

THE TRAINING OF SCHOOLCHILDREN IN CARDIOPULMONARY RESUSCITATION - NEED OR OBLIGATION

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Abstract: Rapid initiation of cardiopulmonary resuscitation can significantly increase the chances of survival of a person with an out-of-hospital cardiac arrest. With every minute that cardiopulmonary resuscitation is reduced, the likelihood of survival decreases. Understanding the impact of early cardiopulmonary resuscitation administration highlights its vital role in emergency response.

The purpose of our study is to analyze the need to introduce school programs designed to train students to apply basic life support techniques in cases of out-of-hospital cardiac arrest.

Methodology: A content analysis of the content of scientific articles, national and European initiatives and policies oriented towards emergency care was used.

Conclusions: Proper cardiopulmonary resuscitation training gives people the knowledge and skills to confidently perform cardiopulmonary resuscitation when needed. Knowing first aid is essential for anyone of any age, including students. cardiopulmonary resuscitation training for schoolchildren successfully increases their cardiopulmonary resuscitation knowledge and skills and their citizens' confidence in helping out-of-hospital cardiac arrest patients.

Keywords: health education, cardiopulmonary resuscitation, schoolchildren, public health, national programs

1. INTRODUCTION

Scientific publications show cardiopulmonary resuscitation as a series of sequential interventions for diagnosis and therapy aimed at restoring the basic vital functions - heart activity, breathing, effective functioning of the central nervous system in persons who are in a state of clinical death (Böttiger, 2015). Early implementation of these actions will increase the chances of a healthy recovery for the victim. As noted by Hr. Bozov, disruption of effective cardiac function and delivery of oxygenated blood to the brain for more than five minutes leads to irreversible neurohistological changes (Bozov, 2023).

CPR covers 3 stages that are related to each other:

Basic Life Support encompasses the fundamental procedures of cardiopulmonary resuscitation performed without specialized equipment. Advanced Life Support involves the main actions of cardiopulmonary resuscitation executed with specialized equipment. Prolonged Life Support includes the comprehensive treatment of post-resuscitation syndrome (Bozov, 2023).

Basic Life Support System (BLS) includes knowledge and skills to perform cardiopulmonary resuscitation, control bleeding, treat shock, clear airway. Basic Life Support refers to the medical aids, life-saving knowledge and skills of the specified algorithm for responding to emergencies such as suffocation, drowning and cardiac arrests. Cardiac arrest is a significant global health problem and is responsible for about 15%–20% of all deaths, ranking it among the three leading causes of death in developed countries. Statistics show that in the US and Europe, over 700,000 people a year die from cardiac arrest, despite medical attention from the emergency services (MaltaHansen, Zinckernagel et al. 2017; Strategies to Improve Cardiac Arrest Survival, 2018).

Research shows that the most effective means of increasing the survival rate of out-of-hospital cardiac arrests worldwide is the rapid initiation of cardiopulmonary resuscitation by bystanders, given that about 70% of such incidents occur in their presence (Kiguchi, Okubo et al. 2020; Wissenberg, Lippert et al., 2013).

Scientific evidence shows that if witnesses or volunteers take timely basic life support actions, the chances of survival can be doubled or even tripled. If adopted, this approach could save around 200,000 lives annually in Europe and North America, along with many other countries around the world (Böttiger, Grabner et al., 1999; Gräsner, Bossaert, (2013).

2. MATERIALS AND METHODS

Studies from systematic reviews identified in previous research on the topic over the past ten years in the National Institutes of Health (PubMed (PubMed, n.d.)), National Library of Medicine (MEDLINE (Medline, n.d.)) were reviewed. Content analysis was used as a method to analyze the content of scientific articles, national and European initiatives and policies oriented towards emergency care. The experience of some countries that have included emergency aid training in their national education programs has been traced.

3. RESULTS

In their 1960 publication on CPR, Kouwenhoven, Judd, and Knickerbocker stated... "Anyone anywhere can immediately start CPR. ...All that's needed is two hands". However, there is a need to raise public awareness of the benefit of early intervention and conduct training to motivate more volunteers to take life-saving measures (Kouwenhoven, Judd, 1960). The European Resuscitation Council (ERC) has been committed to promoting lay CPR training in basic life support since 1992.

In 2012, the European Resuscitation Council persuaded the European Parliament to approve a declaration supporting the creation of a day to promote awareness of cardiopulmonary resuscitation and bystander participation. The declaration was supported and signed by more than half of the members of the European Parliament. On October 16, 2013, the initiative "Restart the Heart" (ERHAD) was launched with the support of 32 European national resuscitation councils and initiatives in more than 20 European countries under the slogan "Children save lives" (Böttiger, 2015; Böttiger, et al., 2016).

Simultaneously, similar initiatives are underway worldwide to improve population readiness to provide basic life support, with BLS student training emerging as a critical component of these efforts (Scapigliati, Zace, et al., 2021). In 2007, the American Heart Association, along with the American Red Cross and the National Safety Council, lobbied for a federal declaration of National CPR Week and automated external defibrillation (AED) use in the United States. At the same time, more than half of the states, as well as the District of Columbia, have passed legislation requiring all students to complete cardiopulmonary resuscitation training before graduating from high school. Thus, more than two million American students are trained in cardiopulmonary resuscitation each year. South Africa is planning a "National CPR Day" to be held in line with the Global Heart Restart Initiative. Similarly, Canada and the Canadian Red Cross organize cardiopulmonary resuscitation Month. In Asia, including Taiwan, school-based cardiopulmonary resuscitation training has existed for over seventeen years and cardiopulmonary resuscitation initiatives are widespread. Similar examples of education in schools and the public exist in Central and South America. The goal of the International Liaison Committee on Resuscitation (ILCOR) together with Global Heart Restart is to use the best practices to achieve the main goal - to increase the survival rate of cardiac arrest occurring outside the hospital setting (Bray, Acworth, et al., 2021).

