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REVIEW | REVISÃO

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Deliberate practice and rapid cycle deliberate practice for basic life support: a scoping review[a]

Prática deliberada e prática deliberada em ciclos rápidos para suporte básico de vida: scoping review[b]

Práctica deliberada y práctica deliberada en ciclos rápidos para soporte básico de vida: revisión de alcance

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Abstract

Objective: to map evidence on deliberate practice (DP) and rapid cycle deliberate practice (RCDP) in teaching Basic Life Support (BLS) to health occupations students. **Method:** a scoping review according to JBI Reviewer's Manual for Scoping Reviews and PRISMA-ScR. Searches and selections were carried out in the databases through descriptors and synonyms, and it was analyzed the relevance of the studies, selecting those that answered the research question, from April to November 2021. In December 2022, study search and selection were updated. **Results:** of the 4,155 studies found, 116 were analyzed in full, with 9 included in this study. 44.4% are Americans and 66.6% were accomplished in medical courses. 11.1% presented simulated scenarios in the intra- and extra-hospital context, and 11.1%, in intra-hospital scenarios. **Conclusion and implications for practice:** DP and RCDP in health education have been consolidated in recent years, showing improvements in learning and knowledge retention over time. This scope identified that most studies address the hospital context, which demonstrates the knowledge production gap in the pre-hospital area. Furthermore, most of the studies focused on Europe and North America, confirming the need to carry out studies for the applicability of DP and RCDP in BLS in different audiences and contexts.

Keywords: Students; Students, Health Occupations; Cardiopulmonary Resuscitation; Basic Life Support; Simulation Training.

Resumo

Objetivo: mapear evidências sobre a prática deliberada (PD) e a prática deliberada em ciclos rápidos (PDCR) no ensino do Suporte Básico de Vida (SBV) de estudantes de ciências da saúde. **Método:** *scoping review*, conforme *JBI Reviewer's Manual for Scoping Reviews* e PRISMA-ScR. Buscas e seleções foram realizadas nas bases de dados estabelecidas por intermédio de descritores e sinônimos, analisando a relevância dos estudos, selecionando os que responderam à pergunta de investigação, no período de abril a novembro de 2021. Em dezembro de 2022 realizou-se atualização da busca e seleção dos estudos. **Resultados:** dos 4.155 estudos encontrados, 116 foram analisados na íntegra, com 9 incluídos neste estudo. 44,4% são americanos e 66,6% foram realizados em cursos de medicina. 11,1% apresentaram cenários simulados no contexto intra e extra-hospitalar, e 11,1%, em cenários intra-hospitalares. **Conclusão e implicações para a prática:** a PD e a PDCR no ensino em saúde vêm sendo consolidadas nos últimos anos, evidenciando melhorias de aprendizado e retenção de conhecimento ao longo do tempo. Foi identificado que a maioria dos estudos abordam o contexto hospitalar, demonstrando a lacuna de produção de conhecimento pré-hospitalar. Ademais, a maioria dos estudos se concentrou entre Europa e América do Norte, confirmando a necessidade de realização de estudos para aplicabilidade da PD e PDCR em SBV em diferentes públicos e contextos.

Palavras-chave: Estudantes; Estudantes de Ciências da Saúde; Reanimação Cardiopulmonar; Suporte Básico de Vida; Treinamento por Simulação.

Resumen

Objetivo: mapear evidencias sobre Práctica Deliberada (PD) y Práctica Deliberada em Ciclos Rápidos (PDCR) em la enseñanza del Soporte Básico de Vida (SBV) a estudiantes del área de la salud. **Método:** una *scoping review* según *JBI Reviewer's Manual for Scoping Reviews* y PRISMA-ScR. Se realizaron búsquedas y selecciones en las bases de datos establecidas a través de descriptores y sinónimos, analizando la pertinencia de los estudios, seleccionando aquellos que respondían a la pregunta de investigación, de abril a noviembre de 2021. En diciembre de 2022 se realizó la actualización de la búsqueda y selección de estudios. **Resultados:** de los 4.155 estudios encontrados, 116 fueron analizados en su totalidad, siendo 9 incluidos en este estudio. El 44,4% son estadounidenses y el 66,6% se realizaron en cursos de medicina. El 11,1% presentó escenarios simulados en el contexto intra y extrahospitalario y el 11,1% en escenarios intrahospitalarios. **Conclusión e implicaciones para la práctica:** PD y PDCR en educación para la salud se han consolidado en los últimos años, mostrando mejoras en el aprendizaje y la retención de conocimientos a lo largo del tiempo. Se identificó que la mayoría de los estudios abordan el contexto hospitalario, demostrando la brecha de producción de conocimiento prehospitalario. Además, la mayoría de los estudios se concentraron en Europa y América del Norte, lo que confirma la necesidad de realizar estudios sobre la aplicabilidad de PD y PDCR en SBV en diferentes audiencias y contextos.

