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The Effect of Basic Life Assistance (BHD) Education on the Knowledge Level of Long-Distance Runners in the RIOT Gorontalo Community

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ABSTRACT

Sudden cardiac arrest is a serious health threat in long-distance running that requires rapid treatment through Basic Life Assistance or BHD to increase the chances of safety of the victim. However, runners' knowledge of the procedure is often not optimal, so structured education is needed. This study aims to analyze the influence of BHD education on the level of knowledge of long-distance runners in the RIOT Gorontalo community. This research method uses a pre-experimental one-group pretest-posttest design. The population of this study is Long Distance Runners in the RIOT Gorontalo Community, totaling 120 respondents. The sample was mixed with the purposive sampling technique totaling 55 respondents who were given interventions in the form of education using lecture methods and simulations measured through questionnaires. The data analysis of this study used the Wilcoxon Signed Ranks Test. The results showed that before the intervention, the majority of respondents had sufficient category knowledge as much as 56.4%, but after being given education, there was a significant increase where 52.7% of respondents reached the good category. Statistical results showed a p-value of less than 0.001 (<0.05) which proved the very significant influence of BHD education on improving runners' knowledge. These findings are expected to be the foundation for the running sports community in developing routine safety training programs to improve the preparedness of community members in dealing with cardiac emergencies on the running track.

INTRODUCTION

Sport is one of the important activities in supporting the physical, mental, and social community. Maintaining body health is certainly very important in the sustainability of human life, because by having a healthy health, of course, we will avoid various diseases so that we can carry out various activities normally. The benefits of exercise are not only beneficial for physical health, but at the same time improve mental health. Scientists have researched many benefits of exercise for body functions, including improving the respiratory system, facilitating digestion, helping to overcome appetite problems, tightening leg muscles, and improving sleep quality. One of the sports that is in great demand because of its ease and effectiveness in improving physical fitness is running (Putra et al., 2025).

According to data from Popolix, which is Platform Survey online, running ranks at the top of the sport that is of interest to the Indonesian people (44%), followed by cycling (32%) and swimming (27%); As many as 65% of respondents stated that they chose sports because they were considered easy to do. This trend is reinforced by data Garmin Connect which shows an increase in running activity in Indonesia throughout 2024 to early 2025: 56,463 activities in January 2024, increasing to 142,975 in December 2024; recorded 135,551 activities in January 2025, then increased post-Eid to 175,969 in April 2025, and jumped to 242,627 in May 2025. These figures indicate a growth in interest in running in the community.Garmin Connect also report Pace average Indonesian runner 06:28 minutes/km with an average mileage of 8.37 km per session (Santosa, 2025).

High health problems The prevalence of running sports in Gorontalo shows an increasing trend in recent years, marked by the growth of active running communities and the expansion of community participation. Informal data collected from community activities show that interest in running is not only concentrated in individuals, but also develops through collective forums. Some of the communities that are quite well-known in Gorontalo include (Running Is Our Therapy) RIOT, The Gorontalo Runners, Leopard Team, Sahabat Pesso, as well as a number of independent runners outside the official community. The presence of these communities is a strong indicator that running sports have become part of the lifestyle of the people of Gorontalo.

Regular activities, participation in Event regional and national issues, as well as involvement in healthy living campaigns, further underscore that the level of community involvement in running sports is on a positive and increasing trend. In various regions including Gorontalo City, running sports are becoming more popular along with increasing public awareness of a healthy lifestyle. According to (Sanga, 2025) People who used to see running as something ordinary, are now starting to be interested in even participating in activities Fun Run which took place in Gorontalo. In addition to the route that is quite long, which makes the number of participants so much that this activity attracts the attention of many people.

The sport of running according to the distance traveled is divided into three groups: short-distance running (Sprint) 100 m, 200 m, 400 m which is done at full speed; medium-distance running, which has similar techniques Sprint but differ in the step pattern and speed setting; as well as long-distance running, which generally includes the 21K half marathon and 42K marathons, where runners emphasize endurance and Pacing who are more physically and mentally relaxed (Rohman, 2022).

