

Clinical simulation to teach nursing care for wounded patients

Simulação clínica para ensino da assistência ao paciente com ferida
Simulación clínica para la enseñanza de la asistencia al paciente con herida

Juliany Lino Gomes Silva¹, Ana Railka de Souza Oliveira-Kumakura¹

¹ Universidade Estadual de Campinas. Campinas, São Paulo, Brazil.

How to cite this article:

Silva JLG, Oliveira-Kumakura ARS. Clinical simulation to teach nursing care for wounded patients. Rev Bras Enferm [Internet]. 2018;71(Suppl 4):1785-90. [Thematic issue: Education and teaching in Nursing] DOI: <http://dx.doi.org/10.1590/0034-7167-2017-0170>

Submission: 03-31-2017

Approval: 11-18-2017

ABSTRACT

Objective: to report the experience of constructing and applying clinical simulation scenarios for the evaluation and treatment of wounds. **Method:** experience report on two simulation scenarios for nursing care of wounded patients applied to nursing undergraduates. We structured simulations based on the model from the National League for Nursing/Jeffries Simulation Framework. The scenarios were evaluated by the instrument Simulation Design Scale and the students by the experience with the simulation. **Results:** the scenarios reproduced nursing care situations with the application of role play and moulage, which allowed us to evaluate and discuss the wound treatment. Reflections on the debriefing were important for the teaching-learning process and association between theory and practice, these factors determined the satisfaction of students with the activity. **Conclusion:** using clinical simulation scenarios to teach students favored the clinical reasoning and decision-making in the evaluation and treatment of wounds. **Descriptors:** Teaching; Education in Nursing; Simulation; Wounds and Injuries; Healing.

RESUMO

Objetivo: relatar experiência da construção e aplicação de cenários de simulação clínica para avaliação e tratamento de feridas. **Método:** relato de experiência sobre dois cenários de simulação para assistência de enfermagem ao paciente com feridas aplicados a graduandos em enfermagem. Estruturaram-se simulações no modelo do *National League for Nursing/Jeffries Simulation Framework*. Avaliaram-se os cenários pelo instrumento Simulation Design Scale e os acadêmicos, pela experiência com a simulação. **Resultado:** cenários reproduziram situações de atendimento, com aplicação de *role play* e *moulage*, que permitiram avaliar e discutir o tratamento da ferida. Reflexões no *debriefing* foram importantes para o processo de ensino-aprendizagem e associação entre teoria e prática, fatores que determinaram satisfação dos alunos com a atividade. **Conclusão:** uso de cenários de simulação clínica no ensino de estudantes favoreceu o raciocínio clínico e a tomada de decisão na avaliação e tratamento de feridas. **Descritores:** Ensino; Educação em Enfermagem; Simulação; Ferimentos e Lesões; Cicatrização.

RESUMEN

Objetivo: relatar experiencia de la construcción y aplicación de escenarios de simulación clínica para evaluación y tratamiento de heridas. **Método:** relato de experiencia sobre dos escenarios de simulación para asistencia de enfermería al paciente con heridas aplicados a estudiantes de enfermería. Se han estructurado simulaciones en el modelo del *National League for Nursing / Jeffries Simulation Framework*. Se evaluaron los escenarios por el instrumento *Simulation Design Scale* y los académicos por la experiencia con la simulación. **Resultado:** los escenarios reprodujeron situaciones de atención, con aplicación de *role play* y *moulage*, que permitieron evaluar y discutir el tratamiento de la herida. Las reflexiones en el *debriefing* fueron importantes para el proceso de enseñanza-aprendizaje y asociación entre teoría y práctica, factores que determinaron satisfacción de los alumnos con la actividad. **Conclusión:** el uso de escenarios de simulación clínica en la enseñanza de estudiantes de enfermería favoreció el raciocinio clínico y la toma de decisión en la evaluación y tratamiento de heridas. **Descritores:** Enseñanza; Educación en Enfermería; Simulación; Heridas y Lesiones; Cicatrización de Heridas.

CORRESPONDING AUTHOR

Ana Railka de Souza Oliveira-Kumakura

E-mail: arailka@unicamp.br

INTRODUCTION

The use of clinical simulation as a teaching technique became widely encouraged due to providing active learning mechanisms, construction of knowledge, critical understanding of reality and favoring the acquisition of technical and non-technical skills, such as crisis management, teamwork, leadership, clinical reasoning and decision-making⁽¹⁾.

