

The Influence of Nurse Knowledge Level on Compliance Implementation of Early Warning Score and Code Blue System in the Inpatient Room

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ABSTRACT

Early Warning Score (EWS) is an early detection system to predict the deterioration of the patient's condition. The Code Blue System is an emergency procedure code that must be activated immediately if someone is found in a condition of respiratory or cardiac arrest in the hospital area. The purpose of this study was to determine the effect of the level of knowledge of nurses on adherence to the implementation of the early warning score and the Code Blue System. The research method used is Systematic Literature Review which is based on online data on Google Scholar, and Pubmed. Articles were searched from January – March 2023. 6 articles from each database, the majority stated that there was an influence on the level of knowledge of nurses on adherence to the implementation of the early warning score and the code blue system.

Keywords: code blue system, early warning score, knowledge level of nurses

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BACKGROUND

Early Warning Score (EWS) is an early detection system to predict the deterioration of the patient's condition. The Code Blue System is an emergency procedure code that must be activated immediately if someone is found in a condition of respiratory or cardiac arrest in the hospital area. (Royal Collage of physicians, 2017).

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Nurses who work in inpatient units must have sufficient knowledge and training in identifying and assessing the condition of patients who experience changes to worsening of physiological parameters. The impact of the lack of knowledge, attitudes and skills of nurses in detecting worsening physiological parameters can result in patients experiencing a widespread decline in clinical conditions resulting in unexpected adverse events such as respiratory arrest/cardiac arrest.

One of the factors that influence the implementation of EWS is knowledge. The nurse's knowledge of EWS will increase confidence in the patient's worsening. The ability to use EWS assists nurses in making clinical decisions in managing patient deterioration. Nurses as a profession that spends the most time monitoring changes in patient conditions as well as first responders in emergencies are required to have knowledge about EWS. The impact of lack of knowledge is the failure to implement the EWS, an error in calculating the score on the EWS which results in wrong actions being taken. Action errors will affect patient safety and Severe Adverse Events, increasing the number of unplanned emergency transfers to the ICU, increasing the length of stay and increasing cardiac arrest or death (Sukarno, 2019).

METHODS

This research is a systematic review study, which is a research methodology conducted to collect and evaluate related research on a particular focus topic (Lusiana & Suryani, 2014). Articles were searched through the PubMed and Google Scholar online databases. In this study, articles published in 2017 to 2022 were used. The search process was carried out by the authors in the period from January 2023 to March 2023. The research methodology analyzed was cross-sectional, descriptive and quasi-experimental. In the process of searching for the article the researcher used the keywords "Early warning score, code blue system, level of knowledge of nurses". Researchers track research from highly relevant, relevant, and moderately relevant. This study uses the following inclusion criteria:

Table 1. Research Inclusion Criteria

Criteria	Inclusion
Time period	Article publication in 2017-2022
Language	Indonesian and English
subject	Early warning score, code blue system, level of knowledge of nurses
Article type	Original articles that have been published in appropriate journals
Theme Contents of the article	Early warning score, code blue system, level of knowledge of nurses

The process of searching and filtering articles uses a Prism diagram. Articles included in this study must meet the inclusion criteria and have been reviewed. There are around 373 articles in the Google Scholar database, however, only four articles specifically discuss

variables that are relevant to this research and two articles in PubMed. The following is a prism diagram used in filtering articles

