Clinical competence in nursing for high-quality cardiopulmonary resuscitation: an integrative literature review

Competência clínica em enfermagem para a ressuscitação cardiopulmonar de alta qualidade: revisão integrativa da literatura

Competencia clínica en enfermería para reanimación cardiopulmonar de alta calidad: revisión integradora de la literatura

ABSTRACT

Purpose: To identify the scientific evidence available in the literature on the skills needed to develop clinical competence in Basic Life Support for nursing. **Method:** Integrative review, in the sources National Library of Medicine (NLM), National Institutes of Health (NIH), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Latin American and Caribbean Literature in Health Sciences (LILACS), Web of Science and SCOPUS. Rayyan was used for selection and Thematic Analysis. **Results:** 753 studies were identified and five comprised the sample. Two categories were elaborated; cognitive and psychomotor skills for Basic Life Support and affective skills. **Conclusion:** Cognitive and psychomotor skills range from the ability to define the cardiorespiratory arrest and understand the Basic Life Support, to the actions necessary for care. The literature explores this category, to the detriment of affective skills, a scientific gap, as they are essential for the quality of cardiopulmonary resuscitation.
Descriptors: Nursing; Clinical Competence; Cardiopulmonary resuscitation; Learning; Teaching.

RESUMO

Objetivo: Identificar as evidências científicas disponíveis na literatura sobre as habilidades necessárias ao desenvolvimento de competência clínica em Suporte Básico de Vida para enfermagem. **Método:** Revisão integrativa, nas fontes National Library of Medicine (NLM), National Institutes of Health (NIH), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS), Web of Science e SCOPUS. Utilizou-se o Rayyan para a seleção e a Análise Temática. **Resultados:** Identificaram-se 753 estudos e cinco compuseram a amostra. Elaboraram-se duas categorias; habilidades cognitivas e psicomotoras para o Suporte Básico de Vida e as habilidades afetivas. **Conclusão:** As habilidades cognitivas e psicomotoras abordam, desde a capacidade de definir a parada cardiorrespiratória e compreender o Suporte Básico de Vida, até as ações necessárias ao atendimento. A literatura explora essa categoria, em detrimento às habilidades afetivas, uma lacuna científica, já que são essenciais para a qualidade da ressuscitação cardiopulmonar.
Descritores: Enfermagem; Competência Clínica; Reanimação Cardiopulmonar; Aprendizagem; Ensino.

RESUMEN

Objetivo: Identificar la evidencia científica disponible en la literatura sobre las habilidades necesarias para desarrollar la competencia clínica en Soporte Vital Básico para enfermería. **Método:** Revisión integrativa, en fuentes Biblioteca Nacional de Medicina (NLM), Institutos Nacionales de Salud (NIH), Índice Acumulado de Literatura de Enfermería y Afines en Salud (CINAHL), Literatura Latinoamericana y Caribe en Ciencias de Salud (LILACS), Web de Ciencia y SCOPUS. Rayyan se utilizó para selección y análisis temático. **Resultados:** Se identificaron 753 estudios y cinco conformaron la muestra. Se elaboraron dos categorías; Habilidades cognitivas y psicomotoras para soporte vital básico y habilidades afectivas. **Conclusión:** Las habilidades cognitivas y psicomotoras van desde la capacidad para definir el paro cardiorrespiratorio y comprender el Soporte Vital Básico, hasta las acciones necesarias para el cuidado. La literatura explora esta categoría, en detrimento de las habilidades afectivas, un vacío científico, ya que son fundamentales para la calidad de reanimación cardiopulmonar.
Descriptores: Enfermería; Competencia Clínica; Reanimación Cardiopulmonar; Aprendizaje; Enseñanza.

Juliana da Silva Garcia Nascimento[1]
0000-0003-1118-2738

Kleiton Gonçalves do Nascimento[2]
0000-0002-2717-6837

Daniela da Silva Garcia Regino[3]
0000-0003-0045-7783

Mateus Goulart Alves[4]
0000-0003-0680-6817

Jordana Luiza Gouvêa de Oliveira[1]
0000-0001-5905-8993

Maria Celia Barcellos Dalri[1]
0000-0002-8173-8642

[1] Escola de Enfermagem de Ribeirão Preto, SP, Brasil.
[2] Universidade Federal do Triângulo Mineiro, MG, Brasil.
[3] Universidade Brasil, SP, Brasil.
[4] Universidade de Franca, SP, Brasil.

