

# CLINICAL SIMULATION: EDUCATION FOR NURSING TEAM IN THE CARE OF PATIENTS WITH NASOENTERAL TUBE

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## SIMULAÇÃO CLÍNICA: EDUCAÇÃO PARA EQUIPE DE ENFERMAGEM NO CUIDADO AOS PACIENTES COM SONDA NASOENTERAL

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## SIMULACIÓN CLÍNICA: EDUCACIÓN PARA EL EQUIPO DE ENFERMERÍA EN EL CUIDADO DE PACIENTES CON SONDA NASOENTERAL

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**Objective:** to understand Nursing technicians' perception of clinical simulation as an education methodology in the care of hospitalized patients using nasoenteral tubes. **Method:** this is an exploratory, descriptive and qualitative study, conducted with 64 Nursing technicians from a hospital in Porto Alegre, Southern Brazil, in August and September 2017. An education intervention was carried out through clinical simulations, recorded and transcribed. Content analysis was used for data processing. **Results:** two categories were established: the potentialities of clinical simulation as an education methodology and the challenges of clinical simulation for the practice of education. **Conclusion:** Nursing professionals realized the potentialities of the simulation activity and were collaborative and receptive to review care practices in enteral nutritional therapy. Clinical simulation is a promising methodology to be used in continuing education in service.

**Descriptors:** Simulation Technique. Simulation Training. Inservice Training. Education, Nursing. Nursing, Team.

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*Objetivo: compreender como os técnicos de Enfermagem percebem a simulação clínica como metodologia de educação no cuidado ao paciente hospitalizado em uso de sonda nasoenteral. Método: trata-se de estudo exploratório, descritivo e de abordagem qualitativa, realizado com 64 técnicos de Enfermagem em um hospital de Porto Alegre, Sul do Brasil, em agosto e setembro de 2017. Realizou-se uma intervenção de educação por meio de simulações clínicas, gravadas e transcritas. Utilizou-se a análise de conteúdo para tratamento dos dados. Resultados: foram estabelecidas duas categorias: as potencialidades da simulação clínica como metodologia de educação e os desafios da simulação clínica para a prática da educação. Conclusão: os profissionais de Enfermagem perceberam as potencialidades da atividade de simulação e mostraram-se colaborativos e receptivos a revisar as práticas de cuidados em terapia nutricional enteral. A simulação clínica é uma metodologia promissora a ser utilizada na educação permanente em serviço.*

*Descritores: Simulação. Treinamento por Simulação. Capacitação em Serviço. Educação em Enfermagem. Equipe de Enfermagem.*

*Objetivo: entender cómo los técnicos de enfermería perciben la simulación clínica como una metodología educativa en la atención de pacientes hospitalizados utilizando sondas nasoenterales. Método: se trata de un estudio exploratorio, descriptivo y cualitativo, realizado con 64 técnicos de enfermería en un hospital de Porto Alegre, sur de Brasil, en agosto y septiembre de 2017. Se llevó a cabo una intervención educativa a través de simulaciones clínicas, registradas y transcritas. El análisis de contenido se utilizó para el procesamiento de datos. Resultados: se establecieron dos categorías: las potencialidades de la simulación clínica como metodología educativa y los desafíos de la simulación clínica para la práctica de la educación. Conclusión: los profesionales de enfermería percibieron las potencialidades de la actividad de simulación y fueron colaborativos y receptivos para revisar las prácticas de atención en la terapia nutricional enteral. La simulación clínica es una metodología prometedora que se utilizará en la educación continua en el servicio.*

*Descriptorios: Simulación. Entrenamiento Simulado. Capacitación en Servicio. Educación en Enfermería. Grupo de Enfermería.*

## Introduction

Incidents related to Enteral Nutritional Therapy (ENT) may be directly linked to the insertion and maintenance of the Nasoenteral Tube (NET), as well as to the administration of therapy through the tube<sup>(1)</sup>. In this sense, different entities, such as the European Society for Clinical Nutrition and Metabolism (ESPEN) and the American Society for Parenteral and Enteral Nutrition (ASPEN), through their specialists, established guidelines based on the best evidence, in order to maintain the safety of patients who use ENT<sup>(2-3)</sup>.

The safety of patients using ENT depends on the Nursing team's constant surveillance and evaluation, enabling, through specific competencies, the establishment of nutritional care and preventing incidents related to the diet administration process<sup>(4)</sup>. The challenge encountered is to adopt safe and feasible practices that address all the specificities of the tube-administered diet. Moreover, only knowledge is not enough for the development

of those practices, since safe care depends on the professionals' skills and commitment<sup>(4)</sup>.

