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KNOWLEDGE, ATTITUDE AND PRACTICE OF NURSES ABOUT DISASTER MANAGEMENT IN MAYO HOSPITAL, LAHORE, PAKISTAN

Original Research

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ABSTRACT

Background: Disaster preparedness is an essential component of hospital-based healthcare systems, particularly for nursing staff who serve on the frontline during emergency situations. The increasing frequency of both natural and man-made disasters necessitates the development of effective knowledge, attitude, and practice (KAP) among healthcare professionals. Despite the vital role of nurses, gaps in disaster readiness continue to hinder optimal response, especially in resource-constrained healthcare settings.

Objective: To assess the knowledge, attitude, and practice regarding disaster management among staff nurses at Mayo Hospital, Lahore, and to examine the association with demographic variables such as age, gender, and experience.

Methods: This descriptive cross-sectional study was conducted at Mayo Hospital, Lahore, in March 2024. A total of 200 nurses were recruited using a convenient sampling technique. Inclusion criteria required participants to have a minimum of two years of professional experience. Data were collected through a validated self-structured questionnaire comprising 15 knowledge, 14 attitude, and 14 practice items, assessed using a 5-point Likert scale. Descriptive and inferential statistics were performed using SPSS version 21, with results presented as means, standard deviations, frequencies, and percentages.

Results: Out of 200 participants, 53% were female and 47% male. The mean knowledge score was 3.1 (SD ±1.6), attitude score was 3.0 (SD ±1.4), and practice score was 4.0 (SD ±1.2). Female nurses showed higher average knowledge (3.3 vs. 2.9), attitude (3.2 vs. 2.8), and practice scores (4.2 vs. 3.6) compared to males. Nurses with over 3 years of experience had the highest KAP scores. Age and experience were positively associated with better disaster preparedness.

Conclusion: While practice levels were relatively strong, knowledge and attitudes toward disaster preparedness were suboptimal. Structured educational programs and practical training must be prioritized to strengthen disaster response readiness among nurses.

Keywords: Attitude, Disaster Planning, Emergency Preparedness, Health Knowledge, Hospitals, Nursing Staff, Risk Management.

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INTRODUCTION

Disasters, whether natural or man-made, exert a profound impact on human life, infrastructure, health systems, and national economies, often resulting in significant losses for both governments and citizens (1,2). Global data have repeatedly highlighted the disproportionate burden borne by certain regions. According to the World Disasters Report 2015, Asia alone accounted for nearly 48% of global disasters in 2014, with 94 countries affected (3). More recently, the 2022 World Disasters Report by the International Federation of Red Cross and Red Crescent Societies underscored the critical importance of disaster preparedness, response, and recovery, especially in the context of public health emergencies, drawing heavily from the global experience with the COVID-19 pandemic (4). Disasters can arise from various sources—natural events such as floods, earthquakes, storms, droughts, and disease outbreaks; scientific or technological incidents such as structural failures, explosions, and radiation leaks; or civil and political crises including terrorism, strikes, and biological warfare (5,6). These events test the resilience of healthcare systems and demand coordinated responses, particularly from frontline health workers. Nurses, forming the backbone of most healthcare responses, must be integrated into all phases of disaster planning due to their essential role during emergencies (7). However, stark disparities exist between developed and developing nations in terms of disaster recovery. While developed countries are better equipped to restore infrastructure and services, underdeveloped regions often struggle due to inadequate preparedness funding, lack of emergency protocols, and limited trained personnel (8).

Pakistan, in particular, has experienced increased exposure to a wide array of natural and anthropogenic disasters over the last 15 years, especially in the northern regions and Sindh province. These include floods, earthquakes, epidemics, and infrastructure collapses (9). Despite the critical importance of nurses in such scenarios, there remains a significant gap in their training and preparedness for disaster response. Many studies have pointed out deficiencies in knowledge and practical skills among healthcare staff, underscoring the need for institutional efforts to strengthen disaster education and routine drill implementation (10-12). Nurses need to be not only aware of the fundamental principles of disaster management, including risk identification and rapid response, but also capable of following leadership protocols and managing uncertainty with competence (13). This study is designed to assess the knowledge, attitudes, and practices related to disaster management among staff nurses at Mayo Hospital, Lahore. By exploring how demographic variables such as age, education, and experience influence preparedness, the study aims to inform strategies that can enhance hospital responsiveness and healthcare system resilience in times of crisis.