Corresponding author:
Juliana da Silva Garcia Nascimento
E-mail: mestradounesp28@yahoo.com.br

INTRODUCTION

Cardiopulmonary arrest (CPA is defined by the cessation of mechanical activity of the heart, confirmed by the absence of signs of circulation, re-established through high-quality cardiopulmonary resuscitation (CPR), composed, a *priori*, by a set of measures and technical procedures for the life support of a victim, called Basic Life Support (BLS)[1].

The positive impact of early identification of CPA, activation of the emergency medical service, and successful CPR with BLS and defibrillation is indisputable, since the victim's neuronal impairment occurs after two minutes of CPA[2]. Given the importance of BLS, the American Heart Association (AHA) addresses the need to invest in the development of clinical competence of health professionals for CPR, with the purpose of making them capable and confident as to decision-making, improving their theoretical and practical knowledge and emotional balance[3-4].

Nurses play a fundamental role in this context, mainly because they hold a leadership position before their team and are close to the patients, which allows for a more attentive observation of the signs of physiological deterioration that precede CPA, their early intervention and care organization, a condition that requires clinical competence to apply BLS effectively[3]. In this study, a complex know-how-to-act was considered as clinical competence to Nursing in BLS, based on the following triad: cognitive skills (knowledge), psychomotor skills (practice) and affective skills (behavior)[5], which enable effective care based on a solid clinical judgment[6].

The existing problematic regarding the development of clinical competence in Nursing, specifically for BLS, is mainly in how to structure, measure and evaluate it, which indicates the need to obtain clarity about what the necessary skills are for high-quality BLS[7-11]. However, the scarce scientific exploration on the topic, added to its fundamentality, for the teaching and learning process in Nursing and patient safety[12], instigates and justifies scientific deepening in this area. The objective of this study was to identify the scientific evidence available in the literature on the skills needed to develop clinical competence in BLS for Nursing.

METHOD

This is an integrative literature review, conducted from March to August 2020, in a public university in the inland of São Paulo, Brazil, whose development went through the following stages: identification of the theme and guiding question; search and selection of the studies in the literature; categorization of the studies; analysis of the selected studies and presentation of the review[13], adopting the PRISMA recommendation[14], configured by a 27-item checklist and a flowchart of four stages, which supported the rigor and methodological quality of this review.

The Patient-Intervention-Outcomes (PIO) strategy, a variation of the Patient-Intervention-Comparison-Outcomes (PICO)[15] strategy, was used to elaborate the research question. The acronym P (Population) was represented by Nursing students and professional nurses, the acronym I (Intervention) by the identification the skills needed to develop clinical competence for BLS in adult victims, and the acronym O (Outcome) by the performance of high-quality BLS.

Consequently, the following guiding question was obtained for the research: What scientific evidence is available in the literature on the necessary skills for the development of clinical competence in Basic Life Support for Nursing?

The following inclusion criteria were determined: primary studies that answered the guiding question, without language restriction, from 2015, the year that witnessed substantial updates in the guidelines for cardiopulmonary resuscitation in adults, as well as studies published in scientific journals and available in electronic format. Literature reviews, case studies, dissertations, theses, monographs, abstracts published in events proceedings, and manuscripts addressing the teaching and learning process of neonatal and pediatric BLS and for lay people were excluded.

The search for studies was conducted in June 2020, in the following databases: National Library of Medicine (NLM), National Institutes of Health (NIH), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Latin American and Caribbean Literature in Health Sciences (*Literatura Latino-Americana e do Caribe em Ciências da Saúde*, LILACS), Web of Science and SCOPUS.

In PubMed® and Scopus, controlled descriptors were determined, in the English language, identified in the Medical Subjects Headings (MeSH): *Nurses*; "*Students, Nursing*"; "*Clinical Competence*"; "*Cardiopulmonary Resuscitation*". The following strategies were used: (*Nurses OR Nurse OR "Personnel, Nursing" OR "Nursing Personnel" OR "Registered Nurses" OR "Nurse, Registered" OR "Nurses, Registered" OR "Registered Nurse" AND "Students, Nursing" OR "Pupil Nurses" OR "Student, Nursing" OR "Nurses, Pupil" OR "Nurse, Pupil" OR "Pupil Nurse" OR "Nursing Student" OR "Nursing Students" AND "Clinical Competence" OR "Competency, Clinical" OR "Competence, Clinical" OR "Clinical Competency" OR "Clinical Competencies" OR "Competencies, Clinical" OR "Clinical Skill" OR "Skill, Clinical" OR "Skills, Clinical" OR "Clinical Skills" AND "Cardiopulmonary Resuscitation" OR "Resuscitation, Cardiopulmonary" OR CPR OR "Cardio-Pulmonary Resuscitation" OR "Cardio Pulmonary Resuscitation" OR "Resuscitation, Cardio-Pulmonary" OR "Code Blue" OR "Mouth-to-Mouth Resuscitation" OR "Mouth to Mouth Resuscitation" OR "Mouth-to-Mouth Resuscitations" OR "Resuscitation, Mouth-to-Mouth" OR "Resuscitations, Mouth-to-Mouth" OR "Basic Cardiac Life Support" OR "Life Support, Basic Cardiac"*).

