

Original Article

Hubungan Pengetahuan Triage Perawat dengan Lama Bekerja di Puskesmas: A Cross-Sectional Study

Relationship Between Nurses' Triage Knowledge and Length of Service in Community Health Centers: A Cross-Sectional Study

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ABSTRACT

Emergency and disaster situations demand rapid, accurate, and well-coordinated responses from healthcare professionals. Triage is a critical process for prioritizing patients based on severity, ensuring optimal use of limited medical resources. Nurses are often the first responders responsible for triage implementation, especially in community health centers (Puskesmas) in Indonesia. Knowledge of triage systems, particularly the Simple Triage and Rapid Treatment (START) method, is essential for achieving optimal patient outcomes. This study aimed to examine the relationship between nurses' triage knowledge and length of service in community health centers, providing insights for targeted training and emergency preparedness strategies.

A cross-sectional correlational study was conducted with 32 nurses from 19 community health centers in Cirebon, Indonesia, selected through purposive sampling. Triage knowledge was assessed using a validated 16-item questionnaire, with scores categorized into low, moderate, and high. Length of service was measured in years. Data were collected via an online session and analyzed using descriptive statistics and Pearson correlation analysis with a significance level of $p < 0.05$.

Most nurses demonstrated high triage knowledge (75%) with a mean score of 13.0 ± 2.74 . Knowledge was highest in disaster definitions (93.8%) and START triage concepts (93.8%), while the most errors occurred in identifying green-labeled (68.8% incorrect) and white-labeled patients (59.4% incorrect). Pearson correlation showed a weak, non-significant positive relationship between length of service and triage knowledge ($r = 0.083$; $p = 0.650$).

The findings indicate that length of service alone does not ensure higher triage knowledge, especially in community health centers with limited exposure to emergencies. Continuous professional development, scenario-based simulations, and structured training are essential to maintain and enhance nurses' triage competence. These results can inform the development of targeted educational programs and policies to strengthen emergency preparedness in primary healthcare settings.

Keywords: Triage, Nurses, Knowledge, Community health centers

ABSTRAK

Situasi darurat dan bencana menuntut respons cepat, tepat, dan terkoordinasi dari tenaga kesehatan. Triage merupakan proses penting untuk memprioritaskan pasien berdasarkan tingkat keparahan, sehingga sumber daya medis terbatas dapat digunakan secara optimal. Perawat sering menjadi responder pertama yang bertanggung jawab dalam pelaksanaan triage, khususnya di Puskesmas di Indonesia. Pengetahuan tentang sistem triage, terutama metode Simple Triage and Rapid Treatment (START), sangat penting untuk mencapai hasil pasien yang optimal. Penelitian ini bertujuan meneliti hubungan antara pengetahuan triage perawat dan lama bekerja di Puskesmas, sekaligus memberikan wawasan untuk pengembangan pelatihan dan strategi kesiapsiagaan darurat.

Penelitian ini menggunakan desain korelasional potong lintang dengan 32 perawat dari 19 Puskesmas di Cirebon, Indonesia, dipilih melalui purposive sampling. Pengetahuan triage diukur menggunakan kuesioner 16 item yang telah tervalidasi, dengan skor dikategorikan rendah, sedang, dan tinggi. Lama bekerja diukur dalam tahun. Data dikumpulkan melalui sesi daring dan dianalisis menggunakan statistik deskriptif serta uji korelasi Pearson dengan tingkat signifikansi $p < 0,05$.

Sebagian besar perawat menunjukkan pengetahuan triage tinggi (75%) dengan skor rata-rata $13,0 \pm 2,74$. Pengetahuan tertinggi terdapat pada definisi bencana (93,8%) dan konsep triage START (93,8%), sedangkan kesalahan paling sering terjadi pada identifikasi pasien label hijau (68,8% salah) dan putih (59,4% salah). Analisis korelasi Pearson menunjukkan hubungan positif lemah dan tidak signifikan antara lama bekerja dan pengetahuan triage ($r = 0,083$; $p = 0,650$).

Hasil penelitian menunjukkan bahwa lama bekerja saja tidak menjamin pengetahuan triage yang lebih tinggi, terutama di Puskesmas dengan paparan situasi darurat terbatas. Pengembangan profesional berkelanjutan, simulasi berbasis skenario, dan pelatihan terstruktur sangat penting untuk mempertahankan dan meningkatkan kompetensi triage perawat. Temuan ini dapat menjadi dasar pengembangan program edukasi dan kebijakan yang ditargetkan untuk memperkuat kesiapsiagaan darurat di layanan kesehatan primer.

