"Heart beating strong" project: educational clinic to prevent cardiopulmonary arrest

Projeto "Coração batendo forte": estratégias educativas de prevenção da parada cardiorrespiratória

Proyecto "Corazón late fuerte": clínica educativa para prevenir la parada cardiopulmonar

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How to cite: Sousa AR, Oliveira MT, Oliveira SET, Araújo ACE, Silva MSRM. "Heart beating strong" project: educational clinic to prevent cardiopulmonary arrest. REVISA. 2021; 10(3): 561-73. Doi: https://doi.org/10.36239/revisa.v10.n3.p561a573

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Received: 12/04/2021
Accepted: 19/06/2021

RESUMO

Objetivo: Descrever a criação do projeto de extensão coração batendo forte dedicado ao ensino de pessoas a lidarem em uma parada cardiorrespiratória. **Método:** Trata-se de um estudo descritivo, exploratório, qualitativo, que envolveu estudantes do curso de graduação de Enfermagem, docentes e a comunidade acadêmica e civil. Foram envolvidas atividades de extensão e pesquisa a partir da aplicação de pré-teste e um pós-testes para avaliar o nível de conhecimento da população sobre como agir frente à uma parada cardiorrespiratória. **Resultados:** a criação do projeto contribuiu para a ampliação da formação acadêmica na área de urgência e emergência, no potencial gerador de conhecimento sobre a parada cardiorrespiratória e o Suporte Básico de Vida por pessoas leigas em locais de grande circulação, professores, funcionários e estudantes de escolas públicas. Fortalecer a educação para a saúde face a produção técnica de materiais educativos e da pesquisa a partir da realização de estudos científicos sobre a área. **Conclusão:** o projeto coração batendo forte mostrou-se eficaz para a promoção do conhecimento e educação para a saúde com o enfoque na prevenção e manejo da parada cardiorrespiratória.

Descritores: Enfermagem; Educação em Saúde; Emergências; Reanimação Cardiopulmonar.

ABSTRACT

Objective: Describe the creation of the heart beating extension project dedicated to teaching people how to deal with cardiac arrest. **Method:** This is a descriptive, exploratory, qualitative study, involving undergraduate nursing students, teachers and the academic and civil community. Extension and research activities were carried out through the application of a pre-test and a post-test to assess the level of knowledge of the population on how to act in the face of cardiopulmonary arrest. **Results:** the creation of the project contributed to the expansion of academic training in the area of urgency and emergency, in the potential generator of knowledge about cardiopulmonary arrest and Basic Life Support by lay people in places of great circulation, teachers, employees and students of public schools. Strengthen health education in the face of technical production of educational materials and research based on scientific studies on the area. **Conclusion:** the heart beating project proved to be effective in promoting knowledge and health education with a focus on prevention and management of cardiorespiratory arrest.

Descriptors: Nursing; Health education; Emergencies; Cardiopulmonary Resuscitation.

RESUMEN

Objetivo: Describe la creación del proyecto de extensión de latidos del corazón dedicado a enseñar a las personas cómo lidiar con un paro cardíaco. **Método:** Se trata de un estudio descriptivo, exploratorio, cualitativo, que involucró a estudiantes de pregrado de enfermería, docentes y la comunidad académica y civil. Se realizaron actividades de extensión e investigación mediante la aplicación de un pre-test y un post-test para evaluar el nivel de conocimiento de la población sobre cómo actuar ante la parada cardiorrespiratoria. **Resultados:** la creación del proyecto contribuyó a la expansión de la formación académica en el área de urgencia y emergencia, en el potencial generador de conocimiento sobre parada cardiopulmonar y Soporte Vital Básico por laicos en lugares de gran circulación, docentes, empleados y estudiantes de escuelas publicas. Fortalecer la educación para la salud frente a la producción técnica de materiales educativos e investigaciones basadas en estudios científicos en el área. **Conclusión:** el proyecto de latidos del corazón demostró ser efectivo en la promoción del conocimiento y la educación en salud con un enfoque en la prevención y manejo de la parada cardiorrespiratoria.

