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IMPLEMENTING PUBLIC EDUCATION TO IMPROVE BASIC LIFE SUPPORT FOR OUT-OF-HOSPITAL CARDIAC ARREST VICTIMS

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ABSTRACT

The incidence of out-of-hospital cardiac arrest worldwide is increasing every year, and Indonesia is one of the countries where the exact incidence of out-of-hospital cardiac arrest is not yet known. The main cause of cardiac arrest is cardiovascular disease. Deaths in Indonesia due to cardiovascular diseases amount to 7.4 million (42.3%), with 6.7 million (38.3%) caused by Coronary Heart Disease (CHD) and 6.7 million (38.3%) caused by stroke. The incidence rate of heart disease in West Kalimantan is 7.89%, with hypertension incidence in individuals over 18 years old at 8.16% and in Kubu Raya Regency at 5.51%. The incidence of stroke in West Kalimantan is 0.96%. This has led to an increasing incidence of out-of-hospital cardiac arrest. The purpose of this community service is to provide knowledge about basic life support for cardiac arrest victims at SMAN 1 Sungai Ambawang. Providing education about preparedness for the general public is very important for enhancing knowledge. the education impact test results indicated that the median knowledge score before delivery education is 47, whereas the median knowledge score after delivery education was 87. The average difference between the pre-test and post-test knowledge scores was 40.40. The Wilcoxon test show that $p = 0.001$ ($\alpha<0.05$), signifying a substantial effect of education on knowledge of basic life support for out-of-hospital cardiac arrest victims at SMAN 1 Sungai Ambawang. We can conclude that our understanding of basic life support for out-of-hospital cardiac arrest victims has improved.

Keywords: *CPR, Education, Knowledge*

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INTRODUCTION

In the United States, there are 350,000 victims of out-of-hospital cardiac arrest. Over the past 15 years, the United States has identified coronary heart disease as a contributing factor to the escalating health concern of cardiac arrest(Gaieski *et al*., 2017; Jentzer *et al*., 2017). The prevalence of out-of-hospital cardiac arrest in the United States is 140.7 cases per 100,000 adults, with the management rate increasing from 47.1 cases to 66 occurrences per 100,000 population between 2008 and 2015(Benjamin *et al*., 2019).

The annual incidence of cardiac arrest in Indonesian hospitals remains uncertain (Rizki *et al*., 2015). The primary cause of cardiac arrest is cardiovascular illness. Cardiovascular disease fatalities are 7.4 million (42.3%), with 6.7 million (38.3%) attributable to coronary heart disease (CHD) and 6.7 million (38.3%) resulting from stroke. The prevalence of cardiac disease in West Kalimantan is 7.89%, while the prevalence of hypertension among individuals over 18 years is 8.16%, and in Kubu Raya Regency, it is 5.51%. The prevalence of stroke in West Kalimantan is 0.96% (Dinas Kesehatan Provinsi Kalimantan Barat, 2018; Kemenkes RI, 2018).

The prevalence of out-of-hospital cardiac arrest victims is escalating due to the growing incidence of heart disease, hypertension, and stroke in the West Kalimantan region. Cardiac arrest incidents result in heart and cerebral damage within minutes, and the recovery success rate depends on basic and advanced life support procedures (Paal *et al*., 2012; Berg *et al*., 2020)The precision of fundamental life support, including CPR (Cardiopulmonary Resuscitation), mitigates neurological impairments and enhances the quality of life for patient's post-cardiac arrest ((Lee and Le Low, 2010; Paal *et al*., 2012). Cardiopulmonary resuscitation (CPR) comprises a sequence of life-saving interventions that conventionally include chest compressions and ventilations to enhance circulation and oxygenation, thereby improving the probability of survival following cardiac arrest. (Hasegawa et al., 2014, 2020). The research findings on parameters influencing the quality of cardiopulmonary resuscitation encompass the rescuer's age, gender, body mass index, degree of exhaustion, knowledge, and self-awareness (Ardiansyah, Nurachmah and Adam, 2019). A further study on nursing students post-basic life support training revealed an impact of such training on their understanding of cardiac arrest care (Jamil and Merisdawati, 2022). The implementation of community service for swimming pool personnel through seminars and training modules might enhance their knowledge, attitudes, and behaviors regarding the management of cardiac arrest patients (Jamil, 2021).

The general public provides first aid for out-of-hospital cardiac arrest cases 40% of the time, but they are not yet proficient in performing basic life support for cardiac arrest victims. We need to improve the general public's involvement in basic life support knowledge and skills. The general public should provide immediate assistance to a cardiac arrest victim outside the hospital, following the basic life support protocol, and then refer them to the nearest healthcare facility. The basic life support protocol for the general public outside the hospital includes how the rescuer seeks help from the call center, performs chest compressions, defibrillation, advanced

resuscitation, post-cardiac arrest care, and the recovery phase. Based on the recommendation of the American Heart Association, chest compressions are the actions taken by the general public when assisting a cardiac arrest victim without checking the pulse.

