Pediatric Early Warning Score (PEWS) Application Compliance with Response Time and Patient Safety

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ABSTRACT

Pediatric Early Warning Score (PEWS) is a scoring system for early detection or early warning to detect a worsening of the condition of pediatric patients. The purpose of this study was to determine the relationship between compliance with PEWS implementation with response time and patient safety at RSIA Muhammadiyah Probolinggo City. This research design uses correlation analytic with cross-sectional observation approach. The population in this study were all nurses at RSIA Muhammadiyah Probolinggo City. The sample in this study were 32 people. With the technique of probability sampling-random sampling. Data processing used chi square test. Compliance with PEWS implementation showed that most of them adhered to the application of PEWS as much as 25 (78%), response time obtained results that most were fast 25 (78%) and adhered to patient safety by 25 (78%). The analysis test uses the chi square test.

Keywords: patient safety, Pediatric Early Warning Score (PEWS), response time

BACKGROUND

PEWS has been widely applied by several hospitals in Indonesia, especially since the Indonesian Hospital Accreditation Commission (KARS) established PEWS in the National Accreditation Standard known as SNARS Edition 1.1 in 2019. Therefore, health workers, especially nurses, must master the concept and comply with PEWS implementation by attending seminars and workshops on Pediatric Early Warning Score in order to implement it properly. The use of PEWS as an early warning system and reporting changes in vital signs is very important, because delays in initiating appropriate action can have a negative impact on patient care outcomes.

Every hospital has PEWS regulations that must be complied with with the aim of improving hospital service outcomes. However, the existence of PEWS regulations in hospitals is not enough to guarantee proper PEWS implementation. In the research , explaining that nurses have conducted PEWS assessments and PEWS documentation is in the patient integrated note but did not immediately take action on patients according to PEWS guidelines (Sambeeck *et al.*, 2018). The situation in the field showed that nurses only recorded PEWS scores but were not analyzed and were not immediately reported to the DPJP. Nurses tend to focus on patient complaints and assume that the patient's condition is fine. This results in delays in providing treatment to patients, causing failure to resuscitate, failure to activate medical emergencies and patients dying in inpatient care (Rose *et al.*, 2012).

The implementation of PEWS by naked eye is still not optimal, because there are still many occurrences of a decline in the condition of patients in hospitals in Indonesia. The level of compliance and accuracy of nurses in implementing EWS is only 53% and 2.2%, respectively. The compliance of nurses as the staff with the most numbers and tasks in the hospital in carrying out PEWS greatly affects the success of PEWS implementation. Currently RSIA Muhammadiyah Probolinggo City has implemented PEWS in the ER and inpatient care (Kemenkes RI, 2016).

The monitoring system used is a monitoring system guided by the NEWS (National Early Warning Score) system for adult patients, PEWS (Pediatric Early Warning Score) for pediatric patients, and MOEWS (Modified Obstetric Early Warning Score) for obstetrics. Each observation result will be coded according to the specified table, then the numbers corresponding to the coding are added up to group the patient's condition into a normal category or a change in worsening of the condition according to its level (Victorian Auditor-general, 2015).

A preliminary study on the application of PEWS in the ER at RSIA Muhammadiyah Probolinggo City, showed that nurses were less obedient in implementing PEWS. This can be seen from the performance of nurses who are still negligent in handling patients. The nurse did not perform EWS according to the procedure, so the patient experienced a decline in the condition. The less than optimal implementation of PEWS can be an early warning that the potential decline in the patient's condition and even the unanticipated death rate in this hospital is due to the failure of early treatment for the worsening of the patient's condition.

Based on observations so far, the researchers found almost all nurses who carry out PEWS monitoring with routine work, such as other forms in the medical record that must be filled out. If there are patients who need to be observed, the nurse writes the results on another observation sheet without rewriting it on the existing PEWS sheet. In addition, in hospitalization there are still incidents of patients suddenly losing consciousness. Therefore, it is necessary to conduct research to relate compliance with PEWS implementation with response time and patient safety so that it can be an evaluation for hospitals to better prepare medical personnel so that services to patients can be improved.

METHODS

The research design used in this study is correlational using cross sectional research methods. The research was conducted where all variables were taken at the same time. The purpose of this study was to find a relationship between compliance with PEWS implementation with response time and patient safety at RSIA Muhammadiyah Probolinggo City.

The population of this study were 32 nurses at RSIA Muhammadiyah Probolinggo City with simple random sampling obtained a sample of 30 nurses. The independent variable in this study is compliance with the EWS implementation. The dependent variables in this study were response time and patient safety which were analyzed using Chi Square.

RESULTS

Table 1. Level of education

No.	Level of education	Frequency (f)	Persentase (%)
1.	DIII Nursing	17	53
2.	Bachelor Ners	15	47
Total		32	100

Based on the Table 1. it is obtained that the education level of respondents in Diploma Nursing is 17 people (53%) and S1 Nurses 15 people (47%).

