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Level of Disaster Preparedness among Emergency Nurses in Aseer Region, KSA

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ABSTRACT

Background: Nowadays, the possibility of disaster that occurs around the world increased, and the need to adapted people and organizations to be ready is a vital part of disaster management. As a part of the healthcare organization, the preparedness of nursing staff for disaster leads to an increased level of awareness of the organization. Furthermore, nursing staff in hospitals dealing with different situations daily in the emergency department but all worlds there is no daily disaster that occurs, so preparedness if the disaster is an integral part of disaster management.

Aim: To evaluate the level of disaster preparedness among emergency nurses in the Aseer region.

Methods: Descriptive facility-based study. Data were collected by standardized, close-ended Questionnaire through direct interview and was analyzed by computer (SPSS program), Data was presented in the form of simple frequency, tables, and graphs. Statistical significance analysis will be performed

Results: The ages of the participants ranged from 20 to 50 Years old, 56% of them are females. A two-tailed samples t-test was used to compare the mean difference in Disaster knowledge between standard Disaster knowledge=3 and Disaster knowledge. The Type I error rate was set at alpha=0.05. The results suggest that the average Disaster knowledge is less than for Disaster knowledge standard, t(150)=-6.429, p=0.000. There is a significant difference between gender in variable familiar with Emergency Preparedness Terms & Activities p.value=0.019

Conclusion: Level of the disaster preparedness among nurses in Aseer region was less than the standard.

Recommendation: giving all emergency nurses courses on how to prepare and deal with disasters. These courses are continuous, and their attendance is required before working in the emergency department and adds a course on how to deal with emergencies and disasters in all health college curriculums.

Key words: Disaster preparedness, Emergency nurses, Continuous education

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INTRODUCTION

It has been widely reported that nurses worldwide play a significant role in the response to disasters and have done so since the earliest days of the profession [1]. All communities across the world could potentially be threatened

by a disaster. In 2015 alone, 99 countries were hit by natural disasters resulting in the displacement of millions of people, more than 22 000 deaths, and 70.3 billion USD (United States Dollar) worth of damage. Furthermore, these figures represent an upward trend in disasters. Given the frequency with which disasters occur and the effect they have, nurses' preparedness to respond to these events is of critical importance in reducing the negative consequences to the health of the affected population.

Despite growing initiatives to prepare nurses for any disasters, evidence suggests they are underprepared for disaster response. A disaster is unpredictable and can strike at any time and place, causing severe damage to the function and structure of local communities as well as the natural environment. The increasing frequency of disasters worldwide necessitates nurses to adequately prepare to respond to disasters to mitigate the negative consequences of the event on the affected population. Despite growing initiatives to prepare nurses for any disasters, evidence suggests they are underprepared for disaster response. According to The International Federation of Red Cross and Red Crescent (IFRC) disaster is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its resources. Though often caused by nature, disasters can have humans.

In any disaster, the health sector is mandated to act and be ready to help in causality and manage the situations everywhere, preparedness for the disaster is a complicated process regarding multifactor restraining it. The health sector in preparation of disaster requires commitment and follow up to be ready if a disaster happens, nurses as a big part and influenced part in hospitals must be ready and well prepared for disaster management, Because nurses make up the majority of the health care workforce worldwide, they will most assuredly play a pivotal role in future Disasters [2]. However, nursing staff in hospitals dealing with different situations daily in the emergency department but all worlds there is no daily disaster that occurs, so preparedness if the disaster is an integral part of disaster management. Furthermore, if nurses do not have basic core readiness, for themselves and their families, they face the quandary of whether to report for or stay at work to care for others [3].

Here in Saudi Arabia, like any country of the world need to have qualified nurses in all hospitals is vital due to the presence of the two holy mosques and the Geopolitical location of unstable parts of the world. Besides, the climate changes that might be causing natural disasters; additionally, there is a few studies or research conduct in disaster preparedness in Saudi Arabia. The level of disaster preparedness among nurses in Saudi Arabia was revealed to be moderate. This finding indicated that Saudi Arabia nurses are inadequately prepared for disaster management [4].

