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KNOWLEDGE OF THE NURSING TEAM ON CARDIOPULMONARY RESUSCITATION BEFORE AND AFTER TRAINING

CONHECIMENTO DA EQUIPE DE ENFERMAGEM SOBRE REANIMAÇÃO CARDIOPULMONAR ANTES E APÓS CAPACITAÇÃO

CONOCIMIENTO DEL EQUIPO DE ENFERMERÍA SOBRE REANIMACIÓN CARDIOPULMONAR ANTES Y DESPUÉS DE CAPACITACIÓN

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Objective: to evaluate the knowledge of nursing staff professionals in the care of cardiorespiratory arrest and to compare before and after training. Method: prospective and comparative research, conducted in a public hospital in São Paulo, in 2021, with 68 professionals. A questionnaire on cardiorespiratory arrest before and after training was applied for comparison. Results: most professionals recognize the classic signs of cardiorespiratory arrest and the correct sequence of care, however, had difficulty identifying the shockable rhythms and actions after defibrillation. The average number of correct answers before and after the training was 43.65 and 66.11, respectively, and corroborates the effectiveness of the educational action. Conclusion: it is extremely relevant to systematically offer training to the team in order to ensure safer and more effective care.

Descriptors: Emergency Nursing; Continuing Nursing Education; Cardiorespiratory Arrest; Cardiorespiratory Resuscitation; Team Training.

Objetivo: avaliar o conhecimento dos profissionais da equipe de enfermagem no atendimento à parada cardiorrespiratória e comparar antes e após capacitação. Método: pesquisa prospectiva e comparativa, realizada em um hospital público em São Paulo, em 2021, com 68 profissionais. Foi aplicado um questionário sobre parada cardiorrespiratória antes e após capacitação, para comparação. Resultados: a maioria dos profissionais reconhece os sinais clássicos de parada cardiorrespiratória e a sequência correta de atendimento, todavia, teve dificuldade em identificar os ritmos chocáveis e as ações após a desfibrilação. A média de acertos antes e após a realização da capacitação foi de 43,65 e 66,11, respectivamente, e corrobora com a eficácia da ação educativa. Conclusão: é extremamente relevante ofertar, sistematicamente, capacitações à equipe, de modo a garantir uma assistência mais segura e eficaz.

Descritores: Enfermagem em Emergência; Educação Continuada em Enfermagem; Parada Cardiorrespiratória; Reanimação Cardiorrespiratória; Capacitação de Equipe.

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Objetivo: evaluar el conocimiento de los profesionales del equipo de enfermería en la atención a la parada cardiorrespiratoria y comparar antes y después de capacitación. Método: investigación prospectiva y comparativa, realizada en un hospital público en São Paulo, en 2021, con 68 profesionales. Se aplicó un cuestionario sobre parada cardiorrespiratoria antes y después de capacitación, para comparación. Resultados: la mayoría de los profesionales reconocen los signos clásicos de parada cardiorrespiratoria y la secuencia correcta de atención, sin embargo, tuvo dificultad en identificar los ritmos chocables y las acciones después de la desfibrilación. El promedio de aciertos antes y después de la realización de la capacitación fue de 43,65 y 66,11, respectivamente, y corrobora con la eficacia de la acción educativa. Conclusión: es extremadamente relevante ofrecer, sistemáticamente, capacitaciones al equipo, de modo a garantizar una asistencia más segura y eficaz.

Descriptores: Enfermería en Emergencia; Educación Continua en Enfermería; Parada Cardiorrespiratoria; Reanimación Cardiorrespiratoria; Capacitación de Equipo.

Introduction

Cardiorespiratory Arrest (CRA) is defined as the sudden and unexpected cessation of blood circulation and ventilatory activity of an individual, associated with loss of consciousness. It is considered one of the largest clinical emergencies and its treatment requires rapid recognition and adequate care in order to preserve neurological functions and enable the return of spontaneous circulation[1].

The care is performed according to the Cardiopulmonary Resuscitation (CPR) maneuvers, which include chest compressions and artificial ventilations, aiming to maintain oxygenated blood flow to vital organs, especially heart and brain. These maneuvers, if performed correctly, can even triple the victim's survival rates[2-6].

