



Factors Associated with Nurses' Knowledge in Carrying Out Cardiopulmonary Resuscitation (CPR)

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Abstract

Cardiopulmonary resuscitation (CPR) is the first effort or action taken to maintain life when a sufferer experiences a situation that threatens a person who experiences respiratory arrest and cardiac arrest who still has hope for life if the health team is alert in treating the victim and providing first aid to the victim. The aim of this study was to identify factors related to nurses' knowledge in carrying out cardiopulmonary resuscitation. This research uses quantitative and correlative types. The sample in this study was 52 nurses who worked in the intensive care unit at Banda Aceh City Hospital. The results of this research are that there is no relationship between age and nurses' knowledge in carrying out CPR (p-value 0.828), there is a relationship between education and nurses' knowledge in carrying out CPR (p-value 0.000), there is a relationship between experience and nurses' knowledge in carrying out CPR (p-value 0.039), there is a relationship between facilities and nurses' knowledge in carrying out CPR (p-value 0.000). The sufficient knowledge of CPR among nurses underscores the need for continuous training and regular skills assessments. Strengthening CPR education in hospitals ensures prompt, effective responses in emergencies, improving patient safety and cardiovascular outcomes in critical care.

Keywords: Cardiopulmonary Resuscitation (CPR), Factors, Knowledge, Nurses.

INTRODUCTION

Sudden Cardiac Arrest (SCA) or what is known as Sudden Cardiac Death (SCD) is a significant health issue throughout the world. About 20% of total deaths in Western countries and the United States caused by sudden cardiac arrest (Paratz et al, 2020). Cardiopulmonary Resuscitation (CPR) is a procedure that functions to reduce the death rate in individuals who experience emergencies such as cardiac arrest. This resuscitation process allows rescuers to take over the patient's respiratory and circulatory functions when cardiac arrest occurs, so that vital organs such as the brain, heart, lungs and kidneys can be protected from hypoxia which has the potential to cause permanent cell death. Providing rapid cardiopulmonary resuscitation to patients experiencing cardiac arrest can minimize damage to brain cells and other vital organs (Kumar et al, 2021).

In 2020, in Wuhan, there were reports of 151 individuals experiencing in-hospital cardiac arrest (IHCA) during a 40-day observation period. Of this number, only 136 individuals received CPR. Among the 136 patients, only 18 people (13.2%) succeeded in achieving return of spontaneous circulation (ROSC), even though CPR could be performed in less than 1 minute in 89% of cases. Only 4 patients survived after 30 days. Most patients were over 60 years old (80.9%), with 66.2% of them being men, and hypertension was the most common comorbidity (30.2%). Respiratory problems (87.5%) were the main cause of Intra-Hospital Cardiac Arrest (IHCA), while only

10 cases were caused by cardiac etiology, with 83.1% of cases occurring in the treatment room. From the data obtained, it can be concluded that the life expectancy of critical patients with severe pneumonia due to COVID-19 who experienced IHCA in Wuhan was very low (Shao F, 2020).

The incidence of SCA in Southeast Asia in 2021 was recorded at around 20.9 per 100,000 population (Zimmerman et al., 2021). The incidence of cardiac arrest that occurs in hospitals, known as IHCA reaches 92% and does not receive high quality cardiopulmonary resuscitation intervention (Kassie, D.G. and Hassen Salih, 2021). The results of the Basic Health Research (RISKESDAS) 2018 showed that the number of cardiac arrest cases In Indonesia, the number of reported cardiac arrest cases reached 1,017,290. In Central Java province, the number of incidents was recorded at 132,565. However, data regarding the prevalence of events outside the hospital or in daily life are not yet available. It is estimated that around 10,000 people experience cardiac arrest every year, which means around 30 people every day (Yunita Dewi, K., & Wisnu Kanita, 2022).

Adequate knowledge regarding anatomical position, the ratio between compression and ventilation, and compression depth are very important in carrying out effective cardiopulmonary resuscitation. Therefore, the American Heart Association (AHA) and the International Liaison Committee on Resuscitation (ILCOR) have reached a consensus and published guidelines regarding the management of cardiac arrest, especially related to high-quality cardiopulmonary resuscitation (Kassie & Hassen, 2021).