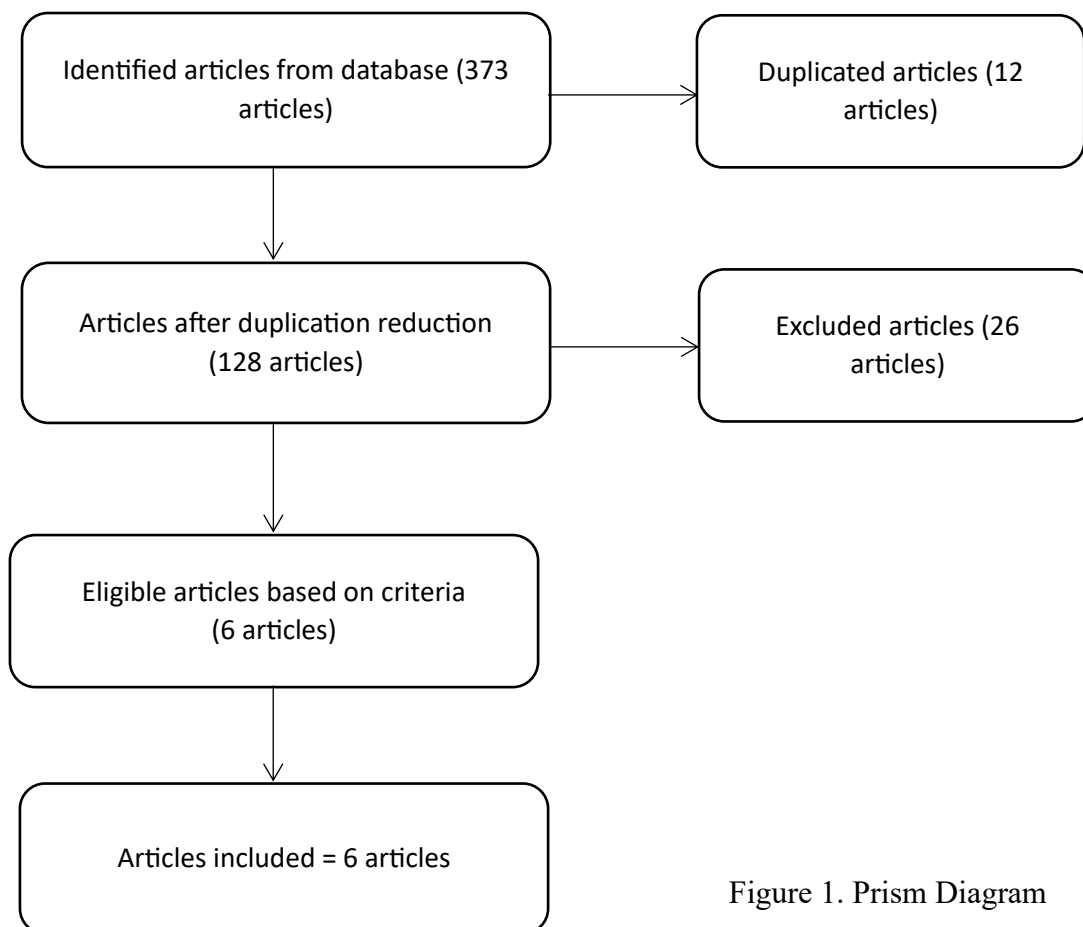


Figure 1. Prism Diagram

RESULTS

Based on the results of the author's search related to the article entitled The Effect of Nurse Knowledge Level on Compliance with the Implementation of the Early Warning Score and Code Blue System in Inpatient Rooms, it produced 6 articles from the database, Google Scholar and PubMed. The results of this <systematic research inform that research on the effect of the level of knowledge of nurses as an independent variable on adherence to the implementation of the early warning score and code blue system as the dependent variable is still very minimal, there are only six journals that have the variables "knowledge of nurses", "ews", and "code blues. Following are the six journals.

Table 2. Article Components

No	Author/ Method/Place	Title/Purpose	Sampel	Results
1	Wahyu Dwi Nugroho, Ridwan Kamaluddin, Galih Noor Alivian/ The research design is	Title: Relationship between knowledge level and nurse's perception of early warning score (EWS) and code blue	This study used a cross sectional approach with a sampling technique using simple	Analysis using the Spearman test results in a correlation value of 0.389 and a p value of 0.000 <alpha 0.05. Based on these

