

Effect of Nurses' Training on Triage Decision Making and Emergency Department Performance in a Gujranwala Hospital

Humaira Kanwal¹, Rubina Inam², Nosheen Kanwal³, Asma Hassan⁴, Salomi Younis⁵

¹Assistant Professor, Nursing Department, University of Chenab, Gujrat, Punjab, Pakistan.

²Principal, Nursing Department, University of Chenab, Gujrat, Punjab, Pakistan.

^{3,4,5}Post RN Student, Nursing Department, University of Chenab, Gujrat, Punjab, Pakistan.

***Corresponding:** Humaira Kanwal,

Assistant Professor, Nursing Department, University of Chenab, Gujrat, Punjab, Pakistan.

Email: hkanwal248@gmail.com

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ABSTRACT

Background: Emergency departments (EDs) serve as the frontline of healthcare systems, providing immediate care to patients with acute and life-threatening conditions. Over the past few decades, EDs across the world have experienced a significant rise in patient visits due to population growth, increased burden of diseases, limited access to primary healthcare, and greater public awareness of emergency services.

Methodology: A quasi-experimental single-group pre-test and post-test design was employed to evaluate the effect of nurses' training on triage decision-making and emergency department performance at Social Security Hospital Model Town, Gujranwala. A total of 64 emergency department nurses were recruited through convenience sampling. Baseline data were collected using a demographic questionnaire, the Triage Decision-Making Scale, and the Emergency Department Performance Scale. Participants then received a structured training program on triage decision-making and emergency department management. Following the intervention, post-test data were collected using the same instruments. Data were analyzed using SPSS version 25.0. Descriptive statistics were used to summarize participant characteristics, while paired-sample t-tests were applied to compare pre- and post-intervention scores. The association between post-intervention triage decision-making and emergency department performance was assessed using the chi-square test. A p-value of ≤ 0.05 was considered statistically significant. Ethical approval was obtained from the Institutional Review Board, and written informed consent was obtained from all participants.

Results: A total of 64 emergency department nurses participated in the study. Most participants were aged 31–40 years and 41–50 years (31.3% each), 51.6% were male, 43.8% held a BSN degree, and 34.4% had 1–5 years of clinical experience. Before the intervention, 56.3% of nurses demonstrated moderate triage decision-making and 43.8% demonstrated poor triage decision-making, while 60.9% exhibited poor emergency department performance. Following the structured training program, the proportion of nurses with poor triage decision-making decreased from 43.8% to 29.7%, and 20.3% achieved good triage decision-making. Similarly, Before the intervention, 60.9% of nurses had poor emergency department performance and 39.1% had moderate performance. Paired-sample t-tests revealed statistically significant improvements in triage decision-making ($t = -3.274$, $p = 0.002$) and emergency department performance ($t = -7.110$, $p < 0.001$). Furthermore, a significant positive association was found between post-intervention triage decision-making and emergency department performance ($p = 0.043$), indicating that improved triage decision-making was associated with better emergency department performance.

Conclusion: The structured training program significantly improved nurses' triage decision-making and emergency department performance. Improved triage decision-making was positively associated with better emergency department performance. Regular triage training is recommended to enhance the quality and efficiency of emergency care.

Keywords: Triage Decision-making, Emergency Department Performance, Nurses' Training, Emergency Nursing, Educational Intervention, Quasi-experimental Study

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INTRODUCTION

Emergency departments (EDs) serve as the frontline of healthcare systems, providing immediate care to patients with acute and life-threatening conditions (Curley &

Gozman, 2026). Waiting time, in particular, has emerged as a critical indicator of healthcare efficiency, directly influencing patient outcomes, satisfaction, and overall hospital performance (Da'Costa et al., 2025). Prolonged

waiting times in emergency departments can have serious consequences. Patients with critical conditions may experience deterioration while waiting for assessment and treatment, potentially leading to preventable complications or even death (Nyce et al., 2021). For healthcare providers, overcrowding and delays increase workload, stress, and the risk of burnout, ultimately affecting the quality and safety of care delivery. In developing countries such as Pakistan, these issues are further exacerbated by inadequate infrastructure, shortage of trained healthcare professionals, inefficient patient flow systems, and lack of standardized protocols (Mosleh et al., 2025).