Descriptores: Enfermería; Educación en salud; Emergencias; Reanimación cardiopulmonar

ORIGINAL

Introduction

In emergency situations, the evaluation of the victim and his/her care should be decided, allowing the reduction of sequelae and increased survival. Thus, when there is a sudden loss of consciousness of an adult individual, the first attitude of the first responder should be to identify cardiorespiratory arrest (CRP), initiate chest compressions as soon as possible and direct someone to activate the Emergency Service that is characterized by the SAMU (Mobile Emergency Care Service) by connecting to number 192.[1]

Thus, the initial care of a patient in emergency situations requires a systematic and objective evaluation and the quality of care is an extremely important factor for emergencies offered by both professionals and the population.

Considering the estimate that more than half of CRP occur outside the hospital environment, it can be concluded that most of them are witnessed by the lay population, however some factors such as emotional imbalance, lack of ability to perform cardiopulmonary resuscitation (CPR), the possibility of being a close relative may hinder the lay man's performance.[2]

The difficulties of starting the basic maneuvers due to lack of sensitization and fear of social disapproval due to possible failure can lead to paralysis of the rescuer at the time of the decision to provide first aid, being therefore essential the clarification and training of the population so that it is prepared to act in any emergency situation.[3]

According to the American Heart Association Guidelines (2020)[4] most victims of sudden extra-hospital CRP do not receive any Cardiopulmonary Resuscitation (CPR) maneuvers from people present at the site. Through this scenario, it is also considered the importance of the insertion of knowledge to provide relief in emergency situations among children. Thus, education being a construction process, it is necessary to start early, and should be inserted even in childhood, the first indications of accident prevention and first aid victims in eergenicia.[5] For these reasons, it is considered extremenecessit and relevance the training of people in school spaces, propagation of this knowledge in school activities.[6-7]

In Article 3 of Ordinance No. 1,863 of September 29, 2003[8] establishing the Policy of National Emergency Care define from one of the following fundamental components the adoption of promotional strategies of quality of life, seeking to identify the determinants and conditioning factors of emergencies and through transitory actions of public responsibility, without excluding the responsibilities of society as a whole.

As a way to overcome this problem, and considering the Brazilian situation of morbidity and mortality associated with emergency conditions, such as those related to trauma and violence, the National Policy for Reducing Morbidity and Mortality from Accidents and Violence was created in 2001, which should act in a manner articulated with the National Emergency Care Policy,[8] through work in networks and indispensable components such as the Mobile Emergency Care Service, SAMU 192, effected by the ordinance in 2003.

The GM Ordinance No. 2,420 of November 9, 2004[9] aims to evaluate and recommend intervention strategies of the Unified Health System -SUS, to address sudden death episodes. The Ministry of State for Health considers that diseases of the circulatory system represent the main cause of death in the country (32%), where ischemic heart diseases are responsible for up to 80% of sudden death episodes. Within this context, it is noteworthy that most episodes in non-hospital environments, requiring adequate intervention strategies in a timely manner.[9]

With the occurrence of CRP, the risk of brain injury becomes increased, or even irreversible, putting the survival of the victim at risk. Thus, the risk of life increases every minute as circulation becomes non-existent for vital organs and the brain. The simple action of a layman who recognizes the signs of a PCR and calls the aid prevents myocardial and cerebral deteriorization.[3]

When CPR is performed effectively, survival rates reach 50%. Unfortunately, this is not the reality of most CPR performed both inside and outside hospitals. To this detriment, we consider the importance of health education of the lay community in the early detection of emergencies, as an effective way for post-stop survival in a systematic way, with interventions such as identification of the stop and the beginning of immediate resuscitation.

In this context, for extension activities are justifiable when they are part of the process of academic training articulating with society, effectively contributing to the improvement of the quality of life and health of the population and the Academic Leagues thus compose important roles for the recognition of health needs and demands, and in coping with existing problems.[10-11]

The training of the lay population to perform first aid and fundamental maneuvers for life maintenance and harm reduction is added to the possibility of greater chances for victims and improvement in their prognoses, still adding to the fact that trained individuals are multipliers of knowledge, thus increasing the number of people indirectly reached by this proposal.[10]

Anchored in the arguments presented and on the relevance of the scenario exposed, this study was guided by research research: How to expand the knowledge and action of the population in the face of a cardiorespiratory arrest from health education? This article aims to describe the creation of the strong beating heart extension project dedicated to teaching people to cope in a cardiorespiratory arrest.