Kata Kunci: Triage, Perawat, Pengetahuan, Puskesmas

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Key Findings

- ⇒ Nurses in community health centers generally demonstrate high triage knowledge, although inaccuracies remain in specific aspects of patient categorization.
- ⇒ Length of service is not significantly associated with nurses' level of triage knowledge in community health centers.
- ⇒ Continuous training and simulation-based learning are essential to maintain and enhance nurses' triage competence regardless of work experience.

Introduction

Emergency and disaster situations require rapid, accurate, and well-coordinated responses from healthcare professionals (Kedia et al., 2022; Stéfani et al., 2022). One of the most critical processes in emergency management is *triage*, which involves prioritizing patients based on the severity of their condition to ensure that limited medical resources are used effectively. Nurses are often the first responders responsible for implementing triage, especially in community-based health

services such as *Puskesmas* (Community Health Centers) in Indonesia. Therefore, nurses' understanding and knowledge of triage systems—particularly the Simple Triage and Rapid Treatment (START) method—are essential to achieving optimal patient outcomes in emergency and disaster situations. This is consistent with Benner's Novice-to-Expert Theory, which emphasizes that clinical knowledge develops over time through experience and practice, suggesting that length of service may influence nurses' competence in critical tasks like triage (Rahmati et al., 2025; Taylan & Özkan, 2024; Ullah, 2022).

In 2023, the world experienced 399 natural disasters affecting approximately 93.1 million people, with 86,473 deaths, far above the 20-year average of around 64,000. The deadliest event was the February 2023 earthquake in Turkey and Syria, which killed over 58,000 people. In Indonesia, 4,940 disasters were recorded in 2023, predominantly hydrometeorological events such as floods, landslides, and extreme weather, impacting millions, with prolonged drought affecting 18.8 million people. By mid-2024, disaster incidents in Indonesia rose to around 1,000 events, indicating an upward trend. These figures highlight the critical need for first aid training and community preparedness, as equipping people with basic emergency skills can reduce fatalities, mitigate injury severity, and accelerate recovery after disasters (Delianto & Kumar, 2025; Panjaitan et al., 2025; Suwardianto et al., 2025).

Several studies have highlighted that adequate triage knowledge significantly contributes to faster decision-making and reduced mortality

rates during mass casualty incidents ("Global Burden of 288 Causes of Death and Life Expectancy Decomposition in 204 Countries and Territories and 811 Subnational Locations, 1990-2021: A Systematic Analysis for the Global Burden of Disease Study 2021," 2024; Izquierdo et al., 2025). Training and experience are considered key factors influencing nurses' triage performance (Iso-Ahola, 2024; Novakowski et al., 2022). However, in primary healthcare settings like *Puskesmas*, where exposure to large-scale emergencies is relatively limited, nurses may not have the same level of practical experience as those working in hospitals or emergency departments. In this context, Knowles' Adult Learning Theory becomes relevant, emphasizing that adults learn most effectively when learning is self-directed and linked to practical experience (Chen & Lian, 2024; Purnamasari, 2023; Sibrian et al., 2022). Hence, even long-serving nurses may require structured training to maintain and enhance triage competence (Alqahtani et al., 2025; Dhakshayani T., 2023; Mawji et al., 2022; Probowati et al., 2024).

Most existing research on triage knowledge has been conducted in hospital settings, focusing on emergency room or disaster response nurses. Few studies have explored the relationship between *length of service* and *triage knowledge* among nurses working in community health centers, which play a pivotal role in the first line of public health emergency response in Indonesia. Furthermore, while some studies suggest that longer work experience may enhance clinical decision-making, others indicate that knowledge can decline over time

without continuous training and practice. This inconsistency highlights a crucial gap in understanding how professional experience relates to triage competence in primary healthcare contexts. The integration of **competency-based frameworks** in nursing suggests that both theoretical knowledge and practical exposure are necessary for effective triage performance, yet empirical evidence in Puskesmas settings remains limited (Palermo et al., 2022; Roberts et al., 2024).