Notably, there is an increased risk of significant disaster that might happen either epidemic like coronavirus or missile attack, even Terrorist attacks like the attack on the security canter in Abha 2015. The nurses play a vital role in the preparedness process in part of setting the policy and raising the awareness regarding the disaster and their role, and I am quoting from [2] this description of the nursing role in properness "It is of utmost importance that nurses during this phase are involved in the discussion of surge capacity and patient care aspects of the developing disaster plan".

The research will help and improve the database of disaster management in the health sector of the Aseer region, especially. It will assist in filling the areas of problem-prone preparedness for disaster. Moreover, the result of the research will facilitate to figure of the knowledge of nurses and their reasonable level regarding the disaster preparedness plan in the region. It will contribute to the development of the policy regarding the disaster in the hospital after publishing the result and training methods in the hospital.

METHODOLOGY

Study design

The research design for this study was a descriptive -facility-based study to evaluate the level of disaster preparedness among emergency department nurses in the Aseer region.

Study area and population

This research was conducted in the ministry of health hospitals in the Aseer region, which is

twenty hospitals randomly select the following hospital according to the geographical location which including the following hospital:

- ✓ Aseer central hospital.
- ✓ Khamis Mushayt general hospital.
- ✓ Sarat Abeidah general hospital.
- ✓ Muhayl general hospital.
- ✓ Ballesmer general hospital.
- ✓ The research targeted the nurses in the emergency department.

Inclusion criteria

Nurses work in an emergency department.

Exclusion criteria

Nurses work in another department.

Sampling procedure

The hospital selected randomly from the list according to interval total hospitals were 12, randomly selected 5 from it and a total coverage was taken, the number of nurses in the emergency department in this hospital was 200 registered nurses.

Study period

Data was collected from Jun to September 2021.

Study variables

Disaster preparedness, emergency nurses, continuous education.

Data collection

Data were collected by standardized, close-ended Questionnaire through direct interview.

Data analysis and presentations

The data were analyzed by computer (SPSS program). Data were compared by using Chi–test, T-Test for equality of means was used and Data were be presented in the form of simple frequency, tables, and graphs. Statistical significance analysis will be performed to test the impact of the intervention.

Pre-test

The tools were being tested and modified accordingly.

Ethical considerations

An official letter will be taken from Taif University to approach the directors of the research administration in the Aseer region health director for permission to conduct the study and approval was taken from directors of the health in Aseer region NO: 822021.

Informed and verbal consent was taken individually from each member.

RESULTS

Distribution of the sample according to age It is noticed that the distribution of ages around the different groups is appropriate, as the highest percentage of ages from 31 to 35 amounted to 28%, then the group from 26 to 30 amounted to 23%, while the group over 50 years amounted to only 2% (Table 1).

Gender

It is noted from the gender distribution of the sample that 56% of them are females.

Experience

Years of experience, more than two groups take high distribution rates, which are the category from one year to five years at a rate of 27.6%, then the next category from 6 to 10 years 21%.

Degree

The highest distribution of degrees Bachelor Degree in Nursing 59%.

Hospital

The highest distribution of hospital is Aseer central hospital 35.5%.

Nationality

The highest distribution of nationality Saudi Arabia 63.2% and Philippine 21.1%.

It is noticed from the distribution of statistics for the familiar with Emergency Preparedness Terms & Activities in Table 2 that most of the distributions are between the neutral Very familiar with the emergency preparedness. 62.5% are receiving ongoing training regarding disaster and 63% of them from 1 to 4 times per year (Table 3). 50% of method of disaster drills is Operational or mock drills (Table 4).

Table 5 shows the ranking of the items of the variable of Disaster knowledge according to the mean statistic, so it is noted that the highest level of knowledge is represented in the (triage system during a disaster is the same as the daily triage

Table1: Personal and related characteristics of participants among nurses in Aseer region.

