

Construction and validation of a clinical simulation scenario on intestinal elimination stomas

Construção e validação de cenário de simulação clínica sobre estomia de eliminação intestinal

How to cite this article:

Pedreira NP, Silva EA, Costa ETT, Silva MJRB, Carvalho DS, Pereira OV, et al. Construction and validation of a clinical simulation scenario on intestinal elimination stomas. Rev Rene. 2026;27:e96722. DOI: <https://doi.org/10.36517/2175-6783.20262796722>

● Núbia Pereira Pedreira¹
● Érica Aquino da Silva¹
● Elaine Thayna Trindade Costa¹
● Marcos José Risuenho Brito Silva²
● Dione Seabra de Carvalho²
● Odenilce Vieira Pereira³
● Aline Maria Pereira Cruz Ramos¹

¹Universidade Federal do Pará. Belém, PA, Brazil.

²Universidade do Estado do Pará. Belém, PA, Brazil.

³Hospital Universitário João de Barros Barreto. Belém, PA, Brazil.

Corresponding author:

Núbia Pereira Pedreira
Passagem Turmalina, 59.B. CEP: 66652-156.
Belém, PA, Brazil.
E-mail: nubia.pedreira10@gmail.com

Conflict of interest: the authors have declared that there is no conflict of interest.

EDITOR IN CHIEF: Ana Fatima Carvalho Fernandes ●

ASSOCIATE EDITOR: Renan Alves Silva ●

ABSTRACT

Objective: to develop and validate a clinical simulation scenario for intestinal elimination stoma. **Methods:** methodological study was conducted in two phases: the development and validation of the clinical simulation scenario by nine expert nurses. For validation, the Content Validity Index, the Scale-Level Content Validity Index by Mean, and the Modified Kappa Coefficient were used to determine the degree of agreement among the experts, in addition to the binomial test to assess the proportion of agreement. **Results:** the clinical simulation scenario showed high levels of agreement. All items evaluated in the domains of objectives, structure and presentation, relevance, and clarity obtained a Content Validity Index and a Modified Kappa Coefficient equal to 1.0. The test indicated satisfactory agreement among the experts, and the scenario was considered valid for use. **Conclusion:** the clinical simulation scenario developed provided evidence of content validity and high agreement among the experts, demonstrating its suitability for use in nurse training. **Contributions to practice:** the scenario can be replicated both in the clinical care setting as a continuing education strategy and in undergraduate and graduate nursing programs, with the potential to develop professional clinical competencies and skills.

Descriptors: Ostomy; Intestinal Elimination; Nursing; Simulation Training; Validation Study.

RESUMO

Objetivo: construir e validar um cenário de simulação clínica sobre estomia de eliminação intestinal. **Métodos:** estudo metodológico desenvolvido em duas etapas: construção e validação de cenário de simulação clínica por nove enfermeiros *experts*. Para a validação, utilizaram-se o Índice de Validade de Conteúdo, o Índice de Validade de Conteúdo em Nível de Escala pela Média e o Coeficiente de Kappa Modificado para determinar o grau de concordância entre os *experts*, além do teste binomial para avaliar a proporção de concordância. **Resultados:** o cenário de simulação clínica apresentou elevados índices de concordância. Todos os itens avaliados nos domínios objetivos, estrutura e apresentação, relevância e clareza obtiveram Índice de Validade de Conteúdo e Coeficiente de Kappa Modificado igual a 1,0. O teste indicou concordância satisfatória entre os *experts*, sendo considerado válido para aplicabilidade. **Conclusão:** o cenário de simulação clínica construído apresentou evidências de validade de conteúdo e elevada concordância entre os *experts*, demonstrando sua adequação para utilização na capacitação de enfermeiros. **Contribuições para a prática:** o cenário pode ser replicado tanto no contexto assistencial como estratégia de educação permanente, quanto nos cursos de graduação e pós-graduação em enfermagem, tendo potencial de desenvolver competências e habilidades clínicas profissionais.

Descritores: Estomia; Eliminação Intestinal; Enfermagem; Treinamento por Simulação; Estudo de Validação.

Introduction

Intestinal elimination stomas involve the surgical externalization of a segment of the intestine, creating an alternative pathway for the elimination of gas and feces. They are classified according to the externalized segment (jejunostomy, ileostomy, and colostomy), duration (temporary or permanent), and shape (round, oval, and irregular)⁽¹⁾. Colorectal cancer is the primary indication for this procedure, which has an estimated prevalence of 0.12% in the global population⁽²⁾.

Complications related to intestinal stomas represent a significant clinical and care challenge, affecting up to 63% of people with stomas⁽³⁾. Among the most common are peristomal dermatitis and stoma prolapse, with incidences ranging from 15.5% to 47.7% and from 3% to 10%, respectively. These conditions are associated with pain, discomfort, difficulty with self-care, increased hospital readmissions, the need for repeat surgical procedures, and higher healthcare costs. The heterogeneity of epidemiological data makes it difficult to monitor and understand the magnitude of these events. Therefore, early identification and appropriate management pose significant challenges for clinical practice, since failures in recognition and timely intervention can result in worsening of the condition and significant impairment of quality of life⁽⁴⁾.