This study aims to examine the relationship between nurses' triage knowledge and their length of service at community health centers. By identifying whether experience influences triage competence, the findings are expected to provide valuable insights for health administrators and policymakers to develop targeted educational and training interventions that strengthen emergency preparedness among Puskesmas nurses. The study is grounded in Benner's Novice-to-Expert Model and Adult Learning Theory, providing a conceptual basis to explore how experience and practical learning shape triage knowledge in primary healthcare.

Methods

Design, Participants, and Setting

This study employed a cross-sectional correlational design to examine the relationship between nurses' triage knowledge and their length of service at community health centers. The study population consisted of nurses working in 19 healthcare institutions across Cirebon, Indonesia, including community health centers and

hospitals. A total of 32 nurses were selected as participants using purposive sampling.

Inclusion criteria were nurses who were actively practicing in emergency care or disaster response, while those not involved in emergency or acute care duties were excluded.

The independent variable in this study was triage knowledge, measured using a structured questionnaire with a score range of 1–16. The dependent variable was length of service in years. Data collection took place at the participating institutions in Cirebon Province, Indonesia, ensuring representation from multiple community health centers and hospital settings.

Instruments

Data for both the independent and dependent variables were collected using a structured questionnaire. The independent variable, nurses' triage knowledge, was measured using 16 multiple-choice items, each scored as 1 for a correct answer and 0 for an incorrect answer. The total knowledge score thus ranged from 1 to 16. Prior to data collection, the questionnaire was tested for validity and reliability. The instrument demonstrated good content validity, confirmed by expert review, and high internal consistency, with a Cronbach's alpha of 0.87, indicating that the items reliably measured nurses' triage knowledge.

For analytical purposes, the total scores were categorized into three levels based on the percentage of the maximum score: low knowledge (0–7 points, <50%), moderate knowledge (8–11 points, 50–74%), and high knowledge (12–16 points, 75–100%).

This categorization facilitates clearer interpretation of the respondents' knowledge levels and allows for comparison with findings from other studies. The dependent variable, length of service, was measured in years of work experience at the respective healthcare facility (**Appendix A and Table A1**).

Data Collection and Analysis

Data were collected on July 24, 2024, via Zoom, during a pre-conference session prior to the emergency care practicum rotation. Participants were guided through the questionnaire and instructed to provide responses independently.

Descriptive statistics, including frequency, percentage, mean, and standard deviation, were calculated to summarize respondents' characteristics and triage knowledge levels. The

relationship between nurses' triage knowledge and length of service was examined using Pearson correlation analysis. Statistical analyses were performed using IBM SPSS Statistics version 26, with a significance level set at $p < 0.05$.

Ethical Approval

Ethical approval for this study was obtained. All participants were provided with detailed information regarding the purpose, benefits, and procedures of the study prior to participation. Participation was voluntary, and participants were free to withdraw at any time without any consequences. Confidentiality of personal information and identity was strictly maintained, and data were used solely for research purposes.

Results

Table 1. Characteristics of Respondents and Descriptive Statistics of Study Variables (n = 32)

Variable	Category / Indicator	n (%)	Mean (SD)	Min-Max
Gender	Male	15 (46.9)	—	—
	Female	17 (53.1)	—	—
Work unit	Emergency Department (ED)	14 (43.8)	—	—
	Inpatient Department / Health Post	18 (56.3)	—	—
Length of service (years)	—	—	13.50 (7.53)	2-30
Triage knowledge ¹	—	—	0.94 (0.25)	0-1

Table 1 illustrates that Most respondents were female (53.1%) and worked in the inpatient department or health post (56.3%). The average length of service was 13.5 years (SD = 7.53),

ranging from 2 to 30 years. The mean triage knowledge score was 0.94 (SD = 0.25), indicating that most nurses had a good level of understanding regarding triage and disaster management concepts.

