

Review Article: Systematic Review, Meta-Analysis, Integrative Review, Scoping Review

IDENTIFICATION OF KEY FACTORS TO IMPROVE NURSES' TRIAGE COMPETENCE IN HOSPITALS: A SCOPING REVIEW

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Abstract

Background: Many emergency department nurses still lack adequate competency in performing triage, so hospital management needs to understand the right strategies to enhance triage competencies.

Objective: The purpose of this scoping review is to identify and analyze the essential factors contributing to the improvement of nurses' triage competencies in hospitals.

Methods: This scoping review was conducted by identifying scientific articles in five databases: ScienceDirect, ProQuest, Google Scholar, Wiley Online Library, and Springer Link. The authors used the keywords "emergency nurses" AND "triage competency" AND "emergency department." After identification, the authors selected and analyzed articles using PRISMA based on predefined inclusion and exclusion criteria. Studies obtained from various databases yielded 186 research articles, and from this number, 10 relevant articles were extracted for data analysis.

Results: Ten studies were included in this scoping review, and the most important factor in improving triage competency was participating in triage training, providing innovative triage learning methods, and developing nurses' professional self-concept. This review shows that the most effective effort is to provide triage training, as it covers all triage-related material in depth by applying various learning methods aligned with actual practice.

Conclusion: This review found that triage training is the most effective factor in improving nurses' triage competency in hospitals.

Keywords: *Competency, Emergency, Nursing, Triage*

INTRODUCTION

Triage refers to the process of prioritizing patients in the Emergency Department (ED) (Zagalioti et al., 2023). Its determination is generally based on the severity and resource

needs to ensure appropriate emergency intervention or treatment (Gilboy et al., 2020). This process plays an important role in ensuring patient safety and preventing patient overcrowding (Varndell et al., 2019). Various

triage systems are used worldwide, such as the Australian Triage System (ATS) (Varndell et al., 2019), the Emergency Severity Index (ESI) (Wibowo, 2020), and the Swiss Triage System (STS) (Zagalioti et al., 2023). Nurses are the primary professionals responsible for performing triage (Stover-Baker et al., 2012; Ariyani & Rosidawati, 2020), making it essential to ensure the competence of nurses in triage implementation (Varndell et al., 2019).

The concept of triage competence for emergency nurses is identified within five aspects: clinical assessment, expert judgment, medical resource management, timely decision-making, and communication (Moon & Park, 2017). Triage decisions must be made within 3-5 minutes, and errors in these decisions can endanger patient lives (Butler et al., 2023a). Studies show that 52% of nurses in Tanzania are not competent in triage (Aloyce et al., 2014). Incompetence in triage can lead to mistriage, which includes errors in assigning triage criteria, encompassing undertriage and overtriage (Najafi et al., 2019). Research has found undertriage rates ranging from 1% to 71.9% and overtriage rates between 19% and 79% (Najafi et al., 2019). If improvements are not made promptly, patient overcrowding may occur (Rumampuk & Katuuk, 2019), potentially increasing patient morbidity and mortality rates (Sari & Fajarini, 2022). It is crucial for the nursing profession to consider appropriate steps to enhance triage competence (Hwang & Shin, 2022).

Several studies have identified factors related to nurses' triage competence (Yoon & Son, 2021). Efforts to improve triage competence are made by providing training (Soola et al., 2022; Wolf et al., 2024; Zagalioti et al., 2023) and developing specific learning approaches for ED nurses (S.-H. Moon & Kim, 2024). However, to date, there has been no review specifically focused on the key factors that contribute to improving nurses' triage competence in hospitals. Given the importance of nurse competence in triage, appropriate, effective, and condition-specific steps are

required for healthcare facilities. This review will help hospital nursing practitioners understand the latest evidence to support efforts to improve nurses' triage competence.

The aim of this scoping review is to examine published works related to the essential factors that can enhance the triage competence of hospital nurses. The results of this study are expected to provide useful information in determining the most effective efforts to improve nurses' triage skills.

METHODS

Search Strategy

This study uses a scoping review analysis method, allowing researchers to collect, synthesize, and report findings from previously published articles with various objectives and scopes related to triage learning methods for nursing students. This review follows the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) with ISSN number 15393704 (Tricco et al., 2018).

The scoping review was conducted through online electronic searches across the following five databases: 1) ScienceDirect, 2) ProQuest, 3) Google Scholar, 4) Wiley Online Library, and 5) Springer Link. The search process in these databases used the following keywords combined with Boolean operators: "emergency nurses" AND "triage competency" AND "emergency department."

