



Effectiveness of Health Education about CPR Using Demonstration and Presentation Methods on The Knowledge Level of Senior High School Students

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Abstract. Cardiac arrest is an emergency that occurs suddenly, anywhere and anytime. CPR is the first action to be performed when a person has a cardiac arrest. This research aims to understand the difference between demonstration and presentation methods. This research is classified as quantitative research with a pre experimental design method using a nonequivalent control group design with a sample of 60 respondents, each group of 30 selected using the quota sampling technique. The results of the Wilcoxon test before and after using either the demonstration or presentation method obtained the Sig. (2-tailed) / P Value 0.000, which is less than 0.05. The researcher concluded that there was a significant difference between before and after giving health education, either through demonstrations or presentations. As for the non-parametric statistical test results with Mann Whitney, the value of Sig. (2-tailed) / P Value is 0.297, which is greater than 0.05. So, it can be concluded that H_0 is accepted and H_a is rejected, indicating no significant comparison between the demonstration and presentation methods. However, the two methods can be applied in the teaching and learning process to increase one's level of knowledge. Researchers hope this research can provide benefits regarding first aid to someone with a cardiac arrest using CPR techniques.

Keywords: CPR, Educational Method, Knowledge Level

1 Introduction

Cardiac arrest is an emergency that can occur suddenly anywhere and at any time, and even anyone has the potential to experience cardiac arrest [3]. Cardiopulmonary Resuscitation (CPR) is the first action to be performed when finding a person having a cardiac arrest by collaborating between chest compressions and breathing assistance [16]. When someone has a cardiac arrest, they do not get help right away, or it is too late to do CPR, it will cause serious problems such as brain damage because oxygen is not supplied, and even death can occur [29]. Based on information from the World Health Organization, cardiac arrest is the main cause of death; in 2019, there were 9 million cases [9]. In 2021 the World Health Organization (WHO), again stated that as many as

17.8 million people died due to cardiac arrest, in 2030 it is expected to increase to 23.3 million cases [10]. Meanwhile, Indonesia does not yet have specific data on people with cardiac arrest. However, in 2015, 10/10,000 residents or around 255,580 cases were found, with an increase of 300,000-350,000 annually and in 2022, it is estimated to reach around 2.3 million. Cases of people dying from cardiac arrest [27]. In 2030, it is estimated that there will continue to be an increase of 23.3 million cases of cardiac arrest caused by blood vessels and coronary heart disease [15]. In 2018, 35,500 cases of cardiac arrest or 0.09% of the total population, were found [13]. In 2019, the Ministry of Health of the Republic of Indonesia stated that East Java had a prevalence of heart disease of 1.3% or 375,127 sufferers; based on this data, East Java province has the highest number [24]. Apart from being caused by diseases such as blood vessels and CHD, cardiac arrest can also be caused by traffic accidents. If you do not get basic life support immediately, you will experience death [26]. One example is in Banyuwangi district, cardiac arrest cases are increasing along with increasing accident cases; in 2016, there were 1,152 cases, then in 2017 it increased to 4,822[19].

Cardiac arrest conditions are divided into two types, namely, shockable and unshockable (cardiac arrest). Cardiac arrest is caused by heart and blood vessel disease [20]. It is said to be a cardiac arrest if the aortic pulses, such as the carotid, femoral and radial pulses, are not palpable and there is cyanosis. Apart from these characteristics, cardiac arrest is also characterized by gasping (stopping breathing), and the pupils are not dilated because the patient is unconscious [23]. Oxygen sent to the brain is determined by cardiac output. If circulation stops for a few seconds, then the oxygen sent to the brain will also stop, so the brain experiences hypoxia. If this condition is not treated quickly, it will experience tissue damage and organ damage [25].

In 2015, one of the associations in America, namely the AHA (American Heart Association), recommended using the principle of High-Quality CPR with a "minimal interruption" component. This recommendation aims to maximize chest compressions and minimize interruptions so that the return of spontaneous circulation (ROSC) can occur more quickly [28]. Adolescents who are in a good growth and development phase have strength, physiology, high motivation, and easily understand a lesson. They hope to apply first aid measures if they find cardiac arrest victims [4]. Therefore, the explanation above is the background for researchers to find out which comparison is more effective between the demonstration method and the presentation method on the level of knowledge about CPR in high school students or lay people.

2 Method

This research is classified as quantitative research with a pre experimental design method using a nonequivalent control group design. The population are students of Nahdatul Ulama Senior High School in Kalibaru Banyuwangi. The sample used in this research was 60 respondents, with each group of 30 respondents selected using the quota sampling technique. This research tool or instrument uses a multiple choice questionnaire with a total of 25. Bivariate data analysis uses the Wilcoxon test to determine

the comparison before and after treatment in each group while determining the difference between the demonstration group and the presentation group using the Mann test.-Whitney.