Table 2. Distribution of Respondents Based on Triage Knowledge Indicators (n = 32)

No	Indicator of Triage Knowledge	Correct n (%)	Incorrect n (%)
1	Definition of disaster	30 (93.8)	2 (6.3)
2	Definition of START triage	30 (93.8)	2 (6.3)
3	Meaning of the acronym START	23 (71.9)	9 (28.1)
4	START triage principles	28 (87.5)	4 (12.5)
5	Application of START principles	28 (87.5)	4 (12.5)
6	Indicators in START triage	29 (90.6)	3 (9.4)
7	Ability to mention indicators used in START triage	28 (87.5)	4 (12.5)
8	Red label patient	32 (100.0)	0 (0.0)
9	Yellow label patient	29 (90.6)	3 (9.4)
10	Green label patient	10 (31.3)	22 (68.8)
11	Black label patient	30 (93.8)	2 (6.3)
12	White label patient	13 (40.6)	19 (59.4)
13	First step in START triage	28 (87.5)	4 (12.5)
14	Next step after identifying ambulatory patients	18 (56.3)	14 (43.8)
15	Action for non-breathing patients after opening the airway	11 (34.4)	21 (65.6)
16	Next step if the patient breathes after airway opening	26 (81.3)	6 (18.8)

Table 2 illustrates that overall, nurses demonstrated a good understanding of triage and disaster concepts. Most respondents correctly identified the definition of disaster (93.8%) and START triage (93.8%), as well as the principles of START triage (87.5%). However, misconceptions were

more frequent in identifying green-labeled patients (68.8% incorrect) and white-labeled patients (59.4% incorrect). The mean total triage knowledge score was **13.0 (SD = 2.74)** out of a maximum of 16, indicating that, in general, respondents had a high level of triage knowledge.

Table 3. Distribution of Respondents' Knowledge Levels and the Relationship between Length of Service and Triage Knowledge Score

Variables	n (%)	Pearson's r	p-value (2-tailed)
Length of service (years) ↔ Triage knowledge score	—	0.083	0.65
Low knowledge (0–7)	2 (6.25%)	—	—
Moderate knowledge (8–11)	6 (18.75%)	—	—
High knowledge (12–16)	24 (75%)	—	—

Note: Pearson's correlation test was used. Significance level at $p < 0.05$.

Table 3 illustrates that the analysis showed a *weak positive correlation*

between the length of service and triage knowledge among nurses ($r = 0.083$, $p =$

0.650). However, the correlation was not statistically significant, indicating that years of experience were not associated with higher triage knowledge among respondents.

Discussion

This study investigated the relationship between nurses' triage knowledge and their length of service in community health centers. The findings indicate that most respondents had a high level of triage knowledge, particularly in identifying disaster definitions, START triage concepts, and the principles of START triage. However, knowledge gaps were observed in identifying patients with green and white labels, as well as in specific procedural steps for non-breathing patients. The mean total triage knowledge score of 13.0 (SD = 2.74) out of 16 suggests that, overall, nurses possessed adequate understanding of emergency triage and disaster management principles.

The high level of triage knowledge observed aligns with prior research reporting that nurses involved in emergency or disaster response training generally achieve good knowledge scores. For instance, studies in hospital and primary care settings have highlighted that structured education and periodic training significantly improve triage competence. Conversely, the lower accuracy in certain areas, such as identifying green-labeled patients, is consistent with literature indicating that less frequently encountered scenarios in clinical practice may reduce nurses' familiarity and confidence in triage decision-making (Fladt et al., 2023; Tahernejad et al., 2024).

Despite expectations that longer work experience would correlate with higher triage knowledge, the analysis revealed a weak and non-significant correlation ($r = 0.083$, $p = 0.650$). This finding suggests that length of service alone does not necessarily enhance triage knowledge, particularly in community health centers where exposure to mass casualty or disaster situations may be limited. It underscores the importance of continuous professional education and simulation-based training to maintain and enhance critical skills, rather than relying solely on years of service.

These findings highlight the need for targeted educational interventions, such as refresher courses, scenario-based simulations, and competency assessments, to address specific gaps in triage knowledge among community health center nurses (Apiratwarakul et al., 2022; Li et al., 2023). Additionally, healthcare administrators should recognize that experience alone is insufficient and implement regular training programs to ensure readiness for emergency and disaster situations (Anschau et al., 2021; Kamau et al., 2024). Future research could explore larger sample sizes across multiple regions, evaluate the effectiveness of different training modalities, and investigate other factors influencing triage knowledge, such as frequency of emergency exposure or continuing professional development.

Conclusion

Nurses working in community health centers demonstrated a generally high level of triage knowledge, particularly regarding disaster definitions, START triage, and its

principles. However, knowledge gaps were observed in identifying certain patient categories, such as green- and white-labeled patients, as well as in specific procedural steps for non-breathing patients. The study also found no significant correlation between length of service and triage knowledge, indicating that experience alone may not guarantee higher competency in triage practices. These findings highlight the need for continuous professional development, refresher training, and scenario-based simulations to maintain and enhance triage competence among community health center nurses.