The following criteria were used to select relevant articles: (1) research published within the last five years since 2019, (2) original research published in English, (3) studies focused on identifying hospital nurses' triage competencies, (4) articles that are fully accessible and free, (5) no duplicates.

The initial search by the authors in the five electronic databases (ScienceDirect, ProQuest, Google Scholar, Wiley Online Library, and Springer Link) and other sources yielded 186 articles. After removing duplicates, 157 articles were screened based on titles and abstracts

relevant to the research. After assessing the titles and abstracts, 118 articles were deemed unrelated to this review. Thirty-nine articles with relevant titles and abstracts were further evaluated for relevance based on the mentioned criteria. Finally, due to the focus on efforts to improve hospital nurses' triage competencies, ten research publications were considered relevant and suitable for this study.

Data Extraction

Data from eligible research articles were collected. Then, the authors extracted data by creating a table that includes the author's name and year of publication, research objectives, research design, research methods, research samples, research location, and research findings and conclusions. In creating the table, the authors determined the variables to be extracted, and data were mapped independently from each eligible article, then the results were discussed. The discussed results were then analyzed and concluded. Table 1 presents a conclusion of selected journals summary of the literature examining essential factors that can improve nurses' triage competence in hospitals.

RESULTS

Characteristic Article

In this review, a total of 10 research articles were used as data sources. These articles came from various countries, including South Korea (5 articles), Australia (1 article), the United States (1 article), Iran (1 article), and Greece (1 article). Most of the studies in this review utilized quasi-experimental, descriptive, and exploratory designs. The majority of studies focused on triage in hospital or emergency department (ED) settings, aiming to enhance triage competency through innovative learning interventions for ED nurses. The primary objective of most of the studies was to identify the effectiveness of training and education in improving nurses' triage competencies and to identify factors associated with these abilities in the ED. The number of

respondents in these studies varied, ranging from 12 to 1181 ED nurses.

Factors influencing the provision of triage training for nurses

Based on a review of 10 studies, the majority of efforts to improve triage competence are through training programs. Triage training is an educational process designed to enhance the skills and knowledge of medical personnel in conducting initial assessments of patients in emergency settings (RSCM, 2023). Training is characterized by the application of specific learning methods, such as triage training conducted by licensed professionals (Goniewicz et al., 2021). Various learning methods are applied in triage training, which has been shown to improve skills (Uslu et al., 2019), self-efficacy (Shuk et al., 2021), and clinical reasoning in assessing patients (Chow, 2023). The training is also designed with an emphasis on practice and real-life simulations (Santoso, 2010). The higher the quality of the simulation in approaching reality, the more optimal the expected results (Terzioğlu et al., 2016). Triage training is highly recommended, especially for emergency department (ED) nurses (Uslu et al., 2019).

Triage training has been proven to be the most influential factor in determining the level of triage competence of ED nurses (Soola et al., 2022; Zagalioti et al., 2023). Although the importance of triage training has been recognized, many nurses working in triage units have yet to undergo such training (Rustiawati & Dewi, 2021). New findings indicate that those who participate in triage training on their own initiative demonstrate better competence (Wolf et al., 2024). Hospital managers should plan to provide training to all triage nurses to help them understand how to assess patient conditions according to the algorithms used (Soola et al., 2022). Triage algorithms are designed to be used by nurses who have received triage training (Gilboy et al., 2020), so those who have not undergone training may find it challenging

to apply the algorithms (Rustiawati & Dewi, 2021).

Factors influencing the implementation of triage learning innovations for nurses

The provision of triage learning innovation involves the use of various approaches and tools to enhance triage understanding and skills among nurses (S.-H. Moon & Kim, 2024). This step can be an alternative effort to improve hospital nurses' triage competency (McCarthy et al., 2022). Types of learning innovations that can be applied to nurses include providing aids in the form of additional data for patient classification (McCarthy et al., 2022), creating learning programs through triage game applications (Moon & Kim, 2024), and producing triage learning videos (Mohan et al., 2017). This approach offers an effective alternative to address triage competency challenges in hospitals, which is the focus of research (McCarthy et al., 2022; S.-H. Moon & Kim, 2024).

The use of additional data aids provides supportive data that helps nurses classify patients more accurately and quickly. With better access to relevant information, nurses can make more precise triage decisions (McCarthy et al., 2022). According to Kenyon et al. (2017), by adding data to the triage assessment system, nurses can more easily identify patient conditions that should be prioritized, making triage assessments more effective without reducing accuracy in determining triage levels. Another effort could involve developing the Gamification Triage Education App (GTEA) (Moon & Kim, 2024). Gamified learning, or using game elements like scores, levels, and challenges, can make nursing education more engaging and sustainable (Robson et al., 2015). One advantage of this game is that nurses can gain knowledge and develop critical thinking based on data within the storyline, thereby enhancing their ability to determine patient triage levels (S.-H. Moon & Kim, 2024).