Considering the evaluation and treatment of wounds, clinical simulation can be an effective instrument for teaching in undergraduate courses in nursing⁽²⁾. Wound care is a dynamic and complex process in clinical practice, influenced by systematized reviews and requirements of different types of coverage. Nurses present important attributions for this type of care, being necessary that he/she holds scientific and technological knowledge for a more accurate assessment of wounds to ensure the proper therapy seeking the promotion of healing⁽³⁾.

However, studies have shown that nursing students present difficulties to perform the clinical care of a wound, they do not know the resources and materials used for this assessment and cannot relate the type of coverage to the characteristics of the lesion to be treated⁽³⁻⁴⁾. The results of these studies have shown the need for the creation of courses focused on improving the knowledge of students on this subject or improving the training process, as well as encouraging the creation of extracurricular classes or discussions on undergraduate disciplines on all aspects involved in the process caring for lesions⁽³⁻⁴⁾.

Given this context, clinical simulation as a method to teach the evaluation and treatment of wounds can stimulate students to establish a connection between theory and practice, to develop clinical reasoning and increase the confidence in his/her care for a wounded patient. The preparation of scenarios is a crucial step for the success of the activity, and documenting the scripts is important for standardization and appropriate pedagogical structure⁽⁵⁾.

Based on the need to incorporate new methods in the teaching-learning process on this theme, we developed two clinical simulation scenarios for undergraduate nursing students.

OBJECTIVE

To report the experience of construction and application of clinical simulation scenarios for the evaluation and treatment of wounds.

METHOD

This article reports the experience of constructing and applying two clinical simulation scenarios for undergraduate students, the simulations were developed as part of the activities of the elective course Topics of Nursing Education, School of Nursing of the Universidade Estadual de Campinas in 2016. The objective of the course was to provide subsidies for students to develop clinical reasoning and judgment, as well as decision-making when evaluating adults and older adults. The responsible for elaborating the simulation were a teacher and a PhD student with clinical experience and expertise in enterostomal therapy. The scenarios were applied to nine

students from the fourth and fifth years of the undergraduate program in nursing.

Prior to the simulation, the students developed activities in the virtual environment of Moodle, they read theoretical material and participated in an online chat to discuss two clinical cases related to nursing care for wounded patients. The students were given the instrument Bates-Jensen Wound Assessment Tool – Brazilian version⁽⁶⁾ to assist them when assessing the wound, this is a reliable method for the evaluation and monitoring of the process of healing of wounds of different etiologies.

The proposals for evaluation scenarios and wound treatment were prepared using the model National League for Nursing (NLN)/Jeffries Simulation Framework, since it covers the five major components for the preparation of a clinical experience: the facilitator, the student, educational practices, the simulation design and the results⁽¹⁾.

Based on this model, the facilitator of the activity was responsible for providing key information during the scenario to guide the participant in clinical reasoning and later, for conducting the debriefing. The participants played the role of nurses, using active learning and other different educational practices.

The simulation design was based on the learning objectives, focusing on the development of clinical reasoning for the evaluation and treatment of the wound. We also considered the use of high-fidelity simulation, applying role play techniques. This method consists of one person of the group taking on the role of another, using dramatization to make the experience be more real⁽⁷⁾.

To achieve the proposed objectives for the scenarios, we determined the complexity of each clinical case with relevant information for the participants to interpret and make the necessary associations, such as identifying the etiology of the wound through the assessment of the patient and characteristics of the wound, apply the treatment and perform the appropriate guidelines.

Among the expected results from the simulation experience, we focused on cognitive learning, diagnostic and therapeutic reasoning, decision-making on the clinical case and the satisfaction of the students with the activity.

After performing both scenarios, the students attended the debriefing to reflect on self-evaluation, acquired knowledge, strengths of the simulation and feelings on the situation they experienced. The debriefing was conducted in group and considered the five stages proposed by Gibbs to achieve this result, the stages are: feelings stage (how did you felt caring for this patient?); descriptive stage (could you describe the clinical picture of the patient?); evaluation stage (what good actions did you perform?); analytical stage (what would you do differently if you had another chance?); and conclusive stage (what did you draw from this learning experience for your future clinical practice?)⁽⁸⁾.