Nurses play a crucial role in managing cardiac arrest in hospitals and are required to hold Basic Life Support and Advanced Life Support licence to ensure they possess the necessary skills for effective CPR. This aims to ensure that they have adequate competence in carrying out CPR to rescue patients experiencing cardiac arrest. (Mulyadi & Kiling, 2018). One of the efforts to reduce the death rate due to heart attacks, appropriate treatment and management is needed, remembering that cardiac arrest can occur at anytime and anywhere. One effective treatment method is CPR, which can reduce the risk of death and allow the heart to beat again if done quickly and correctly (AHA, 2020).

Success in cardiopulmonary resuscitation is highly dependent on adequate skills that must be possessed by nurses. Several factors that influence these skills include gender, knowledge, experience, and the training received. (Rahmawati et al., 2023). The knowledge, attitude and readiness of medical personnel in treating patients experiencing emergency conditions are very crucial factors in treating cardiac arrest in patients (Thalib, A. H., 2020). Based on the phenomena and facts above, researchers conducted this research with the aim of identifying factors related to nurses' knowledge in carrying out cardiopulmonary resuscitation (CPR).

METHODS

This research used quantitative and correlative types. The population in this study was 58 nurses working in the intensive care unit. The data collection technique used total samples, but during the research period only 52 samples were obtained that met the research criteria. The research inclusion criteria were being willing to be a respondent and not being on leave from work. The research was conducted from instrument validation to data collection, November 21, 2022 to January 4, 2023.

The data collection instrument used in this research consisted of an instrument on nurses knowledge about CPR, which consisted of 25 multiple choice questions, based on literature from the AHA. Before the research was conducted, it had gone through an editing process by 2 expert experts from the Faculty of Nursing Universitas Syiah Kuala and conducted instrument tests at different hospitals, the validity value obtained was 0.644 and the reliability value was 0.957. Before distributing the instrument, the researcher submitted the feasibility of the instrument to be distributed to the ethics commission of the Faculty of Nursing, Syiah Kuala University. The research passed ethical feasibility test No. 111088101221 which was assessed by the Research Ethics Team of the Faculty of Nursing, Syiah Kuala University. When research was carried out, pay attention to research ethical principles which include; autonomy, beneficence, non-maleficence, and veracity. After the respondent received an explanation about the research and agreed to participate in the research, the respondent was asked to sign an informed consent.

Data collection followed established administrative procedures. Researchers received an assignment letter to conduct research from the Faculty of Nursing, Syiah Kuala University. Before conducting research, researchers explain the research objectives, benefits and research procedures that will be carried out while still paying attention to health protocols. Data analysis in this study consisted of univariate analysis with frequency distribution and bivariate analysis with the Nonparametric Correlations Spearman's rho test because the data is not normally distributed.

RESULTS

The research results presented include the demographic characteristics of respondents, as well as factors related to nurses knowledge in carrying out CPR.

a. Demographic characteristics of respondents

Table 1. Characteristics of respondents (n=52)

Characteristics	n	%
Gender		
Male	20	38.5
Female	32	61.5
Age		
17-25 years old	1	1.9
26-35 years old	38	73.1
36-45 years old	11	21.2
46-55 years old	2	3.8
Education		
Diploma Nursing	37	71.2
Bachelor Nursing	5	9.6
Nurse Profession	10	19.2
Experience Carrying Out CPR		
Once	39	75.0
Never	13	25.0
Facilities (Training)		
Once	36	69.2
Never	16	30.8

Based on table 1 regarding the demographic characteristics of respondents, it can be seen that the gender in the female category is 32 respondents (61.5%), the majority of ages are in the 26-35 year category (73.1%), have a diploma nursing education in nursing (71.2%), have done CPR (75%) and have participated in facility training (69.2%).

b. Description of nurses' knowledge about CPR

Table 2. Description of nurses knowledge about CPR

Knowledge	f	%
Not enough	12	23.1
Enough	26	50.0
Good	14	26.9
Total	52	100

Based on table 2, it can be seen that the majority of respondents' knowledge in the sufficient category is 26 respondents (50%). 14 respondents (26.9%) had good knowledge and 12 respondents (23.1%) had poor knowledge.