Palabras clave: Estudiantes; Estudiantes del Área de la Salud; Reanimación Cardiopulmonar; Soporte Básico de Vida; Entrenamiento Simulado.

INTRODUCTION

Emergency situations require the recognition of imminent signs of death and immediate, objective and effective interventions that are part of Basic Life Support (BLS), a fundamental action in health professionals' knowledge for cardiopulmonary resuscitation (CPR). BLS includes a set of actions for victim maintenance and support until the arrival of the emergency team, aiming to improve the prognosis of patients who are victims of cardiopulmonary arrest (CRA) both in out-of-hospital (OHCRA) and intra-hospital (IHCRA) environments, characterizing the first care as essential to minimize sequel to patients.[1-3]

The process of training health professionals in emergency care is outdated. In recent decades, specific disciplines related to critical patient care and clinical-cardiological emergencies began to emerge; however, there are still numerous gaps in this teaching-learning process and, consequently, after training, because professionals do not feel able to act in these situations.[4]

Expanding access to education and training among students and health professionals in performing CPR maneuvers, in order to minimize the time between life support and defibrillation and to establish processes for the continuous improvement of resuscitation quality is characterized as a great challenge.[5] In Brazil, the Ministry of Education and the Ministry of Health established the Brazilian National Curriculum Guidelines for Health professions, aiming at professional training that prioritizes a qualification of health care, contemplating the Brazilian Unified Health System (SUS – *Sistema Único de Saúde*) principles.[6]

In this regard, the different areas of health education have discussed the need for changes in clinical learning and the diversification of learning scenarios. Teaching and learning methods need to adapt to the job market's and the population's needs. Therefore, a trend is using techniques that facilitate students' development during their functions.[7,8]

Although the specific processes and educational strategies associated with the development of clinical reasoning in the care of patients in a situation of CRA are not fully known, a simulated and repetitive training experience during which the apprentice can practice his technical and non-technical skills without causing harm to a patient can be an opportunity to acquire knowledge and skills.[9]

Among the different realistic simulation training modalities, a strongly recommended model for achieving mastery in the execution of technical skills is deliberate practice (DP), previously used in other areas such as music and sports, aiming at better training with short-term activities, possibility of immediate feedback, reflections and practice corrections.[10] It involves systematic and structured practice until previously defined learning objectives are achieved and immediate feedback allows changes and improvements in technique in real time.[10-12]

For the author,[10] mastery of actions in a clinical situation is not directly related to experience and knowledge in general, but to the acquisition of an integrated and complex system of actions for performance execution, monitoring, planning and analysis.

Faced with the health education process' needs, based on the concepts of DP and mastery learning, the rapid cycle deliberate practice (RCDP), created in 2014, was described and referred to as a "rapid cycle between deliberate practice and targeted feedback until mastery of the skill, i.e., mastery is achieved" and then progress to more challenging goals or scenarios that build on previously mastered skills, i.e., a debriefing takes place within the event.[13]

This process of performing the cycle between DP and immediate feedback, gave rise to the name rapid cycle.[13,14] The technique presents principles of simulation-based mastery learning, in which participants demonstrate their performance in a given competence before following the next training goal.[15] In clinical simulation, RCDP is similar to other strategies, but its differential is mainly in the feedback process and opportunities for repetition, involving the active participation of facilitator and participant.

DP and RCDP have been the focus of scholars in recent years, collaborating with advances in health education. However, an integrative literature review,[15] which analyzed the structure, effectiveness, advantages and disadvantages of RCDP in different contexts, shows that the publication on the subject is still low, emphasizing that in its results there were no studies in Portuguese and Spanish.

Thus, in an attempt to understand the context and strategy in which RCDP or DP are being used in the BLS theme, associated with limitations of studies that synthesize scientific evidence in relation to the theme, specifically BLS, it is possible to justify this study and its importance, with the objective of mapping the available evidence on DP and RCDP in teaching BLS to health occupations students.

