



EDUCATION ON CARDIOPULMONARY RESUSCITATION MANAGEMENT ON THE KNOWLEDGE LEVEL OF RED CROSS YOUTH

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Article info	ABSTRACT
<p>Corresponding Author:</p> <p>Ika Ainur Rofi'ah ikaainur.ns@gmail.com Faculty of Health Science, Bina Sehat PPNI University, Mojokerto City, East Java, Indonesia</p>	<p>Cardiopulmonary Resuscitation (CPR) is a method for restoring the function of the respiratory and circulatory systems in patients experiencing sudden cardiac arrest or sudden cessation of breathing. CPR skills can be taught to anyone, including the general public, as cardiac arrest incidents can occur anytime and anywhere. The community service activities were carried out with a program providing education on CPR management on the knowledge level of students at Mojokerto City State 2 High School. Education was provided using a 2-method approach, namely the lecture method with material on the definition of CPR, indications for CPR, and CPR actions, and the CPR demonstration method using a mannequin. The sample for this community service activity consisted of 27 respondents, who were taken using total sampling techniques. The design used a pre-experimental and a one-group design pre-test-post-test approach. The instrument used a CPR knowledge questionnaire which was measured before and after education. The data analysis was the Wilcoxon test. The results of this community services activity showed that there was a significant difference before and after being given CPR education, knowledge in the CPR definition domain (p-value = 0.015; $\alpha < 0.05$), knowledge in the CPR indication domain (p-value = 0.000; $\alpha < 0.05$); knowledge in the CPR Action domain (p-value = 0.015; $\alpha < 0.05$). Education on cardiopulmonary resuscitation is essential, especially for the general public, as cardiac arrest can also occur outside of a hospital setting, thereby allowing individuals to assist.</p>
<p>This article distributed under the terms of the Creative Commons Attribution-Share Alike 4.0 International License (https://creativecommons.org/licenses/by-sa/4.0/)</p>	<p>Keywords: Education, Knowledge, Cardio Pulmonary Resuscitation</p>

INTRODUCTION

Emergencies can occur anywhere, at any time, and to anyone. Cardiac arrest is a life-threatening emergency condition and can result in death if not treated immediately. Blood flow will stop when cardiac arrest occurs so that oxygen cannot flow throughout the body.

This can cause brain damage within 4-6 minutes and become irreversible within 8-10 minutes (Ngurah & Putra, 2019). Death due to cardiac arrest can be prevented by carrying out basic life support through the chain of survival, both in-hospital chain of survival and out-hospital chain of survival, one of the components of which is CPR. Several factors are effective in the success of resuscitation such as gender, age, witness, non-witness, initiating rhythm, defibrillation in less than two minutes, good neurological condition without a disability before cardiac arrest, hospital ward where the cardiac arrest occurred, availability of monitoring, response timely response by the resuscitation team, duration of resuscitation, change of resuscitation, no need for mechanical ventilation after resuscitation, history of recent surgery, trauma, cardiac causes, internal pacemaker, hypotension, ACE inhibitor treatment, antiarrhythmic drugs at the time of cardiac arrest, clinical diagnosis sepsis, kidney failure, and cancer (Goodarzi et al., 2022; Rofi'ah & So'emah, 2020).

CPR is a method of restoring the function of the respiratory and circulatory systems in patients who have experienced respiratory arrest or sudden cardiac arrest. This action not only occurs in the operating room but can also occur outside the room if an incident occurs when the patient or victim maintains a life-threatening condition. CPR can provide oxygen absorption and blood flow to organs that are very sensitive to lack of oxygen, such as the brain and heart. Resulting in the cessation of oxygen in the circulation of the body's organs and resulting in disruption of circulation in the brain and heart. At the time of cardiac arrest, oxygen levels in the blood are still low, the heart is still able to pump to important organs, especially the brain. When respiratory assistance is provided in this situation, the oxygen needed in the heart will be provided and cardiac arrest can be prevented (Ganthikumar, 2016). According to Ngurah & Putra (2019), CPR skills can be taught to anyone, that is, all people can be taught about CPR, especially workers who are involved in providing first aid. In reality, performing CPR is not easy for ordinary people and the public.

In cardiac arrest situations, CPR is part of a community emergency response that must be based on four main steps. First, rescuers must realize that the victim needs help. It can be done by recognizing signs of cardiac arrest or recognizing that the victim needs emergency medical services (EMS) assistance. Second, rescuers should immediately call the local EMS access number. Third, the call will be received by a dispatcher who will process the appropriate EMS response by identifying that the victim is experiencing cardiac arrest. The operator provides chest compression instructions to guide the rescuer in performing CPR. Fourth, the rescuer begins to press the victim's chest until help arrives. If CPR is not carried out correctly it will result in the risk of death (Fatmawati et al., 2020; Rofi'ah & Widyastuti, 2024). The main focus of this community service program is increasing the knowledge and skills of students who are members of the Red Cross Youth of Mojokerto City State 2 High School.

