

Cardiopulmonary resuscitation as a health education proposal for children and adolescents: integrative review

RESUMO | Objetivo: identificar as capacitações em reanimação cardiopulmonar que têm sido realizadas para crianças e adolescentes em instituições de ensino. Método: revisão integrativa da literatura realizada de março a julho de 2021, com artigos publicados nas bases de dados MEDLINE, LILACS, IBECs e BDNF entre os anos de 2011 a 2021. Resultados: foram encontrados 29 artigos, os quais, resultaram em 10 artigos, divididos em três categorias: Treinamento em Reanimação Cardiopulmonar, Dificuldades na implementação do treinamento e Importância do Treinamento em Reanimação Cardiopulmonar. Conclusão: a capacitação em Reanimação Cardiopulmonar é um mecanismo que objetiva aumentar o atendimento a Parada Cardiorrespiratória pelo público leigo, visando a diminuição de danos ao paciente. O treinamento de crianças e adolescentes possibilita a propagação do conhecimento a comunidade em geral. Evidencia-se, porém, necessidade de propagação desta prática as instituições de ensino.
Descritores: Educação em Saúde; Reanimação Cardiopulmonar; Adolescente; Criança; Enfermagem

ABSTRACT | Objective: to identify the training in cardiopulmonary resuscitation that have been carried out for children and adolescents in educational institutions. Method: integrative literature review carried out from March to July 2021, with articles published in the MEDLINE, LILACS, IBECs and BDNF databases between the years 2011 to 2021. Results: 29 articles were found, which resulted in 10 articles, divided into three categories: Training in Cardiopulmonary Resuscitation, Difficulties in implementing the training and Importance of Training in Cardiopulmonary Resuscitation. Conclusion: training in Cardiopulmonary Resuscitation is a mechanism that aims to increase the attendance to Cardiopulmonary Arrest by the lay public, aiming to reduce damage to the patient. The training of children and adolescents makes it possible to spread knowledge to the community in general. However, there is a need to spread this practice to educational institutions.

Keywords: Health Education; Cardiopulmonary resuscitation; Adolescent; Child; Nursing

RESUMEN | Objetivo: identificar las capacitaciones en resucitación cardiopulmonar que se han realizado a niños y adolescentes en instituciones educativas. Método: revisión integrativa de la literatura realizada de marzo a julio de 2021, con artículos publicados en las bases de datos MEDLINE, LILACS, IBECs y BDNF entre los años 2011 a 2021. Resultados: se encontraron 29 artículos, lo que resultó en 10 artículos, divididos en tres categorías: Entrenamiento en Reanimación Cardiopulmonar, Dificultades en la implementación del entrenamiento e Importancia del Entrenamiento en Reanimación Cardiopulmonar. Conclusión: la formación en Reanimación Cardiopulmonar es un mecanismo que tiene como objetivo aumentar la asistencia al Paro Cardiopulmonar por parte del público lego, con el objetivo de reducir el daño al paciente. La formación de niños, niñas y adolescentes permite difundir el conocimiento a la comunidad en general. Sin embargo, existe la necesidad de difundir esta práctica a las instituciones educativas.

Palabras claves: Educación para la Salud; Reanimación cardiopulmonar; Adolescente; Niño; Enfermería

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INTRODUCTION

Cardiovascular diseases are one of the main causes of death worldwide, constituting an important

health problem worldwide. In Brazil, deaths resulting from these pathologies correspond to about 1,000 deaths per day, surpassing the mortality rates of immunosuppressive diseases, infections and cancer, for example.¹⁻²

As a consequence of its severity, cardiac disorders can result in cardiorespiratory arrest (CPA), making it necessary to install Cardiopulmonary Resuscitation (CPR) immediately, since time is a crucial factor, since every minute without a heartbeat and absence of oxygenation, the probability of survival decreases by 10%.³⁻⁵

Despite this, less than 40% of adults receive CPR initiated by laypeople, and the difficulty in performing it is associated with the lack of training of this public, indicating, therefore, the need for training programs through health education.³⁻⁵

It is noteworthy that the process of health education is better accepted by children and adolescents who are still in the formation of personal concepts and ideals of life, as well as the construction of autonomy. Therefore, strategies aimed at training this population on a given subject, contribute to making it a habit of life, with possibilities of propagating knowledge and influencing family and community, allowing social changes.⁶⁻⁷

Thus, it becomes advantageous to promote activities aimed at the public of school age and teenagers, as a way of expanding the training of the lay public in performing CPR.

In this context, it is important that, as nurses and health professionals, we know what has been done, worldwide, regarding the training of children and adolescents in the recognition and care of CPA, in order to allow the implementation of projects aimed at training this public, with a view to expanding health education strategies.

Thus, this study aims to identify the training in cardiopulmonary resuscitation that have been carried out for children and adolescents in educational institutions, such as health education actions.