Tabel 2. Length of working

No.	Length of working	Frequency (f)	Persentase (%)
1.	1-5 years	26	81,2
2.	6-10 years	4	12,5
3.	11-15 years	2	6,2
Total		32	100

Based on the Table 2, it was obtained data on the length of work of respondents 1-5 years as many as 26 people (81.2%).

Table 3. PEWS implementation compliance

No.	Compliance	Frequency (f)	Persentase (%)
1.	Obedient	25	78
2.	Less obedient	6	19
3.	Not obedient	1	3
	Total	32	100

Based on Table 3. the distribution of the frequency of compliance with PEWS implementation, the results show that most of them comply with the application of PEWS by 25 (78%).

Table 4. Response time and patient safety

No.			Frequency (f)	Persentase (%)
		Fast response	25	78
1.	*Response time*	Not fast	7	22
		Total	32	100
		Obedient	25	78
		Less obedient	5	16
2.	Patient safety	Not obedient	2	6
		Total	32	100

Based on Table 4. the frequency distribution of response time and patient safety, it was found that the response time and patient safety were 25 (78%).

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	32.000[a]	2	.000
Likelihood Ratio	33.621	2	.000
Linear-by-Linear Association	27.679	1	.000
N of Valid Cases	32		
Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	45.333[a]	4	.000
Likelihood Ratio	36.590	4	.000
Linear-by-Linear Association	28.340	1	.000
N of Valid Cases	32		

From the relationship using the chi square test, the p value (significance) is 0.000, which means it is smaller than the value (α: 0.05) so accept H1: there is a relationship between PEWS compliance with response time and patient safety.

DISCUSSION

Distribution of the frequency of compliance with PEWS implementation, the results show that most of them comply with the application of PEWS 25 (78%), less compliant by 6 (19%), and non-compliant 1 (3%). Nurse compliance is the behavior of nurses as professionals with a recommendation, procedure or regulation that must be carried out or obeyed (Widarti, 2014). Factors that can affect compliance include nurse characteristics, intellectual abilities and physical abilities, motivation, perception, level of knowledge, attitudes, workload, environment, communication, beliefs. Pediatric Early Warning Score (PEWS) is a tool or instrument that can be used to detect physiological changes experienced by patients such as vital signs and level of awareness of patients during hospitalization, so that with PEWS it is expected to minimize the risk of worsening and increase the rate survival in patients with cardiac arrest (Royal College of Physician, 2012). PEWS is used as an instrument to determine the clinical condition of patients and monitor physiological deterioration so that a timely and competent clinical response can be carried out (Qolbi, Nursalam and Ahsan, 2020). Nurses must pay attention to the clinical response given in the assessment of physiological changes which consist of the speed of response, the competence of the responder, the frequency of clinical monitoring and supporting facilities so that the response given is appropriate and guaranteed (Wahyudi and Indriati, 2014).

The implementation of PEWS monitoring in Indonesia has been introduced since 2012, where the government introduced it through an accreditation program at every hospital. Based on the 2017 National Hospital Accreditation Standard (SNARS) it is expected that all hospitals in Indonesia must implement the EWS system in the assessment of improving patient care services (PAP) which must be implemented since January 2018, where the elements listed are the existence of regulations for implementing PEWS, evidence of staff clinicians who are trained to be able to use PEWS, there is evidence of staff being able to implement the PEWS SOP (Standard Operational Implementation), and PEWS results are also available (By Kathy D. Duncan; Christine McMullan; and Barbara M. Mills, 2005).

From the description above, it can be assumed that most nurses are obedient to the application of PEWS because it can help nurses to find out the patient's deteriorating condition early and clinical responses can be carried out on time so that there is no delay in emergency handling. RSIA Muhammadiyah Probolinggo City has implemented the PEWS implementation in accordance with the SNARS version of the accreditation standard. PEWS monitoring regulations are set in accordance with the director's decree dated November 5, 2019. The monitoring system used is a monitoring system guided by the PEWS system without modification where the parameters measured are 3 parameters that occur in general conditions, cardiovascular (CRT, pulse), respiration (respiratory rate, oxygen consumption). Where each observation result from these 3 parameters will be coded according to the specified table, then the numbers corresponding to the coding are added up to group the patient's condition into normal categories or changes in worsening conditions according to their level. Besides that, there are still nurses who are not obedient in the application of PEWS due to lack of supervision by the nursing department. Therefore, it is necessary to increase training or socialization programs, especially regarding the prevention of patient safety incidents for nursing staff and training on the application of PEWS according to SOPs. In addition, there is a need for strict supervision as a first step to disciplining nurses in compliance with nurses carrying out SOPs in providing nursing care at all times and to each patient.(Graham, Robert, Margaret A. McCoy, 2015; Setiyawan *et al.*, 2020).

The results of the study from 32 respondents stated that there were 25 (78%) nurses who obeyed the application of PEWS with a fast response time and were obedient to patient safety. Not fast to response time as much as 7 (22%), less compliant as much as 5 (16%) and non-compliance as much as 2 (6%) towards patient safety.

