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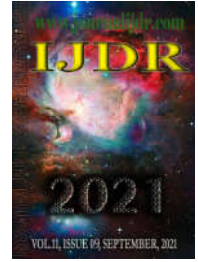
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THE NURSE IN FRONT OF CARDIORESPIRATORY ARREST IN THE PRE-HOSPITAL ENVIRONMENT: DOMAIN OVER THE RECOMMENDATIONS OF THE AMERICAN HEART ASSOCIATION

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ABSTRACT

The aim of the study was to enunciate the knowledge of nurses who work in pre-hospital care in the actions taken in the face of CPA. It is a field research with a quantitative approach of exploratory descriptive character. A pre-Hospital Urgency and Emergency company in the North Zone of Rio de Janeiro was sought as a setting. Twenty nurses with specific contracts who received periodic training in ACLS and 20 nurses who work in the operation where they do not have training in ACLS were interviewed. Approved by the Research Ethics Committee (CEP) of the Federal Hospital of Bonsucesso (HFB), registered by CAAE 65111817.1.0000.5253 and opinion number 2.009.468. It was observed in this sample that nurses who were trained in ACLS are more prepared in the early identification of a CPA, being able to enable their appropriate measures in advance, bringing great results in terms of early identification of this event, with a more crude view of those who The ACLS course does not have the difficulty in identifying a CPA in the course of it, which can be confused in the initial treatment, causing damage or leading to errors in its execution. In view of the results of this research, the need for a monthly simulation plan is evident, until the new certification of each professional is completed, as it is extremely important that each nurse knows how to act and, consequently, perform better, in addition to contributing to the longer survival.

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INTRODUCTION

This study deals with the role of nurses in the face of cardiopulmonary arrest (CPA) in the pre-hospital environment. Cardiovascular diseases in Brazil are represented by 1/3 of all deaths in the country. Epidemic heart diseases are responsible for 80% of sudden deaths in several countries. Thus, the importance of cardiopulmonary resuscitation (CPR) and the scientific knowledge of health professionals are highlighted, emphasizing in this work the role

of nurses in the pre-hospital environment (Lyra, 2012). Most of the time, this fact happens abruptly and care is provided by a pre-hospital team. According to Ordinance No. 2048, of 11/2002 (Brazil, 2002), a mobile pre-hospital care vehicle, type D, is the advanced support ambulance for the care and transport of high-risk patients in pre-hospital and/or emergency care inter-hospital transport needing intensive medical care. The health team that composes it is 01 driver, 01 doctor and 01 nurse. Being the nurse responsible for the nursing care necessary for the resuscitation and stabilization of the patient at the event site and during transport. The CPA is the abrupt cessation of

cardiac mechanical function, reversible if attended to quickly, fatal in cases where there is no counter intervention. And it is an event that the health professional is faced with constantly and requires immediate care due to the risk of life for the patient. The chance of survival ranges from 2% to 49%, depending on the early start of CPR and initial heart rhythm^{3,4} (Bellan *et al.*, 2010; AHA, 2020). The CPA may present rhythms that are non-shockable by defibrillator (asystole and pulseless electrical activity) and shockable rhythms (ventricular fibrillation and pulseless ventricular tachycardia). Possible reversible causes of a CPA must be identified and treated in a timely manner, with the differential diagnosis being about the factors called "H's and T's"; hypovolemia, hypoxia, acidosis, hypo or hyperkalemia, hypoglycemia, hypothermia, cardiac tamponade, coronary thrombosis, toxicity, trauma, pulmonary thrombosis⁴. In our reality, the arrival of a professional nurse does not always indicate an adequate CPA, due to the lack of training of these professionals. Although professionals have been trained at some point during their training, over time, knowledge declines¹. The nurse's lack of knowledge about CPA protocols may cause irreversible risks to the victim, therefore, obtaining knowledge and maintaining constant training reduces errors during the nurse's work (Gonzales, 2013). In this study, we will be guided by guidelines outlined by the American Heart Association (AHA), which makes protocols in PCR feasible. This affirms and emphasizes that the success of the CPA takes place in the midst of training for professionals, who in this research highlight the professional Nurse, in Advanced Cardiovascular Life Support (ACLS), where they perform simultaneous tasks, requiring communication, dynamism from the team in attendance through protocols (Citolino *et al.*, 2015). Thus, the research seeks to assess whether nurses have mastery of the AHA recommended CPA protocols, focusing on professionals who work in pre-hospital care working with CPA.

