Original Article

Translation and cross-cultural adaptation of the Creighton Competency Evaluation Instrument for Brazil

Tradução e adaptação transcultural do *Creighton Competency Evaluation Instrument* para o Brasil

Traducción y adaptación transcultural del *Creighton Competency Evaluation Instrument* para Brasil

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Abstract

Objective: To translate and adapt the Creighton Competency Evaluation Instrument for Brazil.

Methods: A methodological research that adopted Beaton's framework for the process of translation and cross-cultural adaptation, which took place in six stages: translation, synthesis of translations, back-translation, submission to the expert committee, pre-test and opinion of the original author. Two translators, two back-translators and eight members of the expert committee participated. Pre-test was carried out with 32 participants.

Results: After linguistic adjustments, the final version obtained 100% agreement by the Content Validity Index. Reliability (Cronbach's alpha) was 0.897, which is considered an excellent result. The instrument was classified as easy to use by 84.4% of experts.

Conclusion: Translation and cross-cultural adaptation provide the Brazilian academic community with an objective and practical tool, with the possibility of immediate feedback to students in assessments during simulated clinical activities.

Resumo

Objetivo: Traduzir para a língua portuguesa e adaptar transculturalmente para o Brasil o *Creighton Competency Evaluation Instrument*.

Métodos: Pesquisa metodológica que adotou o referencial de Beaton para o processo de tradução e adaptação transcultural, que ocorreu em seis etapas: tradução, síntese das traduções, retrotradução, submissão ao comitê de especialistas, pré-teste e parecer do autor original. Participaram dois tradutores, dois retrotradutores e oito membros no comitê de especialistas. O pré-teste foi realizado com 32 participantes.

Resultados: Após ajustes linguísticos, a versão final obteve concordância de 100% pelo Índice de Validade de Conteúdo. A confiabilidade (Alfa de Cronbach) foi de 0,897, considerado um ótimo resultado. O instrumento foi classificado como de fácil utilização por 84,4% dos experts.

Conclusão: A tradução e a adaptação transcultural disponibiliza para a comunidade acadêmica brasileira um instrumento objetivo e prático, com possibilidade de *feedback* imediato aos estudantes nas avaliações durante a atividade clínica simulada.

Resumen

Objetivo: Traducir al idioma portugués y adaptar transculturalmente para Brasil el *Creighton Competency Evaluation Instrument*.

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Conflicts of interest: this article was extracted from the thesis "*Tradução e adaptação transcultural do Creighton Competency Evaluation Instrument para a língua portuguesa (Brasil)*" presented to *Universidade Federal do Paraná*.

Métodos: Investigación metodológica que adoptó el marco referencial de Beaton para el proceso de traducción y adaptación transcultural, realizada en seis etapas: traducción, síntesis de las traducciones, retrotraducción, presentación al comité de especialistas, prueba piloto y opinión del autor original. Participaron dos traductores, dos retrotraductores y ocho miembros del comité de especialistas. La prueba piloto fue realizada con 32 participantes.

Resultados: Después de los ajustes lingüísticos, la versión final obtuvo una concordancia del 100 % mediante el Índice de Validez de Contenido. La fiabilidad (Alfa de Cronbach) fue de 0,897, considerado un excelente resultado. El instrumento fue clasificado como fácil de utilizar por el 84,4 % de los especialistas.

Conclusión: La traducción y la adaptación transcultural pone a disposición de la comunidad académica brasileña un instrumento objetivo y práctico, con posibilidad de *feedback* inmediato a los estudiantes en las evaluaciones durante la actividad clínica simulada.

