Simulated scenarios in nursing: an integrative literature review

Cenários simulados em enfermagem: revisão integrativa de literatura

Escenarios simulados en enfermería: revisión integrativa de la literatura

ABSTRACT

Objective: to identify in scientific literature which simulated clinical scenarios were developed and validated for teaching and learning in nursing. Methods: integrative review, carried out in seven sources of information. The Rayyan program was used for selection, content analysis to explore the findings and the methodological assessment tool of the validity process, entitled Quality Appraisal tool for Validity Studies. Results: initially, 1,179 manuscripts were identified and 14 were part of the sample. Two categories were defined: Profile of simulated clinical scenarios produced in nursing; and Clinical skills developed and their assessment mechanisms. Final Considerations: there was a predominance of high-fidelity scenarios, built in Brazil in the last five years, aimed at nursing students on the themes of emergency, maternal care and stomatherapy, addressing the assessment of cognitive, psychomotor and affective skills in nursing. Most studies obtained good methodological quality in their content validity process.

Descriptors: Students, Nursing; Nurses; Simulation Training; Teaching; Learning.

RESUMO

Objetivos: identificar na literatura científica quais os cenários clínicos simulados desenvolvidos e validados para o ensino e aprendizagem em enfermagem. Métodos: revisão integrativa, realizada em sete fontes de informação. Utilizaram-se o programa Rayyan para seleção, a análise de conteúdo para exploração dos achados e a ferramenta de avaliação metodológica do percurso de validação, intitulada Avaliação da Qualidade para Estudos de Validade. Resultados: identificaram-se, inicialmente, 1.179 manuscritos e 14 compuseram a amostra. Definiram-se duas categorias: Perfil dos cenários clínicos simulados produzidos em enfermagem; e Habilidades clínicas desenvolvidas e seus mecanismos de avaliação. Considerações Finais: houve predominância de cenários de alta fidelidade, construídos no Brasil, nos últimos cinco anos, voltados a estudantes de enfermagem sobre as temáticas da urgência e emergência, cuidado materno e estomaterapia, abordando a avaliação das habilidades cognitivas, psicomotoras e afetivas em enfermagem. A maioria dos estudos obteve boa qualidade metodológica em seu processo de validação de conteúdo.

Descritores: Estudiantes de Enfermería; Enfermeras e Enfermeiros; Simulação; Ensino; Aprendizagem.

RESUMEN

Objetivos: identificar en la literatura científica qué escenarios clínicos simulados fueron desarrollados y validados para la enseñanza y el aprendizaje en enfermería. Métodos: revisión integradora, realizada en siete fuentes de información. Se utilizó el programa Rayyan para la selección, el análisis de contenido para explorar los hallazgos y la herramienta de evaluación metodológica del proceso de validación, denominada Quality Appraisal tool for Validity Studies. Resultados: inicialmente se identificaron 1.179 manuscritos y 14 formaron parte de la muestra. Se definieron dos categorías: Perfil de escenarios clínicos simulados producidos en enfermería; y Habilidades clínicas desarrolladas y sus mecanismos de evaluación. Consideraciones Finales: hubo predominio de escenarios de alta fidelidad, construidos en Brasil en los últimos cinco años, dirigidos a estudiantes de enfermería sobre las temáticas de urgencia y emergencia, cuidado materno y estomaterapia, abordando la evaluación de las habilidades cognitivas, psicomotoras y afectivas en enfermería. La mayoría de los estudios obtuvieron buena calidad metodológica en su proceso de validación de contenido.

Descriptores: Estudiantes de Enfermería; Enfermeras e Enfermeiros; Simulação; Ensino; Aprendizagem.
INTRODUCTION

Active teaching and learning strategies, capable of encouraging the development of skills and attitudes, constitute a challenge for professors today. Among the educational possibilities in nursing education, clinical simulation stands out, defined as a teaching strategy, guided by experiential learning, which replicates real situations, in a safe and controlled environment, to develop students' cognitive (knowledge), psychomotor (procedural) and affective (attitudes/behavior) skills.

Adopting the clinical simulation strategy requires the application of its steps, called preparation, participation and debriefing. The preparation step is divided into pre-simulation phases, characterized by providing student with the necessary knowledge to experience the simulated scenario, associated with skills training and pre-briefing/briefing, an immediate phase to developing a scenario that covers environment clarification, learning objectives, clinical case and participant roles.

