NURSING STUDENTS' EDUCATION ON CARDIORESPIRATORY ARREST
FORMAÇÃO DE ESTUDANTES DE ENFERMAGEM SOBRE PARADA CARDIORRESPIRATÓRIA
LA FORMACIÓN DE LOS ESTUDIANTES DE ENFERMERÍA ACERCA DEL PARO CARDIOPULMONAR

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ABSTRACT

Objective: to evaluate the knowledge of Nursing students about the basic life support on cardiorespiratory arrest. **Method:** this is a quantitative, descriptive, exploratory and cross-sectional study with 52 Nursing students, using a self-responded questionnaire. For data analysis, the absolute and relative frequencies were calculated. The results are presented in the form of tables. **Results:** 90.38% of the respondents were females, 98.08% were single/unmarried and 41 were between 20 and 24 years old. The prevalence of satisfactory knowledge in relation to the theme was only 11.54%. The greatest percentage of errors (94.23%) regarded cardiorespiratory arrest priorities. **Conclusion:** this study shows the importance of including guidelines on basic life support on cardiorespiratory arrest in undergraduate Nursing curriculum, because there was a high prevalence of unsatisfactory knowledge about the topic. **Descritores:** Knowledge; Learning; Nursing Students; Cardiac Arrest; Cardiopulmonary Resuscitation; First Aid.

RESUMO

Objetivo: avaliar o conhecimento de estudantes de Enfermagem sobre o suporte básico de vida na parada cardiorrespiratória. **Método:** trata-se de estudo quantitativo, descritivo, exploratório e transversal com 52 estudantes de Enfermagem, utilizando um questionário autorrespondido. Calcularam-se as frequências absolutas e relativas dos dados, apresentando-os em tabelas. **Resultados:** registrou-se que 90,38% dos entrevistados eram do sexo feminino, 98,08% eram solteiros e 41 tinham idades entre 20 e 24 anos. Aponta-se que a prevalência do conhecimento satisfatório em relação à temática foi de apenas 11,54%. Entende-se que o maior percentual de erros (94,23%) foi em relação às prioridades na parada cardiorrespiratória. **Conclusão:** Sinaliza-se por este estudo a importância da inserção das diretrizes do suporte básico de vida na parada cardiorrespiratória no currículo de graduação em Enfermagem, pois foi constatada uma alta prevalência de conhecimento insatisfatório sobre o assunto abordado. **Descritores:** Conhecimento; Aprendizagem; Estudantes de Enfermagem; Parada Cardíaca; Reanimação Cardiopulmonar; Primeiros Socorros.

RESUMEN

Objetivo: evaluar el conocimiento de los estudiantes de Enfermería en el soporte vital básico en paro cardiorrespiratorio. **Método:** se trata de un estudio cuantitativo, descriptivo, exploratorio y transversal con 52 estudiantes de Enfermería, utilizando un cuestionario autorespondido. Para el análisis de datos, fueron calculadas las frecuencias absolutas y relativas. Los resultados se presentaron en forma de tablas. **Resultados:** se observó que el 90.38% de los encuestados eran mujeres, 98.08% eran solteros y 41 tenían edades comprendidas entre los 20 y los 24 años. La prevalencia de conocimientos satisfactorios en relación con el tema sólo fue 11.54%. Se entiende que el mayor porcentaje de errores (94.23%) fue en relación a las prioridades en paro cardiorrespiratorio. **Conclusión:** este estudio señala la importancia de la inserción de las guías de soporte vital básico en paro cardiorrespiratorio el currículo de enfermería, porque se encontró una alta prevalencia de insatisfactoriedad en conocimiento acerca del tema. **Descritores:** Conocimiento; Aprendizaje; Estudiantes de Enfermería; Paro Cardíaco; Reanimación Cardiopulmonar; Primeros Auxilios.

