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REVIEW ARTICLE

Nursing care before cardiopulmonary resuscitation in the pre-hospital setting

Cuidados de enfermería antes de la reanimación cardiopulmonar en el ámbito prehospitalario

A assistência de enfermagem diante à uma reanimação cardiopulmonar no âmbito pré-hospitalar

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Abstract

The aim was to identify in the literature the performance of the nurse and the actions performed to direct a cardiorespiratory arrest in the extra-hospital environment. Integrative review, carried out through the survey of scientific data from the last 10 years, through PubMed databases and the Virtual Health Library portal. Original articles in English, Portuguese and Spanish referring to the period from 2012 to 2021 were selected. First, the titles and abstracts were read, and then recruitment of journals that responded to the research intention so that they were analyzed in full. The research complied with the ethical aspects of Resolution CNS n.º 466/12. In view of the evaluation of those selected, the fragmentation into three categories was clarified, namely: performing care in different locations, using the criteria for completing cardiopulmonary resuscitation and identifying the needs for adequate patient care. Presenting scientific knowledge and having autonomy in the face of cardiopulmonary resuscitation favors adequate assistance, regardless of the location where the procedure is performed, and reduces impasses in the handling of human and material resources.

Descriptors: Cardiorespiratory Arrest; Pre-Hospital Care; Nursing; Emergency; Family Members.

Resumén

El objetivo fue identificar en la literatura la actuación del enfermero y las acciones realizadas para el manejo de la parada cardiorrespiratoria en el ambiente extrahospitalario. Revisión integradora, realizada a través del levantamiento de datos científicos de los últimos 10 años, a través de las bases de datos PubMed y el portal de la Biblioteca Virtual en Salud. Se seleccionaron artículos originales en inglés, portugués y español referentes al período de 2012 a 2021. Primero se publicaron los títulos y resúmenes y luego se reclutaron dos revistas que respondieran a la intención de la investigación para que pudieran ser analizadas en su totalidad. Encuesta sobre los aspectos éticos de la Resolución CNS nº 466/12. Ante la evaluación de dos individuos seleccionados, la fragmentación fue esclarecida en tres categorías, a saber: realizar el cuidado en diferentes locales, utilizar los criterios para completar la reanimación cardiopulmonar e identificar las necesidades para el cuidado adecuado del paciente. Presentar el conocimiento científico y la autonomía en resucitación cardiopulmonar favorece la asistencia adecuada independientemente del lugar donde se realice el procedimiento y reduce los impases en la gestión de los recursos humanos y materiales.

Descriptores: Parada Cardiorrespiratoria; Atención Prehospitalaria; Enfermería; Urgencias; Familiares.

Resumo

Objetivou-se identificar na literatura a atuação do enfermeiro e as ações desempenhadas para o direcionamento de uma parada cardiorrespiratória no ambiente extra-hospitalar. Revisão integrativa, realizada através do levantamento de dados científicos dos últimos 10 anos, por meio das bases PubMed e o portal da Biblioteca Virtual em Saúde. Foram selecionados artigos originais na língua inglesa, portuguesa e espanhola referente ao período de 2012 a 2021. Primeiramente, foram lidos os títulos e resumos, e em seguida, recrutamento dos periódicos que respondiam a intenção da pesquisa para que fossem analisados na íntegra. A pesquisa respeitou os aspectos éticos da Resolução CNS n.º 466/12. Frente à avaliação dos selecionados, elucidou-se a fragmentação em três categorias, sendo: realizando o atendimento em diferentes localidades, utilizando os critérios para o término de reanimação cardiopulmonar e identificando as necessidades para o atendimento adequado ao paciente. Apresentar conhecimentos científicos e ter autonomia diante à reanimação cardiopulmonar favorece a assistência adequada, independentemente da localização em que o procedimento é realizado, e diminui impasses no manuseio de recursos humanos e materiais.

Descritores: Parada Cardiorrespiratória; Assistência Pré-Hospitalar; Enfermagem; Emergência; Familiares.