OBJECTIVES

General Purpose

The implementation of public education aims to improve basic life support for out-of-hospital cardiac arrest victims at SMAN 1, Sungai Ambawang, Kubu Raya Regency.

Special Purpose

We are assessing the general population's comprehension of basic life support and first aid for cardiac arrest victims who are out of hospital.

PLAN OF ACTION

Strategy Plan

1. Preparation of modules and provision of public training on basic life support for out-of-hospital cardiac arrest victims
2. At this stage, the coordinator and team members will prepare training materials, modules, and CPR phantoms for basic life support simulations for out-of-hospital cardiac arrest victims.
3. The implementation of community service in the form of counseling and teaching about basic life support for out-of-hospital cardiac arrest victims begins with a briefing from the coordinator to the team members. The activities include training and simulation of basic life support for out-of-hospital cardiac arrest victims in front of the general public using methods such as lectures, demonstrations, and question-and-answer sessions.
4. The general public takes a pre-test as part of this knowledge enhancement program to gauge their understanding of basic life support for cardiac arrest victims outside of hospitals, and a post-test follows theory and practical sessions on the subject.

Implementation

We carried out the community service implementation on September 11, 2024. Stages of community service implementation:

1. Participants fill out a pretest consisting of 15 questions within 15 minutes.
2. The team will deliver material on basic life support for out-of-hospital cardiac arrest victims for one hour.
3. Perform a CPR demonstration using a CPR manikin.
4. Participants fill out a post-test questionnaire consisting of 25 questions within 15 minutes.

Setting

The activity was held on SMAN 1 Sungai Ambawang.

Target

Fifty individuals from SMAN 1 Sungai Ambawang participated in the community service implementation.

RESULTS AND DISCUSSION

We implemented community service in the form of public education efforts to enhance basic life support for out-of-hospital cardiac arrest victims at SMAN 1 Sungai Ambawang, involving 50 participants. Based on the evaluation of the community's knowledge about basic life

support for out-of-hospital cardiac arrest victims using a 15-question questionnaire, the following results were obtained.

Table 1. Average Distribution Based on Pre-Post Test Knowledge of Basic Life Support for Out-of-Hospital Cardiac Arrest Victims

Knowledge	Mean	Median	Standard Deviation
Before	45,02	47	13,61
After	85,24	87	7,63

Table 1 shows that the average knowledge score before and after education is 45.02 and 85.24.

Table 2. Normality Test of Respondents' Knowledge Data on Basic Life Support for Out-of-Hospital Cardiac Arrest Victims

Knowledge	Median	Standard Deviation	P Value
Before	47	13,61	0,134*
After	87	7,63	0,001

*Normal Distribution α>0,05 Shapiro Wilk Test

Based on Table 2, the results of the normality test for the knowledge variable before education showed p=0.134 (α>0.05), which can be concluded that the knowledge before education is normally distributed. The results of the normality test for the knowledge variable after education showed p=0.001 (α<0.05), which can be concluded that the knowledge after education is not normally distributed.

According to table 3, the education impact test results indicated that the median knowledge score before delivery education is 47, whereas the median knowledge score after delivery education was 87. The average difference between the pre-test and post-test knowledge scores was 40.40. A the Wilcoxon test show that p = 0.001 (α<0.05), signifying a substantial effect of education on knowledge of basic life support for out-of-hospital cardiac arrest victims at SMAN 1 Sungai Ambawang.

Tabel 3. The Influence of Education on Respondents' Knowledge of Basic Life Support for Out-of-Hospital Cardiac Arrest Victims

Knowledge	Median	Mean Difference	P Value
Before	47	40,20	0,001*
After	87		

*α<0,05 significant with Wilcoxon test

The research findings on parameters influencing the quality of cardiopulmonary resuscitation encompass the rescuer's age, gender, body mass index, degree of exhaustion, knowledge, and self-awareness (Ardiansyah, Nurachmah and Adam, 2019). A further study on nursing students post-basic life support training revealed an impact of such training on their understanding of cardiac arrest care (Jamil and Merisdawati, 2022). The implementation of community service for swimming pool personnel through seminars and training modules might enhance their knowledge, attitudes, and behaviors regarding the management of cardiac arrest patients (Jamil, 2021).

CONCLUSION

Community service initiatives can augment public awareness of fundamental life support for those experiencing out-of-hospital cardiac arrest.

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