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Assessment of Emergency Nurses Response Toward Caring of Victims During Disasters

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Abstract
Background: Emergency nurses play a vital role in the response phase of disaster including immediate and acute care offered to victims during disasters, such as conducting triage. **Aim of the study:** To assess emergency nurses response toward caring of victims during disasters. **Subject and Method:** Purposive sample of 200 nurses working in the emergency departments at Assiut University Hospital and The ministry of Health Hospitals within 6 months period. **The tool of data collection** was the disaster response questionnaire. **Results:** Finding of the study revealed that less than half of studied nurses (45,5%) had a poor level of knowledge regarding the disaster, response, education and training. **Conclusion:** Emergency nurses had poor level of knowledge regarding disaster, response, education and training. There was a statistical significant difference between knowledge of studied nurses in both hospital nurses group with (P. value = <0.001).While the third of studied nurses had a diploma in nursing and had a poor level of knowledge regarding care of victims during disasters. **Recommendations:** In-service training and education related to disaster management is required for all nurses' especially emergency nurses and should be tailored to the local needs and their actual competences.

Keywords: ***Disaster, Disaster Response & Emergency Nurses.***

Introduction
A disaster is defined by the international strategy for disaster reduction and World Health Organization **ISDR & WHO, (2009)** as "a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources" **(Susan & Joy, 2016)**.

Disaster criteria: Several criteria have been proposed to define disasters in terms of their consequences, at least one of the following criteria has to be fulfilled: ten or more people reported killed, one hundred people reported affected, a call for international assistance, unpredictable, unfamiliar, threat, speed and urgency and declaration of a state of emergency **(Josephine et al., 2014).**

Classification and types of disaster: there are different ways to classify disasters. Disasters are often classified according to their cause, their speed of onset (sudden or slow) and whether or not they are due to "acts of nature" or "acts of humans" **(Matthew et al., 2018).**

Disaster management includes four stages; prevention (mitigation), preparedness, response and recovery. Nurses have unique skills for all aspect of the disaster; this includes assessment, priority setting, collaboration and addressing both preventive and acute care needs. Nurses hold a major role in providing healthcare management and assistance, and allocating care during the time of the disaster and to reduce the impact of it on the community **(Alexander, 2018).**

Emergency nurses play a vital role in the response phase of disaster including immediate and acute care offered to victims during disasters, such as conducting triage, first aid, trauma care and emergency surgical care. The catastrophic event would have a considerable impact on the emergency department (ED) which is considered to be at the front line of the hospital response. Emergency nurses play a vital role in executing the department disaster plan and providing treatment for disaster victims **(Fuad & Yiannis, 2017).**

Significance of the Study
In Egypt, there are many potential disasters that health care professionals might encounter. These disasters including both natural and manmade disaster like severe accidents (Traffic accidents as motor car accidents and train accidents), For example, there were 14,710 accidents recorded in 2016 which resulted in 5,343 deaths, 18,646 injuries and 21,089 damaged vehicles. Also death rates on inter-governorate roads record a total of 4,381 in the same year including highway records 962 deaths also there were 62 train accidents related fatalities and 164 injuries according to the central agency for public mobilization and statistics issued which press release with the statistics of car and train accidents in the year 2016 **(Capms, 2017).**

Assessing the level of knowledge for nurses working in the emergency department's regarding the disaster response would identify both areas of weakness and strengths in their emergency response toward the care of victims during disasters. Future educational programs could then be developed to overcome the weaknesses identified in the study. A workforce that is better prepared would be able to function more cohesively according to need depending on each other more on a crisis situations than in normal day-to-day operations **(Miller & Brockie, 2017).**

Aim of the study

The present study aims to

Assess emergency nurses response toward caring of victims during disasters.

Research question

What are emergency nurses' level of knowledge and response toward caring of victims during disasters?

Subject & Method

Research design

A descriptive research design was used to conduct this study.

Setting

This study carried out in the emergency departments at Assiut Main University Hospital in the following areas; general emergency department and trauma emergency department. Also, the setting included the emergency departments in the Ministry of Health Hospitals at, EL Shamla hospital, EL Eman Hospital in Assiut City, EL qusia central hospital, Manfalut central hospital and Dairout central hospital.

Sample

A purposive sample of this study includes nurses working in the emergency departments at Assiut Main University Hospitals and The ministry of Health Hospitals. The sample size was 200 nursing staff; there were 68 in Assiut Main university hospital; 51 nurses in the general emergency department, 17 nurses in the Trauma emergency department and 132 nurses in the emergency departments associated to the Ministry of Health Hospitals as the following: 47 nurses at EL Shamla hospital, 27 nurses at EL Eman Hospital, 28 nurses at EL qusia central hospital, 12 nurses at Manfalut central hospital and 18 nurses at Dairout central hospital.

Inclusion criteria

The study included all nurses who provide direct and indirect patient care of victims at their emergency departments and who have at least one year of work at the departments.

Exclusion criteria

The study excluded all newly graduated nurses who work for less than one year in the emergency departments.

Tool of data collection

Tool: One tool was used in this study and was designed by the researcher based on the literature review for data collection **(EPIQ, Survey monkey, 2014)**

Tool: Disaster response questionnaire

This tool was developed by the researchers after reviewing the related literature. This tool aimed to assess emergency nurses' response toward caring for victims during disasters. This tool consists of multiple choices and true or false Arabic questionnaire related to their roles in response toward the care of victims during disasters. The questionnaire consists of 61 questions which consist of four main parts as the following:

Part I: This part includes the demographic data of the study sample characteristics, such as; code, six, marital status, years of experience in the emergency departments, years of experience in the nursing field, emergency department area, qualifications and level of career.