Long-distance running is one of the athletic disciplines that tests the body as a whole the most. Long-distance running involves Endurance or long endurance in which a runner must maintain a longer stable pace. Long-distance running involves two main aspects: physical endurance and strategy Pacing that is right. Understanding the energy system, efficient techniques, and how to manage body resources during the race is something that every long-distance runner must master (Maheswari et al., 2025).

However, behind the health benefits of exercise, there are risks that can threaten life, especially when sports activities are carried out without proper physical preparation or knowledge of medical emergencies. One of the emergencies that is often unnoticed and can occur suddenly is sudden cardiac arrest (sudden cardiac arrest). Cardiac arrest is a medical emergency condition that occurs when the heart's electrical activity is suddenly disrupted, causing the heart to stop pumping blood throughout the body. As a result, the blood supply that carries oxygen to the brain and other vital organs is stopped, so that in a matter of minutes it can lead to permanent organ damage to death if not immediately (Purbianto et al., 2024).

The main symptoms of cardiac arrest are sudden loss of consciousness, shortness of breath, and absence of pulse. In some cases, before collapsing, the victim may experience shortness of breath, dizziness, or palpitations. Cardiac arrest can strike anyone, including healthy-looking individuals, especially when doing strenuous physical activity such as long-distance running. The main cause of cardiac arrest is usually a heart rhythm disorder called ventricular fibrillation or pulsless ventricular tachycardia (Purbianto et al., 2024)

Treatment of cardiac arrest should be done as soon as possible through Basic Life Assistance (BHD), which includes chest compressions and artificial breathing. This action aims to maintain blood flow and oxygen to the brain until further medical help is available. Every minute without treatment, the victim's chances of survival decrease by about 7–10%. Therefore, the rapid response of the community greatly determines the final outcome of this condition (Dungga & Liputo, 2024).

The phenomenon of sudden cardiac arrest during running is not new. Global statistics note that cardiac arrest incidents while running are a real risk that occurs globally, although rare. Internationally, the incidence is estimated to be around 0.54-2.5 cases per 100,000 participants (Kim et al., 2025)

Based on literature searches and official media reports, at least 21 cases of sudden cardiac arrest that led to death were recorded in various incidents Event big races in Indonesia, such as the Jakarta Marathon (2018, 2023), Borobudur Marathon (2018, 2023), Bali Marathon (2019), as well as a number of running races in Surabaya, Makassar, Jogja, and other areas. The latest case was recorded at the Kebumen Geopark Trail Run in 2025, where a young participant died of sudden cardiac arrest (April, 2025). This fact shows that the risk of cardiac arrest does not only occur in professional runners, but also general participants in various categories of long-distance running competitions in Indonesia. In Indonesia itself, this case is starting to receive serious attention as awareness of the importance of BHD training and the community's quick response in emergency conditions increases. (Maheswari et al., 2025).

Mitigation efforts have begun to be carried out, for example, on June 1, 2025, the Provincial Health Office together with Ainun Runners and the Indonesian Emergency and Disaster Nurses Association (HIPGABI) held Cardiopulmonary Resuscitation (CPR) and Basic Life Assistance training specifically for running activists in the Alfamidi parking lot. This activity received appreciation from the Head of the Health Office because these skills are crucial for the runners. Although there have been no official reports of cardiac arrest cases in Gorontalo, this training initiative reflects the increasing awareness and priorities of local preparedness (Pemngo, 2025).

Data from World Health Organization (WHO) suggests that cardiovascular diseases, including cardiac arrest, are the leading cause of death worldwide. About 19.8 million people died each year from this disease in 2022 (WHO, 2025) In Indonesia itself, the Ministry of Health of the Republic of Indonesia (Tarmizi, 2023) noted that the death rate of cardiovascular disease incidence is recorded at 651,481 residents every year. Meanwhile, in Gorontalo itself, the prevalence rate of heart disease in the population of all ages based on the results of doctor's diagnosis in Gorontalo province is 3,821 (0.60%) (BPS, 2023). This shows the importance of the general public's understanding, including long-distance runners, of early actions that can save lives in the event of an emergency.

