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ORIGINAL

Nursing knowledge and professional practice in enteral nutrition by nasogastric tube in hospitalized adults

Conocimiento y práctica profesional de Enfermería en nutrición enteral por sonda nasogástrica en adultos hospitalizados

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ABSTRACT

Introduction: The critically ill patient presents a deterioration of nutritional status that requires life support for recovery. Enteral nutrition (EN) is considered the first choice for nutritional support due to its ability to maintain the physiological processes of digestive function and preserve the intestinal barrier. This study focused on assessing the level of knowledge and performance of procedures related to the administration of EN by nasogastric tube (NGT) in nurses in an intensive care unit (ICU).
Methods: An analysis was conducted on a population of 27 nurses working in an ICU. The sample was characterized by a female majority at the technical level, with an average age slightly over 36 years. Professional seniority averaged more than 10 years, while ICU seniority averaged more than 6 years. General knowledge of EN administered by NGLS was assessed, as well as the procedures performed before, during and after administration. Previous training in EN and willingness to undertake future training were also considered.
Results: Almost 60% of the nurses had received some type of education or training in EN, and 100% expressed interest in continuing to participate in this type of activity. The general level of knowledge about the administration of EN by NGUS was 41.85% of correct answers. As for the appropriate mode of administration, the overall level reached 46.67%. The procedures performed before administration obtained a better performance (52.31%) compared to those observed during administration (39.51%) and at the end of administration (40.74%). Strengths in knowledge were evident in four key items: recommendations on medication administration, knowledge of the economic benefits of nutritional intervention, prevention of NE-drug incompatibilities, and benefits of NE in the hospitalized patient. Procedures highlighted included proper feeding bottle height and correct patient positioning prior to administration.
Conclusions: The study revealed that although nurses showed interest in improving their knowledge and skills, the overall level of knowledge and execution of procedures related to NE administration by

NGNS was low. The identified strengths and highlighted procedures prior to administration reflect areas of opportunity for improvement through ongoing training. Specific education and training in NE are essential to optimize nutritional care of critically ill patients.

Keywords: Nursing; enteral administration by nasogastric tube; knowledge; practice.

RESUMEN

Introducción: El paciente en estado crítico presenta un deterioro del estado nutricional que requiere soporte vital para su recuperación. La nutrición enteral (NE) es considerada la primera elección para el soporte nutricional debido a su capacidad para mantener los procesos fisiológicos de la función digestiva y preservar la barrera intestinal. Este estudio se centró en evaluar el nivel de conocimiento y la ejecución de procedimientos relacionados con la administración de NE por sonda nasogástrica (SNG) en enfermeros de una unidad de cuidados intensivos (UCI).
Métodos: Se llevó a cabo un análisis sobre una población de 27 enfermeros que laboraban en una UCI. La muestra se caracterizó por una mayoría femenina de nivel técnico, con una edad promedio ligeramente superior a los 36 años. La antigüedad profesional tuvo un promedio superior a 10 años, mientras que la antigüedad en la UCI alcanzó un promedio superior a 6 años. Se evaluaron los conocimientos generales sobre NE administrada por SNG, así como los procedimientos realizados antes, durante y después de la administración. También se consideró la formación previa en NE y la disposición a realizar capacitaciones futuras.
Resultados: Casi el 60% de los enfermeros habían recibido algún tipo de formación o capacitación en NE, y el 100% manifestó interés en continuar participando en actividades de este tipo. El nivel de conocimiento general sobre la administración de NE por SNG fue del 41,85% de respuestas correctas. En cuanto al modo adecuado de administración, el nivel general alcanzó un 46,67%. Los procedimientos realizados antes de la administración obtuvieron una mejor ejecución (52,31%) en comparación con los observados durante la administración (39,51%) y al finalizarla (40,74%). Las fortalezas en el conocimiento se evidenciaron en cuatro ítems clave: las recomendaciones sobre la administración de medicamentos, el conocimiento de los beneficios económicos de la intervención nutricional, la prevención de incompatibilidades entre NE y medicamentos, y los beneficios de la NE en el paciente hospitalizado. Los procedimientos destacados incluyeron la altura adecuada del frasco de alimentación y la posición correcta del paciente antes de la administración.
Conclusiones: El estudio reveló que, aunque los enfermeros mostraron interés en mejorar sus conocimientos y habilidades, el nivel general de conocimiento y ejecución de los procedimientos relacionados con la administración de NE por SNG fue bajo. Las fortalezas identificadas y los procedimientos destacados antes de la administración reflejan áreas de oportunidad para mejorar mediante capacitación continua. La educación y formación específica en NE son fundamentales para optimizar la atención nutricional de los pacientes críticos.

