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Analysis of documentation quality for early warning score monitoring Inpatient: retrospective observational study

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Abstract

Background: One of the vital signs monitoring systems currently being developed in medical-surgical wards is the Early Warning Score (EWS). However, its implementation still needs to be evaluated, given the frequent occurrence of code blues and even deaths in the ward due to delays in recognizing deteriorating patient conditions.

Purpose: To determine and analyze the quality of documentation regarding the implementation of EWS monitoring in patient setting.

Method: A retrospective survey of patient medical records, supported by an assessment tool. Medical records were collected based on inclusion criteria, namely medical records from both medical and surgical wards.

Results: The completeness of the EWS form was still quite low at 44%, with monitoring frequency accuracy at 12%, and total score calculation accuracy at 3.8%. Several important parameters that were incomplete and needed improvement included blood sugar (65%), which was the component with the lowest achievement; level of consciousness (84%), blood pressure (89%), temperature (90%), total score (89%), and escalation scale (88%), which was still suboptimal.

Conclusion: The significant gap between the implementation of EWS monitoring and the accuracy of its documentation indicates that nurses' consistent documentation of EWS monitoring needs to be improved. This condition increases the risk of clinical deterioration, delayed intervention, serious complications, and even death. Inaccurate documentation also hinders interprofessional communication and increases the potential for clinical errors.

Keywords: Documentation; Early Warning Score; Medical-Surgical Room; Patient Deterioration; Vital Signs.

INTRODUCTION

Inpatient care is a central component of the healthcare system, providing intensive and continuous monitoring for patients with moderate to severe conditions. Patients in the inpatient setting require systematic monitoring because their clinical condition can change at any time due to disease progression, response to therapy, or acute complications. World Health Organization (WHO) states that approximately 1 in 10 patients are at risk

of experiencing a serious clinical event if not monitored appropriately and continuously and more than 3 million deaths occur each year due to unsafe care (Ogero, Ayieko, Makone, Julius, Malla, Oliwa, & English, 2018). This demonstrates that quality monitoring is a critical component of patient safety in hospitals. Abnormal vital sign values are often not effectively addressed (Mok, Wang, & Liaw, 2025). In clinical practice, monitoring the condition of inpatients

is carried out through observation of vital signs including blood pressure, pulse rate, respiratory rate, temperature, oxygen saturation, and level of consciousness (Intening, 2022). These observations should be conducted periodically according to the patient's clinical condition. Changes in condition or clinical deterioration in hospitalized patients often occur gradually, preceded by vital sign abnormalities 6-8 hours before an emergency such as respiratory arrest, cardiac arrest, or shock occurs (Connor, McArthur, & Camargo Plazas, 2021). Therefore, the quality of vital signs monitoring greatly influences the speed of health workers in recognizing clinical problems and even transferring patients to the intensive care unit (ICU) to save lives (Eddahchouri, Peelen, Koeneman, van Veenendaal, van Goor, Bredie, & Touw, 2023). These signs often go unrecognized due to incomplete documentation, delayed assessment, or the absence of an effective early detection system. The consequences can include increased mortality, sudden transfer to the ICU, and a higher need for emergency intervention.

Early Warning Score (EWS) was adopted in hospitalization as an early detection system for patient deterioration that integrates vital sign values into a score that helps determine the level of risk of worsening patient condition and appropriate escalation actions (Score, 2017). Early Warning Score (EWS) monitoring is carried out continuously based on the score obtained. Furthermore, EWS involves other healthcare team members in observing the patient. Due to its ongoing nature, each observation must be documented precisely, accurately, and consistently so that healthcare professionals can make rapid clinical decisions based on valid data. The hospital where the research was conducted is one of the hospitals that uses the Early Warning Score (EWS) as a patient monitoring system. However, in its implementation, code blue cases for inpatients were still encountered. This prompted a review of the implementation of the Early Warning Score (EWS) monitoring for inpatients. Furthermore, the hospital, being only six years old, UEC/2025.

still requires several evaluations of the existing system implementation, including the implementation of the EWS as a means of monitoring inpatients (Keene, Kong, Clarke, & Brysiewicz, 2017).

Previous research has shown that although Early Warning Score (EWS) has been widely used, compliance and accuracy of Early Warning Score (EWS) documentation remains a major challenge (Destri, Asmicel, Delvy, & Avis, 2024). Research conducted at Bethesda Hospital in Yogyakarta found that 36 medical records, or 51.4%, were completed with the EWS observation sheet, while 32, or 45.7%, were incomplete. Factors such as a lack of understanding of the Early Warning Score (EWS), high workloads, limited staff, impractical form models, and a weak escalation culture are often the causes of low compliance (Hands, Reid, Meredith, Smith, Prytherch, Schmidt, & Featherstone, 2023). In other words, the success of EWS depends heavily on the accuracy of vital sign measurements and the completeness of the documentation of monitoring results. Based on the above phenomena, researchers will review the accuracy and completeness of documentation of Early Warning Score (EWS) monitoring implementation in inpatient settings. In addition to providing an overview of the quality of daily nursing practice, this review is expected to help identify factors that can be improved and provide evidence for quality improvement interventions.

