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Nurse' Knowledge and Their Performance on Cardiopulmonary Resuscitation (CPR) in Critical and Emergency Care Unit

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Abstract

Background: Knowing the important relation between knowledge and skill is important because it reflexes the action that nurses do to save people life.

Objective: This research aimed to determine the relationship between the nurse's knowledge level and their performance on cardiopulmonary resuscitation in critical and emergency care unit.

Method: The study was quantitative descriptive with the cross-sectional design used sequential sampling with 30 nurses in critical and emergency care unit. The data were analyzed using the Fisher Exact Test. Data was taken from questioner and observational assessment using a standard operating procedure which was developed by a hospital.

Results: The results of this study found that there were 63.3% respondents which all of them had poor knowledge also poor performance on doing cardiopulmonary resuscitation.

Conclusion: There is a relation between nurse's knowledge level and the nurse's performance on undertaking cardiopulmonary resuscitation. The more knowledge they have the better performance they have on cardiopulmonary resuscitation. Routine training and evaluation may be useful to increase nurses' knowledge and skills.

Keywords: Nurse, Knowledge, Skills, Cardiopulmonary Resuscitation (CPR), Emergency

INTRODUCTION

There is some common problem that was facing health care services in Indonesia. One of them is giving high-quality health services with reachable cost. The availability and quality of health care services depend on the values and response from the client itself. It is because of the quality of services and satisfaction of client are used as a measurement about how is the quality of health care services itself in the hospital they visited (Wardani, 2013). Therefore, all health care providers are involved to determine how good health services that they give in a hospital.

Health care providers that involve are including doctors, nurses, nutritionist, pharmacist, and other professional health care provider. However, the quantity of nurses is the highest than in other professions. Nurses are the one who works with the patient for 24 hours divided into 3 working shifts are morning, afternoon, and night shift (Indonesian Health Minister, 2017). From this condition, can be assumed that nurses contribution hold hope in raising the quality of health services in a hospital. It can be said that nurses services are one of the main concern of a hospital based on their skill and knowledge that appropriate with the development of science and technology.

Between skill and knowledge, knowledge is holding more dominant role rather than skill. However, even though knowledge is more dominant than skill, but still both of them are related to each other. It is because, someone performance is a reflection of the knowledge they have through education, training or experience during their working time. One of the basic knowledge and skill that must be mastered by nurses is performing emergency nursing care, for example, is cardiopulmonary resuscitation (Hanafi, 2007). It is important because the emergency case can happen to anyone anywhere regardless of whoever and wherever they are. So that the quality of nurses in emergency care is one of the factors that determine either someone can still alive or not (Hazink, 2015).

Cardiopulmonary resuscitation (CPR) is an emergency procedure that helps to support and maintain breathing and circulation in a client with has cardiac arrest (sudden heart stop) (Mayo Clinic). In a hospital, especially in Emergency and Critical Care Unit, *cardiopulmonary resuscitation* is very important because, in both rooms, the number of morbidity and mortality are high. According to the American Heart Association (AHA) (2010), too few victims of cardiac arrest receiving standard CPR. As known, CPR quality must be high and that victims require excellent post-cardiac arrest care by organized teams with members who function well together. Education and frequent refresher training are likely the keys to improving resuscitation performance. The AHA has established that initiation of CPR during cardiac arrest will increase the short and long term outcomes for patient survival (AHA, 2005c). Unfortunately, the quality of CPR performed by the public and health care providers alike is deficient resulting in a low (10%) survival rate after CPR (Alspach, 2005).

A person with *cardio-pulmonary resuscitation* (CPR) training can sustain an ailing person's heart and brain for a short time (Farah, 2007). Therefore, the nurses who work on it have to be really mastering CPR because time is the main point who hold someone living. Fast and right CPR method is the point on saving someone in the emergency case especially in cardiac arrest condition.

METHODS

This research design used Quantitative descriptive with *a cross-sectional* design approach. The research took place in the Emergency and Critical Care Unit in Moewardi Hospital of Surakarta. The sample was taken by *the sequential sampling* method. The criteria of the samples are nurses who work in Emergency and Critical Unit. The next was nurses who performed CPR, and nurses with minimum graduated from the diploma of nursing. The last was nurses who were not an internship or orientation nurses. As a result, the total samples that involved were 30 nurses who work in Emergency and Critical Room of the hospital.

The instruments that were used were questioner form, which contains 24 multiple choice questions which used to assess nurses knowledge and nurse skill is assessed by using a checklist that contains 13 items of SOP (Standard Operating Procedure that provided by Moewardi Hospital). This checklist was observed by the researcher through systematic observation. To determinate the score, the researcher used score 1 for the right answer, and score 0 for a false answer.

The 24 multiple choice questions have contained a definition, purposes, indication, contraindication, CPR procedure, and termination of the procedure. For the checklist that being used is contain 13 items.

