P-ISSN : 2338-4700
E-ISSN : 2722-127X

https://bimiki-ejournal.com/
https://doi.org/10.53345/bimiki.v12i1.588

REVIEW ARTICLE

Open Access

METHODS TO ENHANCE CRITICAL THINKING SKILLS AMONG NURSING STUDENTS AND JUNIOR NURSES IN CRITICAL CARE NURSING: A SCOPING REVIEW

[*]Refonda Rias Anggiri[1], Dwi Cahyarani[1]
[1]Master of Nursing Student, Department of Nursing, Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia
*Corresponding Author: Refonda Rias Anggiri (rarefonda@student.undip.ac.id)

Article History:
Submitted: January 6th, 2024

Received in Revised: Mei 14th, 2024

Accepted: June 1th, 2024

ABSTRACT

Introduction: Critical thinking is essential for quality healthcare and positive patient outcomes in critical care settings. It is important for educators to understand and implement teaching and learning strategies to promote critical thinking among nursing students and junior nurses in critical care.
Methods: A scoping review using the Arksey and O'Malley 2005 framework was conducted to examine how critical thinking is promoted among nursing students and junior nurses in critical care. Articles between July 2013 and July 2023 were searched in three databases: CINAHL, Scopus, and PubMed. Descriptive thematic analysis was performed.
Results: Six articles were included for review. Four main themes were identified from the analysis: simulation, concept mapping, team-based learning, and the use of technology and innovation can improve critical thinking skills in nursing students.
Conclusion: Critical situations provide opportunities and challenges to encourage critical thinking. Educators should combine learner-centered pedagogy and encourage reflective practices to improve critical thinking skills in teaching and clinical practice.

Kata kunci: Critical Thinking; Critical Care; Nursing Students; Scoping Review.

INTRODUCTION

Critical thinking is a detailed thinking process in thinking about an event or action and solving a problem with the aim of realizing good thinking results, and critical thinking in nursing is a detailed thinking process in nursing by truly considering the pros and cons in providing health services, namely providing nursing care services using the nursing process (Nurhaliza, 2019).

Learning Process in Hospitals

To develop critical thinking skills in nursing, nurses can conduct self-study, attend training or workshops, and continuously improve their technological competencies. This will assist nurses in providing appropriate nursing care and improving patient outcomes (Ruku et al., 2023). In the teaching process in hospitals or clinics, nurses are trained and educated, then mentored by specialist doctors or other health professionals relevant to the trainee's field of practice. They are responsible and obligated to carry out clinical learning during their internship at the hospital. Furthermore, clinical teaching can also be conducted in teaching hospitals, network hospitals, community health centers, and companies (Permatasari et al., 2021). Several barriers may be encountered in the teaching process for critical care nurses within hospitals. Common barriers include limited resources, lack of training and education, lack of interprofessional collaboration, patient safety, and lack of research in practice (Mirwanti et al., 2017). Teaching and learning in the hospital environment are the learning processes that take place in hospitals or clinics. This process involves clinical education participants acquiring professional knowledge and skills related to clinical learning. Clinical learning, or clinical teaching, aims to achieve clinical competencies in accordance with the established curriculum (Khan et al., 2021).

Critical Thinking Skills in Nurses

Critical thinking is crucial in nursing education. In nursing education, critical thinking refers to a person's ability to analyze information, evaluate situations, and make appropriate decisions based on existing evidence and knowledge. In acute care, critical thinking is a crucial skill for nurses. They must be able to quickly to identify client health problems, analyze existing symptoms and signs, and determine the most appropriate course of action to address these issues (Willers et al., 2021). Critical thinking also assists nurses in dealing with complex and urgent situations. They must be able to process information quickly, assess priorities, and make

appropriate decisions in a short time. This ability is crucial in emergency and critical situations such as resuscitation or the management of patients with life-threatening conditions (Pulungan, 2019). Furthermore, critical thinking also assists nurses in planning and implementing holistic and effective care. Nurses with critical thinking skills can comprehensively identify client needs, plan appropriate interventions, and measure outcomes (Nurhaliza, 2019).

The Scoping Review

Improving critical thinking skills in nurses in critical care nursing has an impact on improving the quality of patient care. The research question in this study is: "What teaching and learning strategies are used to improve critical thinking in nurses (nursing students and junior nurses) in critical care?"

METHOD

Design

This research adopted a scoping review approach guided by Arksey and O'Malley. The process included developing the research question and objectives, locating pertinent articles, screening and selecting studies, organizing the extracted data into charts, and subsequently synthesizing and reporting the findings (Arksey & O'Malley, 2005).

