



**OVERVIEW OF THE LEVEL OF BASIC LIFE SUPPORT KNOWLEDGE IN MEMBERS OF THE HUMANITARIAN STUDENT ACTIVITIES UNIT**

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**ABSTRACT**

Cardiac arrest is a sudden cessation of heart activity that requires immediate treatment in the form of Basic Life Support (BLS). Students who are members of the Student Activity Unit (UKM) in the humanitarian field at Unpad are potential first aiders to provide basic life support in the event of cardiac arrest. This study aims to determine the level of knowledge of basic life support in students who are members of UKM in the humanitarian field at Universitas Padjadjaran. The method used in this research is quantitative descriptive with a cross sectional approach. The population in this study amounted to 158 active members of the humanitarian student activity unit and the sample was taken using convenience sampling type (n = 120). Data were collected using a questionnaire containing 30 questions that have been declared valid and reliable with a Cronbach's alpha value of 0.797 and data were analysed using computer software with univariate analysis techniques. The results showed that the level of knowledge of humanitarian UKM members at Unpad regarding basic life support was classified into the good category with a total of 108 respondents (90%). The conclusion in this study is that the level of knowledge of basic life support in members of humanitarian UKM at Universitas Padjadjaran is in the good category, but it is necessary to increase knowledge, especially on procedural topics related to basic life support.

Keywords: basic life support; cardiac arrest; knowledge level; university students

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**INTRODUCTION**

Cardiac arrest, especially Out-of-Hospital Cardiac Arrest (OHCA), is one of the focus of health problems in the world due to its high prevalence rate of 50 to 60 per 100,000 people/year in 2014 globally (Ana & Kusyani, 2023). In the United States, the incidence of OHCA has increased from 350,000 cases in 2015 to 356,461 cases in 2018 (AHA, 2020). Based on the data above, only less than 40% of patients get basic life support help from people around them (AHA, 2020). The prevalence of cardiac arrest in Indonesia recorded annually, according to the Indonesia Heart Association (IHA), reaches 300,000-350,000 cases (IHA, 2015). The reversible causes of cardiac arrest, according to The International Liaison Committee on Resuscitation Consensus Conference, consist of 5H and 5T, namely hypovolemia, hypoxia, hypothermia, hypokalemia/hyperkalemia, hydrogen ion, cardiac tamponade, tension pneumothorax, pulmonary thrombosis, cardiac thrombosis, and toxins (Lampugnani et al., 2017). OHCA is the leading cause of death in developing industrialised countries (Porzer et al., 2017). The high mortality rate of people affected by OHCA is due to not getting Cardiopulmonary Resuscitation (CPR) or other appropriate and rapid help (AHA,

2020). The golden time for people experiencing cardiac arrest is less than 10 minutes (Kemenkes, 2022). The human brain will experience clinical death if it does not receive oxygen intake within 6-8 minutes and will experience biological death if it does not receive oxygen intake within 10 minutes or more (Putri, 2022). Therefore, cardiac arrest events, especially OHCA events, require the ability of first aiders to perform first aid effectively and efficiently for the survival of people who experience cardiac arrest (Mansour et al., 2019). This is the reason why ordinary people need to be given training related to Basic Life Support (BLS), especially Cardiopulmonary Resuscitation (CPR).

The provision of basic life support, one of whose components is the provision of Cardiopulmonary Resuscitation (CPR) does not always provide good results. In a study entitled conducted by Farzaneh et al (2015), stated that only 63 of 217 patients were successful after being given CPR (Farzaneh et al., 2015). In this study, there was a significant relationship between the success rate of CPR with the time of CPR implementation and the drugs given. Of the 154 cases of failed CPR, 93 cases (60.4%) of CPR were performed with less than 30 minutes (Farzaneh et al., 2015). The quality of CPR also affects the success rate and survival of patients. In a study by Yannopoulos et al (2015), it was stated that low-quality CPR can lead to worse survival for patients when discharged from hospital with mRS 3 compared to high-quality CPR (Yannopoulos et al., 2015).

