Original Research Paper

Factors associated with nurses' ability to perform cardiopulmonary resuscitation

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Abstract

Cardiac arrest is a major cause of death in the world, with an estimated 17.9 million people dying each year in 2019. Several factors can influence the ability of helpers to perform cardiopulmonary resuscitation. This study aims to determine the factors associated with the ability of nurses to carry out cardiopulmonary resuscitation at Labuang Baji Hospital Makassar. This study used a descriptive-analytic method with a cross-sectional approach, with a total sample of 31 people in the ICU and Baji Ateka Care room at Labuang Baji Hospital Makassar. The results of this study indicate that there is a relationship between the level of education (p-value = 0.004), tenure (p-value = 0.001), training attended (p-value = 0.017), knowledge (p-value = 0.004) with the ability of nurses to carry out Cardiopulmonary Resuscitation (CPR). The study concludes that there is a relationship between the level of education, length of service, training, and knowledge with the ability of nurses to carry out CPR in the ICU and Baji Ateka Care room at Labuang Baji Hospital, Makassar, it is hoped that the results of this study can improve the skills of nurses in carrying out CPR correctly so that patients with a cardiac arrest can be helped properly.

Keywords: CPR; education level; tenure; training

1. Introduction

Cardiac arrest is a major cause of death in the world. Data from 2019 estimated that 17.9 million people die each year, 85% of all cardiovascular disease deaths are caused by heart attack and stroke, and more than 75% experience cardiac arrest. Most cardiovascular disease deaths are triggered by risk factors such as high blood pressure, high cholesterol, obesity, or diabetes. While most can be prevented or controlled through eating a healthy diet, regular exercise, and avoiding tobacco, monitoring blood pressure, cholesterol, and blood sugar levels is also very important (*World Health Organization*, 2021).

Efforts to reduce mortality due to cardiac arrest require proper management, one of which is by providing first aid measures in the form of Cardiopulmonary Resuscitation (CPR) (Irfani, 2019). The *American Heart Association (AHA)* states that a heart attack can occur anytime and anywhere. Cardiac arrest can be fatal, but cardiac arrest can beat again if CPR and defibrillation can be performed quickly (*American Heart Association*, 2020).

The ability of health workers to perform perfect Cardiopulmonary Resuscitation (CPR) is difficult to achieve given the emergencies that accompany CPR. Resuscitation in hospitals often does not achieve the desired quality. For example, chest compressions are not deep enough, patients are not placed on a standardized mat, the compression rate is too slow, and ventilation is too high (Sangamesh,2017 in Sugiyarto & Sulistyowati, 2020). Therefore, good mastery and skills are needed by nurses in performing CPR to maintain heart and lung function through artificial ventilation and

circulation. This will provide a better prognosis to reduce morbidity and mortality rates (Rajeswaran et al., 2018).

The results of research that have been conducted show that several factors influence nurses' ability to perform CPR. The research results by Nasution (2021) show a relationship between knowledge, experience, SOPs, facilities, and training with nurses' readiness to carry out CPR in the emergency room and ICCU of Meuraxa Hospital, Banda Aceh City. The results of Herlindawati's research (2017) state that there is a relationship between the age, education, and gender of nurses and understanding the application of CPR. Meanwhile, the results of research conducted by Sesrianty (2018) state that there is a relationship between education level and tenure with BHD actions in the emergency room and ICU. The level of success in performing CPR is strongly supported by the ability of nurses who are influenced by various factors, so it needs to be a big concern of health workers, especially nurses (Marbun et al., 2022).

Based on the above background, the researcher is interested in examining the Factors Associated with Nurses' Ability in Carrying out Cardiopulmonary Resuscitation at Labuang Baji Hospital Makassar ". The purpose of this study is to find out things related to the ability of nurses to perform. CPR, so the front guard, especially in dealing with a critical illness (cardiac arrest), must master and understand CPR because time is the main point that is held for a person's life.

2. Research Methods

This research is a descriptive correlation study using a cross-sectional study approach. The population in this study were all nurses who served in the ICU and Baji Ateka Care rooms at Labuang Baji Hospital Makassar, totaling 33 people. This research was conducted on June 30 to July 31, 2022, at Labuang Baji Hospital Makassar, using a sampling technique, namely a total sampling of 31 people who met the criteria, namely willing to be respondents and not on leave. The variables in this study are the level of education, tenure, training, and knowledge measured using a questionnaire assessed using a Guttman scale, as well as the variable ability of nurses in performing CPR measured by conducting interviews using a CPR action checklist sheet consisting of 16 steps taken from the Standard Operating Procedure (SOP) at Labuang Baji Hospital Makassar. The questionnaire was tested for validity and reliability before being used in the study, then the results of the study were analyzed using SPSS 26 with the Fisher exact test, where the hypothesis is accepted if the p-value $< α$ (0.05).

3. Results and Discussion

The relationship between education, length of service, training attended, and nurse knowledge with the ability of nurses to perform Cardiopulmonary Resuscitation (CPR) was analyzed with the *Fisher exact test with a* significance level of $p < 0.05$. Presented in the form of a table below.

