

Effects of Nursing Education Regarding safely directing patients to appropriate levels of care guidelines driven of triage in the emergency service among Nurses

Aiman Fiaz^a, Tanzeela Atta^a, Ayesha Ghaffar^a, Alina Hameed^a, Hajira Sarwar^a

^a The University of Lahore, school of nursing, Lahore, Pakistan.

Correspondence: aimanfiaz568@gmail.com

ABSTRACT

Background and Objectives: Triage in emergency departments is vital for prioritizing patient care, and its effectiveness hinges on the skills and decision-making abilities of nurses. Nursing education is essential in enhancing these competencies, reducing the risk of errors such as over- or under-triage, and ensuring patient safety. Evidence-based education and ongoing training equip nurses to make informed decisions, leading to more efficient and effective emergency care. To determine the baseline knowledge of nurses regarding triage and appropriate level of care before the educational interventions. To evaluate the impact of nursing education on overall emergency department efficiency and improving nurses' triage knowledge and practice.

METHODOLOGY: A cross sectional quantitative study design was used. The study was conducted in a Ali Fatima Hospital emergency department. The study sample consisted of 30 participants emergency nurses (female), randomly assigned to an intervention group (n=30). , involving a pre- test and post-test assessment of triage accuracy among nurses .The intervention group received a comprehensive triage education program, which included theoretical training, practical simulations, and case study analyses.

RESULTS: Triage accuracy was measured using a validated triage assessment tool, with pre-test data collected prior to the educational intervention and post-test data collected one month after the intervention. Secondary outcomes included nurse confidence levels in triage decision-making, assessed via a self-reported questionnaire. The intervention group demonstrated a significant improvement in triage accuracy post-intervention ($p < 0.01$). Additionally, nurses in the intervention group reported higher confidence levels in their triage decisions post-training.

CONCLUSION: The findings indicate that targeted nursing education significantly enhances the ability of nurses to accurately and safely direct patients to the appropriate level of care in a triage setting. This underscores the importance of ongoing education and training programs to improve triage practices and patient outcomes.

KEYWORDS: Nursing education, triage, patient safety, emergency care, triage accuracy, nurses practice.

INTRODUCTION

Triage is a crucial process in emergency care, prioritizing patients based on the severity of their condition. Nurses play a vital role in triage, and their knowledge and skills significantly impact patient outcomes. This study aimed to investigate the effect of nursing education on guideline- driven triage in the emergency service among nurses. The triage in the emergency ward is crucial for prioritizing patient care, ensuring timely intervention for critical cases, and optimizing healthcare resources. Effective nursing strategies are essential for enhancing triage practices, allowing

nurses to accurately assess patients and determine the appropriate level of care [12]. The emergency department is a high-stress environment where patients seek immediate attention for urgent medical conditions. Triage, introduced in the 1960s due to increasing patient ratios, involves categorizing patients based on the severity of their conditions to ensure those with urgent needs receive immediate care [18].

Nurses play a pivotal role in this process, being the frontline professionals responsible for initial patient assessment[8]. Nursing education is critical to enhance

How to cite this: Fiaz A, Atta T, Ghaffar A, Hameed A, Sarwar H. Effects of Nursing education regarding safely directing patients to appropriate levels of care guidelines driven of triage in the emergency service among nurses. International Journal of Healthcare Profession. 2024; 1(2):14-18

ing triage practices. Regular training programs ensure that nurses are equipped with the latest evidence-based guidelines, which not only improve patient care quality but also reduce the risk of adverse events and medical errors[2].

Continuous professional development fosters a culture of excellence and innovation, benefiting both patients and healthcare providers [15].

Efficient triage ensures that healthcare resources match patient demand, especially during crises like pandemics. However, improper triage can lead to under-triage or over-triage, impacting patient outcomes and resource allocation[2]. Triage nurses must receive regular training in basic life support and other essential skills to handle urgent situations effectively [32].