The participation step covers developing a scenario simulated by students. Finally, debriefing confines an analytical process of discussion/reflection, usually carried out after the simulation scenario, in order to enhance the development of clinical skills. Experiencing a simulated scenario allows students to apply their knowledge, improve psychomotor skills in a controlled environment, make mistakes numerous times, without harming patients, and develop fundamental behavioral skills for work in nursing. However, for this, it is necessary that the design of the adopted scenario is correctly aligned with the desired learning objectives and that it has been submitted to a validity process, in order to obtain clarity, realism and applicability towards teaching and learning.

Despite the increasing clinical scenario use in nursing, it has not yet been possible to identify in the literature a study capable of synthesizing an overview of the scenarios already produced and validated. Moreover, no scientific evidence was found to describe which themes have been addressed through clinical simulation for the care of adult and older patients, the objectives and criteria that supported its construction. Thus, it is believed that this scientific gap may interfere in the determination of best practices in simulation-based teaching in nursing, given the lack of scientific evidence on what has already been advanced and what still needs to be done in the development of described and reliable clinical scenarios in this educational context.

Moreover, knowledge synthesis on clinical scenario production and validity can encourage its use in nursing education, impact the quality of student and professional learning, patient safety and instigate the development of new scientific research capable of contributing to the progress of simulation-based teaching as an effective and innovative strategy. Considering the above, the question is: what are the simulated clinical scenarios developed to promote the teaching and learning of nursing students and professionals?

OBJECTIVES

To identify in the scientific literature which simulated clinical scenarios were developed and validated for teaching and learning in nursing.

METHODS

This is an integrative literature review with the intention of synthesizing and critically assessing studies on simulated clinical scenarios, aimed at teaching and learning in nursing, supported by Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), a theoretical-methodological framework based on a four-step flowchart and a 27-item checklist framework of directing the correct performance of review studies.

To develop the study, six steps were taken: (1) definition of theme and guiding question of research; (2) establishment of inclusion and exclusion criteria that will compose the sample; (3) categorization of information to be extracted from the studies; (4) assessment of included studies; (5) critical interpretation of results; and (6) synthesis of the data obtained.

In the first step, the guiding question was formulated using the Patient-Intervention-Comparison-Outcome (PICO) strategy, a variation of the Patient-Intervention-Outcome (PIO) strategy, considering as the acronym P (Population) nursing students and professionals; the acronym I (Intervention), the identification of simulated clinical scenarios aimed at nursing and the acronym O (Outcome), nursing education based on clinical simulation. Thus, the following question was elaborated: what are the simulated clinical scenarios developed and validated to promote the teaching and learning of nursing students and professionals?

In the second step, the criteria for inclusion and exclusion of articles were established, including primary methodological studies that addressed the development of simulated clinical scenarios for the care of adults and older adults, aimed at nursing students and professionals, without delimiting language or topic frame, published in scientific journals, electronically. We excluded studies such as literature review, letter to the editor, editorials, case reports, abstracts published in annals of events, personal opinions, dissertations, theses, book chapters, institutional manuals and articles on virtual and hybrid simulated scenarios.

The following sources of information have been adopted: Medical Literature Analysis and Retrieval System Online (MEDLINE/PubMed), Latin American and Caribbean Literature in Health Sciences (LILACS), Scopus, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science, Excerpta Medica Database (EMBASE) and Education Resources Information Center (ERIC).

The search for evidence took place on November 23, 2021, based on the structural elements of the PIO strategy, to determine the descriptors and keywords. The descriptors obtained from the Descriptors in Health Sciences (DeCS) and Medical Subject Headings (MeSH) were used, in a trilingual way, their synonyms, in the plural and singular, and the Boolean operators. Knowing that each information source responds to different commands and works in a unique way. The search strategy was adapted, as exemplified below in Chart 1.

In the second step, the selection of studies was carried out, firstly by reading titles and abstracts, by two independent researchers, through a free, single-version web review program called Rayyan Qatar Computing Research Institute (Rayyan QCRI), due to its ability to facilitate the initial screening of manuscripts, exclude duplicate articles, and incorporate a high level of usability and selection effectiveness, with assistant researcher blinding.

