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Parada cardiorrespiratória: vigilância, prevenção e cuidados após PCR

Cardiorespiratory arrest: surveillance, prevention and care after PCR

Paro cardíaco: vigilância, prevención y cuidados después de la PCR

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ABSTRACT

Objective: The study's purpose has been to gather scientific productions about surveillance actions, prevention and nursing care in cardiorespiratory arrest. **Methods:** It was carried out a bibliographic search in both LILACS and MEDLINE databases. **Results:** From the bibliographic research according to research indicators were obtained 22 articles. **Conclusions:** Nursing is extremely important in patient surveillance and prevention, recognizing predisposing factors that would lead to cardiorespiratory arrest. During a cardiorespiratory arrest event, very often, the nursing team is the first to identify, demand the other professionals and initiate a cardiopulmonary resuscitation. They assist the medical staff and make the nursing record in the patient's medical record. The nurse plays an important role by distributing functions to other members of the team and by taking care after a cardiopulmonary resuscitation.

Descriptors: Heart arrest, nursing care, cardiopulmonary resuscitation.

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RESUMO

Objetivo: Reunir produções científicas acerca de ações de vigilância, prevenção e os cuidados de enfermagem na parada cardiorrespiratória. **Métodos:** Pesquisa bibliográfica nas bases de dados selecionadas LILACS e MEDLINE. **Resultados:** O resultado da pesquisa bibliográfica conforme indicadores de pesquisa obtiveram-se 22 artigos. **Conclusões:** A enfermagem é primordial na vigilância e prevenção do paciente, reconhecendo fatores predisponentes que levariam a uma PCR. Durante a PCR, em geral, é a primeira equipe a identificar, acionar o restante dos profissionais e iniciar a RCP. Auxiliam a equipe médica e fazem o registro de enfermagem no prontuário do paciente. O enfermeiro é peça fundamental na distribuição das funções dos demais membros da equipe e nos cuidados após RCP.

Descritores: Parada Cardíaca, Cuidados de Enfermagem, Ressuscitação Cardiopulmonar.

RESUMEN

Objetivo: Reunir producciones científicas sobre vigilancia, prevención y cuidados de enfermería en el paro cardíaco. **Métodos:** Una búsqueda bibliográfica en las bases de datos LILACS y MEDLINE seleccionados. **Resultados:** El resultado de la literatura de investigación como indicadores produjeron 22 artículos. **Conclusiones:** La enfermería es esencial para la vigilancia y la prevención de la paciente, reconociendo factores predisponentes que conducirían a una PCR. Durante la PCR, en general, es el primer equipo para identificar, involucrar al resto de los profesionales y comenzar la RCP. Ellos ayudan al personal médico y de enfermería hacen que el registro en el expediente del paciente. La enfermera es una parte clave en la distribución de las funciones de los otros miembros del equipo y el cuidado después de la RCP.

Descriptores: Paro cardíaco, Los cuidados de enfermería, Reanimación Cardiopulmonar.

INTRODUCTION

In the global context, ischemic heart disease is the leading cause of death. In Brazil, an estimated 300,000 to 400,000 deaths per year are also estimated. Cardiovascular issues are the main causes of unexpected death.[1]

Cardiovascular diseases are one of the major underlying diseases for serious events, such as Cardiorespiratory Arrest (CRA) in patients in the hospital environment. Surveillance of these patients in this environment is a primary responsibility of the nursing team. Thus, this team plays an essential role in the identification of CRA and beginning of the maneuvers of Cardiopulmonary Resuscitation (CPR).[2]

CRA is the interruption of respiratory and circulatory activities, where there are signs and symptoms such as apnea, an absence of central pulse and unconsciousness, characterizing CRA. In this scenario, CPR and defibrillation are initiated in the victim early to restore oxygenation and circulation.[3-5]

The main causes of CRA are the results of myocardial ischemia, circulatory shock, septic shock, trauma, and cardiovascular disease among other pathologies.[4]

The time is like gold, because every minute that happens in CRA, reduces the chance of survival of the patient by about 10%.[6] A CPR with rapid, safe, effective and high-quality intervention of professionals can double or triple the survival after a CRA event.[3]