Schools provide a conducive environment for effective first aid training because the school environment is suitable for different types of learning. Research in this area shows that introducing Basic Life Saving Skills (BLS) activity training in schools increases students' willingness and motivation to learn and apply cardiopulmonary resuscitation, especially if the casualty is a child or family member (Schroeder, Semeraro, et al., 2023).

A study by Kanstad (2011) found a motivating factor for performing BLS among Norwegian secondary school students, which provided the opportunity to prevent deaths and increase survival (Kanstad, 2011).

This means that students realize that quick action by a volunteer can increase the chances of survival in an out-of-hospital cardiac arrest and thus appreciate the importance of including basic life support training in their education (DeSmedt, Depuydt, et al., 2019; Kanstad, Nilsen, et al., 2011).

The implementation of mandatory cardiopulmonary resuscitation training for schoolchildren in Denmark prompted a national cross-sectional study by Hansen et al. (2017) focusing on Danish school administrators and ninth grade teachers. Their findings revealed that a small proportion of students received cardiopulmonary resuscitation training before graduating high school, indicating a lack of systematic implementation of the training. The authors identified several factors contributing to incomplete training among students, including the belief that other schools provide similar training, the mandatory nature of the training as mandated by law, the availability of a cardiopulmonary resuscitation training coordinator within the school, teachers' confidence in their ability for conducting the training and the availability of training resources (MaltaHansen, Zinckernagel et al., 2017).

Such studies address the need to identify appropriate trainers (teachers or external trainers), training materials, length of training session and most importantly introduction of cardiopulmonary resuscitation lessons into the school curriculum and potential sources of funding (Lockey, Georgiou, 2013).

It was found that in the Nordic countries, where the training of students in cardiopulmonary resuscitation skills has been mandatory for more than 10 years, the percentage of cardiopulmonary resuscitation performed by non-specialists was noted to be very high (Wissenberg, Lippert et al., 2013).

In 2015, the World Health Organization (WHO) supported the Children Save Lives initiative, advocating for the inclusion of cardiopulmonary resuscitation training in educational curricula. This was achieved through a partnership with the European Resuscitation Council (ERC), the European Patient Safety Foundation (EPSF), the International Liaison Committee on Resuscitation (ILCOR) and the World Federation of Societies of Anesthesiologists (WFSA).

It is recommended that all schools worldwide provide cardiopulmonary resuscitation training for children aged 12 consisting of two hours of theoretical and practical training each year (Böttiger, 2015; Böttiger, et al., 2016).

Three years after the launch of the program (2018), an online survey by the National Resuscitation Councils and the European Resuscitation Council found that in Europe the training of CPR students is supported and ensured by national legislation in only 5 countries, and in 16 countries the training of students in CPR is recommended by national governments (Semeraro, SabineScapigliati, 2019).

The Australian Resuscitation Council believes that the annual teaching and tracking of students' core knowledge and skills in BLS will increase people's preparedness and ability to respond effectively to emergency situations. Additionally, a study by Rankin and & reported that Australian students supported BLS training in a school setting (Rankin, Holmes et al., 2020).

The existing National Curriculum in Australia requires students in Years 9 and 10 to be able to organise, carry out and assess options for dealing with situations that threaten their safety or the safety of others, which includes first aid and cardiopulmonary resuscitation skills.

BLS training is included in the curriculum in Sweden, France, Norway, Germany, some areas of the United States and the United Kingdom. According to Boettiger and colleagues, countries that offer cardiopulmonary resuscitation training report some of the highest international rates of cardiopulmonary resuscitation application and experience, highlighting that educating children is an effective approach to whole population training (Böttiger et al., 2016).

CPR training has not been introduced into the curriculum of our country. Health education is a traditional activity of the Bulgarian Red Cross. The efforts of the Bulgarian Red Cross to spread health knowledge and culture are in accordance with the National Health Strategy and the National Programs for combating socially significant diseases: cardiovascular, oncological, diabetic, traumatological, HIV/AIDS, tuberculosis, drug addictions, etc.

Every 45 minutes in Europe, someone goes into cardiac arrest and the only chance of survival is to perform cardiopulmonary resuscitation followed by the application of an automated external defibrillator by a bystander until emergency medical help arrives. Every person in the world can save a life and even a child, as long as they are trained (<https://acibademcityclinic.bg/cardio/novini/detaili/izpolzvaneto-na-defibrilator-pri-surdechen-arrest-uvelichava-prezhivyaemostta>).

4. CONCLUSION

Multiple studies across different curricula have shown that teaching Kids Save Lives students basic cardiopulmonary resuscitation significantly increases the odds of surviving an out-of-hospital cardiac arrest. The inclusion of medical students in the training of cardiac resuscitation procedures enables high school students to react adequately and apply life-saving measures in critical situations.

The development of these knowledge and competences will increase their responsibility in emergency situations.

The progress of this education depends mainly on the implementation of effective legislation, political debates in order to develop comprehensive curricula for the implementation of resuscitation measures according to the algorithm: check - call - compressions (check - call - press). Combined theoretical and practical training will motivate students, especially when teaching methods are closely related to their world of perception. If students receive the necessary health education and support, they would develop a positive attitude towards a healthy lifestyle, taking safety measures for themselves and others, and also a willingness to help the victim.

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