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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

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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.

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

Vol. 7 No. 2 December. Pages 125-130
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

	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 facilities¹⁰.

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 early¹². 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

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.

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