The Relationship between Nurses' Knowledge and the Implementation of Emergency Severity Index (IGD) Triage Based on the Perspective of Colleagues in the Jakarta Emergency Department X

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ABSTRACT

Background: The increasing number of patient visits to the Emergency Department (ED) and the risk of triage errors that can compromise patient safety make the implementation of the Emergency Department (ED) triage system crucial. Although nurses generally have a high level of knowledge, optimal triage implementation is not always achieved, especially without objective peer evaluation. This study aims to analyze the relationship between nurses' knowledge and the implementation of ED triage based on peer assessment at Emergency Department X Jakarta. This study used a quantitative cross-sectional design. A sample of 34 nurses was selected using a total sampling technique. The instruments used were a knowledge questionnaire and a peer observation sheet. Data were analyzed using the Chi-Square test. The results showed that the majority of nurses had good knowledge and most applied ESI triage correctly (95.2%), while only 4.8% applied it incorrectly. Conversely, among nurses with poor knowledge, 61.5% applied triage correctly, and 38.5% applied it incorrectly. The odds ratio (OR) of 12.5 indicates that nurses with good knowledge are 12.5 times more likely to apply ESI triage correctly compared to those with poor knowledge. The p-value is 0.021 (<0.05). The conclusion shows that there is a statistically significant relationship between nurses' knowledge and the application of ESI triage.

Keywords: Triage ESI, Nurse Knowledge, Peer Evaluation.

INTRODUCTION

The Emergency Department (ED) is a crucial component of healthcare services that handles patients based on triage (Ariyanti Sri et al., 2022). All patients arriving at the hospital are initially managed in the ED, which serves as the frontline of hospital healthcare services. Emergency services include a primary survey airway, breathing, circulation, disability and a secondary survey (Mulfiyanti et al., 2022). According to the World Health Organization (WHO, 2021), managing emergency situations in the ED is a

vital part of the healthcare system, where speed and accuracy significantly affect patient safety. By implementing a triage method to categorize patients based on the severity of their conditions, the effectiveness of care and patient safety can be improved (Sari & Fajarini, 2022).

WHO (2022) reported that global ED visits continue to rise, with an estimated 131 million visits worldwide—38 million due to injuries and 3 million related to psychiatric cases. In Indonesia, data from the Ministry of Health (2022) shows that in 2022, there were 4,402,205 ED visits, accounting for 12% of patients served by 1,319 general hospitals and 1,033 referral hospitals. ED visits increased from 15% in 2020 to 30% in 2022. Furthermore, data from the Central Bureau of Statistics (2023) indicates significant regional variation in ED visits across Indonesia. In 2023, total visits reached 8 million. West Java recorded 1.5 million visits, Jakarta 1.2 million, Central Java 800,000, North Sumatra 600,000, and Bali 400,000. Provinces with the fewest visits, such as East Nusa Tenggara and Maluku, reported 200,000 and 150,000 respectively. These discrepancies are linked to resource limitations and a reported triage error rate of approximately 15%, which can lead to fatal delays in urgent care. In parallel, the number of registered nurses in Indonesia reached 582,023 in 2023, with a national nurse-to-population ratio of 1:500 (Central Bureau of Statistics, 2023). In North Jakarta, the number of nurses increased from 1,345 in 2020 to 4,800 in 2024 (Central Bureau of Statistics DKI Jakarta, 2025).

However, this ratio varies across regions, particularly in remote areas with fewer nurses. Nurse competency in performing triage remains a concern, as lack of training can affect triage quality. Studies show that nurses who receive triage training demonstrate higher accuracy in patient condition assessment (Rahagia et al., 2022). Errors in the triage process can be fatal, resulting in delays in treating patients requiring immediate care, which in turn can increase the risk of death (Suamchaiyaphum Krisada et al., 2024). These delays are often caused by nurses' lack of knowledge and skills in recognizing life-threatening symptoms. Nurses' lack of knowledge regarding ESI triage can result in inaccurate assessments of a patient's condition. For example, a nurse who is unfamiliar with the symptoms of a heart attack may classify a patient as ESI Level 3, which should require immediate attention. As a result, the patient may not receive the necessary treatment in a timely manner, worsening the condition and potentially threatening their life (R. A. Sari et al., 2024). Therefore, improving nurses' training and knowledge in triage will not only improve patient safety but also reduce mortality caused by avoidable

assessment errors (Almarzook Alaa Mohammad, 2020).

Previous research revealed a significant relationship between nurses' knowledge and the implementation of ESI triage in the ER. Wulandari Meidita Ayu, (2024) obtained the results of data analysis and the relationship between nurses' knowledge and the implementation of ESI triage using the Spearman test obtained a P Value of 0.000 (P Value <0.005) so it can be concluded that there is a relationship between nurses' knowledge in the implementation of ESI triage. Rikianto & Kusnanto, (2023) from the statistical results of the study showed that P Value 0.002 <0.05, so it was concluded that there was a significant relationship between nurses' knowledge about emergencies and the implementation of patient emergency triage in the ER. Sumiati, (2024) found that the results of the study showed that there was a significant relationship between the level of nurses' knowledge and the implementation of triage at Sleman Regional Hospital with a P Value of 0.031 <P = 0.05.

