Relationship between Nurse Knowledge and Decision Making of Code Blue Activation in Rsud Bangil Pasuruan, Indonesia

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Abstract

Background: The Code Blue system at RSUD Bangil Pasuruan was formed in the context of the safety of patients, visitors, and employees who experience heart and respiratory failure in the hospital area. The Code Blue team is a team that can carry out continued life assistance quickly, thereby reducing the incidence of death in hospitals. In its application, The Code Blue system of RSUD Bangil Pasuruanwas running less than optimal. The death process of inpatients who should have received basic life support assistance by The Code Blue team often ended in death without any effort to activate the available code blue system. The nurse knowledge factor is thought to have a connection with the constrained implementation of The Code Blue system in RSUD Bangil.

Objective: This study aims to identify the relationship between nurse knowledge and the decision making of code blue activation in RSUD Bangil Pasuruan.

Method: This quantitative study used an analytic observational design with a cross-sectional approach. Respondents of 101 nurses in general inpatients were selected based on a purposive sampling quota technique. The research instrument was a questionnaire for all variables.

Results: A bivariate analysis using Spearman rank correlation showed that there was a significant, positive (unidirectional) and very weak relationship with nurse knowledge of the decision making of code blue activation in RSUD Bangil Pasuruan

Conclusion: Nurse knowledge needs to be improved to optimize the decision of code blue activation in RSUD Bangil Pasuruan.

Keywords: *Nurse knowledge, decision, code blue activation.*

Introduction

Managing cardiac arrest patients in hospitals or Intra Hospital Cardiac Arrest (IHCA) is a matter of special concern in hospitals today. The incidence of cardiac arrest in hospitals varies greatly in the world, ranging from 0.5 to 2%.Studies conducted in Australia and New Zealand state the rate of cardiac arrest in hospitals range from 2 to 6 cases per 1,000 admissions. The incidence of cardiac arrest in hospitals in Asian populations has not been widely publicized. One study conducted in the Taiwan population reported that the incidence of cardiac arrest in hospitals was 3.25 per 1,000 patients admitted to hospital care(5).

The cause of high death due to IHCA is the ineffective implementation of resuscitation. Code Blue system is one solution to overcome the high mortality rate due to IHCA by implementing effective resuscitation in patients with pulmonary, cardiac arrest. “Code Blue” is a hospital emergency code that is used to give a message to a special hospital emergency response team during an emergency without causing panic in and around the hospital and provide resuscitation as soon as possible without disrupting the normal activities and functions of the hospital. Code Blue is an international code and was first used at Bethany Medical Center, the state of Kansas, in the early 1990(5).

The Code Blue system was then developed by various other American states in the era of 2008 and continues to be implemented by countries around the world. Indonesia is one of the countries that helped develop the code blue and made this system as one of the services for providing medical emergencies in hospitals.

The Code Blue system of RSUD Bangilwas formed in 2014 with the initial purpose of preparing for accreditation and running until now. However, it is felt to be less than optimal, and there are many obstacles in its implementation. Based on interviews with several nurses at RSUD Bangil, researchers obtained data that hospitalized patients with heart, and respiratory attacks should receive further basic life support care with the blue team code. However, patients often end in death without any effort to activate the available code blue system.

Knowledge is an important factor that can be a theory-based guide for nurses in making effective decisions[7]. Theoretical knowledge of code blue that is adequate for health staff can reduce the number of emergency patients in the hospital[2]. Knowledge, skills, and experience not only affect the outcome of the work done but also affect the decision making process. In clinical practice, the decision-making process comes from the knowledge, experience, ability of nurses to cope with a condition [1], and the nurse perception of seeing a problem [4]. The lack of maximum handling of cardiac arrest by the code blue team may be influenced by nurse knowledge of code blue services, which is still minimal.

The researcher suspects that there is a correlation between the nurse knowledge factor and the constraints on the implementation of The Code Blue system in RSUD Bangil Pasuruan. Hence, the researcher aims to identify the relationship between nurse knowledge and the decision to activate the code blue.

Method

This is a quantitative study using observational analytic design through a cross-sectional study approach. The sampling technique used in this study is probability sampling with a purposive sampling quota technique with a sample of 101 respondents. Respondents are nurses in the general ward who meet the inclusion criteria and exclusion criteria that have been determined by researchers.

