

## PERCEPTION OF NURSING TECHNICIANS ABOUT CARE IN ENTERAL NUTRITIONAL THERAPY: CLINICAL SIMULATION

Percepção dos técnicos de enfermagem sobre o cuidado em terapia nutricional enteral: simulação clínica

Percepción de los técnicos de enfermería sobre el cuidado en terapia nutricional enteral: simulación clínica

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### ABSTRACT

**Objective:** to analyze the perception of nursing technicians about care in enteral nutritional therapy, during a clinical simulation scenario. **Method:** qualitative study, based on a clinical simulation scenario, carried out with 64 nursing technicians, at a university hospital in southern Brazil, in August 2017. The statements were audio-recorded, transcribed and, subsequently, submitted to content analysis. **Results:** four categories were highlighted regarding care in enteral nutritional therapy in the stages of: administration of NET; maintenance of the nasogastric tube; nursing records and guidelines for patients using NET. **Conclusion:** reflecting on the care provided, through a clinical simulation scenario, can collaborate with improvements regarding the work

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process of the nursing team and with the strengthening and safety of the care provided.

**DESCRIPTORS:** Simulation training; Nutritional therapy; Enteral nutrition; Nursing care; Inservice training.

## RESUMO

**Objetivo:** analisar a percepção dos técnicos de enfermagem sobre o cuidado em terapia nutricional enteral, durante um cenário de simulação clínica. **Método:** estudo qualitativo, com base em um cenário de simulação clínica, realizado com 64 técnicos de enfermagem, em um hospital universitário do Sul do Brasil, em agosto de 2017. As falas foram audiogravadas, transcritas e, posteriormente, submetidas a análise de conteúdo. **Resultados:** foram evidenciadas quatro categorias sobre o cuidado em terapia nutricional enteral nas etapas de: administração da TNE; manutenção da sonda nasoenteral; registros de enfermagem e orientações ao paciente em uso de TNE. **Conclusão:** refletir sobre o cuidado prestado, por meio de um cenário de simulação clínica, pode colaborar com melhorias acerca do processo de trabalho da equipe de enfermagem e com o fortalecimento e segurança dos cuidados prestados. **DESCRIPTORES:** Treinamento por simulação; Terapia nutricional; Nutrição enteral; Cuidados de enfermagem; Capacitação em serviço.

## RESUMEN

**Objetivo:** analizar la percepción de los técnicos de enfermería sobre el cuidado en la terapia nutricional enteral, durante un escenario de simulación clínica. **Método:** estudio cualitativo, basado en un escenario de simulación clínica, realizado con 64 técnicos de enfermería, en un hospital universitario del sur de Brasil, en agosto de 2017. Las declaraciones fueron grabadas en audio, transcritas y, posteriormente, sometidas a análisis de contenido. **Resultados:** se destacaron cuatro categorías con respecto a la atención en terapia nutricional enteral en las etapas de: administración de TNE; mantenimiento de la sonda nasoenteral; registros y pautas de enfermería para pacientes que utilizan NET. **Conclusión:** Reflexionar sobre el cuidado brindado, a través de un escenario de simulación clínica, puede colaborar con mejoras en el proceso de trabajo del equipo de enfermería y con el fortalecimiento y seguridad del cuidado brindado. **DESCRIPTORES:** Entrenamiento Simulado; Terapia nutricional; Nutrición enteral; Atención de enfermería, Capacitación en servicio.

## INTRODUCTION

Enteral Nutritional Therapy (NUT) is the most indicated nutritional support when the patient does not reach his or her daily nutritional goal by oral route, considering that the gastrointestinal tract is functioning.<sup>1</sup> NUT is an invasive therapy and, therefore, incidents may occur, which may be directly related to the insertion or maintenance of the nasoenteral tube (NET), as well as by the administration of the diet.<sup>2</sup> To mitigate these incidents, many hospitals try to improve the performance of their staff with educational strategies through clinical simulation.<sup>3</sup>

Although clinical simulation is widely disseminated in academia, it is still little used in training and capacity building with trained healthcare professionals.<sup>4</sup> Its use has been growing in healthcare institutions, with the purpose of providing support for the development of skills and

competencies of healthcare teams.<sup>5</sup> Clinical simulation can be attributed as one of the strategies of continuing education for professionals.<sup>6,7</sup> It allows the active participation of the collaborator, integrating the complexities of theory and practice with opportunities for repetition, feedback, evaluation, and reflection.<sup>8</sup> A study<sup>9</sup> reports that simulation increases technical skills and improves performance time in work activities. Thus, simulation can be considered a strategy to enhance the clinical experiences of professionals and stimulate decision making.

