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Article Review

An integrative literature review on clinical decision-making of novice nurses for disaster management in the Emergency Room

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Running title: Clinical decision-making strategies of novice nurse for disaster management

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Significance for public health: Novice nurse need strategy to do in clinical decision-making for disaster management in the ER, especially on comprehensive skill in their condition. Clinical decision-making skill in crowded conditions is an effort to save more lives of disaster victims. So far, the decision-making process for novice nurses tends to be hampered in making accurate assessments due to time pressure and case complexity. Clinical decision-making strategy might help novice nurse in avoiding assessment error and enhancing patient outcome.

Abstract

Novice nurses play a workflow part in responsibility among an overwhelming of patient. This emphasizes the need for nurses to have comprehensive decision-making skills, especially in disaster management. However, in practice, clinical decision-making remains a challenging issue for novice nurses working in the Emergency Room (ER). This review was conducted to synthesize the strategy that novice nurses need to do in clinical decision-making in the ER during a disaster.

This review used an integrative literature review approach to identify (n=16) relevant scientific articles. Six online databases (ScienceDirect, Proquest, Sage Journals, PubMed, Willey Library, and EBSCO) were utilized to identify articles published between 2013 and 2023. The gathered articles were selected using the PRISMA method by removing duplicate articles and those that did not align with the review's objectives. The PRISMA flowchart was used to illustrate the evidence search process. Out of a total of 2,264 identified articles, sixteen articles are relevant for review.

The review revealed that clinical decision-making requires careful consideration in several aspects which focused on determining the priorities of triage, assessment, diagnostic skills, and communication skills in teamwork during a disaster in the ER. This review provides evidence that the accuracy of clinical decision-making is a major influence on patient outcomes during disaster management.

In conclusion, comprehensive training and more education for novice nurses about disaster precision nursing in the future are needed to reduce errors in decision-making.

Introduction

Given the high number of disaster victims in Aceh in 2004, Indonesia is now labeled as the third most disaster-prone country out of 192 countries by the World Risk Index.¹ Highlighting the experience of dealing with disasters, disaster management often intersects with emergency response management, which involves the Emergency Room (ER) as the primary gateway for complex initial care.² According to Wang et al, Emergency Response (ER) management can be defined as specialized and technical medical efforts aim at rescuing disaster victims.³ Furthermore, research conducted by Al Harthi et al revealed that disaster management in the ER should involve all stages of disaster response, not just emergency response.⁴ Therefore, ER disaster management becomes a high-standard emergency care provider.

In urgent situations with a high number of casualties, ER nurses play a central role in saving patients during disasters, including triage, assessment, management, and treatment.⁵ ER nurses, as substantial components, should also be involved in all stages of disaster management, such as risk analysis, pre-disaster planning, crisis response, and risk mitigation during disasters.⁶ Novice nurse play a workflow part in responsibility among an overwhelming of patient. To achieve holistic disaster care, nurses are now emphasized in disaster preparedness management, which refers to optimizing response and recovery efforts that significantly impact patient care outcomes.⁷ This underscores the need for good teamwork support among all nurses to achieve a unified response in disaster management.

Interestingly, some countries currently lack expert nurses in disaster response, leading to novice nurses being placed in the ER.⁸ Furthermore, research by Fernandez-Basanta revealed that during disasters, there is often an imbalance between the number of healthcare workers and victims, leading to novice nurses participating in disaster response.⁹ According to Geekiyanage et al, novice nurses can be defined as individuals who have recently graduated and do not

have adequate practical experience to apply their cognitive and psychomotor skills to new situations.¹⁰ Furthermore, research by Perpina et al explained more broadly that someone working for less than five years can be categorized as a novice nurse.¹¹ During the transition to clinical practice, novice nurses often face challenging situations that can lead to barriers such as failure to identify patients, assessment errors, and decision-making errors.¹² The potential for errors compared to experienced nurses will always be an issue. Moreover, in emergency disaster situations, novice nurses face transition challenges that can result in emotional pressure, self-concept, high risk, and decision-making doubts.¹³ Adequately prepared nurses will reduce vulnerability to errors in clinical decision-making.

However, emergency response implementation is not limited to that; understanding decision-making challenges and the potential for errors must be identified. So far, the decision-making process for novice nurses tends to be hampered in making accurate assessments due to time pressure and case complexity.¹⁴ A combination and utilization of resources and tools by nurses to achieve common goals, including decision-making in emergency disaster response in the ER.¹⁵ Meanwhile, in the Ncube study, decision-making in disasters is an effort to save more lives of disaster victims.¹⁶ In crowded conditions, the urgency of triage accuracy, team communication skills, proper assessment, and diagnostic skills determine the best outcome of decision-making interventions.¹⁷ The need for comprehensive decision-making skills for novice nurses should be considered. Interestingly, there are currently no specific guidelines for novice nurses designed for clear clinical decision-making during disasters to reduce errors. Therefore, this review was conducted to synthesize the strategies novice nurses need to employ in clinical decision-making in the ER during disasters.

Materials and Methods

The integrative literature review analysis method was used in the development of this study. This method allows the authors to organize, synthesize,

and report the results of published articles with the aim and scope of decision-making for novice nurses in disaster management in the ER. Articles were systematically selected using the guidelines from the Preferred Reporting Items for Systematic Reviews and Meta-analyses for Integrative Review (PRISMA method).¹⁸ This methodology involves five review steps, as outlined, including formulating research questions, searching and identifying relevant studies, selecting relevant studies, mapping and analyzing data, and composing a summary of the results, which are then interpreted in this integrative review.

