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Knowledge of nursing students about cardiac stop and cardiopulmonary reanimation

Conocimiento de estudiantes de enfermería sobre parada cardíaca y reanimación cardiopulmonar

Conhecimento de discentes de enfermagem acerca da parada cardíaca e reanimação cardiopulmonar

ABSTRACT

Objective: to evaluate the knowledge of nursing students about cardiopulmonary arrest and cardiopulmonary resuscitation
Methods: this is a descriptive, exploratory study with a quantitative approach carried out with students in the last year of the Nursing course at a university center in the Northeast
Results: 200 students participated in the study, 89% were female, the most prevalent age group was 20 and 24 years old (35%), 60.5% reported knowing how to identify the clinical symptoms of a CRP, 82% expressed knowledge about the correct conduct after recognition, only 50.5% were assertive about chest compressions in the child, 60% were able to identify Ventricular Fibrillation (VF) and Ventricular Tachycardia (VT) as a shockable rhythm and 48.5% stated that epinephrine is the drug of first choice in cases of cardiac arrest.
Conclusion: it is concluded that the level of knowledge of the respondents is low and this leads to their inability to care for victims in cardiorespiratory arrest.

DESCRIPTORS: Cardiac Arrest; Cardiopulmonary Resuscitation; Students, Nursing; Education, Nursing.

RESUMEN

Objetivo: evaluar el conocimiento de los estudiantes de enfermería sobre parada cardiorrespiratoria y reanimación cardiopulmonar
Métodos: se trata de un estudio descriptivo, exploratorio con abordaje cuantitativo realizado con estudiantes del último año de la carrera de Enfermería en un centro universitario del Nordeste
Resultados: En el estudio participaron 200 estudiantes, el 89% eran mujeres, el grupo de edad más prevalente fue el de 20 y 24 años (35%), el 60,5% informó saber cómo identificar los síntomas clínicos de una PCR, el 82% expresó conocimiento sobre la conducta correcta después del reconocimiento, solo el 50,5% se mostró firme sobre las compresiones torácicas en el niño, el 60% pudo identificar la fibrilación ventricular (FV) y la taquicardia ventricular (TV) como un ritmo desfibrilable y el 48,5% afirmó que la epinefrina es el fármaco primera elección en casos de paro cardíaco.
Conclusión: se concluye que el nivel de conocimiento de los encuestados es bajo y esto conduce a su incapacidad para atender a las víctimas en parada cardiorrespiratoria.

DESCRIPTORES: Paro cardíaco; Reanimación cardiopulmonar; Estudiantes de Enfermería; Educación en Enfermería.

RESUMO

Objetivo: avaliar o conhecimento de discentes do curso de Enfermagem acerca da parada cardiorrespiratória e reanimação cardiopulmonar
Métodos: trata-se de uma pesquisa descritiva, exploratória com abordagem quantitativa realizada com alunos do último ano do curso de Enfermagem de um centro universitário do Nordeste
Resultados: 200 discentes participaram do estudo, 89% eram do sexo feminino, a faixa etária mais prevalente foi 20 e 24 anos (35%), 60,5% relatam saber identificar os sintomas clínicos de uma PCR, 82% expressaram conhecimento sobre a conduta correta após o reconhecimento, apenas 50,5% foram assertivos quanto às compressões torácicas na criança, 60% souberam identificar a Fibrilação Ventricular (FV) e Taquicardia Ventricular (TV) como ritmo chocável e 48,5% afirmaram que a epinefrina é a droga de primeira escolha nos casos de parada cardíaca.
Conclusão: conclui-se que nível de conhecimento dos pesquisados é baixo e isso leva-os à inaptidão para o atendimento de vítimas em parada cardiorrespiratória.

DESCRIPTORIOS: Parada Cardíaca; Ressuscitação Cardiopulmonar; Estudantes de Enfermagem; Educação em Enfermagem.

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INTRODUCTION

Cardiorespiratory arrest (CRP) is defined as the interruption of oxygen supply, which occurs due to some circulatory or respiratory deficiency. CRP happens mainly when the heart stops pumping blood to the body or when it beats in a disordered way, thus not having an adequate cardiac output.¹

According to Lima and Invenção², in CRP the main symptom is loss of consciousness, respiratory movements and central pulse, requiring immediate interventions, as the lack of oxygen in the blood and tissues can cause irreversible injuries or even death. In Brazil, it is estimated, annually, 300 thousand victims of CRP, with cardiovascular origin between 70% and 80% of the cases, 88% resulting from some arrhythmia.³