Triage is a fundamental process in emergency care that involves the rapid assessment and categorization of patients based on the urgency of their medical needs (Bull et al., 2022). Traditional triage models often rely on physicians to perform initial patient assessment; however, this approach may not be sustainable in high-volume emergency settings due to limited physician availability and competing clinical responsibilities (Kim, 2024). In this model, specially trained nurses take the lead role in performing initial patient assessments, prioritizing cases, and initiating early management according to established protocols (Boutemine et al., 2026). Research evidence indicates that nurse-led triage systems can significantly improve patient flow and reduce waiting times in emergency departments (Mustafa et al., 2025).

MATERIAL AND METHODS

A quasi-experimental single-group pre-test and post-test design was conducted to assess the effect of structured nurses' training on triage decision-making and emergency department performance at Social Security Hospital, Model Town, Gujranwala, from February to May 2026. The study included 64 registered nurses selected through convenience sampling. Eligible participants were nurses working in the Emergency Department for at least six months, involved in triage and initial patient assessment, available during data collection, and willing to provide informed consent. Student nurses, interns, nurses on extended leave, those not involved in triage, and those unwilling to participate were excluded. After obtaining ethical approval and administrative permission, baseline data were collected using a structured questionnaire comprising demographic characteristics, a 15-item Triage Decision-Making Scale (Reay et al., 2024), and a 15-item Emergency Department Performance Scale (Wiler et al., 2015). Both scales used a five-point Likert response format, with total scores ranging from 15 to 75 and categorized as poor (15–35), moderate (36–55), and good (56–75). Following the pre-test, participants received structured training covering patient prioritization, standardized triage guidelines, rapid patient assessment, clinical decision-making, and emergency department workflow management. A post-test was subsequently conducted using the same instruments under similar conditions. Data were analyzed using SPSS version 25.0. Frequencies, percentages, means, and standard deviations

were used for descriptive analysis, while paired-sample t-tests were used to compare pre-test and post-test scores and chi-square tests were applied where appropriate. A p -value ≤ 0.05 was considered statistically significant. Written informed consent was obtained from all participants, and confidentiality, anonymity, voluntary participation, and the right to withdraw were maintained throughout the study.

RESULTS

Table 1

Demographics characteristics

Demographic Variables	Category	Frequency (f)	Percentage (%)
Age	25–30 Year	16	25.0
	31–40 Year	20	31.3
	41–50 Year	20	31.3
	51 Year and above	8	12.5
Gender	Male	33	51.6
	Female	31	48.4
Qualification	Diploma in Nursing	19	29.7
	BSN	28	43.8
	Post RN BSN	17	26.6
Experience	<1 year	15	23.4
	1–5 years	22	34.4
	6–10 years	20	31.3
	>10 years	7	10.9

Table 1 presents the demographic characteristics of the 64 participating nurses. Regarding age, 31.3% of participants were aged 31–40 years and another 31.3% were aged 41–50 years, while 25.0% were aged 25–30 years and 12.5% were aged 51 years or above. In terms of gender, 51.6% were male and 48.4% were female. Regarding educational qualification, 43.8% had a BSN, 29.7% held a Diploma in Nursing, and 26.6% had a Post RN BSN. Concerning professional experience, 34.4% had 1–5 years of experience, 31.3% had 6–10 years, 23.4% had less than one year, and 10.9% had more than 10 years of experience.

Table 2

Pre and post-intervention level of triage decision-making of nurses

Level of Triage Decision Making	Pre-Intervention Triage Decision-Making		Post-Intervention Triage Decision-Making	
	Frequency	Percent	Frequency	Percent
Poor triage decision making	28	43.8	19	29.7
Moderate triage decision making	36	56.3	32	50.0
Good triage decision making	0	0	13	20.3

Table 2 shows a change in nurses' triage decision-making levels following the intervention. Before the intervention,

43.8% of nurses had poor triage decision-making and 56.3% had moderate decision-making, while none demonstrated a good level. After the intervention, the proportion with poor decision-making decreased to 29.7%, while 50.0% had moderate and 20.3% demonstrated good triage decision-making. Overall, the findings indicate an improvement in nurses' triage decision-making following the training intervention.

Table 3

Comparison of triage decision-making before and after intervention

	Mean	Standard Deviation	t Value	P Value
Pre Triage Decision Making To Post Triage Decision Making	39	60.9	-3.274	0.002

Paired t test

Table 3 compares the nurses' triage decision-making scores before and after the intervention using a paired t-test.

