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THEORETICAL KNOWLEDGE OF UNDERGRADUATES ON CARDIORESPIRATORY ARREST IN BASIC LIFE SUPPORT

CONHECIMENTO TEÓRICO DE GRADUANDOS SOBRE PARADA CARDIORRESPIRATÓRIA NO SUPORTE BÁSICO DE VIDA

CONOCIMIENTOS TEÓRICOS DE LOS ESTUDIANTES UNIVERSITARIOS SOBRE LA PARADA CARDIORRESPIRATORIA EN SOPORTE VITAL BÁSICO

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Objective: to identify the theoretical knowledge of undergraduates of non-health courses about cardiorespiratory arrest on basic life support. Method: descriptive and exploratory research of quantitative nature carried out with graduates of public university located in the Northwest of Paraná, in 2019. For data collection, a questionnaire was used, containing characterization of the subject and ten questions related to the recognition and attendance of situations of cardiorespiratory arrest and cardiopulmonary resuscitation. The data were tabulated and analyzed. Results: 94.0% of the participants were not considered fit for cardiorespiratory arrest event; 92.6% did not know how to detect this condition; and 95.5% did not know which conduct to adopt. Conclusion: the theoretical knowledge of undergraduates of non-health courses about cardiorespiratory arrest was insufficient and training is required for lay people in emergency situations, so that care is started correctly and immediately, without postponing emergency medical service activation.

Descriptors: Knowledge. Cardiac Arrest. Cardiopulmonary Resuscitation. Emergencies.

Objetivo: identificar o conhecimento teórico de graduandos de cursos que não são da saúde sobre parada cardiorrespiratória no suporte básico de vida. Método: pesquisa descritiva e exploratória de natureza quantitativa realizada com graduandos de universidade pública localizada no Noroeste do Paraná, em 2019. Para coleta dos dados, utilizou-se questionário, contendo caracterização do sujeito e dez questões referentes ao reconhecimento e

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atendimento de situações de parada cardiorrespiratória e reanimação cardiopulmonar. Os dados foram tabulados e analisados. Resultados: não se consideraram aptos para atendimento de evento de parada cardiorrespiratória 94,0% dos participantes; 92,6% não sabiam detectar essa condição; e 95,5% não souberam qual conduta adotar. Conclusão: o conhecimento teórico de graduandos de cursos que não são da saúde sobre parada cardiorrespiratória foi insuficiente e é necessário treinamento para leigos em situações de emergência, para que o atendimento seja iniciado correta e imediatamente, sem postergar acionamento de serviço médico de emergência.

Descritores: Conhecimento. Parada Cardíaca. Reanimação Cardiopulmonar. Emergências.

Objetivo: identificar los conocimientos teóricos de los estudiantes universitarios de cursos no sanitarios sobre la parada cardiorrespiratoria en soporte vital básico. Método: investigación descriptiva y exploratoria de carácter cuantitativo realizada con egresados de universidad pública ubicada en el Noroeste de Paraná, en 2019. Para la recolección de datos se utilizó un cuestionario, que contenía caracterización del sujeto y diez preguntas relacionadas con el reconocimiento y asistencia de situaciones de paro cardiorrespiratorio y reanimación cardiopulmonar. Los datos fueron tabulados y analizados. Resultados: el 94,0% de los participantes no se consideraron aptos para el evento de paro cardiorrespiratorio; El 92,6% no sabía cómo detectar esta afección; y el 95,5% no sabía qué conducta adoptar. Conclusión: los conocimientos teóricos de los estudiantes universitarios de cursos no sanitarios sobre parada cardiorrespiratoria fueron insuficientes y se requiere capacitación para los laicos en situaciones de emergencia, de modo que la atención se inicie de manera correcta e inmediata, sin posponer la activación del servicio médico de emergencia.

Descriptores: Conocimiento. Paro Cardiaco. Resucitación Cardiopulmonar. Emergencias.

