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Original Article

CONHECIMENTO DE ACADÊMICOS DE ENFERMAGEM SOBRE A REANIMAÇÃO CARDIOPULMONAR

CARDIOPULMONAR KNOWLEDGE OF NURSING ACADEMICS ON CARDIOPULMONARY REHABILITY

CONOCIMIENTO DE ACADÉMICOS DE ENFERMERÍA SOBRE LA REANIMACIÓN CARDIOPULMONAR

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RESUMO

Objetivos: Este estudo teve como objetivo avaliar o conhecimento teórico dos acadêmicos do curso de enfermagem de uma Universidade da Grande Florianópolis/SC sobre reanimação cardiopulmonar. **Método:** É uma pesquisa quantiqualitativa, exploratória e descritiva, utilizando como instrumento de coleta de dados um questionário semiestruturado. Os participantes foram 21 acadêmicos do curso de enfermagem, matriculados no último semestre do curso, no ano de 2016. Para análise dos resultados, foi utilizado o método de análise de conteúdo de Bardim e o programa *Microsoft Office Excel Versão 2007*. **Resultados:** Os resultados mostraram que a idade dos participantes variou entre vinte e dois a quarenta e nove anos, sendo a média de 31,57 anos, predominando o sexo feminino. Em relação à atuação na área da saúde, quatorze (66,6%) já trabalham neste campo e se sentem preparados para atender uma parada cardiorrespiratória. No que diz respeito às drogas utilizadas na recuperação cardiopulmonar, ritmos chocáveis, ventilação e compressão adequada, os resultados foram satisfatórios. **Conclusão**: Salienta-se a importância na formação profissional tendo como um dos enfoques a reanimação cardiopulmonar. Este estudo poderá contribuir para discussões acerca da intensificação na formação dos acadêmicos de enfermagem nos conteúdos teóricos e práticos relacionados à parada cardiorrespiratória e manobras de reanimação cardiopulmonar.
Descritores: Parada Cardíaca; Reanimação Cardiopulmonar; Aprendizagem; Estudantes de enfermagem.

ABSTRACT

Objective: This study aimed to evaluate the nursing students' theoretical knowledge of a University of Greater Florianópolis/SC about cardiopulmonary resuscitation. **Method:** It is both quantitative and qualitative, exploratory and descriptive research, using as a data collection instrument a semi-structured questionnaire. The participants were 21 undergraduate nursing students enrolled in the last semester of the course in the year 2016. For the results analysis, the Bardim content analysis method and the *Microsoft Office Excel Version 2007* program were used. **Results:** The results showed that participants' age ranged from twenty-two to forty-nine, with a mean of 31.57 years, predominantly female. In relation to health work, fourteen (66.6%) already work in the area and feel prepared to attend a cardiorespiratory stop. Regarding the drugs used in cardiopulmonary recovery, shockable rhythms, ventilation and adequate compression, the results were satisfactory. **Conclusion**: It is important to emphasize the importance of professional training with one of the approaches to cardiopulmonary resuscitation. This study may contribute to discussions about the intensification of nursing students training in theoretical and practical contents related to cardiopulmonary arrest and cardiopulmonary resuscitation maneuvers.
Descriptors: Heart arrest; Cardiopulmonary resuscitation; Learning; Students Nursing.

