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ORIGINAL ARTICLE

VALIDATION OF QUESTIONNAIRE FOR THE EVALUATION OF KNOWLEDGE OF NURSING TEACHERS AND STUDENTS ON THE BASIC LIFE SUPPORT

VALIDAÇÃO DE QUESTIONÁRIO PARA A AVALIAÇÃO DO CONHECIMENTO DE DOCENTES E DISCENTES DE ENFERMAGEM SOBRE O SUPORTE BÁSICO DE VIDA

VALIDACIÓN DE CUESTIONARIO PARA EVALUACIÓN DEL CONOCIMIENTO DE DOCENTES Y DISCENTES DE ENFERMERÍA SOBRE EL SOPORTE BÁSICO DE VIDA

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ABSTRACT

Objective: to validate the content of a questionnaire for the evaluation of the knowledge of teachers and Nursing students related to basic life support. **Method:** quantitative study, methodological type, developed with two rounds of validation, the first, by 19 researchers selected through the Lattes Platform and the second, by 18 professionals from the Permanent Education Nucleus of the Emergency Medical Assistance Service (EMAS). After the analysis of the questionnaire, modifications were made, accepting the Content Validity Index (CVI) > 0.75. **Results:** of the 11 questions evaluated in the first round, five obtained a perfect index of validity (CVI = 1.00), one was excluded and four were modified, according to the judges' recommendations. After the second round, the questionnaire was completed with ten questions, obtaining a general CVI of 0.87. **Conclusion:** the instrument can be considered valid in its content, with all items considered adequate, both separately and globally. **Descriptors:** Education Nursing; Validation Studies; Cardiopulmonary Resuscitation.

RESUMO

Objetivo: validar o conteúdo de um questionário para a avaliação do conhecimento de docentes e discentes de Enfermagem relacionados ao suporte básico de vida. **Método:** estudo quantitativo, tipo metodológico, desenvolvendo-se com duas rodadas de validação, sendo a primeira, por 19 pesquisadores selecionados por meio da Plataforma Lattes e a segunda, por 18 profissionais do Núcleo de Educação Permanente do Serviço de Atendimento Médico de Urgência-SAMU. Após a análise do questionário, foram realizadas modificações, aceitando-se o Índice de Validade de Conteúdo (IVC) > 0,75. **Resultados:** das 11 questões avaliadas na primeira rodada, cinco obtiveram índice de validade perfeito (IVC=1,00), uma foi excluída e quatro foram modificadas, de acordo com as recomendações dos juízes. Após a segunda rodada, o questionário foi concluído com dez questões, obtendo um IVC geral de 0,87. **Conclusão:** o instrumento pode ser considerado válido em seu conteúdo, com todos os itens considerados adequados, tanto separadamente, como de maneira global. **Descritores:** Educação em Enfermagem; Estudos de Validação; Ressuscitação Cardiopulmonar.

RESUMEN

Objetivo: validar el contenido de un cuestionario para la evaluación del conocimiento de docentes y discentes de Enfermería relacionados al soporte básico de vida. **Método:** estudio cuantitativo, tipo metodológico, desarrollándose con dos rondas de validación, siendo la primera, por 19 investigadores seleccionados a través de la Plataforma Lattes y la segunda, por 18 profesionales del Núcleo de Educación Permanente del Servicio de Atención Médica de Urgencia-SAMU. Después del análisis del cuestionario, se realizaron modificaciones, aceptándose el Índice de Validez de Contenido (IVC) > 0,75. **Resultados:** de las 11 preguntas evaluadas en la primera ronda, cinco obtuvieron índice de validez perfecto (IVC = 1,00), una fue excluida y cuatro fueron modificadas, de acuerdo con las recomendaciones de los jueces. Después de la segunda ronda, el cuestionario se concluyó con diez preguntas, obteniendo un IVC general de 0,87. **Conclusión:** el instrumento puede ser considerado válido en su contenido, con todos los ítems considerados adecuados, tanto por separado, como de manera global. **Descriptor:** Educación en Enfermería; Estudios de Validación; Resucitación Cardiopulmonar.