Introduction

Initial emergency scenario care is known as Basic Life Support (BLS). Its application is indispensable to save lives and prevent sequelae, until a specialized team can reach the site of the event. BLS includes cardiopulmonary resuscitation (CPR) maneuvers in victims in cardiac arrest, defibrillation by means of automatic external defibrillators (AED), and airway clearance maneuvers due to foreign body. The recognition of these situations and immediate basic care can be performed by lay people, provided they are properly informed and trained[1].

Cardiorespiratory arrest (CRA) is an emergency condition, in which the individual presents sudden and unexpected interruption of the arterial pulse and breathing, vital conditions for humans[2]. CRA is based on the performance of basic specific maneuvers, as described in early BLS, which consist of the recognition and attempt to immediately correct the failure of the respiratory and/or cardiovascular systems, until the arrival of a specialized team[3].

It is estimated that there are around 200,000 CRAs per year in Brazil, half of which are cases in pre-hospital environments, such as residences, shopping malls, airports, stadiums and public roads, making it a serious public health problem[4]. Among the causes of this disease are: trauma, shock and situations of heart failure or acute myocardial infarction[5].

The survival and prognosis coefficients of patients after CRA are directly associated with the agility with which the search for CRA reversal and the quality of its performance is initiated[6]. Early intervention in CRA, safely and effectively, can even triple survival[7], since each minute lowers the victim's chances of survival by about 7% to 10%[8-9].

There is a great need for learning first aid protocols by lay people, due to insufficient knowledge presented by the population[10], including academics.

Therefore, the objective of this work is to identify the theoretical knowledge of undergraduates of courses that are not health on cardiorespiratory arrest on basic life support.

Method

This is a descriptive and exploratory research of quantitative nature, carried out with students

of the various undergraduate courses offered by a public higher education institution, located in the Northwest region of the state of Paraná, in 2019.

The place chosen to carry out the research was the State University of Paraná, Paranavaí campus, which offers 12 undergraduate courses. The study involved the first year of the courses whose curricular matrices do not contain components of the health area and first aid ideas: administration, biological sciences, accounting sciences, law, geography, history, letters, mathematics, pedagogy and social work. Undergraduate courses in nursing and physical education were excluded from the research and the remaining courses of the campus in question were included. There was no sample calculation, but the number of vacancies offered in the entrance exam of each course was taken into account, reaching an average of 40 students. Undergraduate courses work, according to their particularities, in the morning, evening, night and integral periods.

Therefore, the inclusion criteria in the research were: being 18 years of age and/or older and being regularly enrolled in one of the undergraduate courses chosen for the research. As an exclusion criterion - not to have training and/or to work in the health area.

The students were invited to participate in the research, being explained to them the objective and other methodological procedures. For those who spoke in favor, the Informed Consent Form (ICF) was presented, which was signed in two ways, with a copy with the participant and another with the researcher, in which all the rights of the research participant were explained.

For data collection, a questionnaire was used, containing two parts: the first, with a brief characterization of the participant; the second, with questions formulated according to the objectives of the research. For testing and adequacy, the script was submitted to a board of teachers in the area of urgency and emergency. Subsequently, it was applied to a group of academics not included in the research.

As a return of information and dissemination of knowledge in the academic community, a CPR training event was organized during the breaks of the night classes, during two consecutive days. A research team provided the support and transmitted the essential information about BLS in cardiology and guidance on the correct way to perform chest compressions. Those interested were invited to perform a CPR simulation on Laerdal's® Mini Anne resuscitation prototypes. Concomitantly with the simulation, the participants were instructed with pertinent information about the survival chain in the BLS in cardiology and activation of emergency services, at a time after the application of the questionnaire to the students of all the aforementioned courses.

The quantitative data collected were tabulated in a Microsoft Office Excel 2010 spreadsheet, analyzed and presented in descriptive tables through frequencies.