People living with a stoma may face physical, psychological, and social challenges, requiring ongoing interdisciplinary care. In this context, nurses are the primary providers of care, offering patients strategies to cope with their new reality, ensuring continuity of care, and minimizing complications⁽⁵⁾. Therefore, integrating training in intestinal stoma care as a core competency in nursing education is essential for providing high-quality care.

Consequently, adopting teaching methodologies that promote professional training and development is a priority. Clinical simulation has emerged as a widely used educational tool in nursing education, capable of promoting active, safe, and learner-cente-

red learning, thereby fostering the development of competencies in a safe and controlled environment⁽⁶⁾. In the context of intestinal ostomies, it has been implemented using low-fidelity simulators, wearable manikins, and virtual reality technologies. Recent evidence demonstrates its application in training nurses for preoperative stoma marking, the selection of collection devices, and self-care guidance, proving to be a promising strategy to support the development and assessment of professional competencies related to specialized stoma care⁽⁵⁾.

Despite the growing use of clinical simulation in nursing education in the context of intestinal ostomies, no validated clinical scenarios have been identified that focus on training nurses to recognize and manage complications of intestinal ostomies, particularly peristomal dermatitis and stoma prolapse—conditions that require timely clinical assessment and intervention⁽¹⁾.

Given the high incidence of these complications and the need to improve the quality of nursing care, and considering that nurses play a central role in the care of these patients, it is justified to develop and validate a clinical simulation scenario designed to train and assess nurses' competencies in recognizing and managing these complications, thereby contributing to evidence-based care and patient safety.

Thus, the objective of this study was to develop and validate a clinical simulation scenario for intestinal elimination stoma.

Methods

Study type, location, and time period

This is a methodological study⁽⁷⁾ conducted at a university hospital in Pará, Brazil. The study consisted of two phases: the development and validation of a clinical simulation scenario, guided by the Revised Standards for Quality Improvement Reporting Excellence (SQUIRE) guidelines. Data collection took place between January and May 2025.

Step 1: Development of the clinical scenario

The development of the scenario was informed by an integrative literature review of the PubMed, Web of Science, SCOPUS, and Virtual Health Library databases, as well as the Brazilian consensus document prepared by the Brazilian Association of Stomatherapy (SOBEST)⁽⁸⁾. The review was guided by the following research question: What nursing interventions are necessary for the management and prevention of complications (dermatitis and prolapse) related to intestinal stomas, and what elements constitute a clinical scenario in this context?

We used Health Sciences Descriptors/Medical Subject Headings (DeCS/MeSH) and free-text terms combined with Boolean operators, resulting in the following search strategy: (Ostomy OR “Intestinal Elimination” OR “Colostomy OR Ileostomy”) AND (“Postoperative Complications” OR “stoma complication*” OR “Dermatitis OR “Peristomal skin complication” OR “Stoma prolapse” OR “Ostomy prolapse”) AND (“Nursing Care”) AND (“Simulation Training”). Studies published in the last five years, in Portuguese and English, available in full text, and related to intestinal stoma complications, nursing management, and clinical simulation were included. Editorials, letters, abstracts, and studies not relevant to the review’s objective were excluded.

After reviewing titles, abstracts, and full-text articles, 16 studies were included. The data were organized in a spreadsheet and analyzed descriptively to inform the development of the scenario. There was no formal assessment of the methodological quality of the studies, given the objective of the review.

The guidelines of the International Nursing Association for Clinical Simulation and Learning (INACSL)⁽⁹⁾ were used as the methodological basis for scenario development, as they are an internationally recognized framework for the development of clinical simulations, in addition to Bloom’s Taxonomy⁽¹⁰⁾, the clinical case instructional script⁽¹¹⁾, and the script for constructing simulated scenarios⁽¹²⁾.

Step 2: Content validation by experts, the target population, and the sample

The sample was purposive, consisting of experts identified on the Lattes Platform of the National Council for Scientific and Technological Development (CNPq) website and on the website of the Brazilian Association of Stomatherapy (SOBEST). The selection of experts was based on criteria adapted from a methodological framework⁽¹³⁾, namely: nurses with stricto sensu degrees (master’s and/or doctorate), with a dissertation or thesis related to the study’s topic, and/or a lato sensu degree (in oncology or stoma therapy), a minimum of four years of professional experience in the study’s topic (clinical care, teaching, and/or management), and scientific output in the field, evaluated in terms of the publications’ relevance to and alignment with intestinal ostomies. Academic qualifications and professional experience were mandatory criteria for inclusion, while scientific output was considered a supplementary criterion. The experts were invited via electronic contact, by e-mail.

