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The Effect of Basic Life Support Health Education on Increasing Knowledge and Skills in Cardiac Arrest

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ABSTRACT

Background: Cardiac arrest is an emergency in which blood circulation suddenly stops, characterized by loss of arterial blood pressure. Cardiac arrest can be sudden and cause death. Cardiac arrest is a cause of high mortality. High mortality in Cardiac Arrest cases is due to slow help due to lack of knowledge and skills regarding Basic life Support.
Purpose: The purpose of this study was to analyze the effect of Basic Life Support Health Education on increasing knowledge and skills Basic Life Support in cardiac arrest for students.
Method: This research design is Pra experimental with one group pre-post test conducted on 41 samples with simple random sampling. The instrument of the research are used questionare for knowledge and observed for measured of the skill.
Results: The results before being given health education the level of knowledge was less than 80.5% and the level of skills was less than 85.4%, while after being given health education the level of knowledge was good 53.7% and the level of skills was good 53.7%. From the analysis using the Wilcoxon Sign Rank Test, the p-value is 0.000 <0.05, there is an effect of increasing knowledge and skills before and after Basic Life Support health education for students.
Conclusion: Health education with a short period of time can improve knowledge and skills but to improve high quality, training is needed for a long period.

Keywords: basic life support, cardiac arrest, health education, knowledge, skills

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BACKGROUND

Cardiac arrest is an emergency event in the normal circulatory system that suddenly stops characterized by loss of arterial blood pressure. Cardiac arrest can result in asystole, ventricular fibrillation and ventricular tachycardia without pulse. The identified cause in a victim of cardiac arrest can be implemented after prompt intervention is given to the victim of cardiac arrest. There are several causes of cardiac arrest, but the most common cause of cardiac arrest is cardiovascular disease. Death will occur within minutes if the victim does not receive immediate help (Estri, 2019).

Until now, only a small proportion of patients who experience cardiac arrest can receive basic life support from residents who witnessed the scene, this is due to the lack of knowledge and skills, especially adolescents, regarding basic life support that must be carried out on patients at the scene (Muthmainnah, 2023).

Cardiac arrest can occur inside the hospital, namely In Hospital Cardiac Arrest (IHCA) and outside the hospital, namely Out Hospital Cardiac Arrest (OHCA). Out Hospital Cardiac Arrest is one of the focuses of world health problems due to its high incidence, the global incidence of OHCA in 2014 was 50 to 60 per 100.000 people/year (Merchant et al. 2020).

The World Health Organization (WHO) states that cardiac arrest is the cause of death as much as 60% in developed and developing countries. The United States as a developed country still has approximately 400,000 cases of sudden cardiac death each year, showing that around 80% are caused by coronary heart disease. About 350.000 people die from heart attacks each year in the United States and Canada. On a global scale, about 70% of cardiac arrests are found to occur outside the hospital and only about 10.8% of adult patients who received resuscitation assistance carried out by a trained medical team (Suprayitno and Tasik, 2021). In Indonesia, the prevalence data obtained for Cardiac Arrest patients each year is unclear, but it is estimated that there are around 10.000 Indonesians experiencing Cardiac Arrest (Muthmainnah, 2019). Of the many cases of cardiac arrest in East Java province, there were 176 cases of Acute Coronary Syndrome (ACS) in 2019 (F Ardiansyah, E Nurachmah, 2019).

The incidence of cardiac arrest mostly occurs outside the hospital and has a high risk of death before arriving at the Emergency Department. The high mortality rate is due to victims not getting first aid outside the hospital in under 10 minutes. CPR actions, especially those performed within the first minute of cardiac arrest, can increase the chance of survival 2 to 3 times (AHA, 2020). The impact of failure on victims with cardiac arrest is caused by a lack of knowledge and skills so that they hesitate with inappropriate actions (Wirasakti, 2020). When cardiac arrest occurs outside the hospital, someone who is near the victim must immediately help, because not necessarily every time there is a cardiac arrest event there is a medical staff, so ordinary people need an introduction to people with signs of cardiac arrest and how to handle them, rather than doing nothing (Kleinman et al. 2018).