Low-quality CPR has harmful effects on the survival as well as the neurological status of patients. In contrast, high quality CPR can maintain the survival of patients who experience cardiac arrest (Sapuan, 2016). CPR can be called high quality if it is performed by paying attention to characteristics that include a depth of 2-2.4 inches (5-6 cm) and a compression speed of 100-120 times/minute, providing perfect chest recoil for each compression, minimising interruptions or interruptions during compressions, and avoiding excessive ventilation (Fikriana & Al-Afik, 2016). College students are potential first aiders to provide first aid to victims in OHCA events. Therefore, to be able to provide first aid, college students must increase their basic life support knowledge and skills. One of the platforms for students to develop their knowledge and skills is through Student Activity Units (UKM) that focus on humanitarian activities. Universitas Padjadjaran has several UKMs whose work programmes focus on humanitarian activities at both the university and faculty levels. University-level humanitarian student activity units include PMPA Palawa Unpad, Korps Sukarela Palang Merah Indonesia (KSR PMI), and Search and Rescue (SAR) Unpad. Faculty-level humanitarian student activity units are Padjadjaran Nursing Corps (PNC Fkep Unpad) and Atlas Medical Pioneer (AMP FK Unpad). The five Student Activity Units (UKM) above have several similarities in their activities, especially in humanitarian activities. The student activity units studied in this study often carry out disaster and emergency activities so that they are likely to encounter people who experience cardiac arrest. Besides being able to occur in everyday life, cardiac arrest is one of the emergencies during disasters, disaster volunteers who provide first aid to patients must have good knowledge and abilities (Yuda et al., 2023). This is the background of the need for members of student activity units to know how to provide basic life support in the event of cardiac arrest.

Based on the results of interviews conducted with members of the student activity unit, data were obtained that the five student activity units had received basic life support training at least once, namely during education and training. UKM PMPA Palawa received training from PMI Bandung City during education and training activities with theoretical and practical methods. KSR PMI received basic life support training from PMI Bandung City staff who have been certified in advanced first aid. SAR Unpad received basic life support training from

SAR alumni who are also alumni of the Faculty of Medicine students who were given when members were still prospective students and at mabim activities with material and practical methods. PNC Fkep Unpad received basic life support training from alumni using the curriculum obtained in emergency and critical care lectures when members were still in the advanced education stage. AMP FK Unpad who also has a health science background learns basic life support in lectures and upgrading is done by inviting alumni who have become specialists and have the ability in the field of basic life support.

Benjamin Bloom distinguishes 3 domains that can influence a person in behaviour, namely knowledge, attitudes, and actions (Notoatmodjo, 2010). This theory can be used to look at the behavioural domain in the process of providing basic life support. In this study, the focus is on the knowledge domain because the humanitarian student activity units at Universitas Padjadjaran that are used as the population receive training related to basic life support from different sources with different methods. Therefore, it is necessary to have data on the level of knowledge of each member of the student activity unit before examining the skills to perform basic life support. Knowledge is the most important domain for the formation of a person's action (Hendrawan et al., 2019). Attitudes will arise based on knowledge and understanding of an object or problem (Notoatmodjo, 2010). In Novitarum & Simbolon's research (2017) shows that a positive attitude in providing basic life support is in line with a good level of knowledge and vice versa (Novitarum & Simbolon, 2017). The study concluded that knowledge related to basic life support is the most important thing in providing first aid to victims of cardiac arrest (Novitarum & Simbolon, 2017). Based on the above background, in this study the authors identified the description of the level of knowledge of members of the humanitarian student activity unit at Universitas Padjadjaran, namely UKM PMPA Palawa Unpad, Indonesian Red Cross Volunteer Corps (KSR PMI), Search and Rescue (SAR) Unpad, Padjadjaran Nursing Corps (PNC Fkep Unpad), and Atlas Medical Pioneer (AMP FK Unpad) who were respondents in this study. The purpose of this study was to determine the level of knowledge of basic life support in members of the student activity unit as research respondents.

