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Knowledge, Attitudes, and Practices of Nurses Regarding Disaster Management and Emergency Preparedness at Tertiary Care Hospital Swat, KPK.

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Abstract

Introduction: Natural and artificial disasters pose significant challenges to healthcare systems worldwide, necessitating effective disaster management and emergency preparedness. As frontline healthcare providers, nurses play a critical role in disaster response, making their knowledge, attitudes, and practices (KAP) essential for effective crisis management. **Aim:** This study aimed to assess the KAP of nurses regarding disaster management and emergency preparedness at a tertiary care hospital in Swat, Khyber Pakhtunkhwa (KPK), Pakistan. **Methodology:** A cross-sectional study was conducted involving 132 nurses selected through convenience sampling. Data were collected using a structured questionnaire divided into three sections: knowledge, attitudes, and practices. Descriptive statistics and Chi-Square tests were employed for data analysis using SPSS version 27. **Results:** Most participants were female (69.7%) and aged 20-30 years (49.2%). Most nurses had less than five years of experience (37.9%). Knowledge levels were moderate (53.0%), with 34.1% demonstrating high knowledge and 12.9% low knowledge. Attitudes were predominantly positive (64.4%), while practices were rated as good (45.5%), fair (41.7%), and poor (12.9%). A significant correlation was found between years of experience and preparedness levels, with more experienced nurses showing higher preparedness. Knowledge and practices were also strongly associated (χ^2=12.45, p=0.002). **Conclusion:** The study highlights the need for enhanced training and institutional support to improve nurses' disaster preparedness, particularly for less experienced staff. While knowledge and attitudes are generally positive, practical application remains inadequate. Regular training, simulations, and mentorship programs are recommended to strengthen disaster management capabilities among nurses.

Keywords: Knowledge, attitudes, practice, Emergency preparedness, disaster management.

Introduction

Nurses' knowledge of disaster management includes their understanding of emergency preparedness procedures and their awareness of best practices and protocols. Nurses' attitudes toward disaster

management consist of their perceptions, beliefs, and emotional reactions, indicating their readiness for preparedness activities and ability to respond in an emergency. (1). Nurses perform disaster management strategies in actual or simulated emergencies through their implemented practices, including real-time actions and documented procedures. (2). Residents and health services must participate in planned disaster response activities and coordinate risk-mitigation, emergency preparation, and crisis response procedures while developing recovery strategies to handle disasters and associated emergencies. (3). Emergency Preparedness represents the advanced actions that create readiness for potential crises by providing instruction, budgeting funds, and building response protocols. (4). Natural and artificial disasters pose significant problems for healthcare systems worldwide. They lead to a numeration of lives and property and immense pressure on the health care system. (5). There is a need for adequate disaster management and a good disaster preparedness plan to reduce these effects. Nurses play a critical role in effectively preparing communities as first-line defenders in the fight against such a disaster. (6). They are no longer task-centered on caring for individual patients during sickness but are also involved in the planning, prevention, and recuperation processes. (7). The current disasters are pandemic and technological, and nurses must be competent and always ready for a disaster. This remains a pointer to the need to fill knowledge gaps and enhance existing competencies in disaster management. (8). Disaster management is the science of dealing with the risks associated with emergencies or breakdown of order through mitigation, preparation, response, and recovery. (9). The policy of readiness for effective responses is one of the steps in this process, and the key aspect is emergency preparedness. (10). healthcare workers' knowledge, attitudes, and practices are essential to such efforts, which are the basis for timely and coordinated actions. Nevertheless, readiness among nurses to mitigate disasters is somewhat poor and varies depending on region, level of economic development, and institutional turn-up. (11).

