

## CARDIOPULMONARY ARREST: INTERVENTIONS OF NURSING PROFESSIONALS

Parada cardiorrespiratória: intervenções dos profissionais de enfermagem

La parada cardiorrespiratoria: intervención de profesionales de enfermería

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### ABSTRACT

**Objective:** The study's main purpose has been to assess whether or not the nursing professionals' understanding vis-à-vis cardiopulmonary arrest (CPA) is in accordance to the American Heart Association (AHA) protocol.

**Methods:** It is a descriptive study with a qualitative approach. Data collection took place by using a semi-structured interview performed with 12 nursing professionals from a hospital in the Bahia State, over the period from May to June 2015. Data were analyzed according to the content analysis technique, thematic modality.

**Results:** Based on the analysis of the interviews, two main categories of investigation have arisen: "Difficulties in identifying a cardiopulmonary arrest" and "Nursing interventions: so now, what to do about the CPA?".

**Conclusion:** The results show that the professionals who work in emergency rooms are not qualified to assist victims undergoing a CPA. Therefore, it is necessary to promote both improvement and qualification of these professionals, aiming to increase the survival rate of patients undergoing such clinical condition.

**Descriptors:** Cardiopulmonary arrest, nursing care, knowledge.

### RESUMO

**Objetivo:** este estudo objetivou avaliar se os conhecimentos dos profissionais de enfermagem frente a parada cardiorrespiratória (PCR) estão de acordo com o protocolo da *American Heart Association - AHA*. **Método:** trata-se de um estudo descritivo, qualitativo. Para coleta de dados utilizou-se a entrevista semiestruturada com 12 profissionais de enfermagem de um hospital do interior da Bahia, entre maio a junho de 2015. Os dados foram analisados conforme a técnica de análise de conteúdo, modalidade temática. **Resultados:** surgiram como

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categorias: Dificuldade na identificação da parada cardiorrespiratória; e Intervenções de enfermagem: e agora o que fazer diante da PCR?

**Conclusão:** os resultados mostram que os profissionais que atuam na emergência ainda não estão devidamente qualificados para atender as vítimas em PCR, fazendo-se necessário o aprimoramento das condutas e a qualificação destes profissionais, visando o aumento da taxa de sobrevivência dos pacientes acometidos com tal situação clínica.

**Descritores:** Parada cardiorrespiratória; Cuidados de enfermagem; Conhecimento.

## RESUMÉN

**Objetivo:** este estudio objetivó evaluar si los conocimientos de los profesionales de enfermería frente al paro cardiorrespiratorio (PCR) están de acuerdo con el protocolo de la American Heart Association – AHA.

**Método:** se trata de un estudio descriptivo, cualitativo. Para colecta de datos se utilizó la entrevista semiestructurada con 12 profesionales de enfermería de un hospital del interior de Bahia, entre mayo y junio de 2015. Los datos fueron analizados conforme la técnica de análisis de contenido, modalidad temática. **Resultados:** surgieron como categorías: Dificultad en la identificación del paro cardiorrespiratorio; y Intervenciones de enfermería: y ahora, ¿qué hacer ante el PCR? **Conclusión:** los resultados muestran que los profesionales que actúan en urgencias aún no están debidamente cualificados para atender a las víctimas de PCR, siendo necesario el perfeccionamiento de las conductas y la cualificación de estos profesionales, visando el aumento de la tasa de sobrevivencia de los pacientes acometidos con tal situación clínica.

**Descritores:** Paro cardiorrespiratorio; Atención de enfermería; Conocimiento.

## INTRODUCTION

Yearly, many lives in Brazil are victimized by cardiopulmonary arrest (CPA), despite great advances in terms of cardiopulmonary resuscitation (CPR). Although the actual size of the victims does not exist, due to the lack of statistics, it can be estimated at around 200,000 CPAs per year.<sup>1</sup>

According to the American Heart Association (AHA), a CPA consists of a sudden and unexpected change in blood pumping, which produces either an inadequate rhythm or absence of it, where life cannot be maintained. When a CPA occurs, irreparable cell damage and severe and irreversible brain damage may occur, especially after the first five minutes of arrest.<sup>2</sup>