## **METHOD**

The research method used was descriptive quantitative with a cross sectional approach. The variable of this study is the level of knowledge of basic life support in members of the Universitas Padjadjaran Student Activity Unit (UKM) engaged in the humanitarian field. The research was conducted from January to February 2024 with a population of 158 members of the Student Activity Unit (UKM) in the humanitarian field at Universitas Padjadjaran. The sampling technique used convenience sampling type with the sample size obtained from the calculation of the slovin formula, which is a minimum of 114 samples. In this study, a total of 120 samples were obtained with a distribution of 23 Palawa members, 14 PMI KSR members, 13 SAR members, 33 FKep PNC members, and 37 FK AMP members. The instrument used was a knowledge level questionnaire regarding demographic data and 30 knowledge questions related to basic life support.

This study uses primary data that has received ethical approval with number 705/KEP.01/UNISA-BANDUNG/I/2024. The data collection process begins with an application for research permission to 5 student activity units that become respondents. Furthermore, conducting informed consent to prospective respondents by explaining the purpose of the study. After the respondents were willing to become respondents, questionnaires and consent sheets were distributed in the form of google forms to each respondent through the head of the student activity unit to be filled in. Based on the results of

the previous validity test by Suhatono (2022), 2 invalid question items were obtained, namely question item number 1 and number 12, but considering the question is important, the 2 question items are still included in the questionnaire. Furthermore, the reliability test was carried out for 28 question items and obtained a Cronbach's Alpha value of 0.797. Therefore, the 28 items of knowledge questions were declared reliable. Before being distributed, this questionnaire was carried out face validity test to 5 students who had the same characteristics as the respondents and stated that the questionnaire could be understood in terms of words and meaning. Data were processed with univariate data analysis techniques presented in the form of frequency distribution.

**RESULTS**

Table 1.  
Respondent characteristics (n= 120)

Respondent characteristics		f	%
Age	19 years old	13	10,8
	20 years old	37	30,8
	21 years old	46	38,3
	22 years old	19	15,8
	23 years old	4	3,3
	24 years old	1	0,8
Gender	Female	90	75
	Male	30	25
UKM of Origin	PMPA Palawa	23	19,2
	KSR PMI	14	11,7
	SAR	13	10,8
	PNC FKep	33	27,5
	AMP FK	37	30,8
Faculty of Origin	Health Faculty	87	72,5
	Non-Health Faculty	33	27,5
Experience of BLS Training	Ever	113	94,2
	Never	7	5,8
Experience of Being Helper in a Disaster	Ever	44	36,7
	Never	76	63,3
Experience of Helping Cardiac Arrest Victims	Ever	12	10
	Never	108	90

Table 1 above shows that the majority of respondents were 21 years old (38.3%) and female (75%). Most of the respondents came from AMP UKM FK Unpad (30.8%) and came from the Faculty of Nursing (37.5%). A total of 113 people (94.2%) in this study had received basic life support training. However, as many as 76 people (63.3%) have never been a helper during a disaster and 108 people (90%) have never assisted a victim of cardiac arrest.. Data on the level of knowledge in this study are presented in a frequency distribution table and percentages. This study used a BLS knowledge questionnaire consisting of 30 multiple choice questions.

Table 2.  
Frequency distribution of basic life support knowledge level (n= 120)

Category	f	%
Good	108	90
Poor	12	10

Table 2 above shows that almost all members of the humanitarian student activity unit at Universitas Padjadjaran who were respondent had a basic life support knowledge level that was in the good category, namely 108 people (90%).