METHOD

This is a scoping review carried out using techniques to systematically map knowledge production according to the Reviewer's Manual for Scoping Reviews developed by the JBI.[16] In this regard, this study was developed through five stages: (1) establishing the issue of scoping search; (2) identification of relevant studies; (3) selection and inclusion of studies; (4) data organization; (5) compilation, synthesis and reporting of results.[16] Aiming at methodological rigor, the checklist Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)[17] was used for review and writing, in addition to registering the protocol in the Open Science Framework (OSF).[18]

A survey was carried out in the scientific bibliography in April 2021. In December 2022, the search and selection of studies was updated. To identify similar scope review studies, the International Prospective Register of Systematic Reviews, OSF, The Cochrane Library, JBI Clinical Online Network of Evidence for Care and Therapeutics platforms were consulted, noting the lack of protocols or publications with a similar objective to this review.

The research question was structured using the Population, Concept and Context (PCC) strategy,[19] respectively, P: health

occupations students; C: DP and/or RCDP use; C: teaching BLS. Therefore, the guiding question was obtained: how has DP and/or RCDP been used in teaching BLS to health occupations students? Searches were performed by two independent researchers, in accordance with the JBI protocol,[19] using the databases: Cumulative Index to Nursing and Allied Health Literature + National Library of Medicine (CINAHL + Medline); Latin American and Caribbean Literature in Health Sciences (LILACS); National Library of Medicine (PubMed); Scopus; Base; Web of Science; and Cochrane Library.

For each item of the search strategy, descriptors and/or synonyms found on the Descriptors in Health Sciences and Medical Subject Headings platforms were used. For Population (P): 'Students' OR 'Health Occupations Student' OR 'Health Occupations Students' OR 'Occupations Student, Health' OR 'Occupations Students, Health' OR 'Student, Health Occupations' OR 'Dental Student' OR 'Dental Students' OR 'Student, Dental' OR 'Students, Dental' OR 'Student, Medical' OR 'Students, Medical' OR 'Medical Student' OR 'Medical Students' OR 'Student, Nursing' OR 'Students, Nursing' OR 'Nursing Student' OR 'Nursing Students' OR 'Student, Pharmacy' OR 'Students, Pharmacy' OR 'Pharmacy Student' OR 'Pharmacy Students' OR 'Student, Premedical' OR 'Students, Premedical' OR 'Premedical Student' OR 'Premedical Students' OR 'Student, Public Health' OR 'Students, Public Health' OR 'Health Student, Public' OR 'Health Students, Public' OR 'Public Health Student' OR 'Public Health Students'; Concept (C): 'Patient Simulation' OR 'Patient Simulations' OR 'Simulation, Patient' OR 'Simulations, Patient' OR 'Simulation Training' OR 'Training, Simulation' OR 'Interactive Learning' OR 'Learning, Interactive' OR 'High Fidelity Simulation Training' OR 'Clinical Competence' OR 'Competency, Clinical' OR 'Competence, Clinical' OR 'Clinical Competencies' OR 'Competencies, Clinical' OR 'Clinical Skill' OR 'Clinical Skills' OR 'Skill, Clinical' OR 'Skills, Clinical' OR 'Motor Skill' OR 'Motor Skills' OR 'Skill, Motor' OR 'Skills, Motor' OR 'Rapid Cycle Deliberate Practice' OR 'Deliberate Practice' OR 'Rapid Cycle'; Context (C): 'Cardiopulmonary Resuscitation' OR 'Resuscitation, Cardiopulmonary' OR 'CPR' OR 'Cardio-Pulmonary Resuscitation' OR 'CardioPulmonary Resuscitation' OR 'Resuscitation, Cardio-Pulmonary' OR 'Resuscitation, CardioPulmonary' OR 'Code-Blue' OR 'Mouth to Mouth Resuscitation' OR 'Basic Life Support' OR 'Life Support, Basic Cardiac' OR 'Resuscitation' OR 'Resuscitations'. To combine these, the Boolean operators OR and AND were used.[20]

The selected references were sent to EndNote Web® bibliography manager software. Six researchers worked independently to select studies by title, abstract and full text performed in Rayyan®. All researchers were trained on the methodology used in the review and software use. Thus, in pairs, two reviewers responsible for the same database assessed the full text versions of the selected articles, considering the inclusion and exclusion criteria, resulting in the final study sample.