When considering the forms of prevention of CRP, it is highlighted that automation, through continuous monitoring, and the level of knowledge of nursing staff professionals in the face of a deteriorating patient can contribute to prevention⁴, as well as the implementation of a duly trained rapid response team, aiming at reducing the occurrence of CRP.⁵ It is therefore important to carry out a continuing education of the

team in accordance with national and international guidelines for adequate care in the face of a CRP^{4,6} as a prevention strategy, early diagnosis and successful care, as the patient's prognosis is directly related to the speed and effectiveness of the team's actions.⁷

In this scenario, despite advances in prevention, CRP is still one of the most recurrent cardiovascular emergencies in Brazil. Epidemiological data are insufficient, but show that the main rhythms that cause CRP in the out-of-hospital environment are Ventricular Tachycardia (VT) and Ventricular Fibrillation (VF), in the in-hospital environment, Pulseless Electrical Activity (PEA) is the main cause.⁸

CRP is considered a very common health complication and can occur in an out-of-hospital setting, in emergency care, urgent and emergency units, intensive care units, in addition to other hospital sectors and common places. Among the causes of this aggravation are: trauma, shock and situations of heart failure or acute myocardial infarction.⁹

In the face of a CRP, it is necessary that the professional is qualified or has training to perform quality cardiopulmonary resuscitation (CPR). Therefore, some methods must be followed: safety

in place, assess breathing and check the central pulse simultaneously, in addition to performing chest compressions and ventilations, following a ratio of 30 chest compressions for every 2 breaths.¹⁰

The success of CPR is entirely linked to its rapid recognition, activation of the Urgency and Emergency service, the immediate start of resuscitation maneuvers and early defibrillation.¹¹ According to the 2019 updates to the American Heart Association (AHA) guidelines¹² for CPR and Cardiovascular Emergency Care, first aid can be initiated by anyone and help the chain of survival. However, it is known that the nurse as a team leader has a crucial role in assisting a PCR, since the team's attunement, as well as the knowledge about the correct maneuvers to be performed, are essential for the care to be performed in a fast and safe.¹³ It is worth mentioning that the nurse is fundamental in the delegation of tasks to the team members during a CRP for the success of the care.¹⁴

Some studies demonstrate the deficit presented by nursing students regarding knowledge in CRP and CPR maneuvers. Among the main weaknesses pointed out are: conduct after the detection of CRP, identification of shockable rhythms and depth of chest compression.¹

Evaluating the teaching and learning method is necessary among nursing students. Thus, it is necessary to invest in new teaching methodologies because the quality of these methods is fundamental for the reliability and quality of future professionals.¹⁵

According to Morais, Costa, Silva and Rodrigues¹⁶, it is necessary to increase the number of studies on the subject, as this will allow them to adopt good practices and improve the quality of care. It is known that CRP is a very serious event with high mortality rates, constituting a public health problem. Thus, the objective was to evaluate the knowledge of nursing students about Cardiopulmonary Arrest and Cardiopulmonary Resuscitation.

METHODS

The present study is a descriptive, exploratory research with a quantitative approach carried out in a Higher Education Institution (HEI) in Sergipe.

The sample consisted of students from the undergraduate nursing course in the last year, and defined by convenience, according to the availability of students to participate in the research. As guiding questions we have: "do the students express desirable knowledge about the theme?"; "Are they able to assist a victim of CRP?". As an inclusion criterion, students needed to be enrolled and attending the last year of graduation, and accept to participate voluntarily. Those who refused to participate were excluded from the study. Data collection took place in May 2020 through an instrument created by researchers using Google Forms. The consent form was signed electronically, this being the first stage of the data collection instrument. The collection took place via e-mail, respecting the social isolation standards of the country's health authorities due to the COVID-19 pandemic. We have the support of the academic nucleus of the HEI nursing course in obtaining electronic contact

with students. The obtained information was stored in Microsoft Excel 2020 and analyzed in a descriptive manner, calculating the absolute and relative frequencies of the studied variables. This study was approved by the Ethics and Research Committee of Centro Universitário Estácio de Sergipe under number CAAE 32543020.0.0000.8079.

RESULTS

116 students from the 9th period and 84 from the 10th period participated in this research, totaling a sample of 200 students of the Nursing undergraduate course, out of a total of 258 students enrolled in these semesters (161 on the

9th, 97 on the 10th), both corresponding to the last year undergraduate nursing course.

A higher prevalence is observed in the age group between 20 and 24 years. As for gender, the most present was the female. Most of the participants live in the capital of the state of Sergipe and have no employment relationship (Table 1).

Regarding the recognition of cardiac arrest and conducts, 60.5% of the students got the clinical signs right for their identification. Regarding conduct after recognition, 82% were successful in their responses. As for chest compressions and chest depth in adults, those surveyed were correct in 69,5% and 76%, respectively, considering only 1 rescuer; to child

Table 1. Characterization of nursing students.