This research was done on May-July 2011 and it took 4 rooms, those are critical room (ICU and ICVCU) and emergency care unit (Triage and ICU). Later on, the data was processed through 4 steps, those were editing, coding, entry data, and tabulating. The next was that the data analyzed by Univariate and Bivariate.

RESULTS

The research that has been done, the result that obtained is below :

A. Characteristics of respondents

In this research, total respondents are 30 nurses who work in Emergency and Critical Unit Care, and the table 1 described characteristics of respondents based on their gender, ages, education level and working period.

Table 1 Characteristics of respondents

Characteristic	Frequency	Percentage (%)
Gender:		
-Man	16	53.3
-Woman	14	46.7
Ages:		
24-35	25	83.3
>35	5	16.7
Education Level:		
Diploma	27	90
DIV	1	3.3
Bachelor	2	6.7
Working Experience:		
1-5 years	17	56.7
6-10 years	7	23.3
11-15 years	6	20

In table 1 showed that the frequency of man is more than women (53.3%). The total of man respondents is more probably because man strength is needed more according to their physical is stronger than women. Based on ages, it can be seen on the table that ages of respondents mostly are in the ages of 24-25 years old, it means that in this hospital, nurses that work in Emergency and Critical Unit Care are in productive ages, where physically is really needed to give fast and right nursing care. According to the education level, the nurses are mostly graduated from Diploma in nursing. It can be defined that, most of the Diploma graduation do not continue their study into Bachelor degree and prefer to work directly. Professional nurses are defined as a nurse that develop his knowledge through high education by completing minimum education in diploma of nursing. The next is the working period, most of the respondents are having a working period around 1-5 years. It is because the hospital recruits new employ. The presence of senior nurses, which have a working period of more than 10 years can give working experience to the new nurses which still lack experience related to cardiopulmonary resuscitation. The length of working experience is showing someone performance, and influencing their readiness in doing given tasks. The expectation is the longer someone working experience the better performance they may have (Kuhnigh, 2004).

B. Univariate analysis methods

1). Respondents distribution based on their knowledge on cardiopulmonary resuscitation (CPR)

Division of knowledge category is divided into two that are good and poor level. They are good if the result > mean or respondents which has value 19-34. On the other side, there is less category if the result < means of respondents has value 0-18. The result from 30 respondents who fill 24 questioners obtain the result as below (table 2):

Table 2. Respondents distribution based on their knowledge related to cardiopulmonary resuscitation in Critical and Emergency Care Unit

Knowledge	Frequency	Percentage (%)
Good	7	23.3
Poor	23	76.7
Total	30	100

23 respondents are categorized in a group which has poor knowledge (76.7%), while the respondents who have good knowledge is lesser (23.3%). From 23 respondents who categorize less knowledge, 14 of them have the working period for 1-5 years. While, 9 out of 23 respondents, has enough working period that more than 5 years.

2). Respondents distribution based on their skills in performing cardiopulmonary resuscitation (CPR).

In this research, the result of observing 30 skills respondent is shown in the table below (table 3):

Table 3. Respondents distribution based on their skills on performing cardiopulmonary resuscitation (CPR) in Critical and Emergency Care Unit

Skill	Frequency	Percentage (%)
Good	9	30
Poor	21	70
Total	30	100

Table 2 shows that most of the respondents (21 nurses) skill on performing cardiopulmonary resuscitation include in the poor category (70%), while the rest of them, 9 respondents, are categorized in good skill. Unfortunately, 2 of 9 respondents which in good skill category are still having poor knowledge about CPR. Skills that have by respondents not only from education but also from experience.

Respondents that performing CPR refer to Standard Operational Procedure (SOP). The SOP is contained 13 items that used as a reference to evaluate either

the respondents performing CPR good and right or not. If 13 items can be done rightly, it means respondents have performed right nursing care, but if there are any of 13 items that can not be done, it means that respondents do not give right nursing care. Therefore, from those 13 items SOP of CPR can show that respondents still not able to perform CPR well because most of them are still in poor skill category.

C. Bivariate analysis method

The bivariate analysis method is used to merge between nurses (respondents) knowledge and their skills on performing CPR in Critical and Emergency Unit Care in Moewardi Hospital of Surakarta. Statistic experiment that is used to analyze is the Fisher Exact analysis tool. Researcher merging nurses knowledge and their skills as the table below (table 4):

Table. 4 Relation between respondents knowledge and their skills on performing CPR in Critical and Emergency Unit Care in one of the hospitals in Solo.

Knowl edge	CPR Skill				Total		p^*
	Good		Poor		n	%	
	n	%	n	%			
Good	5	16,7	2	6,7	7	23,3	0,0
Poor	4	13,3	19	63,3	23	76,7	14
Total	9	30	21	70	30	100	

p^* obtained use of *Fisher Exact Test* analysis method

Table 4 demonstrates from 7 (23.3%) respondents who have good knowledge, 5 of them (16.7%) are having good skills on performing CPR while the other 2 of them (6.7%) are having poor skill on it. From 23 respondents (76.7%) who have poor knowledge, 4 of them (13.3%) are performing CPR well. While, the rest of it, 19 respondents (63.3%) are in a poor category on performing CPR.