Introduction

Nursing teaching in clinical practice is a major challenge at any level of education. In order to make the teaching process more pleasant and productive, new methods with innovative resources have been increasingly adopted.[1] Among these, clinical simulation has stood out due to its potential in developing communication and psychomotor and cognitive skills, decision-making, reasoning, and clinical judgment. Moreover, it provides increased self-confidence and student satisfaction in addition to improving learning.[2,3]

This strategy allows students to be assessed individually or in groups, replicating patient care settings. The ability to control and manipulate clinical encounters allows for a more homogeneous assessment of learning and can favor the adequacy of teaching with correction of possible flaws in training.[4]

However, it is necessary that trainers have reliable and validated instruments capable of measuring the development of skills during the application of clinical simulation.[5-7]

Competencies are continuous processes that involve dynamic assessment in a responsible, recognized knowledge of how to mobilize and integrate knowledge, skills, attitudes, social and affective values, among others.[8] Currently, in health, the most used competency model includes knowledge, the ability to use it, skills, attitudes and acquisition of professional identity, translated by professional values, behaviors, actions and aspirations.[9,10]

In Brazil, objectively assessing the acquisition of clinical skills by nursing students in a simulated environment, with reliable instruments that generate results that can be compared with international studies, is still a challenge in nursing education.[11] In this context, in 2008, the University of Creighton in the United States proposed the Simulation Evaluation Instrument (SEI) for skills assessment, developed to be effective and practical in the simulated clinical experience.[12]

In 2014, the SEI was reviewed and was called Creighton Competency Evaluation Instrument (CCEI). Competencies are measured in four categories in CCEI: assessment, communication, clinical judgment, and patient safety.[13,14]

Thus, considering the need for instruments to assess the skills of undergraduate nursing students, this study aimed to translate the CCEI and cross-culturally adapt to Brazil.

Methods

This is a methodological study of translation and cross-cultural adaptation carried out from January 2018 to January 2019. Beaton's methodological framework (2000, 2007) was used with the following steps: translation, synthesis, back-translation, review, pre-test, and submission to the original author.[15,16] Translation and cross-cultural adaptation require rigorous use of a methodology to maintain equivalence between source and target languages, so that the qualities of reliability and validity in the new version are preserved.[15]

The CCEI comprises evaluation, communication, clinical judgment, and patient safety; each category is composed of characteristic items that allow assessing whether students demonstrate competency or not, totaling 23 essential behaviors, applicable to all types of scenarios. The scoring criteria are: 0 = demonstrates competency (*demonstra competência*); 1 = does not demonstrate competency (*não demonstra competência*); and not applicable (*não se aplica*). When using the instrument, it is important to define the objectives and which items will be assessed.

Applicable items must have the minimum behaviors defined and described in the discussion spreadsheet, allowing students to be assessed objectively. It will also serve as a guide for evaluators on the minimum expected skills. Items that require critical thinking and reflection can be better assessed at debriefing.

The score is obtained by the sum of items, divided by the total of valid items. This formula results in the percentage of the grade referring to the assessment. The minimum acceptable score must be established by the professors considering the objectives of the scenario and education level.[4,13] Assuming that of the 23 items, three do not apply to the objectives, we will have 20 items that will be assessed. If, when performing the scenario, students demonstrate competency in 18 items, the following calculation 18 ÷ 20 = 0.9 will be applied, i.e., it reached 90% of the grade attributed to assessment.

To guide the use of CCEI, the University of Creighton recommends that videos available online be viewed.[4]

Translation: Translation was performed by two native Brazilian translators, with English as second language. Recruitment took place by e-mail after analyzing *Curriculum Lattes*; one of the translators was familiar with the research theme and objectives and the other was from a related field, identified as Translator 1 (T1) and Translator 2 (T2).

Synthesis of translations: T1, T2 and the researcher held a video conference using the Google Hangouts® 24.0 to compare translations. The debate continued until the consensus version identified as Translation 12 (T12) was obtained.

Back-translation: Back-translation was performed by two independent and American translators with mastery of Brazilian Portuguese language, unaware of the research objectives. Recruitment occurred by simple search in the database of the Brazilian National Council for Scientific and Technological Development (*Conselho Nacional de Desenvolvimento Científico e Tecnológico*, abbreviated CNPq) observing the criterion of being native to the USA, with training in foreign languages, proficient in Brazilian Portuguese. Resumes outdated for more than three years have been excluded. Thirteen selected were invited by email to collaborate in the back-translation process. Two completed the process. The translations of T12 version were called back-translation 1 (BT1) and back-translation 2 (BT2).

