisfactory; however, participant attitudes and familiarity with where and how to access critical resources in the event of an emergency or disaster situations require reinforcement. This result come in consistent with **(Gundran, 2015)** the practices were deficient and work still needs to be done with regards to ongoing training, performance of drills and the frequency of regular updating of the plans.

Regarding the relation between health providers knowledge and their practice level Table (5), the current study showed that, the most of the studied subject had satisfactory knowledge regarding hospital disaster had complete practice regarding disaster management with statistically significant relation P value ≤ 0.0001 . This result come in the line with **(Khalil, 2019)** who reported that the correlation between mean knowledge scores and mean practices scores regarding preparedness of disaster management among the studied emergency nurses shows that there is positive correlation between knowledge and practice scores regarding patient's admission only, moreover no significant correlation were found between the total knowledge and the total practice scores ($R=0.1, P=0.3$).

Conclusion

Based on the findings of the current study the following conclusions can be drawn: More than two third of the health care providers had satisfactory knowledge and achievement practice regarding hospital disaster management in El-Monira hospital and there was a highly statistically significant relation between health providers knowledge and their practice regarding hospital disaster management.

Recommendations

Based on the results of the present study and research questions the following recommendations are suggested:

- Health care providers should provide with periodically educational classes regarding hospital disaster management
- Providing posters, booklets, and leaflets for healthcare providers regarding hospital disaster management.
- Further study: a need for a written updates hospital disaster management plan and call responsible persons to increase number of workers in the hospital and equipment and supplies.

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