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EVALUATION OF NURSING TRAINING FOR CARE TO CARDIORESPIRATORY STOP ASSISTANCE

AVALIAÇÃO DA CAPACITAÇÃO DA ENFERMAGEM PARA ATENDIMENTO DA PARADA CARDIORRESPIRATÓRIA

EVALUACIÓN DE LA CAPACITACIÓN DE LA ENFERMERÍA PARA LA PARADA CARDIORRESPIRATORIA

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ABSTRACT

Objective: evaluating the nursing assistance to patients in cardiac arrest. **Method:** a clinical epidemiological study conducted in a teaching hospital including 50 nursing professionals, consisting of three steps: (1) observation of compliance of 15 events in nursing PCR and analysis of a questionnaire fulfilled by 50 nursing professionals; (2) identifying the need for training and updating of concepts according to international protocols of this care; (3) observation of nine events of CRA to evaluate the impact of training for 42 professionals trained. The project was approved by the Ethics Research Committee, Protocol 150/2007. **Results:** it was shown improvement in attendance, but also encountered problems. **Conclusion:** nursing must attend regular training courses, journals and own PCR standardized attendance for this model to be adopted by other inpatient units. **Descriptors:** Cardiac Arrest; Cardiopulmonary Resuscitation; Nursing team.

RESUMO

Objetivo: avaliar o atendimento da enfermagem ao paciente em parada cardiorrespiratória. **Método:** estudo clínico epidemiológico realizado em hospital de ensino incluindo 50 profissionais da enfermagem, composto de três etapas: (1) observação do atendimento de 15 eventos de PCR pela enfermagem e análise de um questionário preenchido por 50 profissionais de enfermagem; (2) identificação da necessidade de treinamento e atualização de conceitos conforme protocolos internacionais desse atendimento; (3) observação de nove eventos de parada cardiorrespiratória para avaliar o impacto do treinamento para os 42 profissionais que foram treinados. O projeto foi aprovado pelo Comitê de Ética em Pesquisa, Protocolo 150/2007. **Resultados:** evidenciou-se melhora no atendimento, mas também foram detectados problemas. **Conclusão:** a Enfermagem deve participar de cursos de capacitação, periódicos e possuir atendimento de PCR padronizado para que este modelo seja adotado por outras unidades de internação. **Descritores:** Parada Cardíaca; Ressuscitação Cardiopulmonar; Equipe de Enfermagem.

RESUMEN

Objetivo: evaluar los cuidados de enfermería a los pacientes en paro cardiorrespiratorio. **Método:** estudio clínico epidemiológico en un hospital de enseñanza incluyendo 50 miembros del personal de enfermería, constando de tres pasos: (1) observación de la asistencia de los 15 eventos de PCR por la enfermería y análisis de un cuestionario completado por 50 enfermeros; (2) la identificación de la necesidad de formación y actualización de los conceptos de acuerdo a los protocolos internacionales de la atención; (3) observación de nueve eventos de paro cardiorrespiratorio para evaluar el impacto de la capacitación para 42 profesionales que fueron entrenados. El proyecto fue aprobado por el Comité de Ética en Investigación de Protocolo 150/2007. **Resultados:** mostró se una mejora en la asistencia, pero también fueron encontrados los problemas. **Conclusión:** la Enfermería debe asistir a cursos regulares de capacitación y servicio de PCR estandarizado para que este modelo sea adoptado por otras unidades de hospitalización. **Descriptores:** Paro cardíaco; Reanimación Cardiopulmonar; El Equipo de Enfermería.

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INTRODUCTION

It is defined as cardiopulmonary arrest (CPA) as sudden absence of spontaneous breathing and pulse in large arteries, accompanied by loss of consciousness in the same individual at the same time.¹ Among cardiac emergencies CPA is a situation that requires immediate attention and all experience of nurses and their nursing staff, representing the most severe clinical emergency that it is faced in.² Fast, safe and effective involvement of professionals in order to facilitate the return of spontaneous circulation and ventilation change the chances of survival.³

The emergency attendance in cardiorespiratory and cardiopulmonary resuscitation (CPR) was developed from the 60s of last century, through programs and standardized procedures, resulting from proposals from international organizations for training in emergency measures and techniques basic and advanced.⁴

The Courses in Basic Life Support (BLS) for the general population and Advanced Cardiac Life Support (ACLS), for doctors, nurses and other health professionals, can be considered as formal training, as are courses essentially practical, that sophisticated mannequins, monitors, defibrillators and cardiac simulators are used, this approach to achieving great impact on behavior change professionals.⁵⁻⁷