Table 3.  
Crosstab of respondent’s knowledge level of basic life support with respondent’s characteristics (n= 120)

Respondent characteristics		Knowledge level			
		Good		Poor	
		f	%	f	%
Gender	Female	83	92,2	7	7,8
	Male	25	83,3	5	16,7
UKM of Origin	PMPA Palawa	15	65,2	8	34,8
	KSR PMI	14	100	0	0
	SAR	10	76,9	3	23,1
	PNC FKep	33	100	0	0
	AMP FK	36	97,3	1	2,7
Experience of BLS Training	Ever	102	90,3	11	9,7
	Never	6	85,7	1	14,3
Experience of Being Helper in a Disaster	Ever	38	86,4	6	13,6
	Never	70	92,1	6	7,9
Experience of Helping Cardiac Arrest Victims	Ever	12	100	0	0
	Never	96	88,9	12	11,1

Table 3 shows that most respondents with female gender (92.2%) and male (83.3%) have a level of knowledge in the good category. All respondents (100%) who came from the KSR and PNC student activity units had a good level of knowledge. Based on basic life support training experience, respondents who had received training had a higher percentage of good categories (90.3%). Respondent’s knowledge based on the experience of being a helper in disaster situations and being a helper for victims of cardiac arrest had the same percentage of good categories between those who had and had never been.

## DISCUSSION

Cardiac arrest is a condition of sudden cessation of heart activity so that the patient cannot respond, there is no normal breathing, and there are no signs of circulation (AHA & ACC, 2020). This cardiac arrest event, within seconds, will stop the electrical and pumping activity of the heart so that the human circulation system will stop and blood cannot be pumped throughout the body. This causes patients who experience cardiac arrest to lose consciousness suddenly and can have an impact on permanent brain damage and death (Lestari, 2022). Therefore, the occurrence of cardiac arrest requires first aid in the form of basic life support effectively and efficiently. The provision of basic life support must be in the golden time range, which is less than 10 minutes. Basic Life Support (BLS) is an emergency action given to cardiac arrest patients with the aim of preventing biological death (Husein, 2021). In the process of providing BLS, good knowledge and skills are needed from first aiders. Therefore, members of the humanitarian student activity unit at Universitas Padjadjaran who have the potential to become first aiders need to have good knowledge related to basic life support.

Based on the results of research conducted on members of the humanitarian student activity unit at Universitas Padjadjaran, almost all respondents, namely 108 people (90%) were in the category of good knowledge level related to basic life support. Based on these results, the majority of respondents have a good understanding of the 5 domains of basic life support knowledge on the research questionnaire, namely the domain of basic life support definition, steps to examine cardiac arrest patients, how to free the airway, how to perform basic life support, and high quality CPR. These results are in line with Erawati's research (2015) which states 184 respondents (74.8%) have good knowledge related to the definition of basic life support, 178 respondents (72.4%) have good knowledge related to danger theory, and 185 respondents (75.2%) have good knowledge related to the theory of asking for help (Erawati,

2015). In addition, the results of this study are also in line with Masruri's research (2021) which states that the majority of respondents answered correctly regarding the term CAB, the comparison of heart massage with breathing, and the cycle of artificial respiration (Masruri, 2021). However, the results of this study contradict research by Arinida (2013) which shows that respondents have insufficient knowledge about how to perform basic life support in general (Arinida, 2013).

In the basic life support definition domain, many respondents answered incorrectly on questions related to who is vulnerable to cardiac arrest. In this question, the correct answer is all adults, while respondents who answered incorrectly chose option D, namely no one is vulnerable with a percentage of 17.5%. According to the Ministry of Health, heart disease which includes heart attack/cardiac arrest is susceptible to both men and women. However, women usually experience cardiac arrest 10 years later than men due to the presence of the hormone estrogen in women before menopause. Estrogen, according to the National Institutes of Health, can keep arteries flexible (Rokom, 2024). So, it is necessary to increase respondents' understanding of this question so that everyone can be more vigilant regarding heart disease, especially cardiac arrest.