Período acadêmico	N	%
9º período	116	58
10º período	84	42
Sexo		
Feminino	178	89
Masculino	22	11
Faixa etária		
20-24 anos	70	35
25-29 anos	53	26,5
30-34 anos	32	16
35-39 anos	25	12,5
> 40 anos	20	10
Raça/Cor autodeclarada		
Branca	32	16
Negra/Preta	26	13
Parda	142	71
Residência atual		
Aracaju/SE	146	73
Interior do estado	54	27
Vínculo empregatício		
Sim	45	22,5
Não	118	59
Auxiliar e/ou técnico em enfermagem	37	18,5
TOTAL	200	100

Source: research data, 2020.

Table 2. Distribution of correct answers about clinical signs of arrest, recognition and conduct after recognition, number and depth of compressions in adults, children and babies.

Questionamentos	N	%
Perda de consciência e ausência de pulso carotídeo	121	60,5
Verificar responsividade, respiração e pulso central, quando ausente, pedir ajuda e iniciar RCP	164	82
100 a 120 compressões por minuto no adulto	139	69,5
30 compressões para 2 ventilações considerando 2 socorristas no adulto	156	78
2 - 2,4 (5 a 6 centímetros) no adulto	152	76
30 compressões para 2 ventilações considerando 1 socorrista na criança	101	50,5
15 compressões para 2 ventilações considerando 2 socorristas na criança	96	48
2 polegadas (5 cm) na criança	94	47
30 compressões para 2 ventilações considerando 1 socorrista no bebê	89	44,5
15 compressões para 2 ventilações considerando 2 socorristas no bebê	104	52
1,5 polegadas (4 cm) no bebê	162	81

Source: research data, 2020.

Table 3. Distribution of correct answers about the survival chain, location for the use of cardiac compressions in adults, children and babies, and compression behavior in front of the advanced airway.

Questionamentos	N	%
CABD	112	56
Metade inferior do esterno no adulto	107	53,5
Metade inferior do esterno na criança	101	50,5
Centro do tórax, logo abaixo da linha mamilar no bebê	108	54
Considerando 2 socorristas, simultaneamente	46	23

Source: research data, 2020.

Table 4. Distribution of correct answers about shockable rhythms, drug of first choice, intervals and dose, route of administration in view of the impossibility for PVA

Questionamentos	N	%
FV/TV	120	60
Epinefrina	97	48,5
Epinefrina, 1mg, intervalo de 3 minutos.	90	45
TOT	77	38,5

Source: research data, 2020.

Table 5. Distribution of data on EAD function and operation, respectively.

Questionamentos	N	%
Identificar ritmos chocáveis, chocá-los e avaliar constantemente	177	88,5
Qualquer pessoa	93	46,5

Source: research data, 2020.

care, the data related to chest compressions with 1 and 2 rescuers and chest bulging were not satisfactory, 50,5%, 48% and 47%, respectively. (Table 2)

Regarding the survival chain and location for the use of cardiac compressions in adults, children and babies, more than 50% answered the question correctly, and when asked about the conduct of compressions in front of the advanced airway, considering 2 rescuers, the result was not satisfactory, with only 23% of correct answers. (Table 3)

When asked about the cardiac rhythms characteristic of a CRP in which the application of electric shock is proposed, it was found that fV/Vt are shockable rhythms, and 60% of the students were correct. About the drug of first choice, epinephrine is the main one and consists of the application of 1mg with an interval of 3 minutes. The students were not successful in this questioning and only 48,5% were correct (Table 4).

Regarding the External Automated Defibrillator (EAD), most of the students stated that it is able to identify shockable rhythms, shock them and constantly evaluate, and only 46,5% that anyone can operate it (Table 5).

DISCUSSION

The present study highlighted the importance of technical-scientific research on the level of knowledge of future nurses about CRP and CPR, since they will routinely experience urgent and emergency situations and will need to be prepared to perform appropriate conducts for the quality of care, as well as the management of actions for better service efficiency.

The clinical signs of CRP are: lack of responsiveness, breathing and central pulse. These are the main signs for identifying one of the biggest emergencies in the world: cardiopulmonary arrest.¹⁸

In this study, 60,5% of the students were successful in this questioning, showing adequate knowledge of the signs and symptoms of CRP. Corroborating

the data found, the study developed by Oliveira, Santos and Zeitoun¹ mostrou que 55% dos alunos souberam reconhecer os sinais de parada.

According to Semensato¹⁹, the ideal conducts after the recognition of the CRP are: the activation of the urgency and emergency service, which, in Brazil, is the Mobile Emergency Care Service (SAMU 192), and the immediate start of chest compressions, since it is a time-dependent situation.

