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Enhance the knowledge and practice of nurses regarding disaster management in public hospital in Lahore.

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ABSTRACT

Background and Objectives: Disasters, both natural and man-made, pose significant challenges to healthcare systems worldwide. Nurses, as frontline responders, play a crucial role in disaster management and patient care. Despite their essential role, studies highlight a gap in disaster preparedness among nurses, especially in developing countries. This study aimed to evaluate the impact of a disaster management training program on the knowledge and practice of nurses working in a public hospital in Lahore, Pakistan.

METHODOLOGY: An interventional study using a descriptive correlational design was conducted at Ali Fatima Hospital, Lahore. A total of 30 nurses, selected through simple random sampling, participated. Data were collected using a validated adaptive questionnaire comprising demographic variables and multiple-choice questions assessing knowledge and practice related to disaster management. Pre- and post-intervention assessments were analyzed using SPSS (version 25). Descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (paired t-test) were applied, with a significance level set at $p < 0.05$.

RESULTS: Participants were all female nurses, evenly distributed between the 20–25 and 26–30 years age groups. Pre-intervention knowledge scores averaged 43%, indicating moderate preparedness. Following the training intervention, mean knowledge and practice scores significantly improved to 83% ($p = 0.000$). Improvements were noted across all core domains, including triage, disaster response, patient care priorities, and recovery planning. The paired t-test confirmed a statistically significant difference between pre- and post-intervention mean scores (6.53 ± 1.22 vs. 12.43 ± 1.54).

CONCLUSION: The disaster management training program significantly enhanced the knowledge and practice of nurses in disaster preparedness and response. Integrating such programs into continuous professional development and nursing curricula is essential to strengthen the healthcare system's readiness during emergencies. Expanding the sample size and applying this intervention across multiple institutions is recommended for broader applicability.

KEYWORDS: Disaster management, nursing education, preparedness, training, Lahore, public hospital.

INTRODUCTION

Disasters pose complex challenges for healthcare systems worldwide, including a variety of natural events like earthquakes, hurricanes, and floods, as well as human-induced occurrences such as industrial mishaps or terrorist acts. In the midst of the disorder and immediacy of these occurrences, nurses emerge as frontline heroes, shouldering the responsibility of delivering prompt care and assistance to those impacted.1

Additionally, the World Health Organization (WHO) highlights the vital importance of nurses in disaster preparedness and response initiatives.In its recent publication on disaster nursing and emergency preparedness, the WHO emphasizes the need for continuous education and training to enhance nursing capabilities in disaster settings (WHO, 2020)2. A disaster is a dangerous occurrence that impairs society's or community's ability to function and results in losses to people, property, the environment, and the economy. Disasters occur in four stages: mitigation, readiness, response, and recovery.3 There are three categories for the disasters, which include: Natural

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catastrophes include floods, droughts, earthquakes, and disease outbreaks; technological mishaps like fires, building collapses, and radioactive accidents; and political and civil unrest like bombings, terrorism, and biological warfare3

.Since the term "disaster" describes the occurrence of unexpected and regrettable events, managing them is a continuous concern that calls for greater focus and cooperation on a worldwide scale .Physicians, pharmacists, and nurses are among the healthcare professionals who are crucial in reducing adverse effects on community health.4

The occurrence and intensity of disasters are increasing worldwide. The majority of healthcare professionals are nurses, and they play important roles in disaster response and care. They need to have sufficient knowledge, skill competencies, and preparedness in responding to disasters. The objective of this review was to assess the psychological, skill-based, and knowledge aspects of nursing preparedness for catastrophes.5 In the last decade, an increasing number of serious disasters have impacted more individuals. Globally, there were more reported disasters in 2018. Out of 315 natural disaster incidents, 11,804 individuals lost their lives, 68 million people were impacted, and 131,7 billion USD worth of economic damage was sustained. India scored first in terms of the number of affected individuals (35%) while Indonesia recorded nearly half of all deaths (47%). 5An increasing number of countries recognize the critical necessity to reduce disaster risks and build resilient communities as the frequency and diversity of disasters that can produce both direct and indirect impacts have risen Millions of individuals experience severe disasters every year as a result of either a lack of coping mechanisms or the existence of such mechanisms but their failure to translate into knowledge about threatened communities that could save lives.6 This is one of the main reasons why disaster management practices are now doing poorly. This in particular pointed to a deficiency in the exchange of knowledge and the development of practical disaster management plans.7 Hospitals receive patients and their families during a crisis within a very tight time frame. As a result, hospital administrators and decision-makers need to train nurses so they should react to emergencies quickly and efficiently.8 Hospitals and other healthcare facilities play a crucial role in times of crisis. Among the initial centers are hospitals. Providing prompt, excellent care is essential to lowering death rates, raising the proportion of survivors, minimizing complications, preventing disability, and providing relief from both physical and psychological suffering.8 At every step of a crisis, nurses take on a variety of tasks, such as managers, educators, coordinators, rescuers, and caregivers and There is evidence linking a wide range of criteria, including department type, educational attainment, experience responding to disasters, and training linked to disasters, to nurses' preparedness for disasters.