For an acceptable agreement rate (≥ 0.80), authors suggest six or more judges⁽¹⁴⁾. Initially, 11 experts agreed to participate, but 9 returned the completed instruments within the pre-established 20-day deadline and constituted the final sample. It should be noted that the literature has not yet reached a consensus regarding the ideal number of experts in validation studies. Methodological recommendations indicate the participation of experts with experience relevant to the subject being evaluated, with the appropriateness of the sample influenced by the characteristics of the instrument and the availability of qualified evaluators⁽¹⁴⁾.

Data collection tools

The Google Forms platform was used, through which the experts accessed the following sections: Free and Informed Consent Form (FICF), sociodemographic questionnaire, simulated clinical scenario, and

agreement scale. The characterization questionnaire included the following variables: gender, academic degree, professional role, years of training, experience, and publications in the area of interest. The simulated clinical scenario was made available to the *experts* for review and evaluation of its content.

The agreement scale, adapted from a validation study⁽¹⁵⁾, consists of three dimensions: objective, which refers to the scenario's purposes and goals (9 items); structure and presentation, which concern the organization, formatting, and clarity of the information (13 items); and relevance and clarity, which assess the degree of significance and applicability of the proposed scenario (11 items). The analysis of each criterion was based on a Likert-type scale, which offers four response options: 1 (strongly disagree); 2 (somewhat disagree); 3 (somewhat agree); and 4 (strongly agree), with space for suggestions at the end of each dimension⁽¹⁶⁾.

Data analysis

The collected data were processed and analyzed quantitatively using relative and absolute frequencies in a spreadsheet created with Microsoft Excel® software, version 2024. The overall Content Validity Index (CVI) was calculated, with a value of ≥ 0.80 considered indicative of validity for each item⁽⁷⁾. The CVI was calculated by summing the responses scored 3 or 4 for each item and dividing that sum by the total number of responses. Subsequently, the items were evaluated individually by applying the Scale-Level Content Validity Index by Average (S-CVI/AVE), obtained by summing the CVIs for each item and dividing by the number of items in the instrument. Items that received scores of "1" or "2" should be eliminated or revised. The data were then organized into tables for better visualization.

The Modified Kappa Coefficient (MKC) was calculated as a complementary measure of content validity, allowing for the assessment of agreement among experts adjusted for the probability of random occurrence; it is strongly recommended for studies with small sample sizes. The calculation was performed

using Microsoft Excel® software, using the following formula: $\frac{A}{N}$ [where N represents the number of raters and A the number of raters who rated a given item as relevant. MKC values ranging from 0.40 to 0.59 are considered reasonable; from 0.60 to 0.74, good; and above 0.74, excellent. MKC values ≤ 0.74 should be revised⁽⁷⁾.

The binomial test was also performed to assess the proportion of agreement using the software Jamovi®, version 2.7.30, assuming a minimum agreement rate of 80% among the experts. For this analysis, the responses were dichotomized into agreement (scores 3 and 4) and disagreement (scores 1 and 2), and the hypotheses $H_0: p \leq 0.80$ and $H_a: p > 0.80$ were tested. The agreement proportions, their respective 95% confidence intervals (CI), and p-values were estimated. To consider items valid, values ≥ 0.80 were adopted, as internationally recommended to ensure satisfactory content validity⁽⁷⁾.

Ethical considerations

All participants were informed about the study and provided their consent via electronic signature on the FICF form. The study was approved by the Oncology Research Ethics Committee of the Federal University of Pará, Certificate of Submission for Ethical Review No. 81521824.2.0000.5634 and Opinion No. 7.075.050/2024.

Results

Nine expert nurses participated in this study. The group was predominantly female (55.5%), with master's degrees (66.6%) and doctorates (11.1%); 44.4% were specialists in stoma care and 33.3% in oncology; 44.4% worked in patient care, in management (33.3%), and in teaching (22.2%), and had graduated from college more than 10 years ago (77.7%). All had more than four years of experience in the field of intestinal ostomies (100%), and more than half (66.6%) had scientific publications related to their area of interest.

A clinical simulation scenario was developed regarding nursing care for patients with an intestinal

elimination stoma experiencing complications such as prolapse and peristomal dermatitis.

Adherence to INACSL guidelines was ensured through the prior definition of clear and quantifiable objectives, in accordance with expected clinical competencies and in line with the standards of Outcomes and Objectives. The Prebriefing was structured with an emphasis on orienting participants, presenting the simulated environment, and clarifying the activity's steps. The scenario was developed as a scenario-based simulation, featuring a simulated patient, in situ application, the use of moulage, and high-fidelity resources, in accordance with the principles of Simulation Design. The Facilitation standard was met by having facilitators lead the simulated activity, with the aim of guiding clinical progression and encouraging active participation by the nurses. The development

of checklists aimed at fostering critical reflection and clinical reasoning regarding the simulated experience constituted the Debriefing stage. The evaluation method, based on the use of structured and validated instruments to measure participants' performance, complies with the INACSL standards for Evaluation of Learning and Performance.

Bloom's Taxonomy served as the basis for defining the learning objectives and desired clinical competencies, covering the cognitive domain in the identification of complications and decision-making; the psychomotor domain in the provision of care; and the affective domain in communication between healthcare professionals and patients and in critical reflection during the debriefing. The organization of the scenario, including its objectives, characteristics, and implementation steps, is described in (Figure 1).