Item	Measures	Frequency	Percentage
Age	20-25years	22	14.50%
	26-30years	35	23%
	31-35years	43	28.30%
	36-40years	21	13.80%
	41-45years	16	10.50%
	46-50years	12	7.90%
	More than50years	3	2%
Gender	Male	66	43.40%
	Female	86	56.60%
Year of Experience	less than one year	26	17.10%
	1-5Years	42	27.60%
	6-10Years	33	21.70%
	11-15Years	24	15.80%
	16-20Years	18	11.80%
	More than20Years	9	5.90%
Degree	Diploma Degree in Nursing	48	30.60%
	Bachelor Degree in Nursing	90	59.20%
	Master Degree in Nursing	12	7.90%
	PHD Degree in Nursing	2	1.30%
Hospital	Aseer central hospital	54	35.50%
	khmis mushayt General hospital	41	27%
	Sarat Abidah General hospital	17	11.20%
	Muhayl general hospital	25	16.40%
	Ballasmer General hospital	15	9.90%
Nationality	Saudi Arabia	96	63.20%
	Philippine	32	21.10%
	Indian	22	14.50%
	Egyptian	2	1.30%

Table 2: Emergency preparedness terms & activities among nurses in Aseer region.

	Very familiar		Somewhat familiar		Familiar neutral		Somewhat not familiar		Not familiar	
	N	%	N	%	N	%	N	%	N	%
Are you familiar with Emergency Preparedness Terms & Activities?	47	30.90%	40	26.30%	35	23%	13	8.60%	17	11.20%
How familiar Are you with Incident Command System (ICS) and your role within it?	22	14.50%	36	23.70%	41	27%	23	15.10%	30	19.70%
Are you familiar with Epidemiology and Surveillance of disaster?	21	13.80%	34	22.40%	51	33.60%	20	13.20%	26	17.10%
How familiar Are you with the Decontamination process?	19	12.50%	56	36.80%	32	21.10%	26	17.10%	19	12.50%
Are you familiar with the Communication Connectivity channel?	25	16.40%	50	32.90%	30	19.70%	17	11.20%	30	19.70%
Are you familiar with Psychological Issues related to disaster?	27	17.80%	33	21.70%	41	27%	26	17.10%	25	16.40%
Are you familiar with Special Populations?	22	14.50%	43	28.30%	39	25.70%	18	11.80%	30	19.70%
Are you familiar with Accessing Critical Resources?	25	16.40%	45	29.60%	36	23.70%	21	13.80%	25	16.40%

system) statement and the lower was (Hazard identification and analysis are methods by which planners identify which events are most likely to affect a community and serve as the foundation for decision making).

The Cronbach's alpha=0.84 which is very high and it reflect good reliability of Disaster knowledge indictor. The validity statistic is high and it is equal 0.92 (Table 6).

According to the p.value of Shapiro-Wilk and normality tests which is greater than 0.05 , the distribution of variable, was normally distributed, in this case the researcher will conduct the parametric statistics t-test instead of non- parametric tests to examine the Disaster knowledge (Table 7).

In Table 8 A two-tailed one samples t-test was used to compare the mean difference in

Table 3: Disaster preparedness training among nurses in Aseer region.

				If yes, how often?		
		Value			N	%
Are you receiving ongoing training regarding disaster?	yes	N	95	1-4 Times per year	60	63%
		%	62.50%	5-9 Times per year	22	23%
				10 or More than 10	13	14%
	No	N	57			
		%	37.50%			

	Yes		No		Don 't Know	
	N	%	N	%	N	%
Are disaster drills done at your hospital?	87	57.20%	27	17.80%	38	25%
Is the disaster plan periodically updated?	75	49.30%	25	16.40%	52	34.20%

Table 4: Multiple response regarding previous participate and drills among nurses in Aseer region.