Health institutions use different education strategies focused on patient safety for professionals, including the active teaching methodology, known as clinical simulation. This consists of a dynamic process, which involves the creation of a fictitious scenario and represents, in an authentic way, reality. This teaching-learning strategy facilitates active participation, integrating the complexities of theory and practice with opportunities for repetition, feedback, evaluation and reflection<sup>(5)</sup>.

One of the aspects of using simulation for health professionals involves training and aims at developing technical skills<sup>(6)</sup>. Findings in the literature show that clinical simulation has been inserted in the context of Nursing professionals, focusing on patient safety, either for the development of skills for procedures inherent to nurses' role<sup>(7)</sup> or for the recognition of signs of clinical deterioration and adverse events<sup>(8)</sup>.

In this sense, the simulation is capable of replicating clinical practice and contributing to the learning of health professionals, enabling the support of non-technical skills (cognitive, social and personal), but which complement technical skills, which brings benefits to patient care, contributing to patient safety, effective performance of tasks<sup>(9)</sup> and to the development of interprofessional work<sup>(10)</sup>. In view of this premise, the use of simulation allows the professional to become a participant in the construction of his/her knowledge and not a mere passive receiver, assuming a condition of co-participant in the development of his/her clinical practice<sup>(11)</sup>.

In Nursing, simulation is pointed out as a methodology favorable to the development of ethical posture in the work process<sup>(12)</sup>. There is evidence that simulation generates several competencies and skills relevant to professional practice, such as decision-making, empathy with the profession, theory-practice articulation, leadership development and improved work processes of health services with consequent reduction of errors<sup>(13)</sup>.

The research focused on Nursing technicians, because the multidisciplinary team that works in the ENT is responsible for participating in trainings on ENT good practices, in order to keep care safe. Thus, it is essential to enhance strategies that contribute to the education of Nursing technicians, work processes and safety and quality in patient care. In this context, this study aims to understand Nursing technicians' perception of clinical simulation as an education methodology in the care of hospitalized patients using nasoenteral tubes.

## **Method**

This is an exploratory, descriptive and qualitative study, originated in a clinical trial entitled: "Effect of a clinical simulation intervention on the practices of Nursing technicians in the care of patients using nasoenteral tube: clinical trial." The present study analyzed a cut-out of qualitative data that refer to the Nursing technicians' perception of clinical simulation in

the care of patients using the nasoenteral tube during the intervention of the clinical trial.

The study was carried out in the adult inpatient units of a large hospital in the city of Porto Alegre, Southern Brazil. The study included 64 Nursing technicians from the clinical and surgical hospitalization areas of the hospital. The criteria used were: being a Nursing technician and working in the clinical and surgical hospitalization units where the intervention occurred. There was exclusion of Nursing technicians that were on vacation or on medical leave during the data collection period. For this study, all the statements of the Nursing technicians who participated in the intervention stage (clinical simulation) of the matrix study were potentially eligible, being considered an intentional sample, and excluding those absent from work during the data collection period.

The data collection process followed the guideline of simulation activities<sup>(14)</sup>. This intervention was based on the institutional Standard Operational Protocols (SOPs) for the care of patients using nasoenteral tubes and on the guidelines of Good Practices in Enteral Nutritional Therapy<sup>(2-3)</sup> and the European Society for Clinical Nutrition and Metabolism<sup>(15)</sup>. Data were collected in August and September 2017.

To perform the clinical simulation scenario, a low-fidelity mannequin was used, in which Nursing technicians should identify and correct errors in the care of patients using ENT, such as: the inconsistency between the patient identification and the diet label, the administration of the diet with low headboard, the fixation of an unstuck and dirty tube, delayed administration of the diet, expired date of the enteral diet equipment, diet residue in the syringe and the plastic cup used for cleaning the tube and the drip chamber, in addition to the non-identification of these utensils. The duration of the scenarios was about 30 to 45 minutes during the work shift.

The simulation followed a guide that consisted of seven items: the first refers to the name of the scenario: "Clinical simulation of nasoenteral tube care." The second item is the Briefing (time of presentation of the scenario and guidance for

Nursing technicians). The facilitating nurse, after reading the case, emphasized that the Active Technician (AT) should act as if he/she were in a situation of care to the patient using ENT, performing and reporting the necessary changes in the scenario. The Observer Technician (OT) should remain in silence and not interfere in the scene.

