

"The Role of Nurses in Disaster Preparedness: Bridging Gaps in Emergency Response Systems"

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Abstract

Disasters, whether natural or man-made, pose significant challenges to healthcare systems worldwide, often overwhelming emergency response capabilities. Nurses, as frontline healthcare professionals, play a pivotal role in disaster preparedness, response, and recovery. However, gaps persist in training, resource allocation, and integration of nursing expertise within emergency response frameworks. This study explores the role of nurses in disaster preparedness, identifies critical gaps, and proposes strategies to enhance their contributions to emergency response systems. A mixed-methods approach was employed, involving a comprehensive literature review, surveys, and semi-structured interviews with practicing nurses, healthcare administrators, and emergency management experts. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data were thematically analyzed to identify key challenges and opportunities in disaster preparedness.

The findings revealed that nurses possess unique skills in triage, patient care, and crisis communication, which are crucial during disasters. However, gaps were identified in disaster-specific training, role clarity, and access to resources. Approximately 72% of surveyed nurses reported inadequate training in disaster management, and 68% highlighted the lack of coordination between healthcare and emergency management teams. Notable successes were observed in healthcare facilities with pre-established disaster protocols and regular training sessions, where nurses demonstrated improved efficiency and adaptability. These results underscore the need for a multidisciplinary approach to disaster preparedness that integrates nurses into emergency planning at all levels. Key areas for improvement include enhancing disaster-specific nursing curricula, fostering inter-agency collaboration, and investing in continuous training programs. Policymakers must prioritize the inclusion of nurses in disaster planning committees and allocate resources to empower them in emergency settings.

In conclusion, nurses are indispensable to disaster preparedness and response, yet systemic barriers limit their potential contributions. Bridging these gaps through targeted training, enhanced collaboration, and resource optimization can significantly strengthen emergency response systems, ultimately improving outcomes for affected populations. Future research should focus on longitudinal studies to assess the impact of proposed interventions and develop a global framework for nursing roles in disaster management.

Keywords:

Disaster preparedness, Nurses, Emergency response, Disaster management, Healthcare systems, Training gaps, Crisis communication, Multidisciplinary approach, Resource allocation, Policy integration.

Introduction:

The feature of emergency response and preparedness for disaster systems is important because disasters-strike both man-made and natural- within and outside societies, a function they perform to disrupt the normal flow of so-called societies and even the healthcare systems. Nurses are the largest group in the healthcare workforce in the world, and thus they are the most significant players in managing medical emergencies in disasters. These patients will not only require crisis management with specialty skills in patient care and crisis communication but also require emotional support during such disasters [1].

The underappreciation of nurses regarding their involvement in disaster preparedness has frequently led to systemic gaps in training, role definitions, and resource allocation [2]. Proper research has shown that many of these nurses have no adequate disaster-specific knowledge and skills, although they are willing to participate in emergency response nery activities [3]. This research was conducted by the International Council of Nurses (ICN). Adding to this is the absence of a uniform structured framework to integrate nursing roles in disaster management plans [4].

Broadly speaking, nurses have always been involved in major disaster effects, treating casualties after earthquakes and controlling disease outbreaks such as Ebola and COVID-19 [5]. They often do not manifest their potential due to lack of disaster-specific training and access to necessary resources. For instance, research states that only 54% of nurses in low-resource areas have been well trained in disaster preparedness, which tends to constrict their overall efficiency in responding [6].

Poor interprofessional cooperation between health professionals and emergency management agencies has consistently reduced the effectiveness of disaster response systems further [7]. Nurses tend to be confused about their responsibilities during disasters, resulting in delays to decisions that must be made quickly and resources allocated. A longitudinal case study on various regions affected by disasters revealed hospitals that had clearly defined disaster protocols and trained nursing personnel had much better patient outcomes and operational efficiencies [8]. There is an alarming rampancy of both the occurrence and intensity of disasters worldwide due to climate change, urbanization, and increased geopolitical instability, all of which emphasize the need for a global forehandedness in disaster preparedness frameworks [9]. Empowering nursing through training, collaboration, and policy reform is, thus, one of the critical steps to developing resilient healthcare systems to the evolving disaster situations.

Methods

This study utilized a mixed methods approach to assess the nurses' role or involvement in disaster preparedness and response as well as identifying gaps and recommending strategies to fill them. The research design combined quantitative and qualitative methodologies to give a holistic view of insights gathered from different key players or stakeholders involved in disaster management, especially in nursing.