METHODS

It is a field research with a quantitative approach of exploratory descriptive character. Based on the exposed elements, a scenario was sought for the construction of the research in question, being a Pre-Hospital Urgency and Emergency company in the North Zone of Rio de Janeiro, where one of the responsible researchers works as a nursing professional. It was chosen for the study by professional nurses who accepted to participate of their own free will, upon formal authorization through the Informed Consent Term (FICF), presenting as inclusion criteria, nurses who work directly operationally, that is, in emergency home care, and nurses with specific contracts, contracts that are presented in a private company, all contracts that are owned by that company, in the bidding for the provision of health services, request temporary training every 2 years in ACLS, certified by the AHA, for all employees who will be allocated at the service delivery site, where they are permanently audited on this requirement. The exclusion criteria focus on nurses who work in the company with leadership and leadership positions, as they present themselves administratively, not being in contact with the victims in a pre-hospital environment. Twenty nurses with specific contracts who received periodic training in ACLS and 20 nurses who work in the operation where they do not have training in ACLS were interviewed. It is noteworthy that the staff of professional nurses is currently 57, thus totaling the professionals who participated in the survey 70.17% of the effective in this category.

The calculation of the research sample was developed according to the finite population formula. This calculation was based on a The research was conducted through a semi-structured questionnaire with 10 (ten) questions prepared based on the Guidelines of the Brazilian Society of Cardiology (SBC), AHA 2020, Ordinance No. 2048 of 2002 of the Ministry of Health and the standards for CPA, according to the Regional Nursing Council. The calculation of the research sample was developed according to the finite population formula. This calculation was based on a sampling error of 7% and a confidence level of 90%, thus reaching the result of 40 nurses, a minimum number of 70% of respondents in order to ensure the

desired confidence in the research. The study was based on current ethical aspects, as the data were collected only after filling out the TCLE, ensuring anonymity and confidentiality for the target audience of the research, respecting the norms and guidelines of Resolution 466, of December 12, 2012, of the National Health Council (CNS, 2012), of research involving human beings and Resolution 510, of April 7, 2016, of the National Health Council (CNS, 2016), whose methodological procedures involve the use of data directly obtained from the participants or of identifiable information or that may entail greater risks than those in everyday life. The research was authorized through the embodied opinion of the Research Ethics Committee (CEP) for the evaluation of PlataformaBrasil by the Federal Hospital of Bonsucesso (HFB), registered by CAAE 65111817.1.0000.5253 and opinion number 2.009.468.

RESULTS AND DISCUSSION

Based on what was observed in the results obtained through the applied data collection instrument, the answers were organized and later analyzed with the help of programs such as Microsoft Word® and Excel®, whose results were separated into tables. Then, all variables were categorized and expressed by absolute frequency and relative frequency. Data analysis of the study was carried out in the light of the guideline of the American Heart Association 2020 (AHA), in order to respond to the objective proposed in the study. When asked about the concept of CPA to nurses who have a course, 95% answered correctly, according to the concept of CPA according to the Brazilian Society of Cardiology, with 5% of incorrect answers. For those who do not have a course, we obtained 80% correct answers and 20% errors in the answers. It was observed in this sample that nurses who were trained in ACLS are more prepared in the early identification of a CPA, being able to make their appropriate measures possible in advance, bringing great results in terms of early identification of this event, with a more crude view of those who The ACLS course does not have the difficulty in identifying a CPA in the course of it, which can be confused in the initial treatment, causing damage or leading to errors in its execution (AHA, 2020). The concept of CPA is defined as the abrupt and sudden cessation of cardiorespiratory functions, absence of respiratory movements and unconsciousness (SBC, 2015).