Part II: Nurses level of knowledge at emergency about disaster data which includes (21) multiple-choice questions to assess emergency nurses knowledge regarding disaster as definition, types, causes, phases, complications, Organizations involved in disaster and potential disasters in the community.

Part III: Role of Emergency nurses in disaster response data which includes (29) multiple choice and true or false questions to assess emergency nurses knowledge regarding their role in response toward victim's disaster as; questions about Emergency response to victims disaster, assessment, triage, Communication, Emotional support, resuscitation, Isolation and goal of response to victims disaster.

Part IV: Education and training about disaster response data which includes (11) multiple choice and true or false questions to assess emergency nurses' disaster education and training available and/or perceived by emergency nurses, experiences concerned with response to victims' disaster and scientific research.

The scoring system of nurses knowledge assessment tool

For multiple-choice questions and true or false questions emergency Nurses' knowledge as good, fair and poor level was carried as follows: all items have three alternative answers. It includes 61 questions for emergency nurses. A score value of one was awarded

to each correct answer and score value of zero was awarded for incorrect answer. Scores categorized as;
-Those who obtained less than 30.5 degrees (< 50 %) were considered having a poor knowledge level, while those who obtained from 30.5 to 36.6 degrees (50 to 60%) were considered having a fair level of knowledge. In addition, those who obtained scores above 36.6 degrees (>60%) were considered having a good level of knowledge.

Working definition: Nurses response toward victims disaster means nurses level of knowledge regarding the care of victims during the disaster.

Method

The study was conducted throughout three main phases, preparatory phase, implementation phase and evaluation phase.

1-Perparatory phase

1. Through which the data collection tool was prepared and tested.
2. After taken the official permission from the faculty of nursing to conduct the study then it was delivered to the hospital authorities an official approval letter was obtained from the directors of the emergency departments (the general emergency department and the trauma emergency department at Assiut University Hospitals), in addition to the emergency departments in The ministry of Health hospitals (EL Shamla hospital, EL Eman Hospital in Assiut City, EL qusia central hospital, Manfalut central hospital and Dairout central hospital).

- these letters include permission to carry out the study after explaining the purpose, contents and the nature of the study.

3. A review of the current and international related literature in various aspects of this study using books, periodicals, and magazines were done.
4. **A pilot study**
   It was conducted on 10% of the studied nurses (20) to test the feasibility and applicability of the tools and to estimate the time needed to fill the questionnaire. Based on the results of the pilot study, the necessary modifications in the sheet were done. The studied subjects were included in the actual study sample.
5. Tool which used in this study was developed in the Arabic language by the researchers based on reviewing the literature and tested for validity and reliability.
6. The reliability test for the tool (disaster response questionnaire) by using Alpha Cornbach's test (R=0.679) and Content validity was (0.82).
7. The tool were tested for content validity of research by a panel of 5 experts (4) from faculty of nursing (Staff of Critical care and Emergency Nursing 3 Professors, and 1 lecturer) and one from faculty of medicine (Assistant professor Anesthesia) who reviewed the questionnaire for clarity, relevancy, and understanding and correction was carried accordingly.

Ethical considerations

1- Written consent was obtained from health teams that agree to participate in the study, after explaining the nature and purpose of the study.
2- Health team was assured that the data of this research will not be reused without second permission.
3- Confidentiality and anonymity was assured.
4- Health team has the right to voluntary participate or refuse participation in the study without any rationale at any time.
5- The objective of the study was explained by the researcher orally to the nurses, additionally to the written explanations in the covering letter of the questionnaire.

2- Implementation phase and evaluation phase

Once permission was granted to proceed with the proposed study, the researcher initiated data collection. The implementation phase involved the following issues:

1- At the initial interview, the researcher introduced herself to initiate a line of communication, explain the nature and purpose of the study before answering the questions to gain their consent and cooperation.
2- Data collection was done by the researchers, the head nurse and nurses of the department who helped the researchers to accomplish this work under the researcher's control.
3- Data were collected from emergency nurses in emergency and trauma departments at Assiut Main University Hospitals and emergency departments at the ministry of Health hospitals. Data were collected in six months approximately from December 2018 to May 2019.
4- The questionnaire to assess emergency nurses knowledge regarding their response toward the victim's disasters used for data collection from nurses included in the study.
5- The researchers interviewed each nurse individually to fill out the questionnaire sheet while they are on duty during any shift.
6- The researcher interviewed the emergency nurses at their break time and their answers were recorded immediately.
7- The average time taken for completing the questionnaire for each nurse was around 20-30 minutes.
8- During data collection, emergency nurses had the right to participate or not in the study.

9- The questionnaire sheet included; demographic data, and knowledge about the emergency nurses' disaster, the role of emergency nurses during disaster response also, data about education besides training of disaster response.

Statistical analysis

The data were tested for normality using the Anderson-Darling test and for homogeneity variances prior to further statistical analysis. Categorical variables were described by number and percent (N, %), where continuous variables described by the mean and standard deviation **(Mean, SD)**. We compared continuous variables by **t-test** and **Anova Test. A two-tailed p < 0.05** was considered statistically significant. All analyses were performed with the **IBM SPSS 20.0** software.