Meeting with the Expert Committee: All versions were analyzed and reviewed by the committee, respecting the semantic, idiomatic, experiential and conceptual equivalence. The committee comprised a professional with experience in methodological studies; a linguistic professional; three nurses specialized in clinical simulation; and three nursing researchers, all English speakers. Committee members were intentionally invited to the Multidisciplinary Study Group on Adult Health (GEMSA) and to the Center for Languages and Interculturality (CELIN) of *Universidade Federal do Paraná* (UFPR).

In this stage, decisions were made in the semantic, idiomatic, experiential and conceptual areas. To record the opinion of each member regarding the cross-cultural adequacy of each translated item, a structured script with a Likert-type scale with four points was used: 1 = not equivalent; 2 = impossible to assess equivalence without the item being reviewed; 3 = equivalent, but needs minor changes; 4 = absolutely equivalent.

To calculate the Content Validity Index (CVI), sum of the Content Validity Index by Items (CVI-I), divided by the total number of items assessed was adopted, keeping the focus on the average quality of the instrument. The CVI-I information is important in the review, as a low agreement allows the researcher to exclude or replace terms.[17] In situations of agreement of less than 80%, they were reviewed and readjusted until a consensus of 80% or more was obtained to produce a document understandable in the target language.

Pre-test: in this phase, the instrument was tested by 30 to 40 individuals members of the target population, professors who use clinical simulation for which the instrument is intended, called judges.[15,18] Participants were intentionally recruited by invitation sent via email. Practical experience in the area of interest, knowledge and skills with scientific production related to the subject of the study were observed.[19]

The pre-test judges answered the questionnaires about the understanding of the instrument, objectivity, simplicity, pertinence, accessibility and accuracy of each item, made available with the help of Google Forms®. The items were classified according to their relevance on a 4-point Likert scale: 1 - not relevant, 2 - not very relevant, 3 - very relevant and 4 - highly relevant. They also issued an opinion on the linguistic adequacy, pertinence and understanding of the instrument, suggesting changes when necessary.

Reliability was assessed by Cronbach's Alpha, a parameter widely used in health-related research. A great result for Cronbach's Alpha is between 0.85 and 0.95, with Alpha> 0.70 considered acceptable.[19]

The suggestions from pre-test were discussed and appreciated by the researchers. The final version was sent to the corresponding author together with the report of all stages.

This study was approved by the Research Ethics Committee of the Health Sciences Sector at UFPR, under Opinion 2,387,308. There was authorization and agreement from the corresponding author, Professor Dr. Mary Tracy, from the University of Creighton.

Results

In the first stage, in all textual content, there was agreement in 17 sentences (48.6%), with the need for adjustments in 18 sentences (51.4%) in the synthesis stage. Regarding title, T1 used "Creighton Competency Assessment Instrument" while T2 opted for the translation "Creighton Competency Assessment Instrument". In synthesis, translation 2 was chosen because it presented the objective of the instrument by allocating the name of the institution at the end of the sentence. The identification item "Staff Nurse Instructor Name" has been translated and adapted into "*Nome do enfermeiro facilitador*" observing the theoretical framework. In item 04, the translators reported unfamiliarity with the acronyms "TeamSTEPPS, SBAR, Written Read Back Order", with a consensus that the expert committee and other researchers could choose with better judgment about the use or substitution of terms.

Item 05 was translated and adapted with the insertion of the term "*de forma significativa*" because they understand that emphasis should be placed on communication and not on the person. In item 06, "Accurately" was translated into "*Acurado*" T1 and into "*Preciso*" T2, the term "Accurate" was accepted because it is closer to the original version. Item 18 "Uses Patient Identifiers", as there is not only one way to identify patients, the translation "*Utiliza identificadores de paciente*" was accepted.

At the end of the synthesis meeting, T12 was prepared, which was translated into the original language by the back-translators. In comparison to the original instrument, BT1 had 11 (47.8%) agreement with the 23 items of the original instrument, while BT2 had 7 (30.4%). Small differences in translations were noticed by the use of synonyms, maintaining the original meaning of the items.

The CVI for the general scale was 0.89 as shown in Table 1.