Successful care for an CRA depends on immediate resuscitation measures and some factors are related: early recognition of CRA, activation of the emergency team, application of protocols for a CPR, defibrillation and use of drugs interrelated with the patient's condition (age, comorbidities, CRA initial rhythm, site of the event) and the hospital structure (materials and place of care after a CRA event).[7-9]

Nursing professionals, in general, are the first to encounter a CRA in the hospital. They are the ones who call the service team the most and initiate Basic Life Support (BLS) maneuvers as they await the arrival of the Advanced Life Support (ALS) team. These professionals need to be up-to-date on emergency care, technical skills, fast decision making, priority assessment, and immediate action in a CRA event.[2,10]

Automation and prior knowledge by practitioners in identifying a deteriorating patient through continuous monitoring and a rapid response team could potentially prevent CRA and alleviate cultural barriers.[9, 11]

Hence, patient vigilance becomes a key factor. Given this context, the nursing team has an essential role in identifying signs and symptoms precursors of a CRA as well as in post-CPR care, such as: maintaining blood pressure, therapeutic hypothermia, decreasing metabolic stress and evaluating brain death. Nurses' attitudes and behaviors influence the speed, decision making and level of care of the rest of the team.[12] Given the aforementioned, the following guiding question was elaborated: What are the main actions of surveillance, prevention and nursing care in CRA?

OBJECTIVES

The study's goal is to gather scientific productions about surveillance actions, prevention and nursing care in cardiorespiratory arrest.

METHODS

This is an integrative review of scientific literature by searching databases available online. This type of objective study, through a systematic methodology of search, selection, and analysis, describes the scientific production about a thematic, highlighting the state of the art and presenting the possibilities of future investigations.[13]

Data collection was carried out from August to November 2016. The scientific articles were consulted in the *Biblioteca Virtual da Saúde (BVS)*. The *BVS* Portal is the area of integration of health information sources that promotes the democratization and expansion of access to scientific and technical health information in Latin America and the Caribbean.

According to the descriptors of health sciences, the terms "cardiac arrest", "nursing care" and "cardiopulmonary

resuscitation" were used as descriptors. These descriptors were associated with the Boolean operator "AND". The following inclusion criteria were adopted: articles available in full text, publications between 2007 and 2016, Portuguese language, and that addressed the topic of nursing care in CRA.

Thus, for the development of this integrative review, Ganong's proposal was chosen,[14] in which the following steps are involved: 1) identification of the hypothesis or guiding question; 2) selection of sampling - determination of inclusion or exclusion criteria; 3) categorization of studies; 4) evaluation of the studies - the analysis of the data extracted should be critical; 5) discussion and interpretation of results; 6) presentation of the integrative review and synthesis of knowledge - one should contemplate the information of each reviewed article in a succinct and systematized manner demonstrating the evidence found.

From the established criteria, the selected articles were identified in both LILACS and MEDLINE databases. Both cover index of scientific and technical literature from America and other regions of the world. We found 750 scientific articles in LILACS using descriptors and 32,909 in MEDLINE. The articles available in full, published in the Portuguese language and in the 2007-2016 period resulted in 73 and 62 articles, respectively. Considering only the articles responding to the guiding question, 24 and 6, respectively. Eight articles were repeated. Therefore, the study sample consisted of 22 scientific articles found in the databases aforesaid.

RESULTS

From the analysis of the articles found in the present research, then it was possible to elaborate the **Table 1** that describes the characteristics of the articles according to the variables defined by the authors. They consist of main author/year, method, magazine, and database found.