Inclusion Criteria:

1. Nurses are willing to be respondents
2. Nurses on duty in the inpatient general room

Exclusion Criteria:

1. Nurses who are on vacation, leave or outside services during the study so they can not participate as respondents
2. Nurses on duty in a special room namely IGD, Operating Room, HCU, ICU, CVCU, Delivery Room, Perinatology, Polyclinic

Results

The number of participants in this study was 101 respondents. Based on table 1 it can be seen that the characteristics of respondents based on age are dominated by early adult groups (aged 26 - 35 years) of 66.3%.Characteristics of respondents by sex were dominated by female respondents, amounting to 76.2%. Characteristics of respondents based on education were dominated by D3 educated respondents totaling 79.2%. Characteristics of respondents based on length of work were dominated by respondents who had worked for 3 to 5 years totaling 43.6%. Characteristics of respondents by position were dominated by respondents who were nurses implementing as many as 86.1%.

Table 1 Frequency Distribution of Respondent Characteristics by Age, Gender, Education, Length of Work and Position

Age	Frequency	Percentage (%)
Early adulthood (26 - 35 years old)	67	66.3
Early elderly (36 - 45 years)	26	25.7
Early elderly (46 - 55 years)	8	7.9
Sex		

Age	Frequency	Percentage (%)
Male	24	23.8
Female	77	76.2
Education		
Diploma	80	79.2
Bachelor	21	20.8
Length of work		
3 - 5 years	44	43.6
6 - 10 years	27	26.7
>10 years	30	29.7
Position		
Head of the room	3	3.0
Head of the team	11	10.9
Executive nurse	87	86.1

Primary Data Sources 2020

Based on table 2, it can be seen that the majority of respondents (74.2%) often carry out cardiopulmonary resuscitation, which is as much as 6 to more than 20 times. Besides, the results of the study also showed that only 8.9% of respondents frequently activated code blue, while the majority of respondents had never activated code blue in real or non-simulated situations, namely 79.2%.

Table 2: Frequency Distribution of Respondent Characteristics Based on Frequency of Conducting Pulmonary Resuscitation and Activating Code Blue During Work

CPR	Frequency	Percentage (%)
≤ 3 times (very rare)	12	11.9
4 - 5 times (rarely)	12	11.9
6 times to more than 20 times (often)	75	74.2
No answer	2	2.0
Total	**101**	**100.0**
Activating Code Blue	**Frequency**	**Percentage (%)**
Often (3-5X)	9	8,9
Rarely (1-2X)	12	11.9
Never	80	79.2
Total	**101**	**100.0**

Based on table 3, it can be seen that the sub-component of knowledge about the policy and hospital guidelines about The Code Blue system obtained a mean value of 2.42. Knowledge of code blue management and the role of nurses in The Code Blue system obtained a mean value of 4.12. Knowledge of how to activate code blue obtained an average value of 1.76. The total score of knowledge obtained a mean value of 8.30. The conclusions of the research results of nurse knowledge of The Code Blue system are stated to be good.

The decision-making sub-component about finding alternatives or choices obtains a mean value of 5.63. Decision making about setting goals and values

obtained a mean value of 6.80. Decision making about evaluating and re-evaluating the consequences obtained a mean value of 7.91. Decision making about finding information and assimilating new information so as not to be able to obtain a mean value of 7.74. The total score of decision making obtained an average score of 28.08, so it can be concluded that the nurse decision making was quite good (Table 3).

Table 4 informs that testing the relationship of knowledge with decision making produces a probability of 0.016. Or a probability <alpha (5%), so H0 is rejected. The test results can be stated that there is a significant relationship of knowledge with decision making. The correlation coefficient of 0.238 shows that there is a positive (unidirectional) and a very weak relationship between knowledge and decision making. The test results can be said that the increase in knowledge is followed by an increase in decision making, and conversely, a decrease in knowledge is followed by a decrease in decision making.