After the clinical experience simulation of the student had ended, we requested them to fill the instrument Simulation Scale Design to evaluate the structure of the scenario⁽⁵⁾.

RESULTS

Construction and application of the scenario for the evaluation and treatment of pressure injury

In the scenario of nursing care for the patient with a pressure injury, the objective was to evaluate the wound and apply the appropriate

therapy. The student had to investigate the characteristics of the patient, identify the etiology and evaluate the phase of the healing process, considering the bed, the edges and adjacent skin (Chart 1).

Chart 1 – Simulation design: nursing care for the patient with pressure injury

Objectives	<p><i>General:</i> To develop clinical reasoning in wound evaluation and apply the appropriate therapy.</p> <p><i>Specific:</i></p> <ul style="list-style-type: none"> – Investigate the characteristics of the patient – Evaluate the wound – Choose the treatment – Guide the nurse responsible for the care
Fidelity	<i>High-fidelity using role play</i>
Problem Solving	<p>High complexity of the case, with relevant information for the students to interpret, give meaning to the data and provide an appropriate response, such as:</p> <ul style="list-style-type: none"> – Survey the patient’s history (what led to the development of this wound) – Evaluation of the characteristics of the wound – Implementation of interventions to prevent new injuries and promote the wound healing process (change of decubitus, elevation of the headboard to 30°) – Implementation of the appropriate topical therapy
Clues	<ul style="list-style-type: none"> – Long period of immobilization (bedridden at home) – Prolonged fasting for surgery – Pain when being manipulated – Very nervous nurse
Debriefing	<p>Feelings Stage: How did you felt guiding the nurse that would treat this patient?</p> <p>Descriptive Stage: Could you describe the clinical picture of the patient?</p> <p>Evaluation Stage: What good actions did you perform?</p> <p>Analytical Stage: What would you do differently if you had another chance?</p> <p>Conclusive Stage: What did you draw from this learning experience for your future clinical practice?</p>

The scenario was performed in a meeting room that represented the continuing education service of the hospital, where the weekly meeting of the wounds group occurred. Seven students participated in this scenario, they performed the role of nurses from inpatient units. Multimedia equipment were used to project photos of the pressure injury. One of the professors played the role of facilitator and the other, the role of nurse of the trauma sector; both instigated the debate among the participants.

The instrument Bates-Jensen Wound Assessment Tool – Brazilian version⁽⁶⁾ was provided to guide the evaluation. From the information obtained, the participants used clinical reasoning to choose the appropriate treatment and perform professional guidance on the treatment of the wound.

Before starting the scenario, the participants received initial information regarding the case of the patient from the researchers (briefing): *“The Nurse from the fifth floor, trauma sector, called the Injury Team of the hospital to discuss the case of patient João Flávio, 80 years old, who has been hospitalized for two days. He presents a pressure injury in the sacrococcygeal*

region and the Nurse responsible for the sector requested help for the evaluation of this wound and to define which treatment should be implemented.”

The scenario lasted about fifteen minutes. During this time, we expected the participants to investigate the medical history of the patient. The information provided followed the script described in Chart 2.

Chart 2 – Script of the scenario of evaluation and treatment of the pressure injury

Time	Actions expected from the nurse (participant)	Role Play
0-4 min	Surveying the patient history	Provides relevant data to the clinical history of the patient (several femur fractures, bedridden, hip fracture, pain when manipulated), fasting for surgery, difficulty to mobilize.
04-10 min	Clinical reasoning considering the data collected – risk of developing new pressure injuries. Evaluation of the wound and its characteristics	May provide the dimensions of the wound (12 × 10 × 5 cm) and the presence of detachment of the borders, this can confirm that the wound presents a great amount of serosanguineous exudate (if the students ask) and the lower edge of the wound is macerated.
10-15 min	Interventions to be made (change of decubitus, use of cushions and supports for mobilization) Wound treatment (topical therapy to be used, protection of the edges to avoid maceration, filling the detachment), frequency of bandage change.	

