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RESEARCH ARTICLE

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## NURSING CARE IN THE EMERGENCY OF CARDIAC ARREST IN THE HOSPITAL ENVIRONMENT

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### ABSTRACT

**Introduction:** In Brazil, it is estimated that approximately 200 thousand cases of cardiac arrest (CRA) occur per year, and half of this number occurs in the in-hospital environment. **Objective:** To analyze nursing care in the emergency of cardiac arrest. **Methodology:** This is an integrative literature review aimed at answering the guiding question: what are the nursing procedures in the emergency care of victims of cardiac arrest? For data collection, it was used the search in the electronic library SCIELO and VHL and in the LILACS database with the combination of descriptors cardiac arrest, emergency care, behaviors, nursing. We included articles available in full in Portuguese between January 2008 and January 2018, and excluded monographs, dissertations and case reports. Titles and abstracts were read. The search originated 204 articles, after successive readings and elimination of duplicities, a total of 10 articles were obtained as a final sample. **Results:** Nurses need to recognize the alterations presented by patients before cardiac arrest, as well as in the increased vigilance in front of the signs and symptoms enabling early care, being able to prevent the arrest in some situations. Therefore, it is necessary that the nurse monitors the patient's circulation, takes the venous access, administers medications, assists the physician in this procedure, providing the aspiration material connected to the vacuum network; aspirating the airways, if necessary, among others. **Conclusion:** studies it was possible to conclude that the nurse, through his care, is an essential and trained professional to diagnose and attend a cardiac arrest, both in decision making to initiate care, as in medication care, role reporting performing a good systematization of nursing care, as to care for family members and other professionals of the team.

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## INTRODUCTION

In Brazil, it is estimated that around 200 thousand cases of cardiac arrest (CRA) occur per year, and half of this number occurs in the in-hospital environment (GONZALEZ *et al*, 2013; FILHO, *et al*, 2015). According to the Brazilian Society of Cardiology, in the in-hospital environment, 37% of cases of CRA present a rhythm of pulseless electrical activity (PEA), 39% of cases present asystole as the initial

rhythm of CRA. Thus, the rhythms known as shockable, pulseless ventricular tachycardia (PWV) and ventricular fibrillation (VF) present numbers of 23% to 24%, respectively, rhythms that present survival rate of 36% to 37% (MEANEY *et al*, 2010; GONZALEZ *et al*, 2013). In this context, cardiac arrest (CRA) is considered a relatively frequent emergency situation in Intensive Care Units (ICU), Emergency and Urgent Care. The main signs occur suddenly and patients present altered heartbeat, absence of palpable pulse in the

great vessels, apnea or agonal breathing and irresponsiveness to stimuli, in which all health professionals must be prepared to identify these abnormalities and immediately initiate their care (BECCARIA *et al.*, 2017). According to the 2015 American Heart Association (AHA) guidelines, for high-quality Cardiopulmonary Resuscitation (CPR), it is necessary to apply chest compressions with adequate frequency and depth, making the chest return to the zero point after each compression so that the cardiac chambers fill with blood. Currently, the AHA recommends a compression rate for adults of 100 to 120 compressions per minute, with a depth of 5 to 6 cm. Among the factors that contribute to poor quality CPR is professional fatigue when compressing the chest with inadequate frequency and depth, for this reason, it is recommended to change rescuers every 2 minutes, with interruptions for rescuer change of no more than 5 seconds. (AEHLERT, 2018). In most cases, the nursing professional is the first one to detect a CRA in the intra-hospital environment, and as a consequence, the knowledge about the actions that should be taken during this event is essential for patient survival. Surveillance and prevention, notification and response, cardiopulmonary resuscitation, rapid defibrillation, and care during and after cardiac arrest are the 5 links of the chain of survival, which are interconnected elements of a care system provided to a person who has suffered a CRA (AEHLERT, 2018). According to Alves *et al.*, (2013), the nursing professional must always be aware of the clinical changes that the patient presents, and in the case of a cardiac arrest, the knowledge of its signs and symptoms is essential for the patient's recovery. It is noteworthy that most of the time, the nurse is the team member who first faces the cardiac arrest situation, which together with the nursing team assists the patient until the arrival of the physician. Thus, nurses need to have knowledge about emergency care, with rapid decision making, assessment of priorities and establishment of immediate actions (BRAGA *et al.*, 2018). Therefore, the performance of nurses and their team in CRA are essential, since these are the professionals who have the ability and competence to identify CRA and initiate CPR procedures following the protocol immediately (LIMA, 2017). To analyze the nursing conducts in the care of patients with cardiorespiratory arrest in the hospital emergency room.