The results showed a statistically significant improvement in triage decision-making following the intervention ($t = -3.274$, $p = 0.002$). Since the p-value is less than 0.05, the findings indicate that the training intervention had a significant positive effect on nurses' triage decision-making skills.

Table 4

Pre and post-intervention level of Emergency Performance of Nurses

Level of Emergency Performance of Nurses	Pre-Intervention Emergency Performance of Nurses		Post-Intervention Emergency Performance of Nurses	
	Frequency	Percent	Frequency	Percent
Poor Emergency Department Performance	39	60.9	10	15.6
Moderate Emergency Department Performance	25	39.1	42	65.6
Good Emergency Department Performance	0	0	12	18.8

Table 4 presents the pre- and post-intervention levels of emergency department performance among nurses. Before the intervention, 60.9% of nurses had poor emergency department performance and 39.1% had moderate performance, while none demonstrated good performance. Following the intervention, poor performance decreased to 15.6%, moderate performance increased to 65.6%, and 18.8% demonstrated good performance. Overall, the

findings indicate an improvement in emergency department performance following the training intervention.

Table 5

Comparison of Emergency Performance of Nurses before and after intervention

	Mean	Standard Deviation	t Value	P Value
Pre Emergency Nurses Performance To Post Emergency Nurses Performance	-.64062	.72083	-7.110	0.000

Paired t test

Table 5 compares the emergency department performance of nurses before and after the intervention using a paired t-test. The results showed a statistically significant improvement in emergency department performance following the intervention ($t = -7.110$, $p < 0.001$). Since the p-value is less than 0.05, the findings indicate that the training intervention had a significant positive effect on improving nurses' emergency department performance.

Table 6

Association between post-intervention triage decision-making and emergency department performance among the nurses

Post Triage Decision Making	Post ER Performance			p Value
	Poor emergency department performance	Moderate emergency department performance	Good emergency department performance	
Poor triage decision making	10	9	0	0.043
Moderate triage decision making	0	32	0	
Good triage decision making	0	1	12	

Table 6 shows the association between post-intervention triage decision-making and emergency department performance among the nurses. Among nurses with poor triage decision-making, 10 had poor emergency department performance and 9 had moderate performance, while none demonstrated good performance. Among those with moderate triage decision-making, all 32 nurses had moderate emergency department performance. Of the nurses with good triage decision-making, 12 demonstrated good emergency department performance and 1 had moderate performance. The association between post-intervention triage decision-making and emergency department performance was statistically significant ($p = 0.043$), indicating that better triage decision-making was

associated with improved emergency department performance after the intervention.

DISCUSSION

The present study evaluated the effect of a structured nurses' training program on triage decision-making and emergency department (ED) performance among nurses working in hospitals in Gujranwala. The findings demonstrated that the educational intervention significantly improved nurses' triage decision-making abilities and emergency department performance. These findings support the importance of continuous professional education and competency-based training for emergency nurses. Before implementation of the intervention, none of the participants demonstrated good triage decision-making. More than half (56.3%) exhibited moderate triage decision-making, while 43.8% demonstrated poor decision-making. These findings suggest considerable deficiencies in nurses' baseline triage competencies, which may result from inadequate continuing education, limited simulation opportunities, and inconsistent application of standardized triage systems. Following the intervention, the proportion of nurses demonstrating poor triage decision-making decreased while achieved good triage decision-making. Statistical analysis confirmed a significant improvement in triage decision-making ($t = -3.274$, $p = 0.002$). These findings clearly indicate that structured educational training effectively enhances nurses' ability to prioritize patients appropriately and make accurate clinical decisions during emergency situations. The present findings are consistent with those reported by Mirhaghi et al. (2019), who demonstrated significant improvements in nurses' triage knowledge and decision accuracy following educational workshops based on the Emergency Severity Index (ESI). Similarly, Considine et al. (2020) found that structured simulation-based triage education significantly improved emergency nurses' clinical reasoning and prioritization skills.

