

Exploring Nurses' Preparedness Toward Disaster Management

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Abstract - Disaster can be defined as any event that can damage society and cause casualties, deterioration in economic status, and health services. Natural or human-made disasters can significantly affect the physical, mental, and emotional health status of affected people. Nurses are the largest workforce in the health institutes and having a critical role in managing disasters. Therefore, nurses have to be ready at any time to manage these events effectively without any delay. This study explores nurses' perceptions regarding their knowledge, skills, and preparedness for disaster management in Riyadh Region hospitals. A cross-sectional descriptive study was conducted for hospitals under the management of the general directorate of the Riyadh region's health affairs among 260 participants. Data was collected online by Emergency Preparedness Information Questionnaire (EPIQ). The overall emergency preparedness familiarity mean is (3.4846 ± 1.06), which is a medium level. It is recommended to develop comprehensive training programs to prepare nurses to face any unexpected event, provide care, and meet the needs of affected community members.

Keywords: Disaster, Nurses, Management, preparedness.

I. INTRODUCTION

Disaster can be defined as any event that can damage society, cause casualties, deterioration in economic status, and health services ⁽¹⁾ {1}. Natural or human-made disasters can significantly affect the physical, mental, and emotional health status of affected people ⁽²⁾. According to the Center for Disease Control and Prevention, recent outbreaks and incidents, natural disasters and severe weather, radiation emergencies, bioterrorism, pandemic influenza, and chemical emergencies ⁽³⁾. Disaster preparedness is defined as "the knowledge, skills, abilities and comprehensive functions required for responding to natural or man-made events and disasters" ⁽⁴⁾; health organizations and health care systems which are represented in hospitals are in the front line in managing disasters to assist the community to recover

from different disaster casualties ⁽⁵⁾. Nurses are the largest workforce in the health institutes and having a critical role in managing disasters ⁽⁶⁾. During terrorism, natural and human-made disasters, and pandemics, nurses have the main role in disaster management, including triaging, treating injured and ill individuals, and using resources effectively for all casualties. Therefore, pre-planning for such events is essential, and nurses must prepare themselves and teach preparedness as they are the largest force in the health care institutions. The disaster plan aims to ease the required actions and tasks in crisis events and deal with multiple casualties. The nurses' responsibility is to be aware of these plans, the institution's expectations, the shift commitment, and communication ⁽⁷⁾. Nurses use their knowledge and competent skills associated with critical thinking, problem-solving skills, flexibility, and adaptability to provide the highest level of care during disaster events and deal with the challenges they face ⁽⁸⁾. Disasters could happen unexpectedly at any time. Therefore, nurses have to be ready at any time to manage these events effectively without any delay. Although efforts aim to prepare nurses to manage crises, many studies have reported that they are below the required preparation limit ⁽⁹⁾. It was also reported that disaster response education is not well applied and needs more concentration for clear approval ⁽¹⁰⁾. Many disaster competencies have been developed, which caused a lack of application and poor validity. This indicates the need to create a framework and unified terminologies to accept and adapt these competency sets ⁽¹¹⁾. The literature shows that nurses need improvement in their knowledge, competency to be well prepared to manage disasters. A study that examined four hundred and seventy-four nurses in Jordan revealed that 65% of nurses described their readiness as weak. The majority wanted to expand their knowledge and skills more in disaster management ⁽¹²⁾. Furthermore, an Egyptian study aimed to assess 108 nurses and 42 physicians' familiarity and readiness to manage disasters by (EPIQ) tool. The study found the overall familiarity for nurses was (2.72+0.74){13}. Results of Disaster Preparedness



Evaluation Tool (DPET) after completion of 1341 Indonesian nurses showed that nurses are

not well prepared specifically in their roles in preparedness to cope with disasters, the ability to recover from disaster, and evaluation of disaster victims⁽¹⁴⁾. In Taiwan, a cross-sectional study was conducted to explore the readiness of hospital nurses for disaster responses; 311 nurses participated; the study showed that the majority of participated nurses reported poor readiness for disaster responses, and researchers recommended including disaster nursing training in undergraduate training and continuing education courses to help nurses improve their readiness to respond to disasters⁽¹⁵⁾.