## METHODOLOGY

This is an Integrative Literature Review. According to Mendes; Silveira; Galvão, (2008), the Integrative Review allows the researcher to contact the available productions on the subject, providing new interpretative possibilities in order to point out and try to fill gaps in the study. The research was guided by the guiding question: What are the nursing procedures in the emergency care of victims of cardiac arrest? The search occurred in the electronic library SciELO (Scientific Electronic Library Online), and in the VHL (Virtual Library) and LILACS (Latin American and Caribbean Literature on Health Science) database with the combination of descriptors cardiac arrest, emergency care, nursing. We included articles available in full in Portuguese between January 2008 and January 2018, and excluded monographs, dissertations and case reports. Titles and abstracts were read. The search resulted in 204 articles, and after successive readings and elimination of duplicates, a total of 10 articles were obtained as the final sample. The data were organized in a form adapted from the literature for better evaluation and interpretation. The data were organized using Microsoft Word in a table prepared by the authors, grouping information such as: name of the authors of the sample, title, type of study, scientific journal, and year of publication. The results were analyzed using Bardin's technique, which allows characterizing methods in a schematized way for better understanding (BARDIN, 2016).

## RESULTS AND DISCUSSION

The searches in the electronic databases provided two hundred and four scientific articles that reported on the theme, and after filtering and analyzing them according to the inclusion and exclusion criteria, ten articles were selected as the sample of this study, as shown in the

Table. According to table 1, of the ten articles selected for this research, one was published in each year 2017, 2015, 2013 and 2009, two articles in the year 2012, 2010 and 2008. As for the methodology adopted in the selected articles, six articles presented quantitative study, three qualitative and one exploratory descriptive. Most articles were published in nursing journals such as Escola Anna Nery Revista Enfermagem, Revista Latino-americana de Enfermagem, Acta Paulista Enfermagem, Revista Rene, Revista Escola de Enfermagem da USP.

**Nurses' conduct and knowledge in caring for patients with cardiorespiratory arrest:** According to Araújo *et al.*, (2008), nursing professionals are fundamental in the care of a patient with CRA. It is up to nurses to provide direct care to severe, life-threatening patients, often playing a decisive role in the survival of patients seen in unconscious or in cardiac arrest emergency rooms. For Graça and Valadares (2008), cardiopulmonary resuscitation is an extremely important procedure, on which the reestablishment and maintenance of the patient's life depend. Nurses must be prepared to face this situation. It is then necessary that these professionals seek improvement through continuing education to perform the procedures with quality, technical and scientific knowledge. Araújo *et al.* (2012) emphasize that nurses are usually the first to witness a CRA in the hospital. They are the ones who most often call the care team. Thus, these professionals need to have updated technical knowledge and developed practical skills to contribute more effectively in CPR maneuvers. It is emphasized that it is the nursing team's responsibility, and especially the nurse's, to assist patients by offering artificial ventilation and circulation until the doctor arrives. This reinforces the need for them to undergo continuous training in order to acquire skills to provide the necessary assistance, because the less frequent the updates/capacitations, the less the knowledge/skills are retained, since theoretical knowledge and skills tend to decline over time (ALMEIDA *et al.* 2011). CPR sequence is considered a series of procedures that can be performed by trained professionals and also by trained laypersons, upon recognition of airway obstruction and cardiac and respiratory arrest, and are performed through the sequence of artificial circulation, airway opening, and ventilation (GONZALEZ *et al.* 2013). The knowledge and skills necessary to recognize, as well as the CPR maneuvers in CRA, by health professionals, are increasingly important to direct the actions during the care to be provided. Thus, nurses who work directly in CPR should be prepared, in addition, to have as a basis of care based on care protocols which will provide lower risk and therefore greater patient safety (ALVES; BARBOSA; FARIA, 2013). For the assistance provided to patients with CRA, it is necessary to use interventions and a set of procedures that are performed accurately and quickly by the medical and nursing staff. Thus, patients in CRA end up generating a mobilization for these professionals, often causing a moment of stress, to the extent that saving the life of another is a collective challenge (LUZIA; LUCENA, 2009).

According to Barra *et al.* (2011), it is of great importance that nurses provide specialized care both in CPR and in the organization, elaboration, skill and correct distribution of measures, thus, this professional is the one who is closest to the patient, identifying CPR early to minimize damage. In addition, it is important in identifying the arrest, performing the maneuvers, drug administration, monitoring, helping family members and stabilizing the patient post-arrest, and the nurse is responsible for all these implementations (OLIVEIRA *et al.*, 2013). According to Lucena and Silva (2017), nurses need to recognize the important role they have in observing the changes presented by patients before cardiac arrest, as well as in increasing vigilance against the signs and symptoms, enabling early care and preventing arrest in some situations. Therefore, it is up to the nurse to monitor the patient's circulation, obtain venous access and administer medications. It is necessary to perform intubation, where the nurse assists the physician in this procedure, by providing the aspiration material connected to the vacuum network; to aspirate the airways, if necessary, among others.