Results

Table (1): Demographic characteristics of the nurses included in the study according to the hospital groups (n=200).

Characteristics	University hospital (n=68)		The ministry of health hospitals (n=132)		Total (n=200)		P. value
	N.	%	N.	%	N.	%	
Age group							
< 30 years	36	52.9	69	52.3	105	52.5	0.428
30-40 years	28	41.2	48	36.4	76	38.0	
> 40 years	4	5.9	15	11.4	19	9.5	
Mean ±SD	31.84±5.2		32.53±6.24		32.3±5.9		0.433
Sex							
Male	16	23.5	59	44.7	75	37.5	0.003**
Female	52	76.5	73	55.3	125	62.5	
Marital status							
Single	11	16.2	31	23.5	42	21.0	0.229
Married	57	83.8	101	76.5	158	79.0	
Current profession							
Nurse	23	33.8	46	34.8	69	34.5	0.620
Head nurse	11	16.2	28	21.2	39	19.5	
Technicians nurse	34	50.0	58	43.9	92	46.0	
Experience year							
<5 years	12	17.6	31	23.5	43	21.5	0.446
5-<10 years	33	48.5	49	37.1	82	41.0	
10 - <15 years	10	14.7	20	15.2	30	15.0	
>15 years	13	19.1	32	24.2	45	22.5	
Mean ±SD	10.68±6.08		11.17±7.33		11±6.92		0.636
Years of experience in department:							
<5 years	14	20.6	46	34.8	60	30.0	0.038*
5-<10 years	43	63.2	58	43.9	101	50.5	
10 - <15 years	8	11.8	14	10.6	22	11.0	
>15 years	3	4.4	14	10.6	17	8.5	
Mean ±SD	8.54±3.75		8.27±4.77		8.37±4.44		0.683
Qualifications							
Diploma	23	33.8	47	35.6	70	35.0	0.582
Technical institute	34	50.0	57	43.2	91	45.5	
Bachelor	11	16.2	28	21.2	39	19.5	

Chi –square test **statistically significant difference (p<0.05).*
***statistically significant difference (p<0.0.01).* *Independent T- test*

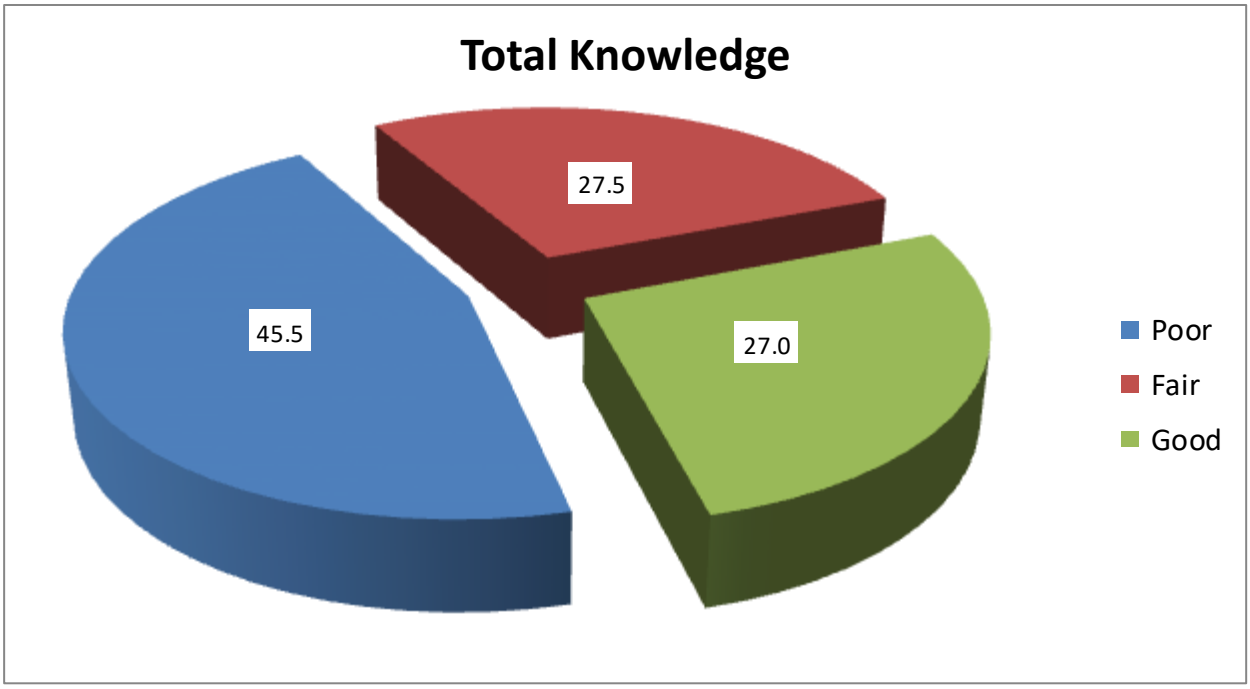

Figure (1): Percentage distribution of nurses according to their total level of knowledge.

Table (2): Nurses level of knowledge related to the disaster, disaster response, education and training according to hospitals groups (n=200).