Qatar Computing Research Institute (Rayyan QCRI), due to its ability to facilitate the initial screening of manuscripts, exclude duplicate articles, and incorporate a high level of usability and selection effectiveness, with assistant researcher blinding.
Subsequently, the selected studies were read in full and their reference lists were checked for the inclusion of new articles, obtaining the desired final sample.

A data collection instrument previously validated\(^{(16)}\) was developed considering author, year of publication, country of origin, objective and main results. Moreover, quality assessment of studies' methodological course was carried out through a specific tool for this purpose, entitled Quality Appraisal tool for Validity Studies (QAVALS), adopted internationally\(^{(17)}\) and nationally\(^{(18)}\), even if not yet validated for Brazilian Portuguese, as it is easy to interpret, handle, and reliable and does not generate an interpretation-dependent score\(^{(17)}\).

The QAVALS is composed of 24 criteria, which assess aspects of validity studies' methodological quality, classified as "yes", "no" or "other" (other = ND = not determined; NA = not applicable; NR = not reported). The more criteria that are met by the study and receive a "yes" rating, the better the validity quality will be\(^{(17)}\).

In the fourth step, the findings obtained were analyzed using thematic analysis, in three phases: (1) pre-analysis, with a thorough reading of evidence; (2) organization of convergent information and exploration of findings with clustering of convergences; and (3) data processing, listing the categories\(^{(16)}\). In the fifth and sixth steps, the information obtained was interpreted, presenting knowledge synthesis.

### RESULTS

Initially, 1,179 primary studies were identified and 14 comprised the final sample. The selection process was demonstrated in Figure 1, as recommended by the PRISMA checklist\(^{(13)}\).

Then, the studies included in the sample were characterized according to their authorship, origin, year of publication, intention, main results, as shown in Chart 2 below. Most of manuscripts included in the sample of this research were from the last five years\(^{(19-29)}\), validated in content by more than eight experts\(^{(9,19-22,24-27)}\), with a level of inter-rater agreement above 80\(^{\text{th}}\)\(^{(19-31)}\). Two studies were submitted to the Delphi technique\(^{(21-22)}\), and only one article was international\(^{(31)}\).

The main components that structured the design of simulated clinical scenarios were: (1) learning objectives\(^{(9,19,22,24,26-27,30-31)}\); (2) scenario fidelity level\(^{(9,19-22,23-26,27)}\); (3) clinical case\(^{(9,19,22,23-26,27)}\); (4) materials used\(^{(9,19-22,25-26,30-31)}\); and scenario duration\(^{(9,19-21,25-29,30-31)}\). It is also worth considering that there was a preponderance of studies\(^{(9,18-28)}\) that considered the other simulation steps, such as preparation and debriefing, as components of the simulated scenario design.

The findings allowed the elaboration of two categories: Profile of simulated clinical scenarios produced in nursing: Developed clinical skills and their assessment mechanisms.

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**Chart 1** - Search strategy, descriptors and keywords used in this integrative literature review, Uberaba, Minas Gerais, Brazil, 2022

| Database | Descriptors | Search strategy |
|----------|-------------|-----------------|
| MEDLINE/PubMed Scopus | MeSH controlled descriptors: Nurses; “Students, Nursing”; “Simulation Training”; the keyword: Scenario and synonyms “Nurse; “Pupil Nurses”; “Student, Nursing”; “Nurses, Pupil”; “Nurse, Pupil”; “Pupil Nurse”; “Nursing Student”; “Nursing Students”; “Training, Simulation” | (“Nurses” OR “Nurse” AND “Students, Nursing” OR “Pupil Nurses” OR “Student, Nursing” OR Nurses Pupil OR “Nurse, Pupil” OR “Nursing Student” OR “Nursing Students” AND “Simulation Training” OR “Training, Simulation” AND “Scenario” AND “Teaching” AND “Learning”). |
| LILACS | DeCS present controlled descriptors in Portuguese: “Enfermagem”; “Estudantes de Enfermagem”; “Treinamento por Simulação”; “Ensino”; “Aprendizagem” and the keyword scenario and its versions in English, Spanish and French. | (“Enfermagem” AND “Estudantes de Enfermagem” AND “Treinamento por Simulação” AND “Ensino” AND “Aprendizagem”). |
| CINAHL | Controlled descriptors in titles/subjects in English: Nurses; “Students, Nursing”; “Simulation Training”; Teaching; Learning. The keyword scenario was adopted. | (“Nurses” AND “Students, Nursing” AND “Simulation” AND “Teaching” AND “Learning”). |
| Web of Science | MeSH controlled descriptors in English: “Nurses”, “Students, Nursing”, “Simulation Training”, “Teaching”, “Learning” and the keyword scenario. | TS= (Nurses AND Students, Nursing AND Simulation Training AND Teaching AND Learning). |
| Embase | MeSH controlled descriptors in English: “Nurses”, “Students, Nursing”, “Simulation Training”, “Teaching”, “Learning” and the keyword scenario. | (((“nurses”/exp OR nurses/EXP OR nurse/EXP OR nurse) AND (students, nursing/ EXP OR students, nursing) OR pupil nurses/EXP OR pupil nurses OR nursing student/EXP OR nursing student) OR nursing students/EXP OR nursing students) AND (simulation training/EXP OR simulation training) OR training, simulation) AND scenario AND (teaching/EXP OR teaching) AND (learning/EXP OR learning). |
| ERIC | Thesaurus controlled descriptors in English: “Nurses”, “Students, Nursing”, “Simulation Training”, “Teaching”, “Learning” and the keyword scenario. | (“Nurses” OR “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 “Simulation Training” OR “Training, Simulation” AND “Scenario” AND “Teaching” AND “Learning”). |