In CINAHL, the controlled descriptors were identified in Titles, in the English language: *Nurse*; "*Students, Nursing*"; "*Clinical Competence*"; "*Resuscitation, Cardiopulmonary*". The following strategy was used: (*Nurse AND "Students, Nursing" AND "Clinical Competence" OR "Nursing Skills" AND "Resuscitation, Cardiopulmonary"*).

In Web of Science, the following descriptors were adopted, in the English language: *Nurses; "Students, Nursing"; "Clinical Competence"; "Resuscitation, Cardiopulmonary"*; and the strategy used was as follows: (*Nurses AND "Students, Nursing" AND "Clinical Competence" AND "Resuscitation, Cardiopulmonary"*).

In LILACS, the controlled descriptors were present in the Descriptors in Health Sciences (*Descritores em Ciências da Saúde, DeCS*), in English: *Nurses; "Students, Nursing"; "Clinical Competence"; "Resuscitation, Cardiopulmonary"*, with the following strategy: *Nurses AND "Students, Nursing" AND "Clinical Competence" AND "Resuscitation, Cardiopulmonary"*. In Portuguese: "*Enfermeiras e Enfermeiros*"; "*Estudantes de Enfermagem*"; "*Competência Clínica*"; "*Reanimação Cardiopulmonar*", with the following strategy: "*Enfermeiras e Enfermeiros*" AND "*Estudantes de Enfermagem*" AND "*Competência Clínica*" AND "*Reanimação Cardiopulmonar*" and, in Spanish: "*Enfermeras y Enfermeros*"; "*Estudiantes de Enfermería*"; "*Competencia clínica*"; "*Reanimación cardiopulmonar*", with the following strategy: "*Estudiantes de Enfermería*" AND "*Competencia clínica*" AND "*Reanimación cardiopulmonar*". The Boolean operators *AND* and *OR* were used, capable of performing the desired combinations between the descriptors in the search, *AND* being a restrictive combination and *OR*, an additive combination[15].

A total of 753 studies were identified, subjected to the first selection stage by two professionals, independently, by reading titles and abstracts, through a free single-version web review program called *Rayyan Qatar Computing Research Institute* (*Rayyan* QCRI)[16], found in https://rayyan.qcri.org, which exports the identified studies to a given database and allows for their rapid and organized selection, with due blinding of the assistant researcher, which ensures the methodological accuracy of this process[16].

Eleven studies presented divergence between the researchers' evaluations, and were referred to a third party, responsible for deciding their inclusion or exclusion; subsequently, full-reading was performed to define the final sample. It is worth mentioning that a manual search was made to analyze the reference lists of the studies that made up the sample of this research, with the intention of identifying manuscripts that could be included in the selection, although no other study was considered eligible. Thus, information was extracted using a validated instrument[17] that prioritized the following criteria: authors; year, origin of the study; objective; type of study; sample; results and conclusions, in addition to the classification of the level of evidence[18].

The findings were analyzed using the Thematic Analysis[19] assumptions and completing three stages: pre-analysis, configured by floating reading of the evidence and organization of convergent information, called registration units; subsequently, exploration of the material with a detailed grouping of the identified registration units; and data treatment, determining the categories.

In consonance with the ethical and legal aspects set forth in Resolution No. 466/2012[20], the research was not submitted to the Research Ethics Committee, for being a literature review and not involving human beings. Finally, the selection of studies was shown, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)[14] recommendations, as presented in Figure 1.