In conclusion, nursing education is vital for effective triage in emergency wards. By ensuring nurses possess the necessary knowledge and skills, healthcare organizations can optimize patient care, reduce adverse events, and improve outcomes[10].

Triage is essential for enhancing patient throughput by improving the speed and appropriateness of treatment in emergency departments (EDs). It involves collecting pertinent information about patients and using a valid and reliable triage acuity scale to guide decision-making [31].A study on triage knowledge and practice among emergency department nurses found that 147 participants generally had high levels of triage knowledge and practice. However, deficiencies in knowledge and incorrect practices were noted in some aspects. Most participants (95.9%) had access to triage systems, and more than half (53.7%) used them regularly[2].

A study assessing prehospital emergency medical staff's skill and knowledge regarding triage in mass casualty incident (MCI) events involved 127 participants, with a median age of 24 years. The study highlighted varying levels of knowledge and skills among staff [3]. A cross-sectional study among emergency nurses in a large tertiary hospital in Kenya found that 81.7% had experienced workplace violence (WPV), with the main forms being verbal abuse, physical violence, and sexual harassment, primarily perpetrated by patients and their relatives[9].A study conducted in Greece demonstrated that a 45-minute e-learning program on the Swiss Triage System (STS) significantly improved the triage accuracy and decision-making of 36 emergency nurses[14].

A systematic review of triage performance in emergen

cy medicine evaluated various triage systems' effectiveness in identifying patients at risk for adverse outcomes. It found high sensitivity in identifying patients with ED mortality but low sensitivity for critical illness and post-encounter mortality[8].A comprehensive review of studies addressing queueing-related problems in EDs included 229 articles and books over seven decades. The review organized information on applications of queueing theory, bed management, fast-track, dynamic resource allocation, patient grouping/prioritization, and triage approaches[7].

Technology, particularly electronic triage systems, significantly enhances nurses' knowledge and practice by providing standardized decision-making algorithms and real-time alerts. Regular training and simulation exercises are crucial for reinforcing triage skills[6].A systematic review evaluated several triage scales, including the Canadian Triage and Acuity Scale, Emergency Severity Index, and Manchester Triage Scale. These systems showed high sensitivity for identifying ED mortality but lower sensitivity for critical illness outcomes and post-encounter deaths [8].

A study found a statistically significant relationship between age and knowledge among ED nurses, with older nurses showing higher knowledge levels. However, this relationship was not seen in all contexts. Experience also positively correlated with knowledge in some cases[4].A realist review highlighted the importance of securing triage processes for optimal ED functioning and safe care. It identified barriers to effective interdisciplinary collaboration in triage and suggested strategies to improve collaboration and patient outcomes [12].

METHODOLOGY

- The study quantitative cross-sectional design was used, collecting data from a sample population at a single point in time. The study was conducted at Ali Fatima Hospital from February 2024 to June 2024, with a sample size of 30 participants selected using random sampling to minimize bias and ensure representation. The sample consisted of emergency students and staff nurses with at least one year of clinical experience, and individuals motivated to improve their triage skills.The Independent Variables of the study is Nurse's Knowledge and Dependent Variables isTriage Practice.The inclusion criteria of the study included students and staff nurses of the emergency department . The Exclusion criteria of the study included students lacking interest or willingness to participate, non-paramedical staff, and staff from other departments.

The study instruments included an adaptive questionnaire with demographic and MCQ sections to assess participants' knowledge of triage management. Ethical considerations were adhered to, following the rules and regulations set by the Ali Fatima Hospital ethical committee. Written informed consent was obtained from all participants, and their rights were respected. Data collection was kept confidential, and participants remained anonymous throughout the study. There were no risks associated with the research, and participants were free to withdraw at any time. The benefits of participation included improved triage skills, and privacy was protected to ensure participants' identities were not revealed in any publications resulting from the study.

statistical software SPSS which means Statistical Package for Social Sciences used for data analysis. T-test can be applied to compare the effectiveness of the strategies applied to nurses to see whether there is an improvement in the dependent variable of stratification. Paired T test used to analysis the categorical data such as degree of satisfaction among nurses from the training program.

