

Realistic simulation in patient safety education: experience report

Simulação realística no ensino de segurança do paciente: relato de experiência

Simulación realística en la enseñanza de seguridad del paciente: relato de experiencia

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Abstract: Aim: To report the experience of teaching and learning in patient safety with students from an undergraduate Nursing Course. **Method:** experience report, developed in 2017, from theoretical and practical activities. The methodological strategy used was the realistic simulation, performed at the Skills Laboratory, with third semester students of a Nursing Undergraduate Course, from a Federal Public University. **Results:** Two simulations were performed in the first semester of 2017, which addressed the protocols of Hand Hygiene, Correct Patient Identification, Safe Surgery and intravenous devices, catheters and probes. Afterwards, discussions was done to strengthen participants' knowledge and skills. **Conclusions:** the students' experience on the use of realistic simulation was positive, allowing greater confidence based on their experience

key words: Education Nursing; Simulation training; Patient safety; Nursing

Resumo: Objetivo: relatar a vivência de ensino-aprendizagem de segurança do paciente com estudantes de um Curso de Graduação em Enfermagem. **Método:** relato de experiência, desenvolvido no ano de 2017, a partir de atividades teórico-práticas na disciplina “A enfermagem e a segurança do paciente na atenção à saúde”. Utilizou-se como estratégia metodológica a simulação realística, realizada no Laboratório de Habilidades, com estudantes do terceiro semestre de um Curso de Graduação em Enfermagem, de uma Universidade Pública Federal. **Resultados:**

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foram realizadas duas simulações no primeiro semestre letivo de 2017. A primeira referente aos protocolos de Higienização das Mãos e Identificação Correta do Paciente; a segunda abordou o protocolo de Cirurgia Segura e dispositivos intravenosos, cateteres e sondas. Pontos fortes e pontos frágeis foram discutidos, oportunizando fortalecer conhecimentos, habilidades e atitudes dos participantes. **Conclusões:** a vivência dos estudantes sobre o uso da simulação realística foi positiva, possibilitando maior confiança baseada na experiência vivenciada.

Descritores: Educação em Enfermagem; Treinamento por simulação; Segurança do paciente; Enfermagem

Resumen: Objetivo: relatar la vivencia de enseñanza-aprendizaje de seguridad del paciente con estudiantes de un Curso de Pregrado en Enfermería. **Método:** relato de experiencia, desarrollado en 2017, a partir de actividades teóricas y prácticas. La estrategia metodológica utilizada fue la simulación realística, realizada en el Laboratorio de Habilidades, con estudiantes del tercer semestre de un Curso de Pregrado en Enfermería, de una Universidad Pública Federal. **Resultados:** Se realizaron dos simulaciones en el primer semestre lectivo de 2017, que abordaron los protocolos de Higiene de Manos, Identificación Correcta del Paciente, Cirugía Segura y dispositivos intravenosos, catéteres y sondas. Posteriormente, se realizaron discusiones para fortalecer el conocimiento y las habilidades de los participantes. **Conclusiones:** la vivencia de los estudiantes sobre el uso de simulación realística fue positiva, posibilitando una mayor confianza fundamentada en la experiencia vivida.

Descriptor: Educación en Enfermería; Entrenamiento Simulado; Seguridad del Paciente; Enfermería

Introduction

Patient safety (PS) has been highlighted in the last decades, because of concern about evidence of avoidable adverse events occurring during patient care. In this context, World Health Organization (WHO) launched World Patient Safety Alliance. In this alliance, several countries have pledged to adopt measures to improve patient care to increase the quality of health care provided.¹ Among these activities, we highlight the document that orients the construction of curricula that involve courses about PS on health professionals training.²

In this sense, the Ministry of Health, through the National Program for Patient Safety, reassures the importance and the need to include the theme in the teaching process on a technician and undergraduate level.² Thus, some institutions have been seeking innovation on teaching methodologies to approach this thematic and it has included realistic simulation (RS). This is a teaching method that enables students to train technical and behavioral abilities to guarantee the quality and performance of the team on patient care.³ There are several resources that can be used in a simulation lab to bring students closer to situations that are similar to reality with elements that

ensure high fidelity before they begin their activities in the practical field and, in that way, to experience the first contact with the patient.⁴

RS aims to improve education, training and performance evaluation, clinical trial and research. It enables acquisition of new knowledge, concepts, technical abilities, decision making, attitudes, behaviors, team work and professionalism.⁵ It allows students to experience daily situations in a fictional and safe environment, in order to promote learning and critical sense.