Four items graded "1" and "2" have been reviewed, requiring reformulation and structural adequacy of the phrases to achieve conceptual equivalence. The term "*Circule todos os critérios que se aplicam*" has been replaced by "*Circule a pontuação de cada um dos critérios que se aplicam*", as it is a more objective and easy was to interpret guidance.

The pre-final version was assessed in the pre-test by 32 judges/experts in clinical simulation; 23 (72.8%) were female and 9 (28.2%) were male; the mean age was 37.6 years old; 27 (84.4%) had a master's degree or higher education levels. There were participants from the North (1), the Northeast (4), the South (18), the Southeast (7), and the Center-West (1); one participant did not identify the location.

Concerning understanding of items, 21 (65.6%) judges considered to have perfectly understood the 23 assessment criteria. As for ease of application, 27 (84.4%) considered it easy to apply and five (15.6%) mentioned difficulties in using it.

Items 1, 2 and 3 were considered subjective, with a clearer wording being suggested. Item 4 received a suggestion to adapt the term "*intra/inter-*

Table 1. Content assessment by the expert committee

Items	Experts' answers								
	E1	E2	E3	E4	E5	E6	E7	E8	CVI-I*
Instrumento de Avaliação de Competências Creighton	4	4	3	3	3	3	3	3	1.00
Campo de identificação	4	4	4	4	4	4	4	4	1.00
Nome do enfermeiro facilitador	3	3	3	3	3	3	3	3	1.00
0 = Não demonstra competência. 1= Demonstra competência. NA = Não se aplica	4	4	4	4	4	4	4	4	1.00
Circule todos os critérios que se aplicam – Caso não se aplique, circule NA	3	3	2	3	3	2	2	2	0.50
Avaliação	4	4	4	4	4	4	4	4	1.00
1. Obtém dados pertinentes	4	4	4	4	4	4	4	4	1.00
2. Executa ações de monitoramento do paciente conforme necessário	3	3	3	3	3	3	3	3	1.00
3. Avalia o ambiente de forma organizada	4	4	4	4	4	4	4	3	1.00
Comunicação	4	4	4	4	4	4	4	4	1.00
4. Comunicação efetiva com equipe intra/interprofissional	3	3	3	3	3	3	4	3	1.00
5. Comunica-se efetivamente com Paciente e outra pessoa de forma significativa (verbal, não verbal, orientação)	1	1	1	1	1	1	1	1	-
6. Documenta em modo claro, conciso e acurado	3	3	3	3	3	3	3	3	1.00
7. Responde apropriadamente a resultados anormais	3	3	3	3	3	3	3	3	1.00
8. Promove o profissionalismo	1	1	1	1	1	1	1	1	-
Julgamento Clínico	4	4	4	4	4	4	4	4	1.00
9. Interpreta Sinais Vitais (T, PA, FR, FC, Dor)	4	4	4	4	4	4	4	4	1.00
10. Interpreta resultados laboratoriais	4	4	4	4	4	4	4	4	1.00
11. Interpreta dados objetivos/subjetivos (distingue entre dados relevantes e irrelevantes)	4	4	4	4	4	4	4	4	1.00
12. Prioriza de forma adequada	4	4	4	4	4	4	4	4	1.00
13. Executa intervenções baseadas em evidências	4	4	4	4	4	4	4	4	1.00
14. Realiza intervenções com informações baseadas em evidências	3	3	3	3	3	3	3	3	1.00
15. Avalia as Intervenções baseada em Evidências e resultados	4	4	4	3	4	3	4	3	1.00
16. Reflete sobre a experiência clínica	3	3	3	4	3	3	3	3	1.00
17. Delega apropriadamente	4	4	4	4	4	4	4	4	1.00
Segurança do Paciente	4	4	4	4	4	4	4	4	1.00
18. Utiliza identificadores de paciente	3	3	3	3	3	3	3	3	1.00
19. Utiliza práticas padronizadas e precauções, incluindo lavagem das mãos	4	4	4	4	4	4	4	4	1.00
20. Administra medicamentos com segurança	4	4	4	4	4	4	4	4	1.00
21. Maneja tecnologia e equipamentos	2	2	1	2	2	2	2	2	-
22. Executa procedimentos corretamente	4	4	4	4	4	4	4	4	1.00
23. Reflete sobre perigos potenciais e erros	3	3	3	3	3	3	3	3	1.00
Critério de pontuação	4	4	4	4	4	4	4	4	1.00
Agreement index among judges	0.91	0.91	0.88	0.91	0.91	0.88	0.88	0.88	
CVI = 0.89									