Knowledge	Max score	University hospital (n=68)	The ministry of health hospitals (n=132)	P. value
Disaster knowledge	**21**	12.65±3.32	12.37±2.94	0.548
Definitions	2	0.84±0.54	0.6±0.84	0.033*
Types of disasters	3	2.09±0.62	1.99±0.53	0.255
Causes of disasters	6	4.51±1.1	4.17±0.93	0.019*
Phases of disaster	3	1.01±0.98	1.2±0.99	0.199
Complications of disaster	3	2.12±0.91	2.28±0.81	0.199
Organization involved in disaster	1	0.44±0.5	0.39±0.49	0.522
Potential disasters in the community	3	1.63±0.9	1.73±0.85	0.427
Disaster response knowledge	**29**	14.51±4.64	14.72±4.69	0.769
Emergency response to victims disaster	6	2.18±1.18	1.94±1.46	0.249
Assessment	3	2.15±0.7	2.19±0.71	0.688
Triage	4	1.6±0.98	1.52±1.08	0.575
Communication	1	0.79±0.41	0.81±0.39	0.782
Aim of disaster response	1	0.4±0.49	0.48±0.5	0.282
Emotional support	2	1.16±0.84	1.36±0.74	0.084
Cardiopulmonary resuscitation	3	1.41±0.87	1.65±0.85	0.062
Nurses responsibility in response to victims disasters	4	2.09±1.34	2.26±1.34	0.398
Types of support that would help emergency nurses	1	0.69±0.47	0.7±0.46	0.846
Role of country in disaster management	1	0.9±0.31	0.7±0.46	0.002**
Isolation	3	1.15±1.25	1.11±1.26	0.827

Knowledge	Max score	University hospital (n=68)	The ministry of health hospitals (n=132)	P. value
Training Courses	**11**	5.16±2.28	4.44±2.35	0.039*
Training courses needed	3	1.03±0.88	0.69±0.8	0.007**
Emergency nurses experience concerned with response to disaster victims	6	3.03±1.45	2.9±1.62	0.585
Scientific research availability	2	1.1±0.69	0.85±0.73	0.018*
Total Knowledge	**61**	32.32±8.16	31.53±8.24	0.518

Independent T- test ** statistically significant difference (p<0.05).*
** *statistically significant difference (p<0.01).*

Table (3): Distribution of nurses' knowledge level according to hospitals groups (n=200).

Level of knowledge	Percentage	University Hospital (n=68)		The ministry of health Hospitals (n=132)		P. value
		N.	%	N.	%	
Poor	<50%	30	44.12	61	46.21	0.859
Fair	50-60%	18	26.47	37	28.03	
Good	>60%	20	29.41	34	25.76	
Mean ±SD		32.32±8.16		31.53±8.24		0.518

Chi –square test.

Table (4): Relationship between nurses knowledge scores with their demographic data according to hospitals groups (n=200).

Characteristics	University hospital(n=68)		The ministry of health hospitals (n=132)	
	N.	Mean ±SD	N.	Mean± SD
Age group				
20-<30 years	36	34.39±8.28	69	34.04±6.91
30-<40 years	28	29.68±7.37	48	28.85±8.91
> 40 years	4	32.25±9	15	28.53±8.45
P. value	**0.070**		**0.001****	
Sex				
Male	16	37.44±8.95	59	33.49±7.66
Female	52	30.75±7.29	73	29.95±8.4
P. value	**0.003****		**0.013***	
Marital Status				
Single	11	33.55±6.82	31	32.29±6.79
Married	57	32.09±8.42	101	31.3±8.65
P. value	**0.591**		**0.559**	
Current profession				
Nurse	23	27.91±6.7	46	26.37±7.86
Head nurse	11	34.82±8.1	28	33.43±3.8
Technicians nurse	34	34.5±8.05	58	34.71±8.18
P. value	**0.005****		**<0.001****	
Experience year				
<5 years	12	34±9.16	31	32.81±5.23
5-<10 years	33	33.39±7.84	49	34.73±7.45
10 - <15 years	10	29.2±8.56	20	27.6±10.6
> 15 years	13	30.46±7.62	32	27.84±7.97
P. value	**0.365**		**<0.001****	

Characteristics	University hospital(n=68)		The ministry of health hospitals (n=132)	
	N.	Mean ±SD	N.	Mean± SD
Years of experience in the current emergency department:				
< 5 years	14	33.36±8.76	46	31.74±6.94
5-<10 years	43	33.07±7.52	58	32.55±7.92
10 -< 15 years	8	26.88±9.08	14	26.21±9.07
> 15 years	3	31.33±10.79	14	31.93±11.17
P. value	**0.243**		**0.077**	
Qualifications				
Diploma	23	27.91±6.7	47	26.72±8.21
Technical institute	34	34.5±8.05	57	34.56±8.12
Bachelor	11	34.82±8.1	28	33.43±3.8
P. value	**0.005****		**<0.001****	

*Independent T- test ** statistically significant difference (p<0.01). One way Anova* statistically significant difference (p<0.05), ** statistically significant difference (p<0.01)*

Table (5): Relationship between Nurses Knowledge Level with their demographic data according to hospitals groups (n=200).