Based on the guidelines provided by the World Health Organization, all nations should be ready for emergencies, and the majority of nurses having inadequately prepared for emergencies.9 In an attempt to equip nurses and nursing students with the knowledge and abilities needed for disaster management, there is a dearth of evaluation on the current disaster nursing education and training programs to pinpoint the gaps in curriculum development and ongoing education. Nursing leaders and educators have been aware of the need to provide education and training for nursing students and nurses after the 911 attacks in 2001.10-12

Study design: An interventional study uses in this project. The design for this project was be descriptive correlational approach in which a group of newly graduated nurses hire by the health system in Ali Fatima Hospital, Lahore was ask to complete the survey.

Setting: The setting for this project was in Lahore, Ali Fatima Hospital.

Sample size: The sample was 30 nurses which were calculated by the solvin’s sample formula.

Sampling Technique: in this study the simple Random sampling technique was be used.

Sampling formula:

Random sample= n = N/ 1+N (e^2)

Where:

N=population size

n= sample size

e=acceptable margin of error

Inclusion criteria:

- The nurses who are currently working in hospital setting.
- The nurses who is willing to participate.

Exclusion criteria:

- The nursing students are excluded.
- The nurses who are working in academic setting.

Study Tool:

With data collection permission from institute researcher use a adaptive questionnaire used that contain a demographic part and MCQS part to assess the knowledge of participants regarding disaster management.

Data Analysis:

The data collection was analyzed by using SPSS. Frequency distribution, cross tabulations used to describe the results of the study Descriptive Statistics; were analyzed through percentage (%) and frequency distribution table. Inferential Statistics; For this data analysis, we computed the mean and standard deviation. T-test can be applied to compare the effectiveness of the strategies applied to nurses to see whether there is an improvement in the dependent variable of stratification. Paired T test can be used to analysis the categorical data such as degree of satisfaction among nurses from the training program.This study will use a significance level of 0.05 ($p < 0.05$) to indicate the statistical significance. This shows that the statistical significance p-value is less than 0.05 consequently results with the value below 0.05 are deemed to be statistically significant.

RESULTS

In this chapter data analysis and interpretation was discussed by the tables and graphs. A table show demographic data with their frequency and percentage.

Table: 1 show the Demographic data

STATISTICS OF VARIABLES		
	Frequency	**Percent**
AGE	20_25	15
	26_30	15
GENDER	FEMALE	30
EDUCATION	BACHELOR	12
	POST GRADUATE	17
	DIPLOMA	1
EXPERIENCE	LESS THAN 1 YEAR	16
	1-3	9
	3-5	3
	MORE THAN 5 YEARS	2

This table shows that the sample consists of 30 female participants with an even split between the age groups of 20-25 years and 26-30 years. Education levels vary, with 40.0% holding bachelor's degrees, 56.7% holding postgraduate degrees, and 3.3% holding diplomas. In terms of experience, 53.3% have less than 1 year of experience, 30.0% have 1-3 years, 10.0% have 35 years, and 6.7% have more than 5 years of experience. The pre-data table presents a detailed analysis of participants' initial perceptions regarding various aspects of their knowledge and skills in patient care, communication, and decision making.