Which method of disaster drills is done? you can choose more than one option		Responses	
		N	Percent
Methods	Computer simulations	46	25.30%
	Tabletop drills	45	24.70%
	Operational or mock drills	91	50.00%
Total		182	100.00%

	Yes		No	
	N	%	N	%
Do you work for a disaster preparedness team before?	73	48%	79	52%
Do you participate in any disaster?	91	59.90%	61	40.10%

Table 5: Disaster knowledge analysis for reliability and validly among nurses in Aseer region.

Descriptive Statistics ranking for Disaster knowledge items among nurses in Aseer region					
	N	Minimum	Maximum	Mean	Std. Deviation
The triage system during a disaster is the same as the daily triage system	152	1	5	2.9803	1.13622
All type of disaster can use one triage method	152	1	5	2.8289	1.12041
As an emergency nursing staff, I read the disaster plan of my hospital.	152	1	5	2.7566	1.11579
I receive an educational program in the disaster plan of my hospital during my orientation period	152	1	5	2.6645	1.13315
The hospital has an emergency operation center familiar to the staff	152	1	5	2.6382	1.13084
The hospital disaster plan includes a clear communication channel during the disaster.	152	1	5	2.5921	1.06327
Hospital disaster plan indicate the chain of command	152	1	5	2.5263	1.08541
Triage methodologies are focused on the proper sorting and distribution of patients, either in the prehospital (field or community) or hospital (emergency department)settings.	152	1	5	2.5197	1.16784
Disaster plans clarify the role of nursing in the emergency department during disaster management	152	1	5	2.4868	1.0357
Hazard identification and analysis are methods by which planners identify which events are most likely to affect a community and serve as the foundation for decision making	152	1	5	2.3355	0.99631

Table 6: This variable described through 10.

Variables	Reliability	Validity	No of Items
Disaster knowledge	0.84	0.92	10

Table 7: Normality test for disaster knowledge statistically.

Shapiro-Wilk normality test for disaster knowledge		
Statistic	Df	Sig.
0.984	152	0.069

Table 8: T-test to compare the mean difference in disaster knowledge.

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Disaster knowledge	152	2.6329	0.70399	0.0571
	t	Df	Sig. (2-tailed)	Mean Difference
Disaster knowledge	-6.429	151	0	-0.36711

Table 9: T-Test difference between gender in disaster knowledge.

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Disaster	Male	66	2.7848	0.65286	0.08036
	Female	86	2.5163	0.72304	0.07797
		Independent Samples Test			
		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	T	Df
Disaster	Equal variances assumed	1.649	0.201	2.367	150
	Equal variances not assumed			2.399	146.023

Table 10: T-test of difference between gender in variable familiar with emergency preparedness terms and activities.

		Independent Samples Test			
		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	T	Df
Familiar with	Equal variances assumed	0.211	0.647	2.001	150
	Equal variances not assumed			2.023	145.19
		Sig. (2-tailed)	Mean Difference		
familiar with	Equal variances assumed	0.047	0.30237		
	Equal variances not assumed	0.045	0.30237		
	Gender	N	Mean	Std. Deviation	Std. Error Mean
familiar with	Male	66	3.0189	0.87849	0.10814
	Female	86	2.7166	0.95668	0.10316

