



Positive and negative aspects of clinical simulation in nursing teaching

Aspectos positivos e negativos da simulação clínica no ensino de enfermagem

Aspectos positivos y negativos de la simulación clínica en la educación en enfermería

Maria Ercília Chagas Rosa¹

Fernanda Maria Vieira Pereira-Ávila¹

Fernanda Garcia Bezerra Góes¹

Natália Maria Vieira Pereira-Caldeira²

Laelson Rochelle Milanês Sousa²

Maithê de Carvalho e Lemos Goulart¹

1. Universidade Federal Fluminense. Rio das Ostras, RJ, Brasil.

2. Universidade de São Paulo, Escola de Enfermagem de Ribeirão Preto. Ribeirão Preto, SP, Brasil.

ABSTRACT

Objective: to describe positive and negative aspects of clinical simulation in nursing education from the perspective of undergraduate students. **Method:** this is a descriptive cross-sectional study with a qualitative approach, developed at a federal university of the city of Rio de Janeiro. Data collection occurred after the clinical simulation on patients' physical examination, where a discussion with students about their perceptions took place. The textual content resulting from the interviews was submitted to lexicographic analysis, using the *Interface de R pour Analyses Multidimensionnelles de Textes et de Questionnaires* (IRAMUTEQ) software. **Results:** the positive aspects of clinical simulation in nursing education deal with the importance of simulation in preparing students for clinical practice, favoring the correlation between theory and practice and the development of critical reasoning. Among the negatives, nervousness and difficulty in carrying out actions with other colleagues were noted. **Conclusion and Implications for practice:** simulation proved to be a significant and viable tool for teaching in nursing. It is recommended that this strategy be adopted in order to contribute to the training of reflective professionals and able to provide care without errors, contributing to patient safety.

Keywords: Simulation; Teaching; Nursing.

RESUMO

Objetivo: descrever os aspectos positivos e negativos da simulação clínica no ensino de enfermagem na perspectiva dos graduandos. **Método:** estudo transversal descritivo de abordagem qualitativa, desenvolvido em uma universidade federal do Rio de Janeiro. A coleta de dados ocorreu após a realização da simulação clínica acerca do exame físico do paciente, onde se sucedeu uma discussão com os alunos acerca de suas percepções. O conteúdo textual decorrente das entrevistas foi submetido à análise lexicográfica, utilizando-se o *software Interface de R pour Analyses Multidimensionnelles de Textes et de Questionnaires* (IRAMUTEQ). **Resultados:** os aspectos positivos da simulação clínica no ensino de enfermagem versam sobre a importância da simulação na preparação dos alunos para a prática clínica, favorecendo a correlação entre teoria, prática e o desenvolvimento do raciocínio crítico. Dentre os negativos, destacaram-se o nervosismo e a dificuldade em realizar as ações com os demais colegas observando. **Conclusão e Implicações para a prática:** a simulação demonstrou ser uma ferramenta significativa e viável para o ensino em enfermagem. Recomenda-se que esta estratégia seja adotada a fim de contribuir na formação de profissionais reflexivos e aptos para prestar os cuidados sem erros, contribuindo para a segurança do paciente.

Palavras-chave: Simulação; Ensino; Enfermagem.

RESUMEN

Objetivo: describir los aspectos positivos y negativos de la simulación clínica en la educación de enfermería desde la perspectiva de los estudiantes de pregrado. **Método:** estudio transversal descriptivo de enfoque cualitativo, desarrollado en una universidad federal de Rio de Janeiro. La recolección de datos se produjo después de la simulación clínica sobre el examen físico del paciente, donde hubo una discusión con los estudiantes sobre sus percepciones. El contenido textual resultante de las entrevistas se sometió a un análisis lexicográfico utilizando el *software Interface de R pour Analyses Multidimensionnelles de Textes et de Questionnaires* (IRAMUTEQ). **Resultados:** los aspectos positivos de la simulación clínica en la educación en enfermería son la importancia de la simulación en la preparación de los estudiantes para la práctica clínica, favoreciendo la correlación entre la teoría y la práctica y el desarrollo del pensamiento crítico. Entre los aspectos negativos, destacamos el nerviosismo y la dificultad de realizar las acciones con la observación de otros colegas. **Conclusión e implicaciones para la práctica:** la simulación ha demostrado ser una herramienta significativa y viable para la educación en enfermería. Se recomienda que se adopte esta estrategia para contribuir a la capacitación de profesionales reflexivos capaces de brindar atención sin errores, lo que contribuye a la seguridad del paciente.