Method

A study described, exploratory, qualitative. It is specifically the creation of an extension project entitled: "Heart pounding strong". It was linked to the academic extension program of the undergraduate nursing course through the creation of the Strong Beating Heart Program of Cardiorespiratory Resuscitation Education (PCBERC) conducted with students from a private Higher Education Institution in a municipality in the state of Bahia, Brazil.

The field of realization of the activities of the project had as scenario units /institution of great circulation of people, such as public schools, health units, public courtyard of the university, sports activities and public squares. This

municipality is the second largest in the state of Bahia, with an estimated population of 556. 642 inhabitants, with an area of 1,337.9 km², standing out in the organization of health care networks, considered a reference for medium and high complexity services in the various lines of care.[12]

The project was implemented in 2016 and is in force until the current context (2020). All ethical aspects were respected. The project was approved by the Research Ethics Committee under the opinion number: CAAE: 58136016.4.0000.5654 and n. 1,673,866.

Results

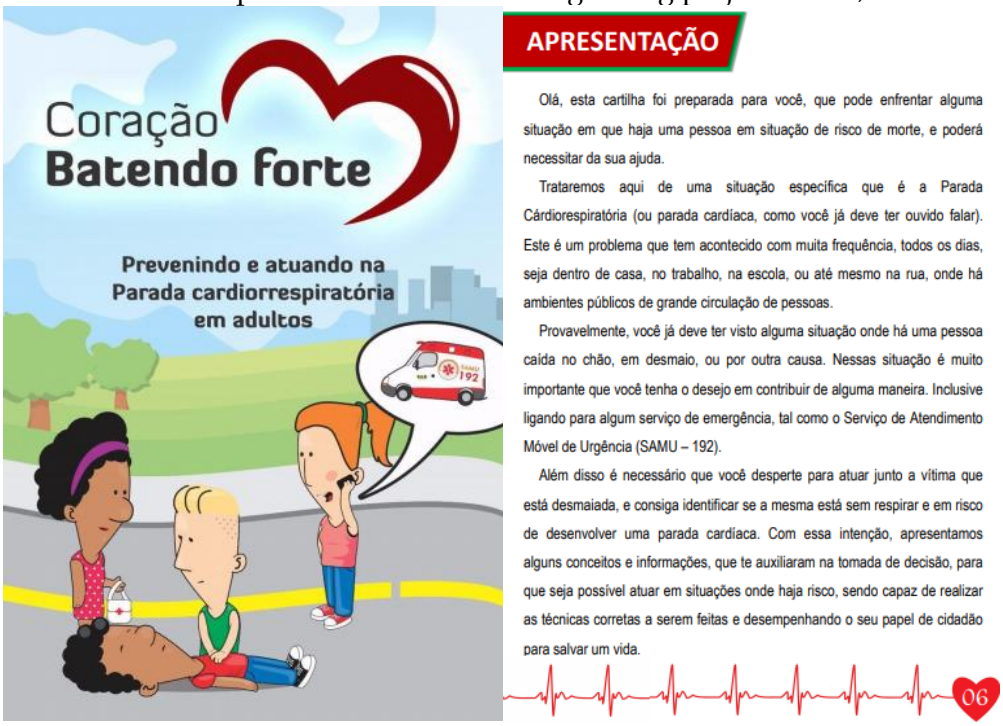
The results of the creation of the extension project "heart beating strong" are composed by the description of the project in the face of its regulation, creation, structuring, execution and evaluation. Moreover, the production of educational material of use with the community that emphasized contents such as: 01 - knowing health services; 02 - mobile emergency care service; 03 - emergency care units (up a 24 hours); 04 - fixed pre-hospital units (polyclinics); 05 - hospitals; 06 - cardiorespiratory arrest; 07 - What should I do in the face of a cardiorespiratory arrest?; 08 - cardiopulmonary resuscitation; 09 - choking; 10 - asphyxiation and references. Imagery resources were used and were elaborated based on student involvement with the actions developed by the academic league.

Chart 1 - Description of the heart beating strong design. Bahia, Brazil. 2020.