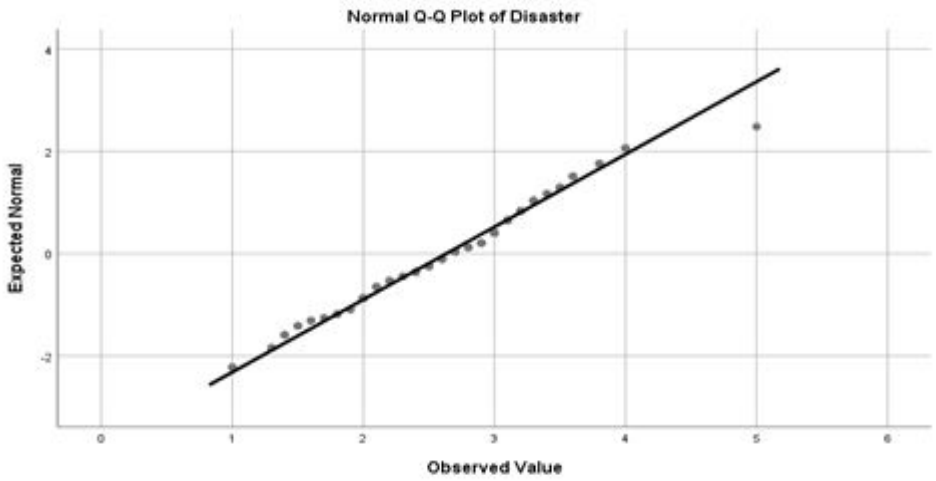

Figure 1: Noticed that all the points do not coincide with an evidence line that the variable is normally distributed.

Disaster knowledge between standard Disaster knowledge=3 and Disaster knowledge. The Type I error rate was set at alpha=0.05. The results suggest that the average Disaster knowledge is less than for Disaster knowledge standard, t(150)=-6.429, p=0.000. There is significant difference between gender in Disaster knowledge p.value=0.019 (Table 9).

There is significant difference between gender in variable familiar with Emergency Preparedness Terms & Activities p.value=0.019 (Table 10).

All the points do not coincide with an evidence line that the variable is normally distributed (Figure 1).

DISCUSSION

In the beginning, I would like to clarify that by reviewing the points of agreement and differences between previous studies, we point out that the current study agrees with previous studies in its main subject and general objective, but it differs from it in several aspects that represent the contemporary variables that this study addresses.

In our study that was prepared Evaluate the level of disaster preparedness among emergency nurses in Aseer region , it became clear with regard to ages and according to the sample, it was noted that the ages around the different groups

are appropriate, as the highest percentage of ages from 31 to 35 reached 28%, then the group from 26 to 30 amounted to 23%, while the group over 50 years amounted to 2% Jus ,and in one of the studies entitled Nurses Knowledge, attitude, practices and familiarity regarding disaster and emergency preparedness-Saudi Arabia which was in 2014 by Fatma Abdelalim, it became clear regarding age in other study show regarding the age that almost two third 67.1%at the study participate were aged between >25:30 year old with mean score of 26:36 ± 1.82 so It is clear here in my study that I fully expanded the distribution of the study to different age groups until the demographic variables are known and the study prepared clearly in order to know the age groups that need training for disaster preparedness at their different ages 25 and 36, and there are different age groups for nurses that must be prepared within the study. The findings also reveal a significant difference between the self-regulation scores in terms of age.

It is noted from the gender distribution of the sample among emergency nurses in Aseer region that 56% of them are females and 44% are males comparison in the previous study entitled Emergency Nurses Readiness for Disaster Response-An Explorative Study among Najran region which was in 2017 by Mohammed Ali Salem there were more female nurses 66% than the male nurses belong to 34% It is evident in gender here a clear convergence in the number of females in this study and the previous study,

In this study among Aseer region Years of experience, more than two groups take high distribution rates, which are the category from 1 to 5 years at a rate of 27.6%, then the next category from 6 to 10 years 21% in the previous study that I mention above among Najran region shows the work experience majority of them had 1 to 5 years of experience at a rate 49% and 6 to 10 year experience at a rate 33%, In both studies, there is a similarity in the number of years of experience, which was from one to five years, but a difference in the sampling rate in the two studies, as the current study, the average experience rate indicates 27%, and the average number of years of high experience refers to 21%, while the previous study, the average experience rate Refers to 49%, and the average number of years of experience refers to 33%, and it is clear that the rates differ, but the average experience is statistically the most in both region, This indicates the continuity of new employment, and therefore we have to target training with recent categories of experience. This is corroborated by the present study which noted that with young age the competence of the disaster management, as well as preparedness, improves given the increased exposure to disaster training and education and prior involvement in the disaster.