c. The relationship between age and nurses' knowledge about CPR

Table 3. Relationship between age and nurses knowledge in carrying out CPR

Variable	n	Correlation Coefficient	Sig. (2-tailed)
Age	52	.0828	.031
CPR Knowledge	52	.0828	.031



Based on table 3, it can be seen that based on the Spearman's rho test, it was found that the p-value was 0.828, which means there is no relationship between age and nurses' knowledge in carrying out cardiopulmonary resuscitation (CPR).

d. The relationship between education and nurses' knowledge about CPR

Table 4. Relationship between education and nurses' knowledge in carrying out CPR

Variable	n	Correlation Coefficient	Sig. (2-tailed)
Education	52	.000	.817
CPR Knowledge	52	.000	.817

Based on table 4, it can be seen that based on the Spearman's rho test, it was found that the p-value was 0.000, which means there was a relationship between education and nurses' knowledge in carrying out cardiopulmonary resuscitation (CPR).

e. The relationship between experience and nurses' knowledge in carrying out CPR

Table 5. Relationship between experience and nurses' knowledge about CPR

Variable	n	Correlation Coefficient	Sig. (2-tailed)
Experience	52	.039	.287
CPR Knowledge	52	.039	.287

Based on table 5, it can be seen that based on the Spearman's rho test, it was found that the p-value was 0.039, which means there was a relationship between experience and nurses' knowledge in carrying out cardiopulmonary resuscitation (CPR).

f. Relationship between facilities and nurses' knowledge in carrying out CPR

Table 6. Relationship between facilities and nurses' knowledge in carrying out CPR

Variable	n	Correlation Coefficient	Sig. (2-tailed)
Facilities	52	.000	-.738
CPR Knowledge	52	.000	-.738

Based on table 6, it can be seen that based on the Spearman's rho test, it was found that the p-value was 0.000, which means there was a relationship between facilities and nurses' knowledge in carrying out CPR.

DISCUSSION

The results of the research that has been carried out show that:

a. Description of nurses' knowledge about CPR

The overall knowledge that nurses have in carrying out CPR is in the sufficient category, namely 26 people (50.0%). This means that it shows that nurses have enough understanding about CPR, even though they are not yet in the good category, which is indicated by some nurses having attended training and some nurses already understanding the concept of CPR. This research is in line with that carried out by Mutiarasari et al, (2018), among nurses at the Baluase community health center which showed that as many as 29 people (76.6%) out of 39 people had sufficient knowledge.

Knowledge can be obtained through various scientific activities related to human intellect. Understanding CPR is considered a crucial skill that nurses must have. Fundamentally, knowledge about CPR has been integrated into the nursing higher education curriculum in Indonesia (Kementerian Kesehatan RI, 2018).

Knowledge is a crucial aspect in ensuring nurses' competence in managing patients as a whole. A thorough understanding of CPR is essential to ensure that nurses can carry out the necessary life-saving measures in emergency situations. Considering that nurses are always next to the patient, having knowledge about CPR is vital so that they can provide a quick response in any emergency situation (Isa, Rahmad, Mohd & Fauzi, 2022).

Knowledge is very important to know, because by having knowledge and knowing something we can carry out and use it as a guide for carrying out RJP actions. Researchers assume that CPR is an action that must be mastered by nurses who work in intensive care because the patients being treated are patients in emergency and critical conditions and at any time there are patients who experience cardiac arrest and respiratory arrest can occur. So, as a nurse, you must be ready to provide CPR at any time.

b. The relationship between age and nurses' knowledge in carrying out CPR

Based on table 3, it can be seen that based on the Spearman's rho test, it was found that the p-value was 0.828, which means there was no relationship between age and nurses' knowledge in carrying out CPR. The research results also showed that the majority of respondents were in the 26-35 year age category, namely 38 respondents (73.1%). Research conducted by Millizia et al., (2020) Regarding the description of the level of knowledge of medical personnel and non-medical personnel regarding cardiopulmonary resuscitation in emergencies at Cut Meutia Regional Hospital, North Aceh, the results showed that the majority of respondents were in the 26-35 year range with a total of 65 people (63.7%).