The opportunity of students to experience assistential practice through SR contributes to reflect their technical and behavioral abilities. In this context, a Brazilian student indicated that 76,9% of students in Nursing of a Federal University reported that RS promoted the approximation of students to real clinical cases and it contributed to clinical reasoning.⁶

RS activities can be planned and organized according theoretical subjects, so that students have the opportunity to associate practice with theory with safety, agility and trust during their clinical environments.⁶ An Australian study verified that 83% of nursing students agreed that knowledge and abilities acquired during RS could assist them on future care practices.⁷ For such, 93% related better with developing clinical reasoning and decision making, and 77% stated that RS enabled them to put knowledge into practice.⁷

We justify this report due to the pioneerism of RS with undergraduate Nursing students of the referred institution. The relevance in the use of RS is in promoting the development of meaningful learning, demonstrating effectiveness in cognitive and behavioral education of students.⁵ In addition, it provides teamwork, strengthening the professional bond.⁶

Also, using participatory and realistic methodology represents a positive strategy on teaching, assisting on learning through practicing nursing techniques, improving abilities and adding competences to students.⁶ Corroborating to that, scientific studies highlight the utilization of RS favours critical and reflexive learning, improvement of technical abilities and self-confidence of students during patient care.⁸⁻¹⁰

In view of the above, the guiding question was delimited: how can the realistic simulation methodology contribute to patient safety teaching-learning for students in a Nursing Undergraduate Course? Therefore, the objective is to report the experience of patient safety teaching-learning with students of an Undergraduate Nursing Course.

Method

It is an experience report developed through Graduate students of an obligatory course in the *Stricto Sensu* Graduate Program in Nursing called Supervised Teaching in a Public University in the South of Brazil. Two RS were held in the first semester of 2017, with the participation of 29 students enrolled in the third semester of the Undergraduate Nursing Course, in the discipline “Nursing and Patient Safety in Health Care”. This discipline was inserted in the Pedagogical Project of the Undergraduate Course, in 2016, after the process of curricular reformulation, it is offered every term and has two theoretical credits (30 hours).

Teaching method with realistic simulation was initiated, in 2017, under the coordination of two professors and the collaboration of Master’s and Doctoral Students on supervised teaching; nurses that work on the course’s laboratory also participated. RS were developed in the Abilities Laboratory of the Undergraduate Nursing Course. Sceneries were organized in a way to enables safe care to patients and their families, and that also provided tranquility in the execution of the activities of both the students in simulation and those who were in the role of observers.

- To plan, implement and evaluate RS, these strategies were followed:¹¹
- Chosing a theme: For the first RS, hand hygiene (HH) protocols and patient identification were considered.; and to develop the second RS, safe surgery protocol and content on safe use of intravenous devices, catheters and probes were used.

Protocols were sent to the students' emails the previous week for them to read beforehand.

- Definition of the objectives to be achieved with the simulation: to provide a simulated environment of a scene similar to the hospital environment; encourage students to identify potentialities and weaknesses, reflecting on their knowledge, skills and attitudes acquired in previous reading; reframing learning, building new knowledge;
- Preparation of clinical cases, implementation script, monitoring and evaluation checklist;
- Scenario organization: based on the cases, the scenario was previously set and tested by the teacher and other collaborators involved in the scenes (nurses, master's and doctoral students). The roles of patient and companion were developed by master's and doctoral students;
- Organization of the simulation: the students were selected, by lot, on the SR day to act as "actors" of the scene. Students not included in the sweepstakes assumed the observers positions. Simulation footage was taken;
- Discussion method: debriefing after simulation and feedback.

Debriefing comprehends teaching and reflection with explanations related to activities that were developed on simulations, in a way that positive.¹² As for the *feedback*, the professor could inform students, conducting them on activities and, this, reinforcing information to improve learning of abilities.¹² In both moments, the professor holds the ability to associate theory to practice and offer opportunities for the student to vocalize his/her experience with .¹²

In order to better assimilate the scenario of the simulation, the students on the scene received support / guidance both through verbal information from the teacher/facilitator, as well as from the speeches of patients and companions; records on patient records and patient

nameplates above the headboard. This information was made available so as not to interfere with student attitude/decision during.

Guidance on the scenario and clinical cases, simulation development, debriefing, and feedback lasted two hours for each simulation episode. This time is justified for the realization of SR due to the available weekly workload of the discipline, and it was shown to be effective for the development of the proposed steps, especially in providing the attention of students to SR. The objectives of the activity were presented to the students at the beginning of the semester, and in each class they verbally authorized the filming of the simulations. It is noteworthy that the images were used only in the classroom to support debriefing and feedback.

Results

To construct scenarios and RS evaluation, the teacher provided a script of actions for the execution of cases. From this, the collaborators (nurses, masters and doctoral students) assisted in the elaboration and assembly of the clinical cases and scenarios; and in the filming of the scenes. They also acted as patients, family members/caregivers and health professionals.