METHOD

This is an integrative review of the literature regarding the training of children and adolescents in cardiopulmonary resuscitation. The integrative literature review makes it possible to investigate the scientific evidence already produced using different methodologies on a given subject, making it possible to compile and syn-



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thesize the studies and thus extract their main information and actions carried out on that subject.⁸

In order to carry out this integrative review, the theme and the choice of the guiding question were first defined, later the inclusion and exclusion criteria were determined, followed in the third stage, the selection of articles to be used. In

the fourth phase, the analysis and division into categories of these studies was carried out, continuing the discussion of the results and ending with the structuring of the integrative literature review, which followed the methodology of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA).⁹ The structuring of the guiding question of this research relied on the use of the PICO strategy, which allows the development of a strong guiding question, which helps in extracting compelling results from the literature. For this, the letter P represents the population, I refers to the intervention, C refers to the comparison and O brings us the outcome.¹⁰

Thus, the guiding question of this study was: What training in cardiopulmonary resuscitation have been carried out for children and adolescents in educational institutions, as health education actions? Since P refers to children and adolescents, I deals with training in cardiopulmonary resuscitation and O includes health education actions in educational institutions. It should be noted that in this review, the C, which deals with comparison, was not used, as it is not relevant to the object of study.

The electronic bibliographic survey was carried out using the following databases: Medical Literature Analysis and Retrieval System on-line (MEDLINE), Latin American and Caribbean Literature in Health Sciences (LILACS), Bibliographic Index Español en Ciencias de la Salud (IBECs), Brazilian Nursing Database (BDENF), between March and July 2021.

The search had descriptors previously selected from Bireme's Health Science Descriptors (Decs), through the vocabularies of the Virtual Health Library (VHL) databases. Thus, the descriptors used in this study were: Health Education, Cardiopulmonary Resuscitation, Adolescents and Children, which were associated with each other through the Boolean indicator "AND" and "OR".

As inclusion criteria, original articles were available in full, free of charge, in

the aforementioned databases, in Portuguese, English and Spanish, published in the last ten years between 2011 and 2021 and that answered the research question. Paid studies, not available in full, letter to the editor, outside the years of publication, repeated, in a language different from those already cited and that did not answer the research question were excluded.

The studies were first evaluated by duplicity and criteria of gratuitousness, followed by the analysis of the abstracts, which excluded those that were not related to the subject, later the reading was carried out in full.

After selecting the articles that included the sample of this research, they were analyzed using an instrument developed by the authors, which included the year and periodical of publication, the language, the database, the country in which the studies were carried out, the method and level of evidence, which the Oxford Center Evidence-Based Medicine classification was used. 11

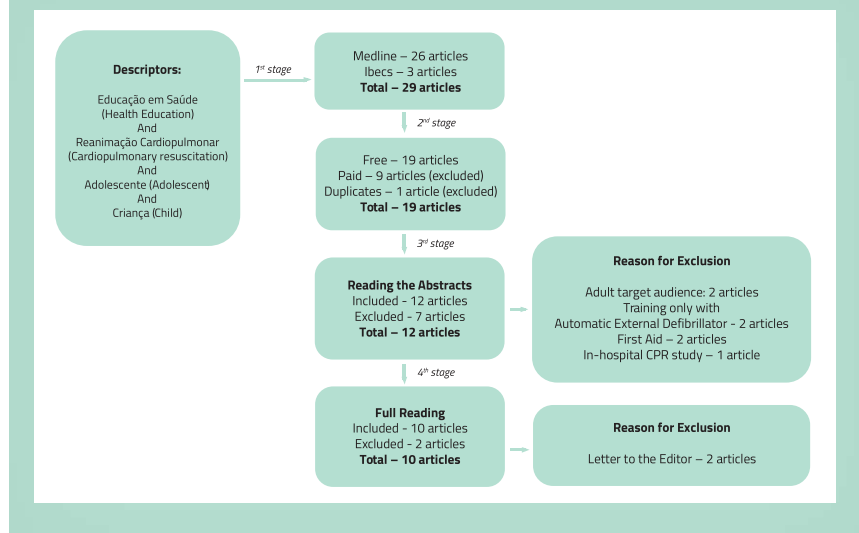
In addition to this initial characterization, the selected studies were also divided into categories according to similarity and central theme, with data presented in tables and analyzed using simple statistics.

RESULTS

A total of 29 articles were found, which, after applying the inclusion and exclusion criteria, resulted in 19 studies, which were submitted to analysis of the abstract and reading in full, bringing as a final sample a total of 10 articles, as can be seen in Figure 1, based on the PRISMA flowchart.