*CVI-I - Content Validity Index by items; † CVI - Content Validity Index.

profissional" to "*a equipe*". The terms "*efetivamente*", "*adequadamente*", and "*apropriadamente*", present in items 4, 5, 7 and 21, were identified as dubious and subjective. There was a suggestion regarding the importance of conceptual alignment for the use of items with these terms.

Two judges pointed out that item 5 can make the assessment difficult due to the number of situations assessed in a single item. In item 12, two judges stated that the sentence should be more specific as to what should be prioritized. A judge proposed to review the need for item 13. A reevaluation of the importance of item 15 was considered due to its repetitive opinion. Item 16 was not understood by one of the evaluators. One judge suggested readjusting the writing in item 17: "*Delega apropriadamente*" to "*Atribui e delega funções adequadamente*". An expert argued about how to score.

The overall internal consistency was calculated using the Cronbach's alpha coefficient with a value of 0.897, considered an excellent result. Cronbach's Alpha if excluded item, allows to identify if any item is more or less relevant for the calculation of the instrument's reliability. Of the 23 items, 20 (86.9%) maintained retention of reliability, resulting in a decrease in Alpha if the item was excluded. The exceptions were items 9, 16 and 18, which would increase to 0.898, a non-significant value to justify the exclusion or replacement. The final version of the instrument (Annex 1) was sent to the

corresponding author, who suggested carrying out joint work to ensure that reliability is maintained. The CCEI-br translation makes it possible to use the discussion spreadsheet (Annex 2).

Discussion

Nursing literature points out that there is a difficulty in understanding between the terms "technical skills" and "professional competency". Also, there is a frequency in the use of checklist to assess skills and knowledge of nursing students.[20,21]

Originally from Latin, *habilitate* means being skillful, intelligent, demonstrating aptitude, cunning, dexterity. It does not equate to competency, but in most cases, it is characterized as a prerequisite. However, a skilled person is not always a competent person.[22] In nursing, the skills assessed are generally associated with the safety and quality of care centered on patients, management, service and health care management and communication.[23-25]

The statistical results showed reliable measures for the adapted version of the CCEI. The reliability value allows us to infer that it is capable of measuring the proposed clinical competencies.[20] In a study carried out in the USA, CCEI's Cronbach's Alpha was greater than 0.90 when applied to 31 experts in simulation.[5]

A study of C-SEI translation into Spanish showed Cronbach's alpha of 0.839. It was considered useful, easy to apply and quick to assess clinical simulation skills.[26]

The version elaborated in step 4 presented divergences regarding the meanings and grammatical aspects of the words "TeamSTEPPS, SBAR and Written Read Back Order". After due clarification, the committee considered that, although very useful, these tools are still not widespread and used in Brazil and could cause difficulties in using the CCEI-br. They were then removed from the final version. However, its use is not restricted as long as the evaluators define it in planning the scenario.

The scoring criterion was discussed in the first version of C-SEI, in which they used a three-point scale: 0 = does not demonstrate minimum competency, 1 = demonstrates minimum competency and 2 = exceeds minimum expectations, considering that some procedures could be partially performed correctly. After the first experiences, the authors considered that a behavior, as a result of patient care, cannot be partially attended to. The score was then chosen: 0 = demonstrates competency (*demonstra competência*); 1 = does not demonstrate competency (*não demonstra competência*); and not applicable (*não se aplica)*.[9]

The judges suggested better conceptual alignment and questioned the subjectivity of the items. However, the generic characteristic of the instrument allows its use in different scenarios in simulated clinical practice. The suggestion to adapt the term "*intra/interprofissional*" to "*a equipe*" in item 4 was not accepted as the researchers understood that the original term is not exclusive.