The nursing technician who works directly in care, under the supervision of the nurse, should participate in training courses, ensuring that he/she is up to date about good practices in his/her work process.<sup>10</sup> In this sense, nursing plays a predominant role in the control of NUT, from the maintenance and control of the chosen route, the administered volume, and even the most varied reactions and complications that the patient may have during this therapy. Thus, by using clinical simulation as an educational tool in health services, nurses can encourage continuing education through reflection and problematization of real-life situations. Thus, the research question for this study was: What is the perception of nursing technicians about enteral nutrition therapy care during a clinical simulation scenario?

Thus, this study aims to analyze nursing technicians' perceptions of enteral nutrition therapy care during a clinical simulation scenario.

## METHOD

This is a descriptive exploratory study of a qualitative nature<sup>11</sup> that is part of the intervention stage of the doctoral thesis entitled: "Effect of a clinical simulation intervention on the practices of nursing technicians in the care of patients using a nasogastric tube: clinical trial", developed in the Graduate Nursing Program of the Federal University of Rio Grande do Sul. This study qualitatively analyzed the recordings generated during the clinical simulation interventions of the clinical trial.

The study was conducted in a large university hospital in the southern region of Brazil, in August 2017. Included were: Nursing technicians allocated in the clinical and surgical inpatient units. For this study, the speeches of the nursing technicians who participated in the clinical simulation (intervention stage) were eligible. Nursing technicians who were away from work during the data collection period were excluded.

The recordings generated during the clinical simulation scenarios of the thesis were used as a source of data collection for this study in order to achieve the proposed objective. The same scenario was performed 30 times in order to enable the participation of the nursing technicians in the different shifts and work days, however, each nursing technician participated exclusively in only one session.

The clinical simulation scenario developed was built from the use of a low-fidelity mannequin that was in flat dorsal decubitus and receiving diet through NET. Each simulation session lasted 30 to 45 minutes and took place in a room adjacent to the nursing technicians' work area. In the clinical simulation, the nursing technicians had to identify and correct the incorrect situations present in the scenario, regarding the assistance to the patient in NUT, according to the institutional Standard Operating Protocols (SOPs), which were patient identification bracelet with name and registration different from the label of the enteral diet installed, patient receiving enteral diet with the headboard low (<30°), detached and dirty tube fixation, administration of diet outside the expiration date on the label, enteral diet administration line outside the expiration date (24h), presence of diet residue inside the line while it was not being used, non-identification and non-labeling of devices (syringes and plastic cups) used for sanitizing the tube and line.

The simulations were conducted by four nurses who took turns running the scenario, working in pairs, and acting as facilitators. The simulation scenario was introduced (Briefing) by one of the nurse facilitators, who related to the participants the clinical case of a patient who was under NET care. The nursing technicians were supposed to identify erroneous situations in the whole process of diet administration through the tube. After the participation of the nursing technicians in the scenario, the Debriefing took place, a space designated for reflection and review of the care routines with the NET.

All clinical simulation sessions were recorded by means of a digital recorder, and then transcribed in their entirety and randomly numbered. It is worth mentioning that the participants' speeches may refer to the moment of the scenario execution or to the debriefing. To understand the multiple perceptions of the participants about the care provided to patients using NUT, the data saturation method was used, when the information was repeated in intensity or quantity.

In the present study, the data followed the orientation of content analysis<sup>11</sup> using the construction of categories obtained through exhaustive and deep reading of the transcripts. Operationally, three major stages were followed: pre-analysis; exploration of the material; and treatment of results and interpretation.<sup>11</sup> In pre-analysis, the data were organized, including the transcription of the recordings of each simulation. In this phase, we carried out a floating reading of each of the transcriptions; the speeches were transcribed in their entirety. However, only the ones about the care provided to patients using NUT were considered representative and selected for the elaboration of indicators that support the interpretation. In the second step, data were coded based on the units of records. In the last step, categorization was performed, which consisted of classifying the elements according to their similarities and by differentiation, with subsequent regrouping, according to common characteristics.<sup>11</sup>

The parent study was registered with Clinical Trials (NCT 03497221) and approved as to its ethical and methodological aspects by the Institution's Research Ethics Committee (CAAE 63247916500005327). The research was conducted according to the ethical standards required by Resolutions 466/2012 - 510/2016 - 580/2018, of the Ministry of Health. All participants signed the Informed Consent Form. The anonymity of the participants was guaranteed with the identification of the participants by the letter "A" for acting in the simulation and letter "O" for observer of the simulation and by a number that corresponded to the order of transcription of the simulation.