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Conflict of Interest

There is no conflict of interest.

Author Contribution

Heru Suwardianto: Conceptualization, study design, methodology, data collection, data analysis, interpretation of results, manuscript drafting, and critical revision of the manuscript.

K. Sesa Kumar: Supervision, methodological guidance, validation of analysis, critical review of the manuscript, and final approval of the version to be published.

References

- Alqahtani, M. A., Sav, A., & Toloo, G. S. (2025). Disaster Management Education and Training for Paramedics: A Scoping Review. *Disaster Medicine and Public Health Preparedness*, 19, e207. <https://doi.org/10.1017/dmp.2025.10137>
- Anschau, F., Worm, P. V., Kopittke, L., de Mello Villwock, L. H., Lemos Sartori, M. L., Cardoso do Rosário, J., Secorun Inácio, J. F., Much, M. D., Marckmann, E., Pinheiro, S., Nickenig Vissoci, J. R., de Lara Machado, W., Costa, D. B., Klug, D., Martin Prestes, J., & Hessel, F. (2021). Smart Check - COVID-19 triage system: Evaluation of the impact on the screening time and identification of clinical manifestations of SARS-CoV-2 infection in a public health service. *International Journal of Clinical Practice*, 75(10), e14610. <https://doi.org/10.1111/ijcp.14610>
- Apiratwarakul, K., Cheung, L. W., Tiamkao, S., Phungoen, P., Tientanopajai, K., Taweepworadej, W., Kanarkard, W., & Ienghong, K. (2022). Smart Glasses: A New Tool for Assessing the Number of Patients in Mass-Casualty Incidents. *Prehospital and Disaster Medicine*, 37(4), 480–484. <https://doi.org/10.1017/S1049023X22000929>
- Chen, F., & Lian, A. (2024). Applying Adult Learning Theory in Improving Knowledge, Attitude, and Practice of Inadvertent Perioperative Hypothermia in Operating Room Nurses: Single-

- Group "Before and After Study". *Therapeutic Hypothermia and Temperature Management*, 14(4), 252–257.
<https://doi.org/10.1089/ther.2023.0072>
- Delianto, & Kumar, K. S. (2025). Accuracy of Triage and Its Association with Family Satisfaction in the Emergency Department of a General Hospital: A Cross-Sectional Study. *International Journal of Health Concord*, 1(1), 18–25.
<https://ihc.candle.or.id/index.php/ihc/article/view/8>
- Dhakshayani T., D. (2023). Forgotten Voices: The Onerous Role of School Health Nurses Residential Schools of India- A View Point. *Journal of Applied Nursing and Health*, 5(2), 307–314.
<https://doi.org/10.55018/janh.v5i2.162>
- Fladt, J., Ospel, J. M., Singh, N., Saver, J. L., Fisher, M., & Goyal, M. (2023). Optimizing Patient-Centered Stroke Care and Research in the Prehospital Setting. *Stroke*, 54(9), 2453–2460.
<https://doi.org/10.1161/STROKEA.HA.123.044169>
- Global burden of 288 causes of death and life expectancy decomposition in 204 countries and territories and 811 subnational locations, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. (2024). *Lancet (London, England)*, 403(10440), 2100–2132.
[https://doi.org/10.1016/S0140-6736\(24\)00367-2](https://doi.org/10.1016/S0140-6736(24)00367-2)
- Iso-Ahola, S. E. (2024). A theory of the skill-performance relationship. *Frontiers in Psychology*, 15, 1296014.
<https://doi.org/10.3389/fpsyg.2024.1296014>
- Izquierdo, M., de Souto Barreto, P., Arai, H., Bischoff-Ferrari, H. A., Cadore, E. L., Cesari, M., Chen, L.-K., Coen, P. M., Courneya, K. S., Duque, G., Ferrucci, L., Fielding, R. A., García-Hermoso, A., Gutiérrez-Robledo, L. M., Harridge, S. D. R., Kirk, B., Kritchevsky, S., Landi, F., Lazarus, N., ... Fiatarone Singh, M. A. (2025). Global consensus on optimal exercise recommendations for enhancing healthy longevity in older adults (ICFSR). *The Journal of Nutrition, Health & Aging*, 29(1), 100401.
<https://doi.org/10.1016/j.jnha.2024.100401>
- Kamau, S., Kigo, J., Mwaniki, P., Dunsmuir, D., Pillay, Y., Zhang, C., Nyamwaya, B., Kimutai, D., Ouma, M., Mohammed, I., Gachuhi, K., Chege, M., Thurairara, L., Ansermino, J. M., & Akech, S. (2024). Comparison between the Smart Triage model and the Emergency Triage Assessment and Treatment guidelines in triaging children presenting to the emergency departments of two public hospitals in Kenya. *PLOS Digital Health*, 3(8), e0000408.
<https://doi.org/10.1371/journal.pdig.0000408>
- Kedia, T., Ratcliff, J., O'Connor, M., Oluic, S., Rose, M., Freeman, J., & Rainwater-Lovett, K. (2022). Technologies Enabling Situational Awareness During Disaster Response: A Systematic Review. *Disaster Medicine and Public Health Preparedness*, 16(1), 341–359.