Demographic characteristics	University hospital(n=68)				The ministry of health hospitals (n=132)			
	Poor (n=30)	Fair (n=18)	Good (n=20)	P. Value	Poor (n=61)	Fair (n=37)	Good (n=34)	P .value
	N. (%)	N. (%)	N. (%)		N. (%)	N. (%)	No.(%)	
Age group								
20-<30 years	12(40)	11(61.1)	13(65)	0.195	23(37.7)	22(59.5)	24(70.6)	0.017*
30-<40 years	17(56.7)	5(27.8)	6(30)		27(44.3)	13(35.1)	8(23.5)	
> 40 years	1(3.3)	2(11.1)	1(5)		11(18)	2(5.4)	2(5.9)	
Sex								
Male	4(13.3)	2(11.1)	10(50)	0.004**	24(39.3)	15(40.5)	20(58.8)	0.156
Female	26(86.7)	16(88.9)	10(50)		37(60.7)	22(59.5)	14(41.2)	
Marital status								
Single	5(16.7)	3(16.7)	3(15)	0.986	15(24.6)	8(21.6)	8(23.5)	0.945
Married	25(83.3)	15(83.3)	17(85)		46(75.4)	29(78.4)	26(76.5)	
Current profession								
Nurse	15(50)	6(33.3)	2(10)	0.042*	35(57.4)	8(21.6)	3(8.8)	<0.001**
Head nurse	4(13.3)	4(22.2)	3(15)		6(9.8)	15(40.5)	7(20.6)	
Technicians nurse	11(36.7)	8(44.4)	15(75)		20(32.8)	14(37.8)	24(70.6)	
Experience year								
< 5 years	5(16.7)	4(22.2)	3(15)	0.880	12(19.7)	11(29.7)	8(23.5)	0.002**
5-<10 years	13(43.3)	8(44.4)	12(60)		13(21.3)	17(45.9)	19(55.9)	
10 -< 15 years	6(20)	2(11.1)	2(10)		13(21.3)	3(8.1)	4(11.8)	
> 15 years	6(20)	4(22.2)	3(15)		23(37.7)	6(16.2)	3(8.8)	
Years of experience in department								
Less than 5 years	6(20)	5(27.8)	3(15)	0.814	20(32.8)	15(40.5)	11(32.4)	0.248
from 5-10 years	18(60)	10(55.6)	15(75)		23(37.7)	18(48.6)	17(50)	
from 10 - 15 years	5(16.7)	2(11.1)	1(5)		11(18)	1(2.7)	2(5.9)	
more than 15 years	1(3.3)	1(5.6)	1(5)		7(11.5)	3(8.1)	4(11.8)	

Demographic characteristics	University hospital(n=68)				The ministry of health hospitals (n=132)			
	Poor (n=30)	Fair (n=18)	Good (n=20)	P. Value	Poor (n=61)	Fair (n=37)	Good (n=34)	P .value
	N. (%)	N. (%)	N. (%)		N. (%)	N. (%)	No.(%)	
Qualifications								
Diploma	15(50)	6(33.3)	2(10)	0.042*	36(59)	7(18.9)	4(11.8)	<0.001**
Technical institute	11(36.7)	8(44.4)	15(75)		19(31.1)	15(40.5)	23(67.6)	
Bachelor	4(13.3)	4(22.2)	3(15)		6(9.8)	15(40.5)	7(20.6)	

*Chi –square test *statistically significant difference (p<0.05). **statistically significant difference (p<0.0.01*

Table (6): Descriptive nurses' knowledge score regarding (disaster, disaster response, education and training) according to qualifications (n=200).

Items of knowledge	Max score	Diploma(n=70)	Technical institute(n=91)	Bachelor(n=39)	P. Value
Disaster knowledge	**21**	**10.37±2.7**	**13.41±2.79**	**14.03±2.23**	**<0.001****
Definitions	2	0.53±0.72	0.8±0.79	0.67±0.7	0.073
Types of disasters	3	1.77±0.68	2.19±0.47	2.1±0.31	0.000
Causes of disasters	6	3.79±0.96	4.53±0.96	4.62±0.81	<0.001**
Phases of disaster	3	0.69±0.88	1.27±0.92	1.64±1.01	<0.001**
Complication of disaster	3	2±0.88	2.24±0.87	2.59±0.55	0.002**
Organization involved in disaster	1	0.24±0.43	0.43±0.5	0.67±0.48	<0.001**
Potential disasters in the community	3	1.36±0.96	1.95±0.79	1.74±0.59	<0.001**
Disaster response knowledge	**29**	**12.4±4.55**	**16.01±4.67**	**15.51±3.18**	**<0.001****
Emergency response to victims disaster	6	1.97±1.2	2.24±1.49	1.59±1.31	0.043*
Assessment	3	1.87±0.72	2.36±0.69	2.28±0.51	<0.001**
Triage	4	1.11±0.93	1.77±1	1.79±1.13	<0.001**
Communication	1	0.8±0.4	0.78±0.42	0.87±0.34	0.482
Aim of disaster response	1	0.23±0.42	0.6±0.49	0.49±0.51	<0.001**
Emotional support	2	0.93±0.79	1.57±0.65	1.31±0.8	<0.001**
Cardiopulmonary resuscitation	3	1.23±0.75	1.62±0.9	2.08±0.66	<0.001**
Nurses responsibility in response to victims disasters	4	1.57±1.27	2.38±1.29	2.9±1.1	<0.001**
Type of support that would help emergency nurses	1	0.74±0.44	0.62±0.49	0.82±0.39	0.040*
Role of country in disaster management	1	0.73±0.45	0.78±0.42	0.82±0.39	0.528
Isolation	3	1.21±1.34	1.29±1.2	0.56±1.05	0.007**
Training courses	**11**	**4.34±2.58**	**5.12±2.23**	**4.28±2.05**	**0.055**
Training courses needed	3	0.73±0.87	0.86±0.8	0.82±0.91	0.628
Experiences concerned with response to disaster victims	6	2.74±1.58	3.24±1.64	2.62±1.23	0.045*
Scientific research availability	2	0.87±0.74	1.02±0.7	0.85±0.74	0.296
Total Knowledge	**61**	**27.11±7.72**	**34.54±8.05**	**33.82±5.29**	**<0.001****

One way Anova statistically significant difference (p<0.0.05), ** statistically significant difference (p<0.0.01)*

Table (7): Nurses knowledge level according to their qualifications.

