

Triage Accuracy and Nurses' Response Time in Emergency Departments : Evidence from two Hospitals in Tulang Bawang, Indonesia

Tiara¹, Cynthia Puspariny², Dayana Noprida³

^{1,2,3} Universitas Muhammadiyah Pringsewu Lampung^{1,2,3}

*Corresponding author : tiara@umpri.ac.id

Abstract

Background: Emergency Department (ED) services require accurate triage and rapid nurse response times to ensure timely management of critically ill patients and reduce the risk of morbidity and mortality. Delays or inaccuracies in triage may lead to inappropriate patient prioritization, delayed interventions, and poorer clinical outcomes. Therefore, evaluating the relationship between triage accuracy and nurse response time is essential to improve the quality and efficiency of emergency care. **Literature Review:** Previous studies have demonstrated that triage accuracy is a key determinant of effective emergency services, as it enables nurses to prioritize patients according to the severity of their conditions and initiate appropriate interventions promptly. Accurate triage has been associated with shorter response times, improved patient safety, and enhanced emergency department performance. **Methodology:** This study employed an analytical survey using a cross-sectional design involving 30 Emergency Department nurses from Mutiara Bunda Hospital and Penawar Medika Hospital, Tulang Bawang Regency, Lampung Province. Total sampling was applied, and data were collected using a triage accuracy questionnaire and a nurse response time observation checklist. Data were analyzed using univariate and bivariate analyses, with the Chi-Square test used to determine the association between triage accuracy and nurse response time. **Results:** The findings showed that 93.3% of nurses performed accurate triage and 93.3% demonstrated rapid response times. Conversely, nurses with inaccurate triage exhibited slow to very slow response times (100%). Chi-Square analysis revealed a statistically significant relationship between triage accuracy and nurse response time ($p = 0.000$), indicating that accurate triage was associated with faster nursing responses in emergency situations. **Discussion:** These findings suggest that accurate triage enhances nurses' ability to identify patient priorities and deliver timely emergency interventions, thereby improving the efficiency and quality of emergency care. The results are consistent with previous evidence indicating that appropriate triage practices contribute to faster response times and better patient outcomes. **Conclusion:** There is a significant relationship between triage accuracy and nurse response time in the Emergency Departments of Mutiara Bunda Hospital and Penawar Medika Hospital, with accurate triage contributing to more rapid emergency nursing responses. **Recommendation:** Hospitals should strengthen continuous triage education, competency-based training, and regular evaluations of emergency nurses to improve triage accuracy and optimize response times, ultimately enhancing the quality of emergency services and patient safety.

Keywords: triage accuracy; response time; emergency nurses; emergency care

INTRODUCTION

According to data from the World Health Organization, in 2021 there were 31,241,031 visits to Emergency Departments (EDs) worldwide, marking an increase from 27,251,031 visits in 2020. Overall, ED visits represented approximately 21.1% of all hospital visits that year. The ten leading causes of death accounted for 39 million deaths, or 57% of the total 68 million global deaths. These causes were primarily associated with

two major categories: cardiovascular diseases (such as ischemic heart disease and stroke) and respiratory diseases (including COVID-19, chronic obstructive pulmonary disease, and lower respiratory infections), with COVID-19 ranking as the second leading cause of death worldwide.

Within the Indonesian context, by 2024, major causes of death include stroke, ischemic heart disease, diabetes, and cancer, with stroke being the leading contributor to mortality. The number of ED visits increased significantly, reaching 10,124,000 cases (18.2% of total hospital visits) in 2021 and rising to 16,712,000 cases (28.2%) in 2022. This trend indicates a steady annual increase in ED utilization, which may also be accompanied by a potential rise in mortality rates. At the regional level, in 2023, hospitals in Bandar Lampung recorded 102,702 visits to their Emergency Departments. ED services are delivered using a triage system to classify patients based on the severity of their conditions. Furthermore, the nursing service quality indicator, particularly response time, has generally met the minimum service standards. Overall, the quality of ED services in Bandar Lampung can be categorized as good; however, further optimization is still required to improve the timeliness and accuracy of emergency care, as reported by the Dinas Kesehatan Provinsi Lampung (2023). Emergency Department (ED) visits in Tulang Bawang Regency reached a total of 58,275 cases. ED services are implemented using a triage system to classify patients according to the severity of their conditions, ensuring that critically ill patients receive priority treatment. The quality indicator of care, particularly nurse response time, has generally met the minimum service standards, although some variation remains across hospitals. The number of patient deaths in the ED during the same year was recorded at 233 cases. Overall, the quality of ED services in Tulang Bawang Regency in 2024 can be considered good; however, further efforts are needed to enhance the timeliness and accuracy of care in order to reduce mortality rates, as reported by the Dinas Kesehatan Kabupaten Tulang Bawang (2024). The number of patient visits to the Emergency Department (ED) in Mutiara Bunda Hospital reached 736 cases, with the most frequent diagnoses being abdominal colic and febrile conditions. Of these cases, 8 patients died in the ED, with the majority classified as dead on arrival (DOA). Meanwhile, at Penawar Medika Hospital, data from July 2025 recorded 505 patient visits, 15 referrals, and 2 DOA cases.