METHODS

This descriptive cross-sectional study was carried out at Mayo Hospital, Lahore, Pakistan, in March 2024. The research aimed to evaluate the knowledge, attitudes, and practices of nurses regarding disaster management. A convenient sampling technique was employed to recruit a total of 200 participants from the hospital's nursing staff. Eligible participants included regular trained nurses (RNs), general nurses holding a three-year nursing diploma, and specialist nurses with more than two years of professional experience who voluntarily agreed to participate. Individuals who did not consent, as well as nursing students, head nurses, and paramedical staff, were excluded to maintain the study's focus on frontline clinical nursing staff. Prior to data collection, participants were provided with detailed explanations regarding the study's purpose, and written informed consent was obtained from all respondents. Confidentiality of the data was assured, and ethical considerations were fully addressed in accordance with the institutional ethical guidelines. The study adhered to ethical research standards throughout the process. A self-structured questionnaire was developed as the primary data collection tool, and its content validity was established through expert review. Educational lectures were prepared and delivered to enhance participants' understanding of disaster-related topics and to minimize potential misinterpretation of questions. The questionnaire comprised three sections, covering 15 questions on knowledge, 14 on attitude, and 14 on practices related to disaster management. The Performa used was designed to be clear, accessible, and aligned with the objectives of the study. Data were analyzed using SPSS version 21. Descriptive statistics were applied to summarize the data. Frequencies and percentages were used for categorical variables, while means and standard deviations were calculated for continuous variables to provide a comprehensive overview of the respondents' demographic profiles and survey responses.

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RESULTS

A total of 200 nurses participated in the study. The gender distribution revealed that 53% (n=106) were female, and 47% (n=94) were male. Regarding age, the majority of participants (35.5%, n=71) were between 19 and 21 years, followed by 33% (n=66) aged 25 years or older, and 31.5% (n=63) aged between 22 and 24 years. Most participants were married (68.5%, n=137), while 31.5% (n=63) were unmarried. The analysis of work experience showed that 28% (n=56) had less than one year of experience, 27% (n=54) had 1–2 years, 23.5% (n=47) had 2–3 years, and 21.5% (n=43) had over three years of experience. Knowledge assessment based on a 5-point Likert scale revealed a mean score of 3.1 with a standard deviation of 1.6, indicating neutral to slightly positive knowledge and considerable variability among participants. Notably, only 17.5% strongly agreed that disaster management is an essential part of healthcare, while 18% strongly disagreed. Only 23.5% reported being able to identify three common disaster types, and 20.5% strongly agreed with familiarity about their hospital's disaster plan. However, 24.5% demonstrated confidence in triage identification, and 21.5% agreed they understood patient triage in mass casualty events. The least agreement was noted in hospital-specific knowledge and clarity on preparedness components.

Attitudes towards disaster management reflected a mean score of 3.0 with a standard deviation of 1.4, indicating moderate variability. Only 21.5% strongly agreed that disaster management is crucial, and 23.5% agreed that disaster training is essential. Regarding teamwork and emotional support, only 24% strongly agreed that staff collaborate well during disaster response. A similar percentage agreed that disaster-related training and psychosocial measures were necessary, although many responses remained neutral or varied.
Practice-related findings showed a more positive tendency with a mean score of 4.0 and standard deviation of 1.2. Approximately 22.5% of nurses regularly participated in drills, while 23.5% agreed their roles during drills were clearly defined. Familiarity with emergency equipment was moderate, with 23.5% agreeing they knew the location and use of tools. Confidence in evacuation procedures was confirmed by 21% of respondents. However, documentation practices during disasters showed inconsistency, with only 20% strongly agreeing about accuracy and adequacy of records. While 18% reported giving feedback on disaster management processes, 20.5% stressed the need for continuous improvements in hospital disaster planning. The analysis revealed statistically meaningful trends in knowledge, attitude, and practice (KAP) scores across demographic categories. Female nurses demonstrated higher average scores across all domains, with a mean knowledge score of 3.3 compared to 2.9 in males, an attitude score of 3.2 versus 2.8, and a practice score of 4.2 compared to 3.6. In terms of age, participants aged over 25 exhibited the highest levels of disaster management competence, showing knowledge, attitude, and practice means of 3.2, 3.1, and 4.1 respectively. Work experience also showed a positive association, as those with more than three years of experience recorded the highest scores in all categories (knowledge: 3.3, attitude: 3.3, practice: 4.2), compared to lower scores in those with less than one year.