Enhancing and ensuring disaster management preparedness for health facility staff cannot be overemphasized in protecting the populace during disasters (12). This calls for intersectoral and multisectoral education, nationwide educational policy reform, and teaching policy implementation. Ongoing improvement in disaster preparedness is mutually prosperous for the individual and healthcare organizations (13). Disaster care, especially in developing countries, has been identified to be inadequately prepared across most developed and developing nations' health systems. (14). It is common to find weaknesses that cause slow response time, poor utilization of resources, and poor patient care. (15). This means that the standards and protocols are currently not being implemented competitively across the world. (16). Filling these gaps is especially important to guarantee effective and efficient disaster management systems. Furthermore, institutional commitment and funding specifically to disaster preparedness are required for the Nurses to perform these roles adequately. To build resilience in health care, correcting such issues is a prerequisite to treating the root causes. (17). Surveys about the disaster management competency of healthcare workers should be conducted to identify knowledge gaps from which research will be conducted. (18). It offers essential information concerning the efficiency of current training courses and calamity reaction plans. Knowledge of these aspects is helpful since they direct future additions and differentiations in areas of concern and potential. (19). It also supports policymakers in budgeting and as well as in the formulation of specific disaster management plans. (20). Therefore, through cost assessment and upgrading these systems, healthcare institutions are better placed to deal with these challenges as they emerge. Enhancing research activities within this line is core to strengthening disaster management outcomes. The study should help establish stronger healthcare systems for other countries. (21).

Methodology

The study utilized a cross-sectional design to evaluate nurses' disaster management and emergency preparedness knowledge, attitudes, and practices through a one-time assessment of their current readiness levels. Researchers implemented the study at a tertiary care hospital in Swat Khyber Pakhtunkhwa (KPK)

Pakistan because nurses act as vital first responders during disasters and emergencies at healthcare facilities. The research included 132 nurses who took part by using convenience sampling in the hospital environment because it's an effective recruitment method. The study method offered essential insights regarding nurses' disaster management knowledge and behaviors because it concentrated on one medical institution.

Data Collection Procedure

The structured questionnaire served as the data collection tool to evaluate nurses' knowledge base and attitudes along with their emergency preparedness and disaster management practices. The survey included sections that matched the research variables' three dimensions of knowledge, attitudes, and practices.

1. The knowledge section evaluated nurses' ability to understand both disaster management protocols and emergency preparedness procedures together with best practices.
2. The attitudes section assessed nurses' views about disaster preparedness and their emotional state in addition to their emergency response readiness.
3. The Practices Section measured nurses' on-the-job performance in genuine disaster contexts and their ability to respect established procedures during simulated emergencies. The questionnaire was distributed to the nurses, and responses were collected anonymously to ensure confidentiality.

Data Analysis Procedure

The researchers conducted statistical analyses through SPSS version 27. The researchers used descriptive statistics to organize information about participant demographics, which included age and gender distribution along with experience level. A percentage distribution analysis provided insights into participant responses for the categories of knowledge level (low, moderate, high), attitudes (positive, neutral, negative), and practice quality (good, fair, poor). The Chi-Square tests demonstrated relationships between employee knowledge and practice levels while establishing associations using p-values between years of work experience and organizational readiness levels. Results with p-values below 0.05 indicated statistical significance.

Ethical Considerations

The institutional review board SGTH granted ethical approval to conduct the study, thus ensuring strict compliance with ethical standards. Participants received informed consent after learning about the study's focus and research steps while being notified of their ability to stop participation without negative effects. All information was maintained anonymously and received strict confidentiality protection throughout the study. The study maintained complete anonymity, protecting participants' identities and storing research data in secure locations exclusively for scientific purposes. The research applied beneficence principles for doing good and non-maleficence principles for avoiding harm to participants. The investigators designed the research methods to obtain information while safeguarding participant safety and maintaining honest reporting of study results.