In each phase, a consensus was reached between the reviewers through discussion, and, in case of disagreement between the pairs of reviewers, a third professional was requested. Reviewers for all steps were named as authors of this manuscript. The entire process of selection of studies took place from April to November 2021, and in December 2022 study search and selection was updated.

After carrying out the search, research available in full was included with different methodological designs published in indexed sources that answered the established question, with audiences of adult age, in addition to dissertations, theses and guidelines, with no time frame, published in any language. Moreover, there was direct contact with authors by email to identify sources of full articles. Publications that did not respond to the research question and that did not use DP or RCDP with BLS in adults were not included, in addition to publications classified as opinions, retractions, websites and advertisements published in the media because they are not scientifically rigorous material.

For the extraction of selected studies' content, an instrument structured by the authors themselves was applied, considering the following variables: year of publication; country of origin; objective of the study; sample; methodology employed; context in which they used the RCDP or DP; theme of the simulated clinical case used in the manuscript that evolved to CRA; intra- or extra-hospital case; RCDP or DP outputs and contributions; practice assessment; guide use for RCDP or DP use; training repetition time or frequency.

A descriptive data analysis was carried out and the results presented in charts and tables. Since it does not involve human beings, this study was not submitted for approval by the Research Ethics Committee.

RESULTS

The initial search obtained 4,155 studies. After application of the eligibility criteria and subsequent reading of titles and abstracts, 116 studies were selected for reading in full, with 9 studies being selected for the final synthesis, as described in Figure 1 adapted.[21]

For the presentation of results, selected studies were numbered and identified as S1 to S9.[22-30] The nine studies included in this review's sample were published between 2011 and 2021. Most of the studies found belong to the EMBASE database, with a total of 5 studies (S4-S8),[25-29] followed by 3 studies from the Web of Science database (S1-S3),[22-24] and the ninth study (S9)[30] was found in both databases. As for the country of origin, 4 (44.4%) studies are from the United States of America (S2-S5),[23-26] 3 (33.3%) from European countries such as Holland (S1),[22] England (S6)[27] and Spain (S9)[30] another 2 (22.2%) did not describe the study's development country (S7-S8).[28,29]

Chart 1 presents study characterization according to the objective of the study, sample and methodological approach used.

Of the 9 selected studies, 4 (44.4%) did not describe the simulation scenario used during training, specifying that there was only skill training (S1, S5, S7 and S9);[22,26,28,30] 3 (33.3%) present scenarios, but do not mention the simulated location (S4, S6 and