Regarding the number of compressions and adequate depths during adult CPR, 69,5% of the participants demonstrated adequate knowledge. In addition, they showed to understand the importance of adequate depth of cardiac compressions, allowing blood return and keeping blood circulating, 76%.

There is a difficulty in assimilating the topics: compression and depth when it comes to the baby and the child, thus configuring an insufficient knowledge for assistance in pediatric PCR. Only 44,5% were assertive when they stated that in the CPR situation with 1 rescuer, 30 compressions should be performed for 2 breaths in the baby, and only 47% stated that a quality CRP should bulge the child's chest 2 inches. Silva, Maximino, Souto and Virgínio²⁰ they also achieved worrying results in their research with the predominance of inadequate answers to these questions.

The chain of survival must follow the CABD algorithm (Circulation, Airway, Breathing, Defibrillation), according to the AHA.¹⁷ Just over half of the graduates (56%) know the steps of the survival algorithm correctly. This finding is similar to that of the study by Caveião, Sales, Brey, Scussiato, Carneiro and Oliveira²¹, in which a deficiency in the level of theoretical knowledge of academics was identified, according to the AHA cardiopulmonary resuscitation guidelines.

Regarding the place of applicability for cardiac compressions in adults, children and babies, there is a difficulty in understanding this theme. A very worrying fact is that only a small part of the

students mastered the knowledge about the relationship of the definitive airway and the need for compressions and ventilations, simultaneously, 43%.

According to the I Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Directive of the Brazilian Society of Cardiology²², in patients with advanced airways, compressions must be uninterrupted and simultaneous to ventilations.

According to the AHA¹⁷, shockable rhythms in a cardiorespiratory arrest are ventricular fibrillation (VF) and ventricular tachycardia (VT). In this regard, the majority of students demonstrated to master this knowledge (60%). In the study by Costa, Damascena and Batista²³, the students, in addition to not correctly answering the question about shockable rhythms, also did not know what were the possible arrhythmias in a patient victim of CRP.

When it comes to the drug of first choice, dose and intervals, the result is worrying, since less than half of the interviewees demonstrated knowledge. Only 48,7% and 45%, respectively, demonstrated mastery of this knowledge. Most are unaware and confuse drugs that have different therapeutic indications.

The first choice drug in a CRP is Epinephrine, being administered 1mg every 3 to 5 minutes, as it is associated with better survival and greater neurological benefit.¹⁷

Melo, Gresta, Vasconcelos, Serufo and Oliveira²⁴ stated that the preferred route of administration of medication in a PCR is the large-caliber Peripheral Venous Access (PVA), and in case of impossibility, the Oro Tracheal Tube (OTT) is preferable as the route of administration. The occurrence of AVP loss or difficulties in achieving it is real, making this knowledge so important. A very low number of students (38,5%) was assertive when asked. Most showed total unpreparedness on this point.

The EAD has the function of restoring the heart rate and should be used in emergencies, be handled by firefigh-

ters, paramedics, trained policemen, nursing technicians, nurses and lay people, as long as they have some type of guidance.⁸

Almost all students understand the EAD's functions of constantly identifying shockable rhythms, shocking and evaluating them (88,5%). However, they have great deficiency in understanding when to use and who can operate the EAD. Only 46,5% demonstrated the desired knowledge, agreeing with Caveião, Sales, Brey, Scussiato, Carneiro and Oliveira²¹, who found that few academics had adequate knowledge about the use of EAD, as well as Pereira, Oliveira, Baldissera and Jaques²⁵ demonstrate in their studies that students have difficulties in understanding the functions of the EAD and who can operate it.

Some points were identified with a consistent deficiency: the compression-to-ventilation ratio and use of advanced airways, most students (56,5%) showed that they believe that in the situation of 2 rescuers on the scene, 30 compressions should be offered to the victim and 2 ventilations; first choice drug, 45,5% believe that noradrenaline should be this drug; dose and intervals of the drug, 38,5% answered that noradrenaline in the dose of 3mg and in intervals of 3 minutes should be applied in the CRP; and, finally, the centimeters that should bulge the child's chest in CPR, 48% selected the option that corresponded to 1,5 inches (4cm).

CONCLUSION

The study made it possible to assess the knowledge of the respondents about CRP and the conducts to be performed in the case of CPR. Given the above, it is concluded that the theoretical knowledge related to cardiopulmonary arrest and cardiopulmonary resuscitation of the respondents is incipient for the care of victims in CRP, which leads to the training of professionals unprepared for care, even if these issues are addressed in subjects during graduation.

However, it was found that most students have adequate knowledge to identify the signs and symptoms of CRP. The results demonstrated the important

ce of a continuous approach to the subject in question during undergraduate nursing. It is noteworthy that, even if there is a quality professional training,

the nursing team must receive periodic training on the care of a CRP, since the national and international guidelines are constantly updated. ■

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