*MEDELINE/PubMed - Medical Literature Analysis and Retrieval System Online; LILACS - Latin American and Caribbean Literature in Health Sciences; CINAHL - Cumulative Index to Nursing and Allied Health Literature; Embase - Excerpta Medica Database; ERIC - Education Resources Information Center.*
Identification of new studies through databases and records

**MEDLINE/PubMed**: (n = 359)  
CINAHL: (n = 68)  
Scopus: (n = 666)  
LILACS: (n = 0)  
Web of Science: (n = 47)  
Embase (n = 21)  
ERIC (n = 18)

Records removed before screening:  
Duplicate records (n = 294)  
Records marked as ineligible by automation tools (n = 0)  
Records removed for other reasons (n = 0)

Selected records (n = 885)

Reports sought for retrieval (n = 0)

Reports assessed for eligibility (n = 18)

Excluded reports (n = 867)

New studies included in the review (n = 14)  
Reports of new studies included (n = 0)

**Figure 1** – Flowchart of identification, selection and inclusion of studies, according to recommendations from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses, Uberaba, Minas Gerais, Brazil, 2022

**Chart 2** – Characterization of studies that composed the sample of this integrative literature review, Uberaba, Minas Gerais, Brazil, 2022

| Author, year and origin | Objective | Main results |
|-------------------------|-----------|-------------|
| Gouveia et al., 2021[19], Brazil. | Build and validate a scenario for the development of diagnostic reasoning skills in nursing students. | Eight judges validated the scenario content and obtained an agreement rate of 96%. Scenario components: prior knowledge of students; goals; theoretical foundation; theme; date; responsible; scenario complexity; expected interventions; expected results; faithfulness; clinical cases for facilitator to student and actor; vital parameters; reason for hospitalization; medical prescription; materials; characterization of actors; physical space; human resources; scenario time; validity; development; debriefing; and assessment. |
| Carreiro; Romão; Costa, 2021[20], Brazil. | Build and validate two medium-fidelity clinical simulation scenarios in basic life support in the context of primary care. | A scenario of cardiorespiratory arrest in primary care and airway obstruction by a foreign body was validated in content, by seven judges, obtaining a CVI between 85.7% and 100%. Scenario components: participant’s previous experience; goals; scenario duration; human Resources; theme; faithfulness; clinical case; physical exam; conduct; actor characterization; materials; physical space; development; debriefing; and assessment. |
| Santana et al., 2021[21], Brazil. | Build and validate the content of a clinical simulation scenario for transporting critically ill patients. | The Delphi technique was adopted to assess inter-rater agreement, obtaining 80% agreement through five judges. Scenario components: theme; target Audience; prerequisites; number of students; scenario; time; goals; pre-briefing/briefing; clinical case; high-fidelity scenario and mannequin preparation; materials; necessary actions; debriefing; and references. |
| Rocha et al., 2021[22], Brazil. | Validate simulated scenarios for teaching and learning nursing students about pressure injury assessment and treatment. | Two scenarios were validated for content by ten judges: the first on nursing care in the assessment of pressure injuries to hospitalized patients; and the second about nursing care in the treatment of pressure injuries to the bedridden patient at home, resulting in an overall Scale-Level Content Validity Index greater than 0.80. Scenario components: previous knowledge of students; goals; theoretical foundation; responsible; scenario fidelity; documentation; clinical case; material and human; team training; debriefing; and assessment. |