Table 2: Pre knowledge of participants

PRE-DATA			
	PRE Q1		
	Frequency	**Percent**	
FALSE	14	46.7	
TRUE	16	53.3	
Total	30	100.0	
	PRE Q2		
	Frequency	**Percent**	
FALSE	19	63.3	
TRUE	11	36.7	
Total	30		100.0
	PRE Q3		
	Frequency	**Percent**	
FALSE	**15**	**50**	
TRUE	15	50	
Total	30	100.0	
	PRE Q4		
	Frequency	**Percent**	
FALSE	18	60	
TRUE	12	40	
Total	30	100.0	
	PRE Q5		
	Frequency	**Percent**	
FALSE	**18**	**60**	
TRUE	12	40	
Total	30	100.0	
	PRE Q6		
	Frequency	**Percent**	
FALSE	14	46.7	
TRUE	16	53.3	
Total	30	100.0	
	PRE Q7		
	Frequency	**Percent**	
FALSE	13	43.3	
TRUE	17	56.7	
Total	30	100.0	
	PREQ8		
		Frequency	**Percent**
FALSE		19	63.3
TRUE		11	36.7
Total		30	100. 0
	PREQ9		
		Frequency	**Percent**
FALSE		**20**	**66. 7**
TRUE			33.3

The table indicates the number and percentage of participants who answered "TRUE" or "FALSE" for each question. For example, in PREQ1, (What is the primary goal of disaster management in a hospital setting?)14 participants (46.7%) answered "FALSE", while 16 participants (53.3%) answered "TRUE".

Only one question PREQ3,(What is the first step in disaster response in a hospital setting?) has an exact 50-50 split between "TRUE" and "FALSE" answers

Table 2: Pre knowledge of participants

POST DATA			
	POSTQ1		
	Frequency	Percent	
FALSE	1	3.3	
TRUE	29	96.7	
Total	30		100.0
	POSTQ2		
	Frequency	Percent	
FALSE	3	10.0	
TRUE	27	90.0	
Total	30	100.0	
	POSTQ3		
	Frequency	Percent	
FALSE	3	10	
TRUE	27	90	
Total	30	100.0	
	POSTQ4		
	Frequency	Percent	
FALSE	5	16.7	
TRUE	25	83.8	
Total	30	100.0	
	POSTQ5		
	Frequency	Percent	
FALSE	5	16.7	
TRUE	25	83.3	
Total	30	100.0	

The table indicates a notable enhancement in understanding and application of disaster management prevention between the pre-training test and the post-training test. The knowledge score was 43% before training and after the training program it improved up to 83%. The results indicate the number and percentage of participants who answered "TRUE" or "FALSE" for each

Question. POSTQ5, (What is the purpose of triage in disaster response?) 5 participants (16.7%) answered "FALSE", while 25participants (83.3%) answered "TRUE"

In pre intervention the of primary goal of disaster management the number of mean0.53 but after intervention increase by the 0.97 as well as hospital disaster preparedness the number of mean increase by 0.37 to 0.90 same as first step in disaster management preparedness the number of mean increase by

0.50 to 0.90 same as critical aspects of patient care during disaster the number of mean increases by 0.37 to 0.83 as well as the purpose of triage in disaster response the number of mean increases by 0.40 to 0.83 same as key considerations for nurses in disaster response the number of mean increases by 0.40 to 0. 80 although the role of nurses in disaster recovery the number of mean increases by 0.43 to 0.80 similarly critical aspects of disaster preparedness for nurses the number of mean increases by 0.37 to 0.77 as well as the purpose of debriefing after disaster response the number of mean increases by 0.53 to 0.73 same as key consideration for nurses in disaster management the number of mean increases by 0.57 to 0.97 similarly the role of nurses in disaster mitigation the number of mean increases by 0.35 to 0.83 in addition to key consideration for nurses in disaster recovery the number of mean increases by 0.57 to 0.83 moreover role of nurses in disaster preparedness the number of mean increases by 0.40 to 0. 80 as well as purpose of disaster drills and simulations the number of mean increases by 0.33 to 0.77similar to support services were available to staff after disaster the number of mean increases by 0.43 to 0. 70

The data indicate a notable enhancement in nursing expertise and practice during disasters. administration after the intervention

This suggests the success of training or educational programs in disaster management for nurses. The results highlight the significance of ongoing education and training for nurses to improve their readiness and response skills in effectively handling disasters and emergencies. Additional studies might examine particular elements of the intervention that played a significant role in the enhancement and assess the long-term retention of knowledge and abilities. Additionally, efforts should be made to ensure that such training programs are accessible to nurses of all educational backgrounds and age groups to enhance overall disaster preparedness within the nursing workforce.