Factors in the Development of Professional Self-Concept in Nurses

According to Yuwanich et al. (2016), professional self-concept, as a domain-specific self-concept, is the attitude or feeling about oneself as a professional nurse. Professional self-concept is categorized into three dimensions: professional practice (consisting of leadership, flexibility, and skills), satisfaction, and communication (Arthur, 1995). Professional self-concept can be an important determinant of triage competency among emergency nurses (Cho et al., 2022). A nurse's professional self-concept can be influenced by work stress. Emergency nurses' work stress is significantly affected by a lack of knowledge and the burden of responsibility in determining patients' triage levels (Park et al., 2018). The consequences of work stress among emergency nurses can lead to increased irritability (Adriaenssens et al., 2015) and, eventually, hinder collaboration between nurses and doctors (Hwang & Shin, 2023).

Emergency nurses need to build a professional self-concept to efficiently carry out complex tasks through collaboration with other healthcare professionals in the emergency room setting (Sung & Oh, 2016). Previous studies have reported that professional self-concept influences professional thinking and performance, which can reduce an individual's performance (Jahromi et al., 2015). A negative professional self-concept increases the likelihood of care errors and reduces the quality and quantity of nursing care (Lee & Park, 2020). In addition, effective professional practice and communication (components of professional self-concept) enhance triage competency (Seo et al., 2017). Based on the findings, it can be concluded that professional self-concept can be an important determinant of triage competency among emergency nurses. To improve triage competency among emergency nurses, individual efforts by nurses and management are recommended to foster a professional self-concept and reduce

emergency nurses' work stress (Cho et al., 2022).

DISCUSSION

Triage refers to the process of determining patient priority, as described by Gilboy et al. (2020). This process is based on the severity of the patient's condition and is carried out by emergency nurses (Zagalioti et al., 2023). Triage plays a crucial role in ensuring patient safety and smooth operation of the emergency department (Rumampuk & Katuuk, 2019). According to the Emergency Nursing Association (ENA), the current triage accuracy rate is 59%, which is attributed to the lack of nurse competence in patient assessment (Butler et al., 2023). To address this, appropriate efforts are needed to improve nurses' triage competency in hospitals. Several efforts have been identified and have shown positive impacts on enhancing triage competency (Zagalioti et al., 2023). Triage training is recognized as the most essential factor, proven to improve nurses' triage competency (Wolf et al., 2024). Training specifically covers a single type of triage (Gilboy et al., 2020), employs various teaching methods (Uslu et al., 2019), and is led by a licensed individual (Goniewicz et al., 2021). Another factor that can improve nurse competency is providing additional learning, either by supplying patient information according to the triage classification level (McCarthy et al., 2022) or by offering game-based learning that guides nurses in determining triage levels based on game data (S.-H. Moon & Kim, 2024). By developing games and receiving scores, nurses also learn patient sorting skills according to appropriate criteria. The more they practice with different scenarios and data, the greater the potential for competency improvement (S.-H. Moon & Cho, 2022). Another approach is developing nurses' professional self-concept (Cho et al., 2022), which includes providing feedback on their actions and offering sufficient guidance if they encounter difficulties (Siallagan et al., 2021).

CONCLUSION

Based on the findings above, it can be concluded that the most essential factor for improving nurses' triage competency is triage training. This is because the training involves an in-depth discussion of triage, utilizing various learning methods, and is conducted by licensed instructors. Additionally, innovative learning approaches such as adding information based on triage classification and using educational games have proven effective in enhancing nurses' understanding and skills in prioritizing patients. The development of nurses' professional self-concept, through feedback and mentoring, also plays a crucial role in supporting the improvement of triage competency. These various efforts, when carried out consistently and systematically, can enhance the accuracy and efficiency of triage in hospitals.

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DECLARATION OF CONFLICTING INTEREST

In the process of writing this article, potential conflicts of interest that may arise have been carefully considered, to ensure that the research results presented remain objective and are not influenced by any personal, institutional, or financial interests.

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AUTHOR CONTRIBUTION

Angga Andreas Wantoro: The author independently carried out the entire writing process, including conceptualization, data collection and analysis, writing the article draft, and final revision of the manuscript.

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