Palabras clave: Enfermería; administración enteral por sonda nasogástrica; conocimiento; práctica.

INTRODUCTION

A study carried out by Bertona and Vestilleiro (2009) at the Dr. Cosme Argerich General Hospital for Acute Conditions in the Autonomous City of Buenos Aires between July 2008 and February 2009 also aimed to establish the percentage of cases that entered Cosme Argerich in the Autonomous City of Buenos Aires between July 2008 and February 2009 aimed to establish the percentage of prescribed enteral feeds administered inappropriately via NGT and the causes of such inappropriate administration in 43 patients admitted to the Medical Clinic ward who received exclusive EN via nasogastric tube (NGT). They also

revealed an inadequacy of 79.10% in the administration concerning the prescription associated with different factors: patient-related factors 30.19%, diagnostic, surgical, and/or therapeutic procedures 15.09%, mechanical problems 16.98%, factors related to the Food Service 1.89% and factors related to the nursing staff 35.85%. The factors related to the patient refer to gastrointestinal intolerances and NS extractions, and those related to nursing refer to activities specific to the discipline.

EN is an effective therapy that allows for better control of complications, but it requires agreed-upon criteria for decision-making regarding its initiation, interruption, suspension, or restart; therefore, the multidisciplinary team needs to interact with and involve professionals trained in artificial nutrition who contribute to good practices and the implementation of evidence-based protocols (Torres Vega et al., 2008).

For Sánchez Rebon (2020), as a member of the aforementioned multidisciplinary team, nursing plays a prominent role in assessing needs and detecting complications in the evolution of the application of EN. The closeness to the patient makes it possible to adequately record all the factors linked to nutritional treatment and the patient's response; identifying factors that prevent complete nutrition seems to be an adequate strategy in the care of the health status of the critically ill patient. Ilari (2005) affirms that the permanent monitoring of the amount of EN supplied to each patient is so important, not only because it corresponds to the correct prescription application but also because it is the way to avoid an additional pathogenic mechanism of caloric-protein depletion in critical patients.

Of the above, the following questions arise: What is the level of knowledge of EN by NGS among the nurses in the Intensive Care Unit of a public hospital in Rosario? What is the EN by NGS practice of the nurses in this ICU?

Answering these questions will provide insight into the nurses' theoretical and practical basis for this common and necessary issue in the ICU. In this way, those responsible for managing the service will be able to identify the training aspects necessary to improve the nursing team's knowledge and practices, generating a direct benefit in the quality of the care they provide.

General objective

To describe the level of knowledge in EN by NNS and the practical application of the nurses of an Intensive Care Unit of a public hospital in Rosario during November 2021.

METHODS

The study was descriptive and non-experimental because it was limited to characterizing the behavior of the variables without manipulating them. It had a quantitative approach and a cross-sectional design because it carried out a single information survey.

Population

The ICU nursing team consisted of 30 nurses, so it was decided to include the entire study population. As an inclusion criterion, technical and bachelor's degree-level care nurses with a minimum of 3 months experience were included. The exclusion criterion was that they were on leave when the information was collected.