This research has received ethical approval based on letter No: 122/03/KEPK-STIKESBWI/VIII/2023. The researcher then provided a complete explanation of the aims and benefits of this research. The confidentiality of participants' identities is maintained by using the participants' initials in research publications.

3 Results

The results of this research consist of:

3.1 Demonstration Method

Based on table 1. shows that all participants, namely 30 respondents (100%), had a low level of knowledge before receiving health education. After being given health education, it was found that participants who had less knowledge were 3 participants (10.0%), quite several 17 participants (56.7%) and those who had a good level of knowledge were 10 participants (33.3%).

Table 1. Frequency Distribution of Knowledge Levels About CPR in the Demonstration Method Group

Knowledge level	Pre Test		Post Test		
	Frequency	Valid Percent	Knowledge level	Frequency	Valid Percent
Not enough	30	100,0	Not enough	3	10,0
Enough	0	00,0	Enough	17	56,7
Good	0	00,0	Good	10	33,3
Total	30	100,0	Total	30	100,0

Source: 2023 Research.

Table 2. Wilcoxon Test of the Effectiveness of Health Education about CPR Using the Demonstration Method on Knowledge Level

Pre Test-Post Test	N	Sig. (2 tailed)
Demonstration	Negative Ranks	0 ^a
	Positive Ranks	30 ^b
	Ties	0 ^c
	Total	30

Source: 2023 Research.

According to table 2. it was found that the value of Sig. (2-tailed) / P Value with the Wilcoxon test in this study is 0.000, less than 0.05.

3.2 Presentation Method

Table 3. shows that before being given health education about CPR, all participants, as many as 30 respondents (100%), had a low level of knowledge. However, after being given health education, it was found that participants with a good level of knowledge rose to 8 participants (26.7%), and the level of sufficient knowledge was 13 participants (43.3%). Those who had less knowledge were 9 participants (30.0%).

Table 3. Frequency Distribution of CPR Knowledge Levels in the Presentation Method Group

Knowledge level	Pre Test		Knowledge level	Post Test	
	Frequency	Valid Per-cent		Frequency	Valid Per-cent
Not enough	30	100,0	Not enough	9	30,0
Enough	0	00,0	Enough	13	43,3
Good	0	00,0	Good	8	26,7
Total	30	100,0	Total	30	100,0

Source: 2023 Research.

Table 4. Wilcoxon Test of Effectiveness of Health Education about CPR with Presentation Method on Knowledge Level

Pre Test-Post Test	N	Sig, (2 tailed)
Presentation	Negative Ranks	0 ^a
	Positive Ranks	30 ^b
	Ties	0 ^c
	Total	30

Source: 2023 Research.

Based on table 4. above, the results show that the value of Sig. (2-tailed) / P Value with the Wilcoxon test in this study is 0.000 for the presentation method, which is less than 0.05.

3.3 Demonstration and Presentation Methods

According to table 5. it is known that of the 30 participants using the demonstration method, three respondents had less knowledge, 17 respondents had sufficient knowledge, and 10 had good knowledge. As for the participants using the presentation method, nine respondents had less knowledge, 13 had sufficient knowledge, and eight had good knowledge.

Table 5. The Effectiveness of Health Education About CPR with Demonstration and Presentation Methods Against Knowledge Levels

Knowledge level		Method		Total
		Demonstration	Presentation	
Not Enough		3	9	12
	Enough	17	13	

Good	10	8	18
Total	30	30	60

Source: 2023 Research.

3.4 Hypothesis Test

Based on table 6. the results show that the Sig. (2-tailed) / P Value with the Mann Whitney test in this study was 0.297 less than 0.05 ($0.297 > 0.05$).

Table 6. Mann-Whitney Test on the Effectiveness of Health Education on CPR by Demonstration and Presentation Methods Frequency Distribution Knowledge Level

Method	N	Mann Whitney	Sig. (2-tailed)
Demonstration	30	350,500	0,297
Presentation	30		

Source: 2023 Research.

4 Discussion

4.1 Level of Knowledge of CPR in the Demonstration Method Group

Based on table 1. before receiving health education about CPR using the demonstration method, all participants or 30 respondents (100%), still had a low level of knowledge. However, after being given health education, it was found that participants with a high level of knowledge amounted to 10 participants (33.3%), and the level of sufficient knowledge was 17 participants (56.7%). Those with a low knowledge level numbered 3 participants (10.0%). Seeing from table 2, regarding the Wilcoxon test before and after receiving health education about CPR, the value of Sig. (2-tailed) / P Value 0.000, which is less than 0.05. The researcher concluded that there was a significant difference between before and after being given health education using the demonstration method.

The demonstration method delivers material by directly practicing or demonstrating the steps of an action procedure and can be used as a method to increase knowledge [14]. In addition to increasing the knowledge of this demonstration method, if it is often applied in the teaching and learning process, students will not get bored quickly, compared to just being explained that this is also able to increase learning motivation for students, which consequently will affect student learning scores [21]. Likewise, according to [5], the demonstration method has the advantage to improve and enliven the teaching and learning process of someone who not only listens but can also see directly the sequence of steps being conveyed.