Regulation:
The project was a product developed in the Academic League of Trauma and Emergency (LIATE) of the Undergraduate Nursing Course of the said institution. The creation of the project occurred through the restlessness and initiative of the students participating in liate, who understood the importance of dissecting knowledge about cardiorespiratory resuscitation as a strategy to save lives in their various places and public, and by the emergency need to overcome the deficiencies of action on this theme.
Creation:
This project was developed by undergraduate nursing students, who already worked in the League and have already attended the basic disciplines for acting in an emergency situation. It also counted as the support of the Pro-Rectory of Research and Extension of the institution, and the partnership of nurses and nurses trained in the care of emergencies and emergencies.
Structuration:
The methodology developed to carry out the project was based on the determinations of the Guidelines of the American Heart Association, European Ressucitation Council, Brazilian Society of Cardiology and the National Urgency and Emergency of the Ministry of Health. The structuring of a one-hour theoretical class program for Group 01 was organized: (teachers, employees, fathers and mothers of students from public schools in the municipality), and 30 minutes for Group II: (lay people on the theme who move through places of great circulation, defined by the project).
Execution:
For the execution of the objectives of this project, the PCBERC provided the provision of audiovisual resources, theoretical classes, practical simulations, which included the

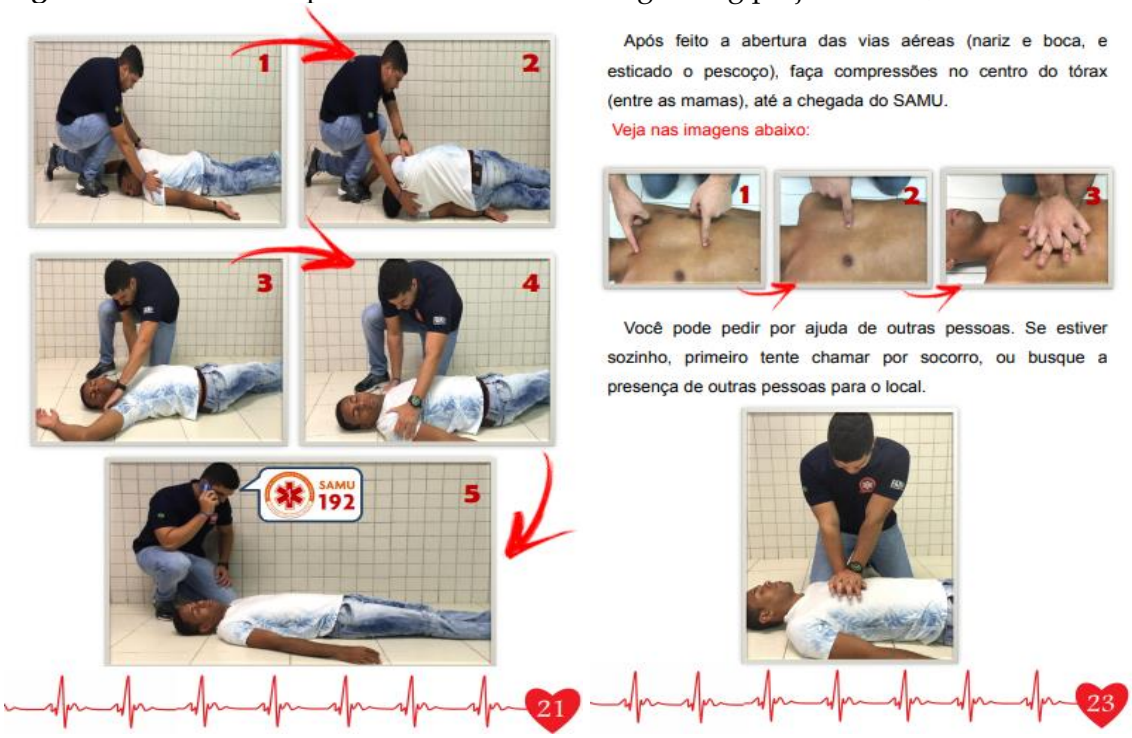
use of mannequins for training in adult resuscitation, DEA simulator (Automatic External Defibrillator). The practices were developed in small groups, by stations, where elementary themes will be presented, such as the epidemiology of cardiorespiratory arrest, contributions of cardiorespiratory resuscitation, chest compression techniques, airway opening and ventilation and use of automatic external defibrillator (DEA). To this do, practical simulation stations were created. In these actions, participants had the opportunity to train in the inflatable mannequins the appropriate technique for performing chest compressions, ventilations, use of the automatic external defibrillator (DEA) and the airway clearance maneuver (Heimlich maneuver) used to prevent choking and asphyxia.
Evaluation:
In order to evaluate the knowledge of the participants, and permanently improve the quality of teaching, as well as the dissemination of knowledge, pre-tests and post-tests standardized and already validated in other Brazilian studies on the theme addressed in each training – a season of practical simulations were applied. In the context of the research, semi-structured questionnaires were applied to assess the knowledge and efficacy of health education activities performed. Therefore, the pre-test and post-test was elaborated by reading and prior analysis of the revised bibliography, which basically addresses the survival chain and the sequence of Basic Life Support and was divided into identification and approach of the victim, being composed of closed questions (multiple choice) and open following a published study.[3-4]