Observational findings indicated that most nurses had not implemented triage procedures optimally. This was attributed to several factors, including a high influx of patients arriving simultaneously, a limited number of nursing staff, inadequate triage space, and insufficient supporting equipment. As a result, the triage process was often conducted hastily, increasing the risk of misclassification and delays in initial nursing interventions. These conditions highlight that triage accuracy and nurse response time remain critical challenges in the ED service system, particularly in regional hospitals such as Mutiara Bunda Hospital.

METHODS

This study employed an analytical survey method with a cross-sectional approach. The study population consisted of nurses working in the Emergency Departments of Mutiara Bunda Hospital (17 nurses) and Penawar Medika Hospital (13 nurses) during the period of September to October 2025, resulting in a total sample of 30 nurses using a total sampling technique.

The research instrument utilized was a checklist questionnaire assessing triage accuracy, adapted from a questionnaire published in the BMC Nursing (2020), and measured using a Likert scale. The statistical analysis applied in this study was the Chi-Square test

RESULTS AND DISCUSSION

Table 1. Distribution of Respondents by Nurses' Triage Accuracy in the Emergency Departments of Mutiara Bunda Hospital and Penawar Medika Hospital, 2025.

Triage accuracy	Response Time			Total	P- value
	Fast	Slow	Very Slow		
accuracy	100%	0,0%	0,0%	100%	0,000
Inaccurate	0,0%	50%	50%	100%	
Total	93,3%	3,3%	3,3%	100%	

The data showed that among 28 respondents who performed accurate triage, all of them (100%) demonstrated a fast response time. In contrast, among the 2 respondents who performed inaccurate triage, none had a fast response time (0.0%); instead, they exhibited either slow response time (1 respondent, 50%) or very slow response time (1 respondent, 50%).

The results of the Chi-Square statistical test revealed a p-value of 0.000 ($p < 0.05$), indicating a statistically significant relationship between triage accuracy and nurse response time in the Emergency Department. These findings are consistent with the Emergency Nursing Framework proposed by Considine (2010), which emphasizes that triage is a critical component of emergency care as it determines the prioritization of initial patient management based on the severity of their condition. Accurate triage serves as the foundation for an effective care flow; therefore, when nurses are able to correctly identify a patient's condition, interventions can be carried out without delay, leading to faster response times.

Furthermore, the Clinical Decision Making theory introduced by Tanner (2006) highlights that nurses' clinical judgment is influenced by their knowledge, experience, and ability to make rapid decisions. Thus, high triage accuracy reflects nurses' competence in processing clinical information precisely, which directly contributes to the timeliness of the interventions provided.

A study by Purwacaraka et al. (2024) reported that nurses with higher triage accuracy demonstrate better success rates in managing emergency cases and exhibit faster response times. Similarly, Ainiyah et al. (2018) found a significant relationship between triage accuracy and response time, indicating that nurses who incorrectly classify patient severity are more likely to experience delays in providing initial interventions. In addition, research conducted by Yunita, Sari, and Pringsewu (2022) revealed that nurses' level of knowledge is closely associated with the implementation of triage in the Emergency Department of RSUD Pringsewu, with a p-value of 0.000, indicating a statistically significant correlation.

The study explained that nurses with a higher level of knowledge are able to appropriately categorize patients according to standard operating procedures (SOPs), thereby enabling faster and more accurate clinical decision-making processes. Although the focus of the study differs (knowledge and triage implementation), its core finding supports the present research, indicating that properly conducted triage leads to more timely subsequent actions, including improved response time. Based on the researcher's analysis, the high proportion of triage accuracy identified in this study (93.3%) suggests that the majority of nurses possess a strong understanding of patient prioritization principles in accordance with established triage guidelines such as the Emergency Severity Index (ESI). Nurses who perform accurate triage are able to rapidly identify life-threatening conditions and promptly initiate appropriate interventions based on standard protocols, resulting in faster response times.

However, the presence of two nurses who performed inaccurate triage and simultaneously demonstrated slow to very slow response times indicates a gap in individual competency that requires attention. The researcher considers that inaccuracies in triage, although limited in number, can have a substantial impact on patient safety, as delays in managing emergency cases may increase the risk of serious complications and even mortality. Therefore, hospitals need to strengthen triage training programs and case simulations, conduct regular triage audits, and ensure effective team coordination to optimize the workflow of Emergency Department (ED) services. Overall, the findings of this study emphasize that triage accuracy is a crucial factor in determining response time and the overall quality of emergency care in the ED.