1. Literature Review:

In the present date with all the cited literature, the above might just be a sharp analysis of the existing capabilities attached to nurses in disaster planning, response, and recovery of works. This literature dependency resulted from peer-reviewed journal articles, books, and reports published by international health organizations such as the World Health Organization (WHO) and the International Council of Nurses ICN. It was pertinent that the search engines be combined in the following way while conducting a keyword-based search: "nurses and disaster management," "nursing: role in emergency response," and "disaster preparedness training" into e-databases like PubMed, Scopus, and CINAHL. All

those publications span nearly every performance area from 2000 to date and are prioritized for designing research to analyze nursing competences, training needs, and system responsiveness. By checking literature, one could make better understand more theoretical and empirical gaps in nursing practices and their present preparedness methods during disasters.

2. **Surveys:**

A structured survey was developed to gather quantitative data from nurses practicing in emergency, disaster, and clinical settings. The survey aimed to assess the perceived level of training, preparedness, and integration of nurses into disaster response systems. In this manner, diversity would be ensured by mailing an inviting letter to a sample of registered nurses in varied healthcare facilities, covering wide geographical areas, and thus with their diversity regarding healthcare infrastructure and disasters experience. A total of 500 qualified nurses were invited to participate and 385 responded. Response rates thus totaled 77%. The survey included likert-scale and multiple-choice questions covering concerns like:

- Frequency and type of disaster preparedness training
- Perceived barriers to effective disaster response
- Comfort level regarding disaster response roles (for instance, triage, patient transport, psychological first aid)
- Accessibility of required resources (e.g., equipment, communications tools) during disasters.

These quantitative data were analyzed descriptively in order to give an overview of what preparedness levels looked like for nurses and thus find trends or patterns. Inferential tests, like chi-square tests, were further employed in understanding the relationships between nurse demographics (e.g. years of experience, specialized training) and preparedness or perceived gaps of these contingency plans in disaster response [12][13].

3. **Semi-Structured Interviews:**

A sample of 30 nurses, administrators, and emergency management experts was found through purposively sampling in order to represent other roles such as frontline nurses, disaster preparedness trainers, and policy makers. Interviews were arranged dependent on the availability of the participants and their preference, and were either conducted face to face or virtual.

The interviews were primarily aimed at collecting the in-depth insights into the success challenges of nurse participation in disaster preparedness. Interview questions were framed to cover areas such as:

- The efficacy of disaster preparedness training for nurses today.
- Personal accounts of nurses in disaster scenarios
- Identified deficiencies on nursing personnel integration into disaster management teams
- Suggestions proposed in enhancing disaster training and response protocols.

The interviews lasted between 45 and 60 minutes, and were audio-recorded with the consent of the participants. The transcriptions were then subjected to thematic analysis [14], through which re-emerging themes were identified and further categorized under broad headings like training inadequacies, resource hurdles, and inter-professional collaborations. This qualitative component's mission was for the perception of the barriers and facilitators as they impact on the nursing role in disaster settings.

4. **Data Triangulation:**

To strengthen the credibility and trustworthiness of the findings, triangulation has been undertaken through the consideration of literature, survey data, and interviews. This did allow for a more comprehensive investigation into the research question and ensured that findings were well supported by different sources. Triangulation also indicated the degree of consistency between the different sets of data, which allowed for a better and more credible analysis of the role of nursing in disaster-preparedness and response [15].

5. **Data Analysis:**

The quantitative survey data was acquired and prepared using SPSS (version 28) for coding and cleaning before analysis. Inferential statistics was employed, such as chi-square tests and t-test in determining the significance of associations between demographic characteristics and disaster preparedness outcomes; descriptives such as frequencies, means, and standard deviations were used to describe the data. The survey results were then compared to previous studies in order to situate the survey findings within existing research. Thus, directions for interpreting results were established by studies examining disaster preparedness among nurses from various contexts [16][17]. Qualitative interview data were transcribed and coded with NVivo (version 12) so as to ensure thematic analysis. i.e. the important themes were deciphered through a recursive reading, coding, and organizing the data iteratively. Each of these themes has implications in terms of the direct quotations from the interviews collected and then cross-analysed with those from different participants' groups so as to find similarities and differences. Thematic findings were discussed in relation to existing models of disaster preparedness and nursing roles in emergency management [19][20].

6. **Ethical Considerations:**

Approval for the study was received from the Institutional Review Board of the principal research institution. Participants were fully informed regarding study purposes, voluntary participation, and confidentiality before giving their consent. One such method is to anonymize data by removing personal identifiers and stored according ethical research guidelines [21].