Figure 1 – Educational primer of the heart beating strong project. Bahia, Brazil. 2020.



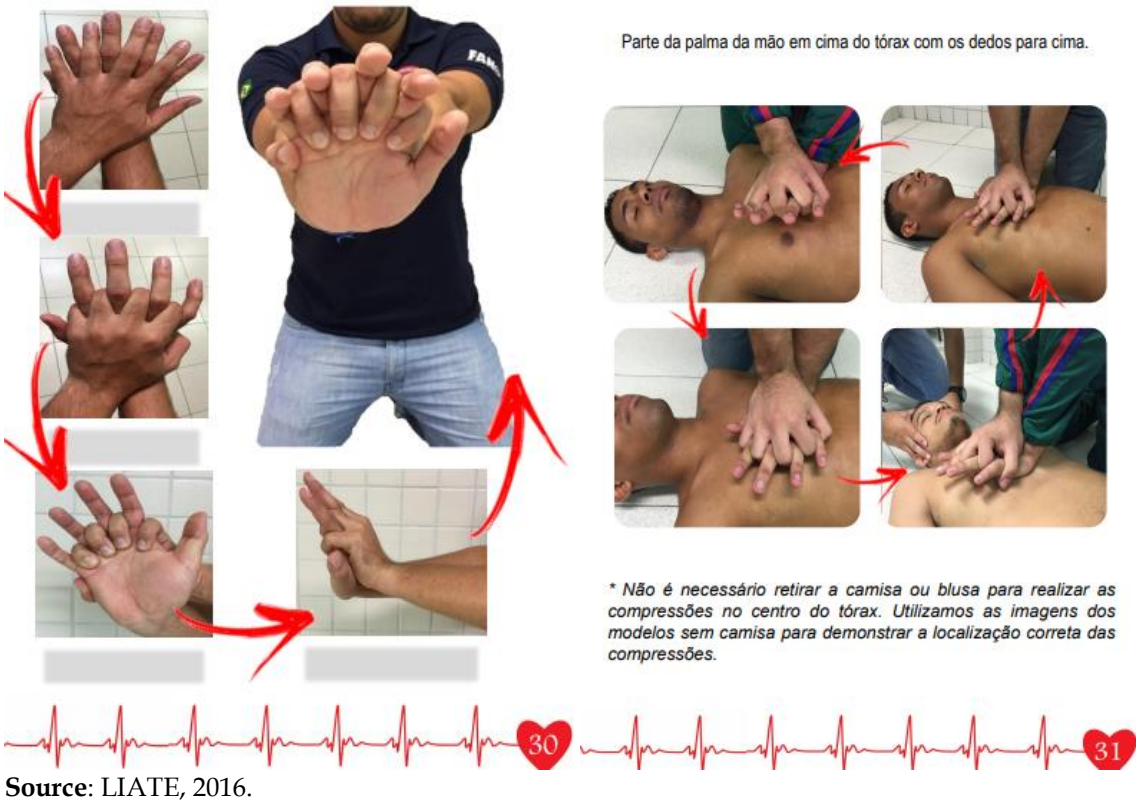
Source: LIATE, 2016.

Figure 2 – Educational primer of the heart beating strong project. Bahia, Brazil. 2020.