Knowledge of basic life support, especially in cases of cardiac arrest, is actually very important and must be known by all ordinary people considering the role of ordinary people as first responders, especially those who are close to the location of victims who have suffered cardiac arrest (Suleman, 2023). The involvement of a community or runner group in emergency management becomes crucial, given that they are on the field in person and share the same activity space. Because they run together, the initial response to an emergency situation such as injury, extreme fatigue, or sudden cardiac arrest often relies on the quick reaction of fellow runners. Therefore, the capacity and preparedness of runners in the face of emergency conditions can play a significant role in saving lives before professional medical help arrives., especially in situations where professional medical assistance is not yet available. The sooner BHD's actions are taken, the greater the victim's chances of survival. However, the runner's awareness and skills in performing this action are still very limited. Several studies have shown that BHD training for athletes, especially runners, can increase readiness and courage to act in emergency situations (Nurfadilla et al., 2024).

One effective way to increase public knowledge about Basic Life Assistance (BHD) is through health education or education. Health education has been proven to improve a person's understanding of first aid measures when facing sudden cardiac arrest. According to research (Aisyah et al., 2022) after being given BHD education, the participants' knowledge level increased significantly from the poor to good category, which shows the effectiveness of health education in increasing people's readiness to face emergencies. This shows that BHD education is one of the right strategies to foster awareness and basic skills in providing first aid quickly and correctly.

In addition, good knowledge of BHD is also directly related to one's preparedness in handling cardiac arrest cases outside the hospital. Research by (Hizrian et al., 2022) showed that there was a significant improvement in community knowledge and skills after BHD training, where participants were better able to recognize signs of cardiac arrest and perform cardiopulmonary resuscitation correctly. These findings confirm that BHD educational activities are very important to be carried out on an ongoing basis so that the community has readiness and confidence in helping cardiac arrest victims before medical personnel arrive at the scene.

Based on an initial survey in the form of observations and direct interviews with the running community, namely Running is Our Therapy (RIOT) to 7 community members said that there was no training or education about Basic Life Assistance in their community and based on interviews 6 out of 7 runners did not know about Basic Life Assistance. They do not know much about the treatment of cardiac arrest. The majority cannot recognize early symptoms such as chest pain, shortness of breath, dizziness, or sudden loss of consciousness. Some even consider cardiac arrest to be the same as regular cardiac arrest, when medically the two are different. This ignorance has the potential to hinder the quick action needed in the event of an emergency. Most runners still don't understand what to do when watching someone go into cardiac arrest. Basic knowledge of life-saving measures such as checking consciousness, calling for help, performing chest compressions, and giving artificial breath.

With the increase in the number of runners and the frequency of sports activities in public spaces, especially in Gorontalo City, the risk of medical emergencies such as cardiac arrest also increases. Therefore, it is important to know the extent of distance runners' knowledge about handling cardiac arrest as a preventive and promotive effort in the field of community health.

Thus, this study aims to determine the effect of basic life support education on long-distance runners in the RIOT Gorontalo community.

RESEARCH METHODS

This research has been carried out in front of the UNG nursing laboratory to the Riot gorontalo runner on December 6, 2026. The type of quantitative research uses a pre-experimental research design. The sampling technique in this study used purposive sampling with a sample of 55 respondents. This research instrument uses a knowledge questionnaire which is divided into two demographic data sheets and a knowledge questionnaire on Basic Life Assistance

RESEARCH RESULTS

Univariate Analysis

Characteristics of Respondents Based on Demographic Data

Table 1. Characteristics of respondents by age

Yes	Age	Frequency (n)	Percentage (%)
1	Teens (13-19 years old)	1	1,8%
2	Young Adults (20-29)	28	50,9%
3	Adult (30-59)	26	47,3%
Total		**55**	**100**