Patients with prolonged length of hospitalization, with advanced age, with comorbidities, such as diabetes mellitus and hypertension, hospitalized due to clinical or acute conditions and who are hemodynamically unstable, are more likely to manifest a CRA[7, 8].

The American Heart Association (AHA) elaborates and frequently revises Basic Life Support (BLS) and Advanced Cardiovascular Life Support (ACLS) guidelines, which standardize out-of-hospital and in-hospital care, respectively[2, 3, 9].

The ACLS corresponds to the interventions performed in the intra-hospital environment, with greater equipment and resources for obtaining advanced calibrous access puncture to perform medications and thorough evaluation to differentiate possible diagnoses and treatment of the cause of CRA. This step should be performed exclusively by trained health professionals[2, 3, 9-11].

The nursing team plays an important role in the recognition of a CRA, since they remain for a longer period with patients, in relation to other professional categories. The nurse, as a team leader, should be responsible for delegating functions and establishing priorities in order to perform an agile and effective care, to increase the chances of success of resuscitation and considerably reduce morbidity and mortality rates[2, 4, 6].

Authors describe that most of these professionals do not feel safe to work in CRA care, in relation to several aspects, such as the identification of CRA, the interventions to be performed, the heart rhythms that can be presented and which are shockable, medications to be administered, the ratio of compressions and ventilations with or without advanced airway, among others[2, 3, 5].

Considering the criticality of cardiorespiratory arrest and the complexity of care, the question arises: What level of knowledge do nursing professionals working in the emergency service of a public hospital in São Paulo have in relation to the theme? Would they be able to assist such a clinical emergency?

To answer this question, the objectives of this study were to evaluate the knowledge of nursing staff professionals in the care of cardiorespiratory arrest and compare before and after training.

Method

This was a quantitative, prospective, comparative and descriptive research. This study was part of the *Lato Sensu* Postgraduate Program, modality of Integrated Multiprofessional Residency in Emergency Care of the Multiprofessional Residency Commission of the Municipal Health Department of São Paulo (COREMU SMS SP). The research was conducted at the Adult Emergency Unit of a Public Municipal Hospital located in the city of São Paulo, from June to August 2021.

The study sample was composed by 68 individuals from the nursing team and the inclusion criteria were who had six months of work or more, considering the care of all patients who present with a clinical picture of cardiorespiratory arrest, regardless of whether they were hospitalized or not, gender, age or associated pathology.

The exclusion criteria for this study were: professionals who never assisted, or assisted only once a CRA, working at night and who on leave for holidays, or any origin, individuals who had refused to participate in the research.

The data collection instrument was composed of a questionnaire to identify the profile of the research participants and to investigate about CRA. The evaluative questionnaire (ANNEX A) contained 15 multiple choice questions, based on the AHA guidelines[2020], with the content described below: the definition of cardiorespiratory arrest (CRA); the rapid recognition of CRA; its main causes; the in-hospital approach to be performed, covering the compression-ventilation ratio, with and without advanced airway; the depth of chest compressions, allowing the chest to return completely after compressions; medications to be infused; and the heart rhythms that can be presented and which are shockable. The answers to the questions were judged as correct or incorrect, being the professional responsible for assessing which should be marked.

The questionnaire was completed individually by the participants from an electronic form, created in Google Forms® and the data were collected during a period of work, in a specific room of the institution itself, ensuring confidentiality, before and after training.

It was used as a learning resource the didactic doll, provided by the Permanent Education team of the hospital. During the training, the link of the didactic content present in Webfolio was disclosed, having as theoretical reference the norms of the American Heart Association, so that they could access and follow the presentation in real time and when necessary. It is worth mentioning that the Webfolio was built in order to subsidize the activities proposed in this study, as well as make information on the subject available in real time to those who wished. The material is composed of nine pages, has images and texts to facilitate the understanding of CRA, and there is also specific content on nursing actions. The link to access it is available from: https://nurse-residente.webnode.com/.

Moreover, the data collected were organized and treated according to the nature of their appearance, according to descriptive statistics. The study was authorized by the Research Ethics Committee and submitted to *Plataforma Brasil*, according to Resolution CNS 466 of 12 December 2012[12], counting with the opinion number: 4.746.858, and carried out after authorization of the participants through the Informed Consent Term.