Palabras clave: Simulación; Enseñanza; Enfermería.

Corresponding author:

Maria Ercília Chagas Rosa.
E-mail: ercilia.chagas@gmail.com

Submitted on 12/05/2019.

Accepted on 01/21/2020.

DOI:<https://doi.org/10.1590/2177-9465-EAN-2019-0353>

INTRODUCTION

Technological advances and social transformations have contributed to the adoption of new practices in teaching and learning models. These changes are mainly related to the need to comply with new behaviors that permeate traditional forms in health education, especially in undergraduate courses.¹

Such transformations in the educational context also occurred due to the adoption of the Brazilian National Curricular Guidelines for nursing undergraduate course (DCN/ENF - *Diretrizes Curriculares Nacionais*), by proposing the association between theoretical and practical content, as well as updating teaching methods. Educational innovations and technological resources considerably favor the quality of education of the future nursing professional.^{2,3}

Active methodologies have been increasingly used due to the construction of knowledge being collaborative, that is, while in traditional methodology students have a passive attitude of the content taught. With active methodology, they have the opportunity to take an active role in teaching, that is, their experiences, skills and opinions are fundamental to their own learning.⁴

In this logic, clinical simulation is considered as an active methodology. It consists of teaching based on tasks developed by educators in a practical setting with different levels of complexity, where students have the opportunity to perform actions countless times until reaching the goal proposed for the scene in question. Therefore, it provides training in a specific environment in which the undergraduate can make mistakes without real damage to the assisted patient and favors the improvement of theoretical-practical performance. Among the advantages of simulation, the opportunity to add clinical skills, therapeutic analysis, interdisciplinary communication and critical thinking in real time stands out.⁵⁻⁷ It is also possible, in a single control environment, to have several settings, whereby students will have the possibility to perform the procedure several times until increasing their skill and safety, without exposing real patients to considerable risks. Thus, due to its effectiveness, it provides training for students who are more critical, reflective and better prepared for professional performance.⁸⁻¹⁰

Simulation as a teaching method can be used in several disciplines of undergraduate nursing. However, for this tool to be successful, the learning objectives must be met in all stages of this technique.¹¹ Furthermore, it is important to understand the favorable and unfavorable aspects of using clinical simulation, given that there are several limitations in the course of its establishment.⁵ In this perspective, this study aims to describe positive and negative aspects of clinical simulation in nursing education from the perspective of undergraduate students.

METHOD

This was an exploratory and descriptive study with qualitative approach. The criteria defined by the Consolidated Criteria for Reporting Qualitative Research (COREQ) were adopted as a guide for the study.¹² The research was developed at a federal

university in the Coastal Region of the state of Rio de Janeiro, Brazil, specifically at the educational institution's Nursing Teaching Laboratory. The teaching laboratory is equivalent to a clinical unit, containing low-fidelity dummies.

Regularly active enrolled students were introduced in the study between the 3rd and 10th period of the nursing course, and over 18 years of age. For exclusion criteria, the following requirements were adopted: pending or failing the Fundamentals of Nursing I and II.

Through the list made available by the undergraduate nursing course coordination, a total of 100 enrolled and regularly active students were found considering the inclusion criteria. Forty (100.0%) students were randomly selected, considering the division of four groups of ten students, due to the physical capacity of the laboratory.

Invitations were sent by e-mail, containing the main research objectives and the relevance of the participation of each student. Subsequently, a meeting took place presenting the dates and times for simulations to be carried out in the nursing laboratory on the university *campus*, but of the 40 (100%) students drawn, 04 (10.0%) did not attend.

Data production occurred after simulation on the physical examination of a fictitious patient, in which there was a discussion with the students about their perceptions regarding participation in the proposed settings, a moment defined as debriefing. This process is conducted by study researchers and consists of encouraging participants to describe their experiences obtained during the simulation.¹³ The group of researchers was composed of four professors and a nursing undergraduate student. Among the researchers, three are linked to the institution where the research took place and the other professors in other higher education institutions in nursing.

The settings were built from a survey of the main aspects that must be observed and implemented in the nursing care provided to a patient admitted to a clinical unit. The first stage took place at two different times, due to the proportion of physical space not being sufficient for all participants. Thus, there was a division into four groups, containing nine students in each. The setting was based on a previously established clinical case, in which two students from each group were invited to actively participate in the simulation, while the others were kept as observers during the performance of the settings.