Among the articles in the sample, 09 (90%) were in English and 01 (10%) in Spanish. Regarding the databases, 09 (90%) studies were indexed in MEDLINE and 01 (10%) in IBECS. Regarding the years of publication, the articles found ranged from 2016 to 2019, with 04 (40%) published in 2016, 03 (30%) in 2018, 02

Figure 1 – Steps for selecting the articles that are part of this review. São Paulo, SP, 2021.



Source: Own elaboration, 2021

(20%) in 2017 and 01 (10 %) in 2019. The study locations included in 06 (60%) works Europe, 03 (30%) Asia and 1 (10%) Central America.

Regarding the methodological approach of the research, it was evidenced that 08 (80%) were quantitative, 01 (10%) were qualitative and 01 (10%) were quantitative-qualitative. As for the main methodological strategy used in the study, there was a predominance of implementation and evaluation of training (07; 70%), followed by implementation and evaluation of training added to focus group (01;10%), focus group in addition to the interview (01;10%) and application of a questionnaire (01;10%).

Regarding the level of evidence, 08 (80%) articles presented level of evidence 4 and 02 (20%) studies were classified with level of evidence 3B.

The studies were carried out, in 07 (70%) situations, exclusively with children whose age ranged from 9 to 19 years, 02 (20%) studies included only teachers and directors of schools whose age range of students ranged from 11 to 19 years and 12 to 16 years, 01 (10%) of the works included, in addition to children, also teachers and directors. Seeking a

comprehensive analysis, the articles were divided into categories, according to similarity. Table 1 shows the details of the work.

As can be seen, three categories were formed, namely: Training in CPR with 07 (70%) studies, Difficulties in the Implementation of Training in CPR with 02 (20%) works and Importance of CPR with 01 (10%) article.

DISCUSSION

Training children in CPR has been seen as a mechanism that aims to increase CPA care by the lay public in the out-of-hospital setting, as it is believed that early training favors rapid recognition of the situation and action, increasing the chances of intervention by lay society in these situations. In addition, knowledge about CPR, as well as the recognition of CPA, allows greater awareness of the population in helping others, developing self-confidence and a sense of responsibility. 12

It should be noted, however, that despite the visible benefits of such training and sensitization of children and adolescents, there is no defined age in relation to the age at which training should begin, since

Table 1 – Details of the studies. São Paulo, SP, 2021.

Study	Objective	Results	Type of study	Level of evidence	Category
E1 ¹²	Investigate the effects of implementing CPR training	Pre- and post-training assessments, which demonstrated improvement in theoretical knowledge after CPR training	Quantitative- Qualitative. Conducting a focus group	4	CPR training
E2 ¹³	Explore current awareness of the importance of CPR and willingness to perform it among Flemish schoolchildren	77% of children, 79% of teachers and 86% of principals believe in the need to learn to do CPR.	Quantitative, with application of questionnaires	4	Importance of CPR
E3 ¹⁴	Measure, evaluate and report knowledge gain and attitude changes by training participants.	There was improvement in students' knowledge of CPR after training	Quantitative, with training implementation	4	CPR training
E4 ¹⁵	Determining whether a training program is an effective strategy for teaching children to learn CPR	Overall student scores more than doubled after training.	Quantitative, with training implementation	4	CPR training
E5 ¹⁶	Assess current basic life support training practices in London secondary schools..	CPR programs start around age 11, with 8% of schools offering universal training programs and another 48% having training as part of an extracurricular program.	Cross-sectional study	4	Difficulties in implementing CPR training
E6 ¹⁷	To examine the effectiveness of a "CPR song" in improving the basic life support skills of high school students.	There were no significant differences between the intervention group and the control group pre- and post-intervention. Eight months after the intervention, there were significant differences in the students' knowledge, with the intervention group showing better results.	Quantitative, with control group	3B	CPR training
E7 ¹⁸	To compare the satisfaction of students who participated in CPR training.	Students ages 10 to 11 enjoyed CPR training more and were more confident in their ability to perform CPR than older students.	Quantitative, with training implementation	4	CPR training
E8 ¹⁹	Identify barriers to implementing CPR training in Danish secondary schools.	Teachers and principals question whether the implementation of this training would not harm other disciplines considered essential. In addition, teachers felt unable to train students.	Qualitative, with focus group and interviews	4	Difficulties in implementing CPR training
E9 ²⁰	To describe the quality of chest compressions obtained by students after training in CPR	Participants maintained an adequate rhythm of compressions, reaching the desired depth in 80% of cases.	Quantitative, quasi-experimental	4	CPR training
E10 ²¹	Assessing CPR training in school-age children in China	After training, students increased their willingness to perform CPR, achieving a performance rate of 85-100% in a simulated basic life support scenario.	Quantitative, prospective	3B	CPR training

Source: Authors, 2021

if it is offered to very young children, it may not have the desired effect. 12

In a study carried out in Germany with children separated into groups of 11 to 13 years old, and 14 to 17 years old, improvement in chest compression was identified in both groups after CPR training, although greater accuracy was observed among the group of older children. 22

Regarding the selected studies, there is a greater concentration of studies aimed at children aged 11 years and over, with nine years being the lower age limit.