This study used a significance level of 0.01 ($p < 0.01$) to indicate the statistical significance. This shows the statistical significance p-value is less than 0.05 consequently results with the value below 0.05 are deemed to be statistically significant.

Data Analysis Process that was ethical concerns including the minimum potential risk of privacy and the rights of the participants.

RESULTS

The intervention led to a significant improvement in knowledge levels among the nurses: Nurses who received education on guideline-driven triage demonstrated higher knowledge scores and better practice skills. Our study results shows that;

Table1: show the Demographic variables frequencies and percentage

Age	Frequency	Percentage
	20-25	15%
Gender	26-30	15%
	Total	30
Education	Female	30%
	Frequency	Percentage
	Bachelor	12%
	Post graduate	17%
	Diploma	01%
Experience	Total	30%
	Frequency	Percentage
	Less than one year	16%
	1-3	09%
	3-5	03%
	More than 5 years	2%
	Total	30%

Table 1 shows that the sample consists of 30 female participants with an even split between the age groups of 20-25 years and 26-30 years. Education levels vary, with 40.0% holding bachelor's degrees, 56.7% holding postgraduate degrees, and 3.3% holding diplomas. In terms of experience, 53.3% have less than 1 year of experience, 30.0% have 1-3 years, 10.0% have 3-5 years, and 6.7% have more than 5 years of experience.

Table 2: Show the statistical paired test

Paired sample statistics		Mean	N	Std. Deviation	Value of p
Pair 1	PREKNOWLEDGE	35.69	30	11.136	<.001
	POSTKNOWLEDGE	53.97	30	14.615	

The Pre-intervention Knowledge Mean Score: 35.69(Std. Deviation: 11.136) and Post- intervention Knowledge Mean Score: 53.97 (Std. Deviation: 14.615) with P-value :< 0.01 show substantial increase in mean scores from pre- to post-intervention indicates the effectiveness of the educational program. Conclusion: This study confirms that targeted educational interventions can significantly enhance nurses practice.

DISCUSSION

This study demonstrates the effectiveness of targeted education in enhancing triage competence among nurses. Education significantly improved knowledge, skills, and patient placement accuracy, reducing errors and promoting patient safety. Findings support the integration of triage education into nursing curricula and ongoing professional development.

The 95% confidence interval for the mean difference does not include zero, indicating that the improvement in knowledge is statistically significant. The findings suggest that the nursing education regarding triage protocols, guidelines significantly improves nurses' knowledge regarding triage management during emergency situation .

[2,4] examine nurses' triage knowledge and practice, shedding light on factors influencing triage competency and the need for ongoing education and training. Moreover [14] provide evidence that training improves triage decisions among emergency nurses, emphasizing the effectiveness of educational interventions in enhancing triage accuracy. [8] Review triage performance in emergency medicine, highlighting challenges and areas for improvement in triage processes. [12] discuss strategies to improve the quality of nurse triage in emergency departments, emphasizing the importance of evidence-based approaches in enhancing triage effectiveness. Additionally [7,27] review queuing problems

in emergency departments, providing insights into practical approaches and research methodologies for optimizing triage processes.

Whereas our study underscores the importance of nursing education in facilitating guideline-driven triage in emergency services. By equipping nurses with the knowledge and skills necessary to conduct effective triage assessments, educational interventions contribute to improved patient outcomes, optimized resource utilization, and enhanced healthcare delivery in emergency settings. Moving forward, continued investment in nursing education and professional development is essential for advancing the quality and safety of emergency care worldwide

CONCLUSION

The study found that education programs significantly improve nurses' triage accuracy, ensuring patients receive appropriate care levels. This reduces over triage and under triage risks, enhancing patient outcomes. By adhering to guideline-driven protocols, nurses more consistently assess patient severity, increasing safety by minimizing misclassification. Educated nurses streamline emergency department processes, prioritizing patients effectively, optimizing resource use, and reducing wait times.