Figure 1 - Flowchart corresponding to the identification, selection and inclusion of the studies, elaborated based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) recommendations. Ribeirão Preto, São Paulo, 2020.
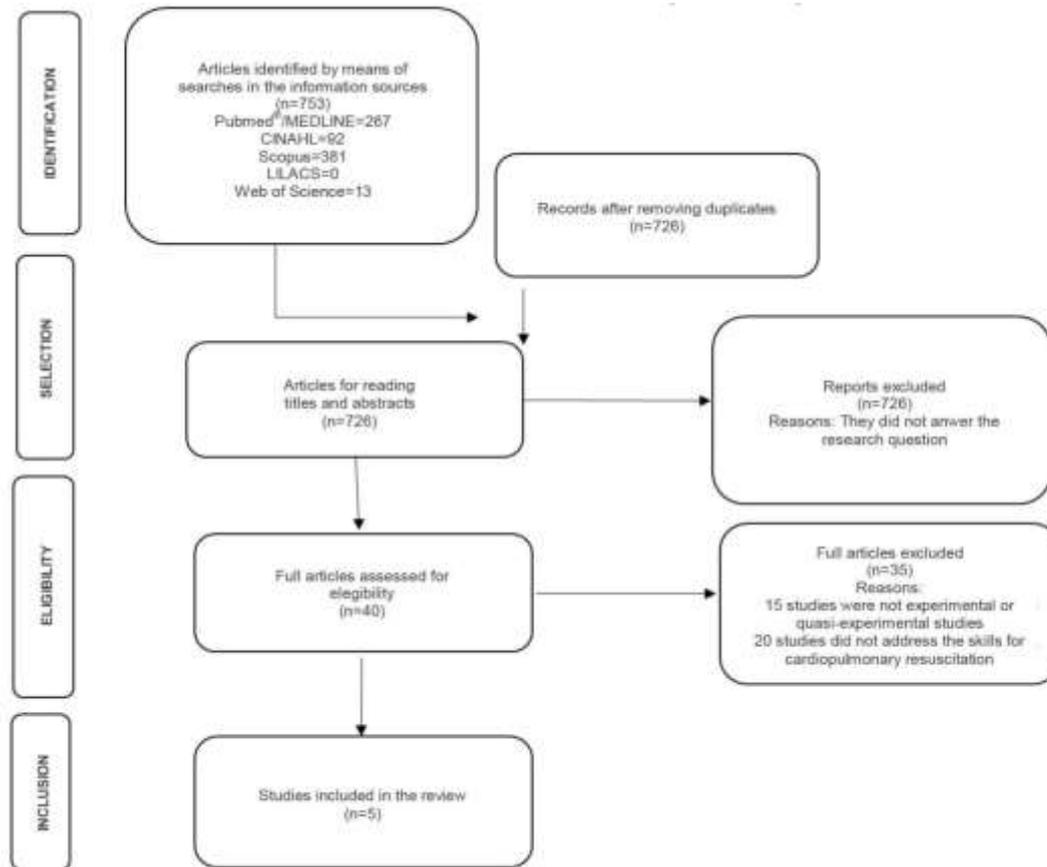
Source: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)[14]

RESULTS

The sample of this study consisted in five primary research studies, characterized in Figure 2 below.

Figure 2 - Presentation of the characterization of the primary studies. Ribeirão Preto, São Paulo, 2020.

Author, year and origin	Study objective and skills assessed	Type of study, sample and procedure	Main results, conclusion and level of evidence
Roel S, Bjørk IT, 2020. Norway.[21]	To compare the development of clinical competence for CPR, in Nursing students, by means of a curricular change for teaching BLS. Skills: cognitive and psychomotor.	A quasi-experimental study, conducted with two groups of Nursing students. The first group, with 60 students, performed traditional BLS training and the second, with 82 students, participated in simulation-based CPR training. The cognitive skills were assessed by means of a questionnaire and the psychomotor skills, by using a feedback device for CPR.	The second group scored higher in the cognitive skills than the other. As for the psychomotor skills, the mean compression, measured in millimeters was quite similar in both groups (55 mm in the first and 54.4 mm in the second). The students in the second group obtained a significantly higher mean rate of compressions per minute, but incorrect hand position. The new CPR training can develop clinical competence in students. Level of evidence 3.

(Continues)

Figure 2 - Presentation of the characterization of the primary studies. Ribeirão Preto, São Paulo, 2020.