Introduction

Cardiorespiratory arrest (CRA) is configured by the absence of relaxation and contractility movements of the heart, as well as the lack of circulation, pulse and breathing, a condition incompatible with life. It is proven by the absence of pressure within the blood vessels reconciled with the absence of respiratory movements. In this way, the perfusion and nutrition of the organs become inefficient and the individual begins to develop a clinical condition that is difficult to reverse[1,2].

Therefore, CRP can be divided into four rhythms, namely, Ventricular Fibrillation (VF), Ventricular Tachycardia (VT), Pulseless Electrical Activity (PEA) and Asystole. When we relate the higher frequency in the pre-hospital environment to VF and VT, it represents an average of 80% of cases, guaranteeing a high rate of regression when treated early. If used within five minutes after the start of the arrest, the automated external defibrillator (AED) the survival marker of these individuals can reach 70%[3-5].

With all the technical-scientific training that nurses receive throughout graduation, they are able to observe, identify and intervene with the protocols required by cardiopulmonary resuscitation (CPR). Nursing, being one of the first to arrive on the scene in the pre-hospital context, is responsible for ensuring the approach of the victim through regulations, which aim to provide oxygenation and circulation of blood fluids to the tissues[6,7].

At the point of care, health professionals, especially rescuers, present criteria for early detection of patients who are in CRA, in addition to being open to guidelines consistent with adequate CPR. It is necessary to carry out rapid and orderly chest compressions, simultaneously ensure airway clearance and promote patient ventilation. In addition, it is the responsibility of the nurse to prepare and administer medications that help in the process of revitalizing blood circulation and support family members[8,9].

Nurses identify the risk to the patient's life using primary and secondary approaches. In this care, it is essential to check the heartbeat, if absent within 10 seconds together with unconsciousness, CPR begins. It is necessary to perform 30 compressions for two ventilations between two minutes, with a depth of two inches, maintaining between 100 and 120 compressions every 60 seconds if the individual does not have an advanced airway[10,11].

In some situations, the CPR process is not capable of favoring the clinical return of the patient, and therefore, in the emergency environment, the end of resuscitation criteria (TOR) are used. This protocol is generally used for cases in which the CPR does not show a shockable rhythm, patients aged 70 years who do not respond to the offered stimuli, and cases in which the CPR is not witnessed by spectators. The proper tool favors the reduction of expenditure on health supplies and reduces damage involving rapid emergency transport[12,13].

Regarding the challenges and difficulties that influence the care for victims with CRA, the process is not limited to theoretical and practical knowledge, but also to socio-environmental factors. It is possible to encounter impasses with emotions, with the organization and leadership of the team, with human resources, with the structure of care, in addition to the lack of equipment and materials necessary for carrying out a fair and integrated procedure[14,15].

Therefore, continuous updating in training, skills, knowledge and leadership modes, that is, health education, is essential to provide professional and emotional improvement for the entire team[16].

Contributing to the prevention of injuries within an emergency service is one of the essential functionalities of nurses, since their functionalities developed in front of a CPR make it possible to guarantee excellent results.

In view of this, throughout their experience, several challenges may arise, and therefore it is necessary to identify them in order to provide greater ease in resolving impasses in the face of practice.

In this scenario, the research aimed to identify in the literature the performance of the nurse and the actions performed to direct a cardiorespiratory arrest in the extra-hospital environment.

Methodology

Refers to an integrative review guided by the PRISMA checklist. The work aims to develop primary research and treat the findings presented with the intention of collaborating with theoretical and practical means. Through this, understanding, minimization of impasses and strategies for better development of the means of service will be approached more easily by professionals, contributing to the well-being of the population. The formation of the research followed the PICo strategy (P-population; I-interest; Co-context).

PubMed and the Virtual Health Library (VHL) portal were the basis for the search for materials. The studies were filtered using the following descriptors: Cardiorespiratory Arrest, Prehospital Care, Nursing, Emergency and Relatives, which were combined using the Boolean operator “AND” in English, Portuguese and Spanish.

The inclusion of journals followed by articles listed in the period from 2012 to 2021. And the exclusion was of works published in the format of editorial, integrative or systematic review, newspaper article, thesis, book or book chapter, reflective study, dissertation, report of experience and others that do not fit the category of original journal.