The training courses were introduced in Brazil, from 1996, by the Brazilian Society of Cardiology, prioritizing the training of medical professionals, and subsequently of the nursing professional.⁵ For health professionals, training in CPR is recommended to ensure rapid diagnosis of these situations and immediate initiation of appropriate maneuvers, as well as the availability and functionality of resuscitation equipment, which should always be prepared for immediate use, so this is not a factor that interferes with the success of CRR.⁸⁻¹¹

The performance of nursing care is essential in this demanding team organization, emotional balance, scientific-technical field and proper distribution of functions in their conduct.¹² As in our reality is the nursing staff that remains 24 hours a day along to bedside, usually one of their members that detects CRA. Thus, it is very important that these professionals are trained to start the CPR maneuvers until the arrival of the medical team.¹³ Some studies have reported that the presence of at least one professional trained in ACLS increases survival of victims of cardiac

arrest patients.¹⁴⁻¹⁵ Corroborating with this finding, other authors reported increase in survival by about four times when the nurse practitioner had training in SAVC.¹⁶

Suggest a training program for the nursing staff care for the CRA/CRR is approaching its practical reality the knowledge being produced on the subject, and also contribute so there is a systematization and standardization of care CRA/CRR in institution under study, it is the responsibility of the hospital and the right of people to have the proper care in basic and advanced CRA. Whereas the time and conditions in attendance will influence directly the results is that the proposed training strategy and evaluation.

OBJECTIVE

- Evaluating the nursing care of the patient in cardiac arrest.

METHOD

This is part of a clinical dissertation, cross-sectional, prospective study, of intervention, conducted in the Intensive Care Unit (ICU) of Emergency Room (ER), with nine beds, a University Hospital in São Paulo.

The sample consisted of 50 staff including nurses, nursing assistants and technicians who provide care in the ICU of PS. Inclusion criteria were: agreement to participate in the study by signing the Instrument of Consent; being a nurse, auxiliary and / or practical nurse; working in the ICU of Emergency. Exclusion criteria consisted of refusal to participate in the study, not being professional nursing staff and those who were not part of the staff of the nursing team.

The data were collected by the researcher and nurses trained between December 2006 and October 2007, using three instruments: Evaluation Form of PCR (Instrument I) Evaluation Form Team Nursing (Instrument II) form and evaluating concepts theoretical and practical care of the CRA/CRR (Instrument III).

The instrument I study variables assessed in relation to the care of CRA/CRR in-hospital environment such as patient ID, date of admission and entry to the ICU professional who identified the CRA, the CRA data, medical diagnosis in the ICU, age and gender; Initial CRA conditions as electrocardiographic pattern, airway conditions and route of drug administration; related to time of beginning and end of the event information; immediate cause of the arrest; members of the healthcare team who attended the event.

Regarding the conditions in post CRR was rated the outcome of success with CRA maneuvers or death. The Instrument II evaluated the related variables basic life support (BLS), equipment and materials, emergency cart, advanced life support (ACLS), the CRA event in the patient's record and approach taken by family members. III The instrument consisted of 20 questions with 4 alternatives each containing only one right answer, on CRA and technical skills for the application of CPR maneuvers based on standardization stipulated in the guidelines.

The study consisted of three steps. The first step was conducted to observe the attendance of 15 events CRA, filling up the instruments I, II and III from December 2006 to June 2007, so the training needs were identified.

The instrument III was administered to 50 members of the nursing staff of the ICU - PS in order to assess knowledge about the theme. Although the total number of employees is 55, the questionnaire was administered in only 50, since there were employees on vacation or sick leave during the period in question. In the second stage, in July 2007, three immersion courses were conducted, lasting ten hours each for 42 professionals, representing 76.4 % of the total staff.

The training of professionals consisted of 42 lessons with theoretical and practical approaches of the Basic Life Support and Advanced Cardiac Life Support, following international guidelines for standardizing on resuscitation¹⁷, using mannequins and dolls in the form of own equipment for training. The third stage occurred after the training, from July to October 2007, and again consisted of observation of 09 events CRA using the instruments I, II and III to evaluate the results of training. The instrument III was applied to all 42 members of the nursing staff of the ICU PS who underwent the training course to meet the CRA/CRR.

For statistical analysis, initially, we used calculations of frequency distribution and arithmetic means in III instrument. It was also used the calculation of indices of consistency and consistency (Cronbach's alpha). As the result of analysis, it was proposed training of the nursing staff care for the CRA and standardization of ICU care of the PS. The results of this training were assessed by the proportions test, analyzed descriptively and interpretively in the form of graphs.