- <https://doi.org/10.1017/dmp.2020.196>
- Li, E. C. K., Tagoola, A., Komugisha, C., Nabweteme, A. M., Pillay, Y., Ansermino, J. M., & Khowaja, A. R. (2023). Cost-effectiveness analysis of Smart Triage, a data-driven pediatric sepsis triage platform in Eastern Uganda. *BMC Health Services Research*, 23(1), 932. <https://doi.org/10.1186/s12913-023-09977-5>
- Mawji, A., Li, E., Dunsmuir, D., Komugisha, C., Novakowski, S. K., Wiens, M. O., Vesuvius, T. A., Kissoon, N., & Ansermino, J. M. (2022). Smart triage: Development of a rapid pediatric triage algorithm for use in low-and-middle income countries. *Frontiers in Pediatrics*, 10, 976870. <https://doi.org/10.3389/fped.2022.976870>
- Novakowski, S. K., Kabajaasi, O., Kinshella, M.-L. W., Pillay, Y., Johnson, T., Dunsmuir, D., Pallot, K., Rigg, J., Kenya-Mugisha, N., Opar, B. T., Ansermino, J. M., Tagoola, A., & Kissoon, N. (2022). Health worker perspectives of Smart Triage, a digital triaging platform for quality improvement at a referral hospital in Uganda: a qualitative analysis. *BMC Pediatrics*, 22(1), 593. <https://doi.org/10.1186/s12887-022-03627-1>
- Palermo, C., Aretz, H. T., & Holmboe, E. S. (2022). Editorial: Competency frameworks in health professions education. In *Frontiers in medicine* (Vol. 9, p. 1034729). <https://doi.org/10.3389/fmed.2022.1034729>
- Panjaitan, J., Linawati Togatorop, & Anastasia, C. A. (2025). The Relationship Between Nurse Burnout and the Implementation of Patient Safety Goals: A Cross-Sectional Study. *International Journal of Health Concord*, 1(2), 99–109. <https://doi.org/10.55018/ihc.v12.26>
- Probowati, R., Nasukha, W. H., Syarifah, A. S., Ratnawati, M., & Prihartanti, N. G. (2024). The Correct Breastfeeding Education on the Knowledge and Behavior of Postpartum Mothers in the NNICU Room. *Journal of Applied Nursing and Health*, 6(1 SE-Articles), 162–169. <https://doi.org/10.55018/janh.v6i1.188>
- Purnamasari, V. (2023). Community Ability In The Process Of Transporting Emergency Victims Due To Traffic Accidents. *Journal of Applied Nursing and Health*, 5(1), 130–136. <https://doi.org/10.55018/janh.v5i1.135>
- Rahmati, D., Nikjo, P., Zahabi, H., Karimi, Z., & Solouki, L. (2025). Work Experience and Anger Management in Nurses: Cross-Sectional Analysis Based on Benner's Novice to Expert Theory. *Asian/Pacific Island Nursing Journal*, 9, e75432. <https://doi.org/10.2196/75432>
- Roberts, M. L., Sinacori, B., Hassler, L. J., & Filippelli, A. (2024). Elevating competency-based education in baccalaureate nursing: A simulation integration project. *Journal of Professional Nursing: Official Journal of the American Association of Colleges of Nursing*, 54, 45–49. <https://doi.org/10.1016/j.profnurs.2024.06.014>