RESEARCH METHOD

A retrospective survey of patient medical records, assisted by an assessment tool. Medical records were collected based on inclusion criteria, namely medical records. The number of medical records used was 185 out of 1.924 total medical records within a three-month period, calculated using the Slovin formula. This study was conducted in the medical records room of a private hospital in Sukoharjo, Central Java. To ensure ethical considerations, the study underwent a research ethics process with the number 423/IV/A

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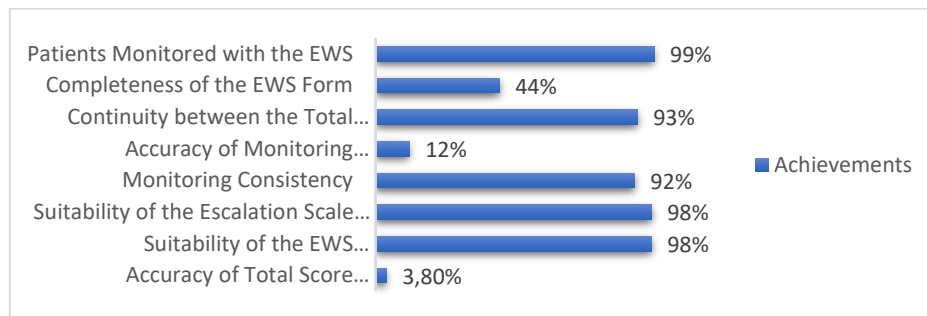
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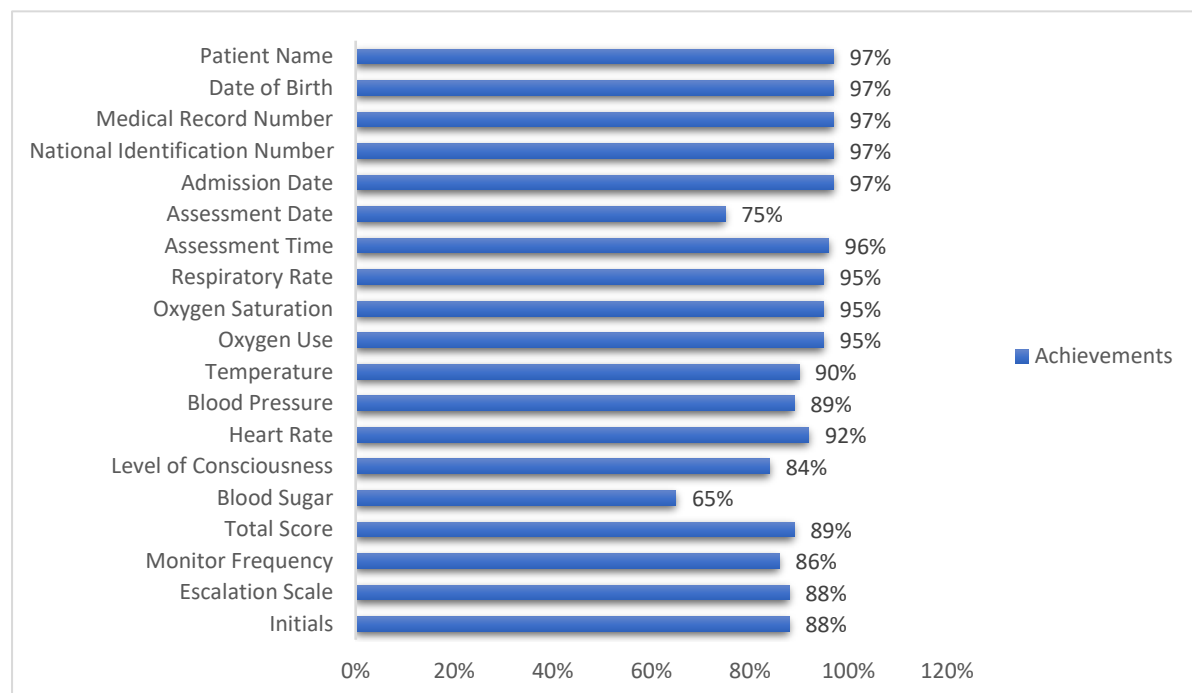
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RESEARCH RESULTS

Table 1. Compliance with Early Warning Score Monitoring Documentation in Inpatient Care (N=185)

Based on the graph, it can be seen that several aspects of the EWS monitoring documentation have achieved a very good level of compliance, but some others still show low levels of achievement and need special attention, such as the completeness of filling out the EWS form (44%), the accuracy of monitoring frequency (12%) and the accuracy of calculating the total score (3.8%).

Table 2. Completeness of Early Warning Score Monitoring Documentation in Inpatient Care (N=185)

The graph shows that most components of the EWS form have been completed very well, with a score of $\geq 95\%$. However, several aspects still need improvement, particularly blood sugar (65%), which was the lowest-performing component; level of consciousness (84%), blood pressure (89%), temperature (90%), total score (89%), and escalation scale (88%), which are still suboptimal.