RESUMEN

Objetivo: Este estudio tuvo como objetivo evaluar los conocimientos teóricos de los alumnos del curso de enfermería de la Universidad de Florianópolis / SC en la reanimación cardiopulmonar. **Método:** Se trata de una investigación cuantitativa y cualitativa, exploratoria y descriptiva, utilizando como instrumento de recolección de datos un cuestionario semi-estructurado. Los participantes fueron 21 estudiantes del programa de enfermería inscritos en el último semestre del año 2016. Para el análisis de datos se utilizó el método de análisis de contenido Bardim, y *Microsoft Office Excel versión 2007*. **Resultados**: Los resultados mostraron que las edades de los participantes variaron entre veintidós y cuarenta y nueve años, con una media de 31,57 años, predominantemente mujeres. En cuanto a la actuación en el área de salud, catorce (66,6%) ya están trabajando en este campo y se sienten preparados para responder a un paro cardiopulmonar. En cuanto a los fármacos utilizados en la recuperación cardiopulmonar, ritmos susceptibles de choque, ventilación y compresión adecuada, los resultados fueron satisfactorios. **Conclusión**: Se hace hincapié en la importancia de la formación con uno de los enfoques para la reanimación cardiopulmonar. Este estudio puede contribuir a discusiones acerca de la intensificación en la formación de los académicos de enfermería en los contenidos teóricos y prácticos relacionados a la Parada Cardiorrespiratoria y maniobras de Reanimación Cardiopulmonar.
Descriptores: Paro cardíaco; Resucitación Cardiopulmonar; Aprendizaje; Estudiantes de Enfermería.

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INTRODUCTION

The cardiorespiratory arrest (CA) is a dramatic event, causing a high degree of morbidity and mortality, even if adequate support is available. The cardiopulmonary resuscitation (CPR) consists of a set of maneuvers that help restore the proper oxygenation, ventilation and circulation, regaining the neurological function without sequelae, according to the American Heart Association (AHA)[1]. Even with effective cardiopulmonary resuscitation maneuvers, the probability of reversing the CA varies, considering that these results are directly related to the initial cardiac rhythm and the early onset of CPR, this incidence can double or triple if these maneuvers are performed properly[2].

There are several differences between the CPR performed within and outside the hospital environment, which includes the location of care, time-response for the initiation of the maneuvers, type of equipment available, patient profile and baseline disease, and initial heart rate[3]. The Brazilian Society of Cardiology (Sociedade Brasileira de Cardiologia - SBC) points out that the ventricular fibrillation (VF) and pulseless ventricular tachycardia (VT) are the most frequent rhythms found outside the hospital environment; however, in the hospital setting, the pulseless electrical activity (PEA) and asystole are the most frequent. It happens because the CA in an inpatient usually occurs due to a possible progressive clinical deterioration, whereas in patients outside the hospital, most CA are sudden and derive, in most cases, from arrhythmias resulting from acute ischemic conditions or to primary electrical problems[4].

It should be highlighted that the knowledge about this subject is of great importance for providing care that is anchored in good practice, recommended by strong evidence and, thus, culminating in a safe and high quality care.

For providing satisfactory care to CA patients, the performance of a trained and qualified team, appropriate drugs, equipment and an adequate environment to attend the patient with spontaneous circulation restoration (SCR) are indispensable, in order to offer this victim the same neurological level as before.

Unfortunately, even today, the knowledge and skills about CPR among health professionals are still scarce, causing detriment to patients. Due to that, the constant updating and investment in training and qualification are key for improving the team's performance in supporting and caring for the lives of many patients[5].

Despite the focus on improving the CPR process and the investment that most health institutions make, providing training to health professionals, the CA remains a worldwide public health problem due to its high mortality rate[6].

The need for constant updating and investments in studies and research regarding the CPR area can ALSe many lives and minimize the risks of sequelae. The nurses, professionals who work full time, directly in the care of serious patients should be highlighted. The care provided to the patient by the nurse may reflect on the success of the resuscitation maneuvers as well as on the outcome of the patient. Thus, it is essential that the professional is able to perform the appropriate maneuvers for an emergency intervention. Therefore, the technical-scientific competence of nurses is as paramount as the establishment of protocols that aim at the organization and synchronization of the behaviors in these kind of situations[7].

Thus, the nurse must develop, as a caregiver, skills of observation, communication, reflection, application of scientific knowledge, leadership and decision-making[8]. This constant update provides greater safety, knowledge and skills for the care and, consequently, it improves the quality of the care provided. Due to that, it is recommended that greater investments from health institutions and from the professionals themselves are made in programs of permanent and continuous education based on the real difficulties faced by these professionals[9].