Total Knowledge Level	Percentage	Qualification						P. value
		Diploma(n=70)		Technical institute(n=91)		Bachelor(n=39)		
		No	%	No	%	No	%	
Poor	<50%	51	72.86	30	32.97	10	25.64	
Fair	50-60%	13	18.57	23	25.27	19	48.72	<0.001**
Good	>60%	6	8.57	38	41.76	10	25.64	
Mean ±SD		27.11±7.72		34.54±8.05		33.82±5.29		<0.001**

*Chi –square test **statistically significant difference (p<0.0.01*
*One way Anova** statistically significant difference (p<0.01)*

Table (1): Shows demographic characteristics of the studied nurses. It observed that the total number of nurses are (200) from different hospitals, (68) nurses from Assiut University Hospitals and (132) nurses from the Ministry of Health Hospitals. As regarding age, it observed that the majority of nurses (52.3%) were between 20-< 30 years old in the ministry of health hospitals with a mean age of 32.53±6.24 years old. As regarding sex, the majority of studied nurses (55.3%) were female in the ministry of health hospitals. Regarding marital status, the majority of studied nurses (76.5%) were married from the ministry of health hospitals. The study showed that the majority of studied nurses (43.9%) were holding technical institute from the ministry of health hospitals, While years of experience in both nursing and the emergency departments, the study showed that (37.1%) in years of experience in nursing with a mean years 11.17±7.33 and (43.9%) in years of experience in the emergency department at 5-<10 years with a mean years 8.27±4.77. In addition, the table showed a statistical significant difference between the 2 hospitals groups related to sex with P value= 0.003 and the majority of nurses were (55.3%) and years of experience in the emergency department with P. value = 0.038 and the majority of nurses (43.9%) were between 5-to <10 years.

Table (2) & Figure (1): Illustrated the percentage of studied nurses with poor knowledge level was 45.5%, nurses with a fair level of knowledge were 27.5% and nurses with a good level of knowledge were 27%.

NOTE: - Poor <50% = <30.5 degrees - Fair 50-60% = 30.5 to 36.6 degrees - Good >60% = >36.6 degrees.

Table (3): This table showed that the total knowledge score regarding the disaster, disaster response, education and training of studied nurses were **61** with mean ±SD (32.32±8.16) in University hospitals group and (31.53±8.24) in The Ministry of Health hospitals group. While Knowledge about the disaster, disaster response, education and training were with mean± SD (12.65±3.32, 14.51±4.64 and 5.16±2.28) respectively in University Hospitals group and (12.37±2.94, 14.72±4.69 and 4.44±2.35) respectively in the Ministry of Health Hospitals group.

There was statistical significant difference between knowledge of studied nurses in both groups related to the definition with P. value = 0.033. Regarding knowledge about causes of disasters with P. value = 0.019, the role of the country in disaster management with P. value = 0.002 and training courses with P. value = 0.007 and scientific research with P. value = 0.018.

Table (4): Showed that (46.21%) of studied nurses had a poor level of knowledge in the Ministry of Health hospitals group and (44.12) in University hospitals group regarding disaster, disaster response, education and training of the nurses.

Table (5): Showed that there was a statistical significant difference between knowledge of studied nurses in the ministry of health hospitals group and their age groups with P. value = 0.001.

In addition, there was a statistical significant difference regarding knowledge of the studied nurses in both groups and their sex with P. value = 0.003 in University hospitals, and with P. value = 0.013 in the ministry of health hospitals group.

The table also, found that there was statistical significant difference of studied nurses knowledge and their profession with P. value = 0.005 in University hospitals, and with P. value = <0.001 in the Ministry of Health hospitals groups.

The table added that; there was a statistical significant difference between knowledge of studied nurses in The Ministry of Health Hospitals group and their experience year in nursing with P. value = <0.001.

There was a statistical significant difference regarding the level of knowledge of studied nurses and their qualifications with P. value = 0.005 in University hospitals group, and with P. value = <0.001 in the Ministry of Health Hospitals group.

Table (6): Showed that there was a statistical significant difference regarding knowledge of studied nurses in the Ministry of Health hospitals group and their age group 30-<40 years old with P. value = 0.017 as the majority of nurses (44.3%) had poor knowledge level. The table also, revealed that; there was a statistical significant difference between studied nurses; knowledge in University Hospitals group and their sex with P. value = 0.004 also, the majority of nurses (86.7%) were female and had a poor level of knowledge.

There was a statistical significant difference of knowledge of studied nurses between both hospital groups and their profession with P. value = 0.042 with the majority of nurses (75%) were technical nurses in University hospitals group and had a good level of knowledge. While the Ministry of Health hospitals group with P value = <0.001 with the majority of nurses (57.4%) holding a nursing diploma in the Ministry of Health hospitals group had a poor level of knowledge.

