

Assessment of Preparedness Regarding Disaster Management Among Nurses

Rani Saba Kanwal^{*1}, Sonia Saleem¹, Rimsha Saleem², Adeel Nouman¹

¹Department of Nursing, Medicare College of Nursing Multan, Pakistan

²Department of Nursing, Chaudhry Pervaiz Elahi Institute of Cardiology, Multan, Pakistan

*Corresponding author's email address: drkash226@gmail.com

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Abstract: Nurses are pivotal in disaster preparedness and response, especially in tertiary care settings where timely and effective intervention is critical. Evaluating their readiness is essential to developing targeted strategies for emergency preparedness. **Objective:** To assess the preparedness of tertiary care nurses regarding disaster management. **Methods:** A cross-sectional study was conducted at the Nursing Department of Medicare Hospital, Multan, from February 2024 to February 2025. A total of 100 registered nurses employed permanently at the hospital were enrolled. Data were collected using a structured questionnaire based on a modified version of the Disaster Preparedness Evaluation Tool, comprising 46 items rated on a six-point Likert scale (1 = strongly disagree to 6 = strongly agree). The tool assessed three core dimensions: knowledge, mitigation, response, and evaluation. Statistical analysis was performed using SPSS version 25, and $p \leq 0.05$ was considered significant. **Results:** The study found that prior training did not significantly improve disaster preparedness knowledge ($p = 0.783$) or evaluation ($p = 0.293$). However, training was significantly associated with enhanced emergency response skills ($p = 0.027$). The inter-dimension correlation coefficient was high ($r = 0.92$), indicating internal consistency. The mean score for the 25 items related to general knowledge, management skills, and family preparedness was 3.08. The score for 15 items on patient-related knowledge and skills was 2.49, while the score for the six items related to evaluation was 2.50. **Conclusion:** The study revealed inadequate disaster preparedness among tertiary care nurses, despite the region's vulnerability to natural disasters. Continuous education and hands-on training programs are necessary to enhance their readiness and response capabilities.

Keywords: Disasters, Emergencies, Knowledge, Nurse

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Introduction

Staying resilient and mitigating the risk of mortality is the top priority of hospital staff in the event of any natural hazard. According to a 2022 report by the Red Cross Association, floods (50.7%), storms (20.5%), earthquakes (9.3%), droughts (6.2%), and landslides (5.3%) have been identified as the deadliest natural hazards globally (1). Among these disasters, 42.6% took place in Asia, and in Pakistan, the primary hazard was floods, resulting in over 1700 fatalities (2).

Pakistan is prone to natural disasters as it is located at the convergence of the Indian and Eurasian tectonic plates. Earthquakes and landslides are frequent in the Himalayan region, whereas the monsoon season often ends in floods. However, a review of the literature shows that 80% of Pakistani nurses are not prepared to handle disastrous situations, and 55% are not aware of protocols to follow (3). In comparison to this, a 45% preparedness rate was reported in Australian nurses and 44% in American nurses (4). Studies have reported that continuing education and training are significantly helpful in improving the knowledge and readiness of nurses in disasters (5).

This study was conducted to assess the preparedness of tertiary care nurses regarding disaster management.

Methodology

A cross-sectional study was conducted in the Nursing Department of Medicare Hospital, Multan, from February 2024 to February 2025. One hundred registered nurses working as permanent employees in the hospital were selected for the study. Students and nurses on an internship were excluded. All participants consented to participate in the study, which the hospital's ethical committee approved.

A survey questionnaire was conducted to collect the data through a modified Disaster Preparedness Evaluation Tool version. The questionnaire had three parts to measure preparedness, mitigation, response, and evaluation. Cronbach's alpha of 0.882, 0.938, and 0.937, respectively, tested the internal consistency and reliability of the questionnaire. The questionnaire contained 46 items that could be on a Likert scale from 1 to 6, with one being strongly disagree and six being strongly agree.

All data were analyzed using SPSS version 24. One-way ANOVA and the student's t-test were used to evaluate data. The Kolmogorov-Smirnov test checked data normalcy. A p-value of 0.05 or less was considered significant.

Results

The study's response rate was 100%. Among the 100 nurses included, 70 (70%) were women, and 55 (55%) were aged between 26 and 32. 70 (70%) nurses had a bachelor's degree, and 50 (50%) had 11-15 years' experience. Lastly, 95 (95%) had previously received training regarding emergency management (Table I).

Table II shows that gaining training knowledge was not associated with greater preparedness for disaster ($p=0.783$) or evaluation ($p=0.293$). On the other hand, training was significantly associated with skills for emergency coping ($p=0.027$). The inter-dimension correlation score was 0.92, with a knowledge score of 0.898, a skills score of 0.886, and an evaluation score of 0.794 (Table III).

The questionnaire score for 25 items related to knowledge, management skills, and family preparedness was 3.08. The score for 15 items related to patients' knowledge and skills was 2.49, and the last six scored 2.50.