The interest in this research arose from the concern of the researchers on disciplines that discuss critical health situations, pointing out that the adequate knowledge about a quality CPR care can have a positive impact on the patients' lives. Therefore, it was listed as a guiding question of this research: how do undergraduate nursing students assess their knowledge regarding the cardiorespiratory arrest?

Thus, the objective of this research is to assess the theoretical knowledge of the nursing undergraduate students of a private university in the region of greater Florianópolis/SC, about the CA.

METHOD

It is a quantitative and qualitative, exploratory, field prospective and descriptive research. It was conducted at a private university in the greater Florianópolis/SC region, with 21 students enrolled in the last period of the nursing undergraduate course. The data collection was carried out in September 2016. The research participants were identified as A1, A2, and so on. For the data collection, a semi-structured questionnaire was used. The inclusion criteria were: undergraduate students enrolled in the 10th period of the academic semester of 2016 of both genders, enrolled in the daytime and nighttime shifts of the course, aged over 18, who have signed the Free and Informed Consent Term (FICT). According to the criteria, the nursing students who were away during the data collection period, those who did not attend the scheduled meeting to respond to the questionnaire or those who did not agree to participate in the study were excluded. For the analysis process, the Bardin's Content Analysis method[10] was used along with a reflexive and critical analysis, culminating in the coding and categorization of the results in the Microsoft Office Excel Version 2007 program for simple and percentage frequencies, represented graphically for a better visualization. The research was approved by the Research Ethics Committee under the Opinion No. 1.516.012.

RESULTS AND DISCUSSION

The results showed that the age of the students ranged from twenty-two (22) to forty-nine (49) years old, with an average of thirty-one (31) years old, being the female gender predominant with 71.4%. The female supremacy and the average age of the nursing professionals is shared by other authors, reproducing the historical peculiarity of nursing, which is a profession characterized by being practiced almost exclusively by women since its beginning[9].

The research results showed that only 7 (33.3%) participants have some type of training in CPR, besides the one provided during the graduation. It is very common for the student to have a previous job in the health area or another occupation for being able to pay for their studies, highlighting that 14 (66.6%) work in the health area. This professional activity characteristic, carried out during the academic training process, allows the continuous education and the accomplishment of specific training as observed in 7 (33.3%) of the participants of the research.

Regarding the CA heart rates, according to the results presented in Table 1, 18 (85.7%) participants correctly identified these rhythms. Only 1 (4.7%) participant identified the Atrial Fibrillation (AF) at the expense of the FV. The FV is the arrhythmia that is most commonly responsible for cases of sudden death, and it is frequent in patients with a previous heart condition. It presents a high chance of reversion, especially if treated early.

The academy holds the responsibility of preparing competent professionals for working in the nursing area. The nursing course contemplates in its curriculum contents related to the CA and CPR in order to provide the knowledge and instrumentalize the student to carry out the activities that are inherent to their future profession.

Considering that in the hospital environment nurses are often the first professionals to identify a CA and to initiate the BSL (basic support of live) maneuvers while awaiting the ALS (advanced life support), there is the need for investments in training, both of the nurse and of the entire nursing team[9].

The impact of a permanent training program on BSL and ALS for the nursing professionals' knowledge reveals that the total percentage of the nursing team performance increases by more than 90% after the training[11]. This data reaffirms the need for structuring a continuing education in health as a mechanism that will contribute to the improvement of CPR success rates. Having that said, the academy has a fundamental role in favoring and facilitating the access to scientific knowledge with the objective of preparing professionals who are capable of exercising their profession. The results of the research corroborate the literature and show that there is still the need for broadening the knowledge regarding the mentioned topics[12].