There was a statistical significant difference between knowledge of studied nurses in the Ministry of Health hospitals group and their experience years in nursing with P. value = 0.002 while the majority of nurses (37.7%) had a poor level of knowledge with the group of > 15 years of experience in nursing.

There was a statistical significant difference between knowledge of studied nurses in both groups and their qualifications with P. value = 0.042 while the majority of nurses (75%) were technical nurses in University hospitals group and had a good level of knowledge, and the ministry of health hospitals group with P value = <0.001 and the majority of nurses (59%) had nursing diploma with poor level of knowledge.

Table (7): Showed that nurses knowledge about the disaster, disaster response, education and training regarding their qualifications. From this table the maximum knowledge score of disaster, disaster response, education and training of the studied nurses were 61 and the mean ±SD equal 27.11±7.72 for nurses with nursing diploma, while 34.54±8.05 for nurses with technical institute and 33.82±5.29 for nurses had bachelor degree, The level of knowledge about disaster, disaster response, education and training were with mean± SD (10.37±2.7, 12.4±4.55 and 4.34±2.58) respectively and in nurses had nursing diploma, (13.41±2.79, 16.01±4.67 and 5.12±2.23) respectively. Also, in nurses having technical institute with mean ±SD were (14.03±2.23, 15.51±3.18 and 4.28±2.05) respectively regarding nurses who had bachelor degree. There was a statistical significant difference regarding level of knowledge of studied nurses in both groups related to disaster knowledge with P. value = 0.001, disaster response knowledge with P. value = <0.001 and total level of knowledge with P. value = 0.001.

Table (8): showed that there was a statistical significant difference between knowledge of studied and their qualifications with P. value = <0.001 with the majority of nurses (72.86%) holding a diploma in nursing and had a poor level of knowledge with mean ±SD = 27.11±7.72.

Discussion

Disaster occurs suddenly, so having nurses with solid disaster knowledge will save more lives. According to the investigation and analysis of the knowledge of disaster rescue and training strategies of nurses. (**(Tzeng et al., 2016).** Therefore, the present study aimed to assess emergency nurses' response toward caring of victims during disasters.

The discussion will cover the main result findings as follow

Demographic characteristics of the studied nurses

Based on the results of the present study, it was observed that the total number of nurses is (200) from different hospitals, (68) nurses from University hospital and (132) nurses from the Ministry of Health Hospitals, The majority of the nurses about half of them their age less than 30 years old, female, married and holding technical institute (diploma in nursing).

This was not in the same line with **Ponikowski et al., (2016)** who mentioned that; the administrators selected older age nurses to be able to perform tasks in the emergency units effectively.

As regarding years of experience in nursing and in emergency department it was observed that about half of them, their years of experience in nursing was around 5 to 10 years while the experience in the emergency department was around 5 to 10 years of experience.

As well, **Shorofi & Arbon, (2017)** revealed in their study that the majority of nurses working in emergency departments their ages were ranged from 20-40 years old, married, female, and had a diploma of nursing and more than half of them, their experience was more than 5 years in the emergency department.

The result was incongruent with **Baack & Alfred, (2015)** who reported that the majority of nurses who are working in ICU and emergency care had a bachelor degree in nursing.

As well, **Emergency Nurses Association, (2017)** stated that nurses with fewer years of experience may require maximum additional instructions before they are ready to take a patient assignment in one of the special units as nurses working in one clinical

specialty may need further instructions to be acquired through the training program.

Regarding the nurses' knowledge about the disaster, disaster response, education and training

The present study illustrated that majority of studied nurses had poor level of knowledge regarding disaster, disaster response, education and training.

Nurses' education experiences can enhance their positive knowledge on disaster management. The results of the survey on knowledge about disaster align with the findings of **Alrazeeni, (2015)** who mentioned that the integration of a course on disaster management in the emergency medical services (EMS) curriculum; along with practical training, will help to prepare students nurses in EMS to become better comprehend disaster management. Further, students of EMS asserted the needs of the integration of disaster management in the curriculum for the undergraduate program.

Similar findings were revealed in **Sultan et al., (2017)** study who reported that nurses' preparedness and trust regarding responses during disasters are influenced by their previous experiences, education, and training on disaster management. There was no disaster-planning program that had been approved by medical service centers at primary and hospital level, even though most of the nurses not received training about disaster management.

The findings were consistent with previous data from World Health Organization **WHO,** (**2017)**; which reported that preparedness of nurses working in primary medical services is considered a low priority **(WHO, 2017).**

Further, it was reported that nurses did not fulfill most of their roles at the optimum level associated with the lack of preparation at all associated institutions.

The findings were supported by research in the Philippines by **Labrague et al., (2016) & Oztekin et al., (2016)** who indicated that nurses were not well fully pre-pared to handle disasters because they did not understand disaster management protocol in their workplace.

Hutton et al., (2016) said that nurses who were working in the emergency unit needed additional education regarding disaster and disaster response. **Grochtdreis et al., (2016)** study showed clearly a knowledge gap among health professionals in understanding the concept of disaster and how to respond to specific disasters. Moreover, only a minority of the participants in Grochtdreis's study had received focused training on disaster preparedness and response. According to the respondents, the most valuable training topics would be communication skills, disaster m anagement, resource mobilization, health economics, and risk analysis.