On the day of RS, two students were drawn to participate as “actors”; the other students in the class played the role of scene watchers. For this, they received a follow-up script (checklist), containing information about the actions and steps that should be developed by the students who were working in the SR. In the checklist, it was indicated yes or no to the items, referring to the practices described in the explored protocols. The activities developed in the SR were filmed and reproduced to the students, providing the visualization and discussion of the strengths and weaknesses on the subject under discussion, during debriefing and feedback.

a) Simulations

The first simulation consisted on students' performances to correct identification protocol for the patient and practice of HH in five moments: before aseptic procedure, after risk

of exposure to body fluids, after contact with patient and in areas near patient.¹ In this case, the simulation was performed with two patients who had similar names and were admitted to the same ward. At the scene, students should pay attention to procedures for checking vital signs, intravenous solution drip counting, oral antipyretic administration, and referral of one of the patients for radiographic examination. For each procedure performed, the student was expected to perform the HH and the patient identification check, as recommended in the protocols.

The second simulation included the protocol of safe surgery and safe use of intravenous devices, catheters and probes. In this, two environments were created: the inpatient unit and the operating room, in which students had to pay attention to the correct completion of the safe surgery checklist¹³⁻¹⁴ and to observe the use of intravenous devices, catheters and probes.

The safe surgery checklist corresponds to a checklist that begins at the inpatient unit, follows the patient's reception at the operating room, in the operating room and is completed after the procedure is completed at the operating room. To check the attention of students on the scene, some risk factors were placed as: a) inpatient unit: surgical marking on wrong limb, patient without identification bracelet; b) Surgical Center: dispersed surgery team during the checklist conference, adorned professionals and patient with a clamped bladder tube and a fallen forceps in the surgical field.

Regarding the safe surgery protocol (application of the checklist) and the safe use of intravenous devices, catheters and probes, the conference was verbally and handwritten, as it is applied in the educational institution where the students act. During the SR in the inpatient unit, the student on the scene identified the marking error, but when redialing, did not remove the wrong marking. He identified and removed the adornments, but did not realize that the patient was without an identification bracelet.

At the reception of the patient in the operating room, the checklist was properly completed by the student, who made the identification bracelet and unmarked the wrong side. In the operating

room, the student had difficulty asking the attention of some professionals to fill out the safe surgery checklist and remove the adornments. As for bladder tube clamping, when the patient referred pain in the lower abdomen, it was identified and corrected by the student. In the phase “before the patient left the operating room” the instruments were counted and the student pointed to the lack of forceps, which was found in the surgical field.

Regarding the correct identification of the patient, it was observed that the students did not check the bracelets before performing the proposed procedures. Identification was performed by the location plate, present at the head of the bed, which contained the patient's name, date of birth, registration and risks / allergies. Positively, the students noticed that the patients had similar names and that one of them had dipyrone allergy. Thus, a medication administration error was avoided. Regarding HH, it was observed that the procedure was performed only at the beginning of the activity and the five moments recommended in the protocol were not followed.

During the simulations, observant students were placed at strategic points in the room so as not to disturb or intimidate students on the scene. Thus, they could observe and fill out the checklist of the activities that were being developed.

b) Debriefing e feedback

After the end of the simulations, debriefing was performed, a stage in which the acting students and the observers were able to verbalize their feelings and reflect on the experience. It also provided the opportunity to list the weaknesses and potentialities of the actions performed during the assistance provided in the simulation. In the feedback, the teacher through the reproduction of the footage and the review of the checklist, provided the opportunity to mix the theory and care practice, to students, teachers, master's students, doctoral students and laboratory nurses.

Students faced the importance of prior knowledge and attention in care, not only for simulations but also for their academic and professional life. They understood that the errors /

failures committed in the care practice can cause health problems to the patient. Therefore, the importance of simulating practices in laboratory environments helps to develop skills and provides safety during the patient care process. Debriefing, held at this time, served as a self-reflection of the participants. They verbalized the feelings about living in the RS, raised their doubts, suggested readjustments, identified the weaknesses as well as the positive points. In this context, the concepts learned in class and the knowledge acquired after reading the protocols could be revised to support future professional practice.

For the first simulation, few students had previously read the materials and protocols, which made it difficult to perform the proposed activities. However, for the second simulation, students were already more attentive and prepared, they've read the material sent beforehand, showing greater autonomy and knowledge in what they were doing, both in performance and in observations. They were more dynamic and attentive during simulation and debriefing. Discussions were more consistent, and valid arguments were presented after viewing, in the recordings, the errors and hits, as well as a greater domain and security over their actions in the execution of the simulation.