The AHA points out that the main clinical signs of a CPA are as follows: unconsciousness, absence of breathing movements or gasping (in other words, breathing inadequately to maintain effective oxygenation and ventilation), no defined pulse felt in 10 seconds. Cyanosis, lividity and pupillary dilation (mydriasis, which occurs one minute after a CPA) are commonly used signs in the diagnosis of CPA.<sup>2</sup>

To reverse this collapse, the CPR method was developed, which refers to attempts to recover spontaneous circulation, with its universal application (regardless of the underlying cause of the CPA), with systematic protocol updates.<sup>3</sup>

CPR is defined as the set of maneuvers performed after a CPA to artificially maintain arterial flow to the brain

and other vital organs, until the return of spontaneous circulation occurs.<sup>4</sup>

The time to start the maneuvers that aim to re-establish the patient's life is one of the main determinants for the success of CPR, as well as the theoretical knowledge and practical skills of the multiprofessional team of professionals,<sup>5</sup> since in the shortest possible interval effective measures should be adopted and initiated to re-establish the patient's vital functions and cause the least possible sequelae.

The success of the patient's survival after a CPA is in the quality of CPR. To this end, health professionals must follow some criteria that will be performed in the face of this clinical emergency: immediate recognition of the CPA, which aims at the beginning of maneuvers and the communication of the occurrence for help; Early CPR, in which the opening of the airways, ventilation and blood circulation will occur with an emphasis on chest compressions, which should occur as soon as possible; rapid defibrillation, with the identification and treatment of ventricular fibrillation, this is an extremely important step, as this is when an attempt will be made to re-establish the victim's cardiac rhythm; and finally, the application of advanced life support techniques aimed at controlling the airways and medications appropriate to the heart rate, as well as post-CPA care.<sup>6</sup> With this, it is emphasized that the recognition actions and CPA interventions are crucial to reducing the morbidity and mortality of the population affected by this health problem.

The nurse plays a priority role when assisting critically ill patients, and it is no different when assisting a CPA. Nonetheless, its function in face of CPR is much more extensive, in addition to performing resuscitation maneuvers, providing material resources, it must support the team and continuous training, so that the conditions of care are carried out properly and with quality.<sup>7</sup>

Considering that countless CPAs occur in the hospital and that the nursing team remains with the patient most of the time, being most of the time the first professionals to witness this clinical situation, the team must be trained and qualified to act as quickly and with the best possible competence. Thus, the nursing professional becomes a key player in the identification of a CPA and the performance of CPR. Given the aforementioned, the following research question was formulated: Is the knowledge of nursing professionals concerning the CPA in accordance to the AHA protocol for CPR?

AHA is an association founded in 1924 dedicated to the fight against heart disease and stroke, which develops scientific treatment guidelines for health professionals and lay people, to provide quality care to patients who are victims of the aforementioned clinical conditions.<sup>8</sup> It is worth noting that this protocol is adopted by the Brazilian Society of Cardiology as a model to be followed in Brazil.

Bearing in mind the aforesaid, this study aimed to assess whether or not the nursing professionals' understanding concerning CPA is in accordance to the AHA protocol.

## METHODS

It is a descriptive study with a qualitative approach, where the research field was the urgency and emergency room from the *Hospital Geral Prado Valadares (HGPV)*, which is located in the municipality of *Jequié, Bahia State*. The research participants were 12 nursing professionals who worked in that sector and who were not away from the service for any reason during the data collection period.

Data collection took place from May to June 2015, after approval by the Research Ethics Committee from the *Universidade Estadual do Sudoeste da Bahia (UESB)*, Brazil, under the Legal Opinion No. 1,047,957. For this, the semi-structured interview technique was used. The objectives of the research were clarified to the professionals and those who wished to participate signed the Informed Consent Form (ICF). In order to maintain the reliability of the information, a recorder was used during data collection.

Then, the interviews were transcribed and analyzed according to the content analysis technique, thematic modality,<sup>9</sup> where two categories have arisen: "Difficulties in identifying a cardiopulmonary arrest" and "Nursing interventions: so now, what to do about the CPA?"