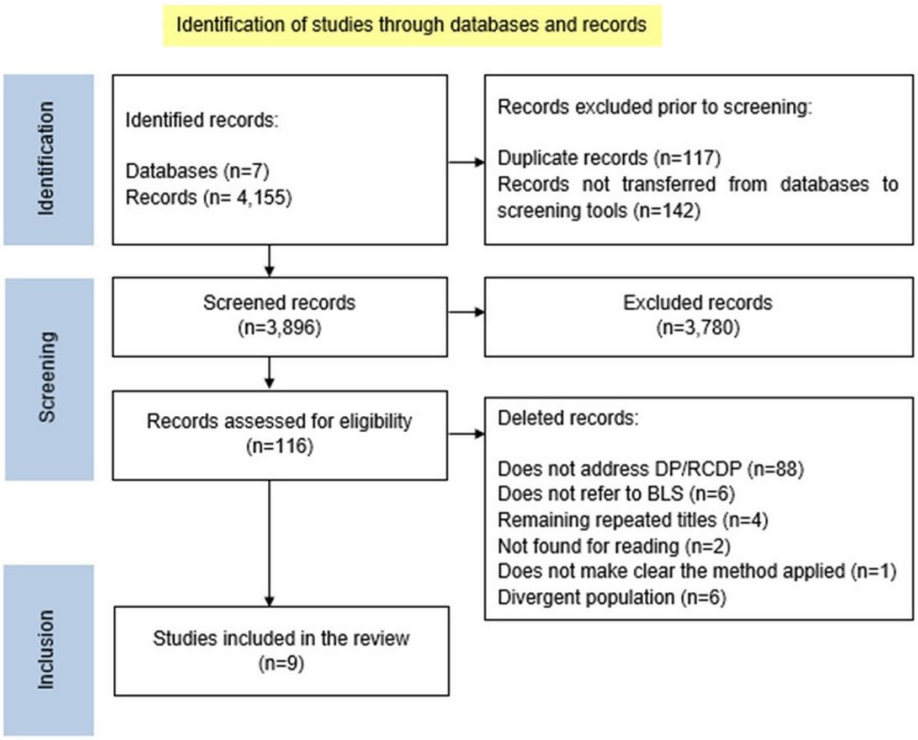

Figure 1 - Flowchart adapted from PRISMA-ScR[21] showing the search used to select the results. São Carlos, SP, Brazil, 2022.

S8)[25,27,29] S2[23] (11.1%) presented simulated scenarios in the intra and extra hospital context, and S3[24] (11.1%), in-hospital settings.

Regarding the description of a clinical event that evolved into CRA during simulations and training, only 4 (44.4%) studies addressed this variable, with S2[23] including a case of care for a collapsed victim, found unresponsive and without a pulse in an out-of-hospital context. Meanwhile, in the intra-hospital setting, the victim is cyanotic and has no pulse. In S3,[24] the simulation was based on two cases of CRA due to ventricular fibrillation (VF) after acute myocardial infarction (AMI) and pulmonary embolism. Also, in S6[27] and S8,[29] there was CRA in VF, without further details of the case.

Of the total number of articles, only S1[22] presented a guide used for DP assessment, and the others did not mention using any guide or assessment script. Finally, the repetition of training over time occurred in up to 12 months in 5 (55.5%) selected studies (S1, S3, S5, S7, S9).[22,24,26,28,30]

Chart 2 shows in detail the studies analyzed according to the simulated modality, the resources used in the assessment of the simulation and the results found.

DISCUSSION

This study aimed to identify how DP and RCDP are being used in teaching BLS to health occupations students, according to a systematic search, in addition to identifying existing gaps in knowledge through national and international scientific literature.

The results of this scope review show that most of the studies found were developed in North America between 2011 and 2021. According to the systematic review,[31] international studies represent a large part of literature on the subject. These focus on the effectiveness of the modality, how it compares to other types of simulation-based learning, and on which characteristics of RCDP are associated with the greatest effect on learning, retention, and impact on patient care. This study[31] states that there was an increase in the number of publications between 2014 and 2016, when RCDP began to gain notoriety. However, of the 15 studies found, only 2 were articles published in scientific journals and 13 had pediatric and neonatal resuscitation as their exclusive theme, evidencing the scarcity of publications and diversification in research.

S5, S6, S8 and S9[26,27,29,30] had objectives that involved students' technical and cognitive performance. In a similar study, in the scope review,[32] learning assessment involved objective measures of knowledge and skills acquired, being demonstrated by multiple-choice question scores, checklist scores, reduced time for critical tasks, and increased compression fraction, evidencing improvements in leadership, communication, and role identification.

The results of this review showed that S1, S2, S4[22,23,25] performed a comparison between DP or RCDP modalities with another simulated training modality. S1[22] used skills training and DP with the intervention and control groups, not bringing notes about

Chart 1. Studies analyzed according to country of origin, objective, sample and methodological approach. São Carlos, SP, Brazil, 2022 (n= 9).

Study identification	Objective	Sample	Methodological approach
S1[22]	Assess training of instructors (medical students) in hands-on BLS training and providing feedback, compared to standard training without using feedback.	First-year medicine students participating in BLS and first aid course following the DP strategy, divided into intervention group (n=144) and control group (n=193), and second-to-sixth medicine students (n=24) participating as instructors	Experimental study
S2[23]	Compare participants' performance in performing simulated CPR in traditional AHA-based BLS training and a revised AHA course including in-hospital skills.	First-year medicine students (n=122)	Experimental study
S3[24]	Assess nursing students' skill retention over a semester in a BLS simulation course using DP.	Nursing students (n=77)	Exploratory descriptive
S4[25]	Compare students' performance in performing CPR using traditional simulation techniques to those trained using DP.	Second-year medicine students (n=120)	Quase-experimental study
S5[26]	Observe the effects of DP during CRA skill training using the dummy's voice feedback device, measuring compression depth and ventilation volume.	Nursing course students (n=606) from 10 different nursing schools	Experimental study
S6[27]	Determine whether DP with high-fidelity simulation training can improve medical students' CPR technique in crisis resource management in the context of a ventricular fibrillation CRA scenario.	Last-year medicine students (n=54)	Intervention study
S7[28]	Compare skill retention between a competency-based BLS refresher training and a time-based refresher course	Fifth-year medicine students (n=40)	Experimental study
S8[29]	Assess changes in CPR quality provided by health professionals using RCDP as a specific intervention teaching technique.	Medical students, physicians, nurses and other unspecified participants (n=431)	Intervention study
S9[30]	Analyze the effects of DP using a feedback device on the CPR performance of nursing students before, immediately after and three months after training, considering their physical characteristics.	Second-year nursing students (n=60)	Randomized clinical trial