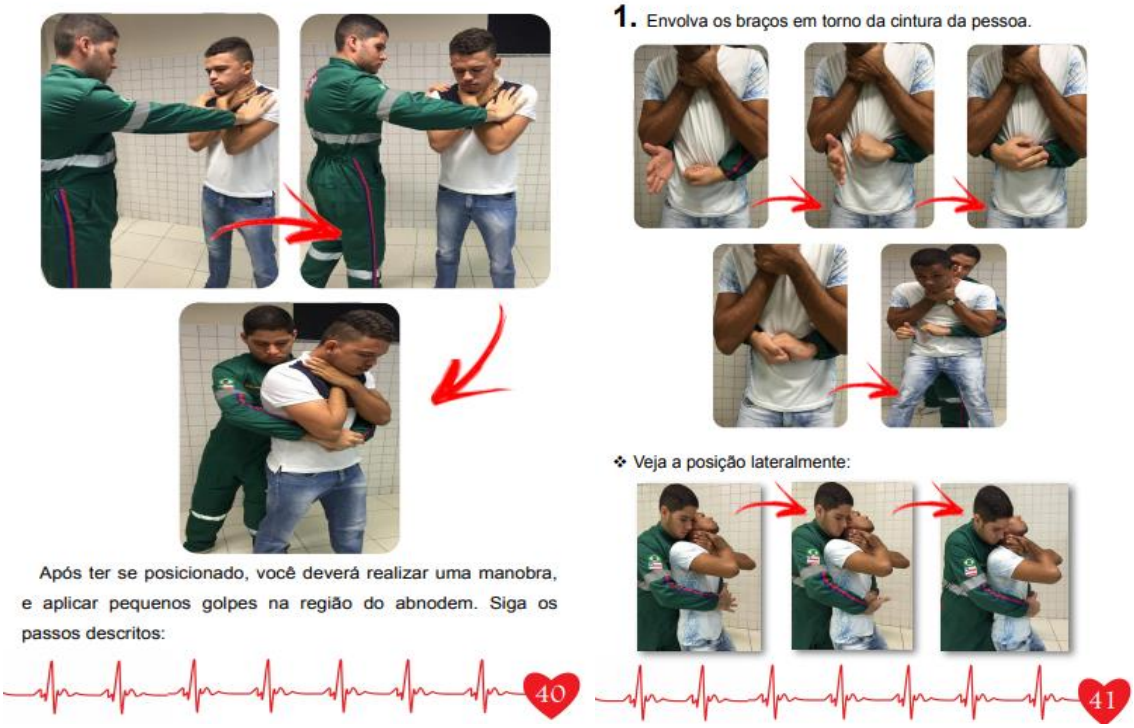
Source: LIATE, 2016.

Figure 3 – Educational primer of the heart beating strong project. Bahia, Brazil. 2020.



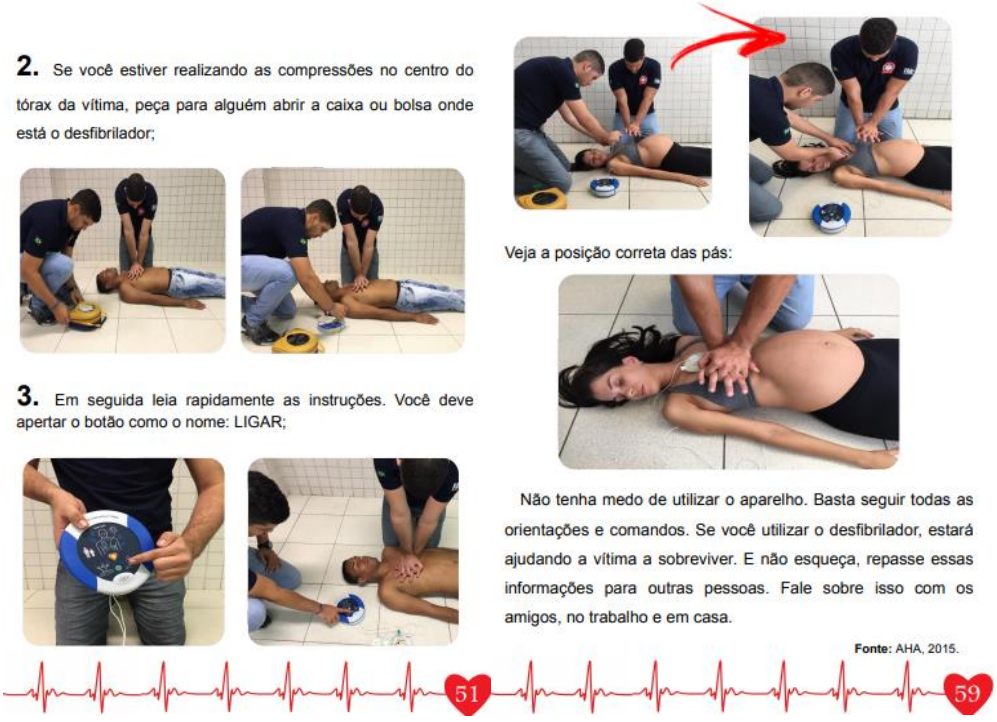
Source: LIATE, 2016.