This review was conducted by searching articles in six online databases: ScienceDirect, Proquest, Sage Journals, PubMed, Wiley Library, and EBSCO, published between 2013 and 2023. This selection used predetermined inclusion and exclusion criteria. Article searches were performed using the keywords "AND and OR" to combine words or with the use of quotation marks (") for similar words. The keywords used was "novice nurse AND clinical decision making AND ER OR ED" or ("disaster decision making-novice nurse and ER" OR "decision making-novice nurse") AND (disaster management OR disaster decision making) AND (newly registered nurse).

The inclusion criteria for this integrative review were as follows: (1) involving novice or newly registered nurses, (2) articles are published in international journals, (3) journal publication years are between 2013 and 2023, (4) original research articles, (5) articles written in English, and (6) articles discussing the decision-making of novice nurses during disaster management in the ER. The exclusion criteria were (1) books, modules, undergraduate theses, master's theses, dissertations, and scientific papers, and (2) articles that could not be accessed in full. Selecting articles using keywords in six online databases resulted in (n=16) articles. This review explored titles, abstracts, and the availability of full texts that met the inclusion and exclusion criteria. The selected articles align with the objectives of this review. The article selection process was summarized by the PRISMA 2020 guideline (Figure 1).

Quality appraisal

Article quality assessment can improve the quality of integrative literature reviews. There are several quality assessment tools used according to the design of each study; the Centre of Evidence-Based Medicine (CEBM) appraisal tools was used to assess the quality of cross-sectional studies, with a list of 12

questions; meanwhile, in qualitative studies, the Critical Appraisal Skill Program (CASP) was used in this review consisting of 10 questions; to assess experimental studies, this review uses the Joanna Briggs Institute (JBI) Critical Appraisal tool which consists of 9 questions. Overall, the quality of all research articles included in this review was rated as moderate, as the studies demonstrated significant and strong results. Articles of quality assessment is summarized in (Table 1-3).

Data extraction and synthesis

The data mapping process evolved during the review as the author considered specific data to be extracted to help answer the questions of this review. Data mapping was focused on the decision-making of novice nurses during emergencies in the ER. Then, the data that came closest to answering the questions were transcribed into a table containing (author, years, country, study objective, research design, instrument used, and results). Data extraction of selected articles is summarized in (Table 4).

Results and Discussion

The search on six online databases yielded 2,264 articles. Subsequently, the authors screened articles published from 2013 to 2023 and removed duplicate data, resulting in 2,162 articles. The authors then selected 81 articles after excluding those with irrelevant titles and abstracts that did not align with the research objectives. Out of these articles, 42 articles were excluded based on criteria such as not discussing decision-making among emergency room nurses during disaster management, participants not being emergency room nurses, articles in languages other than English, and not being original research. After assessing their suitability, 16 articles were included in this scoping review for discussion. The articles reviewed originated from Iran (n=4), Sweden (n=2), Turkey (n=1), Saudi Arabia (n=2), Indonesia (n=2), Southern California (n=1), Switzerland (n=1), New South Wales (n=1), Bangladesh (n=1), and South Korea

(n=1).

Participants in this study were predominantly novice nurses working in the emergency room with less than 5 years of work experience. A small portion consisted of experienced emergency room nurses who had worked for more than 5 years. All the research articles were conducted in the hospital emergency room environment. Furthermore, this review generated the following key themes regarding decision-making which are summarized in (Table 5). The theme of this integrative review discusses clinical decision-making in novice nurses in managing disasters in the ER. In this regard, decision-making is broken down into five main aspects most needed in disaster management, including patient physical assessment, disaster triage priorities, diagnostic skills, team communication skills, and emergency care.

Decision-making in the physical assessment

Novice nurses have a complex role to play. They must be proficient in clinical physical assessment while responding to improve outcomes for affected populations.¹⁹ Nursing decision-making regarding the detection and response to a disaster event, perhaps further recognizing ED nurses as first responders. However, the results of a Delphi study showed that novice nurses' knowledge of disaster management plans and competence regarding the signs and symptoms of various conditions at an early stage were considered important for detecting and caring for victims of rare events. As novice nurses, these findings appear to reflect the assessment that a key factor in successful disaster patient care is basic physical assessment knowledge.²⁰ Decision-making in the physical assessment and care aspects for disaster victims needs to be adjusted to accommodate a sudden influx of patients.²¹ Decision making in this case has several processes, namely a) fast and accurate physical assessment; b) assessment of exacerbation of the disease due to exposure to the agent; c) assessment of local and global infections. Rapid assessment or assessment of patients in accordance with standard principles of first aid procedures can reflect complex decision making. Novice nurses must be skilled in analyzing the condition of incoming patients, synthesizing and evaluating interventions accurately.²² Novice nurses must comply with regulations in disaster situations and take them into account.²³ Decision making is a challenge for novice nurses to provide nursing care to patients

and be responsible for their own decisions.²⁴ Nurses need to assess local infection, so they can quickly make the right care decisions.