Data Collection

An electronic literature search in English was conducted on CINAHL, Scopus, and PubMed. The search strategy used the search terms (teach OR teaching) AND (critical thinking) AND (nurse OR nurses OR nursing) AND (Intensive Care Unit OR ICU OR critical care OR critical care unit), structured using Boolean search operators from July 2013 to July 2023. The search results were then imported into Mendeley Citation Manager for further screening.

Data Extraction and Information Charting

Article selection was conducted in accordance with the PRISMA-ScR checklist (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews), as shown in Figure 1 (Tricco et al., 2018). The search strategy was developed by the first author with librarian support; database searching and screening were completed by the librarian. The search strategy and eligibility decisions were reviewed by the second and third authors at each screening stage. Eligible studies were English-language journal articles addressing the teaching of critical thinking in critical care contexts for nursing students and junior nurses. Studies were excluded if simulation-based instruction was used, if the setting was not a critical care area, or if the publication was not a journal article. Following final inclusion, data were charted by extracting author(s), title, publication date, study location, teaching method, study design, objectives, and key findings (Table 1).

Data Analysis

A thematic analysis was undertaken to identify key themes describing the characteristics and usefulness of the teaching methods. An inductive approach was applied to derive findings relevant to the research questions from the included literature. The analysis followed Braun and Clarke's six-phase process (Braun & Clarke, 2006). This involved 1) familiarization through repeated reading of included studies, 2) generation of initial codes informed by the summary table, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) producing the final report organized around overarching themes. During coding and theme development (phases 2–3), codes recurring across multiple studies were prioritized. Theme refinement (phases 3–5) was conducted in alignment with the research questions, and themes were retained based on their relevance to addressing these questions. Study designs were charted; however, methodological quality and level of evidence were not appraised, as the review aimed to map the breadth of the literature rather than evaluate evidence quality.

RESULT

Theme 1: Simulation

Two articles discussed the process of teaching and learning critical thinking through simulation. A simulation-based emergency study on nursing students' evaluation of critical care teaching and learning curricula found that students in the EG group perceived that the quality and outcomes of teaching in this domain were met more effectively than participants in the CG group (Chen et al., 2018). Meanwhile, a simulation-based learning experiences study on nursing students' final assignments on critical care teaching and learning found that students reported that high-fidelity simulation provided them with the time and safety to prepare for critical thinking and rationalize interactions with patients requiring intensive monitoring (Smallheer et al., 2018).