Results and Analysis

Demographic Characteristics of Participants

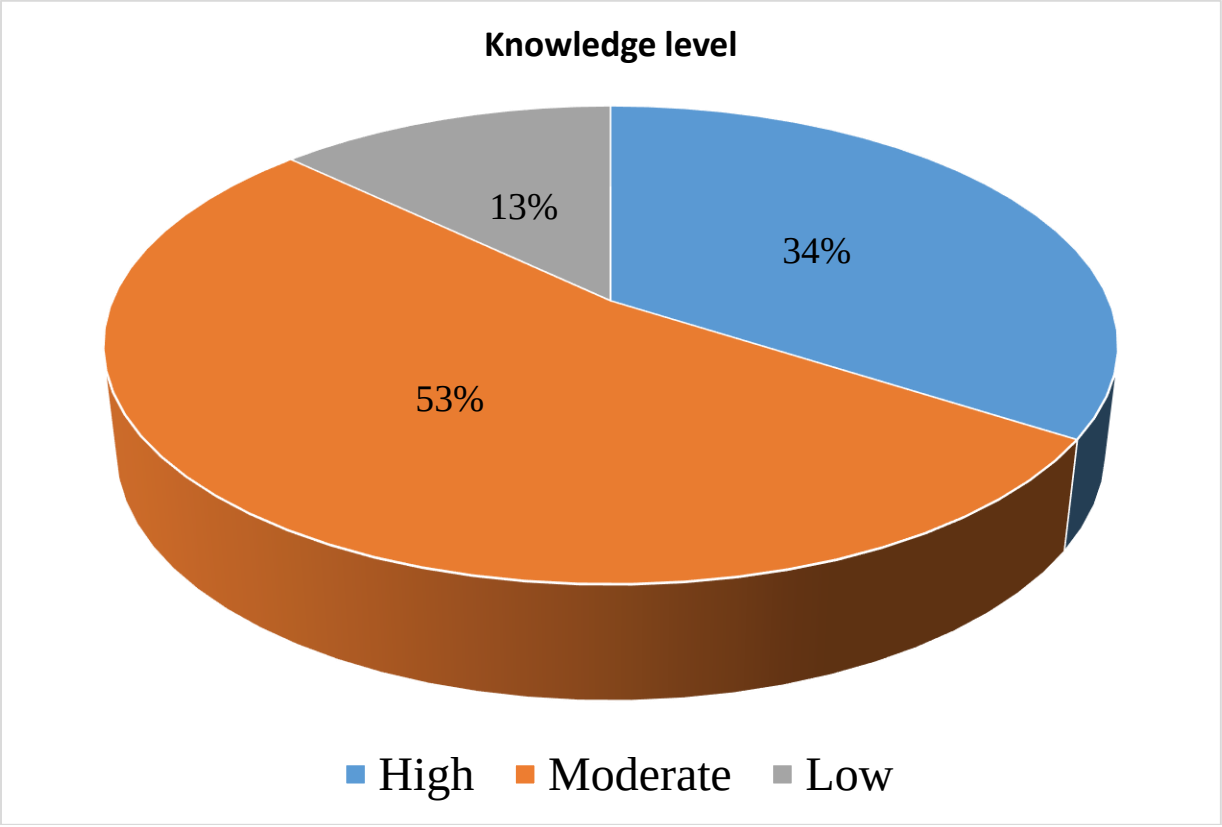
Many participants were 20–30 years old (49.2%) and comprised primarily female participants (69.7%). The nurses in this study group mostly had less than five years of professional experience (37.9%), while more experienced nurses with 5–10 years (34.1%) and those with over 10 years (28.0%) comprised the remaining percentages. The workforce, by demographic characteristics, is composed mainly of young females from different experience backgrounds.

Table 1: Demographic Characteristics of Participants (N=132)

Variable	Category	Frequency (n)	Percentage (%)
Age	20–30 years	65	49.2%
	31–40 years	45	34.1%
	41–50 years	18	13.6%
	>50 years	4	3.0%
Gender	Male	40	30.3%
	Female	92	69.7%
Years of Experience	<5 years	50	37.9%
	5–10 years	45	34.1%
	>10 years	37	28.0%

Participants possessed moderate knowledge of disaster management and emergency preparedness, with 70 participants among 130 taking the survey (53.0%), 45 nurses (34.1%) displayed high knowledge, and 17 nurses (12.9%) displayed low knowledge. According to these results, a majority of nursing staff requires specialized education to enhance their disaster management and Emergency Preparedness knowledge.