The selection of articles followed the criteria according to Figure 1, in which it was divided into three stages, namely: 1) Analysis of titles and abstracts, which favored the delimitation according to the theme; 2) Full reading of the articles recruited in the first stage, eliminating all duplicates; and 3) Selection of eligible journals, which make up the final search results.

Data analysis and interpretation was performed using the MaxQDA Plus software version 2020, in which a word cloud was formulated, as shown in Figure 2, with relevant information within the description of the following search, thus forming means for the construction of subdivisions for discussion later.

Figure 1. Flowchart for selection of articles for research. Maringá, PR, Brazil, 2022

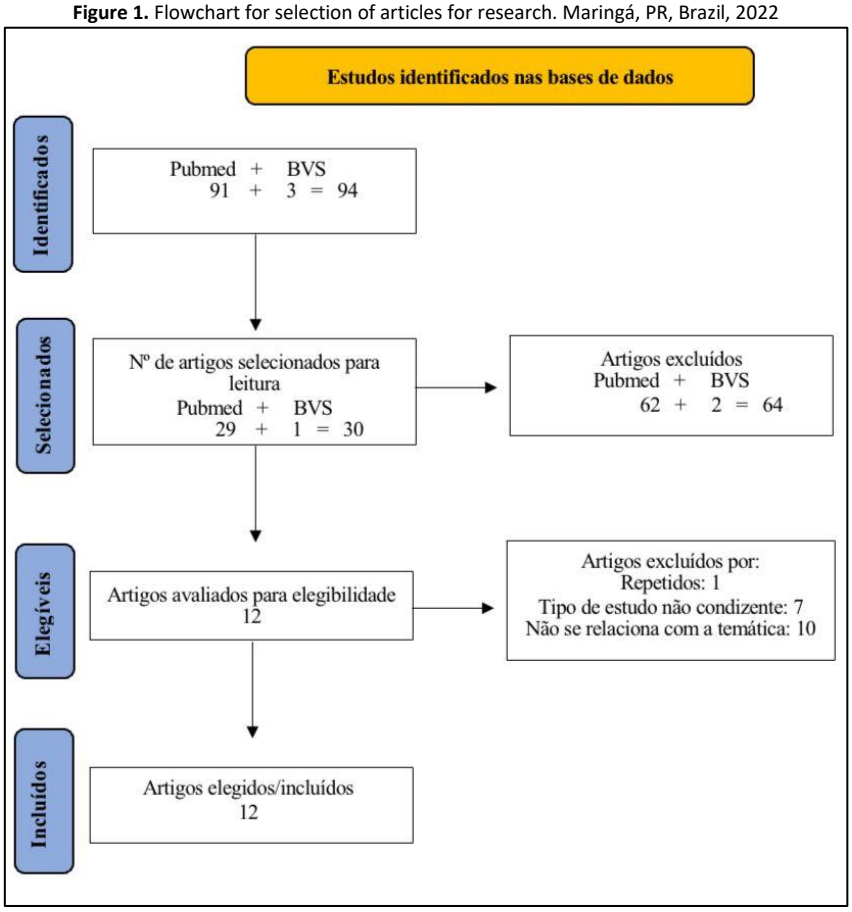

Figure 2. Word cloud according to the main findings. Maringá, PR, Brazil, 2022

Regarding ethical precepts, the following research, as it is composed of a literature review, did not require submission to the Research Ethics Committee, as required by Resolution No. 466/2012 of the National Health Council. However, it followed all the precautions in the formulation and privacy of information handled throughout the work, favoring that the results, when requested, become public.

Results and Discussion

All eligible journals were found only in the PubMed database and in the English language, as described in Chart 1. Regarding the main findings, it is possible to verify that, given the CPR process, quality care can be provided in any location, from that the individual who acts in due process is trained and able to provide the best for the patient and the spectators, who in most cases are the victim's family members.