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INTRODUCTION

Cardiorespiratory arrest (CRA) consists of a sudden and unexpected interruption of systemic circulation characterized by the cessation of pulse in large arteries and spontaneous ventilation or by the presence of agonal breathing.¹⁻²

It is the final event of a series of clinical conditions that may result in irreversible brain lesions, if the necessary measures are not taken, such as resuscitation maneuvers.²

In the United States of America, approximately one million people are victims of CRA every year, with most cases (70%) occurring in men, aged between 60 and 69 years and with previous heart disease. In about 25% of cases, the victims die before reaching the hospital.³ In Brazil, approximately 200 thousand CRAs occur every year, and about 50% occur in the inhospital environment.¹

Among the imminent threats to life, CRA appears as the most feared, since the chance of survival directly relates to the precocity of care.³ The early identification of CRA and the maneuvers of cardiopulmonary resuscitation (CPR) are crucial for increasing the survival rates in episodes of CRA.²

CPR consists of a set of diagnostic and therapeutic measures that aim to reverse the cardiac arrest.⁴ These maneuvers are the best chance of restoring cardiopulmonary and cerebral functions, artificially keeping the blood flow in the brain and other vital organs of the victim until the return of spontaneous circulation.¹

In this scenario, the American Heart Association (AHA), an organization that standardizes the necessary measures in case of a CRA based on scientific evidence, drew up the guidelines referred to Basic Life Support (BLS) and Advanced Life Support (ALS). It updates these guidelines every five years, aiming to improve and expedite the provided care, in an appropriate manner and free from unexpected situations.¹

BLS comprises a set of sequential techniques characterized by chest compressions, airways opening, artificial respiration and defibrillation; ALS consists of keeping BLS through drug administration and treatment of the cause of the CRA, conducted exclusively by trained physicians and nurses.²

Even with the advances related to the prevention and treatment of CRA, many preventable deaths from sudden CRA still occur, representing a great challenge for public health.³

An effective CRA assistance requires updated technical-scientific knowledge from professionals, as well as agility, expertise and calm, because these skills can affect patients' quality of life after cardiorespiratory arrest.⁵

Nevertheless, health professionals and students did not have a satisfactory theoretical-practical knowledge on CRA/CPR, and that disability in relation to the theme results from the education process, due to the timely and superficial approach to the theme, compromising the quality of care.⁶

Newly graduated nurses assume vacancies in emergency care units without any experience, contributing to the emergence of various difficulties during the performance in CRA, as well as in other emergency situations.⁷⁻⁹

Therefore, the objective is to assess the nursing students' knowledge on basic life support in cardiorespiratory arrest, considering that the AHA guidelines change every five years, the unpredictability of the CRA and the importance of the precocity of care to ensure the survival of the patient.

OBJECTIVE

- To assess the nursing students' knowledge on basic life support in cardiorespiratory arrest.

METHOD

This is a quantitative, descriptive, exploratory and cross-sectional study with nursing students from a public university in north Paraná.

The sample was composed by 52 students from the third and fourth years of the nursing undergraduate course of the aforementioned university. The inclusion criterion was all undergraduate students admitted between 2015 and 2016.

Data were collected through a structured self-responder questionnaire, approaching sociodemographic information and specific questions about the BLS in CRA. The researchers developed the questionnaire based on the guidelines of the 2015 AHA (AHA, 2015). The instrument allows assessing participants' knowledge regarding the identification of a patient in CRA, basic resuscitation techniques and the important points about BLS in CRA.

To assess the nursing students' degree of knowledge, two categories emerged, based on the student's percentage of correct responses: "Level of satisfactory knowledge" (individual number of correct answers $\geq 75\%$) and "Level of unsatisfactory knowledge" (individual number of correct answers $< 75\%$). The delimitation of this percentage of correct answers based on some studies, which adopted the same percentages to evaluate the knowledge on BLS.¹⁰⁻¹

Data were analyzed through the electronic tabulation and subsequent calculation of absolute and relative frequencies. The chi-square test was used to compare the frequencies of correct and wrong answers, based on the AHA guidelines.²

Table 1. Nursing students' sociodemographic profile. Maringá (PR), Brazil, 2017.

	N	%
Sex		
Female	47	90.38
Male	5	9.62
Age		
>20	8	15.38
20-24	41	78.85
25-28	3	5.77
Marital status		
Married	1	1.92
Single/unmarried	51	98.08

The assessment of the Nursing students' knowledge on BLS in CRA shows that the prevalence of satisfactory performance (individual

The study complied with the standards for researches involving human beings, according to Resolution 466/2012. Data collection occurred only after participants' signature of the Informed Consent Form, authorization of the course coordination and favorable opinion of the Permanent Research Ethics Committee (2.006.607/17; CAAE 66239617.8.0000.0104).