Assessment of disease exacerbations due to exposure to agents (e.g., toxic chemicals, radiation, or infectious agents) is an important clinical process in taking care for patients who may have been exposed to such agents.²⁵ Evaluation of disease exacerbations due to exposure to agents requires various stages and considerations for decision making. Speed in assessment and treatment actions can be critical in cases of exposure to hazardous agents. Furthermore, the assessment of local and global infections involves assessing infections that affect individuals or populations at a local or global level.²⁶ Nurses need to identify local infections, so they can quickly make appropriate treatment decisions.

Decision-making in the triage priorities

Having disaster triage decision-making skills among all healthcare providers is critical to improving patient flow and impacting patient outcomes, especially during disasters. The results of a study by Azizpour et al (2021) showed that decisions made with intuition or reasoning will drive rapid and accurate decisions. Novice nurses must be able to quickly identify priorities during triage using their clinical knowledge and skills in a crowded, noisy, and stressful environment.²⁷ Slightly different from the study conducted by Ghanbari et al (2021) decision-making must be based on ethical decision-making components in triage by considering the equity between prioritizing patients who require immediate medical needs and those who will give victims a greater chance of survival in their community.²⁸ Novice nurses are responsible for the triage role in clinical settings. Rapid information gathering and accurate decision making such as clinical reasoning skills are essential for severity classification.²⁹ Clinical decision making in prioritizing disaster triage has two dimensions, namely a) efficient and effective triage (urgent need, effective intervention, possibility of survival) and b) priority-oriented triage (special attention to vulnerable patients, prioritizing possible rescue for longer lives, prioritizing patients of productive age, prioritizing social efficiency, priorities based on possibilities in providing services and non-preferential priorities).

Most participants in this study stated that principles alone are not enough to explain the ethical aspects of decision-making in disaster triage.³⁰ The

highest predictor is novice ER nurses who receive disaster triage education, showing higher decision-making abilities in problem-solving and strategic thinking.³¹ Through structured triage education, clinical reasoning abilities can be maximized to make decisions in line with the severity of disaster victims.³² Novice nurses need to prioritize patients with a higher chance of survival. In crowded ER situations with limited resources, the ability to prolong survival is one of the team's goals. Even research conducted by Holmstrom et al (2020) used triage decision-making technology in priority setting, but it was considered to create conflict between nurses and tools. so that novice nurses view the tool as a support for the statements and decisions they make.³³ Therefore this study supports previous research that clinical knowledge and skills are absolutely owned by novice nurses well.

Decision-making in the diagnostic skills

Research findings by Winarti explained that decision-making is low in the diagnostic aspect. Novice nurses will often hesitate in making such decisions.³⁴ Clinical decision-making in emergencies during disasters requires careful consideration. Gaps in decision-making during disaster preparedness reflect decision-making ambiguity. The study by Alharbi found that many nurses do not have a detailed understanding of disaster emergency response.³⁵ Education and training are the main influences in reducing knowledge and decision-making gaps. Furthermore, Labrague et al emphasized the important role of this awareness in supporting disaster management decision-making in the ER.³⁶ Disaster emergency response simulations help illustrate novice nurses in preparing them to provide care during disasters. Based on the weaknesses of novice nurses, one way to improve diagnostic skills is to try to master and improve the skills and knowledge they have by using operational training. Given that operational training is one method of empowering nurses, this diagnostic skills training needs to be highlighted in health service centers.³⁷

Decision-making in the team communication skills

Communication between teams is needed in decision making to determine further actions. Numerical results indicate that personnel factors are categorized as low in the index.³⁸ Furthermore, Chegini et al (2022) suggested that all emergency nurses, both beginners, should understand the proper chain of

command and who to communicate with and how to establish effective communication as it is considered a key component of identifying patients during a disaster event.³⁹ Decision-making support and reflective assistance are mandatory support among fellow professionals in difficult situations. In-depth understanding influences clinical decision-making for novice nurses. Consistent with the findings of Ayenew et al, novice nurses' strengths in decision-making lie in communication skills and critical thinking.⁴⁰ Findings from the study by Considine et al also showed that the need to communicate quality information within the team significantly affects subsequent decision-making actions.⁴¹ Therefore, it is essential that every hospital develop alternative communication methods and provide nursing managers and staff with adequate knowledge on these alternatives and their uses to prepare them to operate efficiently during a disaster to prevent these situations.⁴² Study conducted by Amberson et al 2020, using a concise and relevant integrated information system according to the SBAR principle can be applied in any department especially disaster to develop more confident and prepared novice nurses. Not only that, communication can also be done with all types of devices such as (telephone, fax, email, satellite phones, PDAs, Etc).⁴³ This idea considers the significant patient outcomes from the perspective of all ER nurses.

Decision-making in the emergency care

Decision making is also seen from the perspective of emergency care in disaster situations, where the process consists of: a) resuscitation decision making; b) psychological management of patients; c) individual and family care support. Resuscitation decision making during disaster management involves special considerations because in such situations, resources may be limited and many patients may require emergency care.⁴⁴ Continuous monitoring of the patient's condition is important. If the patient does not show improvement within a reasonable time, the nurse needs to consider stopping resuscitation measures. Identify individuals or groups who may need special psychological support, such as victims who have experienced major losses or health workers working under very high pressure.⁴⁵ Although in the ER setting care is always focused on critical actions, the psychological support aspect during disaster care is very important, both for disaster victims because it often creates very stressful and potentially traumatic situations.⁴⁶ Provide clear, accurate, and up-to-date

information about the disaster situation, available treatments, and actions to be taken. Open communication can help reduce anxiety and increase understanding. Approach each individual and family by considering their specific needs for care. Individuals and families who are victims of disasters have different medical, nutritional or psychological support needs.