Table 1: Description of Demographical profile

Variables	Number%
Gender	
Female	106 (53%)
Male	94(47%)
Age (Years)	
19 - 21	71 (35.5%)
22 - 24	63 (31.5%)
>25	66 (33.0%)
Marital Status	
Married	137 (68.5%)
Unmarried	63 (31.5%)
Work Experiences (years)	
< 1	56 (28.0%)
1-2	54 (27.0%)
2-3	47 (23.5%)
>3	43 (21.5%)

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Table 2: Description of Knowledge regarding of Disaster management of study participants

Questions	Scale	N	%
Disaster management is an essential part of healthcare.	Strongly Disagree	36	18
	Disagree	38	19
	Neutral	43	21.5
	Agree	48	24
	Strongly Agree	35	17.5
I can list three types of disasters commonly encountered in healthcare settings.	Strongly Disagree	28	14
	Disagree	38	19
	Neutral	44	22
	Agree	43	21.5
	Strongly Agree	47	23.5
The key components of disaster preparedness are clear to me.	Strongly Disagree	44	22
	Disagree	48	24
	Neutral	39	19.5
	Agree	36	18
	Strongly Agree	33	16.5
Hospital-specific Knowledge.	Strongly Disagree	45	22.5
	Disagree	32	16
	Neutral	42	21
	Agree	41	20.5
	Strongly Agree	40	20
I am familiar with the hospital's current disaster management plan.	Strongly Disagree	36	18
	Disagree	34	17
	Neutral	43	21.5
	Agree	46	23
	Strongly Agree	41	20.5
I understand the roles and responsibilities of nurses in the event of a disaster.	Strongly Disagree	33	16.5
	Disagree	33	16.5
	Neutral	54	27
	Agree	44	22
	Strongly Agree	36	18
Disaster drills are conducted with sufficient frequency	Strongly Disagree	39	19.5
	Disagree	40	20
	Neutral	29	14.5
	Agree	50	25
	Strongly Agree	42	21
Identification and Triage.	Strongly Disagree	42	21
	Disagree	28	14
	Neutral	42	21
	Agree	39	19.5
	Strongly Agree	49	24.5
I am confident in my ability to identify patients accurately during a disaster.	Strongly Disagree	33	16.5
	Disagree	42	21
	Neutral	38	19
	Agree	44	22
	Strongly Agree	43	21.5

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Questions	Scale	N	%
I understand the principles of patient triage in a mass casualty incident.	Strongly Disagree	43	21.5
	Disagree	41	20.5
	Neutral	39	19.5
	Agree	35	17.5
	Strongly Agree	42	21
Triage plays a crucial role in disaster situations.	Strongly Disagree	41	20.5
	Disagree	35	17.5
	Neutral	41	20.5
	Agree	54	27
	Strongly Agree	29	14.5
Communication and Coordination.	Strongly Disagree	36	18
	Disagree	45	22.5
	Neutral	37	18.5
	Agree	39	19.5
	Strongly Agree	43	21.5
The communication channels during a disaster are effective.	Strongly Disagree	45	22.5
	Disagree	34	17
	Neutral	43	21.5
	Agree	42	21
	Strongly Agree	36	18
Coordination between different departments during a disaster is well-managed.	Strongly Disagree	43	21.5
	Disagree	32	16
	Neutral	36	18
	Agree	44	22
	Strongly Agree	45	22.5
Effective communication with patients and their families is a priority during a disaster.	Strongly Disagree	41	20.5
	Disagree	43	21.5
	Neutral	35	17.5
	Agree	37	18.5
	Strongly Agree	44	22

Table 3: Description of Attitude regarding Disaster management of study participants