The theme of the setting was the clinical assessment of an adult patient's vital signs. The "simulated nurse" was interpreted by one of the researchers in the present study. She worked during the shift turn, clearly and objectively transmitting the clinical case and the patient's medical record to participants. The undergraduate students who actively participated in the scenes interacted with the patient, evaluated the medical record and checked the medical prescription.

The scene started with the patient showing normal vital signs, then hemodynamic changes started, such as cardiac arrhythmia, changes in respiratory rate and increased blood pressure. During the scene, there were complaints from the

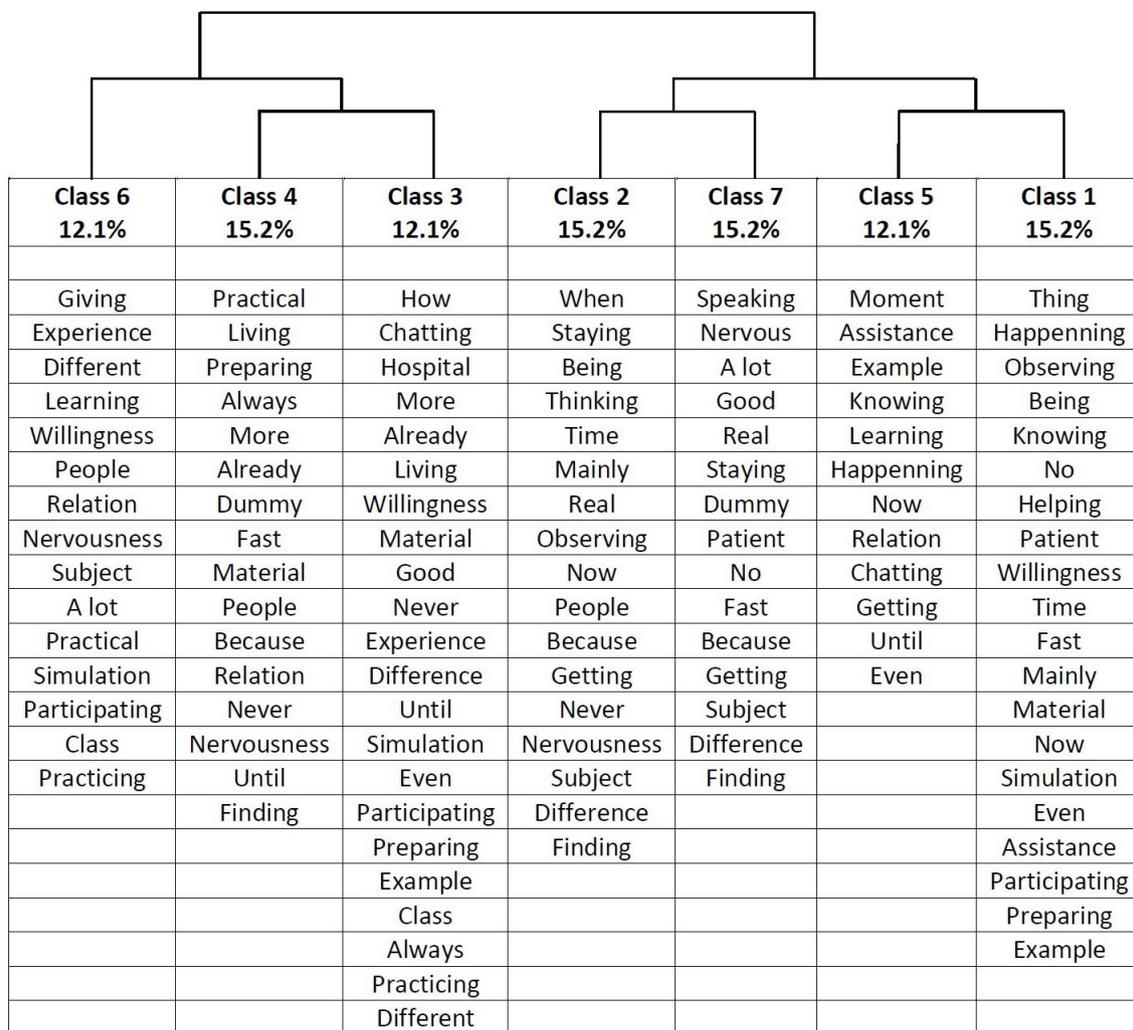


Figure 2. Thematic structure of positive and negative aspects of clinical simulation in nursing education from the perspective of undergraduate students. Rio das Ostras, RJ, Brazil, 2019. *Data provided by the IRAMUTEQ software. Rio das Ostras, RJ, Brazil, 2019.