The study was approved by the research project by the Ethics Committee in Research

of the Faculty of Medicine of Botucatu Committee, as opinion OF.150/2007-CEP.

RESULTS

In evaluating the care of CRA before and after training realized the proximity of the nursing staff with diagnostic CRA in 53,4% of cases in the first stage and 80,0% in the third step.

To describe the context in which the study took place, according to gender, in the first stage of the study, 60% of patients were male, and the third stage, 66,7% were female.

The mean of hospital stay was 3,4 days in the first step and 2,0 days in the third stage of the study. The mean of hospital stay in the first stage was 7 days and the third step of 9,9 days. Between admission and the date of admission, there was a difference of 3,7 days in the first step and 2,4 days in the third stage of the study.

In the first stage of the study, the initial rhythm asystole was found in 73,3% of cases, followed by 26,7% in pulseless electrical activity (PEA), 13,3% in ventricular fibrillation (VF) and 6,7 % in pulseless ventricular tachycardia (TVSP) and in the third step, asystole appears in 66,7% of cases followed by 33,3% in PEA. Among patients who needed to be defibrillated, these FV presented during the service during CPR maneuvers.

Regarding the time of the events in the first and third stages of the study, it was estimated a minute as the average difference between the arrival and called the team to provide care. The average difference between the start of CPR maneuvers and the arrival of the team to provide care was estimated in the first stage in a minute and thirteen seconds in the third stage of the study in a minute. In two of the cases studied in the first stage, the difference was negative between the arrival of the team and the start of the maneuver and in one case in the third step, because in these situations, the maneuvers were initiated by nursing staff who diagnosed CRA. The average of CPR duration was 20 minutes, both the first and the third step. The average time between the 1st dose of adrenaline and the start of CPR was estimated in two minutes in the first and third stages of the study.

The medical and nursing staffs were present in adequate amounts in CPR maneuvers in both steps.

The technical equipment problems and difficulty in handling the first stage appeared in 20% of treated cases. The equipment is functioning and found sufficient in 93%. In the third stage of the study were not found

technical difficulties in operation and handling of materials and equipment, as table 1.

Table 1. Difficulty with equipment and materials in the events of CRA/CRR in ICU-PS in the first stage of the study (n = 15) and in the third stage of the study (n = 9).

Variables	First Step (n=15)		Third Step (n=9)	
	Yes	No	Yes	No
Technical problems	3 (20%)	12 (80%)	0 (0%)	9(100%)
Difficulty of handling	3 (20%)	12 (80%)	0 (0%)	9(100%)
Well-functioning and sufficient equipment	14 (93,3%)	1 (6,7%)	9(100%)	0 (0%)

The difficulty in finding materials on the emergency crash cart appears in the first stage and disappears in the third step. And are shown in Table 2.

Table 2. Use of materials of the crash cart during the CRA/CRR in ICU-PS in the first step (n = 15) and in the third step (n = 9).

Variables	First Step (n=15)		Third Step (n=9)	
	Yes	No	Variables	Yes
Materials used of the crash cart	9 (60%)	6 (40%)	9(100%)	0 (0%)
Difficulty of finding materials on the crash cart	7 (46,7%)	8 (53,3%)	0 (0%)	9(100%)

It was observed that the treated patients had or had intravenous access installed, the administration of drugs occurred appropriately and advocated for these treatments and there was a member of the nursing staff responsible for the function of preparation and administration of drugs in both steps . Not the intratracheal route was used and when used the peripheral route, there was elevation of the limb in both steps.

As for the procedures performed in ACLS, chest compressions to the board were placed in 66,7% of cases in the first stage and 100% in the third step. The compression ratio asynchronous ventilation was in all cases in which the patient was making definitive airway 66.7% in the first step and 100% in the third.

The nurse began maneuvers external chest compression and ventilation assisted by two members of the nursing team in 86,7% of cases in the first stage and 100% in the third. The nurse took the ventilation and / or external chest compressions in 60% of cases in the first stage and 100% in the third step. In 60% of these visits chest compressions resulted in a total of 100 compressions per minute in the first stage and 100% in the third step. There was caster massager in 20% of cases of CRR in the first stage and 88,9% in the third stage, and 46,7% after two minutes of CPR was checked the pulse of the patient in the first stage and 100% of cases in the third stage of the study, as table 3.

Table 3. Procedures in ACLS in relation to definitive airway and CRR maneuvers in the first step (n = 15) and in the third step of the study (n = 9).