Until now, only a small proportion of patients who experience cardiac arrest can receive basic life support from residents who witness the incident. This is due to a lack of knowledge and skills, especially among teenagers, regarding the basic life support that must be performed on patients at the scene (Muthmainnah, 2023). So adolescents need to have and be skilled in performing Basic Life Support (BLS) actions. Adolescence is the most appropriate time to be given health education because during this period the brain growth is the most perfect, and the nervous system can function very well (Nugroho, 2021). The results of the above study used the Wilcoxon Sign Rank Test with a p-value of 0.00 (a <0.05) so that H0 was rejected, meaning that there were differences in knowledge and skills of Basic Life

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Support about cardiac arrest before and after being given health education. In the study, the results showed that there was a difference in Basic Life Support (BLS) knowledge about cardiac arrest before and after health education was given using the lecture method, which was quite good for targets with high and low education. The media used was in the form of leaflets that could be read at any time and were easy for students to understand so that they could be a source of information for the students themselves.

METHOD

This study uses the Pre-Experimental research method. The type of design used one group pre post test design. In this study, the population were 70 students of SMK Muhammadiyah 1, Kediri City, were willing to be respondents to take part in the research until completion. The sampling technique in this study was carried out using simple random sampling with a sample size of 41 respondents. This study given intervention health education with the purpose for increasing the knowledge and skill the student. The instrument in this study was used questionnaire for knowledge and observation for measured the skill. Ethical clearance was approved by Health Research Ethics Committee in IIK Strada Indonesia with registration number 001875/EC/KEPK/I/11/2024 on June 3, 2024.

RESULTS

Table 1. Characteristics of respondents based on age conducted at SMK Muhammadiyah 1 Kediri City on July 21, 2024.

Age	Frequency	Percent (%)
15 years	2	4.9
16 years	9	22
17 years	21	51.1
18 years	9	22
Total	41	100

Based on table 1 above, it is known that most of the respondents were 17 years old as much as 51.2%.

Table 2. Characteristics of respondents based on knowledge conducted at SMK Muhammadiyah 1 Kediri City on July 21, 2024.

	Indicator	**Frequency (F)**	**Percent (%)**
Less	< 54 %	33	80.5
Moderate	55 - 74 %	8	19.5
Good	> 75 %	0	0.00
Total		41	100

Based on table 3, it is known that almost all respondents before being given health education lacked knowledge level as much as 80.5%.

Table 3. Characteristics of respondents' knowledge level based on after health education conducted at SMK Muhammadiyah 1 Kediri City on July 21, 2024.

	Indicator	Frequency (F)	Percent (%)
Less	< 54 %	0	0.00
Moderate	55 - 74 %	19	46.3
Good	> 75 %	22	53.7
	Total	41	100

Based on table 3, it is known that most of the respondents after being given health education had a good level of knowledge as much as 53.7%.

Table 4. Characteristics of respondents' skills based on before health education conducted at SMK Muhammadiyah 1 Kediri City on July 21, 2024.

	Indicator	Frequency (F)	Percent (%)
Less	< 54 %	35	85.4
Moderate	55 - 74 %	6	14.6
Good	> 75 %	0	0.00
	Total	41	100

Based on table 4, it is known that almost all respondents before being given health education lacked skill levels as much as 85.4%.

Table 5. Characteristics of respondents' skills based on after health education conducted at SMK Muhammadiyah 1 Kediri City on July 21, 2024.

	Indicator	Frequency (F)	Percent (%)
Less	< 54 %	0	0.00
Moderate	55 - 74 %	10	24.4
Good	> 75 %	31	75.6
	Total	41	100

Based on table 5, it is known that almost all respondents after being given health education have a good skill level as much as 75.6%.

Table 6. Analysis of knowledge of students of SMK Muhammadiyah 1 Kota Kediri before and after health education at SMK Muhammadiyah 1 Kota Kediri on July 21, 2024.