The research results are also in line with research conducted by Mekonnen & Muhye (2020), it was found that among the variables included in the multiple logistic regression analysis, namely age, gender, place of residence, training regarding basic life support, knowledge about basic life support, as well as interactions with individuals who require basic life support, none of them was significantly related to the knowledge score. According to researchers, age does not significantly influence a person's knowledge about RJP, because this knowledge can now be accessed anywhere, especially electronically.

c. The relationship between education and nurses' knowledge in carrying out CPR

Based on table 4, it can be seen that based on the Spearman's rho test, it was found that the p-value was 0.000, which means there was a relationship between education and nurses' knowledge in carrying out CPR.

This research is in line with studies conducted by (Zamziri, & Maktum, 2023) most of which involve individuals with a Diploma Nursing educational background in their research. Education functions as an indicator that reflects an individual's ability to complete a task. Research conducted by Dzulhijjah, Marlina & Nurhidayah, (2021) showed that the majority of nurses had a Diploma in Nursing education, with a total of 23 people (69.7%). There is a very close relationship between the accuracy of RJP actions and preparedness. When nurses face health problems in patients, they are expected to be able to think critically and make the right decisions.

According to researchers, nurses' knowledge of RJP is greatly influenced by their level of education, the higher the education a nurse has, the more quality the nurse's skills will be when carrying out CPR which will also influence the success of carrying out the RJP action.

d. The relationship between experience and nurses' knowledge about CPR

Based on table 5, it can be seen that based on the Spearman's rho test, it was found that the p-value was 0.039, which means there is a relationship between experience and nurses' knowledge in carrying out cardiopulmonary resuscitation (CPR).

This research is based on the findings expressed by Sesrianty (2018), which showed that nurses who have worked for a short period of time tend to have more limited experience compared to nurses who have worked for a longer period of time. Longer work experience provides an opportunity for nurses to develop better skills.

Nursing staff who provide assistance to patients experiencing cardiac arrest have varying educational backgrounds, work experience and employment status, which can influence the effectiveness and accuracy in carrying out CPR. Nurses are also required to have the understanding and ability to carry out CPR, which is obtained through training and practical experience in the field (Aty & Blasius, 2021).

According to researchers, the experience that nurses have also really depends on their experience in carrying out CPR, the more often nurses do CPR, the more confidence the nurses have in being able to do it again in an emergency situation.

e. Relationship between facilities and nurses' knowledge in carrying out CPR

Based on table 6, it can be seen that based on the Spearman's rho test, it was found that the p-value was 0.000, which means there is a relationship between facilities and nurses' knowledge in carrying out CPR.

Nurse training in cardiopulmonary resuscitation has an important role in improving patient survival after experiencing cardiac arrest in hospital (Novaes, 2019). Moon & Hyun (2019) in his research, it was stated that implementing training programs scan improve the ability to implement good practices.

Basic life support training is an initiative that aims to increase the knowledge and skills of nurses in providing care, especially to victims who require basic life support (Rank, 2021). In addition, providing the latest information and skills training related to CPR practice for nurses is a very important aspect in professional development. CPR training has the potential to increase the knowledge and skills needed to provide basic life support support. The existence of theoretical training, direct practice in the field, as well as regular repetition or updating of training topics is very crucial for increasing nurses' knowledge and skills (Riatmoko et al., 2023).

According to researchers, the facilities obtained by nurses from their participation in the skills training they take part in, nurses are also required to upgrade the knowledge they already have periodically, so that it is supported when implementing the CPR measures that will be carried out.

CONCLUSION

The results of this research are that there was no relationship between age and nurses' knowledge in carrying out CPR (p-value 0.828), there was a relationship between education and nurses' knowledge in carrying out CPR (p-value 0.000), there was a relationship between experience and nurses' knowledge in carrying out CPR (p-value 0.039), there was a relationship between facilities and nurses' knowledge in carrying out CPR (p-value 0.000).

From the research results, it is hoped that hospitals will always upgrade the skills and knowledge about CPR for nurses who work in intensive care units according to the latest AHA guidelines. It is hoped that future researchers will be able to explore nurses' experiences in carrying out CPR on nurses who work in the intensive care unit. These findings emphasize the need for strengthening CPR education and training in hospitals to ensure nurses can provide prompt and effective responses in emergency situations. Enhancing CPR knowledge and skills can significantly improve patient safety and cardiovascular outcomes in critical care units.

It is recommended that further researchers conduct direct observations when nurses are performing CPR, the skills used support the knowledge possessed by nurses.

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