Questions	Scale	N	%
Disaster management is a crucial aspect.	Strongly Disagree	44	22
	Disagree	50	25
	Neutral	35	17.5
	Agree	28	14
	Strongly Agree	43	21.5
Disaster management training is essential for all staff nurses.	Strongly Disagree	45	22.5
	Disagree	39	19.5
	Neutral	36	18
	Agree	47	23.5
	Strongly Agree	33	16.5
Self-Efficacy.	Strongly Disagree	36	18
	Disagree	36	18
	Neutral	41	20.5

Questions	Scale	N	%
	Agree	44	22
	Strongly Agree	43	21.5
I am confident in my ability to perform effectively during a disaster.	Strongly Disagree	37	18.5
	Disagree	36	18
	Neutral	49	24.5
	Agree	45	22.5
	Strongly Agree	33	16.5
My skills contribute significantly to the overall disaster preparedness.	Strongly Disagree	29	14.5
	Disagree	39	19.5
	Neutral	45	22.5
	Agree	44	22
	Strongly Agree	43	21.5
Teamwork	Strongly Disagree	43	21.5
	Disagree	39	19.5
	Neutral	37	18.5
	Agree	33	16.5
	Strongly Agree	48	24
The staff collaborates well during disaster situations.	Strongly Disagree	48	24
	Disagree	37	18.5
	Neutral	33	16.5
	Agree	41	20.5
	Strongly Agree	41	20.5
I feel supported by my colleagues in the event of a disaster.	Strongly Disagree	46	23
	Disagree	31	15.5
	Neutral	39	19.5
	Agree	44	22
	Strongly Agree	40	20
Training and Education.	Strongly Disagree	31	15.5
	Disagree	36	18
	Neutral	35	17.5
	Agree	51	25.5
	Strongly Agree	47	23.5
I am satisfied with the level of disaster management training provided to me.	Strongly Disagree	42	21
	Disagree	45	22.5
	Neutral	41	20.5
	Agree	35	17.5
	Strongly Agree	37	18.5
Continuous education on disaster management is necessary for all staff nurses.	Strongly Disagree	46	23
	Disagree	41	20.5
	Neutral	41	20.5
	Agree	40	20
	Strongly Agree	32	16
Psychosocial Considerations.	Strongly Disagree	40	20
	Disagree	41	20.5
	Neutral	33	16.5
	Agree	58	29
	Strongly Agree	28	14

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Questions	Scale	N	%
Emotional well- being of patients is adequately addressed during a disaster.	Strongly Disagree	35	17.5
	Disagree	42	21
	Neutral	35	17.5
	Agree	55	27.5
	Strongly Agree	33	16.5
Measures to support the mental health of staff in the aftermath of a disaster are in place.	Strongly Disagree	39	19.5
	Disagree	33	16.5
	Neutral	46	23
	Agree	41	20.5
	Strongly Agree	41	20.5

Table 4: Description of practice regarding of Disaster management of study participants

Questions	Scale	N	%
I participate regularly in disaster drills.	Strongly Disagree	43	21.5
	Disagree	38	19
	Neutral	34	17
	Agree	40	20
	Strongly Agree	45	22.5
My role and responsibilities during disaster drills are clearly defined.	Strongly Disagree	34	17
	Disagree	41	20.5
	Neutral	42	21
	Agree	47	23.5
	Strongly Agree	36	18
Equipment Familiarity	Strongly Disagree	36	18
	Disagree	35	17.5
	Neutral	46	23
	Agree	42	21
	Strongly Agree	41	20.5
I am familiar with the location and use of equipment in the department.	Strongly Disagree	34	17
	Disagree	34	17
	Neutral	47	23.5
	Agree	38	19
	Strongly Agree	47	23.5
Supplies and equipment are regularly checked.	Strongly Disagree	34	17
	Disagree	41	20.5
	Neutral	38	19
	Agree	43	21.5
	Strongly Agree	44	22
Patient Evacuation	Strongly Disagree	42	21
	Disagree	37	18.5
	Neutral	38	19
	Agree	35	17.5
	Strongly Agree	48	24
I am confident in my understanding of procedures for patient evacuation.	Strongly Disagree	40	20
	Disagree	37	18.5
	Neutral	39	19.5
	Agree	42	21