The research was developed after the authorization of the academic institution and approval of the Research Ethics Committee of the Universidade Estadual de Maringá, under Opinion n. 3,492,539/2019. All ethical precepts involving research with human beings have been respected.

Results

The sample consisted of 243 (90.7%) individuals from the State University of Paraná, Paranavaí campus. All of them answered the questionnaire with their previous knowledge on the subject.

There was a predominance of the age group between 18 and 20 years and females, constituting more than half of the participants. As for skin color, almost half of the participants declared themselves white and brown. As for marital status, the most cited was single. Most participants worked and the family income of 3 to 4 minimum wages predominated, followed by the income of 2 minimum wages. Regarding the number of residents in the household, it was obtained that the majority lived with 3 to 4 people in the same dwelling; almost all reported not having children (Table 1).

Table 1 – Sociodemographic characterization of undergraduate students of the courses of the State University of Paraná, Paranavaí campus. Paranavaí, Paraná, Brazil – 2019. (N=243)

Variables	n	%
Sex		
Female	159	65.4
Male	84	34.6
Age Group		
18 – 20	166	68.3
21 – 30	63	25.9
31 – 40	9	3.8
40 >	5	2.0
Skin Color		
White	120	49.3
Black	12	4.9
Yellow	7	2.9
Brown	104	42.9
Marital status		
Single	219	90.1
Married	19	7.8
Living together	4	1.7
Divorced/separated	1	0.4
Work		
Yes	147	60.5
No	96	39.5
Family income		
Up 2 minimum wages	94	38.7
3 - 4 minimum wages	116	47.7
5 - 7 minimum wages	28	11.5
8 - 10 minimum wages	2	0.8
Over 10 minimum wages	3	1.2
Number of people at home		
Lives alone	4	1.7
2	28	11.5
3 – 4	139	57.2
5 >	72	29.6
Children		
None	224	92.2
1	8	3.3
2	8	3.3
3 or more	3	1.2

Source: Created by the authors.

As for the pivotal questions, as set out in Table 2, on participation in training directed to CRA situations, almost all participants indicated that they had not participated in specific training for this emergency situation. In the following question, which addressed the obtaining of information in CRA and how the service was performed, few of them answered having

obtained information in other communication vehicles and most stated that they did not have access to other sources of information. For the questioning of CRA witnessed in family members or someone close to us, some stated that they had experienced this scene and almost all reported never having witnessed such an event. In the last question, which concerned the preparation of individuals to attend to a CRA situation, few answered in an affirmative manner and almost all answered that they were not prepared to act in this situation.

Table 2 – Distribution of the responses of the undergraduate students of the courses of the State University of Paraná, Paranavaí campus, about previous experiences with situations involving Cardiorespiratory Arrest. Paranavaí, Paraná, Brazil – 2019. (N=243)

Questions	Answers (%)	
	Yes	No
Have you ever done any targeted training to care for people in cardiorespiratory arrest situations?	9.24	90.76
Have you obtained information about Cardiorespiratory Arrest and how is the service performed by other communication vehicles?	18.07	81.93
Have you ever had cases of Cardiorespiratory Arrest with a relative or someone close to you?	19.68	80.32
Do you feel prepared to help a person in cardiorespiratory arrest situation?	6.02	93.98

Source: Created by the authors.

The data presented in Table 3 expose the percentages of correct and incorrect answers of the undergraduates about Basic Life Support in Cardiac Arrest and Cardiopulmonary Resuscitation. The highest percentages are found in the incorrect answers column. Only in Question E, regarding the position of the first responder's hands in the thoracic region, the percentage of correct answers outweighed that of incorrect ones.

