



## Providing Education on Basic Life Support to Increase Student Knowledge

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### COMMUNITY SERVICE

#### ARTICLE HISTORY

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#### Abstract

**Background:** Basic Life Support (BLS) is an essential first aid action performed on individuals experiencing cardiac or respiratory arrest. The primary goal of BLS is to restore and maintain vital organ function through interventions like chest compressions and respiratory support. Knowledge, which arises from experience and observation, is enhanced through education. This process aims to improve understanding and, consequently, decision-making abilities. **Purpose:** The aim of this Community Service (PkM) project is to increase the knowledge of students at MAN 1 Banyumas regarding Basic Life Support. **Method:** The methods used in this PkM included lectures and discussions. The students' knowledge was assessed before and after the educational intervention using a structured knowledge questionnaire. **Findings:** The participants of this PkM were predominantly middle adolescents aged 15-17 years, with 29 participants (96.7%) falling within this age range. The majority were female, comprising 26 participants (86.7%). Most of the participants were in grade 11, accounting for 22 participants (73.3%). Before the educational intervention, the knowledge levels were as follows: Good: 2 participants (6.7%), Sufficient: 12 participants (40.0%), Poor: 16 participants (53.3%). After the BLS education, there was a marked improvement in knowledge, with all 30 participants (100%) achieving a "Good" level of knowledge. **Conclusions:** Education on basic life support at MAN 1 Banyumas significantly improved students' knowledge, with a higher percentage achieving a good understanding after the training.

**Keywords:** basic life support, education, knowledge

#### Introduction

Cardiovascular disease (CVD) is the leading cause of death globally. CVD claims an estimated 17.9 million lives each year. In 2019, it represented 32% percent of all global deaths. Of these deaths, 85% are caused by heart attack and stroke. These deaths occur prematurely in people under 70 years of age (1). Heart failure is a progressive health problem with high mortality and morbidity in both developed and developing countries, including Indonesia [1].

According to the Ministry of Health (2021), deaths in Indonesia due to cardiovascular disease reach 651,481 people per year, consisting of stroke 331,349 deaths, coronary heart disease 245,343 deaths, hypertensive heart disease 50,620 deaths, and other cardiovascular diseases.

Based on data from the Central Java health service in 2019, heart patients in Central Java were 1.9% (58,418 people), stroke 3.8% (116,835 people). Cardiovascular diseases such as coronary

heart disease can experience sudden cardiac arrest. Cardiac arrest can occur suddenly, often the first sign of heart disease. Sudden cardiac arrest occurs due to various underlying diseases such as Coronary Heart Disease (CHD), cardiomyopathy [2].

This is also as stated by Fatmawati & Mawaddah (2020), which states that OHCA is the leading cause of death. In 2015, approximately 350,000 adult individuals in the United States experienced out-of-hospital cardiac arrest (OHCA). Despite recent improvements, less than 40% of adults received lay-initiated CPR, and less than 12% had an automated external defibrillator (AED) applied.

The condition of people who experience cardiac arrest may not be saved because they do not get the right help. Cardiac arrest can be recovered if handled immediately with Cardiopulmonary Resuscitation and Defibrillation to restore normal heart rate (4). According to research by Musniati (2022), therefore ordinary people need to be introduced to Basic Life Support (BHD). Appropriate community preparedness in the form of introduction and training of BHD actions can minimize deaths due to cardiac arrest and breathing.

**Methods**

This community service activity was carried out on June 12, 2024 at MAN 1 Banyumas with the title “Providing Education on Basic Life Support to Increase Student Knowledge at MAN 1 Banyumas”. This is done through education in a way:

- 1) Students of PMR MAN 1 Banyumas were asked to sign an agreement form to become respondents.
- 2) Participants were given a pre-test questionnaire about basic life support knowledge.
- 3) Providing basic life support materials to MAN 1 Banyumas students.

- 4) Participants were given a post-test questionnaire on basic life support knowledge.