Regarding the relationship between nurses knowledge level with their demographic data according to hospitals:

The result of the existing study showed that there was a statistical significant difference between knowledge of the studied nurses in the Ministry of Health hospitals group and their age group, sex, their profession, experience years in nursing and qualifications with (P. value = 0.005) in University hospitals, and the Ministry of Health hospitals groups.

This findings not compatible with **Gladston & Nayak, (2017)** who reported an opposite results of no association between age, marital status, education, and length of work on knowledge and perception of nurses preparedness in managing disasters. Levels of education and experience coupled with training on disaster response and preparedness showed significant differences in "skills" but did not have any effect on knowledge and evaluation in dealing with disasters. The findings of the research correspond to the results of the study.

Edmonson et al., (2017) stated that educational qualifications and experience of the training, and disaster management could improve disaster preparedness actions among nurses. Moreover, there was minimal evidence that education qualifications could improve cognitive ability related to emerging preparedness.

In addition, the present study revealed that there was a statistical significant difference between knowledge of studied nurses in the Ministry of Health hospitals group and their age group (30-<40 years old), technical degree of nursing education, and with a poor level of knowledge.

This agreed with **Ben-Ishay et al., (2016)** who found that participants with more than 10 years of clinical experience displayed greater self-reported scores in emergency response than nurses with less than 10 years of clinical experience. Similarly, a larger proportion of 946 nurses in mainland China with more clinical experience than without experience reported greater willingness to work in disaster relief efforts.

According to **Alzahrani & Yiannis (2017),** who found the participants readiness for disaster responses were associated with nurses who had a bachelor's degree, emergency/intensive care experience, less than 10 years of nursing experience, and military background. These findings could help nurse educators to evaluate hospital nurses' readiness to respond to a disaster and recognize significant factors that require further

training during undergraduate or continuing education.

Participants reported the highest disaster-readiness scores in clinical management, including physical assessment and equipment operation in an austere environment. However, the clinical experience of hospital nurses might not guarantee their effective performance in disaster conditions **(Yin et al., 2015).**

This study also, showed that nurses level of knowledge about disaster, disaster response, education and training was offered by qualifications, it is apparent that total knowledge score of disaster, disaster response, education and training of studied nurses were 61 with poor level of knowledge in nurses who had a nursing diploma, while good among nurses holding technical institute and bachelor degree.

In this regard, the data of the present research added that there was a statistical significant difference of knowledge among studied nurses with P. value = <0.001 as more than half of the studied nurses had a diploma in nursing and had a poor level of knowledge. This finding the same line with **Hammad, (2017)** who found the level of education had an effect on the level of knowledge among nurses in his study entitled " The lived experience of nursing in the emergency department during a disaster" which revealed that the nurses' knowledge scores about disaster were poor among the institutional nurses than who holding bachelor degree. Also, he recommends developing particular clinical knowledge and skills through expose nurses to the educational program that addresses the disaster types and how nurses could provide disaster health care.

These results might be attributed to the fact that nurses working in the research and training hospitals had much more experience both in the profession and in the emergency care unit and almost all of them had participated in the in-service training programmes.

In this respect, **Nehls et al., (2016)** mentioned that nurses must be able to expand their knowledge in this area through ongoing education, journal, and seminars. Consequently, teaching programs for nursing staff constitute an important part.

These results agreed with **Desseyn, (2017)** who found that, approximately three-quarters of the nurses who participated in the program agreed that their knowledge about emergency preparedness and disaster response were improved.

Noguchi et al., (2016) stated that for professional nurses, continuing education is essential to safe and effective nursing care.

The emergency nurse plays a critical role in all disaster phases starting from the mitigation phase and continues throughout the disaster cycle, preparedness' response and recovery. Nurses are the frontline workers to provide effective care during disaster and crisis situations **(Nakhaei et al., 2015).**

The researcher opinion; nurses need to have adequate knowledge and skills for an effective approach to respond to the critical situation especially in the disaster and catastrophic events. The amount of knowledge required to take care of victims during disaster cannot be obtained simply through experience on the unit or at the bedside **(Natareno, 2018).**

Finally, Nurses play a significant role in disaster preparedness, response, recovery and evaluation, especially in reducing vulnerability and minimizing risk in a disaster. Continuous training related to disaster management is required for all nurses, especially, emergency nurses. Training for disaster management simulation and distribution of nursing personnel in disaster areas must be considered with preparedness. Defining nurses' roles both in post-disaster preparedness and response must be taken into account with continuous training at various levels, including professional organization, governmental agencies, private organization, and the community.

Conclusion

The present study conducted that, emergency nurse's knowledge about disaster, disaster response, education and training at Assiut University hospital and the Ministry of Health hospitals over six months were poor among half of the nurses in both groups, emergency nurse's in the Ministry of Health hospitals group had a poor level of knowledge, while emergency nurse's with diploma in Assiut University hospitals group had a poor level of knowledge but the technical nurses had a good level of knowledge about the disaster, disaster response, education and training. Also there was a statistical significant difference of knowledge between the studied nurses in the both groups with (P. value = <0.001).

Recommendations

The study recommended that

1. In service training and education related to disaster response are required for all nurses' especially nurses working in the emergency department and training programs should be tailored according to the identified needs and their actual competences.
2. Furthermore interventional research can be carried out on interventional and qualitative studies focus on the same topic.

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