From the various discussions above, although awareness of the clinical role of novice nurses in disaster response is reported to be high, a study conducted by Alzahrani and Kyratsis (2017) in Mecca showed limited emergency and disaster preparedness plans.⁴⁷ The study explained that they were able to provide timely general clinical assessment and care; however, few of the novice nurses carried out their duties as part of providing supervision, prevention, leadership or psychological care in disasters.⁴⁸ In contrast to other studies, there were indeed significant differences between nurses in their understanding of the basic elements of disaster management based on their level of experience.⁴⁹ Therefore, novice nurses with less than five years of experience have a significant need to learn these components in order to be able to cope with disasters.⁵⁰ In line with research findings in Indonesia which show that emergency disaster nurses have a moderate level of disaster preparedness.⁵¹ Previous disaster experience and disaster training or education are positively related to disaster preparedness.

Meanwhile, ironically, this study shows that nurses lack the relevant competencies needed in responding to recent disasters. In this regard, this study also suggests that nurses specializing in emergency, trauma, and disaster care are generally underprepared in their ability to optimize disaster response and recovery efforts and patient outcomes during disasters.⁵² Similarly, the issues of surge in patient arrivals, communication problems, lack of adequate emergency care, lack of coordination between disaster areas and hospitals, lack of telecommunications, chaos, and triage difficulties are some of the other issues that need to be addressed in the current literature. In highlighting these issues, this study may provide a useful starting point for the development of an educational framework to prepare nurses and other health professionals to work in disaster situations.

Conclusions

The decision-making competencies identified in this study are expected to give more weight to previous competencies. Furthermore, this review can facilitate the identification of decision-making gaps in novice nurses, allowing training and the incorporation of disaster curriculum in education to be useful in the future. It is also important to learn and teach techniques which encourage nurses to improve their skills. Disaster scenarios and formal disaster preparedness training. The definition of nursing duties in nursing laws and regulations must also be determined and updated. Additional guidance specifically regarding novice nurse instruction and practices should be added to suit disaster nursing law. These findings provide a basis for novice nurses on how ethical decision-making can be achieved in disaster triage due to the large number of victims. Comprehensive training is required for decision-making and more education for novice nurses on precision disaster nursing in the future to reduce decision-making errors.

References

1. World Risk Report 2023. Bündnis Entwicklung Hilft, Ruhr University Bochum – Institute for International Law of Peace and Conflict 2023. <https://weltrisikobericht.de/en>.
2. Al Harthi M, Al Thobaity A, Al Ahmari W, Almalki M. Challenges for Nurses in Disaster Management: A Scoping Review. *Risk Management and Healthcare Policy*. 2020;13:2627–2634.
3. Wang W, Li H, Huang M. A literature review on the impact of disasters on healthcare systems, the role of nursing in disaster management, and strategies for cancer care delivery in disaster-affected populations. *Frontiers in Oncology*. 2023;13:1178092.
4. Al Harthi M, Al Thobaity A, Almalki, M, Al Ahmari W. Improving Disaster Readiness and the Response of Nurses in Saudi Arabia. *Risk Management and Healthcare Policy*. 2021;14:4537–4544.
5. Goniewicz K, Goniewicz, M, Burkle FM, Khorram-Manesh A. Cohort research analysis of disaster experience, preparedness, and competency-based training among nurses. *PLOS ONE*. 2021;16(1): e0244488.
6. Choi W.-S, Hyun SY, Oh H. Perceived Disaster Preparedness and Willingness to Respond among Emergency Nurses in South Korea: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*. 2022;19(18):11812.
7. Ghavami V, Saghi F, Asghari A, Shabanikiya H. Predictors of nurses' reporting for work at the time of epidemics and natural disasters; solutions for hospital surge capacity. *J. Nurs. Sch.* 2021;54:470–476.
8. Yaghmaei S, Raiesdana N, Nobahar M. Novice nurses' experiences from teamwork in the emergency department: A qualitative content

- analysis. *International Emergency Nursing*. 2022;61:101116.
9. Fernández-Basanta S, Espremáns-Cidón C, Movilla-Fernández M-J. Novice nurses' transition to the clinical setting in the COVID-19 pandemic: A phenomenological hermeneutic study. *Collegian*. 2022;29(5):654–662.
 10. Geekiyanage D, Fernando T, Keraminiyage K. Assessing the state of the art in community engagement for participatory decision-making in disaster risk-sensitive urban development. *International Journal of Disaster Risk Reduction*. 2020;51:101847.
 11. Perpiñá-Galvañ J, Juliá-Sanchis R, Olmos-Castelló É, Mollá-Pérez S, Sanjuan-Quiles, Á. European Educational Programmes in Health Emergency and Disaster Management: An Integrative Review. *International Journal of Environmental Research and Public Health* 2021;18(21):11455.
 12. Kapucu N, Garayev V. Collaborative Decision-Making in Emergency and Disaster Management. *International Journal of Public Administration*. 2011;34(6):366–375.
 13. Xu Q, Li D, Dong Y, Wu Y, Cao H, Zhang F, Xia Y, Chen J, Wang X. The Relationship Between Personality Traits and Clinical Decision-Making, Anxiety and Stress Among Intern Nursing Students During COVID-19: A Cross-Sectional Study. *Psychology Research and Behavior Management*. 2022;16:57–69.
 14. Al Harthi M, Al Thobaity A, Al Ahmari W, Almalki M. Challenges for Nurses in Disaster Management: A Scoping Review. *Risk Management and Healthcare Policy*. 2020;13:2627–2634.
 15. Abdulmohdi N, Mcvicar A. Investigating the clinical decision-making of nursing students using high-fidelity simulation, observation and

