

STRENGTHENING THE CAPABILITIES OF ROOM HEADS IN IMPLEMENTING THE EARLY WARNING SCORE (EWS) SYSTEM AT PINDAD TUREN HOSPITAL

Indasah *, Muhammad Rodli

Kesehatan Masyarakat, Universitas Strada Indonesia

Jl. Manila No.37, Tosaren, Kec. Pesantren, Kota Kediri, Jawa Timur 6412, Indonesia

Corresponden Email: muhammadrodli77@gmail.com

Abstract

Early Warning Scoring (EWS) is a clinical instrument designed to detect early deterioration in a patient's medical condition by monitoring vital signs such as pulse, blood pressure, and respiratory frequency. This early detection allows health workers to carry out medical interventions quickly and precisely, thereby increasing the chances of patient safety. However, the implementation of EWS at Pindad Turen Hospital is still not running optimally. The main problem found was the lack of integration in the assessment and recording of EWS scores by health workers, which resulted in delays in clinical decision-making. This study aims to analyze the level of EWS utilization in the hospital through outreach and training activities. Before the training, a pretest was carried out, and after the training, a posttest was carried out to measure the increase in knowledge of health workers. The results show that there is no uniform standard for writing EWS scores. As a form of intervention, the supervision function is strengthened as cues to action whose role is to encourage and guide health workers in the correct implementation of EWS. Through the active involvement of supervision, it is hoped that there will be increased consistency and accuracy in the assessment and recording of EWS scores by nurses in each service unit.

Keywords: Early Warning Scoring, Supervision, Nursing

Introduction

Early Warning Scoring (EWS) is a clinical preparedness tool for identifying patients at risk of experiencing harm in healthcare settings using assessment/scoring [1]. By monitoring vital signs such as heart rate, blood pressure, and respiratory rate, EWS allows healthcare professionals to detect early signs of clinical decline, facilitating timely intervention that can improve patient outcomes and potentially save lives [2]. EWS uses several parameters in its assessment, including systolic blood pressure, AVPU level of consciousness, temperature, respiratory frequency, O2 saturation, and pulse. The main goal of EWS is to facilitate rapid intervention by medical personnel to prevent poor outcomes, especially in emergency departments and intensive care, where a rapid response is essential [3].

Implementation of EWS has been shown to improve patient safety and better clinical outcomes [4]. Consistent use of EWS can reduce mortality rates and improve overall care outcomes by ensuring that patients who show signs of medical decline receive immediate medical attention [5]. A systematic review showed that EWS effectively predicts critical events such as cardiac arrest and death shortly, confirming its utility in clinical practice [6], [7]. Additionally, the integration of EWS into electronic health records (EHR) has improved real-time monitoring capabilities, enabling immediate alerts when a patient's vital signs are at their worst [8]. EWS plays a very important role in assessing the patient's condition. However, if the assessment is not carried out correctly, the EWS assessment can increase

the nursing workload because it requires assessment and re-evaluation by the nurse. To prevent this from happening, nurses are needed who are knowledgeable and skilled in assessing EWS. The current implementation of EWS in hospitals is not optimal as evidenced by the inability to identify deterioration in the patient's medical condition and carry out appropriate interventions. Thus, providing accurate scores is very important in implementing an early warning system (EWS). This assessment aims to ensure that patients who experience a medical decline in the hospital room are treated quickly and promptly [9].

KARS establishes EWS as a national hospital accreditation standard and is one of the goals in patient safety targets. Implementing EWS is a task that is closely related to the role of nurses in hospitals as caregivers. However, the implementation of EWS is still less than optimal and there are deviations found in its implementation. Nurses should be the first to recognize early signs of deterioration in patients [2]. Several studies related to the implementation of EWS in Indonesia show mixed results. One study at the Palembang Muhammadiyah Hospital showed that compliance with EWS implementation was only 53.1% implemented [10]. In one hospital in Malang, it was shown that as many as 80% of EWS had not been implemented ideally and only 10% of internal medicine treatment rooms had guidelines for implementing EWS [2]. Implementation at Saiful Anwar Hospital Malang stated that as many as 75% of nurses experienced difficulties in implementing EWS, 50% made mistakes when completing the instrument, and 50% made mistakes in interpreting it.

Therefore, non-compliance in implementing EWS can have fatal consequences, which can contribute to increasing the death rate due to late detection of the patient's critical condition. However, challenges such as lack of training, limited resources, and compliance by health workers are still the main obstacles to its implementation, including at Pindad Hospital Malang. Therefore, hospitals need to conduct ongoing training for ward nurses regarding the importance of using EWS and its impact on patient safety. Based on the description and initial data from the results of previous research and considering the importance of implementing EWS in hospitals, researchers are interested in conducting a study on the implementation of EWS at Pindad Turen Hospital.