Author, year and origin	Study objective and skills assessed	Type of study, sample and procedure	Main results, conclusion and level of evidence
Moon H, Hyun HS, 2019. South Korea[22].	To analyze whether CPR learning, through the articulation of e-learning and face-to-face education, is effective in improving knowledge, attitude, and self-efficacy in Nursing students. Skills: cognitive and affective (attitudes).	An experimental randomized study conducted with 120 Nursing students. The intervention group (n=60) underwent blended learning, and the control group (n=60), face-to-face CPR training. A 20-item instrument was adopted to assess knowledge, an instrument to assess attitudes, and a scale for self-efficacy.	The results indicated that the Intervention Group scored significantly higher in knowledge (Intervention: 16.40 ± 1.56, Control: 6.46 ± 2, p<0.001) and in emotional attitude (Intervention: 40.85 ± 8.01, Control: 36.05 ± 6.87, p = 0.002) regarding CPR than the Control Group. It was concluded that a blended program for learning CPR was found to be effective in improving the Nursing students' knowledge and attitudes towards CPR. Level of evidence 2.
Munezero JBT, Atuhaire C, Groves S, Cumber SN, 2018 Uganda[23].	To assess the nurses' knowledge and psychomotor skills after training on CPR. Skills: cognitive and psychomotor.	A quasi-experimental study conducted with 32 nurses working in a hospital. A 17-question questionnaire was used to assess the cognitive skills for CPR, and a skills checklist was used to check the psychomotor skills.	The mean knowledge scores were 53.8 points and 82.5 points in the pre-test and post-test, respectively. As for the psychomotor skills, 46 points were obtained before the intervention, and 81.5 after the intervention. There was a significant improvement (p<0.001) in the knowledge about CPR (p=0.02) and in the psychomotor skills. The study revealed improvements in knowledge and in skills. Level of evidence 3.
Tobase L, et al, 2017 Brazil[24].	To describe the learning results of Nursing students after a course of Life Support. Skills: cognitive and psychomotor.	A quasi-experimental study, which resorted to an online course on BLS for 62 Nursing students. Tests were adopted to assess the cognitive skills, and a checklist was used for the CPR psychomotor skills.	A significant increase in the cognitive skills was revealed: pre-test [(6.4 ± 1.61), post-test (9.3 ± 0.82), p<0.001]. The participants performed a CPR simulation, which had a mean ± SD score of 9.1 ± 0.95. The course was an effective method for teaching and learning the main BLS skills. Level of evidence 3.
MoslemiRad M, et al, 2019. Iran[25].	To determine the effect of evidence-based strategies on the clinical competence for CPR. Skills: cognitive and psychomotor.	A quasi-experimental study conducted with 44 nurses working in a hospital, divided in two groups. The first group was subjected to an evidence-based pedagogical strategy and the second, to traditional training on CPR.	The learning group's evidence-based clinical competence was significant for CPR, implementation of artificial airway, principles of initiation and termination of CPR (p <0.05). Evidence-based teaching on BLS can be effective in the development of clinical competence. Level of evidence 3.

Source: The authors (2020).

The selected sample dates from 2017 to 2020, mostly characterized by international studies[21-23,25], of the quasi-experimental type[21,23-25], and with level of evidence 3. Two categories were elaborated: (1) cognitive and psychomotor skills pertinent to BLS and (2) affective skills pertinent to BLS.

The first category addressed cognitive and psychomotor skills for BLS, based on mastery of the following criteria: defining CPA[23], causes of CPA[23], signs and symptoms of a victim in CPA[23,25], definition of BLS[23,25], actions that make up the care in BLS[23,25], Links in the Survival Chain[25], identification of the victim's responsiveness[22,25], arrangement of the first-aider at the side or near the victim's shoulder[25], identification of breathing and ventilatory movements in the chest[22,24-25], carotid pulse check[24-25], communication of the emergency medical service[24-25], exposure of the victim's chest[24], performing hand overlap[25], placement of the hypothenar region of the hand in the center of the victim's chest[25], placement of the shoulders at 90° to the victim's chest[25], number of external chest compressions per minute[23-24,25], frequency/speed of the external chest compressions per minute[23,24], depth of the external chest compressions per minute[23,24], correct hand positioning on the victim's chest for external chest compression[23,24-24], decompression and allowing the victim's chest to return during the external chest compressions[24-

25), not flexing the arms during chest compressions[25], performing trunk movement to apply force to compressions[25], performing the compressions without interrupting them[25], switching time for another first-aider to continue the compressions[25], timing to interrupt the compressions[25], handling of the automatic external defibrillator[21,24], and shockable cardiac rhythms[25].

The category referring to the affective skills pertinent to BLS highlighted the mastery of three attitudes: (1) emotional attitude: referring to someone's feelings about performing BLS for a patient in cardiac arrest (anxiety, satisfaction)[22]; (2) behavioral attitude, which included trying to do the best and most appropriate thing to perform CPR when witnessing a patient in CPA (self-efficacy, confidence)[22]; and (3) cognitive attitude, knowing that performing immediate CPR is important to the favorable outcome of a patient in CPA[22].