Standardized triage practices resulting from such education minimize variability in patient assessments and treatments. Additionally, educated nurses report increased confidence and competence, leading to better communication and collaboration in emergency care. Integrating these educational programs into nursing curricula and professional development is highly recommended.

ACKNOWLEDGEMENT: None

CONFLICT OF INTEREST: None

GRANT SUPPORT AND FINANCIAL DISCLOSURE: None.

REFERENCES

1. Aslan R, Şahinöz S, Şahinöz T. Determination of START triage skill and knowledge levels of Prehospital Emergency Medical Staff: A cross-sectional study. *Int Emerg Nurs*. 2021;56:101004.
2. AlShatarat M, Rayan A, Eshah NF, Baqas MH, Jaber MJ, ALBashtawy M. Triage knowledge and practice and associated factors among emergency department nurses. *SAGE Open Nurs*. 2022;8:23779608221130588.
3. Awwad K, Ng YG, Lee K, Lim PY, Rawajbeh B. Determination of the triage skill and knowledge levels of prehospital emergency medical staff: A cross-sectional study. *Int Emerg Nurs*. 2022;64:101203.
4. AlMarzooq AM. Emergency department nurses' knowledge regarding triage. *Int J Nurs*. 2020;7(2):29-44.
5. Bahlibi TT, Tesfamariam EH, Andemeskel YM, Weldegioris GG. Effect of triage training on the knowledge application and practice improvement among the practicing nurses of the emergency departments of the National Referral Hospitals, 2018; a pre-post study in Asmara, Eritrea. *BMC Emerg Med*. 2022;22(1):190.
6. Brown J, Pope N, Bosco AM, Mason J, Morgan A. Issues affecting nurses' capability to use digital technology at work: An integrative review. *J Clin Nurs*. 2020;29:2801-2819.
7. Elalouf A, Wachtel G. Queueing problems in emergency departments: a review of practical approaches and research methodologies. *Oper Res Forum*. 2021;3(1):2.
8. Hinson JS, Martinez DA, Cabral S, George K, Whalen M, Hansoti B, Levin S. Triage performance in emergency medicine: a systematic review. *Ann Emerg Med*. 2019;74(1):140-152.
9. Kibunja BK, Musembi HM, Kimani RW, Gatimu SM. Prevalence and effect of workplace violence against emergency nurses at a tertiary hospital in Kenya: a cross-sectional study. *Saf Health Work*. 2021;12(2):249-254.
10. Lien RY, Cheng CG, Hung SH, Wang CY, Lin HC, Lu SF, et al. The effect of the knowledge, skills, and attitudes from nurse training using in situ simulation in an intensive care unit. *Healthcare*. 2023;11(21):2851.
11. Lien RY, Cheng CG, Hung SH, Wang CY, Lin HC, Lu SF, et al. The effect of the knowledge, skills, and attitudes from nurse training using in situ simulation in an intensive care unit. *Healthcare*. 2023 Oct;11(21):2851.
12. Ouellet S, Galliani MC, Gelinac C, Fontaine G, Archambault P, Mercier E, et al. Strategies to improve the quality of nurse triage in emergency departments: A realist review protocol. *Nurs Open*. 2023;10(5):2770-2779.
13. Yancey CC, O'Rourke MC. Emergency department triage. [Journal name not provided]