Table 1- Distribution of the studies found regarding the first name of the author/year, method, published journal and the databases found

Author/Year	Method	Journal	Database
DALRI, 2008	Systematic review	*Revista Latino Americana de Enfermagem*	LILACS
LUZIA, 2009	Systematic review	*Revista Gaúcha de Enfermagem*	LILACS
FALCÃO, 2011	Literature review	*Revista Brasileira de Anestesiologia*	LILACS
BELLAN, 2010	Prospective Research	*Revista Brasileira de Enfermagem*	MEDLINE
BERTOGLIO, 2008	Cross-sectional study	*Revista Gaúcha de Enfermagem*	LILACS
ALMEIDA, 2011	Descriptive Study/ Quantitative approach	*Revista Latino Americana de Enfermagem*	MEDLINE
GRAÇA, 2008	Qualitative Research	*Escola Anna Nery*	LILACS
MIYADAHIRA, 2008	Exploratory study	*Revista da Escola de Enfermagem da USP*	LILACS
COSTA, 2008	Descriptive Review of Literature	*Revista Mundo da Saúde*	LILACS
TORRES, 2008	Literature review	*Com. Ciências Saúde*	LILACS
LIMA, 2009	Cross-sectional study	*Arquivos Brasileiros de Cardiologia*	MEDLINE
STORM, 2014	Systematic review	*Revista Brasileira de Terapia Intensiva*	LILACS
GRISANTE, 2013	Retrospective cross-sectional study	*Revista da Rede de Enfermagem do Nordeste*	LILACS
SILVA, 2013.	Theoretical Guide	*Revista Brasileira de Terapia Intensiva*	LILACS
PONCIO, 2016	Case report	*Revista Relampa*	LILACS
GIANATTO-OLIVEIRA, 2014.	Case report	*Arquivos Brasileiros de Cardiologia*	LILACS
THOMAZ, 2013.	Systematic review	*Revista Eletrônica de Enfermagem*	LILACS
FRANCO, 2012.	Case report	*Arquivos Brasileiros de Cardiologia*	MEDLINE
GONÇALES, 2012	Retrospective analysis	*Einstein (São Paulo)*	MEDLINE
ANDRADE, 2015	Integrative Review	*Pediatria Moderna*	MEDLINE
CANCELIER, 2014	Cross-sectional study	*Arquivos Catarinenses de Medicina*	LILACS
PEREIRA, 2008	Literature review	*Revista Brasileira de Terapia Intensiva*	LILACS

(To be continued)

(Continuation)

Of the 22 selected studies, seven are publications from 2008, two from 2009, one from 2010, two from 2011, two from 2012, three from 2013, three from 2014, one from 2015 and one from 2017. As for the study method five systematic reviews, three literature reviews, a prospective investigation, four cross-sectional studies, a descriptive/quantitative study, a quantitative research, an exploratory study, a theoretical guide, three case reports, a retrospective an integrative review. Regarding the publication of the articles, two

publications were published in the *Revista Latino Americana Enfermagem*, two in the *Revista Gaúcha de Enfermagem*, one in the *Revista Brasileira de Anestesiologia*, one in the *Revista Brasileira de Enfermagem*, one in the *Revista Escola Anna Nery*, one in the *Revista da Escola de Enfermagem* from the *Universidade de São Paulo*, one in the *Com. Ciências Saúde*, the three in the *Arquivos Brasileiros de Cardiologia*, three in the *Revista Brasileira de Terapia Intensiva*, one in the *Revista da Rede de Enfermagem do Nordeste*, one in the *Revista Relampa*, one in the *Revista Eletrônica de Enfermagem*, one in the *Revista Einstein (São Paulo)*, one in the *Revista Pediatria Moderna* and one in the *Arquivos Catarinenses de Medicina*. In relation to the databases, sixteen were found in LILACS and six in MEDLINE.

Table 2 refers to the main author/year and the answers to the guiding question: What are the main actions of surveillance, prevention and nursing care in CRA?

Table 2 - Distribution of the studies with regards to the prevention, surveillance and nursing care in CRA

