## THE EFFECT OF EARLY WARNING SYSTEM IMPLEMENTATION ON EARLY DETECTION OF EMERGENCY CONDITIONS IN HOSPITALIZED PATIENTS: A DESCRIPTIVE CORRELATION STUDY

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ABSTRACT

Background: Patient safety is a primary focus in healthcare services, particularly in the early detection of clinical deterioration among hospitalized patients. Delays in identifying signs of critical conditions may increase the risk of cardiac arrest, disability, and even death. The Early Warning System (EWS) is an instrument used to efficiently and accurately detect patient deterioration through structured monitoring of vital parameters. This study aimed to determine the relationship between the implementation of EWS and the early detection of emergency conditions in hospitalized patients. Method: This research employed a descriptive correlation design with a cross-sectional approach. The sample of 60 nurses with a total sample. Data were collected using observation instruments assessing EWS implementation and early detection capability. Data analysis was performed using the Chi-Square test. Results showed that most nurses demonstrated a moderate level of EWS implementation (61.6%), while the ability for early detection of emergency conditions was predominantly in the good category (71.6%). The Chi-Square test revealed a significant relationship between EWS implementation and early detection ability with a p-value of 0.001 ($p < 0.05$). This indicates that the more optimal the EWS implementation, the faster and more accurate nurses are in recognizing clinical deterioration. Conclusion: The importance of consistent EWS application as a preventive measure against critical events in patients. Hospitals are encouraged to strengthen training programs, supervision, and support facilities to optimize EWS performance and enhance patient safety outcomes.

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## 1. INTRODUCTION

Hospitals are required to provide high-quality care with a strong emphasis on patient safety. [1]. One major challenge in achieving patient safety is the ability of healthcare professionals to detect early signs of clinical deterioration before emergencies or adverse events occur. [2]. Delays in recognizing these warning signs often lead to increased risk of sudden cardiac arrest and mortality.[3]

In 2022, the World Health Organization (WHO) recorded 56,657,000 deaths globally, of which 73% occurred in healthcare facilities. [4]. This situation reflects quality-of-care issues that require corrective measures. It is estimated that 22.7% of deaths in hospitals are preventable with timely and optimal management, especially in emergency conditions.[4]

Nurses play a vital role in patient monitoring and early identification of clinical deterioration through consistent assessment of vital signs and other warning indicators. [5]. Failure to perform a structured assessment often results in delayed intervention and contributes to increased mortality. [6]. The Ministry of Health of the Republic of Indonesia (2023) defines emergency conditions as clinical situations requiring immediate medical action to prevent death and disability. [7]. The Early Warning System (EWS) assists in monitoring physiological changes using parameters such as respiratory rate, heart rate, blood pressure, temperature, oxygen saturation, and level of consciousness (AVPU scale) [8]. The calculated score guides healthcare professionals in determining the urgency of intervention. [9]Therefore, structured EWS implementation is crucial in reducing preventable deaths through rapid assessment, timely responses, and improved communication among care teams. [10]. Detection of emergency conditions in Hospitalized Patients is an indicator of patient safety quality. [11]. This will have an impact on the quality of services in the hospital. The achievement of patient safety indicators can be assessed through the implementation of emergency condition detection based on the hospital's existing Standard Operating Procedures (SOP).

## 2. METHODS

This study used a descriptive correlational design with a cross-sectional approach. The sample consisted of all 60 nurses working in inpatient wards, selected through total sampling. The inclusion criteria for nurses working in nursing units and the exclusion criteria for nurses who are not on shift. Data collection was conducted from 2–7 October 2025 using observation instruments, SOP of EWS documentation, and nurses' ability to identify emergency conditions. The validity test produced a calculated r value of >0.30 and Cronbach's Alpha reliability of >0.75. The independent variable was the implementation of EWS,

while the dependent variable was the early detection of emergency

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conditions, with the criteria good, moderate, and poor. Data analysis used the Chi-Square test.