According to the literature, in order to increase the chances of reversion of a CA, it is necessary to correctly identify the rhythm, so that appropriate and directed maneuvers can be implemented according to its corresponding variations[5]. From this, the need for a scientific technical preparation of professionals to recognize different heart rhythms arises[13]. The scientific technical

knowledge inherent to health professionals may favor or not the quality of the care provided[9].

Regarding the main drugs used to treat CA victims, the results showed that 14 (66.6%) respondents correctly reported that epinephrine is the first-line drug used in the CA treatment. Among the others, 4 (19.5%) indicated noradrenaline, and 14.2% indicated atropine (Table 1). When questioned about the appropriate recommendations for a high-quality CPR according to the AHA guidelines (2015), most of the sample, equivalent to 18 (85.7%), adequately answered regarding the main maneuvers to be followed (Figure 1).

Regarding the administration of the necessary drugs during the CPR, studies show that there should be an increase in the nurses' knowledge about the medication used in the CPR[11], since the difficulty in identifying the necessary demands to provide a quality CPR is closely related to the pathophysiological knowledge of the health problem and its demands. In this sense, this study favorably identified that most of the participants have knowledge regarding the drug of choice used in a CA.

Continuous and permanent education of the nursing team in the health institutions presents favorable results, showing a possible strategy to be used in order to promote quality patient care[11].

Until now, every five years, AHA[1], which brings together technical professionals from different countries of the world, presents its 'Guidelines for patient care in CA', suggesting several recommendations that are widely used by different countries, including Brazil. Among them, proper recommendations for a high quality CPR and adequate respiratory rate after establishing an advanced respiratory tract.

The results of this research revealed that there is a discrepancy between the recommended and the reported. Studies corroborate the results obtained and reinforce the obligation of health professionals to carry out a continuous and permanent education[14].

Figure 1 – Nurses' academic knowledge about heart rhythms, drugs used in a CA, and the AHA (2015) recommendations for a quality CPR - São José, Santa Catarina, Brazil**.**

Questions	Answers	No. (%)
Shocking cardiac rhythms of cardiorespiratory arrest	Pulseless ventricular tachycardia; Ventricular fibrillation; Pulseless electrical activity.	18 (85.7%)
	Pulseless ventricular tachycardia; Atrial fibrillation; Pulseless electrical activity.	2 (9.5%)
	Pulseless ventricular tachycardia; Ventricular fibrillation; Atrial flutter.	2 (9.5%)
	Atrial tachycardia with blockade; Ventricular fibrillation; Pulseless electrical activity.	0 (0%)
First-choice drug used for patient care in a CA	Noradrenaline	4 (19%)
	Atropine	3 (14.2%)
	Epinephrine	14 (66.6%)
	Amiodarone	0 (0%)
Proper recommendations for a high quality CPR according to the AHA (2015) guidelines.	30 compressions for 2 ventilations, starting with the ventilation; frequency of approximately 100 compressions per minute; thoracic compression with a minimum depth of 5 cm, respecting the total thoracic wall return; prioritizing the excessive ventilation.	2 (9.5%)
	30 compressions for 2 ventilations, starting with the compression; minimum frequency of 100 compressions per minute; thoracic compression with a minimum depth of 5 cm, respecting the total thoracic wall return; avoiding excessive ventilation.	0 (0%)
	30 compressions for 2 ventilations, starting with the	18 (85.7%)

	compression; minimum frequency of 100 and maximum of 120 compressions per minute; thoracic compression with a minimum depth of 5 cm and never exceeding 6 cm, respecting the total return of the thoracic wall; avoiding excessive ventilation.	
	15 compressions for 2 ventilations, starting with the ventilation; minimum frequency of 100 compressions per minute; thoracic compression with a minimum depth of 5 cm, respecting the total thoracic wall return; prioritizing excessive ventilation.	1 (4.7%)

Source: Elaborated by the authors, 2016.