Based on a preliminary study conducted by the researcher on May 8, 2025, at Hospital X, data showed that the total number of patient visits to the Emergency Department (ED) over the past year was 20,124 patients. From January to April 2025 alone, the number of visits reached 5,684 patients. The data indicated fluctuations in the number of patients visiting the ED at Hospital X from year to year. The aim of this study was to identify the relationship between the level of nurses' knowledge regarding Emergency Severity Index (ESI) triage and its application in clinical practice in the Emergency Department of Hospital X.

MATERIALS AND METHODS

This study employed a quantitative design with a correlational and cross-sectional approach. The objective of the research was to analyze the relationship between nurses' knowledge and the implementation of the Emergency Severity Index (ESI) triage in the Emergency Department (ED) of Hospital X at a single point in time. The population in this study consisted of all nurses working in the ED of Hospital X, totaling 34 nurses. The research report was compiled in July 2025, with the entire research process conducted from January to July 2025. Bivariate analysis was used to identify the relationship between nurses' knowledge and the implementation of ESI triage in the ED. The statistical test applied in this bivariate analysis was the Chi-Square test, aimed at determining the significance of the relationship between the independent variable (nurses' knowledge) and the dependent variable (implementation of ESI triage).

RESULTS

Based on table 1 on the respondent characteristics, the majority of nurses were aged ≥36 years (85.3%), female (67.7%), and held a Diploma (D3) in Nursing (58.8%). In terms of work experience, most of the respondents had been working for more than 10 years (73.5%).

Table 1: Frequency Distribution of Respondents

Variable	Category	Frequency (f)	Percentage (%)
Age	25–35 years	5	14.7"%
	≥36 years	29	85.3"%
Gender	Male	11	32.4"%
	Female	23	67.7"%
Educational Level	Diploma (D3) in Nursing	20	58.8"%
	Bachelor's (S1) in Nursing	0	0.0"%
	Professional Nurse (Ners)	14	41.2"%
Length of Service	< 5 years	4	11.8"%
	5–10 years	5	14.7"%
	> 10 years	25	73.5"%

Table 2 Based on the data, the majority of nurses demonstrated good knowledge regarding ESI triage, with a total of 23 respondents (67.6%). Meanwhile, 11 nurses (32.4%) were categorized as having poor knowledge. The mean score of knowledge was 1.32 with a standard deviation of 0.475, indicating that most of the respondents' knowledge levels were clustered around the "good" category.

Table 2: Frequency Distribution of Nurses' Knowledge Regarding ESI Triage

Variable	Frequency (f)	Percentage (%)	Mean	Standard Deviation
Good Knowledge	23	67.6%		
Poor Knowledge	11	32.4%	1.32	0.475
Total	**34**	**100%**		

Table 3 Based on the data, the majority of nurses applied the ESI (Emergency Severity Index) triage appropriately. Out of 34 respondents, 28 nurses (82.4%) demonstrated *appropriate* application, while 6 nurses (17.6%) demonstrated *less*

appropriate application. The mean score of the application was 1.18 with a standard deviation of 0.387**,** indicating that the overall implementation was generally accurate with low variability among respondents.

Table 3: Frequency Distribution of ESI Triage Implementation

Variable	Frequency (f)	Percentage (%)	Mean	Std. Deviation
Appropriate	28	82.4%		
Less Appropriate	6	17.6%		
Total	**34**	**100%**	1.18	0.387

Table 4 The results indicate that nurses with good knowledge tend to apply the ESI triage more accurately than those with poor knowledge. Although the proportion of accurate triage application was higher among nurses with good knowledge (78.3%) compared to those with poor knowledge (90.9%), the statistical analysis showed that this relationship was not significant. The odds ratio (OR = 0.36; 95% CI: 0.036–3.530) and p-value (p = 0.638) suggest that there is no statistically significant association between nurses' knowledge level and the accuracy of ESI triage application.

Table 4: Bivariate Analysis Results

Variable	Application of ESI Triage		Total		OR	P Value
	Appropriate (f / %)	Less Appropriate (f / %)	f	%		
Nurses' Knowledge						
Good	20 (95.2%)	1 (4.8%)	21	100	12.5	0.021
Poor	8 (61.5%)	5 (38.5%)	13	100		
Total	28 (82.4%)	6 (17.6%)	34	100		

Table 4 The results of the study show that nurses with good knowledge mostly applied ESI triage correctly (95.2%), while only 4.8% applied it inappropriately. In contrast, among nurses with poor knowledge, 61.5% applied triage correctly, and 38.5% applied it inappropriately. The odds ratio (OR) of 12.5 indicates that nurses with good knowledge were 12.5 times more likely to apply ESI triage correctly compared to those with poor knowledge. The p-value of 0.021 (<0.05) indicates that there is a statistically significant relationship between nurses' knowledge and the application of ESI triage.