CONCLUSION

This study concludes that there is a significant relationship between triage accuracy and nurse response time in the Emergency Departments of Mutiara Bunda Hospital and Penawar Medika Hospital in 2025. Nurses who performed accurate triage were more likely to demonstrate rapid response times, while inaccurate triage was associated with delayed responses. The majority of nurses in this study showed a high level of triage accuracy, indicating a generally good understanding of patient prioritization in emergency care. However, the presence of a small proportion of inaccurate triage highlights the need for continuous improvement in individual competencies. Overall, triage accuracy plays a vital role in ensuring timely emergency interventions and improving the quality of care. Therefore, efforts such as ongoing training, regular evaluation, and strengthening clinical decision-making skills are essential to enhance nurse performance and patient safety in the Emergency Department.

ACKNOWLEDGMENT

The author would like to express sincere gratitude to the management and nursing staff of Mutiara Bunda Hospital and Penawar Medika Hospital for their support and cooperation during the data collection process. Appreciation is also extended to all respondents who willingly participated in this study.

REFERENCES

- Ainiyah, N., Mardiyono, & Fathoni, and M. 2018. "Analisis Faktor-Faktor Yang Mempengaruhi Kecepatan Penanganan Pasien Di IGD." *Jurnal Keperawatan Indonesia* 21(1): 37–45.
- BMC Nursing Journal. 2020. "Triage Nurses' Professional Capability Questionnaire."
- Dharma, K. K. 2013. *Metodologi Penelitian Keperawatan: Panduan Melaksanakan Dan Menerapkan Hasil Penelitian*. Jakarta: Trans Info Media.
- Dinas Kesehatan Kabupaten Tulang Bawang. 2024. *Profil Kesehatan Kabupaten Tulang Bawang Tahun 2024*. Tulang Bawang: Dinas Kesehatan Kabupaten Tulang Bawang.
- Dinas Kesehatan Provinsi Lampung. 2023. *Profil Kesehatan Provinsi Lampung Tahun 2023*. Bandar Lampung: Dinas Kesehatan Provinsi Lampung.
- Gilboy, N., P. Tanabe, D. Travers, and A. M. & Rosenau. 2012. *Emergency Severity Index (ESI): A Triage Tool for Emergency Department Care (Versi 4)*. Rockville: Agency for Healthcare Research and Quality.
- Iserson, K. V., & Moskop, J. C. 2007. "Triage in Medicine, Part I: Concept, History, and Types." *Annals of Emergency Medicine* 49(3): 275–281.
- Kementerian Kesehatan Republik Indonesia. 2011. *Pedoman Penyelenggaraan Pelayanan Di Instalasi Gawat Darurat Rumah Sakit*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Masturoh, I., and N & Anggita. 2018. *Metodologi Penelitian Kesehatan*. Jakarta: Kementerian Kesehatan Republik Indonesia.
- Morton, P. G., D. Fontaine, C. M. Hudak, and B. M & Gallo. 2018. *Critical Care Nursing: A Holistic Approach (Edisi Ke-11)*. Philadelphia: Wolters Kluwer.
- Notoatmodjo, S. 2018. *Metodologi Penelitian Kesehatan*. Jakarta: Rineka Cipta.
- Nursalam. 2018. *Metodologi Penelitian Ilmu Keperawatan: Pendekatan Praktis*. Jakarta: Salemba Medika.
- Purwacaraka, Manggar, Rio Ady Erwansyah, Shulhan Arief Hidayat, and Farida Farida. 2024. "Hubungan Ketepatan Triase Dengan Keberhasilan Penatalaksanaan Tindakan Keperawatan Kegawatdaruratan Ruang IGD Di Rumah Sakit Daerah Tulungagung." *Professional Health Journal* 5(2): 597–605. doi:10.54832/phj.v5i2.681.
- Quick, J. C., & Quick, J. D. 2021. *Emergency Department Triage Systems*. New York: Springer.
- Rumampuk, J., & Katuuk, M. E. 2019. "Hubungan Ketepatan Triage Dengan Response Time Perawat Di Instalasi Gawat Darurat Rumah Sakit Tipe C." *Jurnal Keperawatan* 7(1). doi:https://doi.org/10.35790/jkp.v7i1.25206.
- Sisy Rizkia Putri. 2020. "Analisis Angka Kematian Dan Kunjungan IGD Di Indonesia." *Jurnal Administrasi Rumah Sakit Indonesia* 6(1): 12–20.
- Spence, K., & Thompson, L. 2014. "Emergency Department Overcrowding and Its Impact on Patient Flow." *Emergency Medicine Journal* 31(6): 409–413.
- World Health Organization. 2007. *Emergency Triage Assessment and Treatment (ETAT) Manual*. Geneva: World Health Organization.
- Wuerz, R. C., L. W. Milne, D. R. Eitel, D. Travers, and N. & Gilboy. 2000. "Reliability and Validity of a New Five-Level Triage Instrument." *Academic Emergency Medicine* 7(3): 236–242.
- Yunita, Dewi, Rita Sari, and Universitas Muhammadiyah Pringsewu. 2022. "PENERAPAN TRIAGE DI INSTALASI GAWAT DARURAT." : 35–46.