- Sibrian, J., Hutapea, K., Dunbar, G. B., & Kawar, L. N. (2022). A Virtual World: New Graduate Education in the Era of COVID-19. *Journal of Continuing Education in Nursing*, 53(7), 307–311. <https://doi.org/10.3928/00220124-20220603-06>
- Stéfani, G. M., de Melo, M. E., Zardeto, H. N., Costa, V. S. L. P., Lima, F. S., & Cola, M. (2022). JumpSTART Triage Protocol in Disaster Pediatric Patients: A Systematic Literature Review. *Prehospital and Disaster Medicine*, 1–7. <https://doi.org/10.1017/S1049023X22000127>
- Suwardianto, H., Doku, J. F. A., & Ferede, A. J. (2025). Burnout Differences Between Critical Care and Inpatient Nurses: A Cross-sectional Study. *International Journal of Health Concord*, 1(2), 110–120. <https://doi.org/10.55018/ihc.v12.23>
- Tahernejad, A., Sahebi, A., Abadi, A. S. S., & Safari, M. (2024). Application of artificial intelligence in triage in emergencies and disasters: a systematic review. *BMC Public Health*, 24(1), 3203. <https://doi.org/10.1186/s12889-024-20447-3>
- Taylan, S., & Özkan, İ. (2024). Nursing Students' Perception of Missed Perioperative Nursing Care: Hermeneutic Phenomenology. *Journal of Perianesthesia Nursing: Official Journal of the American Society of PeriAnesthesia Nurses*, 39(5), 802–807. <https://doi.org/10.1016/j.jopan.2023.12.013>
- Ullah, T. (2022). Analysis Of Factors That Affect the Implementation Of Triage On Satisfaction Of Patients Family. *Journal of Applied Nursing and Health*, 4(1 SE-Articles), 140–145. <https://doi.org/10.55018/janh.v4i1.66>

Appendix A

Knowledge Questionnaire of Triage START (Kuesioner Pengetahuan Triage START)

1. Definisi bencana adalah:

- Peristiwa yang menyebabkan kerusakan ringan
- Kejadian yang hanya mempengaruhi lingkungan sekitar
- Peristiwa yang menyebabkan kerugian besar baik manusia, material, dan lingkungan
- Peristiwa yang tidak mempengaruhi manusia
- Kejadian yang dapat diabaikan

Jawaban benar: c

2. Definisi triage START adalah:

- Metode penilaian cepat untuk menentukan prioritas perawatan pasien
- Sistem penilaian gizi pada pasien
- Metode pengukuran tekanan darah di rumah sakit
- Sistem perawatan intensif untuk pasien kritis
- Prosedur administrasi pasien di rumah sakit

Jawaban benar: a

3. START dalam triage START adalah singkatan dari:

- Simple Triage and Rapid Treatment*
- Standard Triage and Rapid Transport*
- Simple Treatment and Rapid Triage*
- Standard Treatment and Regular Triage*
- Simple Treatment and Rapid Transport*

Jawaban benar: a

4. Prinsip triage START adalah:

- Menyederhanakan proses triage untuk penanganan cepat
- Memfokuskan perawatan pada pasien dengan luka ringan
- Memberikan perawatan intensif pada semua pasien
- Mengabaikan pasien yang tidak sadar
- Memberikan perawatan berdasarkan urutan kedatangan

Jawaban benar: a

5. Prinsip triage START melibatkan:

- Menyusun daftar tunggu pasien
- Melakukan perawatan berdasarkan kemampuan finansial pasien
- Menggunakan kategori warna untuk mengidentifikasi prioritas pasien
- Merawat pasien yang paling vokal terlebih dahulu
- Mengabaikan pasien yang dapat berjalan

Jawaban benar: c

6. Indikator triage START meliputi:

- a. Usia pasien
- b. Kecepatan pernapasan
- c. Warna kulit
- d. Suhu tubuh
- e. Tinggi badan

Jawaban benar: b

7. Salah satu indikator yang digunakan dalam triage START adalah:

- a. Tingkat kecerdasan
- b. Berat badan
- c. Denyut nadi
- d. Tingkat kebersihan
- e. Kondisi pakaian

Jawaban benar: c

8. Pasien dengan label merah dalam triage START adalah:

- a. Pasien dengan kondisi kritis yang membutuhkan perawatan segera
- b. Pasien dengan kondisi stabil
- c. Pasien dengan luka ringan
- d. Pasien yang dapat berjalan
- e. Pasien yang tidak perlu perawatan