# 3. RESULTS AND DISCUSSION

Table 1. Characteristics of Respondents

| Variables | Frequency (n) | Percentage (%) |
|---|---|---|
| Age | | |
| ≤ 25 years | 0 | 0% |
| 26-35 years | 40 | 67% |
| 36–45 years | 15 | 25% |
| 46–55 years | 3 | 5% |
| ≥ 56 years | 2 | 3% |
| Total | 60 | 100% |
| Gender | | |
| Male | 25 | 42% |
| Female | 35 | 58% |
| Total | 60 | 100% |
| Educational | | |
| Diploma in Nursing | 23 | 38% |
| Bachelor's in Nursing | 37 | 62% |
| Total | 60 | 100% |
| Work Experience < 5 years | 36 | 60% |
| 5-10 years | 13 | 22% |
| >10 years | 11 | 18% |
| Total | 60 | 100% |

Based on Table 1, the distribution of respondents' ages shows that the majority of nurses are in the 26–35 years age group, amounting to 40 respondents (67%), and the majority of nurses are gender are female, amounting to 35 respondents (58%). Based on the table above, most of the respondents have a Bachelor's in Nursing level with 37 respondents (62%), while nurses with a S1

Nursing education amounted to 37 respondents (62%),

Table 2. EWS Implementation in Inpatient Wards

| No | Caregory | n | (%) |
|---|---|---|---|
| 1 | Poor | 8 | 13.3% |
| 2 | Moderate | 37 | 61.6% |
| 3 | Good | 15 | 25% |
| Total | | 60 | 100 |

Based on Table 2, it is shown that the majority of 37 respondents were able to moderately apply the EWS, with a percentage of 61.6%.

Table 3. Early Detection of Emergency Conditions

| No | Caregory | n | % |
|---|---|---|---|
| 1 | Not enough | 8 | 13.3% |
| 2 | Moderate | 9 | 15% |
| 3 | Good | 43 | 71.6% |
| Total | | 60 | 100 |

Based on Table 3 shows that the majority of 43 respondents were able to detect emergency conditions well, with a percentage of 71.6%.

Table 4 Results of Chi-Square test analysis

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| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 61,278 a | 4 | <.001 |
| Likelihood Ratio | 48,133 | 4 | <.001 |
| Linear-by-Linear Association | 20,146 | 1 | <.001 |
| N of Valid Cases | 60 | | |

a. 4 cells (44.4%) have expected count less than 5. The minimum expected count is 1.07.

Based on the results of the hypothesis test using the Chi-Square test, where the p-value = 0.001 < 0.05, it can be concluded that there is a significant relationship between the implementation of the Early Warning System (EWS) and the early detection of emergency conditions.

Based on the results of a study of 60 respondents, it was found that the implementation of the Early Warning System (EWS) by nurses in hospitals showed that the majority of respondents were in the moderate category (37 respondents (61.6%), while 15 respondents (25%) were in the good category, and 8 respondents (13.3%) were in the poor category. These results indicated that the majority of nurses were capable of implementing the EWS, but improvements are still needed in terms of accuracy and consistency of implementation. Optimal. EWS implementation is greatly influenced by knowledge, work experience, training, and the availability of supporting facilities [10].

In the early detection of emergency conditions, the results showed that the majority of respondents were in the good category (43 respondents (71.6%), the Moderate category (9 respondents (15%), and the poor category (8 respondents (13.3%). These results illustrate that nurses understand the importance of quickly and accurately observing changes in patient conditions so that immediate intervention can be carried out before deterioration occurs, leading to respiratory or cardiac arrest.

The results of statistical tests using Chi-Square show that there is a significant relationship between the implementation of EWS and the ability to detect early emergency conditions, with a p-value = 0.001 (p < 0.05). Showed that the better nurses implemented the EWS, the better their ability to detect patients experiencing a decline in clinical condition early [12]. This finding aligns with previous research that found the EWS to be effective in improving patient safety by detecting critical clinical signs early, enabling rapid response measures.[13]

Furthermore, EWS implementation plays a crucial role in supporting Code Blue prevention through systematic and continuous monitoring of vital parameter scores. [14]. The success of this system's implementation depends heavily on nurses' compliance in completing the EWS form, effective communication between teams, and timely

response from the medical team to increasing scores. [15]. Therefore, this

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study confirms that improving nurses' competence and compliance in using the EWS is a key strategy in reducing patient mortality and morbidity in hospitals. [16].

Therefore, hospitals need to develop ongoing training programs, provide close supervision of the nursing team, and ensure the availability of easily accessible clinical guidelines to optimize EWS implementation. Nurses' knowledge of the EWS is adequate, allowing them to perform early detection using the EWS effectively. The experience possessed by nurses influences their ability to think critically when taking action and solving problems.