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Questions	Scale	N	%
	Strongly Agree	42	21
I have been involved in a real patient evacuation, and it was well-executed.	Strongly Disagree	44	22
	Disagree	34	17
	Neutral	36	18
	Agree	47	23.5
	Strongly Agree	39	19.5
Documentation	Strongly Disagree	53	26.5
	Disagree	36	18
	Neutral	38	19
	Agree	33	16.5
	Strongly Agree	40	20
Information is documented effectively during a disaster.	Strongly Disagree	41	20.5
	Disagree	43	21.5
	Neutral	32	16
	Agree	43	21.5
	Strongly Agree	41	20.5
Accurate documentation during a disaster is crucial for patient care.	Strongly Disagree	39	19.5
	Disagree	39	19.5
	Neutral	46	23
	Agree	39	19.5
	Strongly Agree	37	18.5
Feedback and Improvement	Strongly Disagree	38	19
	Disagree	43	21.5
	Neutral	41	20.5
	Agree	46	23
	Strongly Agree	32	16
I have provided feedback on the Disaster management processes.	Strongly Disagree	49	24.5
	Disagree	38	19
	Neutral	40	20
	Agree	37	18.5
	Strongly Agree	36	18
Continuous improvement is needed in our current disaster management practices.	Strongly Disagree	40	20
	Disagree	41	20.5
	Neutral	47	23.5
	Agree	41	20.5
	Strongly Agree	31	15.5

Table 5: Demographic Correlation with KAP Scores

Variable	Group	Knowledge Mean	Attitude Mean	Practice Mean
Gender	Male	2.9	2.8	3.6
	Female	3.3	3.2	4.2
Age	19-21	3	2.9	3.7
	22-24	3.1	3	3.9
	>25	3.2	3.1	4.1
Experience	<1	2.8	2.7	3.5
	01-Feb	3	3	3.8

Variable	Group	Knowledge Mean	Attitude Mean	Practice Mean
	02-Mar	3.2	3.1	4
	>3	3.3	3.3	4.2