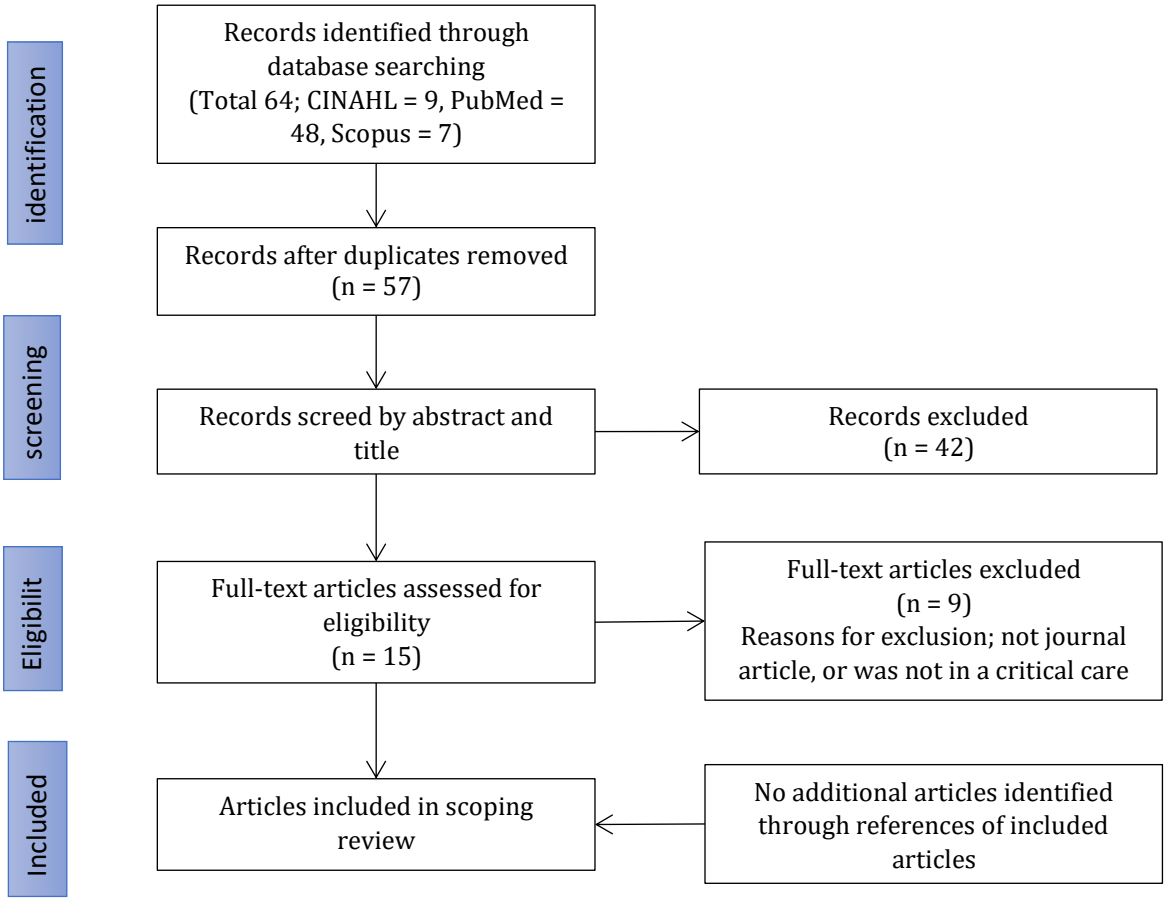

Figure 1. Flow diagram for database search

Theme 2: Concept Mapping

Concept mapping is an effective learning method for improving critical thinking and clinical decision-making skills in novice nurses (Wahl & Thompson, 2013). Concept mapping involves constructing a visual concept map to represent what is being learned. Before conducting the concept mapping exercise, the educator held a meeting with the unit manager, preceptor, and the novice nurse as a team. Before serving as preceptor during the concept mapping exercise, nursing staff must have successfully completed preceptor training. The concept mapping exercise process began with the selection of patients from the novice nurse and preceptor to create a concept map. The novice nurse was asked to independently complete a concept analysis map. The preceptor then reviewed the map and used reflective inquiry to help further develop it. The next step was a presentation of the concept map to the educator, preceptor, and assistant nurse manager. During this time, all parties were free to provide suggestions, ask questions, and express their opinions (Wahl & Thompson, 2013).

Theme 3: Team-Based Learning

Team-based learning (TBL) has been identified as an effective educational strategy for fostering professional attributes among critical care nurses. Through enhanced engagement, improved learning effectiveness, strengthened teamwork skills, and the development of critical thinking, TBL supports the acquisition of core competencies required in critical care nursing practice (Currey et al., 2015).

Theme 4: Technology and Innovation

Learning processes utilizing technology and innovation can enhance critical thinking in nurses. The learning process was carried out using a digital learning management system and innovative critical thinking cards (Jalalpour et al., 2021; Lee & Chang, 2022). After implementing the digital learning system, the critical care knowledge and critical thinking skills of intensive care unit nurses significantly improved. High-level nurses had higher critical thinking scores. All participants associated critical care knowledge with improved quality of care (Jalalpour et al., 2021; Lee & Chang, 2022).

https://bimiki-ejournal.com/
https://doi.org/10.53345/bimiki.v12i1.588

Table 1. Summary of Article Review

Author, Year	Teaching Method Identified	Findings
Lee & Chang, 2022	*The digital learning management system*	Implementation of the digital learning system, significant improvements were observed in both critical care knowledge and critical thinking skills. Nurses with higher clinical levels demonstrated higher critical thinking scores. All participants linked critical care knowledge to improved quality of care.
Jalalpour et al., 2021	*Training using critical thinking cards*	Prior to the intervention of critical thinking cards, the intervention group had a lower mean clinical decision-making score (141.59 ± 10.76) than the control group (148.56 ± 10.95) (P = 0.011); therefore, analysis of covariance was applied. Post-intervention, the intervention group demonstrated a higher mean clinical decision-making score (163.82 ± 8.83) than the control group (154.50 ± 11.25), reflecting a significant improvement (P < 0.001).
Chen et al., 2018	*Simulation-based emergency and critical care*	The study aimed to establish high-fidelity simulation standards for emergency and intensive care nursing and to assess the curriculum's effects on third-year nursing students' response times and teamwork during simulated resuscitation scenarios. A total of 39 third-year nursing students participated. Participants in the experimental and control groups were aged 19–22 years (mean = 20.45) and 19–21 years (mean = 20.26), respectively.
Smallheer, Hunt, & Smith 2018	*Simulation-based learning experiences*	The intervention aimed to enhance patient safety by providing structured opportunities for students to practice managing critical care scenarios, thereby increasing confidence and readiness when encountering similar situations in clinical settings. Only 22.2% of licensed nurses reported feeling prepared for their first experience caring for a specialist patient, and this perceived preparedness was attributed to participation in the simulation activity.
Currey et al., 2015	*Critical care nurses using team-based*	Across performance levels, students reported high enthusiasm for the team-based problem-solving approach, and feedback indicated improvements in individual understanding and contributions to peers' learning. Following immersion in team-based learning (TBL), students articulated perceived professional development and greater acceptance within the healthcare team and demonstrated increased clinical confidence that supported effective participation and facilitation in practice. Improvements in critical reasoning, problem-solving, and clinical judgment were also reported.
Wahl, & Thompson, 2013	*Concept mapping in a critical care orientation*	This study evaluates the effectiveness of concept mapping as a teaching strategy for enhancing critical thinking and clinical decision-making among novice nurses. Pre- and post-intervention critical thinking scores were analysed using a one-tailed t-test in Microsoft Excel with a 95% confidence interval to assess statistical significance.