When contemplating the categories, evaluation, communication, clinical judgment, and patient safety, the CCEI-br meets the main competencies needed in the training of professional nurses. CCEI-br does not only assess technical skills, but also the students' ability to interpret clinical changes, the ability to communicate, organize and develop a care plan.

Nurses must be able to perform a correct anamnesis and physical examination; these data will be the basis for clinical judgment, because in practice they will need to monitor, anticipate and intervene. They must be able to assess the conditions necessary to perform the service. Absence of this competency can compromise the entire care process.[27]

Therefore, using communication becomes essential, as it has a direct impact on the results of nursing care, and when ineffective it can lead to adverse events.[28] With CCEI-br, competency can be assessed before students contact patients, professors will be able to work on the weaknesses, which will help students to have confidence and better performance.

When considering the complexity of nursing care and the unpredictability of clinical situations presented by patients and their severity, it is essential that professionals are trained and assessed in relation to clinical judgment, since it is from there

that interventions will be carried out.[29] Thus, the category "*Julgamento Clínico*" contributes to assessing the development of competency by students.

Training of competent professionals who provide safe care is relevant, given the high levels of documented adverse events.[30] A recent study demonstrated lack of basic care related to patient safety, including lack of adequate patient identification, unidentified solutions, absence of risk assessment and signaling for falls and development of injury due to pressure.[31] These items are included in the CCEI-br, which favors formation of a safety culture for future nurses.

When considering territorial extension and cultural differences in Brazil, even having reached the recommended number of 32 participants, we consider a limiting factor the reduced number of experts from the north, northeast and center-west who collaborated with the research. A greater number of participants from these regions could have contributed to a refinement of the items assessed.

Conclusion

The CCEI translation and cross-cultural adaptation into Brazilian Portuguese showed excellent reliability and bring an important contribution in the current training context as it is specific for assessment of clinical skills in simulation. The CCEI-br makes it possible to give students an immediate response to their performance with guidelines for the necessary improvements in their professional training. As it is an instrument equivalent to the original, research data can be compared with international studies. Additional studies to validate the final version of CCEI-br are underway.

Collaborations

Silva NO, Felix JVC, Boostel R, Kalinke LP, Vayego AS, Mazzo A, Vilarinho JOV and Fontoura ACOB declare that they contributed to the design of the project, analysis and interpretation of data, writing of the article and approval of the final version to be published.

References

1. Silva AC, Bernardes A, Évora YD, Dalri MC, Silva AR, Sampaio CS. Development of a virtual learning environment for cardiorespiratory arrest training. Rev Esc Enferm USP. 2016;50(6):990–7.
2. Gaba DM. The future vision of simulation in health care. Qual Saf Health Care. 2004;13(1):i2-10.
3. Bortolato-Major C, Arhur JP, Silva ÂTM, Mantovani MF, Felix JVC, Boostel R. Contributions of the Simulation for Undergraduate Nursing Students. Rev Enferm UFPE online. 2018;12(6):1751-62.
4. Adamson KA, Parsons ME, Hawkins K, Manz JA, Todd M, Hercinger M. Reliability and internal consistency findings from the C-SEI [Internet]. J Nurs Educ. 2011;50(10):583–6.
5. Hayden J, Keegan M, Kardong-Edgren S, Smiley RA. Reliability and validity testing of the Creighton Competency Evaluation Instrument for use in the NCSBN national simulation study [Internet]. Nurs Educ Perspect. 2014;35(4):244–52.
6. Rutherford-Hemming T, Lioce L, Kardong-Edgren S, Jeffries PR, Sittner B. After the national council of state boards of nursing simulation study - recommendations and next steps. Clin Simul Nurs. 2016;12(1):2–7.
7. Presado MH, Colaço S, Rafael H, Baixinho CL, Félix I, Saraiva C, et al. Learning with high fidelity simulation. Ciên Saúde Coletiva. 2018; 23(1): 51-9.
8. Furukawa PO, Cunha IC. From management competencies to nurse managerial competencies. Rev Bras Enferm. 2010;63(6):1061–6.
9. Cruess RL, Cruess SR, Steinert Y. Amending Miller's pyramid to include professional identity formation. Acad Med. 2016; 91(2):180-5.
10. Al-Eraky M, Marei H. A fresh look at Miller's pyramid: assessment at the 'Is' and 'Do' levels. Med Educ. 2016; 50(12):1253-57.
11. Adamson KA, Kardong-Edgren S, Willhaus J. An updated review of published simulation evaluation instruments. Clin Simul Nurs. 2013;9(9):e393–400.
12. Todd M, Manz JA, Hawkins KS, Parsons ME, Hercinger M. The Development of a quantitative evaluation tool for simulations in nursing education. Int J Nurs Educ Scholarsh. 2008; 5(1).
13. Parsons ME, Hawkins KS, Hercinger M, Todd M, Mans JA, Fang X. Improvement in scoring consistency for the Creighton Simulation Evaluation Instrument. Clin Simul Nurs. 2012;8(6):e233–8.
14. McDermott DS, Sarasnick J, Timcheck P. Using the INACSL simulation design standard for novice learners. Clin Simul Nurs. 2017;13(6):249–53.
15. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cultural adaptation of self-report measures.Spine. 2000;25(24):3186-91.
16. Beaton D, Bombardier C, Guillemin F, Ferraz MB. Recommendations for the cross-cultural adaptation of the DASH & QuickDASH Outcome Measures. Toronto: Institute for Work & Health. 2007. 45p.
17. Coluci MZO, Alexandre NMC, Milani C. Construction of measurement instruments in the area of health. Cien Saúde Coletiva. 2015; 20(3): 925-36.