Variable	Knowledge Category			Total	N	P Value
	Less	Simply	Both			
Students' knowledge before health education	33	8	0	100 %	41	.000
Students' knowledge after health education	0	19	22			
Student skills before health education	35	6	0			
Students' skills after being given health education	0	10	31			

Based on table 6 it is known that there are changes in the knowledge and skills of students of SMK Muhammadiyah 1 Kota Kediri before and after being given health education. The results of the above study using the Wilcoxon Sign Rank Test with a p-value

of 0.00 (a <0.05) so that H0 is rejected, meaning that there is a difference in knowledge and skills of Basic Life Support about cardiac arrest before and after being given health education.

DISCUSSION

Effect of Knowledge Level Before and After Basic Life Support Health Education on Cardiac Arrest at SMK Muhammadiyah Kediri City

Based on the results of the study, almost all respondents before being given health education obtained the results of a lack of knowledge level as many as 33 respondents (80.5%). These results are in line with research conducted by (Sylviana, Sukamto, and Rahman, 2018) with the title "The Effect of Health Education on the Level of Knowledge About Basic Life Support in Level 2 Nursing Students at SMK Medika Samarinda in 2017" with the results of research conducted on 40 respondents, namely knowledge before counseling in the less category as much as 50%. This research is also in line with research conducted by (Priosusilo, 2019), it is known that of the 32 pretest respondents, the knowledge category before being given the basic life support intervention, the most was the less category, namely 56.2%.

An emergency is a clinical situation where the patient needs immediate medical action to save life and subsequent disability. The condition of the heart stopping is one of the emergency cases. Cardiac arrest cases often occur suddenly without initial symptoms that can occur anywhere and anytime. After the heart stops beating, the individual experiences impaired vital functions, namely respiratory arrest and no pulse, leading to loss of consciousness. Death can occur within minutes if not helped immediately (AHA, 2020). Cardiac arrest emergency conditions require immediate medical action, these cases can occur suddenly without initial symptoms (Dewantara and Mulyaningsih, 2022).

The results of measuring student knowledge after being given health education, most of the respondents carried out the post-test experienced a change or an increase in the level of good knowledge as many as 22 respondents (53.7%). There is an increase after health education. This research is also in line with research conducted by (Priosusilo, 2019), it is known that of the 32 respondents in the posttest knowledge category after being given basic life support intervention, the most was the good category, namely 71.9%. These results have increased from the results before the health counseling was carried out, namely in the poor category as much as 21.9%. The change in the level of knowledge and skills is due to the existence of Basic Life Support health counseling which affects the level of knowledge and skills of students so that students can understand and be able to perform Basic Life Support quickly, precisely and correctly, so that it does not have a fatal impact or until death.

BLS knowledge and skills can be mastered with BLS education that contains the types of first aid that will be carried out when a disaster occurs in everyday life. (Siwi, Kurniawan, and Hidayat, 2022) also emphasized that the most optimal BLS education is in the school environment. Education to students will generally provide feedback to help students gain a level of knowledge and skills in first aid in dealing with accident and disaster situations. Honing knowledge about BLS in students will empower student behavior to act as the main actor to provide first aid if there is an incident in the school environment with a short-term level of assistance scale (Oktaviani, Feri, and Susmini, 2020). One of the factors that can influence a person's behavior is health education.

Based on the description above, after being given health education, the results showed that most respondents had a good level of knowledge at the age of 17 as much as 60.0%, there was an increase in knowledge before and after being given health education. In my view, health education plays a crucial role in improving people's quality of life. With a

systematic and practical approach, health education not only increases individual knowledge and skills, but also facilitates positive behavior change.

Effect of Skill Level Before and After Basic Life Support Health Education on Cardiac Arrest at SMK Muhammadiyah Kediri City

The results of observations before being given Basic Life Support health education on Cardiac Arrest almost all respondents get the results of a lack of skill level as many as 35 respondents (85.4%). Basic Life Support (BHD) is the initial handling of patients who experience cardiac arrest, respiratory arrest, or airway obstruction. Basic Life Support (BHD) includes several skills that can be taught to anyone, namely recognizing sudden cardiac arrest, activating the emergency response system, performing Cardiopulmonary Resuscitation (CPR) or initial cardiopulmonary resuscitation (CPR), and how to use an automated external defibrillator.