The AHA guidelines present several recommendations to be used for a better performance of health professionals in CPR. Therefore, regarding the frequency of ventilation with an advanced airway already established, only 6 (8.5%) participants agreed that the adequate respiratory rate, once established by the advanced airway, is between 8 to 10 per minute. Five (38.1%) reported that they would follow the same frequency of 2 ventilations every 30 compressions, 4 (19%) would maintain continuous ventilation between 12 to 16 minutes and 3 (14.2%) would maintain a frequency of 2 ventilations for every 15 compressions (Figure 2).

Regarding the ventilation, it is important to emphasize that the frequency and quality of the established ventilation significantly reflects the success of the CPR and, from this, the importance of proper airway opening and effective ventilation emerges. The data presented demonstrate, in a generalized way, the deficiency of the academics regarding the ventilations.

According to the SBC, the hyperventilation is contraindicated, since it may increase the intrathoracic pressure and decrease the preload, consequently decreasing the cardiac output and survival. In addition, there is an increased risk of gastric insufflation, which can cause regurgitation and aspiration[6]. AHA[1] makes recommendation regarding the shockable heart rhythms; and the results of the present study show that most of the participants have knowledge about the shocking rhythms. However, it is not always possible to identify this knowledge, even after training on the topic, or even as students in the academy[11].

Regarding the shocking cardiac rhythms, 9 (42.8%) participants correctly pointed out to be the VF and VT (Figure 2). This percentage is still unsatisfactory given the importance of defibrillation for the CPR success.

Figure 2 - Nurses' academic knowledge about the ventilatory frequency with advanced airway, shocking CA rhythms and the main precaution for the use of the defibrillator - São José, Santa Catarina, Brazil.

Questions	Answers	No. (%)
AHA (2015) recommendations for the ventilatory frequency, following the established advanced airway	Continuous, with frequency between 8 and 10 per minute	6 (8.5%)
	It follows the same frequency of 2 ventilations every 30 compressions.	8 (38%)
	Continuous, with frequency between 12 and 16 per minute.	4 (19.5%)
	It follows the same frequency of 2 ventilations for every 15 compressions.	3 (14%)
Shockable CA Rhythms	Ventricular fibrillation and pulseless ventricular tachycardia	9 (42.8%)
	Asystole and ventricular fibrillation	1 (4.7%)
	Asystole and Pulseless Electrical Activity (PEA)	1 (4.7%)
	Atrial Flutter and Atrial Tachycardia	10 (47.6%)

Main precautions during the electrical cardioversion	The cardioverter must be always connected to the electricity, as it needs a lot of energy to perform the shock.	0 (0%)
	The patient must be unconscious and without a pulse.	1 (4.7%)
	Before the shock is applied, all the people who are close to the patient should be removed.	11 (52.3%)
	The cardioverter should be ECG-adjusted and should be applied directly and synchronously for the depolarization of the myocardium.	9 (42)

Source: Elaborated by the authors, 2016.

As the main precaution during the electrical cardioversion to be adopted prior to the application of the shock, 11 (52.3%) participants answered that all the people who are close to the patient should be removed, this being a very important and fundamental precaution in cardioversion to protect the team who is active in the CPR. Another necessary precaution for the success of the cardioversion in the patient is the need to adjust it to the electrocardiogram (ECG) mode so that the shock is applied directly and synchronously for the depolarization of the myocardium, which was pointed out by 9 (42.8%) participants.

As mentioned earlier, the continuing education is imperative over the scientific technical knowledge and patient care in a CA[15-16]. The reports of the research participants show the concern and need for training, theoretical and practical courses for a quality patient care.

The scientific knowledge that includes the updating in postgraduate courses is an interesting strategy available in the market, however, the search for and the interest in it are not always observed in nurses, since, academically, the content regarding the CA is limited and does not meet all the academic's needs[5]. In this way, health institutions should provide training courses aimed at the CA care as a way to guarantee a better care. In addition, there is the need for repeated training, since the knowledge tends to fade over time[17].