## RESULTS

During the 30 clinical simulation scenarios, 64 nursing technicians participated. Of these, 33 (51.6%) worked in surgical units and 31 (48.4%) in clinical units. Most of them, 54 (84.4%) were women, with a median of 6 (4-15) years of work in the institution. Among them, 18 (28.1%) worked in the morning shift, 21 (32.8%) in the afternoon and 25 (39.1%) at night. Regarding institutional training on NUT, 38 (59.4%) reported having taken some educational activity, 17 (26.6%) did not participate and nine (14.1%) did not remember or did not inform.

From the organization and analysis of the data, four different categories of NUT care were revealed: administration, maintenance of the NET, nursing records and patient orientation.

### Administration of enteral nutrition therapy

This category identifies the perception of the nursing team in the care related to the enteral nutrition administration step.

Identification was one of the NUT care items that appeared most often in the participants' statements. It was evidenced the team's concern with checking the patient's identification wristband, the use of labels, the expiration dates of diets and water to be administered through the tube, and the devices used for administration of NUT, as described below:

*The first thing you have to look at is the wristband and all the labels. The first thing I do is to check his name with the diet he is running. (A1)*

*I saw that on the hydration water the patient's name is not the same as on the label; also the date and time of this water does not appear. (A14)*

*If it (the diet) has a deadline (due) by 11 pm, it has a why. (A15)*

*I was struck by the presence of many bottles of water. Pay attention to the expiration date! Sometimes we find water from the day before. (A16)*

*The syringe lasts 24 hours. If he (patient) had the medication at 6 am, I would keep it until 6 am to make the medication and then discard the syringe. (A15)*

Another care of the nursing staff refers to hand hygiene and cleaning of the infusion pump used for administration of enteral diet. These statements can be identified as follows:

*I sanitize my hands and introduce myself to him. (A20)*

*The hygiene of the pump is something important. Usually the pumps are sanitized at night. But not that I necessarily have to wait until the night shift arrives to clean the pump, right? (A1)*

*Tá suja (infusion pump), tem que limpar. (O7)*

*In our sector, fortunately, we don't see dirty pumps. I don't notice that it is dirty. Because we take it out, and then we clean it. When we take it out, it is dirty, we have to clean it. (O10)*

*In my schedule I would make the hygiene of the pump. (A9)*

The participants during the simulation refer to care regarding the positioning of the patient when installing the NUT. As identified in the following statements.

*The first thing I saw was that the patient was lying totally straight in bed, which I think is dangerous, because you can end up sucking up the diet. (A3)*

*The headboard is not correct, it can't be straight. Because he has to remain practically seated to receive the diet. As seated as possible if he has no problem with it. (A4)*

*Actually, I never lower my patient's headboard too much. One is finished, another one comes, the water is finished, the diet goes. (A2)*

The simulation favored the identification of aspects related to patient care, with a series of perceived elements such as (identification of labels, hand and infusion pump hygiene, patient positioning during infusion therapy). All these elements when not performed correctly, can compromise the safety of the patient who uses this therapy.

## Care for nasoenteral tube maintenance

The nursing technicians also identified care in the NET maintenance phase, by checking the position of the tube, cleaning the internal lumen and fixing it.

Some participants reported about institutional in the routine of checking the correct position of the nasoenteral tube. Some talked about the old method used in the institution, which was to perform the gastric auscultation test by introducing air in bolus through a syringe and some talked about the change of this routine, in which the verification of the external measurement of the tube started to be used, in order to prevent a situation of a possible displacement.

*At our shift start, we do the auscultation to see the positioning of the probe. (A16)*

*The nurses said in the course that we don't do auscultation anymore. So you have to see the pattern and the mark on the probe. (A16)*

*I think that this business of measuring the probe, prevents us from having to do tests, injecting air, it will be good! It will even make it easier for us to review, even to avoid making the patient more uncomfortable, sometimes it seems that the patient is not doing very well, and we have to go there and change it. (O13)*

The participants also identified, during the simulation, care with cleaning the internal lumen of the NET and the line used for diet administration, by flushing 20 ml of water after use.

*I would wash the probe with 20 ml of water. (A5)*

*The rinsing water you will use to rinse the equipo and the probe. (A7)*

*This one is for washing; I connect the equipment here, watch it wash all the way through. (A2)*

*After he receives the medications and the diet, wash the tube. (A1)*

*You have to wash it after each medication. (A16)*

Participants report that for proper maintenance of the NET, it is important to be careful with attachment. Some perceptions of nursing technicians with this care were pointed out.