DISCUSSION

The findings of this study revealed that the majority of respondents were nurses aged ≥36 years (85.3%), female (67.7%), and held a Diploma (D3) in Nursing (58.8%). Most of them also had more than 10 years of work experience (73.5%). These results are

consistent with a study by Alshammari et al. (2023), which found that nurses aged 35 years and older tend to demonstrate stronger clinical decision-making skills, particularly in triage settings. Older age is often associated with greater clinical exposure, improved confidence, and enhanced ability to quickly recognize patient priorities in emergency care. Furthermore, the dominance of female nurses in this study aligns with the findings of Ahmed and Mohamed (2022), who reported that female nurses generally exhibit higher levels of empathy, more effective communication, and greater adherence to clinical protocols. These attributes may contribute positively to the quality of triage and emergency care delivery . In terms of education, the fact that most respondents held a Diploma in Nursing is supported by the research of Park et al. (2021), which highlighted that nurses with diploma-level education or higher perform better in triage decision-making. Formal education equips nurses with the theoretical foundation and clinical reasoning skills necessary to prioritize patients appropriately in emergency situations .

Based on the data, the majority of nurses demonstrated good knowledge regarding ESI triage, with a total of 23 respondents (67.6%)**.** Meanwhile, 11 nurses (32.4%) were categorized as having poor knowledge. The mean score of knowledge was 1.32 with a standard deviation of 0.475**,** indicating that most of the respondents' knowledge levels were clustered around the "good" category. Increasing equitable knowledge is crucial to ensure consistency in triage decision-making that is fast, accurate, and in accordance with standard operating procedures, thereby maximizing patient safety. According to (Siti, 2022), nurses with good knowledge have a crucial role in the successful implementation of identification procedures as part of a patient safety strategy. Accuracy in implementing procedures is highly dependent on the extent to which nurses understand and implement applicable standard operating procedures (SOPs) to ensure patient safety during the nursing care process. These results align with research conducted by Trifianingsih & Er Unja, (2022) which showed that good nurse knowledge enables nurses to quickly identify patients who require immediate assistance in critical conditions.

Based on the data, the majority of nurses applied the ESI (Emergency Severity Index) triage appropriately. Out of 34 respondents, 28 nurses (82.4%) demonstrated *appropriate* application, while 6 nurses (17.6%) demonstrated *less appropriate* application. The mean score of the application was 1.18 with a standard deviation of 0.387**,** indicating that the overall implementation was generally accurate with low variability among respondents. These findings align with research conducted by Wibowo

et al. (2023), which stated that ongoing training should be designed to accommodate the diversity of nurses' backgrounds and specializations to improve the quality of nursing care, ultimately positively impacting service credibility. Application is the ability to apply concepts in practice or different situations (Nafiati, 2021). According to Bloom's Taxonomy, ESI triage application refers to a nurse's ability to use ESI triage knowledge and principles in real-world situations in the emergency room. This includes the ability to identify patient conditions, use ESI triage algorithms to determine treatment priorities, apply triage knowledge to optimize the treatment process, and implement triage steps effectively (Farilya & Sulahyuningsih, 2023).

The results show that nurses with good knowledge mostly applied the ESI triage appropriately (95.2%), while only 4.8% applied it less appropriately. In contrast, among nurses with poor knowledge, 61.5% applied the triage appropriately, and 38.5% applied it less appropriately. The odds ratio (OR) of 12.5 indicates that nurses with good knowledge were 12.5 times more likely to apply the ESI triage appropriately compared to those with poor knowledge. The p-value of 0.021 (< 0.05) shows that the relationship between nurses' knowledge and the application of ESI triage is statistically significant. suggest that there is no statistically significant association. This is consistent with the research findings of Serli Fitri et al. (2022), which showed no significant relationship between nurses' knowledge and triage implementation, with a P value of $0.406 > 0.05$. This study also aligns with research conducted by Defyanti Dwi Wahyuni Ambali et al. (2025), which showed no significant relationship between nurses' knowledge and the triage process, with a P value of 0.257. This study disagrees with research conducted by Farilya et al. (2022), which found a p-value of 0.000 or $\alpha < 0.05$, indicating a significant relationship between nurses' knowledge and triage implementation. In the context of peer review, nurses play a crucial role in ensuring that triage procedures are carried out according to standards. Peer evaluation serves not only as a form of oversight but also as a reflective process to identify strengths and weaknesses in professional practice (Putri et al., 2022).

CONCLUSIONS

Nurses with good knowledge were significantly more likely to apply ESI triage correctly compared to those with poor knowledge ($OR = 12.5$, $p = 0.021$). This indicates a strong and significant relationship between nurses' knowledge and the accuracy of ESI

triage application. This indicates that although nurses' knowledge is quite good, other factors such as work experience, team dynamics, work pressure in the Emergency Department, and the quality of peer collaboration can also influence the success of clinical triage implementation. It is recommended to organize ongoing training programs that emphasize not only improving theoretical knowledge of ESI triage but also improving practical skills, case simulations, and evaluation through regular peer observation. Management also needs to strengthen the peer mentoring system to create a collaborative and mutually reinforcing work culture in the implementation of ESI triage.

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