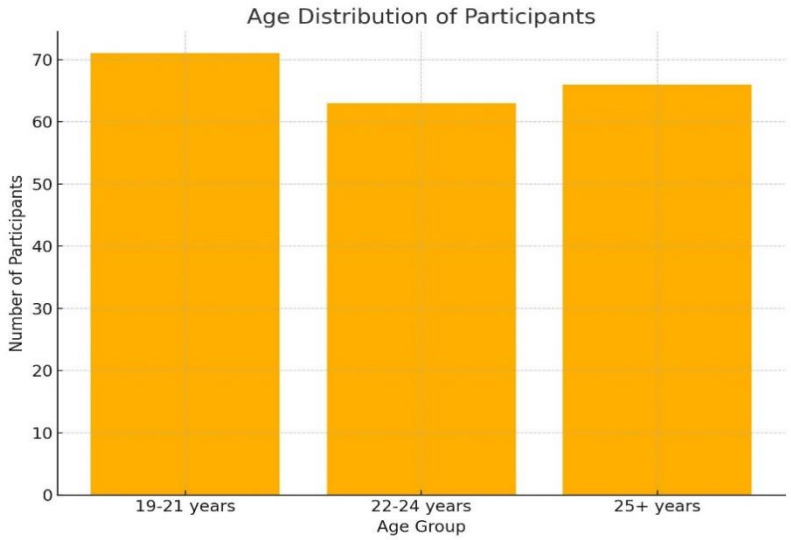

Figure 1 Age Distribution of Participants

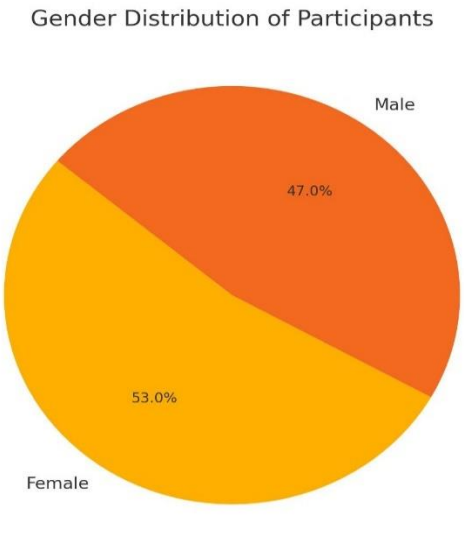

Figure 2 Gender Distribution Participants

DISCUSSION

The findings of this study highlight a moderate level of knowledge, attitude, and practice regarding disaster management among staff nurses in Lahore, which aligns with previous investigations conducted in other healthcare settings. Similar patterns have been observed in studies involving nurses from emergency and outpatient clinics in Southeast Asia, where respondents also demonstrated average disaster preparedness levels despite being actively involved in clinical care (14). This reinforces the concern that frontline healthcare professionals, particularly in tertiary hospitals, often lack structured education and continuous training in disaster management, even though they exhibit a strong willingness to enhance their competencies through academic activities such as workshops, simulations, and training seminars (15). The evident knowledge gaps among nurses can be attributed to limited exposure to formal disaster management content during their professional training. Several studies have pointed out that curricula in nursing schools and continuing education programs frequently neglect comprehensive disaster readiness, focusing instead on theoretical models with minimal practical application (16,17). This absence of structured instruction leads to a situation where even experienced professionals demonstrate only partial understanding of their roles in disaster situations. In the current study, although nurses demonstrated relatively positive attitudes toward disaster preparedness, their practical implementation skills remained inconsistent, suggesting a mismatch between perception and operational readiness (18).

The relationship between demographic characteristics and disaster preparedness competencies observed in this study adds further insight to the literature. While the present analysis showed gender, age, and experience to be positively associated with higher knowledge, attitude, and practice scores, other studies have shown conflicting findings, reporting no statistically significant associations between demographic variables and disaster response capability (11,19). These differences may arise from contextual factors such as institutional preparedness policies, exposure to recent disasters, or availability of in-service education. Consistent with international findings, it was observed that nurses who received frequent drills, structured protocols, and recurring training exhibited more robust disaster management practices, whereas those lacking ongoing exposure to such preparedness initiatives were more likely to report hesitancy or confusion during emergency scenarios (20). In another study conducted in a high-resource setting, it was noted that while most nurses were aware of disaster frameworks, they lacked adequate preparedness to implement these protocols effectively during real-time crises, suggesting that knowledge without action-oriented reinforcement limits response capacity (21). These comparisons point toward a

critical need for integrating practical, scenario-based disaster education into both undergraduate curricula and hospital-based continuing education frameworks.

The strength of this study lies in its comprehensive assessment of disaster-related knowledge, attitude, and practice among nurses within a tertiary care facility, providing useful baseline data for institutional planning. It also contributes to the growing body of literature emphasizing the pivotal role of nursing personnel in emergency preparedness. However, several limitations must be acknowledged. The use of a convenient sampling technique may limit the generalizability of the results beyond the study setting. Additionally, self-reported questionnaires, while useful for perception analysis, may introduce social desirability bias, potentially leading to overestimation of competencies. Moreover, the cross-sectional nature of the study restricts the ability to establish causal relationships between variables. To address these limitations, future studies should employ probability sampling techniques and include a wider range of healthcare institutions to enhance representativeness. Longitudinal research designs and the incorporation of objective assessments such as simulation-based evaluations or disaster drill observations could provide a more accurate reflection of disaster management competencies. Further investigation is also warranted into organizational factors such as institutional policies, leadership support, and infrastructure readiness, which may significantly influence nurses' preparedness levels. Overall, while the findings indicate a foundational level of disaster preparedness among staff nurses, they also underscore the urgent need for systemic educational reforms, continuous training, and policy-driven integration of disaster management into routine clinical practice.

CONCLUSION

This study concluded that staff nurses demonstrated limited knowledge and attitude towards disaster management, while their practical engagement remained at a moderate level. These findings highlight the pressing need for comprehensive disaster preparedness strategies within hospital systems. Implementing structured educational programs and practical training sessions is essential to enhance the competency and readiness of healthcare professionals. Strengthening institutional disaster policies and integrating scenario-based drills can further reinforce effective response behavior. Although the study provided valuable insights, its findings were limited by the sample size and reliance on self-reported data, emphasizing the need for broader, more dynamic assessments in future research to better evaluate performance in real-life disaster situations.

AUTHOR CONTRIBUTION

Author	Contribution
Vishba*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Shaheen	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published

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