Author/Year	Prevention	Surveillance	Nursing care in CRA
DALRI, 2008	Not specified	Not specified	Taking intensive care of the patient undergoing a CRA event, during CPR and after. Permanently and vigilantly assessing the performance of techniques and procedures complementary to medical therapeutics. Acting in the orientation and non-acceptance of family members. Adopting participatory leadership styles, share and demand roles.
LUZIA, 2009	Distribution of the functions of the other team members. To transmit security to the team, to act in an objective and synchronized way. Observe signs of deterioration (including changes in vital signs) that patients exhibit before a CRA event. Promote and stimulate continuing education programs with its team, updating it according to international guidelines.	Not specified	Not specified
FALCÃO, 2011	Not specified	Not specified	Understanding of CPR maneuvers is a priority for all health professionals.
BELLAN, 2010	Not specified	Not specified	Implementing the BLS maneuvers. Recognizing heart rate through monitoring. Rationalize the care for defibrillation. Registering the CRA service. Knowing the contents of the emergency cart and the disposal of the materials.
BERTOGLIO, 2008	Continuing education strategies should be encouraged and maintained systematically to ensure the best team performance.	Not specified	Not specified
ALMEIDA, 2011	Not specified	Performing CRA detection. Asking for help and emergency cart with defibrillator.	Initiating BLS and assisting in advanced support.
GRAÇA, 2008	The nursing team is required to have ample theoretical and practical knowledge, which needs to be articulated with a specific depth, so that a harmless performance can occur, without idiopathic diseases. Seek improvement through continuing education.	Not specified	Not specified

(To be continued)

(Continuation)

Author/Year	Prevention	Surveillance	Nursing care in CRA
MIYADAHIRA, 2008	Be responsable for the teaching-learning process of lay people in the service of CRA with the use of Automatic External Defibrillator (AED).	Not specified	Not specified
COSTA, 2008	Not specified	Not specified	Nurses and nursing technicians must be able to perform the BLS and operate the AED. Initiating CPR with a 30:02 compression and ventilation pattern for adults, regardless of the number of first responders in the scene. Inspecting the chest for the presence of implantable pacemaker or ICD (implantable cardioverter/defibrillator).
TORRES, 2008	Not specified	Not specified	When death is inevitable and ALS is questioned, decisions should be widely discussed between the health team and the family.
LIMA, 2009	Not specified	Not specified	Demanding the service team. Contributing effectively to CPR maneuvers. Preparing instruments for intubation, aspiration, cardiac monitoring and defibrillation, assisting the medical team in performing the procedures. The nursing professional is not authorized to perform early defibrillation with a conventional defibrillator in the absence of a physician.
STORM, 2014	Not specified	Not specified	The use of therapeutic hypothermia between 32ºC and 34ºC maintains a reliable target range.
GRISANTE, 2013	Not specified	Not specified	Responsibility and commitment of professionals to encourage and create conditions to record the information inherent and indispensable to the care process, as well as to carry out this registration in the medical records.
SILVA, 2013	Early diagnosis and effective intervention, considering that the patient's prognosis is directly related to the speed and effectiveness of the actions.	Not specified	Leader during the CPR with the purpose of directing, coordinating and assigning tasks to each participant in the service.
PONCIO, 2016	Not specified	Not specified	A precordial percussion fist may be attempted in cases where other materials or medications are being prepared and still unavailable for use. The precordial punch may be helpful in the treatment of asystole.
GIANATTO-OLIVEIRA, 2014	Not specified	Not specified	Demanding rapid onset of CPR and early defibrillation, which are associated with better neurological prognosis.
THOMAZ, 2013	Not specified	Not specified	The use of the laryngeal mask presented favorable results for the control of the airway in patients undergoing a CRA event.
FRANCO, 2012	Not specified	Not specified	The use of mild to moderate hypothermia (32ºC - 34ºC) is appropriately indicated for comatose patients after recovery to CRA and who initially had shocking rhythms - non-pulse Ventricular Fibrillation/Ventricular Tachycardia.
GONÇALES, 2012	The implementation of the rapid response team might have brought a significant reduction in the number of cardiorespiratory arrest.	Not specified	Not specified

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Author/Year	Prevention	Surveillance	Nursing care in CRA
ANDRADE, 2015	Not specified	Not specified	In neonates, if the pulse presents <60 beats per minute with signs of systemic poor perfusion, then initiate chest compressions. Neonatal CRAs are predominantly asphyxial, which is why the A-B-C resuscitation sequence with compression-ventilation ratio of 3: 1.
CANCELIER, 2014	Not specified	Not specified	Oxygen administration coupled with pulse oximetry may help to stain normoxia more rapidly during neonatal resuscitation in the delivery room.
PEREIRA, 2008	Not specified	Not specified	Therapeutic hypothermia and the control of physiological variables, along with optimization of cerebral perfusion, they may improve its prognosis.