## 4. CONCLUSION

There is a significant relationship between the implementation of the Early Warning System and nurses' ability to detect emergency conditions early. Nurses are expected to implement EWS documentation and carry it out in accordance with the Standard Operating Procedures (SOP). Therefore, it is necessary to improve nurses' knowledge regarding the EWS to achieve high-quality healthcare services.

## 5. REFERENCES

1. Astuti LP, Trisyani Y, Mirwanti R. Implementation of Early Warning System (EWS) in Detecting Acute Deterioration in Adult Patients in Hospital Inpatient Wards. *Journal of Telenursing (JOTING)*. 2023;5(2):1590-1603. doi:10.31539/joting.v5i2.6356
2. Wiyono S, Pambuko E, Munir AlMubaroq M. Description of Knowledge, Attitudes and Skills of Nurses in Inpatient Care at Surakarta General Hospital Regarding Early Warning Score.
3. World-Heart-Report-2023. Published online 2023. Accessed November 25, 2025. https://world-heart-federation.org/wp-content/uploads/World-Heart-Report-2023.pdf
4. Wilastri E, Sekar Siwi A, Sumarni T, Nursing Study P, Health F. Early Warning Score (EWS) Assessment Profile in the Emergency Room of Siaga Medika Hospital, Purbalingga. 2025;2(10):4726-4735. https://doi.org/10.62335
5. Astuti LP, Trisyani Y, Mirwanti R. Implementation of Early Warning System (EWS) in Detecting Acute Deterioration in Adult Patients in Hospital Inpatient Wards. *Journal of Telenursing (JOTING)*. 2023;5(2):1590-1603. doi:10.31539/joting.v5i2.6356
6. KF, Siauta VA, Sulfian W. The Relationship Between Nurses' Knowledge Level About Early Warning Score (EWS) and Emergency Response Time in the Emergency Room of Banggai Regional Hospital, Banggai Laut Regency. *Indonesian Journal of Professional Nursing*. 2024;5(2):84. doi:10.30587/ijpn.v5i2.6390
7. Indra Hizkia Perangin-angin, Rusmauli Lumban Gaol, Sry Rumondang Sitindaon, Putri Rista Ulina Br Tarigan. Nurses' Knowledge Level of Early Warning Score (EWS) in the

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Internal Medicine Room of Santa Elisabeth Hospital Medan. *Journal of Health Sciences Research*. 2025;4(3):471-492. doi:10.55606/jurrikes.v4i3.6741

8. Hogan, H. H, Wulff, J. Type of Track & Trigger system and incidence of in-hospital cardiac arrest: An observational registry-based study. *BMC Health Serv Res* . 2022;20(`).

9. Royal College of Physicians. National Early Warning Score (NEWS) 2: Standardizing the assessment of acute-illness severity in the NHS. Published online 2023.

10. Bukhori T, Widuri. The relationship between nurses' workload and the Early Warning System implementation compliance in adult inpatient wards. *Papua Tropical Nursing*. 2024;7(2):120-125

12. Megawati SW, Sujana W, Intan N, et al. *Nurses' Experience in Implementing Early Warning Score in Inpatient Wards*.

13. Indah Simanjuntak, Hajjul Kamil, Sarvita Sarvita. Optimizing the Implementation of the Early Warning System (EWS) in the Inpatient Ward of Hospital X. *Journal of Telenursing*. 2023;5(2).

14. Triwijayanti R, Rahmania A, Diiii DP, Faculty of K, Health I, Palembang IM. *Nurses' Knowledge in the Application of Early Warning System (EWS) in Inpatient Rooms*. Vol 13.; 2022.

15. Sani Mahoklory S, Laurensia Saranga J, Muammar Y, et al. *Journal of Innovation and Creativity Analysis of the Effectiveness of the Early Warning Score (EWS) Program by Nurses in Detecting Clinical Deterioration in Patients*. Vol 5.; 2025.

16. Rini M, Wowor TJF. Nurses' Perceptions in Filling Out the Early Warning System for Inpatients with Medical-Surgical Care: Literature Review. *MAHESA : Malahayati Health Student Journal*. 2025;5(6):2771-2785. doi:10.33024/mahesa.v5i6.20502

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