- think aloud: A mixed methods research study. *Journal of Advanced Nursing*. 2023;79(2):811–824.
16. Ncube A, Chimenya GN. Hospital disaster emergency preparedness: a study of Onandjokwe Lutheran Hospital, Northern Namibia. *Afr Saf Promot*. 2016;14(2):1–17
 17. Qie Z, Rong L. A scenario modelling method for regional cascading disaster risk to support emergency decision making. *International Journal of Disaster Risk Reduction*. 2022;77:103102.
 18. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71.
 19. Holmström IK, Kaminsky E, Lindberg Y, Spangler D, Winblad U. Registered Nurses' experiences of using a clinical decision support system for triage of emergency calls: A qualitative interview study. *Journal of Advanced Nursing*. 2020;76(11):3104–3112.
 20. Murphy JP, Rådestad M, Kurland L, Jirwe M, Djalali A, Rüter A. Emergency department registered nurses' disaster medicine competencies. An exploratory study utilizing a modified Delphi technique. *International Emergency Nursing*. 2019;43:84–91.
 21. Feng Y, Cui S. A review of emergency response in disasters: Present and future perspectives. *Natural Hazards*. 2021;105(1):1109–1138.
 22. Heydari M, Lai K, K, Fan Y, Li X. A Review of Emergency and Disaster Management in the Process of Healthcare Operation Management for Improving Hospital Surgical Intake Capacity. *Mathematics*. 2022;10(15); 2784.
 23. Labrague LJ, Hammad K, Gloe DS, McEnroe-Petitte DM, Fronza DC, Obeidat AA, Leocadio MC, Cayaban AR, Mirafuentes EC. Disaster Preparedness among nurse: A systematic review of literature. *International Nursing Review*. 2018;65(1):41-53.

24. Tilahun L, Desu B, Zeleke M, Dagnaw K, Andualem A. Emergency and Disaster Handling Preparedness Among Front Line Health Service Providing Nurses and Associated Factors at Emergency Department, at Amhara Regional State Referral Hospitals, Ethiopia. *Open Access Emergency Medicine*. 2022;13:221–232.
25. Canatan H. An Investigation On The Concept Of Triage In The Event Of Disasters And Emergences: Definition, Ethical Decision-Making. *Journal of International Health Sciences and Management*. 2020; 6(12):74–82.
26. Paganini M, Borrelli F, Cattani J, Ragazzoni L, Djalali A, Carengo L, et al. Assessment of disaster preparedness among emergency departments in Italian hospitals: a cautious warning for disaster risk reduction and management capacity. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*. 2016 Aug 15;24(1):101.
27. Amberson T, Wells C, Gossman S. Increasing Disaster Preparedness in Emergency Nurses: A Quality Improvement Initiative. *Journal of Emergency Nursing*. 2020;46(5):654-665.e21.
28. Azizpour I, Mehri S, Soola AH. Disaster preparedness knowledge and its relationship with triage decision-making among hospital and pre-hospital emergency nurses Ardabil, Iran. *BMC Health Services Research*. 2022;22(1):934.
29. Yang J, Kim KH. Effect of the Strategic Thinking, Problem Solving Skills, and Grit on the Disaster Triage Ability of Emergency Room Nurses. *International Journal of Environmental Research and Public Health*. 2020;19(2):987.
30. Al Harthi M, Al Thobaity A, Al Ahmari W, Almalki M. Challenges for Nurses in Disaster Management: A Scoping Review. *Risk Management and Healthcare Policy*. 2020; 13:2627–2634.

31. Khorram-Manesh A, Nordling J, Carlström E, Goniewicz K, Faccincani R, Burkle FM. A translational triage research development tool: Standardizing prehospital triage decision-making systems in mass casualty incidents. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*. 2021;29(1):119.
32. Jiang G.-J, Chen H.-X, Sun H.-H, Yazdi M, Nedjati A, Adesina KA. An improved multi-criteria emergency decision-making method in environmental disasters. *Soft Computing*. 2021;25(15):10351–10379.
33. Ghanbari V, Ardalan A, Zareiyan A, Nejati A, Hanfling D, Bagheri A, Rostamnia L. Fair prioritization of casualties in disaster triage: A qualitative study. *BMC Emergency Medicine*. 2021;21(1):119.
34. Winarti W, Gracya N. Exploring Nurses' Perceptions of Disaster Preparedness Competencies. *Nurse Media Journal of Nursing* 2023;13(2):236–245.
35. Alharbi NS, Youssef DHA, Felemban DEM, Alqarni SS, Alharbi NM, Alsayed AAO, et al. Saudi Emergency Nurses Preparedness For Biological Disaster Management At The Governmental Hospitals. *J' Positive School Psychology*. 2022 Sep 29;6(9):1218–35.
36. Labrague LJ, Hammad K, Gloe DS, McEnroe-Petitte DM, Fronda DC, Obeidat AA, Leocadio MC, Cayaban AR Mirafuentes EC. Disaster Preparedness among nurse: A systematic review of literature. *International Nursing Review*. 2018;65(1):41-53.
37. Ayenew T, Tassew SF, Workneh BS. Level of emergency and disaster preparedness of public hospitals in Northwest Ethiopia: A cross-sectional study. *African Journal of Emergency Medicine*. 2022;12(3):246–251.
38. Aliakbari F, Pirani T, Heidari M, Kheiri S. Effect of operational exercises on nurses' competence in dealing with disaster. *J Educ Health*

Promot. 2022 Feb 26;11:54.