Method

This research was carried out by conducting a seminar at Pindad Turen Hospital on the use of the Early Warning Score (EWS). The flow of implementing this research includes: 1) preparation stage. To ensure that activities are carried out effectively and efficiently, needs are identified by conducting a problem survey and identifying the level of knowledge of room nurses regarding EWS as well as identifying EWS users. Researchers also coordinate with hospitals regarding permits to conduct research and collaborate with health workers to support the smooth running of activities. At this time the researcher also prepared seminar materials and media that were easy to understand and also invited room heads and nurses to take part in seminars held by researchers regarding the implementation of EWS. 2) implementation. After preparations were complete, the researchers conducted a seminar using an interactive method with explanations regarding the basics of using EWS in a hospital environment, the importance of EWS assessment, and educating and harmonizing participants' perceptions regarding how to fill out EWS. 3) evaluation and follow-up. The evaluation was carried out to find out to what extent the seminar conducted by researchers could align the knowledge of room nurses regarding EWS by providing questionnaires before and after the seminar. Researchers also conducted interactive discussions with participants to identify obstacles during activities and find solutions for the future. Apart from that, researchers are also collaborating with hospitals for ongoing development and follow-up EWS training programs and opening mentoring sessions for participants who need further information regarding EWS.

Results and Discussion

The results of observations and interviews with health workers at Pindad Turen Hospital show that the implementation of EWS in hospitals is not yet optimal, which is caused by several factors, 1) training for health workers regarding EWS is still incomplete this year. 2) each health worker in the room has a different perception of the procedure for filling out the EWS form (some fill it with tick marks, score values, plus signs, and so on). 3) The availability of the latest EWS forms in the room is still limited. 4) The SOP regarding the procedure for filling out the EWS has not been explained in detail, regarding the right time to fill in the EWS form. 5) e-medical records related to EWS are not yet available.

The results of interviews with health workers at Pindad Turen Hospital then analyzed the problem using a fishbone diagram. The fishbone diagram is a method of determining problems by positioning the main problem as the head of the fish and the factors causing the problem as the spines of the fish. In fishbone analysis, there are several categories of factors that cause problems which include: man, material, method, money, and quality. The results of the analysis of the fishbone diagram problem were then looked for alternative solution ideas to solve the problem using USG analysis techniques (Urgency, Seriousness, Growth). Analysis of the factors causing the problems found based on the 5M categories include: 1) Man. Several problem factors found were lack of training and resistance to change, not optimal knowledge of health workers in the room, especially assessment for children and writing scores on the EWS form which was still not uniform, good supervision support, and a harmonious working atmosphere. 2) Materials. The factor causing problems for the material category is the limited provision of the latest EWS forms in the room. 3) Method. Problem factors found include the EWS writing method using a manual medical record form, room guard shift operators not writing EWS records in the room operator book, SOPs for implementing EWS not yet standardized, and not thoroughly socialized to health workers in the room. 4) Mother Nature. Pindad Turen Hospital does not yet have a special budget to provide simple equipment to support the implementation of EWS in the room. 5) Quality. Currently, Pindad Turen HOSPITAL is still type C but has been fully accredited, the Pindad Turen HOSPITAL treatment room is complete and has implemented e-medical records. Apart from that, Pindad Turen Hospital has competent medical personnel. The results of these findings are then arranged in a fishbone diagram as shown in Figure 1.