Category 1 deals with the presentation of the profile of the simulated scenarios that have been produced for nursing education, covering:

- **Learning themes**: on emergency: basic life support in the context of primary care[24]; intra-hospital transport of critical patients[23]; asthma care[21]; about maternal care: childbirth and humanized birth[24]; postpartum hemorrhage[27]; licit and illicit drug use and early sexual initiation, pregnancy and abortion[20]; on the care of wounds and stomas: assessment and treatment of pressure injuries in nursing[22]; patient care with stomatherapy[28]; nursing care for colostomy patients[9]; on infection: management of sepsis[28]; prevention of infections associated with peripheral catheters[26]; on different topics: nursing diagnosis reasoning[29]; management of waste from health services[28]; care for patients with the presence of unpleasant odors[28].
- **Target audience**: nursing students[9,19-20,22,28-31]; professional nurses and nursing students[21,23-24,26]; professional nurses[21-24,28-29];
- **Theoretical frameworks that supported the simulation**: National League Nursing Jeffries Simulation Theory (NLN/JST)[23-26]; International Nursing Association for Clinical Simulation and Learning (INACSL)[22,24-26]; theoretical-practical script for clinical simulation proposed by Fabri[9,22,28]; Bloom’s Taxonomy[9,20,28];
- **Scenario fidelity**: high fidelity[9,19,21-25,29-31]; medium fidelity[9,20,27-28,30]; low fidelity[26];
- **Instrument adopted**: mannequin[21,24,26,30-31]; simulated patient[9,22,24,25,28-29]; standardized patient[19,20-23,25];
- **Scenario duration**: 10 minutes[21,24,25,29,30]; 15 minutes[19,23,26,28]; 20 minutes[9,27,31]; 30 minutes[28].

To be continued
To assess knowledge, theoretical assessment with objective questions\(^9,19-31\) and the Pieper knowledge test were adopted\(^{30}\). For psychomotor assessment, the Objective Structured Clinical Examination (OSCE) was used\(^{23}\). To assess the attitudinal aspects, the Student Satisfaction and Self-Confidence in Learning Examination (OSCE) was used\(^{23}\). To assess the cognitive ability of the simulated scenarios, the Diagnostic Reasoning Inventory\(^{19}\) and the Lasater Clinical Judgment Rubric – Brazilian Version\(^{24}\).

As these are methodological studies, it was considered important to present quality assessment of the validity process performed by studies included in the sample of this research, adopting the QAVALS tool\(^{17}\), as noted in Chart 3. Most of the studies that made up the sample included most of the validity criteria relevant to content assessment, demonstrating good methodological quality\(^{9,19-25,27-30}\). Only two articles did not meet a diversity of criteria\(^{26,31}\). It should be noted that, because scenario validity is content, the classification “not applicable” (NA), indicated for criteria such as criterion validity, construction validity for known groups, convergent construction validity and construction validity discriminant, did not interfere in assessing studies’ methodological quality.

Given the above, the validity criteria of greater fragility were the calculation of the sample size of participants to carry out the pilot test of the scenarios with the target audience, the description of friction during validity and result description of validity coefficient and standard deviations or confidence intervals.
**DISCUSSION**

Intensive clinical simulation use by nursing in contemporary times has increasingly demanded clinical scenario design construction and validity, capable of optimizing the development of desired professional clinical skills and providing greater realism, bringing students closer to the contexts experienced in real situations\(^{32}\). This study gives the science of nursing an originality, as it presents an overview of clinical scenario use, capable of supporting...