Students obtained adherence and showed interest in the activities. They suggested the expansion of RS activities to the other disciplines of the Undergraduate Nursing Course, as they experienced a greater understanding of the contents by acting in the scenes and assisting their colleagues in acting. Debriefing and feedback after the simulations meant a wealth of content due to the careful assessment made by students/observers when filling out the scene checklist.

In the course assessment, held at the end of the semester, students reported that the experience with RS was excellent, reinforcing learning, allowing a greater understanding of care dynamics, teamwork and apprehension of the content addressed in class. They expressed that during the simulations, nervousness, insecurity and anxiety were similar to experiencing the actual practice, since the scenes were elaborated in a scenario close to the reality of care.

Discussion

Simulation is important in its ability to provide experiences throughout the education process and to provide students with opportunities for repetition, pattern recognition and decision making. In RS, fidelity is to create a scenario with the closest possible reality according to the proposal.¹² In this sense, problem solving during the simulation takes place according to the student's learning and the content provided previously, so that the student can feel able to solve them.¹⁵

Initially, students were apprehensive due to the failure to read the protocols sent, which caused insecurity in patient management and was an initial barrier to performing RS. However, regarding skills, it was observed that in the second RS, students showed greater autonomy, manual dexterity and empowerment during the activity.

Thus, it is evident that the SR develops skills and competences allied to the student's reflexive, critical and transformative process, as well as the improvement of skills and competences.¹⁶⁻¹⁷ It matches the results of the RS, performed with medical students, which improved skills development during the simulations, which are communication, leadership, decision making, teamwork and patient relationship.¹⁸

This maturity, throughout the course, brings reflection on the importance of using RS as an effective and innovative teaching methodology. RS emerged as a teaching-learning strategy for the teacher, as it helps in the construction of experiences that need the student's reflection. In addition, it provides the opportunity for him to acquire the ability to conduct his training and learning process through the experience of clinical practices in a safe environment close to the reality of care.^{4,19}

As for the feelings experienced by the acting students, it is in line with a study conducted in the Federal District that describes that undergraduate Nursing students experienced feelings such as anxiety and insecurity, which may be present during care practice in hospital settings. Still, in

this line of thought, the use of RS, as a method of teaching and learning, proved promising and efficient. Thus, it is recommended to incorporate RS in the multiprofessional educational system, as it strengthens the technical-scientific knowledge of those involved, provides greater safety in performance, contributing to the strengthening of professional practice.^{10,16}

To this end, the use of RS in the training of health professionals includes the improvement of skills in an environment where mistakes are allowed and they contribute to professional growth, without putting PS at risk.²⁰ In the simulations, students stressed the importance of self-assessment in the developed activities, because it is possible to reflect on the errors and also a better understanding of the contents. The debriefing strategy is considered as one of the most important steps in RS, as the teacher/facilitator leads the student to a reflection of the experience, before the simulation acts, helping in the perception of their performance, in the decision making and their competence in the face of the scenario.¹²

In RS were observed learning, content fixation, increased interest in the discipline and approach to practice. And in agreement with the literature, which assessed the perception of 37 nursing students, identified that RS provides a previous experience of the practice (23.9%); allows to fix the knowledge acquired in the classroom (21.7%) and that contributes to relate theory and practice (15.2%).²¹

Nursing students describe RS as a strategy that enables better teaching-learning and suggest its extension to all subjects combined with theoretical classes.⁶ In addition, the use of RS methodology brings students closer to the reality of care practice, aiming at exchange of experiences and performance of practical skills associated with theoretical reflection, when compared to the traditional method of teaching.²²⁻²³

Conclusions

Teaching-learning experience about patient safety in RS was positive in the students context, as well as for the teachers of the discipline and postgraduate students in supervised teaching. This experience motivated those involved to expand and enrich teaching through this method, because simulation is an effective and innovative tool that enables the student to present himself to the patient with greater confidence, that is, based on previous experience.

The use of RS assists in managing practice problems, flexibility, use of factual knowledge, critical thinking, team interaction, response time, communication skills, planning, strategy, multiple decisions and collaboration. Likewise, the RS methodology acts as a necessary tool for the training of future professionals for the challenges of dealing with patients in different care environments, with regard to human relations with the assisted, family and multidisciplinary team.

This mode of teaching in the discipline proved satisfactory, which provided a quality learning and preparation of students for practical activities, offering greater security and understanding of the reality of the real work environment. During the simulations, the students' interest, commitment and growth with the themes addressed were notorious. In the context of what has been exposed, there is the need for further studies that address this new teaching methodology, which qualifies the training of future professionals, subsidizing them for a critical, creative and safe practice.

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Conception and planning of the subject and realistic simulation; analysis/interpretation of the data; writing of the article and relevant critical review of intellectual content; final approval of the version to be published.

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