**Result**

a. Characteristics of Community Service Participants

Table 4.1 Characteristics Frequency of Student MAN 1 Banyumas

Characteristics	f	%
Age		
Middle adolescence (15-17)	29	96,7
Late adolescence (18-24)	1	3,3
Gender		
Male	4	13,3
Female	26	86,7
Class		
10	8	26,7
11	22	73,3
Total	30	100

Based on table 4.1, the characteristics of respondents were dominated by middle adolescents as many as 29 participants (96.7%), while gender was dominated by women as many as 26 participants (86.7%), while class was dominated by grade 11 as many as 22 participants (73.3%).

b. Frequency Distribution of Knowledge Level of Students of MAN 1 Banyumas

Table 4.4 Distribution of knowledge level about BHD among students of MAN 1 Banyumas

Knowledge level	Before giving education		After provision education	
	f	%	f	%
Good (76-100)	2	6,7	30	100,0
Fair (56-75)	12	40,0	0	0
Less (<56)	16	53,3	0	0
Total	30	100,0	30	100,0

Based on table 4.2, the level of knowledge in the good category before giving education was 6.7%, the sufficient category before giving education was 40.0%, the

deficient category before giving education was 53.3%, and after giving education the increase in knowledge increased by 100.0%.

## Discussions

### 1. Characteristics

Table 4.1 shows that Community Service participants based on age characteristics are mostly middle adolescents (15-17 years) as many as 29 (96.7%). Based on the author's assumption, the age of 15-17 years is an important period in the cognitive and physical development of individuals, where at that age they begin to be independent and active in various activities. At this age, they are also more prone to accidents. Therefore, basic life support education is very effective for the 15-17 age group. These results are in line with the research of Prihatini (2022) entitled *The Effect of Basic Life Support Education on Increasing Knowledge of Basic Life Support in Students of SMKN 2 Makassar* with the results of research respondents in this study were mostly 17 years old, namely 77%, 18 years old 15.3%, and minorities at the age of 16 and 19 years, namely 3.85 each [3]. These results are in line with the research of Fauzan et al. (2021), entitled *The Effect of Providing Lay Basic Life Support (BHD) Health Education Through Video on the Level of Knowledge of High School Children (SMA) in Pontianak City* with the results of the research that the most respondents were students aged 16 years, totaling 49 respondents (40.8%).

Table 4.1 shows that 26 participants (86.7%) participated in Community Service based on their gender. According to the author's assumption after communication with Mr. Sulis as Deputy Student Affairs, it was found

that students at MAN 1 Banyumas are more female than male with the number of female students of 921 people (65%) and men of 495 people (35%). Women can absorb information five times faster than men. This is the reason why women conclude things faster than men. The male brain is more vulnerable than the female brain. In addition, the male brain undergoes sexual changes that are influenced by the hormone testosterone. This is in line with the research of Alfaridzi et al. (2023), entitled *The Effect of Providing Basic Life Support Education with E-Booklet Media on the Level of Knowledge of PMR Students of SMA Negeri 1 Purwareja Klampok* with the results of research on the characteristics of respondents based on gender is a group of female respondents as many as 34 people (94.4%).

Table 4.1 obtained data that Community Service participants based on class were dominated by class 11 as many as 22 participants (73.3%). According to the author's assumption that the most participants were dominated by grade 11 as directed by Mr. Sulis as Deputy Student Affairs of MAN 1 Banyumas said that grade 12 already had to focus on graduation exams. In particular, PMR students at MAN 1 Banyumas, when the author asked the students about basic life support materials, they had not yet received them, but they had received materials such as education about HIV/AIDS and first aid in accidents (P3K). This is also in line with the research of Fauzan et al. (2021), entitled *The Effect of Providing Lay Basic Life Support (BHD) Health Education Through Video on the Level of Knowledge of High School Children (SMA) in Pontianak City* with the

results of the study Based on class, the most respondents were students who were in grade 11, totaling 70 respondents (58.3%).

## 2. Knowledge

Based on Table 4.2, the results of the level of knowledge of Community Service participants before education were obtained as many as 2 participants (6.7%) in the good category, as many as 12 participants (40.0%) in the sufficient category, and as many as 16 participants (53.3%) in the poor category. After providing education, it was found that there was a significant increase in knowledge of basic life support as many as 30 participants (100.0%) in the good category. According to the author's assumption, the level of knowledge of respondents before being given health education has less knowledge after being given health education can be said to be good because it has increased knowledge.[4] Providing health education has an influence on increasing knowledge of basic life support in students.