7. **Limitations:**

Although the research offers some insights, it is important to note certain limitations. The number of interview participants was limited to 30, which probably does not provide a complete representation of diverse nursing professionals, and the handling of the data is contingent upon their own self-response; thus, response bias could easily be introduced in this regard. Another limitation of the survey is that it has a cross-sectional design, making it impossible to make causal inference regarding changes in nursing preparedness after particular disasters or natural events. [22].

Results:

This research shows how much importance nurses have as critical players in disaster preparedness and emergency response systems. With survey, interview, and literature review data synthesized, it led to the following main findings:

1. Core Competencies and Skills of Nurses in Disaster Situations:

Nurses demonstrated exceptional capabilities in critical areas such as:

- **Triage and Patient Prioritization:** Nurses became efficient in rapid assessment for triaging patients for care during mass casualty incidents. About 85% of the participants were very confident of their skills in triage.
- **Crisis Communication:** Nurses effectively function as an interface between patients, their families, and the healthcare teams by delivering clear and empathetic language in the midst of chaos.
- **Adaptability:** Nurses could be confined to a resource-poor place and could manage by effective creative problem-solving and allocating resources available. These are talents that can boost nurses to very important positions during emergencies; still, their effects will always be thinned out by the systemic challenges.

Competency/Skill	Description	Percentage of Nurses Confident
Triage and Patient Prioritization	Rapid assessment and prioritization of patients.	85%
Crisis Communication	Mediating and ensuring clear communication.	78%
Adaptability	Resourceful in handling limited resources.	82%

Table 1: This table summarizes the critical skills and competencies nurses demonstrate during disaster scenarios.

2. Identified Gaps in Training and Preparedness:

Although they said their competencies were good, nurses reported that there were big gaps in disaster-specific training, as shown by:

- **Inadequate Training Programs:** Not counting only about 72% of surveyed nurses, almost no formal training took place regarding disaster preparedness and responses like how to handle CBRN mode of action.
- **Limited Simulation Drill:** Only 34% of the interviewed nurses said that they underwent simulation drills of a disaster response, which is needed to prepare for real situations.
- **Knowledge of Disaster Protocol:** During the disaster majority, then 63% of the respondents said that because there are no institutional guidelines and no clear prototypical guidelines, there would be much ambiguity regarding the roles and responsibilities.

Gap Area	Issue	Percentage Reporting Gap
Disaster-Specific Training	Lack of formal education in disaster management.	72%
Simulation-Based Drills	Limited participation in practical disaster exercises.	66%
Role Clarity	Uncertainty about responsibilities during disasters.	63%

Table 2: This table outlines the main gaps reported by nurses in their disaster preparedness and training.

3. Resource and Infrastructure Challenges:

Deprived of proper staff resources, these are some of the most important aspects of institutional support making it difficult for nurses:

- **Lack of Supplies:** Over 58% of nurses indicated that they often run out of basic medical supplies including PPEs during a disaster.
- **Shortage of Staff:** During a disaster, high patient-to-nurse ratios increased the chances of lower quality care. About 74 percent admitted to experiencing burnout due to understaffing with extended hours.
- **Technological Barriers:** Some 47 percent of respondents reported limited access to emergency communication tools and systems, which prevent real-time decision-making and coordination.

Challenge	Details	Percentage Reporting Issue
Medical Supplies	Shortages of essential supplies (e.g., PPE).	58%
Staffing	Insufficient staffing during emergencies.	74%
Technological Barriers	Limited access to communication tools.	47%

Table 3: This table captures the challenges nurses face related to resources and infrastructure during disasters.

4. Collaboration and Coordination Gaps:

Lack of cooperation is different in between nurses and emergency management organizations or at the healthcare facility or agency levels.

- **Inter-Agency Coordination:** There are few public plans about using their experience in emergency responses, as only 29% of respondents said they were engaged in disaster planning or response committee activities.
- **Integration with Emergency Systems:** Nurses would often say that most of the time, there is no communication between health teams and other first responders like paramedics and firefighters. This greatly delayed interventions during disaster missions.
- **Hierarchical Barriers:** Most of the nurses feel deprived of value among their cohorts. This makes most of them not privy to the decision making at all, and therefore, they do not bring their contributions towards setting emergency response processes.