DISCUSSION

A scoping review of six studies indicated that simulation-based learning, concept mapping, team-based learning, and technology-enabled or innovative approaches may enhance critical thinking among novice nurses (Chen et al., 2018; Currey et al., 2015; Jalalpour et al., 2021; Lee & Chang, 2022; Smallheer et al., 2018; Wahl & Thompson, 2013). The development of critical thinking in clinical contexts was described as a shared responsibility between instructors and learners. Learner-centered pedagogical strategies were emphasized, including the use of concept mapping, structured facilitation of reflective thinking to explore alternative solutions, and proactive questioning to support clinical decision-making. In parallel, students were expected to adopt an active learning stance and cultivate ongoing learning habits through reflective practice and inquiry. During acute clinical situations, collaborative engagement between students and clinical instructors and the purposeful use of in-situ learning opportunities for reflection were highlighted as mechanisms that may facilitate practice change and strengthen critical thinking.

Reviews have highlighted multiple barriers to the development of critical thinking in critical care contexts. These challenges are particularly evident when novice nurses have limited critical care experience, a factor closely linked to patient safety (Smallheer et al., 2018). Reported barriers include the fast-paced nature of clinical environments, where preceptors may focus on providing detailed feedback on learners' actions rather than facilitating reflection on the underlying rationale and encouraging exploration of alternative approaches (Brunt, 2005; Randall et al., 2007).

Peer-to-peer coaching has been proposed as a potential strategy to mitigate generational barriers between instructors and learners (McQuiston & Hanna, 2015). Limited time has also been identified as a constraint on the development of critical thinking in critical care, and some students may require additional support to develop as reflective practitioners. Innovative approaches, including flipped classrooms and e-learning, may be integrated into clinical placements (Pucer et al., 2014). Prior to bedside teaching, students can engage with online modules and discussion boards to consolidate foundational clinical knowledge and prepare for skills application. Such approaches may reduce cognitive load during clinical practice, promote active inquiry, support peer collaboration, and increase engagement with learning materials.

CONCLUSION

Critical care settings provide distinctive learning opportunities while also posing challenges for learning and the development of critical thinking. Teaching and learning critical thinking for nursing students in critical care were reflected across several themes, including simulation, concept mapping, team-based learning, and the application of technology and innovation, which may strengthen critical thinking among novice nurses.

RECOMMENDATION

The promotion of critical thinking in clinical environments requires contributions from both instructors and students. Active learning in practice settings, supported by reflective practice and purposeful inquiry, is recommended to foster continuous learning habits and enhance critical thinking in critical situations.

ACKNOWLEDGEMENT

Appreciation is extended to Universitas Diponegoro for institutional support and access to scientific databases. Gratitude is also expressed to colleagues who assisted with the literature search, article screening, and data extraction. No external funding was received. The authors declare no competing interests.