18. Ferreira L, Neves NA, Campana MB, Tavares MC. Guia da AAOS/IWH: Sugestões para adaptação transcultural de escalas. Avaliação Psicológica. 2014; 13(21):457-41.

19. Polit DF, Beck CT. The content validity index: are you sure you know what's being reported? Critique and recommendations. Res Nurs Health. 2006; 29(5):489-97.

20. Siqueira LD, Caliri MH, Kalisch B, Dantas RA. Cultural adaptation and internal consistency analysis of the MISSCARE Survey for use in Brazil. Rev Lat Am Enfermagem. 2013; 21(2): 610-17.

21. Miranda FB, Mazzo A, Pereira Junior GA. Assessment of individual and interprofessional skills of health professionals in simulated clinical activities: a scoping review. Interface. 2016; 22(67):1221-34.

22. Graveto JM, Taborda JM. Simulação e desenvolvimento habilidades. In: Martins JC, Mazzo A, Mendes IA, Rodrigues MA, editors. A simulação no ensino de enfermagem. Ribeirão Preto: SOBRACEN; 2014.

23. Bodamer C, Feldman M, Kushinka J, Brock E, Dow A, Evans JA, et al. An internal medicine simulated practical examination for assessment of clinical competency in third year medical students. Simul Healthc. 2015;10(6):345–51.

24. Eun K, Kim HY. Effects of multi-mode simulation learning on nursing students'critical thinking disposition, problem solving process, and clinical competence. Korean J Adult Nurs. 2014;26(1):107–16.

25. Kubota Y, Yano Y, Seki S, Takada K, Sakuma M, Morimoto T, et al. Assessment of pharmacy students' communication competence using the Roter Interaction Analysis System during objective structured clinical examinations. Am J Pharm Educ. 2011;75(3):43.

26. Roldán-Merino J, Farrés-Tarafa M, Estrada-Masllorens JM, Hurtado-Pardos B, Miguel-Ruiz D, Nebot-Bergua C, et al. Reliability and validity study of the Spanish adaptation of the "Creighton Simulation Evaluation Instrument (C-SEI)". Nurse Educ Pract. 2019;35:14–20.

27. Santos N, Veiga P, Andrade R. Importance of history and physical examination for the care of nurses. Rev Bras Enferm. 2011;64(2):355–8.

28. Pena MM, Melleiro MM. Adverse events caused by communication failure: considerations about a model for care handover. Revista de Enfermagem da UFSM. 2018;8(3):616–25.

29. Lasater K. High-fidelity simulation and the development of clinical judgment: students' experiences. J Nurs Educ. 2007;46(6):269–76.