It is clear that there is a difference between nurses who have ACLS courses and nurses who do not, as a result 100% got it right from those who received ACLS training, showing the great importance of updating and continuing education through specific and recommended courses. As for the professional nurses who have never been present in the ACLS course, we have as a result the percentage of 55% correctly answering the basic life support sequence and 45% not knowing how to answer the sequence correctly. The AHA reviews all protocols every 5 years, based on scientific evidence to improve the implementation of the protocols, in 2020 (AHA, 2020) it even emphasizes attendant-oriented CPR so that they can eliminate as much as possible errors in the execution of CPR, causing irreversible injuries and until the victim's death without having the adequate and effective treatment, therefore, dissect again in the sequence of the algorithm in the treatment of CPA and its sequence correctly, because with this we can offer the victim in the Pre-Hospital environment the effectiveness of CPR. It is observed that 100% of nurses with and without a course got the right chest compression x ventilation ratio. The amount of compression x ventilation is not changed, but after studies in the new 2015 guideline, the importance of high-quality CPR becomes widespread. Below is the table identifying the data collected. Nurses updated in ACLS 100% answered correctly, therefore, it is shown above that the absence of updating of a specific course denotes the discrepancy of those who have it, with the result of 85% correct answers and 15% incorrect answers. Due to the effectiveness verified by correctly performing the event identification steps, sequence and technique used correctly for the successful attempt of CPR, given the exposed chest compression and ventilation ratio, with 1 or 2 rescuers presents the same 30 X 02 respectively (AHA, 2020).

Table 1. Instrument on nurses' knowledge regarding CPA in the pre-hospital environment.RJ, 2021

Nurses' response regarding the concept of CPA.	Nurses with the ACLS course		Nurses without the ACLS course	
	N	Fi%	N	Fi%
Abrupt interruption of cardiac, consciousness and respiratory functions.	19	95%	16	80%
The abrupt interruption of consciousness and breathing.	1	5%	2	10%
Abrupt interruption of cardiac, respiratory, brain functions.	0	0%	2	10%
Abrupt interruption of cardiac activities.	0	0%	0	0%
Basic Life Support Sequence	Nurses with the ACLS course		Nurses without the ACLS course	
	N	Fi%	N	Fi%
Opening the airway, performing ventilations, chest compressions and defibrillation.	0	0%	3	15%
Defibrillation, pulse check, chest compressions and ventilation.	0	0%	4	20%
Check responsibility and initiate chest compressions, airway opening and early defibrillation.	20	100%	11	55%
Ventilation and chest compressions.	0	0%	2	10%
Comparison of Chest Compression and Ventilation with one and two rescuers in adult CPA	Nurses with the ACLS course		Nurses without the ACLS course	
	N	Fi%	N	Fi%
30x3 ventilations; 15x3 ventilations	0	0%	0	0%
20X3 ventilations 15X3 ventilations	0	0%	0	0%
15X2 ventilations 30X2 ventilations	0	0%	3	15%
30X2 ventilations 30X2 ventilations	20	100%	17	85%
TOTAL	20	100%	20	100%

Table 2. Instrument on nurses' knowledge regarding CPA in the pre-hospital environment RJ, 2021

CRP cardiac rhythms that we should use Defibrillation as a first intervention	Nurses with the ACLS course		Nurses without the ACLS course	
	N	Fi%	N	N
Ventricular Fibrillation and Pulseless Ventricular Tachycardia	20	100%	10	50%
Asystole and PEA	0	0%	5	25%
PEA and Atrial Fibrillation.	0	0%	3	15%
Ventricular Tachycardia with Pulse and PEA	0	0%	2	10%
Non-shockable heart rate in a CPR	Nurses with the ACLS course		Nurses without the ACLS course	
	N	Fi%	N	Fi%
PEA and Ventricular Tachycardia	0	0%	1	5%
Asystole and PEA	19	95%	12	60%
Ventricular Fibrillation and Ventricular Tachycardia	0	0%	7	35%
Asystole and Ventricular Fibrillation	1	5%	0	0%
During the identification of a PCR at which point CPR should be started immediately	Nurses with the ACLS course		Nurses without the ACLS course	
	N	Fi%	N	Fi%
Always after opening the airway and checking breathing	0	0%	2	10%
Immediately after asking for help and placing the victim in the supine position.	20	100%	7	35%
Only after the emergency medical service arrives at the site	0	0%	6	30%
After verifying that the victim has no pulse and breathing	0	0%	5	25%
TOTAL	20	100%	20	100%