Results

Sixty-eight nursing professionals working in the Adult Emergency Room of a Public Municipal Hospital located in the city of São Paulo were evaluated, as characterized in Table 1.

Table 1 - Characterization of CRA training participants, São Paulo, SP, Brazil – 2021 (n=68) (continued)

VARIABLES	n	%
SEX		
Female	56	82.4%
Male	12	17.6%
I prefer not to declare	0	0%
RACE/COLOR		
White	28	41.2%
Black	6	8.8%
Brown	29	42.6%
Yellow	5	7.4%
AGE		
≤ 20 years	0	0%
21-30 years	21	30.9%
31-40 years	28	41.2%
41-50 years	16	23.5%
≥ 51 years	3	4.4%
OFFICE		
Nurse	22	32.4%
Nursing technician	20	29.4%
Nursing assistant	26	38.2%
TIME SINCE GRADUATION		
≤ 1 year	4	5.9%
2-5 years	28	41.2%
6-10 years	16	23.5%
11-15 years	14	20.6%
16-20 years	2	2.9%
≥ 21 years	4	5.9%
TIME WORKING AT THE HOSPITAL		
≤ 1 year	55	80.9%
2-5 years	12	17.6%
6-10 years	1	1.5%
11-15 years	0	0%
16-20 years	0	0%
≥ 21 years	0	0%
EMPLOYMENT RELATIONSHIP		
Statutory	0	0%
CLT	65	95.6%
Other	3	4.4%
NURSE: DO YOU HAVE SPECIALIZATION IN URGENCY AND EMERGENCY?		
Yes	12	52.2%
No	11	47.8%
NURSING TECHNICIAN: DO YOU HAVE ANY SPECIALIZATION?		
Yes	1	2.2%
No	44	97.8%

Table 1 - Characterization of CRA training participants, São Paulo, SP, Brazil – 2021 (n=68) (conclusion)

VARIABLES	n	%
DO YOU HAVE ANY OTHER EDUCATION?		
Yes	23	33.8%
No	45	66.2%
HAVE YOU EVER DONE ANY COURSE FOCUSED ON CRA?		
Yes, less than 5 years ago	22	32.4%
Yes, more than 5 years ago	19	27.9%
No, never	27	39.7%

Source: Created by the Authors

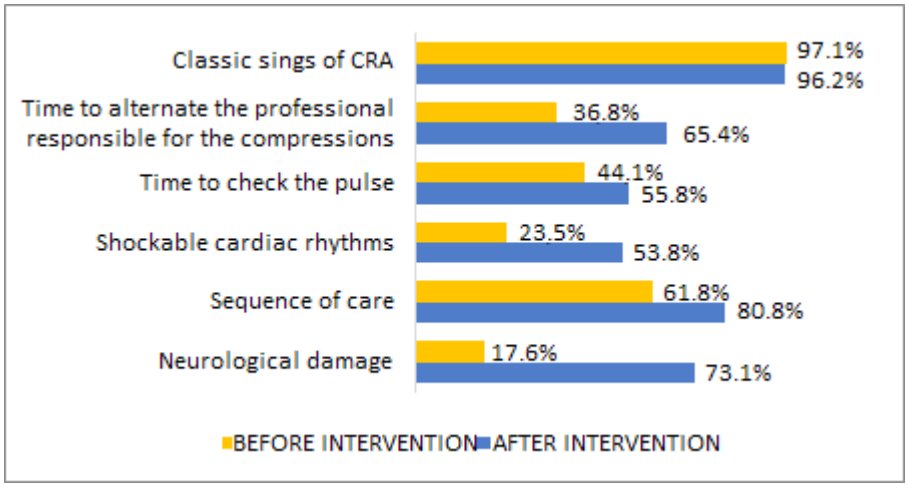
As already described, the participants were submitted to the evaluation through a questionnaire, prepared based on the guidelines of the American Heart Association – 2020 Update. The questionnaire was applied in two moments, before and after training. The terminology before and after the intervention was also used to describe the answers of the interviewees before and after the training on the subject in question.