In a cross-sectional study conducted to assess nurses' requirements in emergency preparedness in Iran, 110 ER nurses participated; EPIQ was used to assess emergency preparedness nurses' knowledge. The overall mean was 2.43 ± 1.01 ; the nurses had high familiarity in triage and first aid⁽¹⁶⁾. Nurses perceived that they have low levels of preparedness, and because of inadequate education and previous experience, their confidence decreased. A survey of 152 nurses showed that 39% of participants were not trained in disaster management, and 63% never participated in disaster response⁽¹⁷⁾. Osman (2016) explored emergency nurses and medical staff knowledge, attitude, and practice and found that they have adequate knowledge and practice with a positive attitude toward disaster management⁽¹⁸⁾. Moreover, gender and educational level, experience, disaster training were linked significantly to knowledge and practice scores.

In Saudi Arabia, the study of nurses' knowledge, attitudes, practices, and familiarity regarding disaster and emergency preparedness reported a lack of knowledge. Their attitude toward disaster preparedness was accepted. In contrast, the practice below the average, the overall familiarity was recorded nearest (2.87) to the neutral familiarity with a highly significant difference of $P \leq 0.000$ ⁽¹⁹⁾. In addition, the knowledge, practices, and attitudes regarding disaster and emergency preparedness among ER nurses were assessed, the knowledge of study participants (189) in satisfactory level, while the attitude, practice, and familiarity in natural level, the overall familiarity mean of study participants was (3.2 ± 1.3) ⁽²⁰⁾. Another study examined the military and civilian knowledge of disaster management. It showed that military nurses have more knowledge than those in other governmental hospitals, and the disaster drill impacts the acquired knowledge and skills⁽²¹⁾.

This study explores nurses' perceptions regarding their knowledge, skills, and preparedness for disaster management in Riyadh Region hospitals.

II. METHOD

A cross-sectional descriptive study was held in Riyadh hospitals under the management of the general directorate of health affairs of Riyadh region, bed capacity ranging from

50 to 200. Nurses who work in the emergency department in 34 hospitals in Riyadh Region will be the target population, and they are 793 nurses. The Raosoft Sample Size Calculator website calculates the sample size with a margin of error of 5%, confidence level 95%, response distribution 50%, and the recommended sample size 260. Nurses who work in Emergency departments had at least one year's work experience in the ER and could read and write English. The study was submitted to the IRB committee in the Ministry of Health and approved. Informed consents obtained from all the respondents for agreement about participation through an online questionnaire indicating that participation is voluntary; participants have the right to withdraw from the study if they want, and confidentiality was ensured. Emergency Preparedness Information Questionnaire (EPIQ) designed to capture nurses' familiarity and preparedness for disasters⁽²²⁾ was created online and distributed to all nursing managers with instructions to invite all ER nurses to participate in this after explaining the purpose of the study. In addition, the researcher's contact details were provided in case if there are any inquiries. SPSS v 24 was used for data analysis, descriptive and inferential.

III. RESULT

260 registered nurses participated in this study. The response rate was (66.3%) from nurses working in the emergency department, and (33.5%) working in other departments, the majority of participants were females (89.6%), (28.8%) and (30.8%) of the participant's ages were within 25-30 years and 31-35 years respectively, the majority of them were non-Saudi with a bachelor degree in nursing with experience between 5-10 years and 10-15 years, and they were rotated to all shifts (76.2%) for 8 hours per shift. Table(1).