Table 1. Relationship between education, length of service, training attended, and nurse knowledge with the ability of nurses to perform Cardiopulmonary Resuscitation (CPR) in the ICU and Baji Ateka Care, Room, Labuang Baji Hospital Makassar

No.	Variables	Nurse's ability to perform CPR				Total		P Value
		Simply		Good				
		n	%	n	%	N	%	
1.	Nurse Education:							
	Low	8	25.8	6	19.4	14	45.2	0.004
	High	1	3.2	16	51.6	17	54.8	
2.	Nurse tenure:							

No.	Variables	Nurse's ability to perform CPR				Total		P Value
		Simply		Good				
		n	%	n	%	N	%	
	New	7	22.6	3	9.7	10	32.3	0.001
	Old	2	6.5	19	61.3	21	67.7	
3.	Nurse Training:							
	Not actively following	4	12.9	1	3.2	5	16.1	0.017
	Active	5	16.1	21	67.7	26	83.9	
4.	Nurse knowledge:							
	Less	4	12.9	0	0	4	12.9	0.004
	Simply	5	16.1	22	71.0	27	87.1	

Table 1 shows that the independent variables, namely nurse education, nurse tenure, nurse training, and nurse knowledge, are related to the dependent variable, namely the ability of nurses to perform CPR, with a P value <0.05.

3.1. Relationship between Education Level and Nurses' Ability to carry out Cardiopulmonary Resuscitation in the ICU Room and Baji Ateka Care room at Labuang Baji Hospital Makassar

The results of the *Fisher exact test* obtained a p-value = 0.004 (p <α). It can be concluded that there is a relationship between the level of education and the ability of nurses to carry out Cardiopulmonary Resuscitation in the ICU room and Baji Ateka care room at Labuang Baji Hospital Makassar. Based on the results of the above research from 31 people who became respondents, it was explained that of the 14 people who had a low education level category with the ability of nurses to carry out CPR moderately, as many as 8 (25.8%), for the category of low education level with the ability of nurses to carry out CPR well as many as 6 (19.4%). Meanwhile, of the 17 respondents with a category of high education level with sufficient CPR skills, as many as 1 (3.2%), and for the category of high education level with. The ability of nurses to carry out good CPR is as many as 16 (51.6%). Research conducted by (Mildawati, 2017) says that a person's education is needed in carrying out an action. Nursing education must be developed in higher education so that it can produce graduates who have professional attitudes, knowledge, and skills in order to carry out their roles and functions as professional nurses (Novi, 2018). The level of education will always be directly proportional to a person's knowledge. The higher a nurse's education level, the better his knowledge of CPR (Millizia et al., 2020). Education is often referred to. As a result, however, the definition of education is the most appropriate medium for developing potential and shaping one's character in the form of skills and insights (Hasanah, 2019).

3.2. Relationship between Working Period and Nurses' Ability to Carry out Cardiopulmonary Resuscitation in the ICU and Baji Ateka Treatment at Labuang Baji Hospital Makassar

The results obtained from 31 respondents showed a relationship between tenure and nurses' ability to perform CPR, with a p-value = 0.001 (p < α). The study showed that ten respondents with a new tenure category, there were 7 (22.6%) respondents with the ability of nurses to perform CPR moderately, and for the new tenure category with the ability of nurses to perform CPR well, as many as three people (9.7%), while 21 respondents with a long tenure category with the ability of nurses to perform CPR moderately as many as two people (6.5%) and the old tenure category with the ability of nurses to perform CPR well as many as 19 people (61.3%). This is supported by the results of previous research, which suggests that one factor that influences the success rate of basic life support and resuscitation is that nurses who work long enough have a higher quality of work (Sulastri et al., 2020).

This is because nurses have performed repeated actions. Nurses with high working hours are also more experienced, so they will foster self-readiness when facing the same problem.

3.3. The relationship between training and nurses' ability to carry out Cardiopulmonary Resuscitation

The study showed that of the 31 respondents, it was explained that of the five respondents whose training category was inactive / following as many as 4 (12.9%) respondents with the ability of nurses to carry out CPR moderately and one person (3.2%) with an inactive/following training category with the ability of nurses to carry out CPR well, while Respondents with active training categories with the ability of nurses to carry out CPR moderately as many as five people (16.1%) and respondents with active training categories with the ability to carry out CPR well as many as 21 people (67.7%). The ability to perform quality CPR must go through training and *update the* latest information related to CPR. According to Kartika (2021), training is an effort to improve certain skills by conducting a teaching and learning process to carry out a skill or *life skill* in a person so that he can work according to his *life skills*.

3.4. The relationship between knowledge and nurses' ability to carry out Cardiopulmonary Resuscitation (CPR)

The results of the *Fisher exact test* obtained a p-value = 0.004 (p <α). It can be concluded that there is a relationship between knowledge and the ability of nurses to carry out CPR in the ICU and Baji Ateka Care room at Labuang Baji Hospital Makassar. Based on the above research from 31 people who became respondents, it was explained that those who had a category of lack of knowledge with the ability of nurses to carry out CPR were 4 (12.9%), while for the category of sufficient knowledge with the ability to carry out CPR was five people (16.1%) and those who had good knowledge with the ability to perform CPR well were 22 people (71.0%). Low so that it will reduce the quality of work; this is in line with research conducted by Herlindawati (2017) that the level of understanding of people with higher education will be different from that of people with low education. This is all evidenced in people with a high level of understanding of CPR; during an emergency, the person will immediately take action without waiting or neglecting patients who are breathing, not moving, and not responding. Regular training during work is one of the important factors in human resource development. Training will not only increase knowledge but also improve work skills, thereby increasing work productivity.

4. Conclusion

The conclusion of the research that has been conducted regarding the factors associated with the ability of nurses in carrying out Cardiopulmonary Resuscitation (CPR) at Labuang Baji Hospital Makassar from June 30-July 31, 2022, can be concluded that there is a significant relationship between the level of education, tenure, training, and knowledge with the ability of nurses in carrying out Cardiopulmonary Resuscitation (CPR) with a value of p <0.05. There are many factors associated with the ability of nurses to carry out cardiopulmonary resuscitation; it is hoped that further research can further examine this with a wider scope of research and more respondents, for example, a comparison of the success of CPR seen from the level of education, tenure, training and knowledge of nurses.

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