In the initial questionnaire, 68 professionals from the nursing team participated, and 52 professionals participated in the subsequent questionnaire. For better visualization of the results, the questions were divided into four categories: identification and neurological damage; CRA care; CPR technique and medications. The following figures show the respondents' knowledge about CRA by the percentage of correct answers, and enables the comparison between the questionnaires, before and after training.

Figure 1 illustrates the level of knowledge that nursing staff professionals present about the recognition of a CRA and the neurological consequences that can be caused in the absence of adequate care.

Regarding the care that should be performed in a CRA, such as the correct sequence of care and the time intervals that should be expected for pulse check, there was a satisfactory average of correct answers in the second questionnaire, as shown in Figure 1.

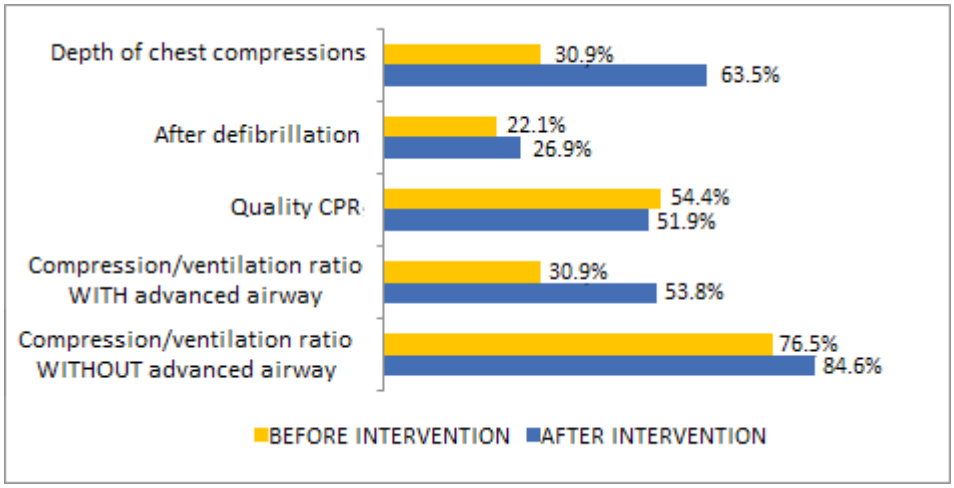
Figure 1 – Knowledge of nursing team professionals regarding the identification and care of CRA and neurological damage, SP/2021



Source: Created by the Authors

Regarding the technique of cardiopulmonary resuscitation (CPR) maneuvers that should be performed, according to the guidelines of the American Heart Association, such as the compression/ventilation ratio and the quality of CPR, the there was a considerable increase in the number of correct answers compared to the first questionnaire, which can be seen in Figure 2.

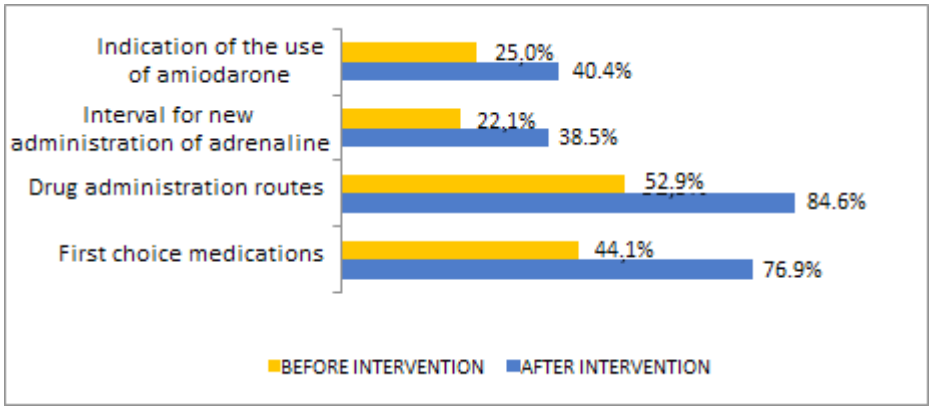
Figure 2 – Knowledge of nursing team professionals regarding CPR maneuvers, SP/2021