*The fixation (of NET) is also bad. No date. Always change after patient's body hygiene. I would change the tube fixation, the feeding tube and the diet. (A13)*

*Take care of the tube fixation, because sometimes they sweat a lot, so the tube fixation falls. (A15)*

*It's the skin oiliness, let's change the tube's fixation. (A16)*

The care with the NET maintenance, when properly performed, has repercussions in the minimization of incidents that may be associated with the accidental exit of the catheter, lumen abruption, contamination of the tube used for diet administration, or skin lesions related to the catheter's permanence.

### Care of nursing records

This category presents the perceptions of nursing technicians in situations related to the records of nursing actions in NUT care. The participants demonstrated, through their speeches, how they perform their records.

*I would put the schedule that I installed. I would put, where the nasoenteral tube is, the volume of the diet. And around 5:00 p.m. I would put the same thing for water. I would record the medication and the washing of the tube. (A18)*

*In the records I would put that I install diet, wash with 20 ml. I put to infuse the diet. If I finish my shift I put the total volume of what I am going to infuse, then if by chance the patient didn't receive something I go there and register, there is how to do it. (A17)*

*I write everything I did in steps. I put that I washed the equipment, removed the diet, washed the probe and put its total volume of 250 ml and more than I used for washing. I think that's it. The time I set the volume. Then I evolve that I changed the fixation, that I did the oral hygiene, that I raised the headboard. To signal, right, that it was wrong. (A16)*

*I put in the record the position of the probe that I found, the number, I put the amount of diet that did not enter, I put the beginning of the diet and of the probe. (A4)*

*I try to put the volume of the diet, the schedule, when the infusion pump is used, I put the volume of water prescribed, the size of the probe, now I also have to put it. (A7)*

In this category, it was possible to evidence that the records are restricted to the debits on the amount of diet and hydration provided to patients, in addition to the external measurement of the NET. There were few reports that highlight the records of oral, nasal and tube hygiene care, as well as the correct position of the patient to receive the NUT.

### Patient Orientations

This category shows the perception of nursing technicians regarding the participation in the care of family members and/or caregivers of patients using NUT, either during hospitalization or during the preparation for hospital discharge.

*I changed the attachment and talked to the patient, I was human. To have a bond, I explained to him, tried to make him help, self-care, right. (A10)*

*How to change the fixation of the tube every day, these are things we know. It is important to tell the family member the importance of the raised headboard... and it goes unnoticed. (O15)*

*Important to inform family members about the importance of a raised head support. (O15)*

*When I see a low head end and there is a relative, I guide the family and explain why, to guide the patient when he needs to go home. (O15)*

Although this category can be considered the one with the lowest representation in the participants' statements, its importance is undoubtedly noted. The nursing technicians identified that the maintenance of care in NUT is a joint responsibility of the health team, patient, family and/or caregivers.

### DISCUSSION

The main finding of this study refers to the nursing technicians' perception of NUT care, among which the category administration of NUT was highlighted. In this sense, the main care reported by nursing technicians involves the correct identification of the patient, identification of infusion labels and devices, hand washing, cleaning of the infusion pump and proper positioning of the patient to receive NUT. All these cares work as a safety barrier to prevent complications.<sup>10</sup> A study<sup>12</sup> mentions that the administration system of NUT has been standardized, by colors, to avoid errors in the connection, especially in the

exchanges with the venous route. Study<sup>13</sup> mentions that the procedures of insertion, maintenance and administration of therapy by NET can cause serious incidents or adverse events. Hand hygiene is also one of the main strategies for the prevention of health care related infections.<sup>14</sup> Regarding the correct position of the patient to receive NUT, a study that implemented an initiative for the prevention of pneumonia corroborates our findings by indicating that an essential care in the prevention of pneumonia is the maintenance of the head position between 30° and 45°. Oral hygiene, however, was not something recurrently mentioned in the present study, but it was also mentioned in the aforementioned study.<sup>15</sup>