Caption: BLS: Basic Life Support; CPR: cardiopulmonary resuscitation; AHA: American Heart Association; DP: deliberate practice; CRA: cardiopulmonary arrest; RCDP: rapid cycle deliberate practice.

the differences between the two techniques. S2,[23] on the other hand, developed the simulated high-fidelity and RCDP scenarios in contexts of intra- and extra-hospital care. In both contexts, teams trained with RCDP had faster responses and better CPR performance. S425 developed DP and high-fidelity simulation with the traditional debriefing, identifying that students who participated in DP had better decision-making results.

The scoping review[32] reveals that of the 23 studies found, 15 studies directly assessed RCDP, while the remaining 8 studies had RCDP as part of mixed interventions, comparing them with other modalities such as skills training or simulated scenarios. Also, a scoping review,[33] which covered using DP and mastery learning in teaching resuscitation, showed that in 7 of the 16 studies found, using the studied practice was compared with traditional training; 1 study compared DP and/or mastery learning delivered through self-correction versus instructor-led guidance; and 8 studies compared pre and post training performance using only DP and/or mastery learning. Better performance was

Chart 2. Studies selected according to the simulated modality, the resources used in simulation assessment and the results found. São Carlos, SP, Brazil, 2022 (n = 9).

Study identification	Simulated modality	Assessments	Results
S1[22]	DP	Instructors' assessment by participants through an adapted instrument. Self-assessment instrument for instructors regarding their teaching and practical skills in BLS. Assessment of instructors by experts through the self-assessment instrument.	There were no differences in self-assessments and expert assessments regarding the performance of instructors in the control and intervention groups. Regarding students' assessment, there was no significant difference between the groups of instructors in theoretical training. Regarding practical training, the intervention group was better assessed, and there was also no difference between groups regarding feedback after training.
S2[23]	RCDP	Students answered a BLS skills test, and an instrument was completed with multiple-choice questions about IHCRA knowledge, constructed by the authors and validated by experts.	Both in the intra- and extra-hospital context, the teams trained with RCDP had faster responses and better performance in the chest compression fraction as well as in identifying the need to apply CPR maneuvers. Also, both teams (traditional method and RCDP) applied defibrillation within the expected time.
S3[24]	Skill training using DP	Each DP was analyzed with a tool called "BLS team assessment (BLSTA)" during a video review, emphasizing the AHA guidelines for effective CPR.	All groups of students performed well and efficiently on DP. All teams met the AHA's five critical components for quality CPR targets. The final assessment was similar to the scores from the first day of training; however, there was a modest decline in CPR quality, which reinforces that frequent practice is necessary to maintain CPR skills.
S4[25]	Skill training using DP	Each participant was assessed individually and performance was rated using a checklist.	Students in the DP group were more likely to ask for help promptly and were also more likely to initiate CPR quickly. Student satisfaction was rated "very helpful" by 98% of control students and 96% of students in the DP group.
S5[26]	Skill training and DP	For assessment, students participated in a 3-minute simulation with compression, ventilation and CPR with 1 rescuer. Data were collected electronically and transmitted to a database.	Intervention group participants showed knowledge retention and also demonstrated improvement in practice throughout the study.
S6[27]	DP and high-fidelity simulation use	Students were assessed for the time needed to start CPR and the time for defibrillation. A focus group was used to qualitatively assess students' attitudes towards training.	The simulation produced objective improvements in resuscitation quality. The comments made by the students regarding the method used for training were positive.
S7[28]	Skill training and DP	A pre- and post-test skills assessment and knowledge retention assessment was carried out.	Higher rates of competence in BLS skills were observed in the control group in the posttest and in the retention test, compared to the test group.
S8[29]	RCDP	Assessment of CPR technical skills.	Simple compression and ventilation techniques taught with RCDP and real-time feedback led to a significant improvement in all CPR quality parameters during simulated resuscitations in healthcare teams.
S9[30]	Skill training using DP	Physical characteristics were assessed using calibrated devices designed for each measurement. Skills were measured by simulating CPR for 2 minutes, with a feedback device attached to the dummy used.	The study showed that the structured DP-based training program using the feedback device improved CPR skill acquisition and retention three months later. Rescuer physical characteristics did not affect CPR performance while performing 2-minute compression/ventilation cycles.