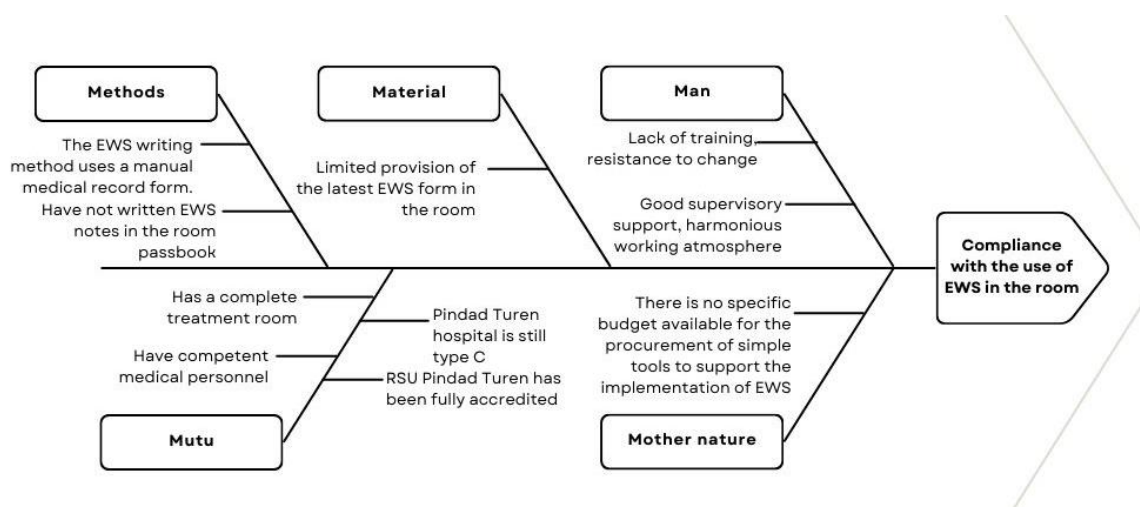


Figure 1 Fishbone Diagram

After creating a fishbone diagram, the next step is to determine problem priorities using USG analysis techniques. The USG analysis technique is useful for determining problem priorities based on

the level of urgency, seriousness and growth (future development of the problem). The results of problem assessment using USG techniques are presented in Table 1.

Table 1 Scoring results using USG techniques

No	Main problems	Urgency (U)	Seriousness (S)	Growth (G)	Total (U+S+G)
1	Lack of training, resistance to change	3	2	3	8
2	The writing of scores on the EWS form is not yet uniform	3	3	3	9
3	The EWS writing method uses a manual medical record form	2	2	2	6
4	The SOP for implementing EWS has not been standardized	3	2	2	7

As can be seen in Table 1, the main priority problem at Pindad Turen Hospital is that there is no uniformity in writing scores on the EWS form which is proven by the highest value of urgency, seriousness of impact and potential for problem development.

Based on the priority results of the main problems obtained in the USG analysis, a problem-solving strategy was then formulated using the SWOT (Strength, Weakness, Opportunity, Threats) analysis technique. SWOT analysis is a strategic planning technique for identifying and understanding the internal and external conditions of an organization based on strengths, weaknesses, opportunities, and threats. The results of the SWOT analysis of this research are presented in Table 2.

Table 2 SWOT Analysis Results

Factors	Internal (strength and weakness)	External (opportunity and threats)
Strength	<ol style="list-style-type: none"> 1. The latest EWS form is available which is easier fill out 2. Management commitment to improving patient safety 3. Good supervisory support, with a harmonious working atmosphere 4. Pindad Turen Hospital has been fully accredited 5. Competent room attendant 	Opportunity <ol style="list-style-type: none"> 1. Increased policy support from hospital accreditation 2. Have started to utilize digital technology for electronic medical records
Weakness	<ol style="list-style-type: none"> 1. The lack of EWS training this year is only 1 training 2. The way to write scores on the EWS form is not uniform 3. Limited availability of the latest EWS form in the room 	

Based on the results of the SWOT analysis, the recommended intervention plans include: 1) Strengthening the ability of room/supervision heads to harmonize perceptions of EWS assessment and recording procedures through socialization and training. 2) Preparation of clearer and more detailed SOPs regarding EWS forms that are easier to understand and timely EWS assessments. 3) Conduct regular monitoring and evaluation to ensure compliance with the EWS.

Implementation of the intervention plan related to socialization and training on harmonizing perceptions, assessing and recording EWS was carried out with a 100% participation rate from the head of the room. From this socialization, there was then an effort to revise the SOP regarding EWS filling procedures and the appropriate time for assessing EWS in the room and interim evaluations showed an increase in awareness regarding the importance of EWS in early detection of patient conditions. Before socialization and training, a pre-test was carried out via a questionnaire to measure respondents' knowledge regarding EWS and after training, a post-test was carried out to measure how

far the socialization and training aligned perceptions regarding EWS. After getting the pretest and posttest results, paired t-testing was then carried out. The results of the pretest and posttest questionnaires for this research are presented in Table 3 and the results of the paired t-test are shown in Table 4.

Table 3 Questionnaire Results Pretest and Posttest

Respondent	Pretest values	Posttest values
1	6	10
2	3	10
3	5	10
4	2	10
5	4	10
6	5	10
7	3	10
8	5	10

Table 4 Results of the t-test Paired Samples Statistics

		Mean	N	Std. deviation	Std. Error Mean
Pair 1	Level of knowledge before providing socialization and training	4,12	8	1,561	0,247
	Level of knowledge after being given socialization and training	10,0	8	0,124	0,0112

Table 4 shows the descriptive value of each variable in the paired sample with a pretest value of 1 having an average value of 4.12 from 8 data with a data distribution of 1.561 and a standard error of 0.247. The posttest 2 score has an average value of 10 from the 8 data used with a data distribution of 0.124 and a standard error of 0.112. These results show that the posttest score is higher than the pretest with the distribution range of the posttest data getting smaller and the standard error getting lower. Table 4 shows the correlation value of the relationship between the two variables in paired samples obtained from the bivariate Pearson correlation coefficient (with a two-sided significance test) for all pairs of included variables.