class 6 was obtained, which corresponded to 12.1% of the total ECU's. In this same *subcorpus*, there was a second subdivision, which included class 4 with 15.2% and class 3 with 12.1% of the ECU. In the other *subcorpus*, there were two new subdivisions, one of which encompassing classes 2 and 7, both with 18.2%, and the other aggregating classes 5 and 1, each with 12.1% of the ECU. In the first division, class 6 determines classes 4 and 3. In the second division, there is no class that overlaps the other, considering the determination criteria.

The processing and grouping as to the occurrences of the words resulted in seven classes provided by the IRAMUTEQ software, which were thoroughly analyzed for understanding and denomination of each one, namely: class 1 - Acquisition of experience for clinical practice; class 2 - Nervousness from experience with the dummy; class 3 - Simulation as a preparation tool; class 4 - Technical and psychological forecast for clinical practice; class 5 - Exercising critical reasoning; class 6 - Practice x theory; class 7 - Watching the simulation. Such classes were

organized in two thematic axes based on the subdivisions from the analytical process.

Axis 1 - Simulation as a teaching strategy in preparation for clinical nursing practice

The first thematic axis contains classes 3, 4 and 6, in which the content addressed by nursing students concerns the importance of simulation in preparing students for clinical practice from different perspectives, being one of the main positive aspects of this teaching strategy.

Class 3 covers the extent to which students see simulation as an important preparation tool in the teaching-learning process, before entering clinical practice in the hospital, promoting improvements in the safety and quality of real care.

When we have the practice right in the hospital, we go without knowing what to do. It would be great if there was a preparation before the practice, when we get there or

we don't know what to do or we do something wrong even though we want to help and end up hurting. Anyway, many things can happen. The simulation provides quality service and assistance (Int. 3).

If you have already seen it in the simulation, you will know what to do in practice. You will know, for example, how to prepare the materials needed to perform a procedure (Int. 8).

Thus, the reports point to satisfaction and the need to use simulation to improve practices, which is also manifested by the desire to participate in simulations again, according to the interviewee's report 22.

I found it interesting because at the time we were scared, but repeatedly practicing the simulation we will be safer when we are in a real assistance (Int. 22).

In this perspective, in class 4, united hierarchically with class 3, it was possible to observe the importance of simulation in both technical and psychological preparation for clinical practice, including, so that they can learn to deal with the nervousness and despair generated previously. the practical field. Through this teaching methodology, it is possible to make a prediction of what to expect in practice regarding the techniques and feelings experienced.

We have a sense of what we will experience when we graduate, it would be very important for us to have these simulations before going to the practical field, because nervousness would come before (Int. 10).

As much as it is a dummy to experience a little of the practice. It is a situation in which you are desperate because you have to think critically and take quick action. When he had cardiac arrest, he didn't know what to do, it was desperate (Int. 14).

Still in this thematic axis, in class 6, students addressed the relevance of simulation as it facilitates learning by favoring the association between theory and practice.

Correlating with the theory, for example, in relation to saturation, knowing when to put oxygen, when to administer the medication without having to call someone else, we learn what to do (Int. 17).

Through simulation, it is possible to perceive effectiveness in relation to learning, that is, to make a comparison and put into practice what we learn in the theoretical segment of the subject (Int. 8).

We never had this simulation technology and when we had contact with simulation in a discipline last semester, we were delighted that we noticed a huge difference.

The way you learn by doing does not compare to how you spend 5 hours in a classroom (Int. 6).

Furthermore, participants linked simulation performance in practical classes with better learning, despite not being something common in their training.

We had never experienced that experience before. We always went to the hospital without having previously practiced what was taught in the theoretical classes (Int. 13).

We really learned a lot in practice, but if we did simulation in the practical class, in the monitoring, we would learn better to get to the hospital. Just looking at this lab has made me want to go back and participate in the simulation again (Int. 9).

If we had simulation during classes we would be on another level (Int. 1).