Theoretically, response time is the speed of handling time starting from the beginning of the patient experiencing an emergency event until the patient gets a response from the officer and is given action. Response time for patients experiencing cardiac arrest is 5 minutes, while for patients with medical emergencies it is 10 minutes (Kemenkes RI, 2015). Several factors that affect the response time of nurses in emergency services are the skills of nurses and the workload of nurses, age, gender, length of work, educational background and knowledge (Widiastuti *et al.*, 2017; Restuning and Wirawati, 2019).

Minimizing the response time for the delay in the first emergency service (emergency response time rate), can be calculated in minutes and is influenced by various things, one of which is the number of personnel. It is said to be on time or not late if the time required does not exceed the existing standard average (Mohammadi *et al.*, 2015; Qolbi, Nursalam and Ahsan, 2020). Speed of service is an indicator of hospital quality service standards in measuring response time for the sake of providing fast, responsive service and being able to save emergency patients, taking into account patient safety and the effectiveness of hospital services (Rose *et al.*, 2012; Mohammadi *et al.*, 2015). While patient safety is defined as the avoidance, prevention and improvement of the results of bad actions or injuries originating from the health care process (Kemenkes RI, 2016). Patient safety is the most important global issue today where many patient demands are now being reported for medical errors that occur in patients. Hospital patient safety is a system where hospitals make patient care safer which includes risk assessment, identification and management of matters relating to patient risk, incident reporting and analysis, the ability to learn from incidents and their follow-up and

implementation of solutions to minimize risks and prevent injuries caused by errors resulting from carrying out an action or not taking the action that should have been taken (Pagala, Iriyanto et al, 2017). Nurses must have the ability or skill in applying emergency nursing care to overcome various health problems, both actual and potentially life threatening. Nurses must have training on Pediatric Early Warning Scores for monitoring conditions in pediatric patients (Rose *et al.*, 2012; Sambeeck *et al.*, 2018).

Eferring to the results and theory above that most nurses are obedient to the application of PEWS and there are still nurses who are less obedient and disobedient because there are several factors that affect the response time in handling emergencies, namely unpredictable conditions, both the condition of the patient and the number of patients being treated, limited resources and time, as well as very high interdependence between health professionals working in the treatment room and the need for increased training or socialization programs, especially regarding the prevention of patient safety incidents for nursing staff and training on the application of PEWS according to SOPs. The application of patient safety in hospitals is strongly influenced by the role of nurses. This is because nurses are the largest community in hospitals and nurses are the closest people to patients, so nurses must comply with established SOPs, apply ethical principles, provide education to patients and families, apply teamwork, implement good communication with patients. and family, and properly document.

The relationship using the chi square test obtained a p value (significance) of 0.000 which means it is smaller than the value (α: 0.05) so accept H1: there is a relationship between PEWS compliance with response time and patient safety. The results of statistical tests using the spearman rho test obtained a p value (significance) of 0.000 which is lower than the value (α: 0.05) so accept H1: there is a relationship between PEWS compliance with the application of patient safety and also obtained a close relationship value of 0.956 which It means that there is a very close relationship between the PEWS compliance variable and the application of patient safety.

Referring to the theory and research results above, according to the researcher nurses carry out nursing care, as care givers provide services by conducting daily assessments and monitoring the patient's condition, when the situation worsens, the first person to know is the nurse. Nurses as an important part of the hospital are required to provide good behavior in order to help patients achieve healing. A nurse's high education will provide optimal health services (By Kathy D. Duncan; Christine McMullan; and Barbara M. Mills, 2005; Victorian Auditor-general, 2015). A nurse who carries out her profession as a nurse, when carrying out her profession must have knowledge and education in certain fields, for that it takes appropriate education to run well. Good knowledge of nurses is needed to conduct assessments and observe vital signs in order to be able to assess and determine the risk of patient deterioration. The Pediatric Early Warning Score is used for physiological monitoring systems for patients, so that there is no deteriorating condition in patients. Knowledge is important for nurses to master, because a person cannot provide fast, precise and accurate action if he does not know the emergency assessment, this is in line with the opinion of an expert who argues that knowledge greatly influences a person's behavior. The level of knowledge of nurses and skills in observing the patient's condition, especially hemodynamics, is needed to prevent complications in patients. According to Notoatmojo, knowledge is a domain of behavior that is very important for the formation of one's actions (Graham, Robert, Margaret A. McCoy, 2015). The level of

lack of knowledge is one of the factors that becomes an obstacle in compliance behavior in health because those who have low knowledge tend to find it difficult to follow the advice of health workers.

The contents of the discussion section include an explanation of the results, references to previous studies, and opinions from researchers.

CONCLUSION

The application of PEWS showed that most of the nurses were obedient. Response time and patient safety showed that most of the respondents were obedient and responsive.There is a significant relationship between the implementation of PEWS with response time and patient safety.

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