METHOD

Based on the analysis of existing problems, community service activities were carried out with a program providing education on CPR management on the knowledge level of students at Mojokerto City State 2 High School. Education was provided using a 2-method approach, namely the lecture method with material on the definition of CPR, indications for CPR, and CPR actions, and the CPR demonstration method using a mannequin. The sample for this community service activity consisted of 27 respondents, namely students from Mojokerto City State 2 High School City who were members of Red Cross Youth and who were taken using total sampling techniques. The design used a pre-experimental and a one-group design pre-test-post-test approach. The instrument used a CPR knowledge questionnaire which was measured before and after education. The data analysis was the Wilcoxon test.

RESULTS

Table 1 Respondent's Characteristic

Variable	Mean	Median	SD	Min-Maks	95% CI <i>Lower-Upper</i>
Age	16.41	16.00	0.79	15-19	16.09-16.72
Variable				n	%
Gender	Man			5	18.5
	Women			22	81.5

* Normally Distributed Data

Results based on Table 1 showed that the median age of respondents is 16.00 years with the youngest being 15 years and the oldest being 19 years. The majority of respondents' gender prevalence was female, 22 respondents (81.5%).

Table 2 Frequency Distribution Based on CPR Knowledge Before Education on The Red Cross Youth of Mojokerto City State 2 High School in 2023

Knowledge Before Education	n	Percentage (%)
CPR Definition	Poor	4 14.8
	Moderate	7 25.9
	Good	16 59.3
CPR Indication	Poor	26 96.3
	Moderate	0 0.0
	Good Kurang	1 3.7
CPR Implementation	Poor	20 74.1
	Moderate	5 18.5
	Good	2 7.4

The results based on Table 2 showed that most of the knowledge before education was carried out in the CPR definition domain was mostly good knowledge as many as 16 respondents (59.3%), in the CPR indication domain most of the knowledge was poor as many as 26 respondents (96.3%), and most of the CPR implementation had poor knowledge as many as 20 respondents (74.1%).

Table 3 Frequency Distribution Based on CPR Knowledge After Education on The Red Cross Youth of Mojokerto City State 2 High School in 2023

Knowledge After Education		n	Percentage (%)
CPR Definition	Poor	0	0.0
	Moderate	3	11.1
	Good	24	70.4
CPR Indication	Poor	8	29.6
	Moderate	0	0.0
	Good	19	70.4
CPR Implementation	Poor	0	0.0
	Moderate	8	29.6
	Good	19	70.4

The results based on Table 3 showed that most of the knowledge after education in the CPR definition domain was mostly good knowledge of as many as 24 respondents (70.4%), the CPR indication domain was mostly good knowledge of as many as 19 respondents (70.4%), and the majority of CPR implementation was good knowledge as many as 19 respondents (70.4%).

Table 4 Differences in RJP Knowledge Before and After Being Provided with Education on The Red Cross Youth of Mojokerto City State 2 High School in 2023

Knowledge	z	p-value
CPR Definition	-2.44	0.015*
CPR Indication	-4.43	0.000*
CPR Implementation	-4.51	0.000*

* Significant at $\alpha < 0.05$

The results based on Table 4 showed that there were significant differences before and after being given CPR education, knowledge in the CPR definition domain (p-value = 0.015; $\alpha < 0.05$), knowledge in the CPR indication domain (p-value = 0.000; $\alpha < 0.05$); knowledge in the RJP implementation domain (p-value = 0.015; $\alpha < 0.05$) on The Red Cross Youth of Mojokerto City State 2 High School in 2023.

DISCUSSION

Knowledge of CPR Before Intervention

The results of the study showed that the majority of CPR indication domains lacked knowledge, as many as 26 respondents (96.3%), and the majority of CPR implementation lacked knowledge, as many as 20 respondents (74.1%). This is in line with research conducted by Suharsono & Fikriana (2016), the majority of respondents' prevalence of knowledge before being given education in the CPR indication domain was 79.2% and the CPR implementation domain was 77.1%. Knowledge is the result of human perception, namely the ability to perceive objects through the senses such as the eyes, nose, and ears. To measure knowledge, it can be done by interviewing or filling out a questionnaire that

asks about the content of the material you want to measure from the research subject (Silitonga & Nuryeti, 2021).