To guarantee anonymity, interviews were identified using names related to the cardiovascular system.

## RESULTS

This study counted with the participation of 12 nursing professionals. Considering this total, 10 (83.3%) were female, within the age group from 27 to 50 years old, seven (58.3%) had another professional relationship and four (33.3%) had previously worked in an emergency department. Another relevant fact is that nine (75%) professionals reported not having knowledge of the American Heart Association (AHA) Resuscitation Protocol.

Based on the analysis of the interviews, two main categories of investigation have arisen: "Difficulties in identifying a cardiopulmonary arrest" and "Nursing interventions: so now, what to do about the CPA?".

### Category 1 - Difficulties in identifying a cardiopulmonary arrest

It can be seen in the units of analysis below that some of the nursing professionals have a superficial knowledge of how to identify a CPA, as they do not report the predictive signs for identification according to the protocol.

*Here it usually starts like this: the patient, before he stops [...] is gasping, with that characteristic breath. When it starts like this, if you don't have an intervention, the patient will probably stop, do you understand? And when he is already stopped, he has no vital signs.* (Heart)

*[...] absence of pulse... carotid pulse, radial pulse, tibial pulse, in short... [...] When there is any sign of the absence of*

*spontaneous circulation, we identify it as cardiopulmonary arrest [...].* (Lung)

*When the patient arrives and we evaluate the vital signs, mainly breathing and pulse in the main arteries, and from there we provide first aid.* (Aorta)

*Initially due to the lack of vital signs, lack of communication [...].* (Atrium)

Nevertheless, it was also identified that in this urgency and emergency sector, some nursing professionals have a complete lack of knowledge regarding the identification of this health risk situation.

*Patient with signs of [...] I am missing the name here now in my head, his oximetry, [...] lack of oxygen, patient with tachycardia, agitation.* (Ventricle)

*[...] a patient unconscious, 'right'? [...] you try to call, if he doesn't answer, you start doing the cardiac resuscitation... the cardiac resuscitation... how to do it? The maneuvers.* (Blood)

*It is when the patient goes into mental confusion. The patient has a... has a... the patient is... decreases the blood pressure.* (Breath)

### Category 2 - Nursing interventions: so now, what to do about the CPA?

*We start CPR maneuvers with compressions and ventilations, which would be thirty compressions for two ventilations [...] followed by more than one hundred per minute [...].* (Circulation)

*Chest compressions are the first step. Later, if there is a possibility of monitoring, and then we identify the ventricular fibrillation and ventricular tachycardia.* (Ventricular Tachycardia)

*[...] you can resort to defibrillation if necessary, but the first moment is cardiac massage [...].* (Lung)

*[...] if I am alone, I will do just the massage, and call someone, I will keep the massage, until someone arrives to put the Artificial Manual Breathing Unit [...] thirty compressions for two ventilations. [...] the steps would be exactly those, massage, synchronized ventilation, depending on the rhythm, if undergoing a shock, if not, go back to massage [...].* (Mitral Valve)

The analysis units previously described show that these professionals know how to intervene correctly in a CPA, emphasize cardiac massage as the first step to be performed, as well as alternating massage with ventilation, thirty compressions for two ventilations, exactly as recommended by 2010 AHA Guidelines for CPR, a professional still reinforces defibrillation, after identifying the ventricular fibrillation and ventricular tachycardia.

In contrast, research participants demonstrated ignorance of the AHA protocol for CPR, reporting inappropriately the procedures adopted to perform a CPR.

*I already have done some courses [...] but it was not something that I studied much.* (Blood)

*Communicate the rescuer; stay with the patient [...] and wait for the conduct".* (Ventricle)

*I don't remember well. I don't know how to tell you step by step. I only help here. [...].* (Blood)

*We puncture a large caliber vein, monitor the patient while 'asking for help from the rescuer at the moment, already looking for the first intubation materials [...] then forward the patient to ECG, laboratory exams, X-ray, all the behaviors that are necessary for that moment [...].* (Aorta)

When inquiring about training courses provided by the institution, half of the interviewees answered that there was no training course:

*No, never.* (Heart)

*No.* (Ventricle; Blood; Vena Cava)

*No, no course.* (Lung)

## DISCUSSION

Herein, the professionals describe a few relevant points regarding the identification of a cardiopulmonary arrest (CPA), yet, no participant addresses the three signs that are necessary for this identification.