In addition, it is possible to verify that the nursing team, even though trained and qualified to approach and perform care for individuals in CRA, which presents difficulties in dealing with due processes in relation to CPR. The autonomy that nurses have in some countries, being professionals in the Emergency Medical Services (EMS) with the function of paramedics, for many is still not emphasized with full responsibility, since the need to start the proper care often depends on the advanced medical services.

The lack of skill and communication between professionals during the procedure in the pre-hospital environment also represents one of the impasses experienced, and for this reason, compliance with guidelines

is not carried out, especially when they are related to the proper and accurate termination. In view of this, the interpersonal relationship and the expenses with inappropriate inputs are evident in the process, interfering in the quality of care and in the resolutive treatment of the service to be provided to the population.

Chart 1. Synthesis of articles for the elaboration of the integrative review. Maringá, PR, Brazil, 2022

Title	Year	Language	Main results
Quality of CPR during out-of-hospital cardiac arrest transport[17]	2017	English (USA)	CPR at the scene and in transport are related. Survival being related to the susceptibility of each individual.
Swedish ambulance nurses' experiences of nursing patients suffering cardiac arrest[18]	2013	English (USA)	The use of technical devices for resuscitation guarantees greater autonomy and time in administering medications and offering support to family members.
Resuscitation attempts and duration in out-of-hospital traumatic cardiac arrest[19]	2016	English (USA)	Initiation of CPR is influenced by the presence of EMS and urban environments.
Evaluation of the uptake of a prehospital cardiac arrest termination of resuscitation rule[20]	2019	English (USA)	Completing a resuscitation with strict criteria prevents spending on health supplies and accidents with ambulances in emergencies.
Implementation trial of the basic life support termination of resuscitation rule: Reducing the transport of futile out-of-hospital cardiac arrests[21]	2014	English (USA)	The application of the BLS-TOR rule, when applied correctly, reduces the possibility of new injuries in transport, reduces expenses with supplies and ensures greater success in resuscitation on the scene.
Decision making in prehospital traumatic cardiac arrest: a qualitative study[22]	2020	English (USA)	Land EMS nurses have greater difficulties in the act of CPR compared to air nurses, as they are not submitted to the practice frequently and do not have autonomy in following the protocols.
Offering the opportunity for family to be present during cardiopulmonary resuscitation: 1-year assessment[23]	2014	English (USA)	Professionals working in CPR should support family members present at the scene, aiming to reduce anxiety and post-traumatic stress.
Measuring the impact of emergency medical services (EMS) on out-of-hospital cardiac arrest survival in a developing country: a key metric for the performance of EMS systems[24]	2017	English (USA)	The EMS has disadvantages related to the lack of agility in arriving at the scene, increasing the risk of death in patients.
Are they trained? Prevalence, motivations and barriers to CPR training among cohabitants of patients with a coronary disease[25]	2016	English (USA)	CPR training should be taught frequently to family members and caregivers of coronary patients, to avoid further harm to patients.
Geographical factors are associated with increased risk for out-of-hospital cardiac arrest and the provision of cardiopulmonary resuscitation in Singapore[26]	2014	English (USA)	Out-of-Hospital Cardiac Arrest Resuscitation (OHCA) cases in low socioeconomic neighborhoods are unlikely to receive CPR. This also occurs in areas far from large centers.
Family presence during cardiopulmonary resuscitation[27]	2013	English (USA)	The presence of the family during CPR reduces cases of post-traumatic stress.
Documentation of ethically relevant information in out-of-hospital resuscitation is rare: a Danish national observational study of 16,495 out-of-hospital cardiac arrests[28]	2021	English (USA)	The low number of medical records with relevant ethical information for decision-making in CPR is still configured as an impasse.

The division of the main findings was carried out into three categories, namely: Carrying out care in different locations, Using the criteria for the end of cardiopulmonary resuscitation and Identifying the needs for adequate patient care.

Serving in different locations

The place of care characterizes a factor that can interfere with the results of the procedure. The research used reports that the performance of median compressions was greater in the scene phase compared to the transport

phase, however, the depth was increased in the latter environment. According to a descriptive and qualitative research, performing manual chest compressions in the ambulance during transport was not ideal, as space was limited, making it difficult to handle the patient and the available supplies[17,18].