Source : Primary Data 2025

Based on the table above, it was obtained that the characteristics of respondents based on age showed that most of the respondents were in the category of young adults (20–29 years), namely 28 respondents (50.9%). This shows that the majority of respondents are of productive age. Meanwhile, respondents in the adult category (30–59 years) amounted to 26 respondents (47.3%), and a small number of respondents were in the adolescent category (13–19 years), which was as many as 1 respondent (1.8%)

Table 2. Characteristics of respondents by gender

Yes	Classification of Adolescents	Frequency (n)	Percentage (%)
1	Men - men	40	72,7%
2	Women	15	27,3%
Total		**55**	**100%**

Source : Primary Data 2025

Based on the table above, it was found that the gender, most of the respondents were male, namely 40 respondents (72.7%), while female respondents amounted to 15 respondents (27.3%).

Table 3. Characteristics of respondents by Last Education

Yes	Gender	Frequency (n)	Percentage (%)
1	High School	16	29,1%
2	College	39	70,9%
Total		**55**	**100%**

Source : Primary Data 2025

Based on the distribution table of respondents based on the last education in the RIOT Gorontalo community, it shows that most of the respondents have the last education of Higher Education, which is as many as 39 people (70.9%). Meanwhile, respondents with the last high school education amounted to 16 people (29.1%). Thus, it can be concluded that the majority of respondents in this study came from groups with a college education level.

Table 4. Characteristics of respondents based on parents' marital status

Yes	Parent's Marriage Status	Frequency (n)	Percentage (%)
1	Married	78	95.1
2	Divorce	4	4.9
Total		**82**	**100**

Source : Primary Data, 2025

Based on the table above, almost all of the respondents' parents' marital status is in the married category, namely 78 respondents (95.1%), the remaining 4 respondents (4.9%) are in the divorced category.

Table 5. Characteristics of respondents by occupation

No.	Jobs	Frequency (n)	Introduce yourself (%)
1.	ASN	15	27,3%
2.	Self-employed	15	27,3%
3.	Bank Employee Store Employee	4	7,3%
4.	Not Working School Operator	3	5,5%
5.		17	30,9%
6.		1	1,8%
Total		55	100%

Source : Primary Data, 2025

Based on the table above, it is known that the characteristics of respondents based on work show that most of the respondents have not worked, namely 17 respondents (30.9%). Respondents who work as civil servants and self-employed each amounted to 15 respondents (27.3%), respondents who worked as bank employees as many as 4 respondents (7.3%), store employees as many as 3 respondents (5.5%), and school operators were the group with the least number, namely 1 respondent (1.8%).

Table 6. The distribution of respondents based on the level of knowledge of the runners before and after being given lecture and simulation education

No.	Long Been Runners	Frequency (n)	Introduce yourself (%)
1.	< 1 year	7	12,7%
2.	1 – 3 years	32	58,2%
3.	>3 years	16	29,1%
Total		55	100%

Source : Primary Data, 2025

Based on the table, it shows that from the 55 respondents studied, data was obtained, the knowledge level of RIOT runners was obtained, most of them were in the sufficient category as many as 31 respondents with a presentation of 56.4%, then the category of less as many as 20 respondents with a percentage of 36.4% and a small part of them were in the good category as many as 4 people with a percentage of 7.3%.

Then after being given education Based on the table showing that from the 55 respondents studied, it was obtained that the knowledge level of riot runners was mostly increased, with knowledge level data being in the good category of 29 respondents with a percentage (52.7%), then the sufficient category as many as 24 respondents with presentations (43.6%) while a small part was in the less category as many as 2 respondents with a percentage of 3.6%.