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INTRODUCTION

The Cardiopulmonary Arrest (CRP) is one of the emergencies that increase morbidity and mortality, and it is necessary a safe, fast and effective care that aims to increase the possibility of survival of people affected by this situation. In the CRP, every 10 minutes the chance of its reversion decreases in 10% its chance of reversal. After ten minutes without any maneuver, the rescue is improbable. However, with efficient maneuvers, the survival time is prolonged, in addition to decreasing or avoiding neurological sequelae.¹

Historically, the first reports of CRP reversal attempts have appeared, in Hebrew medicine, for more than 5,000 years, but it was not until the 1960s that techniques and maneuvers were developed to promote the recovery of cardiac and respiratory functions, Cardiopulmonary Resuscitation (CPR).²

Some aspects may hamper patient care in CRP, since the ducts are often performed in places that do not have the necessary infrastructure conditions, jeopardizing the success of CPR and, consequently, the life of the patient. In addition, other factors are added, such as failure to organize care, lack of knowledge and skills of the professionals involved in this care, associated with insufficient human and material resources, providing misunderstandings in the care process to these victims.³

In 2015, the American Heart Association (AHA) released the latest guidelines for life support (basic and advanced) or cardiopulmonary resuscitation. Basic Life Support (BLS) is a set of emergency procedures that can be performed by trained health professionals or laypersons, consisting of recognition of airway obstruction, respiratory and cardiac arrest, as well as CPR by means of the CAB sequence: artificial circulation (external chest compression), opening of the airways (clearing) and ventilation.⁴

Advanced life support (SAV) consists of resuscitation using additional equipment to the one used in the BLS or CAB, including defibrillation and monitoring, pacemaker, equipment and techniques for obtaining airways and ventilation, obtaining venous medications and post-resuscitation care. It must be carried out by a professional trained and supported by the law.⁴

After cardiac arrest, survival rates range from two to 49% depending on heart rate and early initiation of resuscitation. However, survival may double or triple when performing high quality CPR. Therefore, the increase in survival is directly related to the team's ability to identify the signs of CRP until the maneuvers developed in this process. It is added that the team's synchrony in the distribution of attributions, competency and dialogue interferes directly to increase the chances of CPR being well or unsuccessful.⁵

In the emergency units, the nurse is the professional responsible for the planning of the care of his or her team, with the direct care of the Nursing of the critically ill patient with a risk of death.⁶ In the care of the individual in CRP, the Nursing team must perform artificial ventilation and circulation until the doctor's arrival. It reinforces the need for these professionals to receive the knowledge and skills necessary to perform CPR even during their training, in addition to frequent training to acquire knowledge and skills.^{5,7}

Thus, the evaluation of the knowledge of teachers and Nursing students, in relation to BLS, is an important strategy for the training process, while at the same time it is relevant for reflection on the teaching methodologies employed at the middle and higher level of Nursing. Thus, it was necessary to construct and validate an instrument for the evaluation of the knowledge of teachers and Nursing students about BLS. It is considered that the quality of the instruments to be used for this purpose is fundamental to give legitimacy and reliability to the results obtained, which reinforces the need for content validation, in which they seek evidence that the instrument will adequately, measure, the variable what are you proposing.

OBJECTIVE

- To validate the contents of a questionnaire for the evaluation of the knowledge of teachers and Nursing students related to the basic support of life in cardiology for the adult.

METHOD

Methodological study, developed from June 2016 to March 2017, focusing on the validation of the questionnaire content about basic life support in cardiology for

adults. Content validation is not expressed by a correlation coefficient, but is the result of the judgment of several experts, who verify the items that represent the content areas and the relevance of the objectives to be measured.⁸

The validation process occurred in two steps. The first one consisted of the selection of the sample for the research participation through the Lattes Platform, based on the following criteria: subject - Basic Life Support; In the bases - doctors; Brazilian nationality; Data update time - 12 months; Bibliographical productions - published articles, books and chapters, papers in events, text in newspaper or magazine from the year 2012, related to basic life support / cardiopulmonary resuscitation; Professional performance - health science, Nursing, Nursing in adult and elderly health. Those who did not meet these criteria and those who did not respond to the electronic form were excluded. The search totaled 131 professionals who received an invitation letter, electronically, containing the purpose and justification of the study. Of these, 24 gave the return and 19 judged themselves capable of evaluating the instrument.

Due to the small number of participants participating in this phase, a second phase was carried out, consisting of professionals who make up the Permanent Education Nucleus (NEP) of the Emergency Medical Assistance Service (EMAS) in Natal and the EMAS NEP Metropolitano (service that serves the metropolitan region of Natal), whose experience and expertise in the emergency / emergency area qualify them for the evaluation in question. Thus, all the professionals of the two NEPs accepted to participate in the study, totaling at this stage 18 judges. After the analysis by the judges, modifications were made to the questions in the questionnaire in both the first, and the second round, following the suggestions of the experts.