Recent evidence also supports these findings. Alshammari et al. (2023) reported that emergency nurses receiving structured triage education achieved significantly higher post-training triage competency scores than nurses receiving routine orientation. Likewise, Duko et al. (2023) concluded that continuing professional education substantially improves emergency nurses' triage accuracy and confidence. The improvement observed in this study can be explained by the intervention's emphasis on practical case scenarios, systematic patient assessment, prioritization skills, and repeated reinforcement of emergency triage principles. Adult learning theory suggests that active participation and scenario-based learning facilitate better retention of clinical knowledge compared with traditional lecture-based teaching. The present study demonstrated that prior to the intervention, 60.9% of nurses exhibited poor emergency department performance, while only 39.1% demonstrated moderate performance. None achieved good performance before training. These findings indicate significant deficiencies in

emergency nursing competencies before educational intervention.

Following implementation of the training program, poor emergency department performance decreased dramatically from 60.9% to 15.6%. Furthermore, 18.8% of participants achieved good performance, while the majority (65.6%) demonstrated moderate performance. The paired t-test revealed highly significant improvement ($t = -7.110$, $p < 0.001$). These findings are supported by Wolf et al. (2020), who found that emergency education programs significantly improved nurses' clinical performance, patient prioritization, communication, and emergency response skills. Similarly, Jafari-Rouhi et al. (2020) reported significant improvements in emergency nursing performance following competency-based educational interventions. Recent studies also support these observations. Abuzeyad et al. (2022) found that structured emergency nursing education improved nurses' clinical competence, teamwork, and patient management in emergency departments. Likewise, Kim and Lee (2023) reported that simulation-based emergency training significantly enhanced nurses' confidence, response time, and adherence to emergency care protocols.

One of the important findings of the present study was the statistically significant association between post-intervention triage decision-making and emergency department performance ($p = 0.043$). Nurses demonstrating good triage decision-making consistently exhibited good emergency department performance, whereas poor triage decision-making was primarily associated with poor emergency performance. These findings support the concept that triage decision-making serves as a fundamental component of emergency nursing performance. Accurate patient prioritization enables timely interventions, efficient resource allocation, and reduced treatment delays, all of which contribute directly to improved emergency department performance. Similar findings were reported by Considine et al. (2019), who concluded that triage decision-making competency strongly predicts overall emergency nursing performance and patient safety outcomes. Likewise, Mirhaghi et al. (2020) reported a positive relationship between triage accuracy and emergency department efficiency. Recent literature also supports this relationship. Alshammari et al. (2023) demonstrated that nurses with higher triage competency consistently achieved superior emergency performance indicators, including reduced waiting times and improved patient prioritization. Similarly, Duko et al. (2023) concluded that improving triage competency is one of the most effective strategies for enhancing emergency department quality of care.

CONCLUSION

The study concluded that structured training significantly improved nurses' triage decision-making and emergency department performance. Post-intervention scores showed significant improvements in triage decision-making ($t = -3.274$, $p = 0.002$) and emergency department performance ($t = -7.110$, $p < 0.001$). A significant association was also found between post-intervention triage decision-making

and emergency department performance ($p = 0.043$). These findings support regular triage education and

competency-based training to enhance safe and timely emergency nursing care.