Table 1: Demographic and Employment Details

Dimensions	N (%)
Age	
21-25	25 (25%)
26-32	55 (55%)
33-37	5 (5%)
38-44	5 (5%)
45-50	5 (5%)
51-56	5 (5%)
Gender	
Male	20 (20%)
Female	80 (80%)
Qualification	
Diploma	30 (30%)
Bachelors	70 (70%)
Experience	
Less than 5 years	35 (35%)
5-10 years	50 (50%)
11-15 years	3 (3%)
16-20 years	4 (4%)
21-25 years	2 (2%)
26-30 years	3 (3%)
More than 30 years	3 (3%)
Previous training in emergency or disaster management	
Yes	95 (95%)
No	5 (5%)

Table 2: Results of Disaster Preparedness Evaluation Tool

	F	SD	t	P value
Knowledge	0.559	9.495	0.287	0.783
Skills	2.773	5.450	2.471	0.027
Evaluation	0.005	3.900	1.123	0.293

Table 3: Association between Dimensions of Disaster Preparedness

	Mean	Variance	SD	Score
Knowledge	124.06	205.164	12.183	0.898
Skills	75.27	258.875	9.746	0.886
Evaluation	29.81	470.510	5.532	0.794

Discussion

This study was conducted to assess the preparedness of tertiary care nurses regarding disaster management. The results revealed a low preparedness score of 3.08, an ability of recovery score of 2.49, and a skills for evaluating victims score of 2.50. These factors were not influenced by age or experience. The results are similar to those of Aykan et al, who also showed a negative correlation between disaster management skills and age. (6) Tas et al reported no effect of demographics such as age, social status, qualification, and experience on knowledge and readiness to handle emergencies (7).

However, higher qualifications, more years of experience, and more training were associated with better skills for coping with disasters, while knowledge and evaluation remained unaffected. Emaliyawati et al also concluded that education and training experience enhance disaster management skills (8). Baker also suggested including disaster management courses in the nursing curriculum, followed by practical education to add to the experience of emergency medical services (EMS) (9).

It has been previously reported that Pakistani nurses are not equipped and prepared to handle natural disasters, and there is no official disaster

management program in the health institution; our findings are consistent with this. A report by WHO also informed that nurses in primary care facilities are not actively involved in preparing for a disaster and receiving relevant training, resulting in a lack of their duties. Philipppians studies back these findings, but Chinese and Taiwanese studies contradict it (10-13).

The low evaluation score indicated that nurses were unaware of their role in an emergency, as they lacked the skills to identify the symptoms of the victims and did not have the training to deal with individuals with PTSD. Nishikawa et al also reported that the Japanese nurses were unable to manage victims in the disaster unit effectively (14). Another study also showed that in the event of emergencies, nurses do not perform their best and take more than average time to evaluate victims (15).

Conclusion

Despite the frequency of natural disasters in the region, nurses' preparedness for disaster management is low. Nurses should receive continued education and training to enhance their skills for emergencies.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-MMN-0377-23)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

RSK (Post Rn),

Manuscript drafting, Study Design,

SS ((Post Rn)

Review of Literature, Data entry, Data analysis, and article drafting.

RS (Charge Nurse)

Conception of Study, Development of Research Methodology Design,

AN (Lecturer)

Study Design, manuscript review, and critical input.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

References

1. Schwitter M. The International Federation of Red Cross and Red Crescent Societies is facing climate change. 2022.
2. Alied M, Salam A, Sediqi SM, Kwaah PA, Tran L, Huy NT. Disaster after disaster: the outbreak of infectious diseases in Pakistan in the wake of the 2022 floods. *Annals of Medicine and Surgery*. 2024;86(2):891-898.
3. Almukhlifi Y, Crowfoot G, Wilson A, Hutton A. Emergency healthcare workers' preparedness for disaster management: an integrative review. *Journal of Clinical Nursing*. 2021.
4. Ituma OW, Ranse J, Bail K, Hutton A. Disaster education for Australian nursing students: An integrative review of published literature to inform curricula. *Collegian*. 2022;29(1):93-99.
5. Songwathana P, Timalisina R. Disaster preparedness among nurses of developing countries: an integrative review. *International emergency nursing*. 2021;55:100955.
6. Aykan EB, Fidancı BE, Yıldız D. Assessment of nurses' disaster preparedness. *International Journal of Disaster Risk Reduction*. 2022;68:102721.
7. Tas F, Cakir M. Nurses' knowledge levels and disaster preparedness: A systematic review. *International journal of disaster risk reduction*. 2022;80:103230.
8. Emaliyawati E, Ibrahim K, Trisyani Y, Mirwanti R, Ilhami FM, Arifin H. Determinants of nurse preparedness in disaster management: a cross-sectional study among the community health nurses in coastal areas. *Open access emergency medicine*. 2021:373-379.
9. Baker OG. Preparedness assessment for managing disasters among nurses in an international setting: Implications for nurses. *International emergency nursing*. 2021;56:100993.
10. Ying W, Yu L, Mingfeng Y, Hui W, Chaohua P, Xinying N, et al. Disaster preparedness among nurses in China: a cross-sectional study. *Journal of Nursing Research*. 2023;31(1):e255.
11. Chegini Z, Arab-Zozani M, Kakemam E, Lotfi M, Nobakht A, Aziz Karkan H. Disaster preparedness and core competencies among

emergency nurses: A cross-sectional study. *Nursing open*. 2022;9(2):1294-1302.

12. Tuquero BNG, Tan RNG, Tango GJG, Tinasa KRC, De Leon Torres AI, Torres ASE, et al. Select Demographic Data, Disaster-Related Experience, and Disaster Attitudes as Predictors of Disaster Preparedness Among Student Nurses: A Descriptive Correlational Study. *Public Health Nursing*. 2025.

13. Lin C-H, Tzeng W-C, Chiang L-C, Lee M-S, Chiang S-L. Determinants of nurses' readiness for disaster response: A cross-sectional study. *Heliyon*. 2023;9(10).

14. Nishikawa A, Yamaguchi T, Yamada Y, Urata H, Shinkawa T, Matsunari Y. How do disaster relief nurses in Japan perceive and respond to risks? A cross-sectional study. *Nursing Reports*. 2023;13(4):1410-1420.

15. Kanzaki H, Konno R, Fujii K, Nishimura A. Experience of Nurses Providing Care at Shelters After Natural Hazards and Disasters: A Qualitative Systematic Review. *Journal of Nursing Research*. 2025;33(2):e386.



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