Table 3 – Distribution of the answers of the undergraduates of the courses of the State University of Paraná, Paranavaí campus on questions of Basic Life Support in Cardiac Arrest and Cardiopulmonary Resuscitation. Paranavaí, Paraná, Brazil – 2019. (N=243)

Questions	Answers (%)	
	Right	Incorrect
A - Detection of cardiorespiratory arrest	7.4	92.6
B - Conduct at Cardiorespiratory Arrest	4.5	95.5
C - Call Help (SAMU)	49.8	50.2
D - Number of compressions	16.0	84.0
E - Position of hands	61.7	38.3
F - Depth of Compressions	15.2	84.8
G - Compression times	12.4	87.7
H - Victim's position	46.9	53.1
I - Use of automatic external defibrillator	33.7	66.3
J - Position of the rescuer	22.6	77.8

Source: Created by the authors.

Discussion

Circulation-related diseases, such as CRA, mainly affect the heart and blood vessels, constituting a global public health problem. Currently, it is observed that the actions of the BLS should be initiated immediately, to reverse the CRA and to prove a return with

minimal presentation of damage. Therefore, the participation of the layperson in the recognition of CRA is important[11]. Therefore, it is necessary that this public can perform such care, since it is the first to witness a sudden evil in most cases.

Lay first responders need to follow the criteria for recognition of CRA, ask for help, initiate CPR and apply defibrillation. That is, having public access to defibrillation (AED) until a professionally trained emergency medical service (EMS) team accepts responsibility and then transports the patient to a definitive quality treatment[12].

This research located theoretical limitations and practical skills of the target audience, in view of an occurrence of CRA, due to the non-understanding and foundation of the BLS. A similar study conducted with students from the Federal University of Lavras (UFLA) identified that previous knowledge about the BLS was extremely low[10]. A study that evaluated the delivery of theoretical and practical CPR training to high school students in the public school system of a municipality identified, after training, significant improvement, which supported the perception presented about the importance of inserting health-related issues in curriculum components[13].

Therefore, it is assumed that the lack of knowledge and lack of preparation of a large part of the population on the subject are the main obstacle to saving lives. According to a study conducted with the objective of understanding the reasons why laypeople do not intervene in cases of CRA, the main reasons were: lack of knowledge about the subject or difficulty in identifying a cardiac arrest associated with fear of acting incorrectly and causing harm to the victim[14].

On the recognition and conduct assumed in the scenario of PCR, in this research, the results indicated that most of the participants could not identify and act before the event. In view of this, educational efforts should be directed to help the lay public understand that people who are victims of CRP may initially have activities similar to abnormal crises or breathing and that every effort should be made to minimize delays in the initiation of care[14].

According to the CPR care guidelines of the American Heart Association (AHA), for adults in Extra Hospital Cardiorespiratory Arrest (EHCA), untrained lay first responders should apply CPR only with chest compressions with or without assistance from attendants, as they are easy to perform and can be easily guided by a specialized emergency professional[15-16].

With the early onset of BLS actions, there is knowledge of more chances of CRA reversal and indications of less sequelae for the individual[11]. In the present study, regarding the number of compressions, a small portion of undergraduates correctly reported “at least 100”; answered about the depth of the compressions correctly “at least 5 cm” and a smaller number of participants knew how to answer the correct time of compressions.

A study[17] showed that victims who received chest compressions early had a survival rate of 6.7%. Therefore, the faster the aid, the greater the chances of success in circulatory return, because, every minute without effective care, the chances of 7% to 10% of resuscitation are lost.

In this study, it was observed that less than half knew how to position the victim to perform CPR. However, most of them knew how to locate the site for chest compressions, being the question with the highest percentage of correct answers. Among the main justifications of the laity for not performing cardiac massage alone, include ignorance of what to do and/or fear of being contaminated by infectious diseases[3].

With the implementation of the mobile pre-hospital service, provided for in the National Emergency Care Policy (PNAU in Portuguese), as well as its regulatory centers in municipalities and regions throughout the Brazilian territory, there was an important advance, considering that the situation of morbidity and mortality in Brazil related to emergencies decreased[18].