During the debriefing the participants had the opportunity to reflect on their actions, skills, decision-making and the possible treatments that should be used in that case. Through this scenario it was possible to recuperate concepts related to the etiologies of wounds, tissue types present in the bed and, considering all the characteristics observed in both the patient and the wound, select the products available on the market according to their action in the healing process.

The elements evaluated by the application of the instrument Simulation Design Scale, showed some aspects to be improved in the scenario design, like fidelity, and stressed that the reflection and feedback moments were constructive for learning.

Construction and application of the scenario for the evaluation and treatment of venous ulcer

In the scenario of nursing care for the patient with venous ulcer, the objective was to develop clinical reasoning on the evaluation and treatment of the wound. The student should

investigate the clinical history, perform wound assessment and guide the patient about making a bandage at home (Chart 3).

One of the facilitators played the role of the patient. We used the technique of moulage to create the model of wound.

This scenario required the preparation of a nursing room in a Basic Health Unit with the presence of a litter, table, chairs and the availability of products for the treatment of wounds, such as 0.9% saline solution, essential fatty acids, 10% papain, hydrogel, calcium alginate and silver sulfadiazine. To facilitate the performance of the scenario, we prepared a script containing the actions expected from the student and the responses given by the actor (Chart 4).

Chart 3 – Simulation design: nursing care for the patient with venous ulcer

Objectives	<p><i>General:</i> To develop clinical reasoning on the evaluation and treatment of a patient with venous ulcer.</p> <p><i>Specific:</i></p> <ul style="list-style-type: none"> – Investigate the patient history – Evaluate the wound – Implement the actions proposed – Guide the patient about wound care in home environment
Fidelity	<i>High-fidelity using Role play</i>
Problem Solving	<p>Moderate complexity of the case, with relevant information for the students to interpret, give meaning to the data and provide an appropriate response, such as:</p> <ul style="list-style-type: none"> – Identify the etiology of the wound by surveying the patient's history, physical examination and evaluation of the characteristics of the wound; – Define the proper treatment; – Guide the patient about the bandage at home.
Clues	<ul style="list-style-type: none"> – The presence of an edema in the lower limb which improves after being raised – Presence of pain at the site of the wound – Varicose veins in the limb – Lipodermatosclerosis – Normal limb perfusion (large arterial pulses, capillary filling < 2 s, normal skin coloration) – Anxious patient
Debriefing	<p>Feelings Stage: How did you feel caring for this patient?</p> <p>Descriptive Stage: Could you describe the clinical picture of the patient?</p> <p>Evaluation Stage: What good actions did you perform?</p> <p>Analytical Stage: What would you do differently if you had another chance?</p> <p>Conclusive Stage: What did you draw from this learning experience for your future clinical practice?</p>

The participant of this scenario played the role of a Basic Health Unit nurse who was going to care for *Maria Cândida*, 50 years old, who reported a lower limb wound that was not cicatrizing. The other students watched the scene within the simulation environment. The scenario lasted fifteen minutes.

The facilitators and all nine students participated in the debriefing, they reflected on the appointment considering the clinical condition experienced in the simulation, the assessment of the patient and the wound, the clinical reasoning of the etiology and the appropriate topical therapy for the treatment.

We also considered the report of the feelings and satisfaction of the participant; the other students could voice their doubts and anxieties regarding the clinical simulation experience.

Chart 4 – Script of the scenario of evaluation and treatment of the venous ulcer

Time	Actions expected from the nurse (participant)	Patient (role play)
0-4 min	<ul style="list-style-type: none"> – Presentation – Handwashing – Performing anamnesis – Physical examination 	<ul style="list-style-type: none"> – Refers to the wound for three years – Mentions pain in the limb – Mentions that the limb is swollen – Mentions that a vascular specialist stated that limb perfusion is normal – Mentions that has been changing the bandage once a day using essential fatty acids – Mentions that the wound is presenting a large amount of strong-smelling secretion – Mentions that is feeling anxiety
04-10 min	<ul style="list-style-type: none"> – Evaluation of the characteristics of the wound – Clinical reasoning to determine the etiology of the wound 	<ul style="list-style-type: none"> – Mentions that the skin around the wound is increasingly hardened and dry – Expresses concern due to noticing increased redness in the skin around the wound – Mentions that the yellow tissue at the bed of the wound is increasing
10-15 min	<ul style="list-style-type: none"> – Determining the topical therapy (concluding that the wound is probably infected) – Performing debridement interventions on the wound (conservative debridement) – Guiding the patient to change the bandage twice a day (10% papain for enzymatic debridement) – Guiding the patient to use compression stockings (refer the patient to the medic for the prescription of compression therapy) 	<ul style="list-style-type: none"> – States that is understanding the guidelines – If necessary, will provide clues to assist the student in clinical reasoning