Area of Concern	Details	Percentage Reporting Issue
Inter-Agency Coordination	Lack of participation in disaster planning.	71%
Communication with First Responders	Inefficient communication with emergency teams.	62%
Exclusion from Decision-Making	Limited involvement in emergency strategies.	55%

Table 4: This table presents the key issues related to collaboration and coordination among nurses and other stakeholders in disaster response.

5. Positive Outcomes in Prepared Institutions:

Establishment of priorities in disaster preparedness made resulting differences.

- By having Plans in Place: Accident-prone areas should have designated protocols already established, and hospitals need to carry out frequent simulation training. This really becomes evident through having increased efficiencies in patient care. Nurses, while attending to patients, reported less stressed and more confident.
- Improved Cooperation: Collaborative models between nurses, physicians, administrators, and emergency responders really speeded up decision-making, as well as improved patient outcome.
- Community Engagement: Institutions that involved nurses in community disaster preparedness initiatives displayed a better public health outcome, as nurses will reach out, educate, and support the local community.

Preparedness Factor	Impact	Percentage Observing Benefit
Pre-Established Protocols	Higher efficiency and patient care quality.	89%
Routine Simulation Training	Increased nurse confidence and adaptability.	81%
Community Engagement Initiatives	Better public health outcomes and education.	76%

Table 5: This table highlights the benefits observed in institutions with established disaster preparedness systems.

6. Psychosocial Impact on Nurses:

The effects of disasters on nurses were revealed by research:

- Very High Stress: At least 67 percent of nurses reported that they have very high stress or anxiety and fear during a disaster owing to lack of training and resources.
- Post Traumatic Stress Disorder: A little, but worrying, number of nurses has reported something in line with post-traumatic stress disorder (PTSD) after disaster response. That percentage is 18.
- Need Support System for: The nurses have claimed a lot about how there is great need for mental health support, such counseling services or peer support groups, that will be required to address long-term psychological impacts of disaster response work.

Psychosocial Factor	Details	Percentage Reporting
High Stress Levels	Anxiety and fear during disaster scenarios.	67%
PTSD Symptoms	Symptoms of PTSD post-disaster.	18%
Need for Mental Health Support	Desire for counseling and peer support systems.	82%

Table 6: This table provides insights into the psychological challenges faced by nurses during and after disasters.

7. Quantitative and Qualitative Synthesis:

Repeatedly mentioned themes such as lack preparedness, lacking in resources, and not valuing the participation of nurses in disaster response systems are iterated from the quantitative data, which correlate qualitative observations from interviews:

- More funding for disaster-oriented education.
- Participation in planning for disasters and formulating policies concerned with them.
- Make frameworks for interdisciplinary collaboration.

Challenge Area	Quantitative Data	Qualitative Insights
Training	72% lack disaster-specific training.	Nurses emphasized the need for CBRN-focused education.
Resource Availability	58% reported shortages in supplies.	Nurses expressed frustration with inadequate PPE during crises.
Collaboration	71% reported poor inter-agency coordination.	Nurses highlighted exclusion from planning as a barrier.

Table 7: This table consolidates quantitative and qualitative findings related to nurse challenges in disaster response.

Discussion:

The contributions of nurses in disaster preparedness are categorized under three areas: clinical, organizational, and community areas. Most of the displaced populations during disasters have vertical connection with nurses as frontline health care personnel, which ensure a timely and effective delivery of health care. However, this study recorded noticeable gaps with regard to the utilization of nurses' skills and abilities in the emergency response systems. Understanding these systemic barriers and the potential enablers that empower nurses to take better positions in disaster management will be essential in closing the gaps.

1. Gaps in Disaster-Specific Training:

Majority of the nurses are lacking the training on disasters preparedness. This lack is not limited to the topics of disaster management missing in the nursing curricula but also has to do with the scanty simulation-based training and drills in many healthcare facilities. Their important scenarios of disaster cover skills that go way beyond normal clinical care. These include triaging under resource constraint conditions, crisis communication, psychological first-aid, and public health interventions like outbreak containment. Without consistent training, critical responses are rarely endorsed by nurses for feeling confident with responding effectively during a crisis. The institutions should integrate disaster management modules into nursing education and give scenario-based regular training in order to develop competence and resilience among nurses.

2. Role Clarity and Scope of Practice:

Indecision with respect to the duty of nursing in disaster response has further limited the effectiveness of nurses. They have indicated that there is little guidance as to what their contribution is meant to be during an emergency, which causes overlap or underuse of their functions. For example, in disaster emergencies, nurses are recognized to be skilled in patient assessment and triage but are usually excluded from strategic activities related to disaster response planning. Clear protocols that define the scope of practice for nursing in disaster scenarios will help minimize confusion and maximize nurse deployment.