Source: Created by the Authors

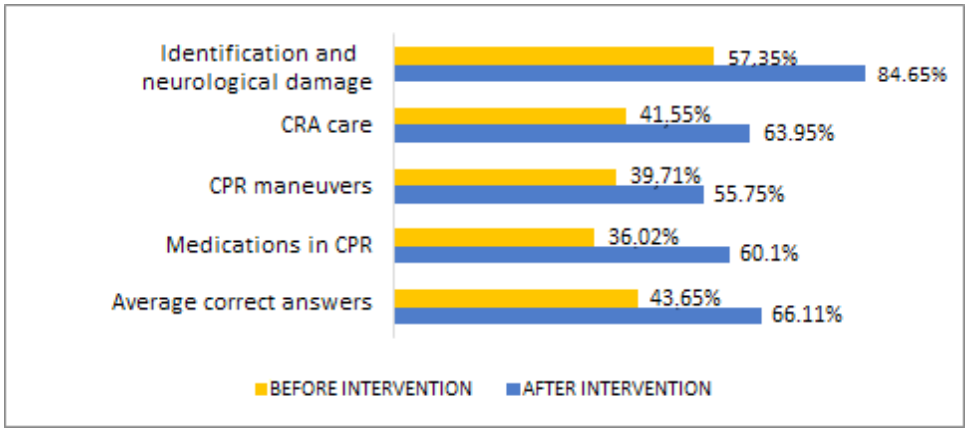
Concerning aspects related to medications, such as the routes of administration and indications in CRA, the correct answers also showed an increase when compared to the first and second questionnaires, as shown in Figure 3.

Figure 3 – Knowledge of nursing team professionals regarding medications administered in CRA, SP/2021



Source: Created by the Authors

Figure 4 – Comparison of knowledge about cardiopulmonary resuscitation before and after training, by theme and average number of correct answers, SP/2021



Source: Created by the Authors

Discussion

The total population of nursing professionals on day duty in the Adult Emergency Room of the Hospital was 70 employees. The participants of the first questionnaire were 68 professionals, making a total of 97.1% of the team. Nevertheless, in the second questionnaire, 52 professionals participated, with use of 74.2% of the total, which can be explained by the period of vacation, leave and justifiable factor to non-participation.

Regarding sex, it is possible to observe a mostly female picture in the nursing team, with 82.4%, and none of the participants chose the option "I prefer not to declare". It should be noted that the increase in the male population in the profession has been evidenced over the last decades. The female predominance has great historical and cultural basis, since the profession is consolidated as a science, and has been repeated by all spaces of Brazilian nursing, according to the Research of the Federal Nursing Council (COFEN) on the Profile of Nursing Professionals, disclosed in 2017[6, 7, 9, 13].

Regarding race/color, nursing professionals have a higher predominance of the black race, with 51.4% of the entire team. A literature review article points out the distribution by race and education, finding that 57.4% are black female nursing workers of technical level, under the command of 57.9% of white female nurses, which proves the permanence of the social division of nursing work[14].

The age group most observed among the participants was 31 to 40 years old, that is, from an economically active population that inevitably contributes to the family budget. Regarding the position, most of the team is composed of professionals of technical level (nursing assistants and technicians), totaling 46 interviewees.

Resolution COFEN n. 543/2017 provides for the minimum parameters for the design of nursing professionals. The Emergency Room is considered one of the Special Care Units (SCU) for developing nursing interventions where it is not possible to apply the sizing method based on the Patient Classification System. The calculation is made by the Functional Site (FS), that is, unit of measurement based on professional experience, considering the activities developed, the operational area, or place of activity, and the weekly workload. Considering the duties of nurses, nursing technicians and assistants provided for in the Law of Professional Exercise of Nursing, it is suggested, in the first instance, quantitative analysis of the professional staff of the said sector and that, a posteriori, qualitative analyses are performed, based on the physical area of the sector, the assistance provided, through the supervision and interpretation of nursing records[15, 16].