RESULTS

Of the 52 interviewed nursing students, 47 (90.38%) were women, 51 (98.08%) were single/unmarried and 41 (78.85%) were between 20 and 24 years old, with the minimum age of 19 and maximum of 28 years (Table 1).

number of correct answers $\geq 75\%$) was only 11.54%, according to the evaluation criterion adopted (Figure 1).

Figure 1. Nursing students' knowledge assessment. Maringá (PR), Brazil, 2017.

When questioned about their knowledge about BLS in CRA before the admission in the Nursing course, only 19.23% of the students reported having had contact with the subject. Regarding the level of confidence to act in a situation of CRA, 78.85% (41) of the students did not consider themselves able to act and only 21.15% (11) felt prepared (Table 2).

Table 2. Distribution of self-reported knowledge according to Nursing students' satisfactory knowledge. Maringá (PR), Brazil, 2017.

	Satisfactory		Unsatisfactory		Total		p-value
	N	%	N	%	N	%	
Course grade							-
3 rd year	6	100.00	23	50.00	29	55.77	
4 th year	-	-	23	50.00	23	44.23	
Previous knowledge							0.324*
Yes	2	33.33	8	17.39	10	19.23	
No	4	66.67	38	82.61	42	80.77	
Confidence to act							0.595*
Yes	2	33.33	9	19.57	11	21.15	
No	4	66.67	37	80.43	41	78.85	
Knowledge confidence							1.00*
Yes	1	16.67	11	23.91	12	23.08	
No	5	83.33	35	76.09	40	76.92	
AHA** guidelines update addressed							1.00*
Yes	5	83.33	33	71.74	38	73.08	
No	1	16.67	13	28.26	14	26.92	

*Fisher Exact Test.
**American Heart Association.

In relation to the learning on CRA during classes, 76.92% reported that learning is insufficient for being able to intervene in a CRA, while 23.08% said they have learned enough to act in this situation. The majority (73.08%) said that

AHA updated guidelines of 2015 were addressed, in relation to care in CRA situations, and 26.92% denied it. There were no statistically significant differences between students with satisfactory and unsatisfactory knowledge (Table 3).

Table 3. Distribution of self-reported knowledge according to Nursing students' satisfactory knowledge. Maringá (PR), Brazil, 2017.

	Satisfactory		Unsatisfactory		Total		P-value
	N	%	N	%	N	%	
Course grade							-
3 rd year	6	100.00	23	50.00	29	55.77	
4 th year	-	-	23	50.00	23	44.23	
Previous knowledge							0.324*
Yes	2	33.33	8	17.39	10	19.23	
No	4	66.67	38	82.61	42	80.77	
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Yes	1	16.67	11	23.91	12	23.08	
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AHA** guidelines update addressed							1.00*
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In relation to the items evaluated in the second part of the questionnaire, which addresses specific issues on the BLS in accordance with the AHA (2015), the average number of right answers of participants was 10.52% and the average number

of wrong answers, 7.48%. Regarding wrong answers, six students had four or fewer errors, 23 had five to seven errors, 12 had from eight to nine errors and 11 had ten or more errors (Table 4).

Table 4. Distribution of the assessed items on BLS in cadiorespiratory arrest according to the percentages of right and wrong answers of the Nursing students. Maringá (PR), Brazil, 2017.

Assessed Items	Right Answers		Wrong Answers	
	N	%	N	%
CRA bases	28	53.85	24	46.15
CRA sequence in adults	39	75.00	13	25.00
Composition of basic life support	24	46.15	28	53.85
Pulse check site in suspected CRA	44	84.62	8	15.38
CRA priorities	3	5.77	49	94.23
BLS sequence in adults according to the AHA	18	34.62	34	65.38
Compressions/ventilation synchronization	43	82.69	9	17.31
Efficient ventilation characteristics	24	46.15	28	53.85
High-quality CPR characteristics	25	48.08	27	51.92
Thoracic compression	38	73.08	14	26.92
Airways opening	32	61.54	20	38.46
Compressions/ventilation without advanced airway	43	82.69	9	17.31
Alternation time between first-aiders	34	65.38	18	34.62
Hand positioning in compressions	42	80.77	10	19.23
Thoracic compression depth	43	82.69	9	17.31
Use of AED***	18	34.62	34	65.38
When to use AED	16	30.77	36	69.23
BLS sequence	31	59.62	21	40.38

*CRA: Cardiorespiratory arrest. **BLS: Basic life support. ***AED: Automatic external defibrillator.