The diverse evidence identified also allowed synthesizing five teaching and learning strategies, in order to develop the cognitive, psychomotor and affective skills for BLS, namely: (1) CPR Educational Program: characterized by a teaching and learning process on BLS during a three-year undergraduate Nursing course. In the first year, five lectures were developed, which included basic first aid and airway obstruction by foreign bodies, coupled with training in the simulation center with an instructor. In the second year, instructor-led classes with simulation scenarios on CPR; and, in the third year, simulation of an accident with subsequent CPA in a hospital setting[21].

(2) Blended learning educational program for CPR, consisting of four sessions: in the first session, expository class and lectures; in the second session, adoption of a video lecture on CPR, covering CPR definition; CPR process, basic principles of CPR with chest compression and defibrillator use. In the third session, a video entitled "Basic course to the standard CPR educational program", with information about CPA, cases of successful CPR, chest compression process, cases of CPR when no one was available to help, use of the automatic defibrillator, provision of rescue breaths; and, in the fourth session, lecture and reading/studying of a handout with knowledge for CPR[22].

(3) Four-hour CPR training, with pre- and post-tests: first there was an analysis of the cognitive skills about CPR, and then a three-hour BLS training session with a mannequin that simulated the characteristics of the physiology and anatomy of an average adult. Two instruments were used; the first consisted of 17 multiple-choice questions about CPA and CPR, covering definition, causes, signs and symptoms, complications, and actions to prevent sudden death. The second instrument involved a 15-point test of psychomotor skills, adjusted to assess the CPR skills[23].

(4) Online self-instructional 20-hour BLS course, with an instructional design model called ADDIE (Analysis, Design, Development, Implementation, Evaluation) and implemented via the *Moodle* platform: all the students receive their login and password to access the virtual environment and are supervised by eight nurses, experts in distance education and emergency. Subsequently, the clinical simulation is applied to assess the students' psychomotor skills. The required BLS stages were applied in pairs, for 2 minutes, using an automated external defibrillator and a mannequin simulator with CPR feedback devices, swapping roles to verify skills in all the required procedures[24].

(5) Evidence based workshop: it included two research workshops of four consecutive sessions (totaling 8 hours), followed by two evidence-based workshops on CPR care (totaling 8 hours). The content covered an introduction to evidence based Nursing, addressing how to define a clinical question, how to use information sources, and how to criticize the articles. Subsequently, the workshops on CPR were implemented, focusing on evidence-based care and its stages for correct CPR. Learning was followed up during two months and, immediately after that, clinical competence was assessed using a clinical checklist[25].

DISCUSSION

The scientific evidence on the cognitive, psychomotor and affective skills for BLS has been presented by current and methodologically well-designed studies; however, they make up a scarce sample that evidences the need for further scientific study in this area[24-25].

This study is unprecedented in the science of Nursing and cardiopulmonary resuscitation because it presents a knowledge framework based on reliable scientific evidence, which synthesizes and organizes which cognitive,

psychomotor and affective skills are necessary in order to develop clinical competence for BLS but, above all, by identifying that the cognitive skills (knowledge) and psychomotor skills (practical skills) are more valued by scientific research, to the detriment of the affective skills (behavior and attitudes); and to precisely delimit the three aspects of the affective skills that are necessary to improve the nurse's behavior regarding CPA. In addition, by exploring five pedagogical possibilities for the teaching and learning process in BLS, it pointed out instructional alternatives that favor the development of the aforementioned skills.

It is important to understand that spreading this knowledge is fundamental, in order to increase the number of students and professionals capable of performing high quality BLS and, regardless of the educational strategy adopted, to be considered appropriate, it must be based on the updated BLS protocols established by the American Heart Association[4,21] guidelines.

In view of the results, it was noticed that the category referring to cognitive and psychomotor skills for BLS[22-24] overlap the scientific deepening of the affective skills (attitudes/behavior)[23], which can be justified by the existing difficulty to assess, in a broad manner, the development of clinical competence for BLS, due to the scarcity of validated instruments capable of covering the triad of cognitive, psychomotor, and affective skills, since most constructs focus only on the assessment of the cognitive and psychomotor skills[5].

In this perspective, an experimental research study, carried out with students of an undergraduate Nursing course in South Korea, compared teaching strategies for BLS and their effectiveness in developing the three skills: cognitive, psychomotor and affective, and identified the main attitudes of nurses during BLS, characterizing them in emotional attitude, which addresses the feelings generated by the professional or student during BLS, such as anxiety and satisfaction; the behavioral attitude, which included initiative, leadership, motivation and self-efficacy; and the cognitive attitude, which is awareness of their responsibilities regarding care[23].