Figure 4 – Educational primer of the heart beating strong project. Bahia, Brazil. 2020.



Source: LIATE, 2016.

Figure 5 – Educational primer of the heart beating strong project. Bahia, Brazil. 2020.



Source: LIATE, 2016.

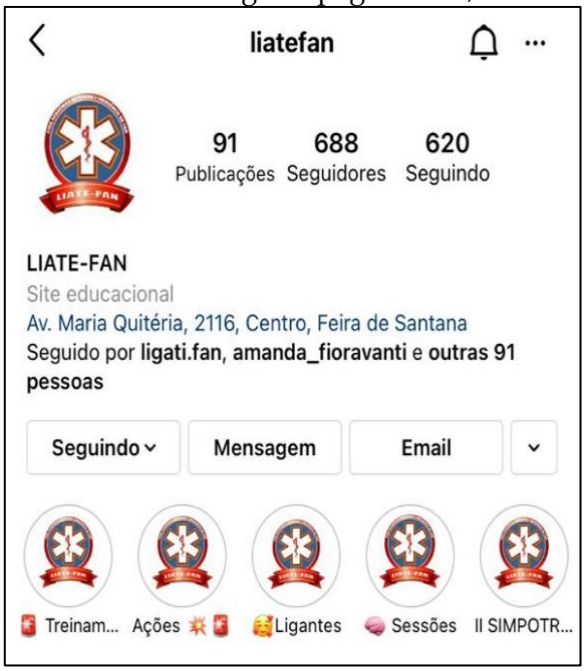
Figure 6 – Educational activities of the heart beating strong project. Bahia, Brazil. 2020.

Source: LIATE, 2020.

Figure 7 – Logo of strong beating heart design. Bahia, Brazil. 2020.

Source: LIATE, 2016.

Figure 8 – LIATE Instagram page. Bahia, Brazil. 2020**.**



Source: LIATE, 2020.

Discussion

This study was able to describe the creation of the strong beating heart extension project dedicated to the promotion of educational strategies for the prevention of cardiorespiratory arrest in a metropolis in northeastern Brazil.

Sudden death such as unexpected death of cardiac etiology that occurs immediately or within one hour after the onset of symptoms of ischemic heart disease.[13] The clinical condition that characterizes sudden death is cardiac arrest (CP) characterized as cessation of cardiac mechanical activity confirmed by the absence of signs of circulation (absence of pulse, apnea or agonic respiration).[14]

Despite all developments in recent years related to treatment and prevention, Cardiorespiratory Arrest (CRP) remains a worldwide public health problem. There are many lives lost annually in Brazil related to PCR. Advances such as cardiopulmonary resuscitation (CPR) training also extend to legislation on public access to defibrillation and mandatory availability of DEA (automatic external defibrillator). Approximately 200,000 PCR per year are estimated in Brazil, half of which occur in a hospital environment, and the other half in environments such as residences, shopping malls, airports, stadiums.[15]

Regarding the ASD, ventricular fibrillation is the rhythm of stop most found in the extra-hospital environment, and this rhythm and ventricular tachycardia are resolved with defibrillation, which consists of the application of electrical impulse in the chest, leading myocardial fibers to function in the same phase of the action potential with the resumption of normal rhythm by the sinus node.[16-17]