Caption: BLS: Basic Life Support; CPR: cardiopulmonary resuscitation; AHA: American Heart Association; DP: deliberate practice; CRA: cardiorespiratory arrest; RCDP: rapid cycle deliberate practice; IHCRA: in-hospital cardiac arrest.

evidenced with using DP and/or mastery learning in 12 of these studies and in the remaining 4 studies no differences were found between practices.

It is noted that S2[23] and S3[24] developed RCDP or DP with clinical scenarios in BLS in the in-hospital context, both aiming to improve CPR skills in health students. This strategy is essential for the training of new professionals, since IHCRA has a significant incidence within this environment. Authors[34] point to an incidence of 26.1% in hospitalized adults in the USA. Also, survival to the CRA event is related, among other factors, to rescuers' professional skill, and the literature indicates that the mortality of these patients was lower when CPR was conducted in teaching hospitals, corroborating the importance of training for students, they act as agents in resuscitation both during their training process and after graduation as professionals.[35]

The choice of performance training context associated with participants' profile is extremely important and should be focused on the chance of changing erroneous behaviors and adding new concepts, meeting the demands described in the literature. RCDP training has three principles, first being the ability to maximize the time learners spend in DP, providing multiple opportunities, applying the concepts of super learning and automation, resulting in muscle memory providing multiple opportunities for repetitive practice to "do the right thing".[12]

S1, S3, S5, S7 and S9[22,24,26,28,30] reveal that technical or cognitive knowledge retention was assessed over time. In a scope review,[33] 6 studies assessed decline in the ability, 5 of these showed no significant skill differences after training for up to 9 months, and 1 study found performance improvement after 1 single learning session, but the skill retention level was not maintained after 6 months. A study[36] concluded that the ideal time for recycling resuscitation skills training is every 3 months as well as a study[37] that states a 4-month retention after training technical and cognitive skills in BLS.

Finally, only one study, S1,[22] presented a guide for assessing participants in RCDP cycles. Each cycle must be planned according to each competence, which must be divided into a sequence of critical actions, which can be objectively assessed by the facilitator. Thus, performing the tasks of a cycle properly and in the correct sequence allows participants to progress to the next cycle; therefore, in RCDP, participants only advance in the scenario after reaching the level of competence determined in the tasks of the cycle under development,[15] being essential the development of an assessed guide for the facilitators.

Given all of the above, this review presents the sample size as a limitation, even without a time limit. The fact that this review focused only on BLS and specifically on the adult population may have drastically reduced the sample population. Despite the limitations, this review has strengths, such as using the methodological rigor required by the JBI and mapping how DP and/or RCDP have been used in teaching BLS to health occupations students.

CONCLUSION

The mapping of information showed that using DP and RCDP in teaching BLS to health occupations students has a limitation of publications in recent years. Studies have shown positive results in relation to simulated strategies. Despite their insufficiency in the sample and in the applied context, such results represent the international scenario, showing improvements in learning and knowledge retention over time.

There is a gap in information about the development of DP or RCDP, using instruments or scripts for assessing participants and simulated practices.

This scope identified that most studies addressed the hospital context, which demonstrates the gap in knowledge production in the pre-hospital area. Furthermore, it is necessary to point out that most of the studies focused on continents such as Europe and North America, thus denoting the need to encourage studies on DP and RCDP applicability in BLS in different audiences and contexts.

AUTHORS' CONTRIBUTIONS

Review study design. Ana Carolina Belmonte Assalin. Fernanda Berchelli Girão.

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Data analysis. Ana Carolina Belmonte Assalin. Fernanda Berchelli Girão.

Interpretation of results. Ana Carolina Belmonte Assalin. Fernanda Berchelli Girão.

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