30. Maia CS, Freitas DR, Gallo LG, Araújo WN. Registry of adverse events related to health care that results in deaths in Brazil, 2014-2016 [Internet]. Epidemiol Serv Saude. 2018;27(2):e2017320.

31. Paixão DP, Batista J, Maziero EC, Alpendre FT, Amaya MR, Cruz ED. Adhesion to patient safety protocols in emergency care units. Rev Bras Enferm. 2018;71(1 Suppl 1):577–84.

Annex 1. Creighton Competency Evaluation Instrument for Brazil (CCEI-br)

Nome do estudante:	**0 = Não demonstra competência** **1 = Demonstra competência** **NA = Não se aplica** Circule uma pontuação para todos os critérios que se aplicam - Caso não se aplique, circule NA			Data: ____/____/____ DIA / MÊS / ANO
AVALIAÇÃO				**COMENTÁRIOS**
1. Obtém dados pertinentes	0	1	NA	
2. Realiza avaliação e acompanhamento conforme necessário	0	1	NA	
3. Avalia o ambiente de forma organizada	0	1	NA	
COMUNICAÇÃO				
4. Comunica-se efetivamente com equipe intra/interprofissional	0	1	NA	
5. Comunica-se efetivamente com o paciente e acompanhante (verbal, não verbal, fornece orientações)	0	1	NA	
6. Documenta de forma clara, concisa e precisa	0	1	NA	
7. Responde apropriadamente a achados anormais	0	1	NA	
8. Atua de forma profissional	0	1	NA	
JULGAMENTO CLÍNICO				
9. Interpreta Sinais Vitais (T, PA, FR, FC, Dor)	0	1	NA	
10. Interpreta resultados laboratoriais	0	1	NA	
11. Interpreta dados objetivos/subjetivos (distingue entre dados relevantes e irrelevantes)	0	1	NA	
12. Prioriza as ações de forma adequada	0	1	NA	
13. Executa intervenções baseadas em evidências	0	1	NA	
14. Apresenta fundamentação baseada em evidências para as intervenções	0	1	NA	
15. Avalia as Intervenções baseadas em evidências e seus resultados	0	1	NA	
16. Faz reflexão sobre a experiência clínica	0	1	NA	
17. Delega apropriadamente	0	1	NA	
SEGURANÇA DO PACIENTE				
18. Utiliza identificadores de paciente	0	1	NA	
19. Utiliza práticas padronizadas e precauções, incluindo a higienização das mãos	0	1	NA	
20. Administra medicamentos com segurança	0	1	NA	
21. Utiliza tecnologia e equipamentos adequadamente	0	1	NA	
22. Executa procedimentos corretamente	0	1	NA	
23. Reflete sobre potenciais erros e riscos	0	1	NA	
COMENTÁRIOS				

Annex 2. The CCEI-br discussion spreadsheet

AVALIAÇÃO
1. Obtém dados pertinentes
2. Realiza avaliação e acompanhamento conforme necessário
3. Avalia o ambiente de forma organizada
COMUNICAÇÃO
4. Comunica-se efetivamente com equipe intra/interprofissional
5. Comunica-se efetivamente com o paciente e acompanhante (verbal, não verbal, fornece orientações)
6. Documenta de forma clara, concisa e precisa
7. Responde apropriadamente a achados anormais
8. Atua de forma profissional
JULGAMENTO CLÍNICO
9. Interpreta Sinais Vitais (T, PA, FR, FC, DOR)
10. Interpreta resultados laboratoriais
11. Interpreta dados objetivos/subjetivos (distingue entre dados relevantes e irrelevantes)
12 Prioriza as ações de forma adequada
13. Executa intervenções baseadas em evidências
14. Apresenta fundamentação baseada em evidências para as intervenções
15. Avalia as Intervenções baseadas em evidências e seus resultados
16. Faz reflexão sobre a experiência clínica
17. Delega apropriadamente
SEGURANÇA DO PACIENTE
18. Utiliza identificadores de paciente
19. Utiliza práticas padronizadas e precauções, incluindo a higienização das mãos
20. Administra medicamentos com segurança
21. Utiliza tecnologia e equipamentos adequadamente
22. Executa procedimentos corretamente
23. Reflete sobre potenciais erros e riscos