This result is a continuation of research conducted by [11], where the demonstration method can be used to increase one's knowledge.

Each learning method certainly has advantages and disadvantages of each. As an example of the demonstration method, this demonstration method has many advantages, including someone being able to directly observe objects in real life, learning is more interesting and systematic and reducing verbalism or understanding only with

words. Apart from having advantages as described above, the demonstration method also has disadvantages, such as having to be carried out by someone who has mastered special skills in their field, adequate facilities, and the readiness of the respondent to receive the material because if the respondent does not pay attention to delivering the material through demonstration, then the information obtained will be less than optimal. Based on the facts and theories above, the researcher concludes that health education using the demonstration method is able to increase a person's level of knowledge.

4.2 Level of Knowledge About CPR in the Presentation Method Group

Based on table 3, it is known that before being given health education using the presentation method, 100% (30 participants) had insufficient knowledge. After receiving health education using the presentation method, the results showed that 26.7% (8 participants) had a good level of knowledge, respondents with a sufficient level of knowledge were 43.3% (13 participants), and respondents who had a poor level of knowledge were 30.0% (9 participants). The Sign value is obtained in table 4 regarding the Wilcoxon test. (2-tailed) 0.000, which is less than 0.05. Researchers concluded that there was a significant difference between before and after being given health education using the presentation method.

Presentation method is an activity to discuss and present material with the aim of influencing someone's knowledge [6]. In Rusminie's opinion (2021), using the presentation method will be more interesting and trigger someone to be more active in the learning process because someone is required to truly understand the content of the material presented. The presentation method can be seen from the following characteristics: respondents are enthusiastic about participating in learning, respondents' responses change for the better, they have their responsibilities, and the final results of learning have improved [17]. These results align with the results of research conducted by [18], where the research results stated that the presentation method effectively increased a person's knowledge in the learning process.

The presentation method also has advantages and disadvantages, the advantages of the presentation method are that the material presented can be in the form of text, images, or audiovisuals so that it is more interesting, and the way of presenting the material can also be adjusted to cover many groups. Of course, the material is easy to obtain. Apart from these advantages, the presentation method also has several disadvantages, namely supporting equipment such as LCDs and laptops, which are quite expensive, depend on high electric currents, and presenters are required to master the material to be presented. Looking at existing facts and theories, researchers concluded that health education using the presentation method can increase a person's level of knowledge.

4.3 The Effectiveness of Health Education About CPR with Demonstration and Presentation Methods

Based on table 6, it can be seen that the non-parametric statistical test results with Mann Whitney obtained the Sig. (2-tailed) / P Value is 0.297, greater than 0.05, meaning that H_a is rejected and H_o is accepted.

The use of demonstration and presentation methods in the learning process is felt to be interesting and can increase a person's motivation because they can see directly the sequence of steps presented [7]. These two methods can be used as a reference in the learning process in increasing one's knowledge [1]. It is better if the learning method follows several other factors that influence a person's level of knowledge, such as exposure to sources of information, because with information, both formal and non-formal, people will understand what was previously unknown and become known [12]. Apart from that, according to the opinion of [8] social culture and economics have a big impact on a person. If that person experiences a habit then a person's knowledge will also increase. A person's level of knowledge can also be influenced by the environment around him, as stated by [2], this environment has a big influence on a person's level of knowledge. If the environment is positive then it is likely that the person's knowledge will also be positive and vice versa. Don't forget that there is also the age factor, because as you get older your way of thinking becomes broader.

Based on the facts and supported by the theory put forward by previous researchers, it can be concluded that there is no significant comparison between the demonstration method and the presentation method, but both methods can be applied in the teaching and learning process to increase a person's level of knowledge. So researchers are of the opinion that a person's knowledge is not only influenced by education or learning methods, there are also other factors that can influence a person's knowledge such as age, environment, social culture, experience and frequent exposure to sources of information.

5 Conclusion

5.1 Wilcoxon test

Based on the Wilcoxon test to find out the difference before and after receiving health education about CPR using the demonstration and presentation method, the value of Sig. (2-tailed) / P Value 0.000, which is less than 0.05. Researchers argue that there are significant differences between before and after receiving health education through demonstrations and presentations.

5.2 Mann-Whitney non-parametric statistical test

Based on the Mann-Whitney non-parametric statistical test with the aim of knowing the comparison between the demonstration method group and the presentation method, the Sig. (2-tailed) / P Value is 0.297, greater than 0.05, meaning that H_a is rejected and H_0 is accepted. It can be concluded that there is no significant comparison between the demonstration method and the presentation method. However, the two methods can be applied in the teaching and learning process to increase one's level of knowledge.

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