The third item of the guide addresses the objectives of the simulation: to identify non-conformities in relation to the care of the ENT, to report and/or to perform the appropriate care to correct the non-conformities found and to recall the correct routines regarding the use of ENT. The fourth item deals with the materials necessary for the maintenance of therapy: low fidelity mannequin, stretcher, nasoenteral tube, patient identification bracelet, enteral infusion pump, enteral equipment, Orapak® 10ml syringe, disposable plastic cup, enteral diet bottles, water bottles for hydration, water bottles for sanitizing devices, measuring tape, stethoscope, identification labels for diet, water and device vials (syringes, equipment and plastic cups), adhesive, micropore, alcohol bottle, medical and Nursing prescription, vital signs registration sheet and water monitoring, clipboard and pen.

Item five refers to the participants of the simulation scenario: a Nursing technician working in the scenario, a Nursing technician who is an observer of the scenario, a researcher facilitating the simulation and a data-collecting researcher (both nurses). The sixth item refers to the environment where the clinical simulation occurred: a room contiguous to the care area, with a mannequin positioned on a stretcher in dorsal decubitus and a straight headboard, receiving a diet through NET. Some nonconformities were presented in the scenario and the Nursing technician was expected to identify them, performing them or reporting the correct execution. Some examples of these nonconformities: the mannequin was receiving a diet with low headboard, in flat dorsal decubitus, the NET was fixed with oil, dirt and little unstuck, the infused diet was expired, the hydration water was identified with the name of another patient and the devices for hygiene of the equipment

and tube were not labeled and presented diet dirt.

The seventh item of the guide is the Debriefing, a moment that aims to reflect and review the care routines for the care of the NET. The instructor was the facilitator, asking the following questions to the Nursing technician who worked in the scenario: How do you describe the scenario? How was the mannequin? Have you identified any non-compliance? What did you do during the call? How did you proceed during the call? What have you done that you think is correct? How did you feel about the service? Has the proposed goal been achieved? What would you do differently in the call? What did you remember with this experience?

Thirty simulations were performed, in which all audios were recorded and then the data was transcribed. After reading all the transcriptions, this study considered the statements referring to the answers given to the questions: "How did you feel about the service?" and "What did you remember with this experience?".

It is also noteworthy that the participants' statements may refer to the moment of the scenario itself or to the moment of the debriefing, in which both technicians (active and observers) were participating.

Data analysis followed the orientation of the thematic content analysis, consisting of three stages: Pre-analysis: corresponds to the data transcription and organization phase, in which the objectives of the research were resumed in order to operationalize and systematize the initial ideas; Exploration of the material: thematic categories were defined and organized, initiated in the previous phase; Treatment of results and interpretation: the study data were articulated with the literature in the area and new information was constructed based on the study object<sup>(16)</sup>.

The study followed the recommendations of the Consolidated criteria for reporting qualitative research (COREQ)<sup>(17)</sup>. The matrix study was registered in the Clinical Trials (NCT03497221) and approved in its ethical and methodological aspects by the Research Ethics Committee (REC) of the institution (CAAE n. 63247916500005327). All participants signed the Informed Consent

Form (ICF). The participants' anonymity was guaranteed with the their identification by the letters "a" of the active technician and "o" of the observer technician, accompanied by the number corresponding to the order of transcription of the clinical simulation.

## Results

Of the 87 Nursing technicians working in clinical and surgical units, 64 (73.6%) participated in the simulation. Of them, 30 (46.9%) performed the function of "active", the other performed the function of "observers". Among the participants, 33 (51.6%) worked in the clinical unit and 31 (48.4%) in the surgical unit. Most participants (84.4%) were women, with an average of 6 (4-15) years of work at the institution. Regarding the work shift, 28.1% worked in the morning, 32.8% in the afternoon and 39.1% in the evening. When questioned, 38 (59.4%) reported that they attended some type of training or institutional training for ENT administration, while 17 (26.6%) said they had never participated in this type of activity, and the others, 9 (14.1%), did not remember or report.

The data analysis process resulted in the construction of two thematic categories: potentialities of clinical simulation as an education methodology and the challenges of clinical simulation for the practice of education.

### *Potentialities of clinical simulation as an education methodology*

This category presents the positive aspects attributed by the Nursing team to the practice of clinical simulation in the health service. In this sense, most participants indicated that the scenario used represented the daily reality experienced and indicated the understanding of simulation as a learning methodology in the service, capable of breaking with the "care automation", besides expressing a positive perception of the practice.