Table 3 Sub Components of Knowledge, Self-Efficacy, and Nurse Decision Making

Knowledge Sub Component	**Min**	**Max**	**Mean**	**SD**
Hospital policies and guidelines regarding The Code Blue system	1	3	2.42	0.70
Code blue management and the role of nurses in The Code Blue system	2	5	4.12	0.83
How to activate code blue	1	2	1.76	0.43
Total knowledge score	4	10	8.30	1.96
Decision Sub-Components	**Min**	**Max**	**Mean**	**SD**
Look for alternatives or choices	2	8	5.63	1.23
Set goals and values	3	8	6.80	1.14
Conduct an evaluation and re-evaluation of the consequences	3	12	7.91	2.12
Look for information and assimilate new information to avoid bias	3	12	7.74	1.78
Total Decision-Making score	11	40	28.08	6.27

Table 4 Results of the Analysis of the Relationship between Knowledge and Decision Making

Coefficient Correlation	**Probability**
0.238	0.016

Discussion

This study shows that there is a significant, positive, and very weak relationship between nurse knowledge and the decision on activation of code blue in RSUD Bangil Pasuruan. The high knowledge of nurses is followed by high decision making to activate code blue and vice versa. This research is in line with other studies that explain that knowledge is an important factor that can be a theory-based guide for nurses in making effective decisions[7]. Critical thinking has a strong influence on decision making and problem-solving [6].

The results of this study indicate that nurse knowledge in RSUD Bangil Pasuruan about the code blue system obtained good grades, and the nurse decision making was stated to be quite good. It means that good nurse knowledge is followed by good or appropriate decision making. Still, related to the decision making of code blue activation by nurses, there is a gap in its implementation.

Based on data related to the frequency of activation of code blue by nurses in this study, it was found that the majority (79.2%) of nurses in RSUD Bangil had never activated code blue. Whereas, their role as the first responder in patients with cardiac arrest and respiratory arrest was very important. Based on data on the frequency of performing CPR during work informs that the majority of nurses (74.2%) are quite often involved in patient resuscitation but inversely proportional to the blue activation data code. It means that nurses often do resuscitation in patients with cardiac arrest and respiratory arrest without activating code blue, whereas activation of code blue is a decision that must be taken

by nurses when dealing with patients with cardiac arrest and respiratory arrest.

Inappropriate decision making to activate code blue has made treatment of resuscitation ineffective. Ineffective treatment of resuscitation causes death in cases of cardiac arrest and respiratory arrest. The study of Kaykısız, Tongün, Sönmezsoy, & Güven (2017) concluded that the theoretical knowledge of code blue that was adequate for health staff could reduce the number of emergency patients in the hospital.

This study includes knowledge of hospital policies and guidelines related to The Code Blue system, Code Blue management, and the role of nurses in the Code Blue system, as well as how to activate code blue. High or low knowledge illustrates whether or not the knowledge of nurses. The average knowledge about code blue management and the role of nurses in the Code Blue system is 4.12. It is the highest average, while the average knowledge about how to activate code blue is 1.77 and is the lowest mean. The nurse's lack of knowledge about how to activate code blue can be one of the causes of the lack of optimal implementation of The Code Blue system in RSUD Bangil Pasuruan, even though the facilities and infrastructure are fully available.

The increase in nurse knowledge about The Code Blue system and the code blue activation decision making at the RSUD Bangil Pasuruanmust continue to be pursued through various method so that the application of the code blue system can run optimally.

Efforts to increase nurse knowledge can be made together with efforts to improve decision-making skills through innovative outdoor learning method that are not boring and more enjoyable so that the learning system as well as a means of recreation. Periodic and continuous socialization, training and simulations need to be carried out as an effective method for increasing nurse knowledge in decision making for code blue activation in RSUD Bangil Pasuruan, Indonesia.

Limitations: This study explores the personal factors of nurses, namely, knowledge of the code blue activation decision making. Nurse decision making in Code Blue activation does not only originate from personal nursefactors. Other factors in the form of external factors can also contribute to nursing decision making. These external factors are organizational factors, patient characteristics, and environmental factors. Therefore the results of this study have not yet shown comprehensive and maximum results.

Conclusion

There is a significant and positive relationship between nurse knowledge and code blue activation decision making in RSUD Bangil Pasuruan. Nurses have good knowledge and decision on the activation of a code blue. However, there are several sub-components in decision making knowledge that is still considered to be lacking or low.

Ethical Clearance: This article has been approved by the Medical faculty of Brawijaya University.

Source of Funding: Self founding

Conflict of Interest: Nil

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