39. Ayenew T, Tassew SF, Workneh BS. Level of emergency and disaster preparedness of public hospitals in Northwest Ethiopia: A cross-sectional study. *African Journal of Emergency Medicine*. 2022;12(3):246–251.
40. Considine J, Botti M, Thomas S. Do Knowledge and Experience Have Specific Roles in Triage Decision-making? *Academic Emergency Medicine*. 2007;14(8):722–726.
41. Jiang GJ, Chen HX, Sun HH, Yazdi M, Nedjati A, Adesina KA. An improved multi-criteria emergency decision-making method in environmental disasters. *Soft Computing*. 2021;25(15):10351–10379.
42. Al Harthi M, Al Thobaity A, Al Ahmari W, Almalki M. Challenges for Nurses in Disaster Management: A Scoping Review. *Risk Management and Healthcare Policy*. 2020;13:2627–2634
43. Seyedin H, Abbasi Dolatabadi Z, Rajabifard F. Emergency Nurses' Requirements for Disaster Preparedness. *Trauma Monthly*. 2015;20(4).
44. Ortiz-Barrios M, Gul M, López-Meza, P, Yucesan M, Navarro-Jiménez E. Evaluation of hospital disaster preparedness by a multi-criteria decision making approach: The case of Turkish hospitals. *International Journal of Disaster Risk Reduction*. 2020;49:101748.
45. Brewer CA, Hutton A, Hammad KS, Geale SK. A feasibility study on disaster preparedness in regional and rural emergency departments in New South Wales: Nurses self- assessment of knowledge, skills and preparation for disaster management. *Australasian Emergency Care*. 2020;23(1):29–36.
46. 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.
47. Brinjee D, Al Thobaity A, Almalki M, Alahmari W. Identify the Disaster Nursing Training and Education Needs for Nurses in Taif City, Saudi Arabia. *Risk Management and Healthcare Policy*. 2021;14:2301–2310.
48. Hasan MdK, Younos TB, Farid ZI. Nurses' knowledge, skills and preparedness for disaster management of a Megapolis: Implications for nursing disaster education. *Nurse Education Today*. 2021;107:105122.
49. Rizqillah AF, Suna J. Indonesian emergency nurses' preparedness to respond to disaster: A descriptive survey. *Australasian Emergency Care*. 2018;21(2):64–68.
50. Alzahrani F, Yiannis K. Emergency nurse disaster preparedness during mass gatherings: A cross-sectional survey of emergency nurses' perceptions in hospitals in Mecca, Saudi Arabia. *BMJ Open*. 2017;7(4):e013563.
51. Choi WS, Hyun, SY, Oh H. Perceived Disaster Preparedness and Willingness to Respond among Emergency Nurses in South Korea: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health* 2022;19(18):11812.
52. Fithriyyah YN, Alda AK, Haryani H. Trends and ethical issues in nursing during disasters: A systematic review. *Nursing Ethics*. 2023:096973302311556.