Bivariate Analysis

Table 7. Analysis of the influence of BHD education on the knowledge level of RIOT runners

No.	Runner Knowledge Level	Knowledge Level Pre-test		Knowledge Level Post-test	
		(n)	(%)	(n)	(%)
1.	Good	4	7,3%	29	52,7%
2.	Enough	31	56,4%	24	43,6%
3.	Less	20	36,4%	2	3,6%
Total		55	100%	55	100%

Source : Primary Data, 2025

Based on the table, the results were obtained that 55 respondents obtained the average runner's knowledge about BHD before education 7.07 with a standard deviation of 2,332 and after education was carried out the average runner's knowledge about BHD which was 10.15 with a standard deviation of 2,745 Thus, there was an average difference in the average before and after education for respondents. Based on the

SPSS output using the Wilcoxon Sign Rank Test test, it is known that Asymp.sig. (2-tailed) value 0.001, because the value is 0.001 <0.05, it can be concluded that the hypothesis is accepted, meaning that there is an influence of BHD education on the level of knowledge in the RIOT Gorontalo community

DISCUSSION

Runners' knowledge before being given basic life support education in the RIOT Gorontalo Community

The results showed that the level of knowledge of runners about Basic Life Assistance (BHD) before being educated with the lecture method was in the poor category, namely as many as 28 respondents (36.4%). Respondents in this category were mostly under-answered for questionnaire indicators number 2, 6, 10, and 11, as evidenced by the data showing that only about 41.4% were able to answer correctly in relation to the purpose of Basic Life Assistance, BHD actions, procedures for calling for assistance, and cardiopulmonary resuscitation pressure points.

Based on my interview with the RIOT community leader, this condition occurs because most of the runners have never received an explanation or direct experience related to handling a heart emergency. Respondents tend to understand first aid as limited to helping victims in general, so they do not understand the main purpose of BHD, are not able to recognize BHD's actions appropriately, and do not know the steps that must be taken to call emergency assistance. In addition, the captain of RIOT said that the respondents had never participated in the simulation or practice of cardiopulmonary resuscitation, so they did not know the correct pressure point when performing the CPR. This condition shows that the limited understanding of the respondents is more due to the lack of exposure to education and direct experience related to Basic Life Assistance before the study was conducted. Respondents with the knowledge category are less dominated by young age, have a high school education equivalent, and have a running time of less than one year, so exposure to information and experience related to Basic Life Assistance is still limited and reflected in the many errors in the question item.

This is in line with the theory of Susilawati et al., (2022) that the factors that affect knowledge are education, information, experience, culture, social, and economic. One of the factors that plays a role in increasing the absorption of accurate knowledge in a person is education. Knowledge or the process of knowing occurs after an object is sensed. A crucial aspect of the formation of one's actions is knowledge/cognition.

This is in line with research by Doni et al., (2024) conducted on a community with a total of 38 respondents who have a low level of knowledge because they do not understand the definition of BHD and the concept of Basic Life Assistance.

As for runners with knowledge at a sufficient level, there are 31 people (56.4%) who have not been given education. The results showed that before being educated, some respondents did not answer questionnaires number 2, 6, 12, and 13, which were related to the purpose of BHD, relief measures for cardiac arrest victims, and the speed and depth of chest compression. These findings show that respondents have understood the basic concept of BHD, but have not fully mastered the aspects of its objectives and technical procedures for implementation.

This condition can be explained based on the material characteristics of BHD, where understanding the purpose and procedure of cardiopulmonary resuscitation, especially related to chest compression parameters, requires specific knowledge and certain standards. Questions 12 and 13 require respondents to find out the standard numbers of chest compression speed and depth, which are generally only obtained through special education or training. Meanwhile, the errors in questions 2 and 6 show that respondents still interpret BHD as a general relief measure, without understanding in detail the main purpose and appropriate action in cardiac arrest conditions. This illustrates that the respondents' knowledge in the category of sufficient is still at the level of general understanding and has not reached comprehensive technical mastery. Respondents in this category are generally still inaccurate in answering questions related to the sequence of BHD, indications of cardiac arrest and basic resuscitation techniques.

Based on the demographic characteristics, the knowledge category is quite dominated by early adult respondents with 1-3 years of runner experience and high school/vocational education background. This condition shows that respondents have an initial awareness of the importance of health and safety but exposure to information or direct experience related to BHD is still limited, so the knowledge they have has not reached the good category.