Currently, it is recommended to adopt clinical simulation as a pedagogical strategy to enable the development of clinical competence for BLS, given its efficiency to intensify the

teaching and learning process in urgency and emergency and for offering appropriate conditions to enable the assessment not only of the cognitive and psychomotor skills, but also of the affective ones in this context[1-4].

Finally, it is considered that the development of clinical competence, for a certain area in Nursing, depends on the articulation of several criteria, related to cognitive, psychomotor and affective skills and that, for the completion of this profile, it is essential to develop studies that propose to explore and evaluate these skills in a broad and consistent manner[5-6].

The main limitation of this study was the scarce sample of scientific articles that address the development and assessment of cognitive, psychomotor, and affective skills for BLS, a factor that hinders the comparison and discussion of this scenario, but does not interfere with the quality of the exposition of the findings and their understanding.

Based on the results of this review, it is possible to add evidence capable of substantiating the development of clinical competence for BLS in Nursing, clarifying the triad of skills that supports this condition and to point out, as a future implication, the elaboration of well-designed scientific manuscripts that commit to evaluate the three skills and value the attitudes regarding BLS.

CONCLUSION

Five studies were identified that addressed the skills needed for BLS, from which two categories were obtained: cognitive and psychomotor skills for BLS, characterized by the actions related to CPA care through BLS, and affective skills, which include the emotional, behavioral and cognitive attitude towards BLS.

The main educational strategies to develop cognitive, psychomotor and affective skills for BLS were synthesized: CPR Educational Program, CPR Blended Learning Educational Program, Four-Hour CPR Training, Online self-Instructional BLS Course; and Evidence Based Workshop.

This study contributes to Nursing research, teaching and care, by evidencing the triad of skills needed to develop clinical competence for BLS, to pointing out the three strands that make up the affective skills, which are configured as a scientific gap, likely to be explored, mainly by methodological studies that propose to develop and validate instruments capable of assessing attitudes and behavior, during BLS, within the

scope of Nursing, and experimental clinical studies that analyze the effectiveness of pedagogical strategies to develop clinical competence in BLS and, also, for describing pedagogical possibilities that support the teaching and learning process of this topic.

REFERENCES

1 - Awadalla NJ, Al Humayed RS, Mahfouz AA. Experience of basic life support among King Khalid University Health Profession Students, Southwestern Saudi Arabia. Int J Environ Res Public Health 2020;17(13):4822. DOI: 10.3390/ijerph17134822

2 - El Sayed M, Al Assad R, Aad YA, Gharios N, Refaat MM, Tamim H. Measuring the impact of emergency medical services (EMS) on out-of-hospital cardiac arrest survival in a developing country: A key metric for EMS systems' performance. Medicine 2017;96(29):e7570. DOI: 10.1097/MD.0000000000007570

3 - Kose S, Akin S, Mendi O, Goktas S. The effectiveness of basic life support training on nursing students' knowledge and basic life support practices: A non-randomized quasi-experimental design. Afr Health Sci. 2020;20(2):966-76. DOI: 10.4314/ahs.v20i2.53

4 - Neumar RW, Shuster M, Callaway CW, Gent LM, Atkins DL, Bhanji F, et al. Part 1: Executive summary: 2015 American Heart Association Guidelines update for cardiopulmonary resuscitation and emer gency cardiovascular care. Circulation 2015;132(18):315-67. DOI: 10.1161/CIR.0000000000000252

5 - Le Boterf G. Developing the competence of professionals. 3a ed. Porto Alegre: Artmed; 2003.

6 - Pijl-Zieber EM, Barton S, Konkin J, Awosoga O, Caine V. Competence and competency-based nursing education: Finding our way through the issues. Nurse Educ Today 2014;34(5):676-8. DOI: 10.1016/j.nedt.2013.09.007

7 - Alves MG, Carvalho MTM, Nascimento JSG, Oliveira JLG, Cyrrillo RMZ, Braga FTMM, et al. Construction and validation of objective structured clinical examination (osce) on cardiopulmonary resuscitation. Rev Min Enferm. 2019;23:e-1257. DOI: 10.5935/1415-2762.20190105

8 - Son YL, Park PN, Ko SH. The effects of preclinical Objective Structured Clininal Examination (OSCE) on knowledge, nursing students confidence in core fundamental nursing skills and self-efficacy. J Korean Clin Health Sci. 2017;5(2):850-63. DOI: 10.5977/jkasne.2015.21.1.75