**Chart 1. Characterization of the articles according to the title, Authors, Year, Journal, Methodology, and results.**

Title	Author (year)	Journal	Methodology	Desfecho
Recognition of cardiorespiratory arrest in adults: level nurse's knowledge in a municipal emergency medical service in São Paulo city	Araújo <i>et al.</i> , 2008	RevInstCiênc Saúde	Non-experimental, exploratory, descriptive research with a quantitative approach	It was possible to verify that it is necessary to encourage the continuous reevaluation and training of nurses, especially when it comes to CPR care, because many among the interviewees in this study were not aware of the new guidelines for cardiopulmonary resuscitation (CPR).
The re (act) from front to stop nursing cardiopulmonary: a challenge in the daily	Graça; Valadares, 2008	Esc Anna Nery Rev Enferm	Qualitative approach study	It was noticed that nursing teams face several problems regarding the physical space used to perform emergency procedures that directly interfere in the team's performance, considering the search for quality care to clients in cardiopulmonary arrest.
Cohort study to evaluate nursing team performance in a theoretical test after training in cardiopulmonary arrest	Brião <i>et al.</i> , 2009	Rev Latino-am Enfermagem	Contemporary cohort study	The CRA training improves the team's knowledge soon after training, with a reduction in the score of correct answers after 6 months.
Quality of nursing records related to cardiopulmonary resuscitation compared to the Utstein model	Fernandes <i>et al.</i> , 2010	Acta Paul Enferm	Prospective, interventional and comparative research	Annotations were scarce and often not performed. The use of the Utstein model favors the sequential annotation of events, avoiding data loss.
Theoretical training for nurses in cardiac arrest attendance	Berlan; Araújo; Araújo, 2010	RevBrasEnferm	Prospective, interventional, comparative research study	It is believed that the training program developed can be used in the institution, with the possibility of being adapted for use in other institutions, and also updated with each publication of new guidelines.
Assisting a patient in cardiac arrest in an intensive care unit IntensiveCare Unit	Moura <i>et al.</i> , 2012	Rev Rene	Cross-sectional, descriptive and quantitative study	The low rate of correct answers in this study demonstrates the need to update the entire nursing team, with periodic theoretical and practical training, and with systematic evaluations of the team's performance, in order to improve care provided to critically ill patients.
Knowledge of nursing staff about cardiopulmonary resuscitation Protocol in the emergency department of a public hospital	Araújo <i>et al.</i> , 2012	Revista Univap	Descriptive study with quantitative approach	It was observed that the professional training offered to the team members who work specifically in the emergency room needs to be more effective in order to provide updated knowledge and development of skills in assisting the patient in cardiac arrest.
Importance of training the nursing team when facing cardiac arrest cardiorespiratory arrest in Primary Care	Menezes; Rocha, 2013	InterScientia	Descriptive, exploratory study	Therefore, the importance of the nursing team in assisting the victim of CRA was perceived, and the need for training and qualification for an efficient and effective care, which makes the quality of the adopted procedure possible, was emphasized.
Factors affecting the quality of cardiopulmonary resuscitation in inpatient units: perception of nurses	Citolino Filho, 2015	RevEscEnferm USP	Prospective, interventional and comparative research	The identification of factors that compromise the quality of CPR, in the perception of nurses, serves as a parameter for the implementation of improvements and training of teams that work in inpatient units.
Acting as a nurse in cardiac arrest in an Emergency Care Unit (UPA)	Lima, 2017	Revista UNILUS Ensino e Pesquisa	Research of qualitative approach and descriptive character	CPR situations require from the Nurses extreme attention and quick decision making, besides constant training and good relationships among the teams, because all these factors interfere in CPR care.

Next, ventilation must be assessed, confirming the placement of the airway device with a physical exam and confirmation equipment, verify if the patient has respiratory sounds, auscultate the epigastric region to confirm the position of the endotracheal tube, among others. It is up to the nurse to coordinate the nursing actions to be performed during CRA, because he/she will lead his/her team. Advanced life support consists of secondary CABD, where adequate equipment is used for better oxygenation and ventilation associated with the use of medications. It is the nurse's role to perform the checklist of the CRA cart and verify the functioning of the equipment, such as the monitor, defibrillator, and ventilator, in order to avoid iatrogenic events. Thus, the need for professionals to be updated and trained for this type of care is extremely important (ROCHA *et al.*, 2012). According to Luzia and Lucena (2009), Rocha *et al.* (2012), Oliveira *et al.* (2013), and Barra *et al.* (2011), in the assistance provided to these patients, it is necessary to use interventions and a set of procedures that must be performed accurately and quickly by the medical and nursing staff. Thus, patients in CRA end up generating a mobilization among professionals, often generating a moment of stress, to the extent that saving the life of another is a collective challenge.

## CONCLUSION

After analyzing the study it was possible to conclude that the nurse, through his/her care, is an essential and capable professional to diagnose and assist a cardiac arrest, both in decision making to initiate care, as in medication care, role report, performing a good systematization of nursing care, as in the care of family members and

other professionals of the team. It can be concluded that nursing assistance must take care of the patient integrally and intensively in the vigilance of the aggravating signs, as well as taking therapies to prevent CRA, preparing materials to optimize time. Among the nurse's conducts during CRA we can mention the flow of medications, accesses, time, compressions and oxygenation. However, the experience and training of professionals influence the care given to clients with cardiac arrest, thus the need for in-service education about CRA and CPR. In addition, professionals should seek study strategies to improve and maintain their own performance over time. It is also emphasized that because the nurse is a good leader, he/she should seek methods that contribute to the execution of his/her management for a better approach to the members of his/her team with respect and professionalism, listening to his/her team and also to the criticism, seeking to innovate aiming at the only objective, which is the patient's survival.

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