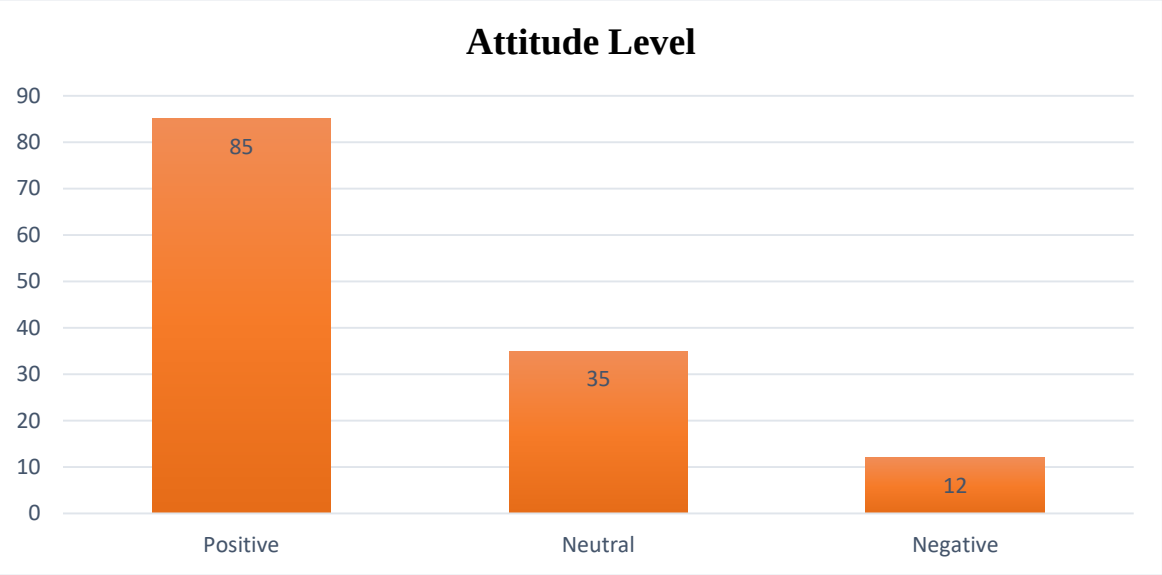
Figure 1: Knowledge of Nurses Regarding Disaster Management and Emergency Preparedness



The majority of nurses (64.4%) maintained positive feelings about disaster readiness, along with 35 neutral professionals (26.5%) and 12 nurses with negative attitudes (9.1%). The current attitudes indicate

encouraging support, which can be improved through targeted initiatives to address remaining neutral and negative perspectives.

Figure 2: Attitudes of Nurses Toward Disaster Management and Emergency Preparedness



45.5% of nurses' responses to emergencies were good practices, 41.7% used fair measures, and 12.9% demonstrated poor behaviour. The results show opportunities for growth since the majority falls within the fair or poor practice standard.

Figure 3: Practices of Nurses in Disaster Management and Emergency Preparedness

The proportion of nurses with high preparedness increased with longer years of experience, resulting in a higher percentage among nurses with more than ten years of experience (25) than those with less than five years (10). The number of nurses who demonstrated low preparedness decreased when nurses gained more experience, showing the positive influence of expertise on disaster readiness.

Table 2: Correlation Between Years of Experience and Preparedness Level

Years of Experience	High Preparedness (n)	Moderate Preparedness (n)	Low Preparedness (n)
<5 years	10	25	15
5–10 years	20	18	7
>10 years	25	10	2

The Chi-Square test outcome indicated a direct link between knowledge and practices, with a significance value of 0.002 and χ^2=12.45. Based on their knowledge acquisition, nurses' disaster management skills and preparedness levels in emergencies have a strong positive relationship.

Table 3: Chi-Square Test for Association Between Knowledge and Practices

Variable	**Chi-Square Value (χ^2)**	**p-value**
Knowledge vs. Practices	12.45	0.002

Discussion

This study provides an essential understanding of nurse expertise, emergency management postures, and existing disaster preparedness methods. Research data showed that the study participants were primarily female nurses in the 20–30 age range (22). Most nurses with experience periods of less than five years show the need for additional training to master disaster preparedness skills.