When respondents are asked to provide bls interventions on phantoms with simulations that have been made, it is known that respondents cannot perform basic life support interventions on skill level indicators. This is characterized by respondents not being able to help secure themselves and the victim at the scene, helpers ensure consciousness and seek help, helpers check the pulse and ensure there is no pulse, perform 30 chest compressions, observe the location (compression, speed, and depth) of compressions performed, know the basic life support algorithm and conduct an examination that includes DRCABDE. The cause of the lack of Basic Life Support skills in students is due to not getting knowledge about Basic Life Support and lack of information in handling victims of cardiac arrest. The lack of information is also due to the lack of health education that includes training or practice. The lack of skills possessed by someone causes someone to hesitate in taking action and making decisions to help (Guruh Wirasakti, 2020).

After health education, most respondents experienced an increase in skills with an average of 31 respondents (75.6%) having good skill indicators. This is evidenced by respondents being able to perform basic life support interventions on skill level indicators including: helpers secure themselves and victims at the scene, helpers ensure awareness and seek help, helpers check the pulse and ensure the absence of a pulse, perform 30 chest compressions, observe the location (compression, speed, and depth) of compressions performed, know the basic life support algorithm and perform an examination that includes DRCABDE. Someone with a good enough cognitive, affective ability on how to understand and perform Basic Life Support will tend to do it based on the material they have received. Middle and high schools are ideal places to provide health education about Basic Life Support. Providing health education can add insight or knowledge so that when practicing with the provisions possessed will make someone confident in taking action. Actions that are often carried out repeatedly will result in more competent expertise in performing Basic Life Support (Oermann et al. 2020). It would be very beneficial if someone has high knowledge and confidence about Basic Life Support to strengthen skills. Researchers' assumption of skills in Basic Life Support (BLS) is an essential element in the handling of emergency situations such as cardiac arrest and respiratory arrest. These skills are very important for the general public, especially in junior and senior high school settings, which are ideal places to provide this health education. Students at this level are at an age that is mature enough to apply BLS effectively. This is indicated by the increase in skill level that almost all respondents after being given health education had good skills at the age of 17 years as much as 70.0%. By providing comprehensive education on BLS, we not only increase students' knowledge, but also build their confidence in performing appropriate first aid actions.

Analysis of the Effect of Knowledge Levels and Skills Before and After Basic Life Support Health Education on Cardiac Arrest at SMK Muhammadiyah 1 Kediri City

Based on the results of the analysis of the description above, there are differences in results before and after being given health education, respondents experienced an increase in knowledge and skills after being given health education interventions. This is evidenced by changes in indicators at the level of knowledge before being given health education almost all respondents get a level of knowledge less (80.5%), while after being given health education has increased most respondents knowledge level good (53.7%). In the skill level category before being given health education, almost all respondents lacked skills (85.4%), after health education most respondents experienced an increase in the level of good skills (75.6%).

Based on the results of statistical analysis using the Wilcoxon test of student knowledge before and after being given health education, it is known that changes in the category of knowledge and skills before and after being given health education obtained a Z score for the knowledge category of -5.685 for the Z score skill category of -5.616 with a P value of <0.000 (p <0.05) so that Ho is rejected, meaning that there are differences in knowledge and skills of Basic Life Support (BLS) about cardiac arrest before and after being given health education.

These results are in line with research conducted by (Suhaimi Fauzan, Ibnu Kahtan, 2021) with the title "The Effect of Providing Lay Basic Life Support (BHD) Health Education Through Videos on the Level of Knowledge of High School Children (SMA) in Pontianak City" with the results of research conducted on 120 respondents. The results of the Wilxocon test obtained a Z score of -4,784 with a P value of <0.000 (p <0.05). So it can be stated that there is a significant effect on the provision of Basic Life Support Health Education.

The protocol designed by the American Heart Association (AHA) regarding CPR has been designed to be used by lay people such as the general public, students, and or trained lay people who have been certified (Almojarthe et al. 2021). To save the life of a person suffering from cardiac arrest, anyone can learn it according to their capacity. Health education on BHD can increase the confidence of adolescents, especially school children, in practicing BHD (Suleman, 2023).