3. Interdisciplinary Collaboration and Coordination:

For efficient disaster management, there should be smooth coordination among health service providers, emergency management agencies, and community service organizations. That was what this study had cited but found that there was no adequate coordination between nurses and other stakeholders, especially in the planning and early response phases. Nurses do not usually comprise disaster committees. Their frontline experiences can, however, significantly enhance the understanding of patients' needs. This can be bridged with interprofessional disaster planning workshops and joint training sessions which develop a culture of collaboration and mutual respect. Policymaking and planning forums should also include nurses so that their perspectives are represented in decision-making processes.

4. Resource Allocation and Infrastructure Challenges:

The relevant resource-related effects, such as insufficient provision of personal protective equipment (PPE), low access to life-saving equipment, and poor communication infrastructure, significantly impedes adequate nursing responses during disasters in resource-limited settings, where most nurses have adapted to live on inadequate supportive availabilities. Priority investments in healthcare disaster resilience, such as stockpiling critical supplies and creating redundant communications systems for continued coordination in the event of a disaster, must be made by policymakers and health care administrators.

5. Psychological and Emotional Resilience:

Nurses get very much stressed and made very mentally numb during work hours as they become accustomed to working long-continuous hours with human suffering. However, such long working hours go from one phase to another without giving any psychological support; in that case, the possible experience would be burnout, less performance, and also chronic mental health problems. Providing some mental health support services in disaster preparedness plans such as peer counseling and debriefing sessions will strengthen emotional resilience among nurses thus contributing to their ever-effective performance in emergencies.

6. Community Engagement and Advocacy:

They indeed go beyond being professionals in the hospital, and nurses are community advocates and educators during disaster preparedness and response. The relationship that they have with patients within the community allows them to be crucial sources of vital information such as measures that would include evacuation and disease prevention. However, such possibilities remain untapped because of a lack of structured community engagement processes. Empowering nurses in leadership roles on initiatives for community disaster preparedness positions itself as a very future and competitive initiative towards enlightening the members of the public and resilience.

7. **Policy Implications and Future Directions:**

These systemic issues denote the kind of policy reforms that need to be undertaken if the nursing profession is to be empowered for disaster preparedness. Governments and health organizations should regard nurses as important members of emergency response teams—having recognized this, they should include nurses in disaster management as a whole. Policy must mandate regular disaster preparedness training, basic standards for resources, as well as inter-agency cooperation.

Future research should include longitudinal studies that will assess the efficiency of these interventions and also pinpoint scalable best practices. On the same note, computerized innovations have also to be considered, such as on virtual disaster training as well as the users of AI for optimal resource management in emergencies.

Conclusion

The importance of nursing expertise in emergency care has been established by the research for the case of preparedness and response to disasters, given that this clinical experience can be linked with active thinking and holistic attention under stressful conditions. The study reveals systemic barriers through which nurses are currently not able to realize their potential regarding contributions to an emergency response system. The issue is one of specific training regarding certain types of disasters, the definition of roles, access to resources, and exclusion from decision-making and planning processes.

In order to address these gaps, a multifaceted approach will have to be adopted to empower nurses and maximize their involvement in disaster preparedness. First, nursing educational programs and training must be upgraded with proper inclusion of the comprehensive disaster management courses in nursing curriculum. Such courses must include some key competencies, like disaster risk and capacity assessment, triage protocols, crisis communication, and psychosocial support. As well as direct training, practitioners should conduct regular simulation exercises. Secondly, it also enhances the collaboration of healthcare facilities with the emergency management agencies and community organizations. It may tie to the creation of inter-agency partnerships and multidisciplinary planning committees tying in the strong voice of nurses in coming up with disaster preparedness and response strategies. These collaborative efforts can facilitate the coordination of communication channels regarding resource sharing and redundancy reduction during an emergency.

Thirdly, the healthcare organizations and policymakers must allocate resources for the supporting of nurses in disaster areas. Resource here refers to the clinical supplies, protective gear, as well as technology-based tools such as telemedicine and decision-support systems to improve the disaster efficiency and effectiveness of nurses. Above all, there must be solid support source like mental health counseling and peer support networks that would help address the physical and psychological toll disasters exact on nurses through response to disaster situations. Health and health organizations focus more on parity allocation of resources to nurses during disaster scenarios. This resource allocation includes the provision of basic supplies, protective gear, telemedicine, and decision-support systems that facilitate efficient and effective delivery of services during disasters. More importantly, a sound support system has been developed to heal the nurses from the physical and psychological injuries suffered through their response, such as mental health counseling and peer support networks.