Another perception of the nursing technicians was the care in maintaining the NET, where the need to check the proper position of the tube before the administration of the diet and the hygiene of the lumen of the enteral feeding tube and feeding tube is highlighted. This recommendation is essential to be sure that the tube is in gastric position, avoiding administration of food in the upper respiratory tract or even causing vomiting and aspiration.<sup>16</sup> Adequate tube fixation is also an important nursing care in clinical practice, perceived by the nursing team, besides being recommended by NUT guidelines.<sup>17</sup> In the study<sup>18</sup>, the group of patients with adequate use of tape had a similar incidence rate of accidental exit as the group of patients with a specific feeding tube attachment device (Holister® FTAD), 1.9% versus 1.4%, respectively. A study<sup>19</sup> shows that washing the lumen of probes and feeding tubes avoids the formation of bacterial biofilms that may be responsible for events related to gastrointestinal changes due to the use of NUT. The irrigation of the internal lumen of the NET with water flushes aims, besides preventing tube obstruction<sup>10</sup> to reduce this formation and, consequently, the events resulting from contamination.

Nursing technicians perceived that nursing records are fundamental to care in NUTs. However, a study<sup>20</sup> found that the practice of documentation and nursing records has an inadequacy rate of 47.8%. There are limitations in the nursing record keeping, which involve operational issues such as the reduced number of collaborators, team members' lack of preparation, work overload, task model of activity division and the high turnover of professionals in the team<sup>21</sup>. In this sense, the absence of records or their inadequacy can result in discontinuity of care, inadequate evaluation of changes in the patient's clinical conditions, inaccurate judgment of the results obtained, absence of consistent legal basis regarding the work performed or the care received.<sup>21</sup>

The category called patient orientation care was also perceived by the professionals during the simulation. It is important that the family contributes to the good evolution of the treatment.<sup>22</sup> However, the inclusion of the family member in the care of the patient, on a daily basis, is a

challenge, especially when it comes to care with invasive methods, as in the case of the use of NET. The nursing team must support and empower the patient and his family to use the therapy, in addition to preparing them for self-care through supervision and evaluation of the care provided.<sup>10</sup> Thus, the nursing team plays an important role by providing emotional support directed to users of NUT, in order to minimize fears and apprehensions they may have, as well as to promote empowerment and safety to perform self-care.<sup>23</sup>

In this study, nursing technicians were exposed to a set of situations involving the care of patients using NUT. Clinical simulation allowed professionals to identify the care performed by the collaborators, and allowed them to reflect and expand their knowledge, train their skills, and solve their doubts. In this sense, clinical simulation can be a promising methodology to strengthen the clinical learning of nursing technicians, as it allows directing care to specific needs. A study<sup>24</sup> corroborates these findings by stating that simulation provides a vital infrastructure for in-service continuing education.

A review study<sup>25</sup> is in agreement with our results, when it evaluated the use of clinical simulation as an effective and innovative teaching strategy. Clinical simulation can contribute to developing confidence, communication skills, efficiency in identifying the clinical worsening of patients, development of technical skills, teamwork, and clinical decision making, demonstrating that the tool is effective in qualifying the assistance to critically ill patients.<sup>25</sup>

Given the results of this study, it is essential that nursing technicians have knowledge of teamwork, establishing adequate communication, having a professional ethical posture, essential elements for the safety and quality of patient care.<sup>24</sup> Simulation is a teaching methodology that offers training opportunities for the development of nursing technicians' competencies as effective participants in the health team, since care in NUT is not a sporadic act, limited to protocols, norms and routines, but a permanent and conscious attitude.

From this perspective, the nursing team has a highly relevant role in promoting continuing education by developing, standardizing and implementing nursing procedures.<sup>26</sup> Moreover, this team acts as a link between the family and the patient, making the NUT successful.

## CONCLUSION

The results of this study indicate that the simulation scenario carried out with nursing technicians in a hospital environment allowed us to identify the perception of nursing technicians in NUT care, the main one being the administration of enteral nutrition, followed by care with maintenance of the enteral tube and care with the recording of nursing actions. On the other hand, the nursing technicians

orientations about the NUT care provided to patients, relatives and/or caregivers, was perceived in a smaller quantity by the nursing technicians.

The study had some limitations regarding data collection because they were generated from a quantitative research, therefore, the data were not collected specifically for this purpose. Also, the data refer to the reality of a highly complex university hospital in the southern region of Brazil, which can make it difficult to compare the results found in this study with other realities different from the one presented.

By presenting the perception of nursing technicians in NUT care in inpatient units of a hospital, the results of this study enable the proposition of improvements in the work process and transformations in the continuing education of nursing technicians. Consequently, it contributes to the construction of safer NUT nursing practices, which can be developed and improved through clinical simulation. Further investigations should be carried out in order to verify the practices of the nursing team who works in the care of patients using NUT.

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