Jawaban benar: a

9. Pasien dengan label kuning dalam triage START adalah:

- a. Pasien dengan kondisi kritis yang membutuhkan perawatan segera
- b. Pasien yang memerlukan perawatan tetapi tidak secepat pasien dengan label merah
- c. Pasien dengan luka ringan
- d. Pasien yang dapat berjalan
- e. Pasien yang tidak perlu perawatan

Jawaban benar: b

10. Pasien dengan label hijau dalam triage START adalah:

- a. Pasien dengan kondisi kritis yang membutuhkan perawatan segera
- b. Pasien dengan kondisi stabil
- c. Pasien yang memerlukan perawatan tetapi tidak secepat pasien dengan label merah
- d. Pasien yang dapat berjalan
- e. Pasien yang tidak perlu perawatan

Jawaban benar: d

11. Pasien dengan label hitam dalam triage START adalah:

- a. Pasien dengan kondisi kritis yang membutuhkan perawatan segera
- b. Pasien dengan kondisi stabil
- c. Pasien dengan luka ringan
- d. Pasien yang dapat berjalan
- e. Pasien yang tidak mungkin selamat meskipun diberi perawatan

Jawaban benar: e

12. Pasien dengan label putih dalam triage START adalah:

- a. Pasien dengan kondisi kritis yang membutuhkan perawatan segera
- b. Pasien dengan luka ringan yang tidak memerlukan perawatan medis segera
- c. Pasien yang memerlukan perawatan tetapi tidak secepat pasien dengan label merah
- d. Pasien yang dapat berjalan
- e. Pasien yang tidak perlu perawatan

Jawaban benar: b

13. Langkah pertama dalam triage START adalah:

- a. Mengukur suhu tubuh pasien
- b. Memeriksa tekanan darah pasien
- c. Mengarahkan pasien yang dapat berjalan ke area aman
- d. Memberikan perawatan medis
- e. Mengumpulkan data pribadi pasien

Jawaban benar: c

14. Setelah menentukan pasien yang dapat berjalan, langkah berikutnya dalam triage START adalah:

- a. Memberikan obat penghilang rasa sakit
- b. Mencatat informasi pribadi
- c. Menilai pernapasan pasien yang tidak dapat berjalan
- d. Mengukur tekanan darah
- e. Mengirim pasien ke rumah sakit

Jawaban benar: c

15. Pasien yang tidak bernapas setelah membuka jalan napas dalam triage START harus:

- a. Diberikan CPR segera
- b. Diberikan oksigen
- c. Dilabeli hitam
- d. Diberikan obat penenang
- e. Dibawa ke rumah sakit

Jawaban benar: c

16. Jika pasien bernapas setelah membuka jalan napas, langkah berikutnya adalah:

- Memberikan infus
- Memeriksa tekanan darah
- Memberikan obat penenang
- Mengukur kecepatan pernapasan
- Mengambil sampel darah

Jawaban benar: d

Table A1. Kisi-Kisi Instrumen Kuesioner Triage START

No	Domain Materi	Indikator	Nomor Soal	Kunci
1	Konsep bencana	Definisi bencana	1	C
2	Konsep triage	Pengertian triage START	2	A
3	Konsep triage	Kepanjangan START	3	A
4	Prinsip START	Prinsip dasar triage START	4	A
5	Prinsip START	Sistem kategori warna	5	C
6	Indikator START	Penilaian pernapasan	6	B
7	Indikator START	Penilaian sirkulasi	7	C
8	Kategori warna	Label merah	8	A
9	Kategori warna	Label kuning	9	B
10	Kategori warna	Label hijau	10	D
11	Kategori warna	Label hitam	11	E
12	Kategori warna	Label putih	12	B
13	Prosedur START	Langkah pertama triage	13	C
14	Prosedur START	Penilaian pasien tidak berjalan	14	C
15	Prosedur START	Pasien tidak bernapas	15	C
16	Prosedur START	Penilaian lanjutan pernapasan	16	D

Skor dan Kategori

Skor total pengetahuan: Rentang 1 hingga 16.

Kategori Pengetahuan:

- Rendah: 1–7 poin (<50%)
- Sedang: 8–11 poin (50–74%)
- Tinggi: 12–16 poin (≥75%)