After a defibrillation, cardiac massage should be initiated, since the heart does not return to normal circulation immediately after shock, even if the defibrillation has been successful. The current sequence is shock, CPR, rhythm and pulse checks. Rhythm check should be performed two minutes after each defibrillation.[18]

PCR care is necessarily necessary and priority of all health professionals, regardless of their specialty. Early and correct diagnosis is the key to the su¬cession of cardiopulmonary resuscitation (CPR). The signs used for detection are: absence of pulse vessels of large caliber, unconsciousness, cyanosis and absence of respiratory movements.[18]

The modern 'birth' of CPR took place from 1960, however it was considered a medical practice where even nurses and dentists were prevented from performing it. Over time, the views gradually changed and, in mid-1974, the American Heart Association published its first guidelines for both health professionals and lay people, in view of the great advantages evidenced by the involvement of the general public.[15]

The immediate performance of CPR in a CRP victim, even if only with chest compressions in the pre-hospital, contributes significantly to the increase in survival rates of cardiac arrest victims.19 In Brazil, the greatest challenge is to expand access to CPR education, establish processes for the continuous improvement of its quality, in addition to reducing the time between CPR and the application of the first shock by the defibrillator.[20]

Among the most relevant aspects of the American Heart Association guidelines on cardiopulmonary resuscitation and emergency cardiovascular care, evidence showed that when the aid is performed in the initial 5 minutes of CRP there is no difference in survival if the maneuvers start first or if help is requested before the maneuvers are rea¬lized. When late after this period, help should be requested and then cpr should start, except when the patient is a child, because the main cause of CRP in this age group is hypoxia that requires immediate help.[4]

Therefore, the actions performed during the initial minutes of emergency care are critical regarding the survival of the victim. Basic Life Support (BVS) defines the primary sequence of actions to save lives. Even if adequate and efficient is an advanced support, it is the basic support actions that will define the survival of the victim in PCR. Thus, most PCRs occur in adults, but children are also affected. The etiological/epidemiological profile of the child is totally different from the adult, which is reflected in important differences in the treatment.[15]

The survival rate of children with sudden CRP and witnessed in the external environment, by ventricular fibrillation, is 20% to 30%. These data address and emphasize the importance of teaching CPR maneuvers to the lay public, as well as the creation of strategies for emergency care training in schools and day care centers.[15]

They are conducts for PCR in general except for specific cases such as infants (less than 1 year) that the rescuer should evaluate responsiveness and breathing in less than 10 seconds, trigger the emergency service, when reaching the brachial pulse identify the PCR trace an imaginary line in the nipples, place 2 fingers just below the intermamilar line and compress the thorax in the sternum, straight, at a depth of 1/3 of the anteroposterior height of the thorax, about 4cm, at a speed of at least 100 compressions per minute. The thorax should return to its normal position after each compression. Perform 30 compressions for 2 vents.[15]

The success of the recovery of the CRP victim is the presence of someone with training to initiate CPR maneuvers, so its occurrence is identified. Therefore, it is fundamental to participate in the lay population in the care of CRP, providing the minimization of the time between the occurrence and the beginning of interventions. Thus, the importance of the education of the lay population in the early detection of PCRs is highlighted.

This study presented as contributions the strengthening of public policies aimed at health education, emergency and emergency care, with a potential aggregator for the improvement of health care employed by academics in future professional experience, as well as to the reduction of damage and mortality caused by diseases that trigger cardiorespiratory arrest.

The creation of the strong beating heart project contributed significantly to the population's preparation for social engagement aimed at reducing the mobimortality of the population inserted in the locus of action and other surrounding cities, through the strengthening of health education actions and the dissemination of knowledge. Satisfactory aspects were evidenced regarding the coping with the problem in question by health professionals, education and

related areas and by students affected by extension activities, so that they are able to perform a successful function in the face of a cardiorespiratory arrest.

The qualification of nursing education can also be observed through the use of active methodologies and the use of light/relational technology used in health education actions.[21] And with the community having promoted exchanges of knowledge, which constitutes a social commitment. In addition, this project aimed to promote studies and research on the area in order to bring greater expansion to face the problem in question.

Aknowledgement

The authors did not receive funding for this study.

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