The result in table 2. presents the nurse's familiarity with disaster preparedness. The overall emergency preparedness familiarity mean was (3.4846 ± 1.06) , and within the dimensions of EPIQ, it is clear that the triage is the highest (3.64 ± 1.17) . Isolation, decontamination, and quarantine

were (3.5938 ± 1.17) followed by Incident command system (3.50 ± 1.084) , Reporting and accessing critical resources (3.48 ± 1.14) , Psychological issues and special population (3.47 ± 1.16) , Epidemiology and clinical decision making (3.44 ± 1.15) , Communication scale and connectivity (3.38 ± 1.11) , Biological agent (3.34 ± 1.08) respectively.

In this study, the ER nurses' familiarity with disaster management was (3.58 ± 1.02) , while nurses working in other departments familiarity with disaster management was (3.28 ± 1.10) ; it was concluded that the ER nurses are significantly more familiar in managing disasters than the nurses working in other departments (0.29) by the independent t-test with CI (0.02, 0.57).

IV. DISCUSSION

This study was aiming to explore the nurses' familiarity regarding disaster management, and it has been found that nurses have a moderate familiarity in preparedness to manage disasters, which was consistent with other studies (20) (13) (16) (19).

Working	Frequency	Percent
ER	173	66.5
Others	87	33.5
Gender		
Male	27	10.4
Female	233	89.6
Age		
Less than 25 years	10	3.8
25-30 years	75	28.8
31-35 years	80	30.8
36-40 years	43	16.5
41-45 years	28	10.8
More than 45	24	9.2
Marital		
Single	102	39.2
Married	158	60.8
Nationality		
Saudi	60	23.1
Non-Saudi	200	76.9
Education		
Diploma	66	25.4
BSN	189	72.7
Master	5	1.9
Experience		
less than 1 year	13	5.0
1 - 5 years	72	27.7
5 - 10 years	63	24.2
10-15 years	76	29.2
More than 15 year	36	13.8
Shifts		
Only morning	60	23.1
Only evening	2	.8
All shifts	198	76.2
Hours		
8 hours	236	90.8
12 hours	24	9.2
Total	260	100.0

Familiarity was significantly higher among nurses who are working in the emergency department, which goes with a study that was conducted by Nofal et al. (2018) and showed

that staff who are working in the emergency department mainly in triage and first aid highest scores were in "Ethical issues in triage," "emergency preparedness terms and activities" and "decontamination" (20).

Dimensions	Mean	Std. Deviation
Incident command system	3.50	1.08
Triage	3.64	1.17
Communication scale and connectivity	3.38	1.11
Psychological issues and special population	3.47	1.16
Isolation, decontamination, and quarantine	3.59	1.17
Epidemiology and clinical decision making	3.44	1.15
Reporting and accessing critical resources	3.48	1.14
Biological agent	3.34	1.08
Overall emergency preparedness familiarity	3.48	1.06

"Triage" and "Isolation, decontamination, and quarantine" were the highest dimensions in scoring. This is related to the nursing role in emergency departments involving triaging patients follows the isolation protocols, documentation, and quarantine. In addition, this study was conducted during the COVID- 19 pandemic and nurses received educational programs related to isolation and quarantine, which may affect their score for this dimension.

The lowest scoring in this study was in the biological dimension, and the same result reported in the study of (Seyedin, Dolatabadi, & Rajabifard, 2015)⁽¹⁶⁾ and another study showed that emergency nurses lowest score was in "accessing critical resources and reporting" and "biological agents" (20). Nurses need to identify their biodefence roles related to pre-events that include risk assessment, surveillance, preparedness, education, and drills. Post-exposure events involve disaster management, triaging, casualty management, public education, panic control, counseling, and measures to lower the effect of agent spread.

V. CONCLUSION

This study indicates that continuous drills and continuous education in emergency management in hospitals are required to increase nurses' familiarity in managing disasters. In education, it is essential to integrate disaster management

with the undergraduate nursing curriculum and establish advanced nursing programs specializing in disaster management to prepare nurses qualified in this area.

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