Axis 2 - The simulation experience: possibilities and limits

The second thematic axis encompasses classes 1, 2, 5 and 7 and deals with the possibilities and limits of simulation from the perspective of undergraduate students. Moreover, the need to acquire experience for clinical practice from simulation was highlighted as another positive aspect of this activity, despite the nervousness that it generates for both the students on the scene and for the students who attend, this being the main one negative aspect pointed out by students.

In this sense, class 1 reinforces the view of academics about the importance of clinical simulation for the acquisition of experience for the daily practice of professional nurses, to know how to act, considering that the academic education that is currently being offered does not provides activities of this nature for the application of theory in practice.

If it had that, we would be better prepared for the practical field. We have not had the opportunity to participate in any simulation until today (Int. 2).

Actually, we learn a lot in practice, but the practice that we experience here at the university does not provide much basis or experience, if we did it in the practical class in monitoring we would learn better to get to the hospital (Int. 9).

I think simulation is very important because, for example, someone who is here tells me that if the patient was in PCR, they would know what to do on the spot, how will you act? You know you have to do massage; you know you have to check the beats, that is, you know the theory, but you don't know the practice (Int. 1).

In this line of argument, class 5, hierarchically linked with class 1, treats as another positive point of the simulated practice

the development and exercise of critical reasoning in the face of situations experienced in the simulation. Thus, the moments that permeate decision-making in simulated practice were described as critical points, but essential to provide reflections and thus promote assertive actions in real future practice, including to ensure safe patient care.

In the simulation, we had several students did not know what to do in a cardiac arrest, how to perform the procedure and did it without coordination. If we had not had that simulation we will not know how to proceed with a cardiac arrest (Int. 1).

You can see several factors that can occur in real life, and in the simulation, you have the opportunity to think, and when you are in real life you will already know what to do. For example, I made a mistake in something now I will improve and I will already know that I will have the materials prepared, we can make mistakes in the simulation so as not to make mistakes with the patient (Int. 7).

Simulation demonstrates what we will experience in the hospital, helps in organizing thoughts and how to pay attention to all details (Int. 12).

Still in this thematic axis, in class 2, it was found that the nervousness in participating in a clinical simulation emerged as a hindrance to the teaching-learning process, being signaled as a negative aspect of this practice. Students reported that the experiences with the dummy generate difficulties, mainly nervousness, as it is something new for them, especially when the simulator interacts through speech with the academic.

It gives a blank. I felt very nervous during the simulation, it was a very different experience (Int. 11).

While the patient was speaking, I was nervous, he was speaking very fast. I didn't know where to start (Int. 20).

I have difficulties to talk to a dummy, but it is different when the dummy answers you, it is already a step forward and you can create a more realistic setting, you can interact better through simulation (Int. 9).

However, despite the nervousness, simulation contributed to the organization of clinical reasoning and teamwork, and the fact that the dummy speaks also emerged as a factor that facilitates learning,

Despite the nervousness for experiencing something different, we managed to organize ourselves and each one was responsible for a function, we worked as a team and everything went well (Int. 19).

We seem to forget everything we have learned. At the time of the simulation, I was nervous and could not reason in

some ways. It was very real. The possibility of the dummy speaking makes all the difference for learning (Int. 10).

Finally, in class 7, hierarchically linked with class 2, the experience of the students who watched the simulation is described. It was possible to verify that the act of assisting the colleague in developing the practice also contributes to the learning apprehension, on the other hand, arouses different feelings, including nervousness, which appears again in the statements.

I was nervous for them. I would very much like to have helped (Int. 21).

We realize what could be done, if we were in their place. We who are out are not so nervous so we stopped to think about what could be done. We also learn, because just watching is more peaceful than participating. There is willingness to help (Int. 5).

Thus, by means of examples, academics signaled how watching the simulation elicited countless reflections on how to act in the presented clinical case. However, the presence of the professor was considered by participant 6 as an inhibiting aspect of this practice.

In our turn, we forget everything, but in the other's turn we remember everything! (Int. 17).

Regarding how to reach the patient's diagnosis. Lung auscultation was missed, as he was experiencing rales according to the evolution (Int. 5).

I don't know if it would be the right thing to do, but what I thought here would think there at the time. Even with the signs and symptoms presented by the patient, none of the participants underwent cardiac auscultation and did not undergo respiratory auscultation (Int. 25).

It makes you want to help those who are participating. The attitude in which participants presented during the simulation was different from what they usually present in hospital practice, the presence of the professors somewhat inhibited it (Int. 6).