The questionnaire was prepared through a literature review and was initially composed of 11 questions about basic life support. Each question was evaluated in two ways: Adequate / adequate with changes and Inadequate. The questionnaire was also evaluated comprehensively, considering ten requirements: usefulness / relevance, consistency, clarity, objectivity, simplicity,

feasibility, updating, vocabulary, accuracy, instructional sequence of topics, judges should judge whether the requirement was Adequate/appropriate with changes or inappropriate. Judges should also designate, if necessary and in writing, suggestions, so that the items could be improved.

After the evaluation, content validation, was applied using the Content Validity Index (CVI), which measures the judges' agreement on the representativeness of the items in relation to the study content, being calculated by dividing the number of judges who evaluated the item as Adequate / adequate with changes and Inadequate by the total of judges (evaluation by item), resulting in the proportion of judges who judged the valid item. To calculate the overall CVI of the instrument, the sum of all the CVIs calculated separately, divided by the number of items, was performed. As acceptable, a minimum index of 0.75 was considered both for the evaluation of each item, and for the overall evaluation of the instrument.

The data was organized into an electronic data sheet and exported to a Microsoft Excel Software. After coding and tabulation, they were analyzed by means of descriptive statistics. The instruments were reformulated according to the judges' suggestions.

The study obtained a favorable opinion from the Research Ethics Committee of the Federal University of Rio Grande do Norte (UFRN), Certificate of Presentation for Ethical Assessment (CPEA) nº 54295016.1.0000.5537.

RESULTS

Regarding the first round judges, of the 131 researchers who met the inclusion criteria, only 24 (18.3%) responded to e-mail, and, only 19 (14.5%) felt secure to participate in the e-mail. Research, being all nurses, doctors and had bibliographical productions related to urgency and emergency.

The judges of the second round were health professionals working in the two NEPs of the EMASs (Natal and Metropolitan), mostly, males (55.5%), ranging in age from at least, 27 to, at most, 56 years, mean of 38.5 ($\pm$ 39) years. Half of the judges had specialization (50.0%), 27.8% had a master's degree; 11.1% had a doctorate degree and 11.1%, had a degree.

In the first round, five questions (four, five, seven, nine and ten) obtained a perfect concordance index (CVI = 1.00) on the judgment process of the items that make up the questionnaire for the

evaluation of the teachers and Nursing students. However, question two did not achieve agreement within the established level (CVI> 0.75). The results are shown in table 1.

Table 1. First phase of the judges' judgment on items of the questionnaire to evaluate the knowledge of teachers and Nursing students about basic adult life support. Natal (RN), Brazil, 2017.

Items related to the questionnaire on basic adult life support (1st round)	Judgement				CVI	CVI general
	Adequate		Inadequate			
	n	%	n	%		
1. The fundamental links of adult survival in the extra-hospital environment remain unchanged compared to 2010, and are:	17	89.5	2	10.5	0.89	0.79
2. The recommended sequence for a single rescuer was confirmed (A-B-C - airway, breathing, chest compressions), so that he applied rescue ventilation and chest compressions. (Right or wrong?)	13	68.4	6	31.6	0.68	
3. Cardiorespiratory resuscitation is a procedure:	17	89.5	2	10.5	0.89	
4. Are clinical signs of a cardiorespiratory arrest:	19	100.0	0	0.0	1	
5. You should suspect a respiratory arrest when the patient presents:	19	100.0	0	0.0	1	
6. A first responder should initiate CPR with:	18	94.7	1	5.3	0.94	
7. Shocking rhythms are considered in cardiorespiratory arrest:	19	100.0	0	0.0	1	
8. For positioning of hand and adhesive paddles, the most suitable location is the position:	17	89.5	2	10.5	0.89	
9. In adults the depth of chest compressions is:	19	100.0	0	0.0	1	
10. The recommended frequency (velocity) for chest compressions during a cardiorespiratory arrest procedure:	19	100.0	0	0.0	1	
11. Put F for WHAT to do and NF for what NOT to do on basic life support to get a high quality adult CPR:	17	89.5	2	10.5	0.89	

In figure 1, the judges' suggestions on the items of the questionnaire evaluated as inadequate are presented. It is observed

that six questions received suggestions from the judges for changes in content.