In the domain of steps to check cardiac arrest patients, many respondents answered incorrectly on questions related to steps to be taken after ensuring the victim is safe with the correct answer checking awareness or response. Many respondents who answered incorrectly had option A, which is to call for help. According to the International Federation of Red Cross and Red Crescent (2011) in Erawati (2015), a primary survey to assess the victim is important to do in order to provide effective assistance. After the primary survey or recognition, the helper must immediately activate the emergency response system or call for help (Berg, et al, 2010). Therefore, it is necessary to provide understanding to respondents regarding the importance of performing basic life support in the right order in order to provide effective assistance.

In the domain of how to free the airway, the majority of respondents answered incorrectly on questions related to how to provide breath support. This is because science continues to develop so that there are changes in the process of providing help. According to the Ministry of Health (2022), breathing assistance can be provided in several ways, namely mouth to mouth, mouth to nose, mouth/to hood, and using a bag mask (Aditianingsih, 2022). However, along with the development of science and changes in human health conditions, the provision of artificial respiration without the use of tools may not be carried out (hands-only CPR) if the helper does not know the victim or the victim is indicated to have an infectious disease (Kleinman et al., 2018). This is a form of anticipation so that there is no transmission of disease from the patient to the helper or vice versa. However, in theory, breathing can be given through the methods mentioned above. Because of this, it is necessary to improve learning that refers to the latest guidelines regarding how to provide basic life support.

In the domain of how to perform basic life support, many respondents answered incorrectly on questions related to what a helper should do if they feel exhausted while performing CPR with the correct answer being to stop performing CPR. Many respondents answered incorrectly by answering option D, namely rest. Based on an article from the Ministry of Health (2022), CPR can be stopped if there are conditions such as the return of pulse and spontaneous breathing marked by the patient responding such as coughing or moving, the helper is threatened with safety when performing CPR, the helper is exhausted, and there is a do not resuscitate statement on the patient (Aditianingsih, 2022). In the steps of giving CPR, it

is stated that the helper must pay attention to the 3As, one of which is the safety of the helper. If the helper feels tired and unable to continue, the helper must stop performing CPR to prevent the helper from becoming an additional victim. In this case, in addition to being given training on how to perform basic life support to victims, respondents need to be given an understanding of the things that need to be considered for their own safety and that of the patient.

In the domain of high quality CPR, many respondents answered incorrectly on questions related to the right time to evaluate or check the victim's pulse. The correct answer to this question is after 5 cycles, while many respondents answered after 1 cycle. High quality CPR is the key to achieving Return of Spontaneous Circulation (ROSC) or the return of pulse and breath of patients who previously experienced cardiac arrest (Jamil, 2016). Based on the AHA 2020 Guidelines, there are five components needed to make high-quality CPR, namely the minimum compression depth is 2 inches or 5 cm, the compression speed that must be given is 100-120x/minute, minimising interruptions, full recoil, and avoiding excessive ventilation by maintaining a ratio of 2 breaths for every 30 compressions (AHA, 2020). Evaluating every 1 cycle will increase the interruption time so that CPR cannot be said to be of high quality. If the helper does not perform high quality CPR, the percentage of successful CPR will decrease, so practical training is needed so that helpers can better understand how to perform high quality CPR.

The level of knowledge can be influenced by various factors, both internal and external. According to Mubarak (2007), knowledge is influenced by 7 factors, including education, occupation, age, interest, experience, environment, and information (Husein, 2021). According to Wawan and Dewi (2010), some other factors that were not mentioned earlier are gender, socio-culture, and training (Zaenab, 2021). Based on the results of the study, respondents are in the age range of 19-24 years, which includes early adulthood. Early adulthood starts from the age of 18 to 25 years which is a transition period from adolescence to adulthood characterised by continuous change (Santrock, 2011). According to Notoatmodjo (2003), with increasing age, the individual's capacity and mindset will increase so that the knowledge gained will be better (Wiliastuti, 2017). This shows that the respondents in this study were ready to process information into knowledge.