DISCUSSION

Participant characterization made it possible to show that the majority of students in no time during graduation had participated in clinical simulation settings. In contrast, a survey conducted in China with a total of 177 nursing students, showed that using simulation as a teaching strategy surpasses traditional methods, promoting an increase in students' critical and clinical judgment skills. In addition, it allows the participant to apply the theoretical content taught in the classroom and develop necessary skills for professionals in clinical practice.¹⁵

Theoretical teaching, associated with simulation, promotes the development of critical thinking in nursing students. If they are directed to practical teaching in clinical settings, it can cause considerable damage to health and even concern patients because they do not have enough skills to act in care.¹⁶

It was found that undergraduate students consider simulation as a beneficial tool to help control emotions, due to the preparation to work with real patients. Previous experience provides a better understanding of the most likely situations that may occur in the practical field of nursing. This experience allows them to obtain psychological preparation and technical improvement, to work safely in clinical practice environments that can cause fear and agitation.¹⁷

Nervousness, mentioned by the students of this research, can lead to a limitation in the simulated practice and was the main negative aspect pointed out in this study. Academic path itself is considered as the main stressor for the undergraduate, yet, the emotional changes increase when he starts a clinical and/or simulated practice. The presence of professors in the settings, the observation of other colleagues about their performance and lack of competence during the setting are considered as the main factors that influence the development of stress and discomfort to perform the procedures during the clinical simulation,¹⁸⁻²⁰ which corroborates the findings of the present investigation.

Corroborating the results of this research, a study carried out at a public university in the southern region of Brazil, with undergraduate nursing students, demonstrated that the simulation caused changes in critical thinking and understanding of their responsibilities in students, as well as encouraging students themselves to develop essential skills for their professional training.¹⁹

It was evident that students highlight clinical simulation as a fundamental training for their professional training. Still, they stated that this didactic tool should be used in the other disciplines, since they would have a more adequate technical and psychological preparation, gaining experience for the practical field. Scholars stress the importance of a good academic education, so that future nurses provide quality care to patients, based on scientific and clinical knowledge.²¹

Recent studies have demonstrated the importance of teaching undergraduate nursing students to develop decision-making skills, given that the results of this process will directly affect the patient.^{17,22} Furthermore, the students of the present research deemed it necessary for clinical simulation in their graduation, as this pedagogical strategy helps the development of critical reasoning for assertive decision-making and encourages teamwork, fundamental in real care practices.

Furthermore, simulation improves the ability to work in a team and develops interpersonal skills, according to the findings of a survey by the *Universidade Federal do Paraná*, with 35 students of the nursing course, which proved the effectiveness of the simulated practice to increase competence at work in a team. Each group showed satisfactory results in the proposed settings

regarding team work, presenting communication, clinical judgment and leadership, favorable aspects for a good management of the nursing team.¹⁷

The active participation of the student in the clinical simulation provides the improvement of logical reasoning and the critical analysis of situations that may occur in future practices.¹¹ In contrast, in the present study, students who only watched the simulation expressed the desire to help colleagues involved in the simulated setting. As they were under the condition of spectators, they stated that they did not develop stress and for this reason they had a better perception of the clinical situations proposed with greater clarity.

Clinical simulation provides the student with considerable learning, so that the undergraduate, as a spectator, becomes a co-participant in the setting in terms of developing their critical knowledge to build strategies that can intervene in the proposed case.²³ In this segment, simulation favored all research participants, including those graduating students who collaborated passively for research, since there was an interest by academics in analyzing the entire context of the case presented and, together with the other colleagues, outline the best strategy for the benefit of the patient.

Therefore, clinical simulation is highlighted as a pedagogical resource of considerable importance, where it provides students with the improvement of their professional skills and competences in clinical practice, encouraging them to act with excellence in their professional journey in the field of nursing.²⁴

CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

The results showed that the positive aspects of clinical simulation in nursing education deal with the importance of simulation in preparing students for clinical practice, favoring the correlation between theory and practice, as well as the development of critical reasoning and reflection on the decision-making. Among the negatives, nervousness in simulation stood out, in view of the dummy's speech and the difficulty in carrying out the actions with the other colleagues observing and even the moderators.

Clinical simulation is related to educational strategies that guide students to correctly perform relevant procedures and techniques, as it will enable the direction of actions, which are based on clinical and scientific evidence and contribute to the formation of critical and reflective professionals able to provide due care without errors in order to ensure patient safety.