Scenery element	Description
Scenario theme	Nursing care for patients with intestinal stoma elimination in the presence of complications (prolapse and peristomal dermatitis).
Target audience	Nurses.
Scenario location	Hospital Clinical Simulation Room.
Primary learning objective	Train and qualify nurses to assess, identify and manage complications related to intestinal elimination ostomies, to promote greater safety in the care of these patients.
Secondary objectives and learning	Apply preventive actions related to intestinal stoma of elimination; identify and treat complications related to intestinal stoma of elimination; perform nursing care aimed at the management of stoma and peristomal skin; guide patients and family members/caregivers on self-care and the proper use of devices and adjuvants.
Evaluation method	Application of the pre-test among eligible participants; Synchronous and asynchronous theoretical meetings on intestinal ostomies and complications; Post-test application among eligible participants.
Modality	Scenic simulation (simulated participant).
Scenario fidelity	High fidelity.
Time of activities	Prebriefing and Briefing: 10 minutes; Scenario: 20 minutes; Debriefing: 15 minutes.
Participants and simulation team	Two volunteer participants (patient and family member or companion) and two facilitators.
Materials for the scenario	A bed, PPE, a cannula, 1 and 2 piece collecting equipment, stoma meter, scissors, gauze, tray, saline, 40x12 needle, serum equipment, paper towel, for hygiene and adjuvant products for ostomies.
Material for moulage	Characterizing dough, biscuit dough and glue, red pancake, red simulation paint and coffee grounds (simulating effluent).
Scenario Description and Script	The scenario will be organized one hour before the start of the simulation, it will start with the prebriefing (presentation of the objective of the scenario, the scenario team and the steps to be developed during the simulation).
Characterization and Briefing scripts	Simulated participant - The actor will be characterized with clothing appropriate to the hospital environment, peripheral venous access on the dorsum of the hand of the right upper limb. The moulage for the preparation of the intestinal stoma located in the upper/lower right quadrant of the abdomen, representing two complications (prolapse and peristomal dermatitis).

(the Figure 1 continue in the next page...)

Scenery element	Description
Case report	E.S.V., 48 years old, lives in Belém; she is married, has three teenage children, and is self-employed. She reports that in 2021, she experienced symptoms of frequent constipation and pain during bowel movements, as well as dry, dark-colored stools. In early 2024, her condition progressed to episodes of rectal bleeding that became increasingly severe and were accompanied by severe pain; she lost 10 kg in three months. She sought medical care and, in December 2024, was diagnosed with colorectal cancer. In January 2025, she underwent colon resection and rectal amputation, resulting in the creation of a single-outlet permanent terminal colostomy. Two months after surgery, she has reported skin irritation around the stoma, which is only getting worse, as well as an increase in the size of the stoma, which gradually protrudes during activities that involve straining the abdomen, causing discomfort and making it difficult to secure the ostomy bag. Currently, she complains of a burning pain around the stoma, which is protruding more than usual. Physical examination: normal-tension abdomen, flaccid, painless on palpation; presence of a functioning LRQ colostomy; brown, pasty stool; flatus passing; stoma protruding approximately 3 cm beyond the abdominal wall (prolapse), pink in color, fixed to the abdomen with no signs of mucocutaneous detachment. The area around the stoma shows areas of abrasion and is extremely irritated (diffuse erythema) and tender to the touch. The patient reports interrupted sleep due to leakage from the collection device, frequent trips to the bathroom because the device detaches, and the pain experienced. The patient is unable to eat properly, fearing an increase in stool volume and a worsening of her condition.
Prebriefing	The facilitator should identify the participants' expectations with simulation-based teaching; inform the general objective of this simulation; inform the sequence of sessions; inform the context of the scenario.
Briefing	As a nurse and/or nursing technician, you went to provide care to a patient with a loop colostomy who is complaining of a burning sensation in the peristomal skin, accompanied by prolapse of the stoma. The first step is to determine whether there are any complications with the stoma, how long the patient has been experiencing this symptom, and then assess the best nursing intervention for this patient.
Expected decision-making checklist	1. Did the professional identify with the simulated participant? () Yes () No 2. Did the professional ask if there are any complaints to the patient? () Yes () No 3. Did the professional identify the presence of a complication? () Yes () No 4. Did the professional observe the aspect of the effluent and the need to change the equipment? () Yes () No 5. Did the professional measure the diameter of the stoma? () Yes () No 6. Has the professional identified the appropriate collection equipment? () Yes () No 7. Has the professional evaluated the need for the use of adjuvants? () Yes () No 8. Did the professional guide and teach the patient about the use of adjuvants and skin care? () Yes () No
Debriefing Checklist	1. Summarize the case. 2. How did you feel? 3. What do you think you have done well? How does this relate to practice? 4. What could have been done differently? 5. What was the most challenging moment? 6. What would be the negatives and positives of the simulation?