This condition is in line with the theory put forward by (Notoatmodjo, 2014) which states that a person's knowledge is influenced by experience, exposure to information, and education received. Individuals who have never received formal health education or training tend to only have knowledge at the level of know and limited comprehension, so their knowledge is in the category of sufficient.

This is in line with the research of Suryadi et al., (2025) Research conducted in the Cinere area, Depok reported that 17 respondents had a sufficient level of knowledge in the pre-test, which indicates that the respondents already had basic knowledge about BHD, but did not fully understand the definition, objectives, and correct BHD action steps before being given counseling.

While the minority group is a group with a good level of knowledge of 4 respondents (7.3%), this is because the respondents at the time of education already have experience receiving information related to BHD. Based on demographics, the category is well dominated by the demographic of adults and running experience >3 years

In addition, based on age categories, runners in the age range of 13–19 years tend to have a lower level of pre-test knowledge than runners in the age groups of 20–29 years and 30–59 years. This difference shows that age plays a role in shaping an individual's ability to receive and understand health information. As they get older, individuals tend to have better thinking maturity and ability to grasp information, so that their knowledge becomes wider.

This is in line with the opinion of Notoatmodjo, (2014) who states that age affects a person's ability to grasp and mindset, thus affecting the level of knowledge possessed. Individuals in adulthood generally have a better understanding than adolescence because they have experienced a more mature learning process and cognitive development.

In addition to the age factor, the length of running also plays a role in shaping the runner's pre-test knowledge level. Runners who have been running for a longer period of time tend to have a better level of initial knowledge than runners who have just started running. Long running can be seen as a form of experience in living healthy living behaviors, so that individuals have a greater opportunity to learn and understand health information related to physical activity.

This is in line with the research of Febriana & Astuti, (2025) which states that experience is the main source of acquiring knowledge, because knowledge is formed through empirical experience and direct interaction with the environment. Repeated experiences allow individuals to better understand an object or condition. Thus, the results of this study show that age and length of running both play a role in the difference in the level of knowledge in the pre-test of runners.

Runners' knowledge after being given basic life support education in the RIOT Gorontalo community

After being educated about BHD, the results of the study were obtained, as many as 29 respondents (52.7%) were included in the category of good knowledge. It can be seen from the data that there has been an increase in the number of knowledge that is in the good category. Where before being given education for respondents with knowledge at a good level, there were only 4 respondents. However, after being given education, there were 29 respondents with a good level of knowledge. According to the results of the researcher's analysis, changes in individual knowledge at the time of receiving the material are the cause of increasing knowledge from a low level to a sufficient level or a good level.

This is in line with the theory (Notoatmodjo, 2016) in (Silitonga & Nuryeti, 2021) that defines knowledge as a process of curiosity, from those who do not know to know. Knowledge is based on the curiosity that is born from the individual. Knowledge can be obtained from anywhere, especially from the learning process and questions and answers in the hope of finding a common ground and truth.

This is influenced by the educational method used, namely a combination of lectures and simulations. The lecture method is delivered in a communicative and interactive manner by building closeness between the presenter and the respondent, so as to create a comfortable and fun learning atmosphere. The presenter gave an explanation using easy-to-understand language and case examples that were close to the respondent's activities, so that the Basic Life Assistance material was easier to accept. Furthermore, the simulation method was carried out by directly practicing the correct cardiopulmonary resuscitation (CPR) action, so that respondents could see and try directly the technical steps taught. The respondents' active involvement in the simulation increases interest and understanding of the material. In addition, the use of leaflet media that is designed in an attractive and concise manner helps respondents stay focused and makes it easier to recall the material that has been delivered.

In the category of sufficient knowledge after the post-test, there were 24 respondents (43.6%).this condition reflects an increase in respondents' knowledge, because some respondents who were previously in the poor category have increased to the sufficient category, while other respondents have increased further to the good category after being given education. This is because in providing counseling, respondents pay attention to the material presented by the speaker, but there are still respondents who while the material is ongoing, respondents go aside to smoke and still do not pay attention.