From the assessment of this scenario by the Simulation Design Scale, we concluded that the model created using the technique of moulage accurately represented the tissues that should be observed and was important to stimulate reasoning about the etiology of the wound, the implementation of the appropriate treatment and patient guidance on performing the bandage at home. As results from this simulation, we observed the satisfaction of the students with the activity and the development of clinical reasoning, which was evidenced by the form the students conducted the clinical research and by the final choice of the treatment to be performed.

DISCUSSION

The importance of applying clinical simulation is in its effectiveness for training. There is evidence that using this method is more effective for the acquisition of knowledge than using only case studies or other strategies⁽⁹⁻¹⁰⁾. In clinical practice, simulations promote changes in attitudes and a significant reduction of adverse events, thus, contributing to patient safety.

The educators must have skills and expertise to prepare students before inserting them in the simulation environment, considering their level of experience and learning. In addition, the educators must provide clues to guide and support the participants so they can reach the proposed objectives and expected results⁽¹⁾.

Therefore, the structuring of the scenario is an important step to ensure the effectiveness of the simulation, which includes setting up the environment that will be played, the characterization of the dummy or actor and the definition of clear objectives. When choosing the strategy that will be used, the choice between different degrees of fidelity, the use of a standardized patient technique or role play will depend on the level of realism and on the factors that must be replicated during the clinical simulation⁽¹⁾. Failures and errors may occur in this process if they are not processed correctly by the professor, compromising the success of the strategy and the education quality. A careful design will collaborate with the sharing and adaptation of the scenarios to different training contexts, thus, enhancing learning⁽⁵⁾.

Using the structure proposed by the *National League for Nursing/Jeffries Simulation Framework* provides the incorporation of the best teaching practices in the design and implementation of the simulation, presenting relevant variables for an organized and systematized application of the training process. These recommendations prevent ineffective evaluations of the participants and the creation of scenarios in which the students are incapable of meeting the goals or achieving the expected results⁽¹⁾.

As an example, from this report, the proposed objectives were achieved by the students in the scenarios that simulated wounds using moulage, since the wound models accurately reproduced the characteristics that are observed in practice (realism of the scenario) and contributed to learning.

For nursing educators, this innovative technique of teaching-learning provides tools that assist in the implementation and evaluation of the knowledge acquired. Within the context of active learning, students and teachers effectively participate in the construction of knowledge. The student is encouraged to develop an autonomous attitude to ensure the promotion of quality and safe care. These factors, associated to patient-centered care, evidence-based practice and teamwork are essential skills for care. Therefore, clinical simulations can contribute to the development of students, better preparing them for clinical practice⁽¹¹⁾.

Considering this perspective, evaluation clinical simulations is important to measure the quality and effectiveness of

the activity and to encourage the adequate structuring of the scenarios. Evaluation also allows the understanding of how the participant comprehends and incorporates the specific characteristics of the scenario, contributing to strengthen simulations as an education strategy⁽⁵⁾.

The construction of clinical simulation scenarios is a process that must be developed based on scientific evidence, reviewed by peers with clinical expertise and undergo pilot testing. Thus, the construction and updating are cyclical and must be accompanied by continuous feedback from students and professors.

Study limitations

The designed scenarios were not reviewed by peers with clinical expertise before being implemented. This process involves the evaluation by professors or specialists in clinical simulation, ensuring the proper formulation of all components involved in the preparation of the clinical experience.

Contributions to the Nursing field

The construction of clinical simulation scenarios focused on the evaluation and treatment of wounds will allow the student, as well as the nurse, to develop clinical reasoning more accurately, thus, promoting safer nursing care. The participants can live situations close to real ones in a controlled environment, thus, being able to perform tasks and procedures without causing harm to patients. Given the growing number of patients with chronic wounds and the availability of new technologies for treatment, there is a need for courses and teaching strategies that effectively promote learning, assist in the preparation of students and professionals for the care of wounded patients and ensure the cost-effectiveness when choosing the treatment.