In this study, the respondents consisted of 90 women (75%) and 30 men (25%). In the crosstab table, both have a good category in the level of basic life support knowledge, namely 92.2% women and 83.3% men. This shows that in this study, there is no difference in the numerical results of the data between gender and the level of knowledge of respondents. The results of this study are in line with research from Ifada that there is no significant relationship between gender and level of knowledge (Ifada, 2010). Meanwhile, based on research conducted by Yohana, it shows that men and women have the same level of knowledge because they are in the same environment (Yohana, 2006).

The environment, according to Mubarak (2007), is one of the factors that influence the level of knowledge. In this study, the Student Activity Unit (UKM) is an environment that can influence its members regarding the level of knowledge. Based on the results of the study, student activity units whose members' level of knowledge is in the good category up to 100% are PNC Fkep Unpad and KSR PMI Unpad. In addition, AMP FK Unpad has members with a good level of knowledge up to 97.3%. PNC Fkep, KSR PMI, and AMP FK are student activity units at Universitas Padjadjaran that are specific in the health sector. These three student activity units also have members who are mostly from health study programmes so

that they learn about basic life support more deeply in the lecture curriculum compared to UKM members who do not come from health study programmes. This is in line with research conducted in Denpasar by Suranadi that the level of knowledge from doctor study programmes (6.2%), nursing (8.7%) and psychology (5.0%) is better than other study programmes (Suranadi, 2017).

In addition to age, gender, and environment, another factor that affects knowledge is training. Basic Life Support (BLS) training is an important factor in the level of individual knowledge related to basic life support. Information obtained from training can affect an individual's knowledge and way of thinking. In this study, 113 respondents (94.2%) had received training related to basic life support at least once. According to Mubarak (2007), one of the factors that can affect knowledge is information (Husein, 2021). Information related to basic life support can be obtained from a training. This result is in line with research conducted by Fernando (2018) which shows a positive change in respondents after being given training related to basic life support compared to before being given training (Mongkau, 2018).

In addition, a person's level of knowledge can also be influenced by experience. According to Kotur & Anbazhagan (2014), experience can make someone wiser in their performance. This causes experience to affect a person's level of knowledge (Suranadi, 2017). In the results of the study, as many as 12 respondents (10%) had helped victims of cardiac arrest and all of these respondents had a level of basic life support knowledge that was classified as good. This is in line with research conducted by Izzati, H. et al (2021) which showed the results of respondents with 1-time CPR experience had good knowledge as many as 14 respondents, CPR > 1 time all respondents had good knowledge, and those who had never performed CPR had sufficient knowledge (32.9%) and less (21.2%) (Izzati et al., 2021).

From the results of this study, the majority of respondents answered incorrectly on procedural questions rather than theoretical, so the Student Activity Unit (UKM) in the field of humanitarianism at Universitas Padjadjaran which is the research respondent needs to create activities aimed at increasing the understanding of its members regarding basic life support, especially procedures. Activities that can be carried out by each student activity unit include working with nurses or lecturers from nursing study programmes to provide education in the form of basic life support practices to members of student activity units. In addition, the student activity units involved in this study can hold joint exercises with the aim of improving and generalising understanding of basic life support.

## **CONCLUSION**

Based on the results of the research that has been carried out, it can be concluded that the level of knowledge related to basic life support in members of the Student Activity Unit (UKM) at Universitas Padjadjaran with a total sample of 120 people shows that almost all respondents fall into the good category in general. Most respondents answered incorrectly on procedural questions when compared to theoretical questions. Therefore, respondents need to improve their understanding and ability to provide basic life support through practice. The Student Activity Unit which is the respondent in this study can create activities aimed at increasing the understanding and ability of its members to perform basic life support. These activities can be in the form of education and practice of providing basic life support periodically in collaboration with nurses or lecturers from nursing study programmes. In addition, joint exercises can also be carried out with inter-unit student activities engaged in the humanitarian field discussing how to perform CPR and procedures for providing breathing assistance.

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