For the activation of the emergency service, in this research, most participants did not know how to trigger the SAMU, mentioning another emergency service. However, calling an institutionalized health sector represents an

advantage over those who would not call any place in search of help[1].

The activation of help, with the request of an AED[9], is an important predictor of survival and long-term quality of life in patients affected by a CRA event outside the hospital environment[19]. However, even nowadays, despite being fundamental to the success in CRA reversal, there are many barriers to the use of this equipment, mainly due to the reduced availability in public spaces[20].

According to population studies, the ODA, making AED available to lay people trained in its use, has the potential to be the intervention that represents the greatest advance in the treatment of CRA in ventricular fibrillation, since the development of CPR, because it allows victims to be defibrillated within the first minutes of CRA[21].

In the present study, regarding the use of AED, one third of the participants presented knowledge about its usefulness, corroborating the result of a recent study, in which only 13.8% of the participants answered correctly about the functionality of this equipment[22].

Brazil does not have a program that addresses the subject definitively, however, Law n. 13,722 of October 4, 2018, known as the Lucas Law, makes it mandatory to train first aid basics of teachers and employees of public and private educational establishments and child recreation establishments[23]. The predilection of this environment for training is based on the fact that students find themselves in a phase of great motivation, in which they learn more quickly and retain skills easier[18]. There is no agreement on the best age to start CPR training. However, children under nine years of age, despite not being able to perform the skill with dexterity, are able to instruct close adults[17]. Moreover, the positive reaction of children to the acquisition of new knowledge can trigger the spread of this training to their families and friends[24]. With the insertion of this theme in school curricula, it is expected that it can contribute to continuous training aimed at lay people[22].

Currently, among the various existing methodologies for dissemination of knowledge, we highlight the use of realistic dolls in theoretical-practical training, which is an efficient method for the purpose of expanding knowledge about CPR and for the quality of movements[25].

These data indicate that the knowledge of undergraduates about BLS is reduced, which makes it essential to conduct training, so that it can be the participation of the lay population in the care of CRA, providing a reduction in the time between the occurrence and the beginning of interventions. Thus, the importance of education of the lay community in the early detection of cardiovascular emergencies is justified[10]. One cannot fail to consider the possibility of knowledge being lost over time, due to lack of training. Regular interval training is necessary to maintain skills, due to updates to the AHA guidelines, which are reviewed periodically[17].

This study presents some limitations that may restrict the interpretation and generalization of the results, considering that they reflect data from a unique group and reality. It is suggested that this proposal may be used in other scenarios, but mainly inserted in the education of lay people.

Conclusion

The study allowed us to conclude that the theoretical knowledge of undergraduates of non-health courses about cardiorespiratory arrest was insufficient, which makes it necessary to train lay people in emergency situations, so that care is started correctly and immediately, without postponing the activation of emergency medical services.

As seen, the lay population has limited knowledge regarding the care of victims of cardiorespiratory arrest, regarding the detection and approach of a victim of CRA, activation of the emergency service, performance of chest compressions and adequate positioning of the victim on a rigid surface, in addition to the minimum number of compressions and time, depth and, later, use of AED.

In this circumstance, it is observed that education is an important instrument for health promotion and development of actions to

prevent injuries. Therefore, it is necessary to disseminate information that can contribute to the performance of lay people in pre-hospital emergencies.

Collaborations:

1 – conception, design, analysis and interpretation of data: Maria Gabriela Cordeiro Zago, Muriel Fernanda de Lima, Jean Carlos Ferreira, Lucas Vinícius de Lima and Carlos Alexandre Molena Fernandes;

2 – writing of the article and relevant critical review of the intellectual content: Maria Gabriela Cordeiro Zago, Muriel Fernanda de Lima, Jean Carlos Ferreira and Jorseli Angela Henriques Coimbra;

3 – final approval of the version to be published: Maria Gabriela Cordeiro Zago and Muriel Fernanda de Lima.

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