Variables	1ª STEP (n=15)		3ª STEP (n=9)	
	Yes	No	Yes	No
Ventilated patient with mask and ambu bag	3 (20%)	12(80%)	1 (11,1%)	8 (88,9%)
Placed massage Board	10 (66,7%)	5 (33,3%)	9 (100%)	0 (0%)
Compression ratio: ventilation Asynchronous	10 (66,7%)	5 (33,3%)	9 (100%)	0 (0%)
Nurse began manoeuvres with 02 members of nursing staff	13 (86,7%)	2 (13,3%)	9 (100%)	0 (0%)
A nurse took the compression manoeuvres and ventilation	12 (80%)	3 (20%)	9 (100%)	0 (0%)
External chest compressions has reached 100 com	9 (60%)	6 (40%)	9 (100%)	0 (0%)
There was caster Massager	3 (20%)	12(80%)	9 (100%)	0 (0%)
After 2 minutes of CRR was checked the pulse	7 (46,7)	8 (53,3%)	9 (100%)	0 (0%)

The record of the beginning and end of the events in the medical records was performed in 93.3% of cases in the first stage and 100% in the third step.

For statistical analysis of the Instrument III Chronbach α coefficient was calculated to evaluate the consistency and coherence in the first stage of the study. The value of α obtained was 0.33 and there was no change in this value when some questions were dropped. To compare the proportion of correct instrument III in the first and third stage of the study, we used the chi-square test. The results are shown in Table 4, a total of 50 and 42 forms, pre and post-test, respectively. The

results in this table were analyzed in three ways:

- 1) Not significant, ie, when we obtained percentages of correct answers that were already high in the first stage and remained high in the third stage or percentage of correct answers that were already low and remained low in the third step.
- 2) Significant, when the percentage of correct answers was low and increased percentage of correct answers in the third step.
- 3) A specific analysis for question number 20, which had a better outcome in the first

stage than in the third step contradicting expected. Question number 20 was referring about who is responsible for checking the crash cart.

Also compared with the instrument III the mean score obtained in the first and third stages, considering five points per correct answer. Obtained in the first stage, before the training, an average of 58,4 points, with 22% of employees had lower score 50 points. In the

third step, after training, there was a significantly higher average of 82,38 points ($p < 0,0001$ by Student's T test), and only 2,3% had lower grades to 50 points. Not proportions not matched by professionals who completed the instruments III, since it would be unethical to know who answered that does not conduct, therefore, a matching have been identified test.

Table 4. Comparison between the pre- and post-test.

Questions	Pre-Test	Post-Test	Cui-square	P-Value
1	94%	100%	0,8107	0,3679
2	14,29%	27,78%	1,5931	0,2069
3	48%	75%	5,2529	0,02191
4	16,33%	66,7%	20,3106	P<0,0001
5	90%	100%	2,2142	0,1367
6	60%	83%	4,353	0,03694
7	20,45%	69,44%	17,4926	P<0,0001
8	30%	86,11%	20,481	P<0,0001
9	4,17%	77,78%	10,0902	0,00149
10	55,10%	71,43%	1,6673	0,1966
11	74%	100%	9,0936	0,00256
12	81,25%	100%	5,727	0,01671
13	65,31%	88,89%	5,0015	0,02533
14	52%	62,86%	0,595	0,4405
15	87,76%	91,67%	0,0495	0,824
16	80%	91,67%	1,4041	0,2360
17	67,35%	91,97%	5,7401	0,01658
18	52,08%	63,89%	0,7383	0,3902
19	81,63%	94,44%	1,9933	0,158
20	72%	58,33%	1,1911	0,2751

DISCUSSION

Brazilian reality in the nursing staff who always stays at the bedside within 24 hours, with the first professionals to identify signs of CRA, the call for help, initiating CPR maneuvers, and bringing materials and equipment necessary for the care until the arrival of medical.¹⁸ This is a team with procedures contained with the patient and therefore closer to the patient.

In this study, male gender was predominant in the first and the third, the female. Researchers have paid increasing attention to the role of sex in cardiovascular disease in terms of risk, prognostic factors and differences in the treatment.¹⁹⁻²¹

The difference between the findings of residence time is justified by the severity of the patients. The time difference between the input and the ICU admission date is due to the fact that patients remain in the emergency rooms of the PS, before entering the ICU.