PPE: Personal Protective Equipment; LRQ: Lower Right Quadrant

Figure 1 – Structure of the clinical simulation scenario for the care of a person with an intestinal elimination stoma. Belém, PA, Brazil, 2026

After the simulated clinical scenario was developed, content validation was performed. High agreement was observed among the experts regarding the items evaluated, with Content Validity Index and Scale-Level Content Validity Index values of 1.0, indicating satisfactory agreement and consensus among the evaluators (Table 1). Validation was achieved in the first round of evaluation.

The Modified Kappa Coefficient was 1.00, clas-

sified as excellent, demonstrating agreement among the experts after adjusting for the probability of chance agreement. The probability of casual agreement (Pc) showed that the observed agreement was highly unlikely to have occurred by chance (Table 1).

Furthermore, as shown in Table 2, the binomial test analysis demonstrated the proportion of agreement among the experts in the assessed domains. The confidence interval indicated high agreement. Although

gh the p-value did not reach statistical significance, complete agreement was observed among the experts in all assessed domains, corroborating the results obtained by the CVI and MKC.

Despite the consensus reached among the experts, some suggestions were incorporated into the

scenario. These included: updating references, standardizing terminology, revising the learning objective, and adding characters (caregiver/family member), with the aim of improving the scenario's applicability and clarity.

Table 1 – Content validation of the clinical simulation scenario according to expert evaluation (n=9). Belém, PA, Brazil, 2026

Objective	TD*(1)	PD†(2)	PA‡ (3)	TA§(4)	CVI
The content is coherent	–	–	1	8	1.0
Objectives are clear and concise	–	–	1	8	1.0
Scenario content facilitates critical thinking	–	–	2	7	1.0
The information presented is scientifically correct	–	–	2	7	1.0
There is a logical sequence of proposed content	–	–	–	9	1.0
The information presented from the scenario can cover the proposed theme	–	–	2	7	1.0
Information is important for the quality of care provided	–	–	–	9	1.0
The objective of the clinical simulation scenario instigates changes in the behavior and attitude of professionals towards the care of the proposed theme	–	–	2	7	1.0
The scenario is suitable to be used by you at this time	–	–	1	8	1.0
S-CVI-AVE¶	1.0 – Suitable				
Structure and Presentation					
The scenario script is appropriate	–	–	2	7	1.0
The language used is easy to understand	–	–	1	8	1.0
The setting has an attractive look that keeps the attention of professionals	–	–	7	2	1.0
The data is presented in a structured and objective way	–	–	–	9	1.0
The way the scenario is presented contributes to learning	–	–	–	9	1.0
The patient’s profile provides sufficient data to conduct a clinical judgment	–	–	1	8	1.0
The title is attractive and indicates the content of the scenario	–	–	–	9	1.0
The length of the title and content in the topics is adequate	–	–	–	9	1.0
Topics have a logical sequence	–	–	1	8	1.0
There is coherence between the objectives and the content of the scenario	–	–	3	6	1.0
Are the debriefing steps adequate?	–	–	–	9	1.0
Are the evaluation methods relevant?	–	–	–	9	1.0
O <i>checklist</i> do procedimento está adequado?	–	–	–	9	1.0
S-CVI-AVE¶	1.0 – Suitable				
Relevance e Clarity					
The scenario roadmap allows for the transfer of knowledge and learning regarding content and clarity	–	–	1	8	1.0
The theme portrays key aspects and clarity that must be reinforced	–	–	–	9	1.0
The model allows the transfer and generalization of learning to different contexts	–	–	5	4	1.0
The scenario guide aims to foster knowledge building	–	–	1	8	1.0
Can be used by healthcare professionals and/or educators	–	–	–	9	1.0
The clinical simulation scenario in the care of patients with intestinal elimination stomas can circulate in the scientific environment of the area	–	–	1	8	1.0
The scenario is appropriate for the profile of nursing professionals	–	–	-	9	1.0
Interaction is invited by the texts. Suggests actions	–	–	1	8	1.0
The content of the scenario is presented in a logical way	–	–	–	9	1.0
Invites/instigates changes in behavior and attitude during care	–	–	2	7	1.0
The scenario proposes knowledge for nursing professionals (technicians and nurses)	–	–	–	9	1.0
S-CVI-AVE¶	1.0 – Suitable				
Kappa coefficient modified by item	1.00 – Suitable				
Probability of random agreement by item	0.00195 – Suitable				

*TD: Totally disagree; †PD: Partially disagree; ‡PA: Partially agree; §TA: Totally agree; ||CVI: Content Validity Index; ¶S-CVI/AVE: Scale-level Content Validity Index by Average

Table 2 – Results of the binomial test for the domains of the clinical simulation scenario evaluated by experts (n=9). Belém, PA, Brazil, 2026

Domain	P (binomial test)*	95%CI
Objective	0.134	0.717 – 1.00
Structure and Presentation	0.134	0.717 – 1.00
Relevance and Clarity	0.134	0.717 – 1.00

*p-significance value of the exact binomial test (reference proportion = 0.80); CI: Confidence interval

Discussion

The adoption of innovative methodologies in the teaching-learning process, such as clinical simulation, has proven to be a significant resource for minimizing the incidence of complications, in addition to promoting greater safety for both patients and the nursing staff⁽¹⁷⁾. Clinical simulation scenarios, which have been validated in the healthcare field, have been identified as effective strategies for improving technical, cognitive, and affective skills, as well as for fostering the development of critical thinking and clinical decision-making⁽¹⁸⁾.