Thus, the participants' statements show reports about the realism of the clinical simulation scenario:

*This scenario approaches our reality. I think we have to be careful, we have to see carefully to install and test everything [...]. (a14).*

*Yes, the scene is real. (a3).*

*Yes, pretty real. (a7).*

*It is about reality. (a15).*

*What was found at the scene is similar to what we find [...] That is so real [...]. (a5).*

*This scenario approaches our reality. (a14).*

For the participants, the simulation collaborated with the review and reflection on their practices, in grasping the knowledge and avoided possible risks to patients who use ENT.

*Yes, it helps. It always helps for professional practice. (o3).*

*It surely helped with the routine. (a6).*

*Watching what he did was positive. We know, but it is good to adjust. (o12).*

*I think that these reviewing practices help avoid risk to the patient in the diet intake, help prevent the patient from ingesting in the wrong way. I think these simulations collaborate to improve the professional [...]. (a14).*

*It helped! Because we do not forget what we learn, I think we always have to put it into practice. (a14).*

Similarly, the participants' statements indicated that the simulation was useful to break with "care automation":

*All training, even if it is part of our routine, is always important. It is just that sometimes, even with practice time, we end up getting a little careless. (o13).*

*It certainly helped to improve! These are things that people forget or stop doing [...]. (a15).*

*[...] maybe because it is all too fast, you do not observe, but under others' eyes, you get more concerned [...] Did I do everything right like I usually do? (a21).*

Thus, the participants expressed a positive feedback about the clinical simulation performed in the work environment, according to the following statements:

*I thought it was pretty good. (o7).*

*Everything is valid. I like it! (o10).*

*Good. It is good. (a11).*

*It is always good to do that here, isn't it? (a12).*

*It helped a lot! (o21).*

### *Challenges of clinical simulation for the practice of education*

This thematic category addressed elements that can be considered challenging for the practice of clinical simulation. They are elements related to nervousness to participate in the simulation, the discomfort in the fact of evaluating the colleague and/or identifying nonconformities in the scenario.

There was certain nervousness of the participants when participating/acting in the clinical simulation, according to the following statements:

*I got a little nervous.* (a10).

*Nervous, huh? These are things we do on a daily life, but you create a routine, right?* (a17).

*Yes, we get a little anxious under observation [...].* (a6).

Similarly, some participants felt uncomfortable when evaluating the colleague or due to the proposal to identify non-conformities in the scenario, according to the statements:

*The simulation we are doing is bad, we are evaluating the colleague.* (a21).

*The pranks were the problem.* (a11).

In summary, when comparing the categories potentialities and challenges of the simulation, it is evident that the latter presented a smaller number of statements in the thematic categories.

## **Discussion**

The scenario's approach with the real environment was cited by Nursing technicians as one of the main potentialities of clinical simulation for the Nursing team. A review study<sup>(18)</sup> reveals that the realism of simulations can bring benefits and success to the activity, because it leads participants to view the strategy as legitimate. The fact of developing a clinical simulation reliable to reality in a scenario set up in a room contiguous to the care area and with the same utensils used for administration and maintenance of enteral nutritional therapy may have approximated the experience to the real environment, making the simulation authentic

and with a high level of realism. The realism of the scenario provokes in the individual the same psychological responses that he/she would have in a real care environment, which leads the participant to develop critical thinking and the skills for decision making<sup>(18)</sup>.

In this sense, the results demonstrate that clinical simulation was a strategy that helped in the review of care practices and in grasping knowledge in ENT. A study<sup>(19)</sup> corroborates these results by demonstrating that clinical simulation emerges as a fruitful methodology, capable of developing technical and communication skills among health professionals, providing an educational space that allows reflecting on the work process and identifying what needs changes.

An experience report, which involved the stages of training of facilitators, construction of scenarios, development of realistic simulation with Nursing of a teaching hospital in southern Brazil, demonstrated that simulation is a methodology that allows the teaching-learning process and can be widely used for the permanent education of professionals successfully<sup>(20)</sup>. A study, which reviewed 53 publications on clinical simulation, showed gains, such as the improvement of knowledge and the capacity for reflection and critical thinking<sup>(18)</sup>.

The methodology used in the simulation of the present study used the scenario with some non-conformities in ENT care, similar to a study conducted with students from the health area, whose objective was to evidence the best decision-making, which allowed participants to perceive the errors made during the execution<sup>(21)</sup>. The results of the present study demonstrate that the scenario elaborated allowed participants to review their practices and reflect on their own performance during the scenario, evaluating as positive the simulation, seen as an opportunity for improvement in the work process.