The students' poor knowledge was caused by 20 respondents (74.1%) not knowing that heart massage could be carried out by other than medical personnel, 11 respondents (40.7%) did not know that heart massage should be carried out directly without needing to ensure the environment around the victim. and rescuers are safe because it is an emergency, there were 10 respondents (37.0%) who did not know that when they saw someone in an unconscious condition, they could do a heart massage immediately without asking for help.

Research conducted by Fitri et al., (2023), showed that 37.5% of respondents did not know about the RJP method. Knowledge about CPR is also influenced by previous experience with basic life support (BHD) training. The research results showed that 100% of respondents had never attended RJP training. This is in line with research conducted by Fitri et al., (2023), showing that 100% of respondents had never attended BHD training with the reason being that they did not know 54.1%. A person's knowledge will increase in line with the knowledge taught and the person's experience which is carried out repeatedly.

Knowledge of CPR After Intervention

The research results showed that the majority of respondents' knowledge level was good in all domains, namely the definition of RJP at 70.4%, indications for RJP at 70.4%, and RJP actions at 70.4%. This is in line with research by Khademian et al., (2020), showing that the average knowledge of respondents in the intervention group before the education was provided was 2.78 (± 1.74) and the average knowledge after the education was provided was 6.78 (± 1.74). Other research also shows that most of the level of knowledge about RJP is good knowledge at 82.9% (Ramadhiani, 2023).

There was an increase in respondents' knowledge as evidenced by the results of the study showing that all respondents (100.0%) knew that CPR is an emergency measure to save cardiac arrest victims. Most respondents, 88.9%, knew that cardiac arrest was an emergency condition and could cause death to the victim within minutes. All respondents (100.0%) knew that cardiopulmonary resuscitation was an action consisting of heart massage, clearing the airway, and providing breathing assistance. All respondents (100.0%) knew that heart massage should not only be carried out by medical personnel. All respondents (100.0%), knew that heart massage was needed by cardiac arrest victims because it could restore normal heart function. The majority of respondents, 92.6%, knew that during cardiac massage procedures, you must ensure that the environment around the victim and rescuers was safe because it is an emergency.

Measuring knowledge can be done by interviewing or filling out a questionnaire that asks about the content of the material you want to measure from the research subject. Education refers to the guidance given by one person to another in developing one's self. Education is needed to obtain information about things such as health that support a better quality of life. A person's knowledge increases in line with the education provided. Teaching RJP using a combination of 3 methods, namely lecture, demonstration (using a mannequin),

and re-demonstration shows an increase in knowledge about RJP (Darsini et al., 2019; Khademian et al., 2020).

Differences in Knowledge about CPR Before and After Intervention

The research results showed that there was a significant difference in knowledge before and after being given CPR education in the CPR definition domain (p-value = 0.015; $\alpha < 0.05$), knowledge in the CPR indication domain (p-value = 0.000; $\alpha < 0.05$); knowledge in the RJP implementation domain (p-value = 0.015; $\alpha < 0.05$). This is in line with research by Suharsono & Fikriana (2016), namely that there was a significant difference in knowledge before and after being given CPR education in the CPR indication domain (p-value = 0.005; $\alpha < 0.05$) and knowledge in the CPR implementation domain (p-value = 0.001; $\alpha < 0.05$). Other research also shows that there is a difference in the average knowledge about RJP before and after being given education about RJP (p-value < 0.001 ; $\alpha < 0.05$). Someone who has a good level of knowledge can gain from clear, structured, and comprehensive teaching about cardiopulmonary resuscitation in understanding the concepts and procedures better. Education regarding CPR provides a meaningful experience for respondents so that understanding becomes deeper. Awareness of the importance of cardiopulmonary resuscitation as a crucial first aid skill in emergencies can be increased through effective education. The important role of educators or facilitators who can convey information clearly and motivate someone (layperson or non-health person) also influences increasing their level of knowledge (Khademian et al., 2020).

Changes in a person's level of knowledge are influenced by the delivery of information during education. Interactive delivery methods such as live demonstrations, simulations, or videos help someone understand the material better. Proper education can improve understanding and provide correct knowledge to someone. The cardiopulmonary resuscitation education process also creates better awareness about the importance of CPR in saving other people's lives. This awareness encourages lay people, especially PMR students, to be more proactive in learning and remembering the material taught. Apart from that, sharing experiences such as listening and trying to do what is taught (re-demonstration) about CPR, has a deep emotional impact and motivates someone to master CPR knowledge better. Increasing the level of knowledge about CPR can make students better prepared to deal with emergencies and has the potential to have a positive impact on the safety and health of society as a whole (Borovnik Lesjak et al., 2022; Oteir et al., 2019).

CONCLUSION

Education on cardiopulmonary resuscitation is essential, especially for the general public, as cardiac arrest can also occur outside of a hospital setting, thereby allowing individuals to assist.

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