To ensure that the content validation process guarantees the quality of the material developed, it is suggested that, after structuring the instrument based on the literature, it be submitted for evaluation by experts with expertise in the subject matter, followed by adjustments as necessary, in order to reinforce the study's credibility and legitimacy^(9,14). Similarly, authors emphasize that the stages of planning, structuring, implementation, and validation are essential to support the methodology and achieve satisfactory results in the learning process⁽¹⁸⁾.

The findings of this study demonstrated a high degree of agreement among the experts, with a Content Validity Index and a Modified Kappa Coefficient of 1.0, indicating consensus regarding the appropriateness of the proposed scenario. Similar findings were reported in the field of nursing, specifically regarding the evaluation of specialist credentials in stoma therapy and the management of infusion therapy by nurses; these studies also employed similar validation

processes in clinical settings and achieved high levels of agreement among the experts. The authors state that, even with a small number of experts, the methods employed in the validation process contributed to the robustness of the material and strengthened the evidence of content validity⁽¹⁹⁾. Thus, the results of this study reinforce the appropriateness and quality of the scenario developed.

It is worth noting that, although the selection criteria for experts⁽¹³⁾ are frequently used in methodological research, the definition of expertise has been the subject of extensive discussion, since this concept is a multidimensional construct that cannot be defined by a single attribute⁽¹⁶⁾. Nevertheless, in the context of validation studies in nursing, this model remains a robust and widely cited⁽²⁰⁻²¹⁾ tool due to its operational relevance and adaptability, which justifies its application in this study. Nevertheless, it is recognized that the adoption of this framework for selecting and training the panel of experts may influence and limit the content validation results, an aspect that should be considered when interpreting the findings of this study and conducting future research.

The high level of agreement among the experts can also be attributed to the systematic process of scenario development, based on a review of the literature and international guidelines for clinical simulation⁽⁹⁾. Thus, the findings suggest consistency with the literature, confirming that the proper structuring of scenarios can positively influence agreement rates among experts, especially when the scenarios are evaluated and developed by experts in the field⁽²²⁾.

Additionally, since these experts have backgrounds and experience in different regions of Brazil, this may have contributed to specific qualitative observations, particularly regarding the clarity and wording of the text. A similar situation was identified in the context of a clinical scenario for sepsis recognition by nursing students, in which, although the results proved satisfactory, specific changes were made to make the scenario clearer and more understandable⁽²³⁾. It is worth noting that the study in question fo-

cused on the quantitative validation of the scenario's content, an essential step in initial methodological studies aimed at constructing and validating simulated scenarios prior to their practical application.

Although there have been advances in the use of clinical simulation as a teaching strategy, it was found that scientific literature focused on the development of simulated scenarios for the care of patients with intestinal ostomies remains scarce. Only one recent Brazilian study was identified that validated a clinical scenario relevant to this topic, aimed at nurses and focusing on preoperative preparation for intestinal stoma creation⁽²⁴⁾.

Internationally, two studies were found that discussed the training of nurses on this topic through clinical simulation, using manikins or virtual reality resources⁽²⁵⁻²⁶⁾. However, no studies were identified that applied clinical simulation *in situ* with a standardized patient, combined with the moulage technique, for teaching nurses how to care for individuals with an intestinal stoma.

The unique aspect of this study lies in the development and validation of a clinical simulation scenario focused on the care of individuals with an intestinal elimination stoma—an approach that remains largely unexplored in both the national and international literature, which limits the comparison and consolidation of simulation-based continuing education. Furthermore, it integrates *in situ* application, simulated participants, and the moulage technique, which—unlike simulators based solely on virtual technologies—moulage offers varying levels of complexity, providing visual, aesthetic, tactile, and olfactory stimuli that contribute to clinical reasoning in the development of technical skills and competencies, in addition to increasing participant satisfaction, immersion, and confidence⁽²⁷⁾.

Clinical simulation scenarios that are properly structured and executed, with a level of fidelity appropriate to their intended purpose, are associated with significant learning gains, greater participant satisfaction, strengthened professional confidence, and improved clinical reasoning and decision-making^(22-23,28).

In this regard, these results reinforce the idea that well-planned clinical scenarios, aligned with INACSL guidelines, can contribute significantly to the development of the technical and scientific competencies necessary for the safe clinical practice of generalist nurses.