The time of training of the professionals evaluated varies between 2 and 15 years, but the vast majority (80.9%) has less than one year of work in the hospital, which coincides with the time of contracting the Social Health Organization (SHO) at the research site and is related to the employment relationship of the Consolidation of Labor Laws (95.6% of participants) (CLT – *Consolidação das Leis Trabalhistas*), while there was no participant with a statutory relationship at the time of the survey, and three participants (4.4%) chose the option "another employment relationship". In this case, it is inferred that these professionals may have been appointed, exclusively, to exercise office in committee, or are workers of the federal and state spheres, because of the agreement concluded.

The Municipal Department of Health of São Paulo – Brazil has performed the admission of professionals and execution of services through management contracts with the SHO. This movement, in force since 2015, has provided the transition of work teams and the remodeling of care processes, so that there is no loss in assistance. In recent years, there has been a progressive increase in the number of CLT workers in contrast to the statutes, which can be observed in the Annual Management Report of the City Hall. Thus, it is observed that the institutional redesign has directed the professionals of statutory relationship allocated in the Emergency Department to other units and may hinder the personal and professional relationship between peers[17].

It is observed that half of the nurses (52.2%) have specialization in Urgency and Emergency, which is considered an important factor for the work in Emergency Room, disagreeing with the study conducted by Santos [2017], where 80% of the nurses analyzed had a postgraduate degree. Many selection processes establish as criteria the *lato sensu* post-graduation in the area of action to be applied, which meets the policy of people management of organizations.

Article that addressed the analysis of the labor market of nursing professionals, from the data obtained through the Profile of Nursing Research in Brazil (COFEN - Fiocruz), discusses that professions such as nursing have been transformed in relation to technical-scientific aspects and reorder an ideological-politics of the "ideal care", resulting in the search for economic and technological demands of corporate interests[13, 18].

Only one nursing technician participant reports having specialization, despite the existence of Resolution COFEN n. 609/2019, which updates the procedures for the training of technical level professionals. It is inferred that this universe of professional qualification is small, and these workers should be encouraged and recognized[19].

Still on this issue, the COFEN approved in October 2021, with prevision to start in the first half of 2022, the completion of the Nursing Technical Post-Graduation, free specialization program at the post-professional education level for nursing technicians, in order to qualify these professionals and democratize access to professional updating, which constitute the largest workforce in the category[20].

As for the questioning of the specific course aimed at cardiopulmonary resuscitation (CPR), 60.3% of the participants answered affirmatively, 32.4% for less than five years and 27.9% for more than five years, which, when relating to the answers to the questionnaire, corroborates more the importance of training based on updates and clinical guidelines. The updates in the care to the CRA must be periodic, being, therefore, the role of the institutional management the planning and the programming of the actions of permanent education.

The comparisons made on the identification of cardiorespiratory arrest (CRA), between the questionnaires performed before and after training, showed a decrease of 0.9%, which is considered statistically acceptable. The observed result may be related to the speed with which the participants answered the questionnaire, due to the reduced number of nursing professionals, after some dismissals and departures, and the volume of care activities, which overloaded the employees. In the study, the great turnover

of professionals, many of them with reduced experience, is a very frequent occurrence nowadays[2].

The question related to the correct sequence of CRA care presented an increase in the percentage of correct answers of 19%. The questions referring to the compression/ventilation ratio with and without advanced airway increased the percentage of correct answers by 22.9% and 8.1%, respectively[1, 2, 4, 9-11].

The question related to the first choice medications for CRA revealed a significant increase in the percentage of correct answers between the first and second questionnaires, by 32.8%. The question that addressed the route of administration of drugs in CRA also increased greatly, by 31.7%. The question that addresses the time interval for new administration of adrenaline also increased by 16.4%. And the question that refers to the indication of the use of amiodarone suggests an increase of 15.4% in the correct answers before and after the training.

Regarding heart rhythms, the question that addressed which heart rhythms are shockable increased by 30.3%, while the question related to the sequence of care after defibrillation suggests an increase of 4,8%. However, the identification of the CRA rhythm is more related to the level of knowledge of nurses, and is justified due to the training provided in educational legislation and nursing exercise.

As for questions related to the depth of chest compressions and the time interval determined for a new pulse check and for changing the professional responsible for compressions, there was an increase of 32.6%, 11.7% and 28.6%, respectively[1, 2, 9, 11].