### Chart 3 – Methodological quality assessment of sample validity studies using the Quality Appraisal tool for Validity Studies, Uberaba, Minas Gerais, Brazil, 2022

| Items                                                                 | Studies |
|-----------------------------------------------------------------------|---------|
| 1. Was the study design reported?                                      | Y Y Y Y Y Y Y Y Y Y Y Y Y Y |
| 2. Did the study provide an accurate description of the type of validity tested? | Y Y Y Y Y Y Y Y NR Y Y Y Y Y |
| 3. Was the study setting and time frame of participant recruitment clearly outlined and described? | Y Y Y Y Y Y Y Y N Y Y Y Y Y |
| 4. Were the criteria for participant selection clearly described?       | Y Y Y Y Y Y Y Y N Y Y Y Y Y |
| 5. Were the participants in the study representative of the sample population from which they were recruited? | Y Y Y Y Y Y Y Y NR Y Y Y Y Y |
| 6. Did the study clearly describe the outcome measures to be validated? | Y Y Y Y Y Y Y Y N Y Y Y Y Y |
| 7. Did the study provide a clear description of the procedures for testing validity? | Y Y Y Y Y Y Y Y N Y Y Y N |
| 8. Was the testing procedure standardized for all participants?         | Y Y Y Y Y Y Y Y N Y Y Y Y Y |
| 9. Was a prior sample size calculation performed to ensure that the study had sufficient power? | N N N N N N N N N Y N N N N |
| 10. Did the study describe and justify any attrition that may have occurred? | NR NR NR NR NR NR NR NR NR NR NR NR NR |
| 11. Were the statistical analyses used to test validity appropriate for the study? | Y Y Y Y Y Y Y Y N Y Y Y Y Y |
| 12. When multiple comparisons were performed, were appropriate statistical adjustments used to control for the likelihood of a type 1 error? | NA NA NA NA NA NA NA NA NA NA NA NA NA |
| 13. Did the study identify potential confounding variables and if so, were measures taken to adjust for these confounders? | NA NA NA NA NA NA NA NA NA NA NA NA NA |
| 14. Were the primary findings of the study clearly described?           | Y Y Y Y Y Y Y N Y Y Y N Y N |
| 15. Were validity coefficients reported for primary outcomes?          | Y Y Y Y Y Y Y N Y Y Y N Y N |
| 16. For primary outcomes, did the study report the standard deviation or confidence intervals for normally distributed data? Or, if non-normally distributed data, did the study report the inter-quartile range for the main outcomes? | N N N N N N N N Y Y N N N N |
| 17. Was the process of selecting expert panel and their qualifications described? | Y Y Y Y Y Y Y Y Y Y Y Y Y Y |
| 18. Did the study provide a rationale for the selection of the reference standard? | NA NA NA NA NA NA NA NA NA NA NA NA NA |
| 19. When the index test was assessed by more than one rater, were the raters blinded to the findings of the other raters? | NA NA NA NA NA NA NA NA NA NA NA NA NA |
| 20. When the index test was assessed by more than one rater, was the inter-rater reliability between raters established and reported? | NA NA NA NA NA NA NA NA NA NA NA NA NA |
| 21. Was the time interval used between administration of reference standard and the test measure appropriate? | NA NA NA NA NA NA NA NA NA NA NA NA NA |
| 22. Were subjects in different groups homogenous at baseline or if they weren’t homogenous at baseline, were differences between groups accounted for during the analysis? | NA NA NA NA NA NA NA NA NA NA NA NA NA |
| 23. Did the measures used for convergent validity represent a similar construct as the outcome measure of interest? | NA NA NA NA NA NA NA NA NA NA NA NA NA |
| 24. Did the measures used for discriminant validity represent a construct different from the outcome measure of interest? | NA NA NA NA NA NA NA NA NA NA NA NA NA |

NA - not applicable; NR - not reported; Y - yes; N – no.
teaching and learning based on simulation, demonstrating the themes, contexts, learning intentions and assessment mechanisms that have already been considered in this scope, to highlight the advances and also the gaps that can be explored. Also, for critically assessing the manuscripts included, in their validity process and pointing out the existing methodological strengths and weaknesses, aiming at the future elaboration of more robust studies on clinical scenarios in nursing.

It is important to highlight the relevance of all studies identified on this topic and the preponderance of national literature on clinical scenario validity, given that, in Brazil, there is a tendency to practice clinical scenario construction and validity aimed at simulated teaching in nursing and its presentation in scientific articles, differing from simulation research in the international context, which performs scenario validity by experts during the methodological path, but generally does not consider its detailed description in the studies.