The physical space of the nursing laboratory stands out as a limitation of the study, not being sufficient to accommodate all undergraduate students on the same day. It is recommended that this pedagogical proposal be implemented in the other disciplines of the undergraduate nursing course, in order to provide undergraduate students with opportunities to obtain experiences in the various areas of nursing.

AUTHOR'S CONTRIBUTIONS

Review study design acquisition, data analysis and interpretation of results, writing and critical review of the manuscript, approval of the final version of the article, responsibility for all aspects of the content and the integrity of the published article: Maria Ercília Chagas Rosa, Fernanda Maria Vieira Pereira-Ávila and Fernanda Garcia Bezerra Góes.

Acquisition, data analysis and interpretation of results, writing and critical review of the manuscript, approval of the final version of the article, responsibility for all aspects of the content and the integrity of the published article: Natália Maria Vieira Pereira-Caldeira, Laelson Rochelle Milanês Sousa, Maithê de Carvalho and Lemos Goulart.

ASSOCIATE EDITOR

Marta Sauthier

REFERENCES

- Domingues AN, Tibes CM, Dias JD, Westin UM, Zem-Mascarenhas SH, Fonseca LMM. Simulação virtual por computador no ensino de enfermagem: relato de experiência. *Rev Enferm UFP*. 2017;6(4):70-4. <http://dx.doi.org/10.26694/2238-7234.6470-74>.
- Franco ECD, Soares AN, Bethony MFG. Currículo integrado no ensino superior em enfermagem: o que dizem os enfermeiros docentes. *Enferm Foco*. 2016;7(1):33-6. <http://dx.doi.org/10.21675/2357-707X.2016.v7.n1.662>.
- Gomes SR. Inovação no ensino superior do curso de enfermagem da faculdade redentor: relato de experiência. *REINPEC*. 2016;2(2):71-87. <http://dx.doi.org/10.20951/2446-6778/v2n2a5>.
- Diesel A, Baldez ALS, Martins SN. Os princípios das metodologias ativas de ensino: uma abordagem teórica. *Revista Thema*. 2017;14(1):268-88. <http://dx.doi.org/10.15536/thema.14.2017.268-288.404>.
- Oliveira SN, Prado ML, Kempfer SS. Use of simulations in nursing education: An integrative review. *REME*. 2014;28(4):487-95. <http://dx.doi.org/10.5935/1415-2762.20140036>.
- Costa RRO, Medeiros SM, Martins JCA, Menezes RMP, Araújo MS. The use of simulation in the context of health and nursing education: An academic reflection. *Espaço. Saúde*. 2015 mar 30;16(1):59-65. <http://dx.doi.org/10.22421/1517-7130.2015v16n1p59>.
- Valadares AFM, Magro MCS. Opinion of nursing students on realistic simulation and the curriculum internship in hospital setting. *Acta Paul Enferm*. 2014 abr;27(2):138-43. <http://dx.doi.org/10.1590/1982-0194201400025>.
- Yeun EJ, Bang HY, Ryoo EN, Ha EH. Attitudes toward simulation-based learning in nursing students: an application of Q methodology. *Nurse Educ Today*. 2014;37(7):1062-8. <http://dx.doi.org/10.1016/j.nedt.2014.02.008>. PMID:24629271.
- Negri EC, Mazzo A, Martins JCA, Pereira JGA, Almeida RGS, Pedersoli CE. Clinical simulation with dramatization: Gains perceived by students and health professionals. *Rev Lat Am Enfermagem*. 2017;25(0):e2916. <http://dx.doi.org/10.1590/1518-8345.1807.2916>. PMID:28793125.
- Ferreira RP, Guedes HM, Oliveira DWD, Miranda JL. Realistic simulation as a method of teaching in the learning of the health field students. *Rev Enferm Cent-Oeste Min*. 2018; 8:e2508.
- Costa RRO, Vitor FA, Medeiros SM, Lira ALBC, Martins JCA, Araújo MS. Tipos e finalidades da simulação no ensino de graduação em enfermagem: revisão integrativa da literatura. *Rev Baiana Enferm*. 2016;30(3):1-11. <http://dx.doi.org/10.18471/rbe.v30i3.16589>.
- Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349-57. <http://dx.doi.org/10.1093/intqhc/mzm042>. PMID:17872937.
- Sebold LF, Boell JEW, Girondi JBR, Santos JLG. Clinical simulation: Development of relational competence and practical skills in nursing fundamentals. *Rev enferm UFPE*. 2017; 11(10): 4184-90.
- Camargo BV, Justo AM. Tutorial para uso do software de análise textual IRAMUTEQ [Internet]. Florianópolis: Laboratório de Psicologia Social da Comunicação e Cognição, Universidade Federal de Santa Catarina; 2018 [citado 2019 jun 20]. Disponível em: <http://www.iramuteq.org/documentation/fichiers/tutoriel-en-portugais>
- Yang F, Wang Y, Yang C, Zhou MH, Shu J, Fu B et al. Improving clinical judgment by simulation: a randomized trial and validation of the Lasater clinical judgment rubric in Chinese. *BMC Med Educ*. 2019;19(20):1-6. <http://dx.doi.org/10.1186/s12909-019-1454-9>.
- Manetti W. Evaluating the clinical judgment of prelicensure nursing students in the clinical setting. *Nurse Educ*. 2017;43(5):272-6. <http://dx.doi.org/10.1097/NNE.0000000000000489>. PMID:29240015.
- Major CB, Mantovani MF, Félix JVC, Boostel R, Silva ATM, Morera JAC. Avaliação do debriefing na simulação clínica em enfermagem: um estudo transversal. *Rev Bras Enferm*. 2019 jun;72(3):825-31. <https://doi.org/10.1590/0034-7167-2018-0103>. PMID:31269147.
- Bublitz S, Guido LA, Lopes LFD, Freitas EO. Association between nursing students' academic and sociodemographic characteristics and stress. *Texto Contexto Enferm*. 2016;25(4):1-7. <http://dx.doi.org/10.1590/0104-07022016002440015>.
- Boostel R, Felix JVC, Major CB, Pedrolo E, Vayego SA, Mantovani MF. Stress of nursing students in clinical simulation: A randomized clinical trial. *Rev Bras Enferm*. 2018;71(3):967-74. <http://dx.doi.org/10.1590/0034-7167-2017-0187>. PMID:29924167.
- Costa RRO, Medeiros SM, Martins JCA, Menezes RMP, Araújo MS. Simulation in nursing teaching: a conceptual analysis. *Rev enferm Cent-Oeste Min*. 2018;8:1-8.
- Ortega MDCB, Cecagno D, Seva AM, Siqueira HCH, López MJ, Maciá L. Academic training of nursing professionals and its relevance to the workplace. *Rev Lat Am Enfermagem*. 2015;23(3):404-10. <http://dx.doi.org/10.1590/0104-1169.0432.2569>.
- Johansen ML, O'brien JL. Decision making in nursing practice: a concept analysis. *Nurse Forum*. 2016;51(1):40-8. <http://dx.doi.org/10.1111/nuf.12119>.
- Jerônimo IRL, Campos JF, Peixoto MAP, Brandão MAG. Use of clinical simulation to improve diagnostic reasoning in nursing. *Esc Anna Nery Rev Enferm*. 2018;22(3):1-9.
- Teixeira CRS, Pereira MCA, Kusumota L, Gaioso VP, Mello CL, Carvalho EC. Avaliação dos estudantes de enfermagem sobre a aprendizagem com a simulação clínica. *Rev Bras Enferm*. 2017;68(2):311-9. <http://dx.doi.org/10.1590/0034-7167.2015680218i>.



Erratum: Positive and negative aspects of clinical simulation in nursing teaching

In the article "Positive and negative aspects of clinical simulation in nursing teaching", with DOI number: <https://doi.org/10.1590/2177-9465-ean-2019-0353>, published at the Journal Escola Anna Nery, 2020; 24(3):e20190353, page 8, where is written:

17. Major CB, Mantovani MF, Félix JVC, Boostel R, Silva ATM, Morera JAC. Humanitude in the humanization of elderly care: experience reports in a health service. *Rev Bras Enferm.* 2019 jun;72(3):825-9. <http://dx.doi.org/10.1590/0034-7167-2017-0363>. PMID:31269152.

Should be written:

17. Major CB, Mantovani MF, Félix JVC, Boostel R, Silva ATM, Morera JAC. Avaliação do debriefing na simulação clínica em enfermagem: um estudo transversal. *Rev Bras Enferm.* 2019 jun;72(3):825-31. <https://doi.org/10.1590/0034-7167-2018-0103>. PMID:31269147.