The issue that addressed the quality of CPR showed a decrease of 2.5%, and can be explained by the inattention of the participants, when reading the statement that requested the incorrect alternative. To analyze this issue, a question arises about the dedication and posture of professionals in previous courses. It is also possible to investigate the overload and fatigue of professionals who have more than one employment relationship. In addition, articles 55 and 56 of the Code of Ethics for Nursing Professionals (COFEN Resolution n. 564/2017) are highlighted, which concern personal, technical-scientific improvement, and teaching and research activities for professional training. Considering all this information, it is worth mentioning the Law n. 7.498/86, which stresses that the planning, organization, coordination, execution and evaluation of nursing care services are private activity of the nurse, ensuring the quality of care safely and competently[9, 11, 16, 21].

Concerning the questions that did not obtain a greater amount of correct answers or that remained with the same indexes, it is likely that the failures are linked to work overload and/or lack of attention, since they are considered the main contributors to the occurrence of adverse events, which is in line with previous studies[22, 23].

In the question about the neurological damage related to the time of CRA without care, there was a significant increase of correct answers among the questions, by 55.5%, being proven by the positive and immediate response after the educational intervention and the need for periodic updating of workers, and especially the Nursing team.

The methodology adopted in this study is the same used by the AHA, and has been effective over the last decades in training professionals in basic and advanced life support.

In general, there was an increase in knowledge after the training of the Nursing team, requiring greater attention to the identification of shockable heart rhythms, actions to be performed after defibrillation, the medications used, as well as their indications. It is valid to consider that the studied population, composed of Nurses, Nursing Technicians and Assistants, has different levels of training, with distinct syllabus, and that the professionals of technical level made a total of 67.6%.

Dedication and posture of the participants before their own professional updating, work overload and the number of employment relationships are variables that deserve reflection from the workers and managers themselves, as

they directly interfere in the work process and that slip into the Code of Ethics of Nursing Professionals, in relation to responsibilities, duties and prohibitions, and the Law of Professional Practice of Nursing, both in the assignments of each member of the Nursing team and member of the health team, as well as in the nurse's private activities, as an articulator responsible for the planning of assistance in a safe and competent way[16, 21].

The actions of Permanent Health Education (PHE) are relevant to ensure the excellence of services, professional qualification, and, finally, a better care to the customers. It is reiterated that the PHE team should plan with the management of the services, and especially the Emergency Department, the training agenda according to the needs identified or reported by the professionals themselves.

Conclusion

When assessing the knowledge of nursing staff professionals in CRA care, it was concluded that the vast majority of professionals recognize the classic signs of CRA, being inversely proportional to neurological damage. As for care, most had difficulty in identifying the shockable rhythms and actions to be performed after defibrillation, however, are aware of the correct sequence of care. Regarding the drugs used, they had difficulty in recognizing them, based on the updated guidelines of the AHA.

The average number of correct answers before and after the training was 43.65 and 66.11, respectively, and corroborates the effectiveness of the educational action. It is extremely necessary to propose constant training for the team, making the care safer and more effective.

Separately investigate the technical-scientific knowledge of the nursing team, for better understanding and evaluation of knowledge by professional category, may be interesting in the near future, since it was not drawn as one of the objectives of this study.

Collaborations:

1 – conception and planning of the project: Maria Isabel and Valnice;

2 – analysis and interpretation of data: Maria Isabel and Valnice;

3 – writing and/or critical review: Maria Isabel and Valnice;

4 – approval of the final version: Maria Isabel and Valnice.

Conflicts of interests

There are no conflicts of interests

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ANNEX A

EVALUATION OF THE KNOWLEDGE LEVEL OF THE MULTIPROFESSIONAL TEAM ABOUT CRA CARE

1. CLASSIC SIGNS OF A CARDIORESPIRATORY ARREST (CRA):

a) Absence of pulse, unconsciousness and seizure
b) Unconsciousness, no pulse and no breathing
c) Unconsciousness and no breathing
d) Tonic-clonic movements
e) Presence of Gasping and motor agitation

2. WHAT IS THE CORRECT SEQUENCE OF CARE FOR CARDIOPULMONARY RESUSCITATION (CPR)?

a) ABC
b) BCA
c) CBA
d) ABCD
e) CABD

SUBTITLE:
A: airway opening
B: ventilation
C: heart compressions
D: defibrillation