The American Heart Association (AHA) recommends that quality CPR learning provided to high school-aged children can provide confidence and a positive attitude in responding to cardiac arrest events. In addition, students who are over 15 years old already have readiness to perform CPR so that they want to help family, friends and others (Sutono and Achmad, 2020).

Increased student knowledge, especially about BHD where health education provides information that previously students did not know about BHD with a lot of little students already understand about BHD so that it can increase student knowledge (Resta et al. 2023). training with a short duration can improve skills related to BHD. However, training over a long period of time will result in high quality CPR. BHD training can increase confidence and willingness to help people who need help during cardiac arrest, regardless of the length of the study (Nirmalasari and Winarti, 2020).

Increased knowledge and skills after being given health education were obtained by almost all respondents at the age of 17 years. This assumes that the training can be accessed and utilized by a wide range of people. Health education on BHD not only improves knowledge but also adolescents' confidence in performing BLS, which is an important asset in emergency situations. Quality learning at the senior high school level not only provides practical skills but also builds positive attitudes and readiness to help family and others in

cardiac arrest situations. Increased knowledge of BHD through health education has a positive impact on students' understanding of first aid. While short trainings can improve basic skills, longer trainings provide more in-depth and high-quality results, increasing individuals' confidence and willingness to provide help. Therefore, a well-designed and sustainable training strategy will bring great benefits in improving preparedness and response to respiratory arrest situations.

CONCLUSION

Based on the results of research that has been conducted at SMK Muhammadiyah 1 Kota Kediri with a total of 41 respondents about the effect of Basic Life Support health education on increasing knowledge and skills in cardiac arrest can be concluded, namely:

1 The results of the study before education almost all respondents lacked knowledge. While after being given health education has increased most of the respondents level of knowledge is good.
2 The results of the study before education almost all respondents lacked skill levels. Meanwhile, after being given health education, most respondents experienced an increase in the level of good skills.
3 Based on the analysis of the results of the Wilcoxon test, it was found that there was an effect of Basic Life Support health education on increasing knowledge and skills on Cardiac Arrest in students of SMK Muhammadiyah 1 Kota Kediri.

REFERENCES

AHA. (2020). AMERICAN HEART ASSOCIATION Tahun 2020 KEJADIAN PENTING PEDOMAN CPR DAN ECC. https://cpr.heart.org/-/media/CPR-Files/CPR-Guidelines%02Files/Highlights/Hghlghts_2020ECCGuidelines_Indonesian.pdf.

Almojarthe, Bandar et al. (2021). "Awareness of Secondary School Students Regarding Basic Life Support in Abha City, Southern Saudi Arabia: A Cross-Sectional Survey." Scientific World Journal 2021.

Dewantara, Saftirta Gatra, and Mulyaningsih Mulyaningsih. (2022). "Gambaran Tingkat Pengetahuan Tentang Bantuan Hidup Dasar Pada Relawan PMI Dalam Kesiapsiagaan Bencana." ASJN (Aisyiyah Surakarta Journal of Nursing) 3(2): 62–68.

Estri, Arimbi Karunia. (2019). "Peran Bystander Dalam Penanganan Henti Jantung Di Komunitas : Studi Literatur." Seminar Nasional UNRIYO 1(1): 1–6.

F Ardiansyah, E Nurachmah, M. A. (2019). "PENDAHULUAN Henti Jantung Kesehatan Tergantung Dari Bantuan Hidup Dasar Dan Sebagai Masalah Tahun Bantuan Hidup Lanjut." Jurnal 'Aisyiyah Medika 123– 137(3(2), 123–137): 3.

Guruh Wirasakti, Guruh Wirasakti. (2020). "Pengaruh Metode Pembelajaran Multimedia Cardiopulmonary Resuscitation (CPR) Terhadap High Quality CPR." Jurnal Kesehatan dr. Soebandi 8(2): 142–47.

Kleinman, Monica E. et al. (2018). "2017 American Heart Association Focused Update on Adult Basic Life Support and Cardiopulmonary Resuscitation Quality: An Update to the American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care." Circulation 137(1): e7–13.