They also highlight the possibility of implementing such scenarios beyond the local context, taking into account adaptations to different Brazilian locations in light of their political and cultural constraints. Finally, it should be noted that the results not only confirm previous findings regarding the effectiveness of this type of methodology in nursing education and training but also expand upon a structured, innovative methodological approach that can be tested in future experimental studies, taking into account different care contexts.

Study limitations

A key limitation of this study is that data collection was conducted asynchronously, which may have limited the ability to immediately address questions during the evaluation process. The non-probabilistic selection and small sample size—due to the unavailability of up-to-date contact information on the Lattes Platform and the SOBEST website—combined with the low response rate to the invitations sent, reduced the final number of participants, which may introduce selection bias. It is also acknowledged that the use of the adapted methodological framework in this study may influence the stability of the content validity estimates. Finally, it should be noted that the research was limited to the content validation of the scenario and did not include semantic analysis, the administration of a pilot test, or its implementation in a real-world training environment—aspects that may be investigated in future studies.

Contributions to practice

The scenario described can be replicated both in clinical practice—as a continuing education strategy for nurses and other nursing professionals—and in

academic settings, including undergraduate and graduate programs, particularly in the fields of oncology and stoma care. Its applicability has the potential to develop the clinical competencies and skills of professionals and students in training in the context of stoma care, contributing to high-quality, evidence-based care.

Conclusion

The scenario demonstrated content validity and agreement among the experts, highlighting the relevance of the instrument developed. These findings support its use as a strategy for training nurses in the context of intestinal stomas.

Authors' contributions

Conception and design: **Pereira OV, Ramos AMPC**. Data analysis and interpretation: **Pedreira NP, Ramos AMPC**. Manuscript preparation: **Pedreira NP, Ramos AMPC, Silva EA, Costa ETT**. Substantial review of intellectual content: **Pereira OV, Ramos AMPC, Silva MJRB, Carvalho DS**. Final approval of the version to be published; Agreement to be responsible for ensuring that all aspects of the manuscript related to the accuracy or integrity of any part are investigated and resolved appropriately: **Pedreira NP, Silva EA, Costa ETT, Silva MJRB, Carvalho DS, Pereira OV, Ramos AMPC**.

Data availability

The authors declare that the data are available in full in the body of the article.

References

1. Endeshaw D, Tesfaye TD, Afewerk S, Adal O, Be-layneh AG, Bogale EK, et al. Knowledge and practice of intestinal ostomy care among nurses in Bahir Dar City, Ethiopia: a cross-sectional study. *SAGE Open Nurs*. 2024;10:23779608241274205. doi: <https://doi.org/10.1177/23779608241274205>
2. Instituto Nacional de Câncer (BR). Estimativa 2023: incidência de câncer no Brasil [Internet]. 2023 [cited Mar 25, 2026]. Available from: <https://www.inca.gov.br/publicacoes/livros/estimativa-2023-incidencia-de-cancer-no-brasil>
3. Parini D, Bondurri AA, Bianchi PP, Carrano FM, Dionigi G, Boni L, et al. Surgical management of ostomy complications: a MISSTO-WSES mapping review. *World J Emerg Surg*. 2023;18(1):48. doi: <https://doi.org/10.1186/s13017-023-00518-1>
4. Ma LL, Zhang YJ, Yao JX, Zhang WY, Zhuang HR. Influencing factors associated with peristomal skin complications after colorectal ostomy surgery: a systematic review and meta-analysis. *Wound Manag Prev*. 2024;70(3). doi: <https://doi.org/10.25270/wmp.23114>
5. Abselam-Ali K, Capilla-Díaz C, Reina-Prego R, Parra-González ME. Knowledge, self-efficacy, satisfaction and self-confidence of nursing students for stoma care using active learning methodologies: a quasi-experimental study of three arms. *Invest Educ Enferm*. 2025;43(2):e06. doi: <https://doi.org/10.17533/udea.iee.v43n2e06>
6. Alharbi A, Nurfianti A, Mullen RF, McClure JD, Miller WH. The effectiveness of simulation-based learning on students' knowledge and skills in nursing programs: a systematic review. *BMC Med Educ*. 2024;24(1):1099. doi: <https://dx.doi.org/10.1186/s12909-024-06080-z>
7. Polit DF, Beck CT. Nursing research: generating and assessing evidence for nursing practice. Philadelphia: Lippincott Williams & Wilkins; 2021.
8. Paula MAB, Moraes JT. Consenso Brasileiro de Cuidados às Pessoas Adultas com Estomias de Eliminação [Internet]. 2021 [cited Mar 14, 2026]. Available from: <https://sobest.com.br/eventos/consenso-brasileiro-cuidados-com-estomias/>
9. International Nursing Association for Clinical Simulation and Learning. Onward and upward: introducing the healthcare simulation standards of best practice. *Clin Simul Nurs*. 2021;58:1-4. doi: <https://doi.org/10.1016/j.ecns.2021.08.006>
10. Ferraz APCM, Belhot RV. Bloom's taxonomy and its adequacy to define instructional objectives. *Gest Prod*. 2010;17(2):421-31. doi: <https://doi.org/10.1590/S0104-530X201000020001513>