The result from counting used Fisher Exact analysis tools with SPSS 16.00 for Windows program is also displayed in table 4. the outcome is obtained significant values (p -value) 0,014 the conclusion of the test is rejecting H_0 because p -value values is smaller than 0,05 ($0,014 < 0,05$), so can be concluded that there is relation between nurses knowledge level and their skills on performing cardiopulmonary resuscitation in Critical and Emergency Care Unit in one of the hospitals in Solo.

From 30 respondents that analyzed, there are 19 of them which have poor knowledge and poor skill also on performing CPR. Nursing care that referred to SOP that must be done rightly, in real practice, some of SOP steps are still neglected. That was obtained according to the observation of researcher to respondents who performed CPR, where there are 3 out of 13 items in the checklist that most of them did not do. Those are items no 3, 5 and 8. Every nurse must have good knowledge and skills related to CPR because that is a vital procedure that must be mastered by professional nurses.

DISCUSSIONS

Patient emergency care is one of the hospital services that required fast, proper, and accurate service to prevent death and deformity. One of the quality service indicators is response time, where this indicator is a process to achieve an outcome indicator that is life sustainability (Halim, 2016).

Cardiopulmonary resuscitation knowledge is a vital modal for nurses who work in Critical and Emergency Care Unit. In the same research from Hermawan (2011), with the title Relation Between Nurses About Critical Respiratory with Attitude on Handling Breath Failure on Neonatal in Intensive Care Unit In PKU Muhammadiyah Delanggu Klaten. Where the result is there is a relation between nurses knowledge about critical respiratory and their attitude on handling breath failure on neonatal who has critical breathing condition.

Knowledge level can be different because of some factors, one of it is educational background. It is because the respondents obtain information through education and experience on it. The relationship between education level with nurses knowledge is a knowledge level that has an impact on increasing clients knowledge about their health. Other factors that also effect is working period, motivation on the study, and lack of training given by hospital about cardiopulmonary resuscitation.

On the other side, from analysis data above obtained 7 respondents (23.3%) who have good knowledge, there is 5 of them (16.7%) also have good skills. According to Notoadmojo (2007) explain that knowledge is one of the dominant factors that create someone action, so from that theory also explain about why there are 3

respondents (6.7%) that have good knowledge but still have poor skills. Research result of Thamrin (2010) about Image of Nurses and Midwives Knowledge about Cardiopulmonary Resuscitation on Neonatal in RSIA Siti Fatimah Makassar. The result showed that most of them (57,5%) nurses respondents have good knowledge. Nurses and midwives knowledge about cardiopulmonary resuscitation on neonatal is important where knowledge is a basic foundation on creating nurses and midwives attitude on performing *cardiopulmonary resuscitation* fast and right. The outcome of Thamrin research is in line with this research where someone (nurses) knowledge will have an impact on their attitude and their skills in performing CPR.

Based on table 3, which explain about nurse's skills quality in CPR, the result of performing cardiopulmonary resuscitation is valued by doing observation toward respondents while filling a checklist when they performing CPR. Later on the outcome will be divided into 2 categories, first is categorize good if the result of value >mean or respondents get value 10-13. The second is categorize poor if they have value <mean or 0-9.

From 9 respondents (30%) who have good skills, there is 4 of them (13,3%) who have poor knowledge. It showed that only knowledge does not ensure that someone can perform cardiopulmonary resuscitation well. An outcome of the research displayed that 2 out of 4 of them have working experience for 5 years, the other one respondent has been working for 8 years, and the rest has worked for 15 years. Besides experience and knowledge, according to Oman and Bell in Bastable (2002), there are some other factors that influence someone skills. Those are health status, environmental stimuli, and anxiety level. That research outcome is in line with the research of Kuhnigk (2004), with the title Skills and Self Value on Cardiopulmonary Resuscitation from Nurses in Hospital. From those research are obtained that CPR skills from respondents are different in education level, professional experience, on doing CPR either in the past or working in the hospital.

The limitations of this research are: 1. research methods using descriptive so that the result is

limited on nurses who work in Critical and Emergency Care Unit in one of the hospitals in Solo and the result cannot be generalized for nurses from others hospital. 2. this research only limit on the relation between nurses knowledge and their skill on cardiopulmonary resuscitation. 3. changes of statistic test from Kendall Tau-b become Fisher Exact analysis tool is because there is no any respondents who have poor knowledge and skill,

CONCLUSIONS

Respiratory and cardiac arrest inpatient can occur suddenly and unpredictable, by knowing signs and symptoms fast and early appropriate aid procedure, it can help to prevent worsening of the patient condition and give maximal chance for the patient to recover. Therefore it is very important that nurses understanding about CPR and it needs poor knowledge also so that CPR can be done rightly, and fast on giving aid to the patient with respiratory and cardiac arrest.

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