The findings among Aseer region have indicated that the highest educational level degrees were Bachelor Degree in Nursing 59% Compared with the findings in another study in 2019 titled A descriptive study to analyze the disaster preparedness among Saudi nurses through self-regulation survey have indicated that both Saudi and non-Saudi nurses with a diploma were more self-regulated as compared to the present study with BSN (Bachelor of Science in Nursing) so in the present study, the bachelor degree in nursing more than this previous study that Saudi and non-Saudi nurses with a diploma were may be due to a different structure which is followed for arranging their lectures or courses in terms of the parallel years.

Among Aseer region the study was distributed in five hospitals as are Ballasmer General Hospital 9.9%, Aseer Central Hospital 35.5%, Khamis Mushyate General Hospital 27%, Sarat Abidah General Hospital 11.2%, and Muhyal General Hospital 16.4% so the highest distribution of hospitals is Aseer central hospital 35.5%.

It is noticed from the distribution of statistics for the familiar with Emergency Preparedness Terms & Activities that most of the distributions are between the neutral Very familiar with the emergency preparedness. 62.5% are receiving ongoing training regarding disaster and 63% of them from 1 to 4 times per year. 50% of a method of disaster drills is Operational or mock drills.

Major of responses did not work for a disaster preparedness team before 52%. But major of them participate in any disaster 60%. Disaster knowledge analysis for reliability and validity: This variable is described through 10 items. the Cronbach's alpha=0.84 which is very high and it reflects good reliability of the Disaster knowledge indictor. the validity statistic is high and it is equal 0.92.

Also is noted that the highest level of knowledge is represented in the (triage system during a disaster is the same as the daily triage system) statement and the lower was (Hazard identification and analysis are methods by which planners identify which events are most likely to affect a community and serve as the foundation for decision making). And in another study Readiness of hospital nurses for disaster responses in Taiwan: A cross-sectional study was in 2016 by Wen-Chil Tzeng [5] their results showed that from 311 hospital nurses in Taiwan showed that they had the greatest readiness to respond to a disaster outside the hospital in terms of clinical management and the least readiness in self-protection. Overall. the majority of these hospital nurses reported poor readiness for disaster responses consistent with previous findings For 140 hospitals nurses in Australia [6]. 620 hospitals nurses in the US and 164 nurses in Hong Kong participant in our study with disaster-related training or experience in disaster response were more likely to perceive readiness for future disaster events as previously reported from Singapore. In addition, our participant's readiness for disaster responses was associated with having a bachelor's degree emergency/intensive care experience,> 10 years of nursing experience, and military background. These findings help nurse educators evaluate hospital nurses' readiness to respond to a disaster and recognize significant factors that require further training during undergraduate or continuing education.

Our participants reported the highest disaster-readiness scores in clinical management including physical assessment and equipment operation in an austere environment.

This result is likely due to the nurses in this study performing these skills during their daily practice and clinical management being traditionally included in continuing nursing education programmers. as previously reported. However, the clinical experience of hospital nurses might not guarantee their effective performance in disaster conditions. Thus multiple evaluation methods should be considered when assessing nurses' clinical knowledge and skills for disaster response [7-10].

It was clear from the current study and the previous study in Taiwan the difference in the readiness of hospital nurses to respond to disasters in that the two studies showed different rates of results, but they are similar in that they have the utmost preparedness for disaster response and clinical management. A difference in readiness rates.

It was also found that participants in the current study with disaster-related training or experience in disaster response were more likely to perceive preparedness for future disaster events as was the case in the previous study. and we can say that from the two studies, and I'm talking here about my current study and the previous study, that participants have the highest levels of disaster preparedness in clinical management, this result is likely because the nurses in this study perform these skills during their daily practice and clinical management that are traditionally included in education Continuous nursing. We emphasize that the clinical experience of hospital nurses may not guarantee their effective performance in disaster situations and therefore multiple assessment methods should be considered when assessing nurses' clinical knowledge and skills for disaster response.

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