11. Galdeano LE, Rossi LA, Zago MMF. Instructional script for the elaboration of a clinical case study. *Rev Latino-Am Enfermagem*. 2003;11(3):371-5. doi: 10.1590/S0104-11692003000300016
12. Fabri RP, Mazzo A, Martins JCA, Fonseca AS, Pederoli CE, Miranda FBG, et al. Development of a theoretical-practical script for clinical simulation. *Rev Esc Enferm USP*. 2017;51:e03218. doi: <https://doi.org/10.1590/S1980-220X2016265103218>
13. Fehring RJ. Methods to validate nursing diagnoses. *Heart Lung [Internet]*. 1987 [cited Mar 14, 2026];16(6 Pt 1):625-9. Available from: <https://pubmed.ncbi.nlm.nih.gov/3679856/>
14. Pasquali L. Instrumentação psicológica: fundamentos e práticas. Porto Alegre: Artmed; 2010.
15. Borges MS, Camacho TC, Cogo ALP. Construction and validation of an interprofessional simulated scenario for identification and management of sepsis. *Rev Gaúcha Enferm*. 2024;45:e20230223. doi: <https://dx.doi.org/10.1590/1983-1447.2024.20230223>
16. Yusoff MSB. ABC of content validation and content validity index calculation. *Educ Med J*. 2019;11(2):49-54. doi: <http://doi.org/10.21315/eimj2019.11.2.6>
17. Park O, Jeon M, Kim M, Kim B, Jeong H. Effects of a simulation-based patient safety education program. *Healthcare (Basel)*. 2023;11(21):2824. doi: <https://doi.org/10.3390/healthcare11212824>
18. Daneshfar M, Moonaghi HK. Impact of clinical simulation on bridging theory-practice gap in nursing education: a systematic review. *BMC Med Educ*. 2025;25(1):1216. doi: <https://doi.org/10.1186/s12909-025-07790-8>
19. Meszaros MJ, Almeida AO, Silva RLFD, Eduardo AHA, Lima MHM, Oliveira-Kumakura ARS. Clinical simulation scenarios for the planning and management of infusion therapy by nurses. *Rev Bras Enferm*. 2023;76(6):e20230019. doi: <https://doi.org/10.1590/0034-7167-2023-0019>
20. Alameda-Cuesta A, Oter-Quintana C, Lizcano-Álvarez Á, Brito-Brito PR, Talavera-Sáez A, Cid-Expósito MG. NANDA-I and NOC Linkages for Six Psychosocial Nursing Diagnoses: a validation study. *Issues Ment Health Nurs*. 2024;45(12):1268-77. doi: <https://doi.org/10.1080/01612840.2024.2400512>
21. Souza VMAF, Lins SMSB, Bezerra PCL, Santana RF, Prado PR, Cardoso RB. Nursing diagnosis frail elderly syndrome: an integrative review. *Rev Rene*. 2023;24:e81342. doi: <https://dx.doi.org/10.15253/2175-6783.20232481342>
22. Duarte AM, Silva CMC, Barbieri-Figueiredo MDC. Construction and validation of a simulation scenario for teaching family-focused care in pediatric oncology. *J Fam Nurs*. 2025;31(2):89-105. doi: <https://doi.org/10.1177/10748407231223768>
23. Nogueira JWS, Magro MCS. Construction and validation of a scenario for recognizing sepsis. *Rev Bras Enferm*. 2023;76(4):e20220537. doi: <https://doi.org/10.1590/0034-7167-2022-0537>
24. Silva PN, Rocha IC, Silva A, Silva MMR, Katagiri S, Kamada I. Construction and validation of a tele-simulation scenario. *Rev Enferm Cent-Oeste Min*. 2023;13:e4709. doi: <https://doi.org/10.19175/recom.v13i1.4709>
25. Haughey M, Harman M, Watson A, Goodwin C, Hines J, Sullivan K, et al. Development and evaluation of a metric-based clinical simulation procedure for assessing ostomy care in nursing practice. *Clin Simul Nurs*. 2024;94:101579. doi: <https://doi.org/10.1016/j.ecns.2024.101579>
26. Kai K, Shinoda H, Takeiri E, Hamada T, Chikubu M, Kodama Y, et al. Acceptance of virtual reality simulation training for stoma care. *Cureus*. 2024;16(7):e65465. doi: <http://doi.org/10.7759/cureus.65465>
27. Onder HE, Sari D. Improving pressure injury assessment skills of nursing students' using in-situ simulation and moulage: a randomized controlled trial. *BMC Nurs*. 2025;24(1):1373. doi: <https://doi.org/10.1186/s12912-025-04049>
28. Soares FMM, Dutra SVO, Lima GK, Rodrigues ABFL, Magalhães DS, Negri EC, et al. Development and content validation of a nursing clinical simulation scenario. *Int J Environ Res Public Health*. 2024;21(8):1042. doi: <https://doi.org/10.3390/ijerph21081042>



This is an Open Access article distributed under the terms of the Creative Commons