Items	Valuated requirements that required changes		Judges suggestions
The fundamental links of adult survival in the extra-hospital environment remain unchanged compared to 2010, and are:	Clarity;	Vocabulary	* Replace term by chain links of survival. * Maintain the assessment of a single construct.
The recommended sequence for a single rescuer was confirmed (A-B-C - airway, breathing, chest compressions), so that he applied rescue ventilation and chest compressions. (Right or wrong?)	Clarity;	Consistency; Sequence of topics.	* Standardize questions with 5 response items. * Modifying / removing the question, may induce the respondent to error.
Cardiorespiratory resuscitation is a procedure:	Clarity		* Add in the response alternatives: which can occur in any environment. * Include in the answer alternatives the word environment.
A first responder should start CPR with:	Clarity;	Vocabulary; Consistency;	* Change the root of the issue by replacing: with regard to the proportion of compressions and ventilation in CPR it is recommended to perform:
In relation to the positioning of the manual and adhesive shovels, the most suitable place is the position:	Clarity;	Vocabulary; Consistency;	* Include, at the root of the matter, adhesive defibrillator; most frequent position; * Remove the precordial region, that is infrequent. * Suspend issues for special situations in which the AED may be used.
Put F for what to DO and NF for what NOT to do on basic life support to get a high quality adult CPR	Clarity;	Instructional Sequence of topics.	* Use V or F

Figure 1. Judges' suggestions on the items of the questionnaire to evaluate the knowledge of teachers and students about basic adult life support. Natal (RN), Brazil, 2017.

Regarding the second round of the trial process of the items of the questionnaire,

none of them was assessed as inadequate. All of them obtained agreement within the

established level (CVI> 0.75). It was observed an increase of the questions with perfect concordance index (CVI = 1.00), going from five, in the first round, to six, in the second. The lowest CVI obtained in this round was 0.89. The results are shown in table 2.

Table 2. Second phase of the judges' judgment on items of the questionnaire to assess the knowledge of teachers and Nursing students about basic adult life support. Natal (RN), Brazil, 2017.

Items related to the questionnaire on basic adult life support (2nd round)	Judgement				CVI	CVI general
	Adequate		Inadequate			
	n	%	n	%		
1. The first link in the chain of survival of Intra-Hospitalar Cardiopulmonary Arrest (CRPIH) is:	16	88.9	2	11.1	0.89	0.87
2. Cardiopulmonary resuscitation (CPR) is a procedure:	18	100.0	0	0.0	1	
3. These are clinical signs of a cardiorespiratory arrest:	17	94.4	1	5.6	0.94	
4. Respiratory arrest should be suspected when the patient presents:	18	100.0	0	0.0	1	
5. A trained lifeguard who provides assistance alone must perform CPR in a ratio of:	18	100.0	1	5.6	1	
6. Shockful rhythms are considered in cardiorespiratory arrest:	18	100.0	0	0.0	1	
7.About the special situations for using the Automatic External Defibrillator (AED), it is correct to state:	17	94.4	1	5.6	0.94	
8.In adults the depth of chest compressions is:	18	100.0	0	0.0	1	
9. The recommended frequency for chest compressions in a Cardiopulmonary Resuscitation procedure is:	17	94.4	1	5.6	0.94	
10. To obtain high quality CPR for adults, put V to True and F to False:	18	100.0	0	0.0	1	

DISCUSSION

In this study, it was observed that, of the researchers selected through the curriculum lattes, only 14.5% participated in the validation of the instrument. These results are reinforced by other authors who affirm that researches using electronic forms guarantee speed of the process, however, they demand the adhesion of the population, which, is not always, willing to respond. It is believed that, by understanding as something possible to discard, those selected may simply delete the email, or forget to respond, which makes Web Survey-type surveys have low rates of adherence and return.⁹

With regard to the population participating in the second round of validation, all were professionals of the Nucleus of Education and Research (NER) of EMAS. The NER in the EMAS has a fundamental role, aims at training its professionals to better serve the victims of trauma, aiming at the provision of humanized care, focusing on the use of elaborate and current care techniques, based on regulatory protocols elaborated by the Brazilian Society of Integrated Attention

to the Traumatized (SIAT), Ministry of Health, among others. In addition to the development of educational activities, the NER directs its activities to multidisciplinary teams, students and programs that select a target audience, such as MINI EMAS, which aims to raise children's awareness of problems caused by improper connections), as well as teaching to rescue citizenship from helping others.