	correlative analysis / rsup Dr. Sardjito (2020)	system at RSUP Dr. Sardjito Yogyakarta Objective: to determine the relationship between the level of knowledge and perceptions of nurses about EWS and the Code Blue System at RSUP Dr. Sardjito Yogyakarta	random sampling on 101 respondents.	results it can be concluded that there is a relationship between the level of knowledge of nurses' perceptions of EWS and the Code Blue System at RSUP Dr. Sardjito Yogyakarta
2	Dwi Pujiyanti, 1 Erlina Windyastuti, 2 Noor Fitriyani 3 / The research design used a Retrospective Cohort/ Orthopedic Hospital Prof. Dr. R. Soeharso Surakarta (2020)	Title: Relationship between Early Warning System Documentation and Code Blue Implementation at Orthopedic Hospital Prof. Dr. R. Soeharso Surakarta Objective: This study aims to determine the relationship between EWS documentation and the implementation of Code Blue at the Orthopedic Hospital Prof Dr R Soeharso Surakarta.	The research design used a retrospective cohort. The population is patients who have activated Code Blue cases from April 2018 to April 2019 with a total of 13 respondents.	92.3% of the research implementation of Code Blue was in the good category and 7.7% in the less category, while 23.1% of the EWS documentation was in the complete category, 61.5% in the incomplete category and 15.4% were not carried out by EWS. Analysis of the Mann-Whitney test data found that there was no relationship between EWS documentation and the implementation of Code Blue at the Orthopedic Hospital Prof Dr R Soeharso Surakarta with p value = 0.878
3	Leli Purnawati / Correlative study quantitative research methods, cross sectional approach / Rs Siloam Lippo Karawaci Tangerang (2018)	Title: Correlation between Knowledge and Attitudes of Nurses towards EWS Assessment Behavior (Early Warning Score) and Code Blue Incidents in Adult Care Unit Rs Siloam Lippo Karawaci Tangerang	Retrieval of data using purposive sampling technique, a sample of 80 respondents to implementing nurses in the medical-surgical unit	The results showed that the majority of respondents aged ≤ 30 years 64 people (80%), education level DIII Nursing 55 people (69%), level \geq PK2 43 people (54%), respondents who had attended EWS

		<p>Objective: The aim of the study was to determine the relationship between knowledge and attitudes of nurses towards EWS (Early Warning Score) and Code Blue Incidents in the Adult Care Unit at Siloam Hospital Lippo Karawaci Tangerang</p>	<p>in September- November 2017</p>	<p>assessment training/socialization 67 people (84%)). The results of the Spearman Rho bivariate test have an attitude relationship p value: 0.046 (0.05) on EWS Assessment Behavior. The conclusion of this study is that good knowledge has no significant relationship with the behavior of the EWS p-value (0.074), a positive attitude has a significant relationship with the behavior of the EWS-p-value (0.046), but has no effect on reducing the incidence of Code Blue.</p>
4	<p>Jamal, Nurul Aini , Nurhidayah, Rika Endah / This research is a descriptive research/ Rsup H. Adam Malik Medan</p>	<p>Title: Knowledge, Attitudes and Skills of Nurses About the Early Warning Score (EWS) at H. Adam Malik General Hospital Medan</p> <p>Objective: This study aims to identify the knowledge, attitudes and skills of nurses regarding the Early Warning Score (EWS) in RSUP H. Adam Malik Medan</p>	<p>Respondents in this study were 136 nurses in integrated inpatient rooms A and B. Data collection was carried out from March to May 2020. The data collection technique used was Simple Random Sampling by distributing questionnaires to respondents</p>	<p>The results showed that out of 136 people, 112 respondents (82.4%) had good knowledge, 24 respondents (17.6%) had sufficient knowledge and no respondents had less knowledge. Respondents who had a positive attitude were 124 respondents (91.2%) and a negative attitude were 12 respondents (8.8%). All respondents have good skills, namely 136 respondents (100%). It is hoped that this research can</p>