Table 5 Paired Samples Test

Paired differences		Mean	Std deviation	Std error mean	95% confidence interval of the difference Lower Upper	t	df	Sig. (2-tailed)
Pair 1	Level of knowledge before being given training - level of knowledge after being given training	-1,025	1,539	0,243	-2,617 -1,633	-8,733	8	0.000

Table 5 shows the test results with a significance value (2-tailed) of 0.000 ($p < 0.05$), which means the pretest and posttest values experienced significant changes.

Conclusion

The implementation of EWS at Pindad Turen Hospital is quite good with the availability of EWS sheets in the room, the availability of the latest EWS form with a simpler format, good supervision support, and harmonious work dynamics motivating the room health team to carry out assessments and fill in the EWS. To advance the hospital regarding patient safety, it is still necessary

to improve the implementation of EWS at Pindad Turen HOSPITAL. Through continuous monitoring and evaluation, problems and solutions can be found regarding the implementation of EWS at Pindad Turen Hospital. Supervision support plays an important role in encouraging consistent implementation of EWS among health workers. Supervision provides reminders and encouragement to health workers and helps them overcome obstacles that health workers may experience in the room. Clearer and more detailed training, monitoring, and SOPs related to EWS help increase the effectiveness of using this system. Apart from that, the use of e-medical records makes it easier to implement EWS in hospitals.

References

- [1] S. Sufri, F. Dwirahmadi, D. Phung, and S. Rutherford, "A systematic review of Community Engagement (CE) in Disaster Early Warning Systems (EWSs)," *Prog. Disaster Sci.*, vol. 5, p. 100058, 2020, doi: 10.1016/j.pdisas.2019.100058.
- [2] N. Q. Y. Qolbi, N. Nursalam, and A. Ahsan, "Knowledge and Skill in Relation to the Speed and Accuracy of the Nurses When Assessing Using an Early Warning System (EWS)," *J. Ners*, vol. 15, no. 2 Special Issue, pp. 531–537, 2020, doi: 10.20473/jn.v15i2(si).20522.
- [3] S. M. O'Neill et al., "Why do healthcare professionals fail to escalate as per the early warning system (EWS) protocol? A qualitative evidence synthesis of the barriers and facilitators of escalation," *BMC Emerg. Med.*, vol. 21, no. 1, pp. 1–19, 2021, doi: 10.1186/s12873-021-00403-9.
- [4] R. Trubey et al., "Validity and effectiveness of paediatric early warning systems and track and trigger tools for identifying and reducing clinical deterioration in hospitalised children: A systematic review," *BMJ Open*, vol. 9, no. 5, pp. 1–22, 2019, doi: 10.1136/bmjopen-2018-022105.
- [5] J. McGaughey, D. A. Fergusson, P. Van Bogaert, and L. Rose, "Early warning systems and rapid response systems for the prevention of patient deterioration on acute adult hospital wards," *Cochrane Database Syst. Rev.*, vol. 2021, no. 11, 2021, doi: 10.1002/14651858.CD005529.pub3.
- [6] S. Gerry et al., "Early warning scores for detecting deterioration in adult hospital patients: Systematic review and critical appraisal of methodology," *BMJ*, vol. 369, no. 3, pp. 1–16, 2020, doi: 10.1136/bmj.m1501.
- [7] R. Meckawy, D. Stuckler, A. Mehta, T. Al-Ahdal, and B. N. Doebbeling, "Effectiveness of early warning systems in the detection of infectious diseases outbreaks: a systematic review," *BMC Public Health*, vol. 22, no. 1, pp. 1–62, 2022, doi: 10.1186/s12889-022-14625-4.
- [8] C. L. Wu et al., "Implementation of an electronic national early warning system to decrease clinical deterioration in hospitalized patients at a tertiary medical center," *Int. J. Environ. Res. Public Health*, vol. 18, no. 9, 2021, doi: 10.3390/ijerph18094550.
- [9] Y. Eddahchouri et al., "Low compliance to a vital sign safety protocol on general hospital wards: A retrospective cohort study," *Int. J. Nurs. Stud.*, vol. 115, p. 103849, 2021, doi: 10.1016/j.ijnurstu.2020.103849.
- [10] R. Triwijayanti and A. Rahmania, "Pengetahuan Perawat Dalam Penerapan Early Warning System (Ews) Di Ruang Rawat Inap," *J. Ilmu Keperawatan dan Kebidanan*, vol. 13, no. 1, pp. 12–15, 2022, doi: 10.26751/jikk.v13i1.887.