3. WHAT IS THE CORRECT RATIO OF COMPRESSIONS AND VENTILATION IN PATIENTS WITHOUT ADVANCED AIRWAY?

a) 15 compressions and 1 ventilation
b) 15 compressions and 2 ventilations
c) 30 compressions and 1 ventilation
d) 30 compressions and 2 ventilations
e) 100 compressions and 2 ventilations

4. WHAT IS THE CORRECT RATIO OF COMPRESSIONS AND VENTILATION IN PATIENTS WITH AN ADVANCED AIRWAY?

a) 15 compressions and 2 ventilations
b) 30 compressions and 2 ventilations
c) 100 compressions and 2 ventilations per minute
d) 100-120 compressions per minute and 6 ventilations per minute
e) 100-120 compressions per minute and 1 ventilation every 5-6 seconds

5. WHAT ARE THE FIRST CHOICE MEDICATIONS FOR CRA?

a) Noradrenaline and adrenaline
b) Epinephrine and amiodarone
c) Atropine and vasopressin
d) Vasopressin and adrenaline
e) Amiodarone and noradrenaline

6. WHICH HEART RHYTHMS ARE SHOCKABLE?

a) Pulseless electrical activity (PEA)
b) Asystole and PEA
c) Atrial fibrillation and ventricular tachycardia
d) Atrial fibrillation and ventricular fibrillation
e) Ventricular fibrillation and pulseless ventricular tachycardia

7. ABOUT QUALITY CARDIOPULMONARY RESUSCITATION (CPR), IT IS INCORRECT TO SAY:

a) The chest must be allowed to retract completely between compressions
b) Hyperventilation should be avoided
c) Interruptions between compressions should be minimized
d) A saline flush should be performed after administering medications and elevating the limb
e) In advanced airway, ventilations should be administered after compressions, never at the same time.

8. AFTER PERFORMING DEFIBRILLATION, YOU MUST:

a) Immediately check the rhythm on the monitor
b) Immediately return to compressions
c) Check pulse and breathing
d) Administer adrenaline
e) administer new shock

9. WHAT ARE THE POSSIBLE DRUGS ADMINISTRATION ROUTES IN CRA?

a) Intravenous and intramuscular
b) Intravenous and subcutaneous
c) Intravenous and intraosseous
d) Intramuscular and subcutaneous
e) Sublingual and subcutaneous

10. WHAT IS THE TIME INTERVAL INDICATED FOR A NEW ADMINISTRATION OF ADRENALINE?

a) 2 minutes
b) 1-2 minutes
c) 2-5 minutes
d) 3 minutes
e) 3-5 minutes

11. WHAT DEPTH SHOULD CHEST COMPRESSIONS BE IN ADULTS?

a) 3-4 cm
b) 4-5 cm
c) 5-6 cm
d) 6-7 cm
e) 7-8 cm

12. HOW LONG SHOULD YOU WAIT BEFORE PERFORMING A NEW PULSE CHECK?

a) 30 seconds
b) 1 minute
c) 2 minutes
d) 4 minutes
e) Always after defibrillating

13. WHAT IS THE SUGGESTED TIME INTERVAL TO ALTERNATE THE PROFESSIONAL RESPONSIBLE FOR CHEST COMPRESSIONS?

a) Every 1 minute
b) Every 2 minutes
c) Every 2 minutes or when there is professional fatigue
d) Every 5 minutes
e) Only 1 person will be responsible for compressions

14. IN WHICH CRA MODALITY (HEART RHYTHM) IS THE USE OF AMIODARONE INDICATED?

a) Pulseless electrical activity (PEA)
b) Asystole and PEA
c) Atrial fibrillation and ventricular tachycardia
d) Atrial fibrillation and ventricular fibrillation
e) Ventricular fibrillation and pulseless ventricular tachycardia

15. IN CPA, FROM HOW LONG TIME WITHOUT CARE CAN NEUROLOGICAL DAMAGE OCCUR?

a) 1 minute
b) 5 minutes
c) 10 minutes
d) 15 minutes
e) 30 minutes