Finally, it must change its culture and recognize and elevate the leadership role of nurses in disaster management. Policy formulators and healthcare administrators should ensure an involvement of nurses at leadership levels during the entire disaster planning and response. Decision-making capacity and leadership training in disaster preparedness can empower the nurse to contribute effectively to disaster preparedness efforts.

However, it has been concluded that nurses already play an important role in disaster response, but for maximum use of their skills, systemic improvements are needed for coordinated, efficient, and effective emergency response systems. Filling up the gaps that exist in training, resources, and collaboration will not only enhance the resilience of healthcare systems but will also improve the outcomes of patients being treated by them in community-based recovery efforts following disasters. In the future, research should focus on the evaluation of such recommendation implementations and creative solutions for further integrating nursing expertise into disaster management on regional, national, and global levels.

References:

1. World Health Organization (WHO). (2021). Strengthening nursing and midwifery in emergency and disaster settings. Geneva: WHO.
2. Al Thobaity, A., & Alshammari, F. (2020). Nurses on the frontline: Challenges in disaster preparedness and response. *International Journal of Nursing Sciences*, 7(2), 125-131.
3. International Council of Nurses (ICN). (2019). Nursing roles in disaster response: A global perspective. Geneva: ICN.
4. Veenema, T. G., et al. (2016). Disaster nursing and emergency preparedness for chemical, biological, and radiological terrorism and other hazards. Springer Publishing.
5. Rebmann, T., et al. (2020). Nursing workforce challenges during public health emergencies. *Journal of Emergency Nursing*, 46(4), 451-460.
6. Fung, O. W. M., et al. (2022). Disaster preparedness among nurses in low-resource settings: A systematic review. *Disaster Medicine and Public Health Preparedness*, 16(3), 123-135.
7. Hammad, K. S., et al. (2021). Interprofessional collaboration in disaster preparedness and response: The role of nursing. *Journal of Advanced Nursing*, 77(5), 2256-2267.
8. Arbon, P., et al. (2019). Hospital preparedness for mass casualty incidents: Lessons from international experiences. *Prehospital and Disaster Medicine*, 34(1), 50-57.
9. United Nations Office for Disaster Risk Reduction (UNDRR). (2022). Global assessment report on disaster risk reduction. Geneva: UNDRR.
10. World Health Organization (WHO). (2020). Health emergency preparedness: The role of nurses. Geneva: WHO.
11. International Council of Nurses (ICN). (2019). The role of nurses in disaster preparedness. Geneva: ICN.
12. Coughlin, K., James, S., & Wilson, K. (2021). The impact of disaster response training on nurses: A review of the literature. *International Journal of Nursing Studies*, 58(1), 11-19.
13. Thomas, J., Nixon, J., & Brown, S. (2022). Nurse preparedness in disaster situations: Challenges and solutions. *Journal of Emergency Management*, 20(6), 407-415.
14. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
15. Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.
16. Han, S., Lee, K., & Kim, J. (2021). Nurses' disaster preparedness and response in the context of COVID-19: A global review. *Journal of Nursing Scholarship*, 53(4), 345-352.
17. Jabbari, S., Sadeghi, R., & Mohammadi, A. (2019). Disaster nursing and preparedness: The need for global collaboration. *International Nursing Review*, 66(3), 341-347.
18. Silverman, D. (2016). *Qualitative research* (4th ed.). Sage Publications.
19. Redman, R., Dillon, R., & Stevens, M. (2017). Enhancing the nursing role in disaster response through inter-professional collaboration. *Journal of Advanced Nursing*, 73(8), 1916-1924.
20. Luntamo, M., Okeyo, B., & Wambui, N. (2022). Disaster preparedness in healthcare systems: The role of nurses in emergency management. *Disaster Medicine and Public Health Preparedness*, 16(2), 102-109.
21. Hoffmann, A., Hovden, K., & Lunde, T. (2021). Ethical research practices in disaster nursing. *Journal of Clinical Nursing*, 30(5-6), 867-875.
22. Meyer, T., Mason, C., & Lee, A. (2023). Longitudinal assessment of disaster preparedness training for nurses: A case study. *Journal of Emergency Nursing*, 49(3), 413-420.