REFERENCE

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19-32. https://doi.org/10.1080/1364557032000119616

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Brunt, B. A. (2005). Critical thinking in nursing: an integrated review. *The Journal of Continuing Education in Nursing*, *36*(2), 60-67. https://doi.org/10.3928/0022-0124-20050301-05

Chen, J., Yang, J., Hu, F., Yu, S. H., Yang, B. X., Liu, Q., & Zhu, X. P. (2018). Standardised simulation-based emergency and intensive care nursing curriculum to improve nursing students' performance during simulated resuscitation: A quasi-experimental study. *Intensive & Critical Care Nursing*, *46*, 51-56. https://doi.org/10.1016/j.iccn.2018.02.003

Currey, J., Eustace, P., Oldland, E., Glanville, D., & Story, I. (2015). Developing professional attributes in critical care nurses using Team-Based Learning. *Nurse Education in Practice*, *15*(3), 232-238. https://doi.org/10.1016/j.nepr.2015.01.011

Jalalpour, H., Jahani, S., Asadizaker, M., Sharhani, A., & Heybar, H. (2021). The impact of critical thinking training using critical thinking

cards on clinical decision-making of CCU nurses. *Journal of Family Medicine and Primary Care*, *10*(10), 3650-3656. https://doi.org/10.4103/jfmpc.jfmpc_319_21

Khan, M. A., Rajendram, R., Al-Jahdali, H., Al-Harbi, A., Al-Ghamdi, M., Hasan, I., Obaidi, M. M., & Masuadi, E. (2021). Do ward rounds offer effective teaching and training? Obstacles to learning and what makes good teaching in a large tertiary care hospital from trainee doctor's perspective. *GMS J Med Educ*, *38*(6), Doc106. https://doi.org/10.3205/zma001502

Lee, S.-Y., & Chang, C.-Y. (2022). Nursing management of the critical thinking and care quality of ICU nurses: A cross-sectional study. *Journal of Nursing Management*, *30*(7), 2889-2896. https://doi.org/10.1111/jonm.13591

McQuiston, L. S., & Hanna, K. (2015). Peer coaching: an overlooked resource. *Nurse Educator*, *40*(2), 105-108. https://doi.org/10.1097/NNE.0000000000000103

Mirwanti, R., Agustina, H. R., & Nuraeni, A. (2017). Hambatan yang dirasakan oleh perawat dalam melaksanakan pencegahan luka tekan di ruang perawatan intensif. *Medisains*, *15*(1), 1-9. https://jurnalnasional2.ump.ac.id/index.php/medisains/article/view/1619

Nurhaliza, S. (2019). Pelaksanaan Proses Diagnosa dalam Asuhan Keperawatan di Rumah Sakit. *Jurnal Kesehatan*, 1-7.

Permatasari, R. C., Sari, M. I., Oktaria, D., & Oktafany. (2021). Efektivitas Pengajaran Klinik di RSUD dr. H. Abdul Moeloek Provinsi Lampung. *Medula (Medical Profession Journal of Lampung)*, *10*(4), 638-643. https://www.journalofmedula.com/index.php/medula/article/view/142

Pucer, P., Trobec, I., & Žvanut, B. (2014). An information communication technology based approach for the acquisition of critical thinking skills. *Nurse Education Today*, *34*(6), 964-970. https://doi.org/10.1016/j.nedt.2014.01.011

Pulungan, H. R. (2019). *Pengembangan Konsep Berpikir Kritis Dalam Keperawatan* (Open Science Framework, Issue. https://osf.io/qga9e/

Randall, C. E., Tate, B., & Lougheed, M. (2007). Emancipatory teaching-learning philosophy and practice education in acute care: navigating tensions. *Journal of Nursing Education*, *46*(2), 60-64. https://doi.org/10.3928/01484834-20070201-04

Ruku, D. M., Kaparang, G. F., & Bahasa, F. A. M. (2023). Lesson Learned Dalam Asuhan Keperawatan Ketoasidosis Diabetikum Tn. Y Di Ruang Intensif. *Klabat Journal of Nursing*, *5*(1), 44-54. https://doi.org/10.37771/kjn.v5i1.893

Smallheer, B., Hunt, J., & Smith, J. (2018). Using Critical Care Simulations to Prepare Nursing Students for Capstone Clinical Experiences. *Dimensions of Critical Care Nursing*, *37*(2), 69-77. https://doi.org/10.1097/DCC.0000000000000283

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., & Weeks, L. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Annals of Internal Medicine*, *169*(7), 467-473. https://doi.org/10.7326/M18-0850

Wahl, S. E., & Thompson, A. M. (2013). Concept mapping in a critical care orientation program: a pilot study to develop critical thinking and decision-making skills in novice nurses. *The Journal of Continuing Education in Nursing*, *44*(10), 455-460. https://doi.org/10.3928/00220124-20130916-79

Willers, S., Jowsey, T., & Chen, Y. (2021). How do nurses promote critical thinking in acute care? A scoping literature review. *Nurse Education in Practice*, *53*, 103074. https://doi.org/10.1016/j.nepr.2021.103074