Merchant, Raina M. et al. (2020). "Part 1: Executive Summary: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care." Circulation 142: S337–57.

Muthmainnah. (2019). "Hubungan Tingkat Pengetahuan Awam Khusus Tentang Bantuan Hidup Dasar Bedasarkan Karakteristik Usia Di Rsud x Hulu Sungai Selatan." Healthy- Mu Journal 2(2): 31–35.

Muthmainnah, Muthmainnah. (2023). "Hubungan Tingkat Pengetahuan Awam Khusus Tentang Bantuan Hidup Dasar Berdasarkan Karakteristik Usia Di RSUD X Hulu Sungai Selatan." publikasi.

Nirmalasari, Vina, and Wiwin Winarti. (2020). "Pengaruh Pelatihan (Bhd) Terhadap Pengetahuan Dan Keterampilan Mahasiswa Kesehatan Masyarakat." Jurnal Keperawatan Widya Gantari Indonesia 4(2): 115.

Nugroho, Kristianto. (2021). "Pelatihan Bantuan Hidup Dasar Bagi Siswa Sma 1 Sumber Pucung Kabupaten Malang." Jurnal Pengabdiaan Masyarakat Kasih (JPMK) 2(2): 64–69.

Oermann, Marilyn H. et al. (2020). "Training Interval in Cardiopulmonary Resuscitation." PLoS ONE 15(1): 1–13. http://dx.doi.org/10.1371/journal.pone.0226786.

Oktaviani, E., J. Feri, and Susmini. (2020). "Pelatihan Pertolongan Pertama Kasus Kegawatdaruratan Di Sekolah Dengan Metode Simulasi." JCES (Journal of Character Education Society) 3(2): 403–13.

Priosusilo, Abdillah Pujo. (2019). "Pengaruh Pemberian Pelatihan Bantuan Hidup Dasar Terhadap Peningkatan Pengetahuan Dan Keterampilan Pada Siswa SMKN 1 Geger Madiun." Journal of Chemical Information and Modeling 53(9): 1689–99.

Resta, Harinal Afri, Vino Rika Nofia, Chindy Claudia Nengsih, and Hartati Deri Manila. (2023). "Pengaruh Edukasi Basic Life Support (BLS) Dengan Media Video Terhadap Pengetahuan Siswa Tentang Bls Di SMK Plus Bina Nusa Mandiri (BNM) Kabupaten Padang Pariaman." Jurnal Kesehatan Saintika Meditory 6(2): 518–24.

Siwi, Adiratna, Wasis Kurniawan, and Arif Hidayat. (2022). "Pemberian Edukasi Untuk Meningkatkan Pengetahuan Siswa Dalam Pelaksanaan Bantuan Hidup Dasar." Journal Of Community Health Development 3(2): 29–35. http://jos.unsoed.ac.id/index.php/jchd.

Suleman, Ibrahim. (2023). "Edukasi Bantuan Hidup Dasar (BHD) Awam Untuk Meningkatkan Pengetahuan Siswa Menolong Korban Henti Jantung." Jurnal Pengabdian Masyarakat Farmasi : Pharmacare Society 2(2): 103–12.

Suprayitno, Guruh, and Jeni Rante Tasik. (2021). "Efektivitas Pelatihan Bantuan Hidup Dasar Terhadap Peningkatan Pengetahuan Dan Keterampilan Tindakan Resusitasi Jantung Paru Mahasiswa Keperawatan." Jurnal Keperawatan Tropis Papua 4(2): 68–74.

Sutono, and Bayu F. Achmad. (2020). "Effectiveness of First-Aid Training in School among High School Students in Kulon Progo, Indonesia." International Journal of Research in Medical Sciences 8(3): 974.

Sylviana, Erika, Edi Sukamto, and Gajali Rahman. (2018). "Pengaruh Penkes Terhadap Tingkat Pengetahuan Tentang Bantuan Hidup Dasar Pada Siswa Keperawatan Tingkat 2 Di Smk Medika Samarinda Tahun 2017." Husada Mahakam: Jurnal Kesehatan 4(6): 368.