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DISCUSSION

These findings indicate a significant gap between monitoring implementation and documentation accuracy, necessitating a more in-depth evaluation and targeted corrective interventions. For example, the 44% completion rate for the new EWS form demonstrates nurses' continued inconsistency in comprehensively documenting vital parameters. This finding was echoed by other hospitals in previous studies, which found that EWS completion rates were still under-appreciated, resulting in relatively low percentages (Hidayat, Agushyana, & Nugraheni, 2020). This will undoubtedly jeopardize patient safety because it can lead to missed early detection of long-standing conditions. Without complete EWS parameter data, EWS scores will be inaccurate, leading to inappropriate treatment. Furthermore, changes in condition may go undetected, resulting in a delayed clinical response. This increases the risk of worsening outcomes, including respiratory arrest, cardiac arrest, serious complications, and even death. Furthermore, inaccurate documentation hinders interprofessional communication, complicates quality of care evaluation, and increases the potential for clinical errors among healthcare professionals (Clifton, Clifton, Sandu, Smith, Tarassenko, Vollam, & Watkinson, 2025).

The Early Warning Score (EWS) is built on physiological parameters to detect clinical deterioration. Therefore, all parameters in the Early Warning Score (EWS) must be filled in completely and accurately. Inaccuracy in EWS parameter documentation creates monitoring gaps that can lead to missed moments of patient deterioration. Retrospective research on the use of the EWS protocol shows that nurses' compliance with monitoring frequency and completeness of recording varies widely and is very low in some areas. Similarly, the results of this study indicate that several EWS parameters are not filled in correctly. One of these is blood sugar. Blood sugar is a crucial parameter, especially for patients with chronic diseases or those with unstable blood sugar levels. These results align with previous literature that the most common non-compliance in documentation is recording blood glucose levels (Delvy, Destri, & Pratama, 2024).

These results require further review regarding the factors causing inconsistent documentation of blood sugar parameters (Shamsi, 2018).

Besides blood sugar, another crucial parameter that also indicates low documentation compliance is the level of consciousness. Level of consciousness is a core parameter in the EWS because changes in consciousness can be one of the earliest indicators of clinical decompensation. These results align with previous research that found that non-compliance with EWS implementation (including consciousness parameters) is significantly associated with patient mortality. This suggests that failure to consistently document patient consciousness can decrease the effectiveness of the EWS and increase the risk of death (Sutrisno, Pramusinto, & Setiyarini, 2022). In addition, awareness of blood pressure and temperature parameters also showed low results. These results align with previous research that found blood pressure and temperature to be the least frequently recorded vital signs (Wangdi, Guragai, Namgay, Dorji, & Wangchuk, 2025). This significantly hampers the detection of deteriorating patient conditions, given the vital function of blood pressure and temperature as hemodynamic perfusion responses and thermoregulatory parameters of the human body (Gerdtz, Waite, Vassiliou, Garbutt, Prematunga, & Virtue, 2023).

The total score and escalation scale also still show relatively low levels of documentation. These results align with previous research that found significant assessment inaccuracies in the use of the EWS, including unrecorded elements, missing parameters, and inaccurate score calculations. Compliance with monitoring frequency also remains low, with higher EWS scores often associated with decreased adherence to the escalation protocol. Furthermore, adherence to the escalation elements within the EWS protocol is also inadequate, leading to prolonged delays before clinical reviews should be conducted promptly (Eddahchouri, Koeneman, Plokker, Brouwer, van de Belt, van Goor, & Bredie, 2021). The escalation scale is more important for high-risk patients (Niegsch, Fabritius, & Anhøj, 2023). This is very dangerous for patient safety if not followed up immediately. Equally important to the completeness

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of the EWS form, the accuracy of monitoring frequency and the accuracy of total score calculations also show relatively low results (Brekke, Puntervoll, Pedersen, Kellett, & Brabrand, 2019). This also directly impacts the accuracy of early detection of patient conditions, as inappropriate monitoring intervals can lead to missed clinical changes, while errors in score calculations can result in inappropriate escalation, either late or not at all. Consequently, the risk of deterioration, delayed intervention, and disrupted interprofessional coordination increases (Credland, Dyson, & Johnson, 2018).

CONCLUSION

A significant gap between the implementation of EWS monitoring and the accuracy of its documentation. The completeness of EWS forms, which only reached 44%, indicates that nurses' documentation consistency in comprehensively recording EWS parameters still needs improvement. Incomplete documentation results in inaccurate EWS scores, thus reducing the ability to detect patient conditions early. This condition increases the risk of clinical deterioration, delayed intervention, serious complications, and even death. Inaccurate documentation also hinders interprofessional communication and increases the potential for clinical errors.

These findings emphasize the need for in-depth evaluation and targeted improvement interventions to improve the completeness and accuracy of EWS documentation to ensure patient safety.

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