Through the content analysis performed from the application of the semi-structured questionnaire, the category emerged: Technical Scientific Preparation for a Quality And Successful CPR. From this category, two subcategories further emerged: Need for New Knowledge and Training and Organization of the Team.

Technical scientific preparation for a quality and successful CPR

It is imperative that the health professional has technical and scientific training. In this sense, 14 (66.6%) participants positively agreed with this assertion, to the detriment of 6 (33.3%) who do not feel prepared for providing the care, as observed in the reports.

"No... more courses and practical classes are lacking." (A1)

"No... I think I need more training and courses..." (A6)

"No, we should have preparatory courses..., because often, without the specific knowledge, we may not save a life." (A5)

"No, because I think I lack a more practical training." (A3)

On the other hand, it was possible to observe through the participants' reports who exercise their professional activity in the health area and who believe to have life experience, that they believe to be prepared for the CPR care, as observed in the speeches.

"Yes... I already work in the pre-hospital care (APH)." (A9)

"With all the knowledge acquired in life, I think I am prepared to attend to an emergency situation." (A17)

Need for new knowledge

Even when the participants positively indicate that they feel prepared to attend a CA, they also report the constant need for learning, new training and the addition of postgraduate knowledge, as observed in the following reports.

"Yes... but as other procedures it is necessary to always be studying and getting updated." (A10)

"Yes, ... I intend to specialize at the end of graduation, with a postgraduate degree." (A21)

Training and organization of the team

The reports also showed the need for a well-trained team and the need to organize the team members:

"No. I can work with the team, but still as an assistant, I do not feel prepared to lead." (A2)

"Yes, however, in order to be fully effective, it is also necessary for the team to work together in synchronism so that it does not disturb the environment." (A19)

In all the reports, the scientific technical preparation of the participants of this research is clear. However, it is important to highlight the continuing need for acquiring new knowledge and new technologies, since they are critical to the quality and success of the CPR.

Studies show that only the professional experience does not offer enough theoretical bases and subsidies to supply the knowledge deficit in CA[18]. On the other hand, the experience allied to the specialization strongly favor the actions that could avoid premature deaths and ensure a greater patient survival[5].

CONCLUSION

The CA is a dramatic event, causing a high degree of morbidity and mortality, even with the appropriate support. Besides being an extremely stressful factor for the health professional, it requires vast knowledge and precise technical skills, especially from the nurse.

This study accomplished the objectives proposed, since it contributed to assess the theoretical knowledge of the nursing undergraduate students of a University of the greater Florianópolis/SC Region on CPR, knowing the features of the participants, which influence in the best performance and preparation of this future professional, a team leader.

Considering the knowledge regarding this extremely relevant topic, the general low average of correct answers stands out, emphasizing once again the importance of a consolidation regarding the cardiopulmonary resuscitation. The data from the study show that the knowledge about the CPR and the skills to deal with it seem scarce, and it reinforces the need for improvement among nursing students (future nurses) on the practice of the CPR, since it is constantly updated, considering that this research is based on the 2015 AHA guidelines.

This study may contribute to discussions regarding the intensification of the training of nursing students in the theoretical and practical topics related to the CA and CPR maneuvers, in order to meet the students' needs regarding this content and as a way to guarantee patients with a more efficient care. It also seeks to stimulate the academic student in the search for a specialization, and investment in improvement (training); looking for the consolidation of their skills and competences regarding the cardiopulmonary resuscitation with the objective of providing better care to patients who are victims of a cardiac arrest, leading, consequently, to a better prognosis and increased chance of life with the reduction of sequelae.

However, the importance of new studies on cardiopulmonary resuscitation should be highlighted, especially by nurses who, as team leaders, need intense knowledge and updating so that the CA care is satisfactory. Due to that, the constant updating and investment in training are indispensable for improving the team performance in supporting and caring for the lives of many patients.

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