A pertinent reflection regarding this aspect refers to the possibility of planning different approaches aimed at groups with younger ages, since it is likely that they will not be able to perform compressive maneuvers effectively, however, it can play a relevant role in the recognition of CPA and activation of the emergency service. 12,14-17,19-20

In a study conducted in Japan with more than 6000 children aged between 10 and 16 years, it was observed that younger children had greater confidence in their ability to perform CPR and a strong relationship between age and satisfaction with the CPR course, so that the public between 10 and 11 years old was considered the most suitable to carry out the introduction of this course at school. 18 This finding is reinforced by other studies, as pointed out by Pivac (2020), 11 who in their study identified that younger children showed greater progress in knowledge after CPR training when compared to older children. In this study, it was also identified that, after the theoretical information, the children showed an improvement on what should be provided to health professionals if they find an unconscious person and what action should be taken to help the victim, even with a 2 month break from training. 12

Although the selected studies implemented training methods that involved different duration and strategies, including questionnaires and theoretical training, theoretical and practical training, and video training, an increase in the theoretic

cal and practical knowledge of children and adolescents regarding CPR was observed, as well as in handling the AED, which reinforces the importance of developing and conducting training aimed at this population. Therefore, it is essential that during the training design, language, duration, methodologies and materials suitable for different age groups are considered in order to obtain better results and better retention of knowledge. 12-14,17,20-21

Another aspect that must be taken into account when planning BLS training for the school public was reported in some studies, and refers to the teachers' apprehension about their competence to provide this type of training to students. 12,18 This raises the question of who would be the ideal instructors, considering that this application requires specific knowledge and skills that are more relevant to properly trained health professionals, or about how the training program for these teachers should be in order to feel safe for this practice.

It is possible to observe a lack of knowledge on the part of the children in relation to the BLS and the absence of protocols on the part of educational institutions, which may be related to the non-prioritization of this type of education to the detriment of curricular subjects, and insufficient investment to make it viable.

This is corroborated by a study conducted in China with over 1093 children, in which about 93% of them said they had never participated in basic training with an emphasis on CPR, and the majority of children had superficial knowledge on the part of school-age children regarding first aid, and describes that prior to the training carried out, the knowledge came from information obtained from television, internet and other sources. 21

It can be seen, therefore, that public health agencies are fundamental actors in the process of transforming the scenario of improving CPR success rates in the extra-hospital scenario, adopting measures that favor the training of children and

adolescents to act in the face of a CPA.

Regarding the safety of performing cardiopulmonary resuscitation before training, most students retreated due to fear of hurting the victim, lack of attitude towards helping others and insufficient self-confidence. After the practical administration of the BLS technique, they showed greater disposition, better attitudes, greater intention to help others, especially when a family member was mentioned. 13 It is also observed that the training resulted in a statistically significant increase with respect to the desire to administer CPR. 14 These findings may be related to the feeling of appropriation of knowledge regarding the BLS and increased self-confidence provided by the training, according to the results of the previously mentioned studies.

A study conducted with Chinese children of low and high socioeconomic status involving CPR training identified a greater pre-training CPR knowledge deficit in students of lower socioeconomic status. 20 However, they performed as well as children of high socioeconomic status on the total scores for the skills assessment. 21 This study allows us to reflect on the impacts of the socioeconomic level on access to information and education, and to ask how this relationship would take place in the Brazilian context, where there are large social discrepancies.

It can be seen, therefore, that there are many variables that relate to the scenario of CPR training, so that knowledge in this regard becomes fundamental so that we can reach an increasingly qualified population for this service, in order to achieve a reduction in the time taken to start BLS, as well as an improvement in its quality, thus increasing the rates of cardiopulmonary resuscitation.

CONCLUSION

Training in cardiopulmonary resuscitation for the lay public becomes a necessity when we think about the alarming numbers of cardiovascular diseases that

can lead the individual to present a CPA. Recognizing and acting in cardiopulmonary resuscitation makes it possible to reduce damage to the patient who suffered CPA, or even in a better scenario, the absence of these. As nurses, it is necessary to establish partnerships with educational institutions, aiming at promoting health education strategies, aimed at training in CPR, especially at the national level,

whose programs, as seen in this study, are scarce or non-existent.

Early training, when we think about the public of adolescents and children, is considered an advantage, since at this age there is the possibility of modifying and sensitizing this public about the need for prompt care for individuals in CPA, in addition, it opens up the possibility of spreading knowledge, since children and

adolescents can spread it to family and friends, contributing to the transformation of reality.

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