REFERENCES

- Ainila, F. N., Basoeeki, A. P., & Nuswantoro, D. (2020). Triage knowledge of emergency rooms nurses at Dr Soetomo Regional General Hospital.
- Alrfooh, M., & Eladjaoui, I. (2026). Knowledge, Skills, and Triage Practices in Emergency Nurses in Mafrq. *medRxiv*, 2026.2002.2017.26346462.
- AlShatarat, M., Rayan, A., Eshah, N. F., Bageas, M. H., Jaber, M. J., & ALBashtawy, M. (2022). Triage knowledge and practice and associated factors among emergency department nurses. *SAGE Open Nursing*, 8, 23779608221130588.
- Bahre, W., Mengist, B., Bitsa, Y., Woldemariam, G. T., Kebede, S., Wubete, A., Halefom, M. A., & Bantie, A. T. (2024). Triage knowledge, perceived skills, and associated factors among nurses working in adult emergency departments of selected public hospitals in Addis-Ababa, Ethiopia, 2023: multicenter cross-sectional study. *Annals of Medicine and Surgery*, 86(12), 7029-7036.
- Bista, S., Mukhia, S., Rai, L., & Chaudhary, T. K. (2022). KNOWLEDGE ON TRIAGE MANAGEMENT AMONG NURSES IN A TERTIARY LEVEL HOSPITAL OF KATHMANDU. *Asian Journal of Advances in Medical Science*, 4(1), 122-130.
- Boutemine, L., El-Banna, M., Atyeh, R. R., Sami, W., & Rizvi, M. R. (2026). Effectiveness of Standardized Nurse-Led Triage Protocols in Improving Outcomes, Timeliness, and Accuracy in Road Traffic and Trauma Care in Low-Resource Settings: A Systematic Review. *Journal of Multidisciplinary Healthcare*, 585877.
- Bull, C., Latimer, S., Crilly, J., Spain, D., & Gillespie, B. M. (2022). 'I knew I'd be taken care of': Exploring patient experiences in the Emergency Department. *Journal of Advanced Nursing*, 78(10), 3330-3344.
- Curley, D., & Gozman, D. (2026). Maintaining Emergency Department Operational Efficiency and Capacity Management in the Era of Emergency Department Overcrowding and Inpatient Boarding. *Medical Research Archives*, [online] 14 (4). In.
- Da'Costa, A., Teke, J., Origbo, J. E., Osonuga, A., Egbon, E., & Olawade, D. B. (2025). AI-driven triage in emergency departments: A review of benefits, challenges, and future directions. *International Journal of Medical Informatics*, 197, 105838.
- Karina, R., & Basabih, M. The Role of The Triage Nurse Deployment in Reducing Triage Time in Emergency Department. *Jurnal ARSI: Administrasi Rumah Sakit Indonesia*, 11(3), 3.
- Kim, J.-K. (2024). Enhancing patient flow in emergency departments: a machine learning and simulation-based resource scheduling approach. *Applied Sciences*, 14(10), 4264.
- Malak, M. Z., Al-Faqeer, N. M., & Yehia, D. B. (2022). Knowledge, skills, and practices of triage among emergency nurses in Jordan. *International Emergency Nursing*, 65, 101219.
- Mosleh, S. M., Alsereidi, A. R., Aldhanhani, A. A., Alnaqbi, H. M., Alhouti, R. S., & Alshehhi, S. S. (2025). A descriptive study on patient satisfaction with waiting time in emergency departments: Insights from hospitals in the Northern Emirates. *International Emergency Nursing*, 78, 101564.
- Mustafa, M. A. a.-K., Al-Khafaji, Z. A. T., & Al-Hussien, I. Q. K. (2025). Challenges and Knowledge of Nurses Regarding Triage Systems in Emergency Departments. *The Malaysian Journal of Nursing (MJN)*, 17(Supplementary 1), 100-111.
- Nyce, A., Gandhi, S., Freeze, B., Bosire, J., Ricca, T., Kupersmith, E., Mazzarelli, A., & Rachoin, J.-S. (2021). Association of emergency department waiting times with patient experience in admitted and discharged patients. *Journal of patient experience*, 8, 23743735211011404.
- Rahimoon, U., Channar, H. B., Ms, P. A., Gohar, A., & Jaffar, N. (2025). Assessment of Knowledge of Triage and Its Barriers among Nurses working at Tertiary Care Hospital. *Pakistan Journal of Medical & Cardiological Review*, 4(3), 809-823.
- Reay, G., Rankin, J. A., Then, K. L., Fung, T., & Smith-MacDonald, L. (2024). Emergency department triage decision-making by registered nurses: An instrument development study. *Journal of advanced nursing*, 80(11), 4725-4735.
- Riaz, N., Sunhail, S., Shamaon, P., Khalid, N., Komal, S., & Riaz, H. U. (2025). Assessment of Triage Knowledge Among Nurses Working in Emergency Departments of Tertiary Care Hospitals, Lahore. *Journal of Health, Wellness and Community Research*, e764-e764.
- Shawah'en, A. A., Al-Akash, H. Y., Massadeh, R., Shajrawi, A., Maabreh, R., Assaf, E., & Alrabab'a, M. H. (2024). Triage knowledge level and skills among emergency nurses in Jordan: a quasi-experimental study. *Community Pract*, 21(1), 83-101.
- Wiler, J. L., Welch, S., Pines, J., Schuur, J., Jouriles, N., & Stone-Griffith, S. (2015). Emergency department performance measures updates: proceedings of the 2014 emergency department benchmarking alliance consensus summit. *Academic Emergency Medicine*, 22(5), 542-553.