DISCUSSION

This study found a low prevalence of satisfactory knowledge on BLS in CRA among nursing students, suggesting that the theoretical-practical knowledge acquired during their undergraduate course does not meet enoughly the needs of knowledge on this subject. Moreover, most students reported not feeling prepared to act in case of a CRA.

CRA has been increasingly frequent, causing concern among the professionals that can witness such situation.¹² Therefore, a good knowledge on the subject is essential to feel more confident and, consequently, reduce the weaknesses in the assistance.¹³

The nurse is one of the main professionals when it comes to assistance for the CRA care; however, he-she needs to attend update and training courses in accordance with the current guidelines, ensuring the construction of competences and skills sufficient to begin CPR with effectiveness.¹⁴

Nonetheless, the education on this theme should be continuous, because the retention of knowledge on BLS in CRA and the skills to its intervention decline rapidly after the initial education, varying according to the characteristics of instructors and participants and the quality of the theoretical and practical education.¹⁵ For this, there should be trainings every six months.¹⁶

The comparison between the two researched years of the Nursing course shows that the participants who had achieved satisfactory knowledge predominantly belonged to the third

year. According to the syllabus of these students, this year is intended to receive the theoretical-practical content on BLS in CRA, demonstrating that time reduces the knowledge about the theme.

BLS fundamental aspects include immediate recognition of cardiac arrest and immediately calling to the emergency service, early CPR and rapid defibrillation, prioritizing fast and hard chest compressions, knowing defibrillation and advanced care should be performed in order to minimize interruptions in CPR.² This study evidenced that the greatest number of wrong answers occurred precisely at this item, in which only 5.77% of the students pointed out the correct alternative.

A victim who remains in CRA and does not receive CPR maneuvers early loses 7% to 10% chance of survival, every minute,¹ thus, the rapid identification of CRA is essential for the immediate initiation of interventions.

On the other hand, a positive aspect between the results found is that most students answered correctly regarding the pulse check site in a suspected CRA. According to BLS guidelines, the fundamental aspects of the immediate recognition of cardiac arrest include checking the pulse and breathing simultaneously.²

The correct and fast identification of CRA, including checking/verification of the absence of breathing and pulse, is extremely important, since it may guide the subsequent actions of the elo of the chain of survival recommended by the AHA 2015 guidelines. It enables, in this way, assessing

Pereira ELC, Oliveira RR de, Baldissera VDA, et al.

that students assimilate and understand the importance of this action.

In relation to the questions addressing the use of automatic external defibrillator (AED), most of the interviewees could not answer that it is a non-complex equipment, which can be handled by a trained lay, and that its use should be available early, because the defibrillation is a priority in CRA.² However, the fact of not being able to handle the AED does not invalidate the CPR maneuvers, since they are fundamental to increase the victim's survival chances.²

Two basic ways facilitate the opening of the airways, being important to differ and adapt them to the existing situation. The recommendation is the hyperextension of the head and the elevation of chin in situations in which the victim has no trauma, and, in cases of suspected or confirmed trauma, the maneuver shall be the elevation of the mandible angle, aiming at the protection of the cervical spine.^{1,2} When questioned about this item, 61.54% of the students pointed out the correct alternative, showing that they know the different ways to open the airways, according to the situation, in a CRA.

This study had some limitations, such as including nursing students from only one university, besides having evaluated only the theoretical content, not considering the assessment of practical skills. Nevertheless, the results show the importance of inserting BLS in CRA in undergraduate nursing syllabus, being necessary to discuss new teaching-learning strategies about the theme in order to fulfill the gaps and to promote effective contributions in the consolidation of this knowledge in the education process of the Nursing student.

CONCLUSION

There was a high prevalence of unsatisfactory knowledge on the basic life support in cardiorespiratory arrest among Nursing students. The highest rates of correct answers related to compressions/ventilation synchronization, the pulse check site, compressions/ventilation without advanced airway, the CRA sequence in adults and the thoracic compression.

Due to the possibility of witnessing the CRA event, inside or outside the hospital environment, the weakness in the knowledge on BLS in CRA may impair the quality of professional activity. Although graduation addresses the theme, the existing approach is not satisfactory for the consolidation of a permanent and effective knowledge; however students showed knowledge on many important aspects of BLS in CRA.

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Nursing students' education on cardiorespiratory...

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