The result is 100% correct answers with trained nurses, and a division of opinions into 50% correct answers and 50% errors for those who do not have training. CRP rhythms, which are shockable rhythms, were demonstrated, given that event, early defibrillation is the emergency management and the main treatment for ventricular fibrillation and pulseless ventricular tachycardia. Defibrillation is the use of a large-amplitude, short-duration direct current electric shock applied to the patient's chest. This manual treatment can only be performed by the medical professional after recognition of the same through non-invasive monitoring. And by the professional nurse through the Automatic External Defibrillator (AED), because if used properly, the identification of the rhythm is performed by the device itself (Boaventura & Miyadahira, 2012). With all the tools exposed and disciplines presented in the undergraduate course, there are still some differences in the answers, 95% with ACLS answered correctly and 5% incorrectly, whereas 60% of those who do not have ACLS got their answers right and 40% got it wrong, based solely on your knowledge. The rhythms that do not use defibrillation as the first treatment, q are asystole and pulseless electrical activity (PEA). In these rhythms, defibrillation is contraindicated, with chest compression and ventilation as the initial treatment. It is emphasized that, given this situation, basic life support must be very well applied,

identified and organized so that the survival rate increases in victims affected by CPA (Zanini et al., 2006). Regarding the analysis of reversible causes of CRP, specifically the 5H's, it is observed that nurses who have ACLS 100% answered correctly, and those who do not have a course 50% answered correctly and 50% incorrectly. Regarding the 5T's, nurses with ACLS answered the correct statement in 95% of respondents and 5% incorrect statement. Those who do not have ACLS, there were great divisions of opinions, but the percentile was 50% correct and 50% of the answers. Through examinations and clinical findings, it is possible to correctly identify and treat the direct cause, in order to successfully reverse the patient's CPA and maintain their health. For each cause, there is a specific treatment and it is essential that the professional has the knowledge of each one of them (AHA, 2020; Tallo et al., 2012). The table below demonstrates these results. In the ACLS course content according to the American Heart Association (2020), the call for help is presented as one of the main activities to be performed when the professional is faced with a victim of CPA, with nurses participating in the research they did not pay attention to the fact that this help should be requested when this professional found himself alone in the place, without specialized human resources and equipment. When the professional arrives at the event site equipped with his team and necessary equipment, there is

no need to ask for help. Thus, demonstrating in the answer, that the nurses who participated in the data collection are somewhat automated in the content presented in the course, this is bad, as it makes the nurse in the face of CPA not have the reasoning power and understand that the his presence at the site together with the pre-hospital team is the help that the patient needs, no longer needing to call for help, for an effective care. Therefore, when the absence of central pulse and breathing is identified, CPR must be started, however, carrying an automatic external defibrillator (AED) in their advanced vehicle, the nurse can offer that patient with CPA an effective care, not requiring more human resources like the help that course content presents (AHA, 2020). In view of the results of this research, the need for training and updating courses is evident so that nurses have better theoretical knowledge and, consequently, better performance, in addition to contributing to greater survival.

CONCLUSION

In this research, the results obtained showed that nurses who have an ACLS course are more prepared to work in CPA care, as evidenced by higher numbers of correct answers to data collection issues regarding CPA based on AHA 2020, from nurses who do not obtain this specialization. Thus relating the importance not only for the professional but also for the patient affected by the CPA event. Nurses with an ACLS course had incorrect answers regarding the importance of identifying a CPA, showing an increasing need for simulations so that the service is more effective. Still, it is important that the institution where the data was collected has a somewhat broader view towards the professional investment of its employees, in order to obtain quality of service, and to present a differential in the APH market, with this satisfaction also of its employees.

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