The geographic sphere in which CPR occurs can point to a means of decision-making to start care. Urban areas are more likely to receive resuscitation attempts compared to rural settings. The research says that the potential benefits for mechanical CPR would be the ability to perform it with high quality for a prolonged period, which would be consistent with cardiac arrest resuscitation occurring in rural areas, as locomotion to the site demands a longer period[17,19].

The safe sequence for adequate care depends on the association of several factors, mainly the quality of the initial approach. High-quality manual compressions can be initiated by individuals in the prehospital setting, provided they are well trained by skilled providers. The prerequisites for CPR is sufficient space, and for this reason, the person in cardiac arrest must be placed on the floor, have a flat, hard surface for support and easy access for the patient to place intravenous lines, and be free from various surrounding dangers[17-21].

Using the criteria for termination of cardiopulmonary resuscitation

The security and professionalism to correctly impose the due criteria guarantee positive results at the end of the service. According to the study, the Universal End of Resuscitation Rule followed by Basic Life Support (BLS-TOR) was successfully implemented by the EMS, with Primary Care Paramedics requesting TOR in 89.0% of out-of-hospital CA patients who meet the appropriate criteria. Complementary to this, the survey says that when the context required the termination of procedures, the following guideline recommended the termination of resuscitation, and about 80% of primary physicians were comfortable with the results provided[21-26].

The autonomy and the exact moment to carry out the end of the procedure still represent an impasse for some professionals. According to the analysis carried out in the survey, the participants reported that defining the time and interruption of treatment before contacting the physician responsible for the care was complex. In another study, it was the doctors themselves who used to make clinical judgments without proper discussion, deciding which patients should be transported to the hospital, not necessarily applying the TOR requirements[18,20].

The absence of a concise application of the BLS-TOR may favor high spending on health inputs and increase the risk of life. According to the research[20], transport and continuous resuscitation of futile cases increase the costs of care. Using the following rule can reduce care investments and improve resource availability, as consumption with high-priority ambulance transport and the risk of collisions between motor vehicles and pedestrians decreases[21].

Identifying needs for appropriate patient care

Within the resuscitation process, the period of care is essential for the effectiveness of the results. According to the study, several ambulance nurses mentioned the total time of chest compressions as an important factor. The median resuscitation duration in their data analysis was 19 minutes. According to research[18], manual chest compressions on one patient were described as tiring, as participants needed good space and good communication between colleagues to maintain quality compressions[19,22,27].

The low demand for protocols and scientific bases throughout the professional career implies in the results regarding the care provided. The lack of ethically relevant documented information may be a result of a simplified evidence-based approach to medical treatment. On the other hand, air medical transport participants were sometimes frustrated with the fact that ambulance nurses did not initiate resuscitation on patients, as they thought it would be inappropriate. Inadequate knowledge of available protocols and literature and limited experience were mentioned as the most important factors contributing to this difference in perception[22,23].

Communication and experience among team members is a factor that interferes with the quality of care. Good co-operation between colleagues was important, especially when changing positions continuously during manual chest compressions, even though when applied mechanically, the person tired quickly. Research describes that high-quality CPR occurs regardless of location, but for this participants need to be prepared with adequate knowledge for proper care[17,18,28].

Conclusion

In view of the proper research, it is possible to conclude that the nursing team has complete autonomy in performing the CPR process with quality, since it has a scientific basis and recognizes the necessary protocols for such action. When trained, the nurse identifies a CRA early, favors the appropriate design for such treatment and decides with other professionals the correct moment to stop the service.

According to the materials found, the location where the CPR takes place can interfere with the beginning of care, since areas far from the urban center may imply greater risks in transit due to locomotion and the act of transferring the scene to an intra-hospital area. . The due dilemmas do not justify that the service can happen without excellence, as knowledge can be put into practice regardless of the environment.

Finally, in view of the processes necessary for essential care, the nursing team has some obstacles in terms of care. The precariousness in updating recent protocols are points that most impact the results. The lack of communication and the consumption of inputs unnecessarily are points that contribute to the formation of these impasses.

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