Another relevant finding of this review is that most studies identified insert all steps of clinical simulation (preparation, participation and debriefing) as simulated scenario elements. This, thus, is a scarcity in literature on the elaboration and validity of more complete simulation designs, with the presentation of simulation steps separately, with the intention of guiding facilitators and professors, in a clear and didactic way, regarding the planning and application of simulated activities in nursing.

It was possible to understand the profile of the simulated clinical scenarios already developed for the care of adult and older patients in nursing, based mainly on emergency, maternal care, and wound and stoma care contexts.

In the meantime, the findings identified in this review made it evident that, although simulated scenario use is already considered a successful practice for teaching in nursing, which can enhance, exponentially, learning in nursing, there is still a need to extend its application to the teaching of other topics, which may take advantage of the benefits of this pedagogical strategy in the development of clinical skills.

Most clinical scenarios discussed here based their construction on consistent theoretical-methodological frameworks, especially the National League Nursing Jefferies Simulation Theory (NLN/ JST). A study carried out in Brazil, which aimed to build and validate three clinical scenarios by experts with candidates for the title of expert in stomatherapy, adopted the Jefferies Simulation Theory, contemplating the elements determined by this conceptual model of simulation: facilitator, student, educational practices, simulation design and expected results. It was observed that the chosen design allowed the candidates for the title of expert to demonstrate their knowledge in the area and achieve the desired objectives.

Many changes have occurred in simulation-based teaching following the release of the Jefferies Simulation Theory in 2005, due to the provision of a framework for this educational modality. In 2016, a new version of this theory was published with the intention of obtaining, after a deep literary search, more consistent and standardized simulation practices, capable of disseminating knowledge and conducting the planning of more effective simulated scenarios.

A review corroborates with this research, which intended to assess the validity process quality carried out in studies that developed simulated clinical scenarios for teaching and learning in nursing, through the QAVALS, presenting six primary studies of good methodological quality, indicated by this tool.

The clinical scenario validity process is essential for the practice of simulation in health, as it provides subsidies for the elements of a tool to become relevant and representative for fulfilling its purpose. In the context of building clinical scenarios, content...
validity provides its scientific recognition, reproducibility and coherence, to achieve higher quality simulation-based teaching and learning in nursing(27).

**Study limitations**

A limitation of this review refers that the search was limited to primary published studies, i.e., the gray literature was not included. Other primary studies could be identified through searches in other databases and clinical trial registry websites as well as the inclusion of studies published in journals from different areas of health. In addition to this, using descriptor “nursing student” limited our search, making it impossible to identify another study on the investigated topic. The search for simulation use as a teaching and learning strategy in the continuing education of health. In addition to this, using descriptor “nursing student” limited our search, making it impossible to identify another study on the investigated topic. The search for simulation use as a teaching and learning strategy in the continuing education of health professionals could have resulted in a greater number of clinical scenarios developed and validated.

**Contributions to nursing**

This study contributes to the advancement of science in nursing, as it presents a contemporary profile of the construction and validity of clinical scenarios for this context and substantiates the choice of professors and facilitators about the best pedagogical practices in simulation. It is recommended the elaboration of new review studies, capable of investigating the production of clinical scenarios for all care areas as well as clinical trials to test the effectiveness of existing simulated scenarios.

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**FINAL CONSIDERATIONS**

Most simulated clinical scenarios in nursing, aimed at the care of adults and older adults, were produced and validated in the last five years, in Brazil, on the teaching of urgency and emergency, maternal care and stomatherapy, aimed at nursing students. Regarding the theoretical frameworks that supported scenario construction, Jeffries’ theoretical framework was highlighted, having learning objectives, fidelity level, clinical case, material resources and duration as main components. Although the simulated clinical scenarios are capable of developing and assessing cognitive, psychomotor and affective skills, it is necessary to accurately establish mechanisms and instruments used to analyze scenario construction and validity. Most of the manuscripts that made up the sample included the criteria of the validity process addressed by the QAVALS tool, demonstrating good methodological quality in scenario development.

**CONTRIBUTIONS**

Amorim GC, Bernardinelli FCP, Nascimento JSG and Chavaglia SRR contributed to the conception or design of the study/research. Amorim GC, Bernardinelli FCP, Nascimento JSG, Souza IF and Chavaglia SRR contributed to the analysis and/or interpretation of data. Amorim GC, Bernardinelli FCP, Nascimento JSG, Contim D and Chavaglia SRR contributed to the final review with critical and intellectual participation in the manuscript.
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