Similarly, Nursing technicians considered that the simulation process helped reflect on patient safety issues and reported that care could avoid adverse events related to the ENT care. The literature demonstrates that the scenario allows simulating daily actions in a risk-free environment



and aligned with good Nursing practices<sup>(5)</sup>. In this sense, institutions, by integrating simulation into in-service education processes focused on patient safety, can reduce the occurrence of accidental or avoidable adverse events caused by the health team<sup>(20)</sup>.

It is also worth mentioning that the simulation presents advantages for patient safety, for the development of teamwork and for the reduction of real costs, besides being recognized as an ally in the preparation of the Nursing team for the performance of technical and non-technical skills in the work environment. A portion of the adverse events that occur in health services are attributed to the non-compliance of these skills in the work environment<sup>(9)</sup>.

The results are disturbing because they indicate that, sometimes, Nursing technicians perform the actions automatically. The legal and moral obligation of the health team is to provide excellent care to the patient, in which care must be performed through the correct technique and in an integral way<sup>(12)</sup>. Therefore, it is necessary to articulate strategies based on evidence and norms aimed at safe care in the care provided to the patient<sup>(22)</sup>.

Another review study<sup>(18)</sup> corroborates the positive feedback of the participants of this study by reflecting and reporting the gains obtained by health professionals during the simulation scenario, such as: satisfaction, self-confidence, knowledge, empathy, realism, communication, motivation, reflection capacity, critical thinking and teamwork. In this study, items such as communication, teamwork and motivation were not evidenced.

The feeling of nervousness mentioned by the participants in relation to the performance was considered a challenge. A randomized clinical trial<sup>(23)</sup> conducted with 52 Nursing students corroborates the findings, pointing out that the simulation indicates that anxiety influences behavior during the execution of the scenario and might lead to poor performance when participants find themselves in emergency care situations. In this sense, anxiety is a natural reaction and can be generated by the feeling of lack of preparation on the part of Nursing technicians. Studies report that lack of knowledge

and skill are among the main sources of anxiety, as well as the fact of being observed or feeling inexperienced in some item evaluated in the simulation<sup>(18,24)</sup>.

The participants reported discomfort in evaluating the colleague. It is important to highlight that the way the instructor conducts the moment of the simulation is decisive to determine whether the experience will be positive or negative for the participants<sup>(25)</sup>. In this perspective, the debriefing is the key moment of the simulation, because it is when the behavior is observed and reflected on, making the participant understand what is missing to achieve the desired competence<sup>(25)</sup>. The debriefing provides an opportunity for participants to review their knowledge, evaluate the justifications and responses to their interventions and develop skills<sup>(26)</sup>.

This study presented some limitations regarding the lack of previous experience with the simulation methodology by Nursing technicians, being, for many, the first contact with this type of learning methodology. The study design does not allow generalizing the results, because its use needs to be contextualized to health professionals inserted in hospital and clinical hospitalization units, which makes it impossible to generalize the data. However, some recommendations regarding the strengthening of the simulation methodology may be applicable in other care contexts. Thus, there is need for other studies with professionals working in clinical practice using the simulation methodology, with a view to improving care quality and developing practical evidence-based studies.

## Conclusion

The results showed that clinical simulation was understood by Nursing technicians as a methodology that approaches the service's reality, assists in learning and allows using previous knowledge to review and prevent events that may harm the patient, besides being an opportunity to reflect on the care performed. The participants of this study also considered that the simulation generated nervousness

and discomfort when evaluating the colleague working in the scenario.

This study contributed to the understanding of simulation as a methodology for continuing education in the service, which can contribute to acquiring competencies and skills and reflecting on better performance of Nursing technicians in relation to patient safety issues. Thus, this study provides subsidies for health services to invest in active learning methodologies, such as simulation for their professionals. Similarly, this study can contribute to health education, as it points out the need to use this methodology during undergraduate Nursing, allowing the development of technical and non-technical skills.

Despite not being possible to extrapolate the results to other realities, the understanding of Nursing technicians' perception about clinical simulation during patient care allows concluding that this methodology has potential and that it is necessary to continue investigating this teaching practice in different health contexts and with different professionals, in order to produce positive changes in health services.

### Collaborations

1 – conception, design, analysis and interpretation of data: Ana Paula Almeida Corrêa and Stella Marys Rigatti Silva;

2 – writing of the article and relevant critical review of the intellectual content: Ana Paula Almeida Corrêa, Carlise Rigon Dalla Nora, Stella Marys Rigatti Silva, Graziela Lenz Viegas and Gabriele Peres Sousa;

3 – final approval of the version to be published: Carlise Rigon Dalla Nora and Mariur Gomes Beghetto.

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