				be input for the H. Adam Malik Hospital in Medan in evaluating the knowledge, attitudes and skills of nurses about EWS so that EWS implementation can be maximized.
5	Blair L Bigham 1, Teresa Chan 1, Steven Skitch 1, Alison Fox-Robichaud 2/Semi-structured interviews were conducted with nurses, resident physicians and attending physicians to explore perceived feasibility, utility, comfort, barriers, successes, opportunities and accuracy. A constructivist grounded theory approach was used. Transcripts were coded into thematic coding trees./ <i>General Hospitals</i>	<p>Title: Attitudes of emergency department physicians and nurses toward implementation of an early warning score to identify critically ill patients: qualitative explanations for failed implementation</p> <p>Objective: Our objective was to elucidate nurse and physician perceptions with the Hamilton Early Warning Score (HEWS) in combination with the Canadian Triage Acuity Scale.</p>	The twelve participants Sampel	The twelve participants did not value the HEWS in the ED because they felt it was not helpful in identifying critically ill patients. We identified five themes; knowledge of sepsis and HEWS, utility of HEWS in emergency triage, utility of HEWS at the bedside, utility in communicating acuity and deterioration, and feasibility and accuracy of data collection. We also found 9 barriers and 7 enablers to the use of early warning score in the ED.
6	Talecia Warren 1, Leslie C Moore 1, Sterling Roberts 1, Laura Darby 1/simulation-based intervention to implement	<p>Title: Impact of a modified early warning score on nurses' recognition and response to clinical deterioration</p> <p>Objective: (a) Improve nurse knowledge of and confidence in responding to clinical deterioration through implementation of the</p>	Eighty-five nurses participated	The simulation-based intervention significantly improved nurse knowledge (t = 4.029, p < .01) and self-confidence (t = 3.698, p = <.01). Chart reviews found a 34.1% increase in nurse action taken in response to signs of clinical deterioration.

Modified Early Warning Score tool and (b) improve nurse ability to react to patient deterioration in a timely manner.

Current study found that the Modified Early Warning Score tool as taught through a simulated patient experience is useful to prevent unrecognized deterioration.

Characteristics of Research Subjects

There were a total of 373 search results from the PubMed online database and Google Scholar using the keywords "nurse knowledge", "ews", and "code blue". There were a total of 6 articles that met the inclusion criteria. There are many articles that examine the variables in this research, especially in Google Scholar, but there are still few articles that specifically discuss nurse knowledge, ews and code blue. This review summarizes the results of research on nurse subjects.

DISCUSSION

Wahyu Dwi Nugroho et al (2020) explained that there is a relationship between the level of knowledge of nurses' perceptions of EWS and the Code Blue System. The results showed that 59 (57.8%) nurses had good knowledge of EWS, 29 (28.4%) bad, 8 (7.8%) very good and 5 (4.9%) very bad . Nurses who had good knowledge of the Code Blue System were 62 (60.8%), 37 (36.3%) very good, 1 bad (1.0%), and 1 very bad (1.0%). There were 69 (68.3%) nurses who had a very good perception of EWS and 32 (31.7%) who had a good perception. Nurses who had a very good perception of the Code Blue System were 59 (58.4%) and 42 (41.6%) had a good perception. Meanwhile, Dwi Pujiyanti et al (2020) stated that there was no relationship between the EWS documentation and the implementation of Code Blue in Hospitals.

Other research has a different view, as stated by Leli Purnawati (2018) that good knowledge has no significant relationship with the behavior of the EWS assessment p-value (0.074), a positive attitude has a significant relationship with the behavior of the EWS assessment p- value (0.046), but has no effect on reducing the incidence of Code Blue.

CONCLUSION

Based on these results it can be concluded that there is a relationship between the level of knowledge of nurses' perceptions of EWS and the Code Blue System. The drawback of this case review is that researchers are still limited in finding articles in online databases, especially on Scopus and Pubmed sites which are international scale. So that the results of the literature review of this journal are very limited in the results and references.

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