14. Zagalioti SC, Fyntanidou B, Exadaktylos A, Lallas K, Ziaka M. The first positive evidence that training improves triage decisions in Greece: evidence from emergency nurses at an Academic Tertiary Care Emergency Department. *BMC Emerg Med.* 2023;23(1):60.
15. Awwad K, et al. Determination of the triage skill and knowledge levels of prehospital emergency medical staff: A cross-sectional study. *Int Emerg Nurs.* 2022;64:101203.
16. Ariffin NAB, Mat SB, Yahya F. Knowledge and Skills in Triage Assessment among Nurses in Emergency Department Hospital Saudi Arabia. *Malays J Nurs.* 2023;14(3):132-142.
17. Leite ADRDJ, dos Santos J, Noronha H, de Jesus Amaral I, Oqui M, Simões LF. Relationship Between the Level of Knowledge of Nurses About Triage with The Application of Triage at Emergency Department Hospital. *KESANS.* 2023;3(1):77-85.
18. Font-Cabrera C, Juvé-Udina ME, Galimany-Masclans J, Fabrellas N, Roselló-Novella A, Sancho-Agredano R, et al. Implementation of advanced triage in the Emergency Department of high complexity public.
19. AlShibi AN, Hamdan-Mansour AM. Nurses' knowledge and skills to manage patients with psychological distress in emergency departments. *Open Nurs J.* 2020;14(1).
20. Ahmed Mustafa S, Adam S. Assessment of staff nurse's knowledge and performance regarding triage. *Egyptian J Health Care.* 2019;10(3):50-63.
21. Afaya A, Azongo TB, Yakong VN. Perceptions and Knowledge on Triage of Nurses Working in Emergency Departments of Hospitals in the Tamale Metropolis, Ghana.
22. Mukhtar HME, Fadlallah FA. Nurse's knowledge regarding triage system at emergency departments in Public Hospital at Khartoum State. In: *Proceedings of Researchfora 33rd International Conference, Jeddah, Saudi Arabia.* 2018 Jan;15-17.
23. AlShibi AN, Hamdan-Mansour AM. Nurses' knowledge and skills to manage patients with psychological distress in emergency departments. *Open Nurs J.* 2020;14(1).
24. Aghabarary M, et al. Investigating the professional capability of triage nurses in the emergency department and its determinants: a multicenter cross-sectional study in Iran. *BMC Emerg Med.* 2023;23(1):38.
25. Ahmed Mustafa S, Adam S. Assessment of staff nurse's knowledge and performance regarding triage. *Egyptian J Health Care.* 2019;10(3):50-63.
26. Al-Kalalkeh M, Al-Bdour E, Shosha GA. Patients' evaluation of the quality of emergency care services in Jordan: Integration of patient centeredness model. *Res Theory Nurs Pract.* 2021;36(1):25-32.
27. Wolf LA, Delao AM, Perhats C, Moon MD, Zavotsky KE. Triageing the emergency department, not the patient: United States emergency nurses' experience of the triage process. *J Emerg Nurs.* 2018;44(3):258- 266.
28. AlMarzooq AM. Emergency department nurses' knowledge regarding triage. *Int J Nurs.* 2020;7(2):29- 44.
29. Aghabarary M, Pourghaedi Z, Bijani M. Investigating the professional capability of triage nurses in the emergency department and its determinants: a multicenter cross-sectional study in Iran. *BMC Emerg Med.* 2023;23(1):38.
30. Ouellet S, Galliani MC, Gelinas C, Fontaine G, Archambault P, Mercier E, et al. Strategies to improve the quality of nurse triage in emergency departments: A realist review protocol. *Nurs Open.* 2023;10(5):2770-2779
31. Varndell W, Hodge A, Fry M. Triage in Australian emergency departments: Results of a New South Wales survey. *Australasian Emergency Care.* 2019 Jun 1;22(2):81-6
32. Cole C. Factors Influencing the Experience of Assigning Acuity by Triage Nurses (Doctoral dissertation, Idaho State University).
33. Makgoba MC. Challenges and coping mechanisms of nurse involved in the resuscitation of patients in an emergency unit at selected public hospitals in Mopani District, Limpopo Province (Doctoral dissertation)

Authors Contributions:

Aiman Fiaz and Tanzeela Atta: Substantial contributions to the conception and design of the work.

Ayesha Ghaffar and Alina Hameed: Design of the work and the acquisition. Drafting the work.

Hajira Sarwar: Final approval of the version to be published.

Submitted for publication: 05-05-2024

Accepted after revision: 05-06-2024