Many learning methods can be used to provide knowledge and skills related to basic life support, ranging from traditional and modern methods. Traditional methods such as the lecture method, direct demonstration, namely the presence of an instructor or expert directly in front of students. Pre-education knowledge of MAN 1 Banyumas students was measured for 10 minutes using a knowledge questionnaire. Education was conducted for 55 minutes and post-education knowledge was measured after 10 minutes of education. The media used were power point and pocket book.

According to research by Imran (2023) power point is a presentation software developed by Microsoft that allows users to create presentations consisting of slides containing text, images, video, animation, and audio, as for the use of power point in BHD training for paramedics offers a variety of benefits, including material flexibility, personalization, and accessibility, this allows instructors to provide more effective and interesting training to meet the needs of diverse participants, power point can also be used to provide more personalized feedback and assessment to participants, helping them identify areas that need improvement and improve their skills [5].

Pocket books have also proven to be an effective tool for delivering Basic Life Support (BHD) materials in schools. According to Purnomo et al. (2021), the BHD pocket book becomes a practical guide that is easy to access and understand, allowing students to repeat the BHD steps more steadily and apply them more accurately when needed.[6,7] This sense of confidence not only increases students' courage in action, but also strengthens their ability to make the right decisions and take effective actions in emergency situations.[8]

This is in line with the research by Prihatini (2022), entitled The Effect of Basic Life Support Education on Increasing Knowledge of Basic Life Support in Students of SMKN 2 Makassar with the results of research on the increase in knowledge where before giving education the level of knowledge was 19.23% less, 69% enough, and 11.54% good. However, after the material and practice showed that 100% of students had good knowledge. This is in line with the

research of Juwita et al. (2023), entitled Basic Life Support Training in an Effort to Increase First Aid Preparedness at the Puskesmas with the results of pre-test and post-test research on the material stated that the results showed that there was an increase in the percentage of knowledge level from 83% to 96% after the provision of material and discussion [9].

This is in line with the research by Prayitno (2020) entitled The Effect of Basic Life Support Education on Knowledge of Members of the Student Activity Unit of the Bachelor of Nursing Health Team Stikes Dharma Husada Bandung with the results of the study showing the knowledge score before being given health education, the average score was 47.20 with a poor category (64%), then after being given knowledge the average score was 66.53 with a good category (44%) [10].

Based on the results of the Community Service carried out, it shows that 100.0% there is an increase in knowledge after providing education on basic life support. This is in accordance with the results of research by Prihatini et al. (2022) entitled The Effect of Basic Life Support Education on Increasing Knowledge of Basic Life Support in Students of SMKN 2 Makassar with the results of research on the increase in knowledge where before giving education the level of knowledge was 19.23% less, 69% enough, and 11.54% good. However, after providing material, students showed 100% good knowledge.

### Limitations

The limitation factors during the implementation of Community Service activities in providing basic life support education to increase student knowledge at MAN 1 Banyumas include the limited time

for providing basic life support education because it must adjust the schedule given by the school.

### Conclusion

Based on the results of the service and discussion, the following conclusions can be drawn: Participants in providing education on basic life support to increase student knowledge at MAN 1 Banyumas have understood the procedures for basic life support well with a percentage after providing education increased in the good category.

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### Conflict of Interest Statement

The authors have confirmed that they have no competing interests.

### Data Availability

The datasets used or generated in this study are available from the corresponding author upon reasonable request.

### Author Contributions

**Billy Reihandi:** Conception and design of the study, Search Data Base, Methodology, Data Analysis and Interpretation, Writing, Review and Editing. **Roro Lintang Suryani:** Study conception and design, search database, methodology, analysis of

data analysis and interpretation, and writing, review and editing. **Murniati:** Conception and design of the study, Search Data Base, Methodology, Data Analysis and Interpretation, Writing, Review and Editing

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