FINAL CONSIDERATIONS

The scenarios were prepared based on important steps for the structuring of clinical simulation, such as defining clear objectives and choosing a suitable script to promote clinical reasoning and decision-making in the students when caring for the wounded patient.

We considered the selection of common cases in clinical practice to make the scenario be more real and improve the student's understanding regarding the aspects involved in the evaluation and treatment of wounds. Using the technique of moulage and applying role play were essential for the realism of the scenes. Another important factor in the application of the scenarios was the use of instruments validated in the literature to document the collected information and guide the healing process during the activity.

The strategy presented in this report can facilitate the teaching-learning process of students, in addition to being replicable in other educational institutions for the safe and effective construction of knowledge.

REFERENCES

1. Jeffries P. Simulation in Nursing Education. 2. ed. New York: National League for Nursing; 2012.
2. Stephens M, Jones D. Assessing the use of simulated wounds in nurse education. Wounds[Internet]. 2012 [cited 2017 May

- 15];8(1):74-80. Available from: http://www.wounds-uk.com/pdf/content_10326.pdf
3. Santos AAR, Medeiros ABA, Soares MJGO, Costa MML. Avaliação e tratamento de feridas: o conhecimento de acadêmicos de enfermagem. *Rev Enferm UERJ*[Internet]. 2010 [cited 2017 May 15];18(4):547-52. Available from: <http://www.facenf.uerj.br/v18n4/v18n4a08.pdf>
 4. Baratieri T, Sangaleti CT, Trincaus MR. Conhecimento de acadêmicos de enfermagem sobre avaliação e tratamento de feridas. *Rev Enferm Atenc Saúde*[Internet]. 2015 [cited 2017 May 15];4(1):2-15. Available from: <http://seer.uftm.edu.br/revistaeletronica/index.php/enfer/article/view/1259/1130>
 5. Almeida RGS, Mazzo A, Martins JCA, Pedersoli CE, Fumincelli L, Mendes IAC. Validation for the portuguese language of the Simulation Design Scale. *Texto Contexto Enferm*[Internet]. 2015[cited 2017 Jan 27];24(4):934-40. Available from:<http://www.scielo.br/pdf/tce/v24n4/0104-0707-tce-24-04-00934.pdf>
 6. Alves DFS, Almeida AO, Silva JLG, Morais FI, Dantas SRPE, Alexandre NMC. Translation and adaptation of the Bates-Jensen Wound Assessment tool for the Brazilian culture. *Texto Contexto Enferm*[Internet]. 2015[cited 2017 Jan 20];24(3):826-33. Available from:<http://www.scielo.br/pdf/tce/v24n3/0104-0707-tce-24-03-00826.pdf>
 7. Cogo ALP, Pai DD, Aliti GB, Hoefel HK, Azzolin KO, Busin L, et al. Casos de papel e role play: estratégias de aprendizagem em enfermagem. *Rev Bras Enferm*[Internet]. 2016 [cited 2017 Jan 20];69(6):1231-5. Available from: <http://www.scielo.br/pdf/reben/v69n6/0034-7167-reben-69-06-1231.pdf>.
 8. Gibbs G. *Learning by doing: a guide to teaching and learning methods*. Further Education Unit: Oxford Polytechnic; 1988.
 9. Karadag M, Caliskan N, Iseri O. Effects of case studies and simulated patients on students' nursing care plan. *Int J Nurs Knowl* [Internet]. 2016[cited 2017 Aug 01];27(2):87-94. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/25773922>
 10. Shinnick MA, Woo M, Evangelista LS. Predictors of knowledge gains using simulation in the education of prelicensure nursing students. *J Prof Nurs*[Internet]. 2012[cited 2017 Aug 01];28(1):41-7. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3386605/pdf/nihms384264.pdf>
 11. Durham CF, Sherwood GD. Education to bridge the quality gap: a case study approach. *Urol Nurs* [Internet]. 2008[cited 2017 Aug 01];28(6):431-8. Available from: <https://www.cbuna.org/sites/default/files/download/members/unjarticles/2008/08dec/431.pdf>
-