DISCUSSION

In several selected articles, the broad theoretical and practical knowledge of CPR techniques is a priority and responsibility of nursing and all health professionals, since everyone can pass through these emergencies and must be prepared.[8] The strategies of continuing education as implementation of the team response should be encouraged and maintained to ensure a harmless performance, avoiding recklessness, malpractice, and negligence.[9,11,15-16]

The nurses' way of acting influences the speed, decision-making process and level of care by the other team members. Ask for a key during the CPR in order to direct, coordinate and assign tasks to each participant in the service.[6] The nursing professional is a fundamental member of the multi-professional team, as it is directly responsible for care. In addition to caring, nursing is responsible for the teaching-learning process of lay people in the care of CRA with the use of the Automatic External Defibrillator (AED).[17]

In a cross-sectional study, it was pointed out that it is the nursing team that provides the most time to care for patients. With this, the members of this team are directly responsible for the prevention and surveillance of the patients and in the first service in the CRA, and must have the updated technical knowledge, following the updated protocols and the practical skills developed to contribute in a more effective way in the CPR maneuvers.[18]

Some studies have defined nursing as paramount in detecting the signs of deterioration, including vital signs, that patients present before an ARC, knowing the heart rhythm through monitoring; is responsible for requesting help and emergency cart with defibrillator; initiating the BLS maneuvers, assisting in the ALS and early defibrillation;[9,19-20] to register in CRA protocols, having responsibility and must record the inherent and indispensable information performed to the patient.

Knowing the contents of the emergency cart and the disposal of the materials. The nurse enters as a fundamental part of the distribution of the functions of the other members of the team, sharing security to the team, then aiming to act in an objective and synchronized manner.[2,10,21]

Two studies have brought nursing care to newborns. They have shown that, if the pulse rate is <60 beats per minute with signs of systemic poor perfusion, chest compressions should be initiated.[22] Oxygen administration coupled with pulse oximetry may help to reach normal levels of blood oxygen more rapidly during neonatal resuscitation in the delivery room.[23]

It has been shown in only one case report study that the wrist precordial percussion can be attempted in cases where other materials or medications are being prepared and still unavailable for use. The precordial punch may be useful in the treatment of asystole.[24]

In a systematic review, the use of the laryngeal mask presented favorable results for the control of the airway in patients with CRA.[25]

After a CPR event, studies show that the patient's prognosis can be improved by using therapeutic hypothermia from 32ºC to 34ºC as a reliable target temperature and reduction of the inspired fraction of oxygen, with the lowest value to obtain an arterial oxygen saturation of 94% and optimization of cerebral perfusion.[8,26-27-28]

When death is inevitable and ALS is questioned, decisions should be widely discussed between the health team and the family. The non-resuscitation decision must be well-founded, widely discussed and taken in advance, prior to clinical deterioration.[29]

The nursing team should be careful when assessing the implementation of procedures and techniques that complement medical therapeutics, always based on guidelines for nursing care, thus ensuring the continuity of a humanized and integrated work. Furthermore, they are also

responsible for the dialogue, orientation and the welcoming of family members, who are subject to suffering.[3]

CONCLUSIONS

It is concluded that nursing is fundamental to the multiprofessional team, as it is directly responsible for care. Of a complete team, at least 70% is composed of nursing professionals. The nurse as the team leader, their attitudes and behaviors will influence the development during the CPR of the rest of the team.

In nursing care, the patient should be fully and intensively cared for in the surveillance of signs of injury, such as taking therapies to prevent CRA, preparing materials to optimize time. During CRA, nursing controls the flow of medication, access, time, compression and oxygenation. At the end of the CPR successfully, the work of the team only grows; the hemodynamic maintenance of the patient with vasopressor drug use, oxygen therapy, thermal control and assessment/ surveillance for a possible new CRA, they all are nursing care.

The nurse plays an important role by distributing functions to other members of the team and by sharing security. The nursing technicians become the providers that are most directly connected to care, acting in an objective and synchronized way along with the patient.

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