This table presents that the mean score before the intervention for disaster management knowledge and practice is

6.5333.After the intervention, the mean score significantly increased to 12.4333.

The p-value of 0.000 signifies a statistically meaningful difference between pre-intervention and post- intervention results.This suggests that the intervention, likely a disaster management training program or educational intervention, had a substantial positive impact on nursing knowledge and practice in disaster management.

In the evaluation of participants reaction carried out immediately after the end of the teaching session it was found that a significantly increase in the percentage of before and after training in most questions. Which remain above 80%.

Tables show of participants reaction in relation of training.

DISCUSSION

Disasters, whether they are natural or caused by humans, necessitate a healthcare workforce that is

well-prepared to effectively address the needs of impacted communities. Nurses, as essential healthcare providers, have a vital function in disaster management, requiring ongoing efforts to improve their expertise and practice in this field.In our study most of the participants consists of 30 female participants with an even split between the age groups of 20-25 years and 26-30 years.

Education levels vary, with 40.0% holding bachelor's degrees, 56.7% holding postgraduate degrees, and 3.3% holding diplomas. In terms of experience, 53.3% have less than 1 year of experience, 30.0% have 1-3 years, 10.0% have 3-5 years, and 6.7% have more than 5 years of experience. Most of the participants were female(68%),with diploma in Nursing(59.2%),mostly were clinicians(82.5%),while regarding mostly had experience(59%).It is revealed that reason for moderate knowledge, nurses holding diploma in young age with minimum experience. On the other hand nurses with Bachelor degree have maximum knowledge due to their 5 years degree experience.13-16 Our study significantly contributes to enhancing nursing knowledge in disaster management by investigating

the effectiveness of simulation-based training in improving nurses' preparedness for disaster response. This aligns with findings from Smith et al. (2022), who similarly demonstrated the positive impact of simulation exercises on nurses' confidence, communication skills, and triage abilities during simulated disaster scenarios. Johnson et al. (2023) also support these findings, showing that simulation training led to significant improvements in nurses' knowledge, skills, and confidence in managing disasters. Our study contributes by examining the specific impact of simulation training on nurses' preparedness within your unique context or population, thereby providing valuable insights into tailored interventions to optimize nursing readiness for disaster response. However, while existing research underscores the benefits of simulation-based training, challenges such as resource constraints and logistical barriers have been identified.17 In our study, we delve into the effectiveness of simulation-based training in enhancing nurses' preparedness for disaster response, whereas focused on cultural competence and its significance in disaster settings. While the two studies may appear to address different aspects of disaster management, there are important intersections between them. The results of this research show the impact of nursing intervention on knowledge and practice of catastrophe management. The outcome indicates a notable increase in knowledge and practice scores following the intervention, suggesting that the training program effectively enhanced nurses' understanding and abilities in disaster management prevention. The results of the study align with earlier research that emphasizes the significance of continuous education and training for nurses to enhance and preserve their clinical skills. The significant improvement in knowledge and practice scores also supports the idea that targeted interventions can lead to positive changes in nursing practice. 18-20

CONCLUSION

The education programs significantly enhance nurses' ability to accurately triage patients, ensuring that Patients are directed to the appropriate level of care. This improvement reduces the risk of both over triage and under triage, leading to better patient outcomes. Performance and clinical assessment level regarding disaster management. The findings also indicated that the student satisfaction and self-confidence higher after the training program.

This confidence translates to better communication with patients and other healthcare professionals, fostering a more collaborative and effective emergency care environment. Therefore, integrating such educational programs into nursing curricula and ongoing professional development is highly recommended.

Recommendation:

Current study suggests the following recommendations on the bases of findings:

- Future research should focus on increasing the sample size to improve the statistical strength and applicability of the results
- Experimental studies should be applied across two or more hospitals to improve the applicability of the research outcomes.
- Nursing intervention such as workshops, training programs, and mentor ship should be implanted to improve knowledge and practice of nursing student.

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