It is recommended that the health professional should start performing the cardiopulmonary resuscitation (CPR) maneuvers as soon as the victim does not have a pulse (this should be verified within 10 seconds at the most), associated with the absence of breathing or abnormal breathing (gasp) and unconsciousness.<sup>6,10</sup>

Corroborating this result, a study performed with nursing professionals who work in an intensive care unit, showed that 40% of professionals did not know how to identify the signs of a CPA, however, 93% considered themselves

able to perform CPR care.<sup>11</sup> Adequate recognition of a CPA is of fundamental importance in the correct and immediate performance of CPR maneuvers, as well as in increasing the survival rates of victims.

It was also observed that for nursing professionals the identification of a CPA is linked, in most cases, to the patient who is unconscious, in addition to one of the professionals presenting agitation as an identification criterion, which does not constitute the correct identification of a CPA, since, as previously presented, CPA can be identified through a set of factors that associated establish clinical signs that are characteristic.<sup>6</sup>

Although unconsciousness is part of the clinical signs and is mentioned by some of these professionals, this alone is not a major factor in the diagnosis of a CPA, as it might be originated from other conditions.

Studies carried out to confirm these results, demonstrating that the knowledge that nursing professionals have concerning the recognition of CPA is insufficient and scarce.<sup>5</sup> A survey showed that only 38.4% of respondents answered correctly and 61.6% answered in a partially correct way with respect to the signs of recognition of a CPA, which leads to infer that there is still a large number of professionals unable to work in this emergency situation.<sup>12</sup>

Despite the limited knowledge regarding the recognition of a CPA, some professionals interviewed demonstrate how to act in such a situation. Corroborating these findings, in one study it was found that 81% of nursing professionals answered correctly to know how to act after the recognition of a CPA.<sup>13</sup> Although the AHA protocol is updated every five years, it is noticed that some professionals meet the new determinations recommended by him, such as the inversion of steps: opening the airways, breathing and compressions, A-B-C, respectively, for C-A-B, demonstrating that professionals pursue to update their knowledge concerning patient care when undergoing CPA.<sup>10</sup>

Even when asked about their knowledge of the AHA protocol for CPR, even when working in the emergency room, where they demand great knowledge about the main urgencies and emergencies, some of the professionals showed almost no or total ignorance, which shows that they are not properly qualified to work in this sector.

A similar result was observed in a study performed in a highly complex hospital, in which it was demonstrated a deficiency concerning the comprehension of a CPA by the professionals, which can be inferred that these may come to have negative results in the care provided to patients in the face of such an emergency situation.<sup>5</sup>

As demonstrated in this research, some studies have shown that nursing professionals have gaps in their knowledge about the care of the CPA and do not know how to act properly during a CPR.<sup>13-5</sup>

Such data legitimize the remarkable need for qualification of professionals who provide direct assistance to patients, in addition to reinforcing the importance of permanent health education, so that the success rates in CPR are improved.<sup>7</sup> Hence, the researched institution must promote training courses related to this matter.



## CONCLUSIONS

By accomplishing this study, it was observed that most nursing professionals were unable to identify cardiopulmonary arrest (CPA), and many still do not know how to perform CPR as recommended by the American Heart Association (AHA), even though, in most cases, they are the first to deal with a CPA in the hospital setting. It is also important to emphasize the relevance of promoting the necessary training for taking action when dealing with such clinical emergency.

The number of qualified professionals is still little to reduce the sad rates that are constantly recorded in emergency rooms throughout Brazil. Another important point to be underlined is that there is no protocol established for taking care of victims undergoing a CPA in the emergency room where this research was performed. Therefore, it was identified that these elements corroborate to a significant reduction in the chances of the patients' survival.

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