This is in line with the theory (Notoatmodjo, 2017) in (Majid et al., 2024) that the capture of knowledge provided through the sense of sight is 75% to 87%, through the sense of hearing is 13%, and 12% from the other senses. The more senses are involved in the capture of the message, the easier it is for the message to be received by the educational target.

The category of less after being educated about BHD as many as 2 respondents (3.6%), this is because perhaps the respondents are seen from their level of education while still in high school so they are still in the poor category. This is in line with research This is in line with the theory (Susilawati et al., 2022) that factors that affect knowledge are education, information, experience, culture, social, and economic. One of the factors that plays a role in increasing the absorption of accurate knowledge in a person is education. Knowledge or the

process of knowing occurs after an object is sensed. A crucial aspect of the formation of one's actions is knowledge/cognition.

Based on the explanation above, the researcher assumes that there is a change in respondents' knowledge because the respondents already know well the counseling material provided so that the respondents become easier to answer the questionnaire and are also followed by lecture and simulation methods that attract the attention of the respondents.

The effect of BHD education on runners' knowledge level

The results of bivariate analysis using the Wilcoxon test between BHD knowledge in runners before and after the difficulty of education were obtained results p = 0.001 (p<0.05), which means that education has an effect on the level of knowledge of runners in the RIOT Gorontalo community

Based on the theory presented by (Notoatmodjo 2016), Health Education is defined as an effort in the form of providing information and skills related to health to individuals, groups and communities. It can be said that education is all efforts to provide information, knowledge or skills to improve the quality of health. From the results obtained in this study, the author understands that before and after education there are differences between the two. This can be seen in the respondents' knowledge before and after being given education to experience an increase in knowledge.

The results of respondents before and after education about BHD increased because in the education they conveyed the definition of BHD, the purpose of BHD, and the causes of cardiac arrest using lecture and simulation methods that could attract the attention of the runners. In essence, lecture and simulation methods can increase runners' knowledge and increase understanding

CONCLUSION

The runners' knowledge of basic life support (BHD) before being educated by lecture and simulation methods was mostly in the sufficient category (56.4%).

The runners' knowledge of basic life support (BHD) after being educated by lecture and simulation methods was mostly in the good category (52.7%).

There was an effect of basic life support education on the level of knowledge of runners in the RIOT Gorontalo community with the results of a statistical test using the Wilcoxon test obtained a p value = 0.001 (meaning p value <α = 0.05).

ADVICE

It is hoped that the RIOT Gorontalo community can increase the understanding and awareness of its members on the importance of mastering Basic Life Assistance (BHD) as a first aid effort in emergency conditions, especially cardiac arrest that can occur suddenly while doing sports activities. In addition, the community is expected to be able to regularly participate in BHD education and training activities, both held independently and in collaboration with health workers, so that the knowledge that has been gained is not only theoretical, but can also be applied in real situations. The proper application of BHD knowledge is expected to improve the safety of community members and the surrounding community.

Health workers are expected to be more active in carrying out health promotion and education activities to the community, especially related to Basic Life Assistance (BHD) for ordinary people and the sports community. The education provided not only focuses on improving knowledge, but also includes simulations and hands-on practice so that people have basic skills in performing first aid. With continuous education, it is hoped that people's preparedness in dealing with cardiovascular emergencies can increase optimally.

Health institutions, such as the Health Office and Puskesmas, are expected to make Basic Life Assistance education part of public health promotive and preventive programs. The program can be directed at the sports community and other community groups that are at high risk of emergency events during physical activity. In addition, health institutions are expected to establish cross-sector cooperation in the implementation of BHD training on a regular basis, so that the scope of education can be wider and more sustainable.

Researchers are then expected to develop this study using a more robust research design, such as the addition of control groups or long-term measurements to look at respondents' knowledge retention. In addition, further research is suggested to not only assess the knowledge aspect, but also measure the practice skills of Basic Life Assistance (BHD) directly, so as to provide a more comprehensive picture of the effectiveness of BHD education in the community.

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