9 - Hadi MA, Ali M, Haseeb A, Mohamed MMA, Elrggal ME, Cheema E. Impact of test anxiety on pharmacy students' performance in Objective Structured Clinical Examination: A cross-sectional survey. Int J Pharm Pract. 2017;26(2):191-4. DOI: 10.1111/ijpp.12389

10 - Johnston AMB, Weeks B, Shuker MA, Coyne E, Mitchell M, Massey D. Nursing students' perceptions of the objective structured clinical examination: An integrative review. Clin Simul Nurs. 2017;13(3):127-42. DOI: 10.1016/j.ecns.2016.11.002

11 - Zieber M, Sedgewick M. Competence, confidence and knowledge retention in undergraduate nursing students: A mixed method study. Nurse Educ Today 2018;62:16-21. DOI: 10.1016/j.nedt.2017.12.008

12 - Costa IKF, Tibúrcio MP, Costa IKF, Dantas RAN, Galvão RN, Torres GV. Development of a virtual simulation game on basic life support. Rev Esc Enferm USP 2018;52:e03382. DOI: 10.1590/S1980-220X2017047903382

13 - Whittemore R, Knafl K. The integrative review: Updated methodology. J Adv Nurs. 2005;52(5):546-53. DOI: 10.1111/j.1365-2648.2005.03621.x

14 - Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and metaanalyses: The PRISMA statement. PLoS Med. 2009;6(7):e1000097. DOI: 10.1371/journal.pmed.1000097

15 - Santos CM, Pimenta CA, Nobre MR. The pico strategy for the research question construction and evidence search. Rev Latino-Am Enfermagem 2007;15(3):508-11. DOI: 10.1590/S0104-11692007000300023

16 - Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan-a web and mobile app for systematic reviews. Syst Rev. 2016;5(1):210. DOI: 10.1186/s13643-016-0384-4

17 - Ursi ES, Galvão CM. Perioperative prevention of skin injury: An integrative literature review. Rev Latino-Am Enfermagem 2006;14(1):124-31. DOI: 10.1590/S0104-11692006000100017

18 - Melnyk BM, Fineout-Overholt E. Evidence-based practice in nursing & healthcare: A guide to best practice. 2a ed. Philadelphia: Wolters Kluwer Health/Pippincott Williams & Wilkins; 2011.

19 - Minayo MC. Sampling and saturation in qualitative research: Consensuses and controversies. Rev Pesquisa Qualitativa 2017 [citado em 17 jun 2020]; 5(7):1-12. Acesso em: https://editora.sepq.org.br/index.php/rpq/article/view/82/59

20 - Brasil. Conselho Nacional de Saúde. Resolução nº 466, de 12 de dezembro de 2012. Dispõe sobre diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Diário Oficial [da] República Federativa do Brasil 2013 [citado em 17 jun 2020]. Acesso em: https://bvsms.saude.gov.br/bvs/saudelegis/cns/2013/res0466_12_12_2012.html

21 - Roel S, Bjørk IT. Comparing Nursing Student Competence in CPR before and after a Pedagogical Intervention. Nurs Res Pract. 2020;(7):1-6. DOI: 10.1155/2020/7459084

22 - Moon H, Hyun HS. Nursing students' knowledge, attitude, selfefficacy in blended learning of cardiopulmonary resuscitation: A randomized controlled trial. BMC Med Educ 2019;19:414. DOI: 10.1186/s12909-019-1848-8

23 - Munezero JBT, Atuhaire C, Groves S, Cumber SN. Assessment of nurses knowledge and skills following cardiopulmonary resuscitation training at Mbarara Regional Referral Hospital, Uganda. Pan Afr Med J. 2018;30:108. DOI: 10.11604/pamj.2018.30.108.15398

24 - Tobase L, Peres HHC, Gianotto-Oliveira R, Smith N, Polastri TF, Timerman S. The effects of an online basic life support course on undergraduate nursing students' learning. J Med Educ. 2017;8:309-13. DOI: 10.5116/ijme.5985.cbce

25 - MoslemiRad M, Zaker MA, Elahi N, Hossein M. Investigating the effect of two evidence-based and routinebased learning techniques on the clinical competency of cardio-pulmonary resuscitation on emergency ward nurses in Imam Khomeini Dehdasht Hospital in 2017 Haghighizadeh. J Res Med Dent Sci. 2019 [cited 2020 Jul 6];7(1):52-60. Available in: https://www.jrmds.in/articles/investigating-the-effect-of-two-evidencebased-and-routinebased-learning-techniques-on-the-clinical-competency-of-cardiopulmonary-r-5656.html

Editores Responsáveis:
Juliana Dias Reis Pessalácia
Helisamara Mota Guedes