Knowledge of Disaster Management and Emergency Preparedness

Moderate levels of disaster management knowledge were observed in 53.0% of nurses who participated, with 34.1% having high knowledge and 12.9% showing low knowledge levels. The research results match those. (23), who found that Pakistani nurses had a 52% moderate disaster preparedness knowledge level, with fewer nurses demonstrating advanced levels of expertise. The research reported higher numbers (68%) of nurses with high emergency preparedness knowledge within the Philippine healthcare sector. Training programs, institutional policies and exposure to disaster drills within various healthcare environments are probably the cause of this information divergence. Disaster preparedness training programs should focus specifically on nurses with little experience because the current study showed their knowledge level was moderate. (24)

Attitudes Toward Disaster Management and Emergency Preparedness

Out of all participants, 64.4% had a positive view on disaster preparedness, whereas 26.5% maintained a neutral stance and 9.1% showed negative attitudes. Documented the same positive attitude toward disaster management when examining nurse reactions and found that 63% of nurses held this sentiment. (25). A study conducted in Iran discovered that 72% of nurses maintained a positive attitude toward disaster preparedness, yet this result contrasted with the findings of this study. Cultural and educational differences seem to affect nurses' views concerning disaster readiness. Emergency preparedness needs more emphasis by leadership and educational campaigns to avoid neutral or negative attitudes in the workforce since they were present in 35.6% of respondents. (26).

Practices of Nurses in Disaster Management and Emergency Preparedness

Among the respondents, 45.5% followed good practices, yet 41.7% exhibited fair practices, along with 12.9% exhibiting poor practices. The research revealed similar outcomes to this study when they discovered that nurses showed a commitment rate of 47% to disaster preparedness and moderate practice levels at 39%. (27). A recent study revealed that the nurses provided good disaster preparedness with a 30% success rate, which differs from other healthcare systems. Results show that nurses follow proper practices well, but additional training initiatives should be implemented to benefit the nurses who display poor or poor practices. (28).

Impact of Experience on Preparedness

Relevant data showed a meaningful relationship between years of nursing work experience and readiness preparedness levels, where nurses with 10 or more years demonstrated the most excellent preparedness (n=25). Yet, those under 5 years showed the lowest levels (n=10). Nurses with extended work periods display superior disaster preparedness capabilities. Studies showed that through their accumulated disaster experience and training participation. Research reveals the significance of leadership programs through which skilled nurses should support junior nurses by passing on their emergency readiness experience. (29, 30)

Correlation Between Knowledge and Practices

The research demonstrated that knowledge and practices exhibit a meaningful relationship (χ^2=12.45, p=0.002), as individuals with better knowledge displayed superior practice behaviors. Research showed that confirmed knowledge plays a significant role in determining emergency preparedness protocol adherence, similar to this study's findings. (31). Nursing practices found that healthcare facilities and insufficient resources prevented nurses with strong knowledge from using it correctly. (32). Hospital policies, emergency preparedness resources, and regular disaster drills prove essential for properly implementing emergency preparedness measures above mere knowledge acquisition. (33).

Conclusion

The research findings demonstrate that nurses maintain good disaster preparedness knowledge and favorable coping behaviors, yet their practical application remains inadequate, especially for less experienced professionals. Enhanced preparedness requires ongoing education, hands-on training, and institutional support to develop effective practice capabilities because knowledge demonstrates a strong relationship with preparedness performance. The findings match and deviate from previous research regarding nurse disaster preparedness in various healthcare settings, which shows why specific hospital-based solutions are needed to improve this preparedness. Researchers should investigate why barriers exist against best practice implementation and measure the success rate of training programs in disaster preparedness development.

Limitations of the study

The study has two main limitations: its use of cross-sectional data collection and reliance on self-report methodology, which might create response bias. Since the research occurred within one institution only, it cannot be considered applicable to multiple healthcare environments. The research failed to investigate institutional influences and budget constraints in detail.

Recommendations

1. The hospital should create standard disaster management training events and emergency preparedness methods that provide nurses with theoretical understanding and practical skill enhancement.

2. To reinforce real-life applications during disasters, hospitals must schedule regular disaster simulations that test nurse preparedness competency levels.
3. Healthcare institutions should create standardized protocols and policies that define animal and human infection control measures and disaster readiness approaches for every hospital department.
4. No compliance lapses will occur When essential personal protective equipment (PPE), emergency supplies, and infection control materials exist in sufficient quantities.
5. Periodic mentorship programs involving senior nurses must train novice staff to transform emergency scenario theories into active practice.
6. Regular assessments with research activities must be conducted to recognize disaster preparedness shortfalls and infection control deficiencies and to develop evidence-based solutions.
7. The hospital should establish a positive safety culture that allows nurses to report their difficulties, propose improvement ideas, and actively participate in disaster preparedness initiatives.

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