On the initial rate of CRA studies found different results uniformly observed that evaluated extra- hospital cardiac arrest, where the FV or TVSP appears as the initial rhythm in 80-90 % of cases, papers that analyze intra - hospital cardiac arrest presenting information several.²² Probably, the different characteristics of hospitals,

public and co - morbidities found in hospitalized patients are responsible for the different findings regarding the initial pace of CRA. The procedure for defibrillation is indicated for cases of VF / TVSP. In this study defibrillation occurred only in PV, present in the first and third stages, after the shock rhythm, immediately reset the CPR maneuvers with external chest compressions and rescue breaths.

In the daily work of professionals in the health field, it is common to observe situations that reinforce the importance of knowing the main aspects involving care of CRR¹⁸. Often the nursing staff PCR detects signals, triggers the emergency call, but does not initiate CPR maneuvers, merely carry resuscitation equipment to the bedside of the patient and await the arrival of the physician on duty. The time to onset of CPR in both stages of the study was less than 2 minutes, which confirms the results of several studies which claim that the success of CPR is directly proportional to a short time interval between collapse and start of emergency basic and / or specialized.²³

The number of people to meet, in general, should be around four to five because the turmoil during the service affect the actions taken and also the setting for the elements of leadership and follow up actions.^{9,24} As in our reality is the nursing staff who remains 24 hours a day by the bedside of the patient,

usually one of their members that detects CRA. Thus it is very important that these professionals are trained to start the CPR maneuvers until the arrival of the medical team.

The ICU has been understood as a physical space, endowed with human and material resources appropriate to the prompt and efficient service to severe, potentially recoverable.¹⁸ Patient One of the functions of the nursing staff is to keep the materials and necessary equipment, such as ventilation equipment, cardiac monitoring, defibrillation, drugs, among others, for the care of a patient victim of CRA. The deficiencies in emergency care are related to the lack of definition of tasks between the elements that make up the care team, coupled with the lack of coordination of activities and specific training as well as failures in the supply of appropriate material and equipment. The difficulty in finding materials on the emergency cart appears in the first stage and disappears in the third step, since this procedure was discussed and emphasized in the second stage, when the training of staff for the care of CRA/CRR.

The main routes of drug administration are the central and peripheral, endotracheal, and intraosseous intracardiac intravenously. Among these pathways, the first choice is intravenous, followed by endotracheal when you cannot get a line IV. There is recommended specific care, mainly for peripheral intravenous and intratracheal.

All results discussed in relation to proceedings before the ACLS showed better definition of tasks in the third stage of the study, reinforcing the importance and results of the training staff to provide the service of CRA/CRR according to table 3.

The main difficulty observed in a study of coronary care unit in the CRA was the lack of information regarding compliance with CRA in patients' medical records.²³ The record of CPR maneuvers required by law, doctors and nurses through the regulations urgent care and emergency respective professional bodies. We found that the registration of nursing notes was poor in the 1st stage of the study and after the training of the nursing staff care for the CRA/CRR were recorded at all visits.

In the application form for assessing knowledge about the care of CRA/CRR could observe the ignorance of the subject matter by the officials and realized the need for training. A study of the nursing staff of an Intensive Care Unit about their knowledge of CRA and CRR also found that the majority of

participants (84,6 %) were unable to correctly identify a CRA and 34,6 % were unaware of the medications used; what may compromise the initial management, organization and rapidity of maneuvers.²⁵

It is recommended that all health services perform CPR training periodically, in order to train teams for a quick, safe and effective care, within what is recommended by the AHA.^{9, 14,17} Therefore, we believe that the existence of a protocol in the ICU-PS is a strategy to improve this care, however, in the second stage of the study was to elaborate training of the nursing staff following standardized by international resuscitation guidelines adapted to the actual situation protocols.

CONCLUSION

The observation of the events of CRA/CRR in the first step subsidized the development of a course, following the current concepts of standardization for team training.

The form containing multiple-choice questions that evaluate theoretical and practical concepts about the care of CRA/CRR allowed a general assessment of understanding of the subject, since the mean score increased significantly after the training of the nursing staff.

The training course offered to the nursing team in the second stage of the study reached 76.4% of the total staff in this unit and provided theoretical and practical information that this service be performed safely and efficiently, since it was based on guidelines care of CRR and standardized procedures and flows.

The observation of the events of CRA/CRR in the third stage, through the application of Form III study demonstrated an improvement in the care of the nursing staff from basic life support to advanced, since in all items jumped to 100% success.

With this study we noticed an improvement in the attendance of CRA/CRR. Problems still exist as shown in the results obtained in the evaluation of knowledge of the nursing team. Thus, we suggest that nursing staff participate in regular training courses and continuing education to update the theoretical and practical knowledge.

It is important to reinforce the need to standardize the care of CRA/CRR and that this model should be adopted for other inpatient units.

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