Thus, it was noted that EMAS's NER professionals were able to perform validation of the instrument as they have ongoing training and are kept up-to-date on emergency and emergency procedures, especially basic life support. Research shows that academic production and time of experience in the field are essential for the professional to exercise the role of judge in the validation of content with quality.¹⁰

In the validation process of the questionnaire, it was observed that questions regarding the recognition of a CRP obtained a perfect agreement index in the first round. It is emphasized that the correct identification of the clinical signs of a CRP is essential for the success of resuscitation to be achieved.¹¹ Recognition of the patient's lack of response, respiration, pulse, or

circulation signals is responsible for alerting the patient to need for fast and efficient support, avoiding serious damage to health.¹²

Although the defibrillators / cardioversors identify the heart rhythms, it is of fundamental importance that the Nursing team is aware that in the extra-hospital environment most CRP occur due to rhythms such as ventricular fibrillation (VF) and non-pulse ventricular tachycardia (NPVT), whereas in the hospital setting, pulseless electrical activity and asystole respond in most cases. This difference makes the ducts performed different, since early defibrillation is the only treatment for VF / non-pulse ventricular tachycardia.

Another relevant issue, and that Nursing should have mastery, is the technique of applying chest compressions, since these must be well executed, with appropriate depth and frequency, since the total number and depth of compressions, during CPR, is a determining factor on patient survival in CRP. In order to improve the effectiveness of the compressions, the interruptions must be reduced. During CPR, rescuers should perform compressions at a rate of 100 to 120 / minute, with a minimum depth of two inches or five centimeters, not exceeding six. When the rescuer performs CPR alone, he / she should start CPR with 30 chest compressions followed by two ventilations.⁴

As for the question about the links of the survival chain, besides the alteration of the vocabulary, clarity was suggested in the content and formulation of the question with only one construct. It is emphasized that current resuscitation guidelines recommend the use of distinct survival chains that identify the different care pathways of patients who undergo CRP in the in-hospital or out-of-hospital setting. This recommendation was due to the fact that patients who underwent CRP in out-of-hospital settings depended on community care. On the other hand, those who suffer in-hospital arrest require an adequate surveillance system to avoid CRP.⁴ Therefore, a question was asked about the links of the survival chain in extrahospital care, since most of the questions were focused on this environment.

Regarding the content of the question related to the automatic external defibrillator (AED), there were suggestions

for modifications that were accepted, because the design contained in the blades of this equipment indicates the location where each shovel should be adhered to, and it is unnecessary to question the respondents about this item.

On the basis of the recommendations of the judges, the reformulated content addressed issues relating to special situations for the use of the AED. In this sense, the rescuer should be aware that in case of excessive hairs on the thorax, the excess should be removed only from the region where the blades will be positioned, and these can be removed with a blade that is usually in the AED Kit. Another alternative is to epilate the area with a tape or with the first blades and then apply a second set of blades. When the thorax is wet, it must dry completely, and, if the victim is on a pool of water, there is no problem, but, if this pool also involves the rescuer, the victim should be removed to another location, the fast as possible. Another situation is related to drug / hormonal adhesives, which should be removed if they are in the place where the AED blades will be applied.¹⁴

In the first round, an issue did not get the expected validation index. Negative comments on this item focused on the attributes of clarity, consistency, and instructional sequence of topics. It should be noted that the content of this question was the recommended sequence of CPR for a single rescuer. In 2010, the care sequence was modified from A-B-C to C-A-B, to reduce the time to first compression. However, the 2015 guideline recommends that trained rescuers be encouraged to perform a few steps simultaneously, ie check for breath and pulse at the same time, in an attempt to reduce the time to the first chest compression. It was therefore decided to exclude that question, since it could lead the respondent to error, as one of the judges.⁴

CONCLUSION

The questionnaire to evaluate the knowledge of teachers and Nursing students related to the basic support of life in cardiology for the adult was valid regarding the content. All questions, separately, and the questionnaire, overall were assessed as appropriate in accordance with the given requirements.

Of the 11 questions assessed in the first round of the study, five scored perfect, one was excluded, and four were modified, according to the judges' recommendations, in order to increase clarity of the items, facilitate reading, understanding and applicability. The questionnaire was concluded with ten questions, obtaining a general CVI of 0.87, a rate higher than that considered acceptable.

Speaking of the second round, it is highlighted that, during the investigation, a relevant fact was the availability of EMAS's NEP professionals to participate in the validation process of the questionnaire. However, the difficulties presented were related to low adherence of the selected researchers, through the *curriculum lattes*, in responding to the e-mail for the acceptance of the research.

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