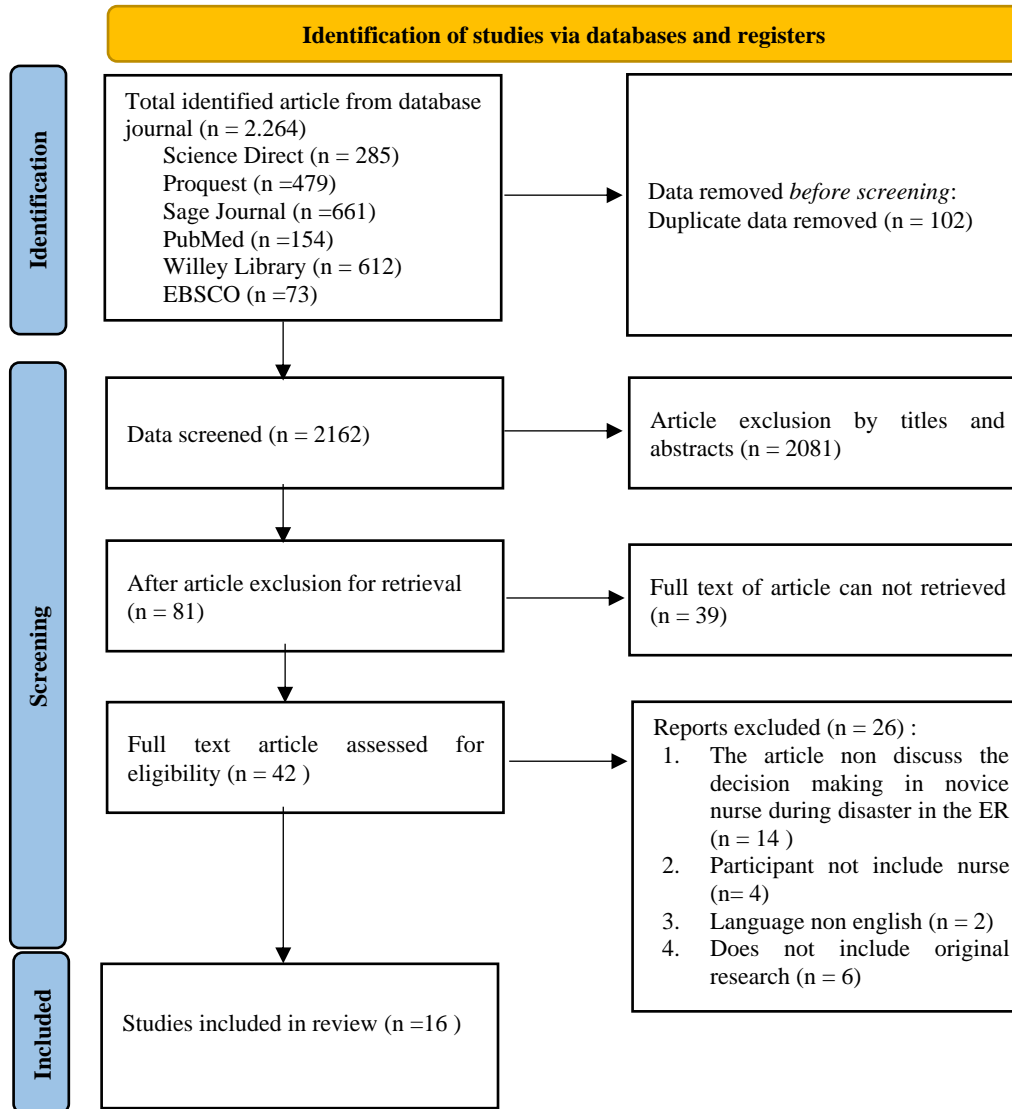


Figure 1. Selection Articles Using PRISMA

Was the sample size based on pre-study considerations of statistical power?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Was a satisfactory response rate achieved?	Y	C	Y	C	Y	C	Y	Y	Y	Y	Y	Y
Are the measurements (questionnaires) likely to be valid and reliable?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Was the statistical significance assessed?	Y	Y	Y	Y	N	Y	C	Y	C	N	C	N
Are the confidence intervals given for the main results?	C	C	Y	N	Y	Y	C	C	C	C	N	N
Could there be confounding & factor that have not been accounted for?	C	C	Y	C	Y	Y	N	N	Y	Y	Y	Y
Can the results be applied to your organizations?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Quality appraisal	M	M	M	M	M	M	M	M	M	M	M	M

Description : Y = yes, C = can't tell, N = no, M = moderate overall appraisal, L = low overall appraisal

Table 2. Summary of articles quality assessment for qualitative study using Critical Appraisal Skill Program (CASP) tools

Author, year	Was there a clear statement of the aims of the research?	Is the qualitative methodology appropriate?	Was the research design appropriate to address the aims of the research?	Was the recruitment strategy appropriate to the aims of the research?	Was the data collected in a way that addressed the research issue?	Has the relationship between the researchers and participants been adequately considered?	Have ethical issues been taken into consideration?	Was the data analysis sufficiently rigorous?	Is there a clear statement of findings?	How valuable is the research?	Quality appraisal
Ghanbari et al. (2021)	Y	Y	Y	Y	Y	Y	C	C	Y	Y	M
Holmstrom et al. (2020)	Y	Y	Y	Y	Y	Y	N	V	Y	Y	M

Description : Y = yes, C = can't tell, N = no, M = moderate overall appraisal, L = low overall appraisal

**Table 3. Summary of articles quality assessment for experimental study using
Joanna Briggs Institute (JBI) Critical Appraisal tools**

Author, year	Is it clear in the study what is the 'cause' and what is the 'effect' ?	Were the participan ts included in any compariso ns similar?	Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	Was there a control group?	Were there multiple measurement s of the outcome both pre and post the intervention/e xposure?	Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	Were the outcomes of participants included in any comparisons measured in the same way?	Were outcomes measure d in a reliable way?	Was appropriat e statistical analysis used?	Quality appraisal
Murphy et al. (2019)	Y	Y	Y	Y	Y	Y	Y	Y	Y	M
Amberson et al. (2020)	Y	Y	Y	U	Y	U	U	Y	Y	M

Description : Y = yes, U = unclear, N = no, NA= not applicable, M = moderate overall appraisal, L = low overall appraisal

Table 4. Summary of articles selected from the database

Author, Years, & Country	Results
Murphy et al. (2019) Sweden	<ul style="list-style-type: none"> ● The main findings of this research highlight the importance of decision-making seen as a crucial competency during disasters, taking into account the fundamental aspects of first aid during disasters, rapid triage decision-making for large-scale disaster victims, and the differences in decision-making processes within the Incident Command System between major emergency incidents and non-emergency situations ● About 89% of participants reached the predetermined level of consensus, 75% of participants reached agreed consensus and 91% of participants missed disaster preparedness items
Amberson et al. (2020) Southern California	<ul style="list-style-type: none"> ● Decision-making process that must be carried out, including patient assessment and the ability to identify exacerbations of underlying diseases due to disasters
Azizpour et al. (2022) Iranian	<ul style="list-style-type: none"> ● Triage decision-making has a statistically significant influence on disaster preparedness management. Decision-making is based on reasoning and knowledge, enabling quick and accurate assessments ● This questionnaire is accurate and effective for assessing triage decision making during disaster management
Ghanbari et al. (2021) Iranian	<ul style="list-style-type: none"> ● The research findings yield ethical clinical decision-making in disaster triage by considering effectiveness, efficiency, and the likelihood of providing effective interventions
Aliakbari et al. (2020) Iranian	<ul style="list-style-type: none"> ● This study shows that clinical decisions made in emergency disaster situations require careful consideration when providing acute or urgent care ● Decision-making to rapidly and accurately assess patients in crowded ER conditions ● This questionnaire is accurate and effective for assessing triage decision making during disaster management
Barrios et al. (2020) Turkey	<ul style="list-style-type: none"> ● Decision-making that can be integrated into disaster preparedness includes an emergency network, triage tags, emergency response time, and information quality ● This questionnaire is accurate and effective for assessing triage decision making during disaster management in various sectors
Holmstrom et al. (2020) Sweden	<ul style="list-style-type: none"> ● The main findings in this study include that triage decision-making was performed with higher priority triage than lower priority, and decision-making utilization is a professional competence in disaster response situations
Yang and Kim (2022) Switzerland	<ul style="list-style-type: none"> ● The main findings in this study show that novice nurses working in the emergency room need an understanding of decision-making in determining triage priorities during disasters
Brewer et al. (2019) New South Wales	<ul style="list-style-type: none"> ● Decision-making in the context of this research is related to the triage principles used in disaster situations in the ER. Both new and experienced nurses are expected to be prepared to face local disaster response challenges while in the ER
Alzahrani & Kyratsis (2017) Saudi Arabia	<ul style="list-style-type: none"> ● Key roles in decision-making during disaster management in this study included general assessment, followed by disaster triage and decision-making for resuscitation

Author, Years, & Country	Results
	<ul style="list-style-type: none"> ● Results of key roles in decision making during disaster management in this study included general assessment and concern for patients (38%), followed by disaster triage (26%) and resuscitation (21%), while respondents gave a lower priority to leadership roles than (14%), and only one respondent considered their role to include providing psychological care (1%)
Chegini et al. (2020) Iranian	<ul style="list-style-type: none"> ● The study's findings indicated that decision-making indications in emergency nurses are seen from various roles, including special diagnostic skills, general diagnostic skills, and communication skills
Brinje et al. (2021) Saudi Arabia	<ul style="list-style-type: none"> ● The results showed significant differences among nurses in understanding the basic elements of disaster management in the ER. Decision-making has significant needs in elements such as disaster triage, patient psychological management, patient assessment skills, communication, and decontamination during disaster management ● This questionnaire was accurate and effective for assessing triage decision making during disaster management in various sectors
Hasan et al. (2021) Bangladesh	<ul style="list-style-type: none"> ● Ethical planning was required to make decisions regarding triage priority assignments for disaster victims ● The focus of decision-making in disaster management is on how nurses can prioritize patients according to the disaster triage principle
Rizqillah et al. (2018) Indonesia	<ul style="list-style-type: none"> ● Low scores were obtained in emergency response planning at the local, regional, and national levels. Decision-making regarding disaster response logistics had low value in this study
Husna et al. (2022) Indonesia	<ul style="list-style-type: none"> ● Triage assessment and basic first aid with sub-scales of biological agent detection, communication, and connectivity were found in good decision-making. Basic triage and first aid assessment, biological agent detection, communication and connectivity sub-scales were found to be in good understanding with scores of 63.3%, 56.7% and 53.3% respectively. Meanwhile, there is low understanding in epidemiology and clinical decision making with a value of 48.3%.
Choi et al. (2022) South Korea	<ul style="list-style-type: none"> ● The decision-making obtained in this research consists of assessment in emergency patient care, triage for basic disaster concepts, and team communication skills for disaster victim care

Table 5. Summary of clinical decision-making on novice nurse

Decision-Making	Authors	Implementasi
Patient physical assessment	Amberson et al. (2020) Aliakbari et al. (2020) Alzahrani & Kyratsis (2017) Brinje et al. (2021) Husna et al. (2020)	<ul style="list-style-type: none"> ● Rapid and accurate physical assessment ● Assessment of exacerbations due to exposure to agents ● Assessment of local and global infections
Disaster triage priorities	Murphy et al. (2019) Azizpour et al. (2022) Ghanbari et al. (2021) Barrios et al. (2020) Holmstrom et al. (2020) Yang & Kim (2022) Brawer et al. (2019) Alzahrani & Kyratsis (2017) Brinje et al. (2021)	<ul style="list-style-type: none"> ● Efficient and effective triage based on urgent needs and potential for survival ● Triage oriented towards special attention to vulnerable patients, prioritizing life-saving measures for longer life expectancy, emphasizing productive-age patients, and social efficiency, prioritizing based on the likelihood of service delivery
Diagnosis skills	Chegini et al. (2020)	Significant decision-making outcomes are also found in diagnostic skills, both in general and specialized cases
Team communication skills	Chegini et al. (2020) Barrios et al. (2020) Husna (2022) Brinje et al. (2021)	<ul style="list-style-type: none"> ● Team communication is necessary for decision-making to determine the actions to be taken
Emergency care	Barrios et al. (2020) Alzahrani & Kyratsis (2017) Brinje et al. (2021) Rizqillah (2018)	<ul style="list-style-type: none"> ● Resuscitation decision-making ● Patient psychological management ● Individual and family care support