Techniques and instruments

Two techniques and two instruments were used to collect the information. The survey technique made it possible to evaluate nurses' knowledge about enteral feeding by GNS. A self-constructed questionnaire with 20 multiple-choice questions was applied, and a section was attached to establish the socio-academic characteristics of the participating nurses. The instrument was administered on paper and completed in an area adjacent to the ICU at a time agreed upon by the service coordination and the respondent. To improve the instrument's validity, a pilot test was carried out with 15 nurses studying for their degrees, verifying that the statements of the questions were clear and that the questionnaire took an average of 15 minutes to complete.

On the other hand, the observation technique made it possible to determine the mode of administration of the NE by SNG and to record it in an observation guide that served as a checklist at 3 moments: before, during, and after administration. The guide was constructed in consultation and with the advice of the department head; furthermore, for its application, the researcher attended the department at times that the department's coordination considered appropriate and surveyed the activities of all the nurses included in the study through non-participant observation.

Both the correct answers on the questionnaire and the correct technical applications recorded in the guide were valued with one point to quantify the results and present them adequately.

Ethical considerations

The nurses were informed of the study's objectives and invited to participate, with the clarification that participation was entirely voluntary. It was also specified that the anonymity of the participants and the confidentiality of the data obtained would be guaranteed.

Once the nurses agreed to participate, they were given an informed consent form, which they read and signed; furthermore, institutional permission to collect the necessary data was requested and obtained.

The anonymity of the participants, voluntariness, knowledge of the study's objectives, informed consent, and permissions from the effector/person in charge were guaranteed.

RESULTS

Regarding the collection of data to respond to the socio-academic characteristics, it is worth mentioning that, out of a population of 30 nurses working in the selected ICU, 27 participated after excluding those who were not present at the time of application of the instruments where the female gender and the title of nurse predominated.

The age of the participants was limited to a minimum of 28 and a maximum of 45, resulting in an average of just over 36 years (M=36.15). The predominant age range was between 34 and 39 years.

Table 1. Socio-academic categories of nurses.

Category	Frequency	Percentage
Gender		
Feminine	25	92,59
Masculine	2	7,41
Age		
28 to 33 years	9	33,33
34 to 39 years old	10	37,04
40 to 45 years old	8	29,63
Title		
Nurses	23	85,19
Graduates	4	14,81
Professional seniority		
3 to 8 years	12	44,44
9 to 14 years	9	33,33
15 to 20 years	6	22,22
Length of stay in the ICU		
1 to 6 years	15	55,56
7 a 12 años	9	33,33

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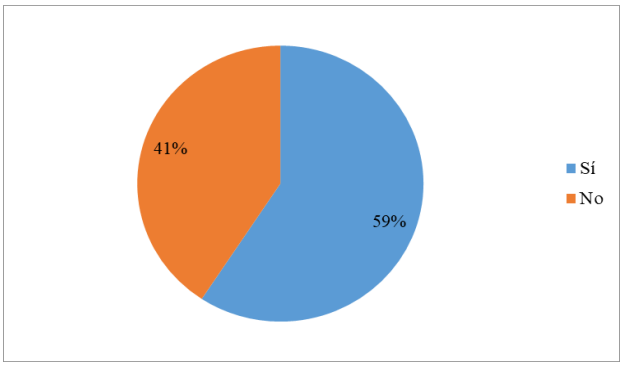
13 to 18 years old	3	11,11

Source: survey data.

Professional seniority ranged from 3 to 20 years with an average of over 10 years (M=10.41), while seniority in the ICU ranged from 1 to 18 years with an average of over 6 (M=6.44). The predominant age in professional seniority was between 3 and 8 years, while seniority in the ICU occupied a slightly lower age range (between 1 and 6 years).

Almost 60% of the nurses had received some education or training in NE, and all the participants expressed a willingness to continue doing activities of this kind. Motta (2016) asserts that protocolized nursing actions are the starting point for improving the quality of care in a service and that knowledge is fundamental as a basis for practices based on a level of recommendations based on scientific evidence.

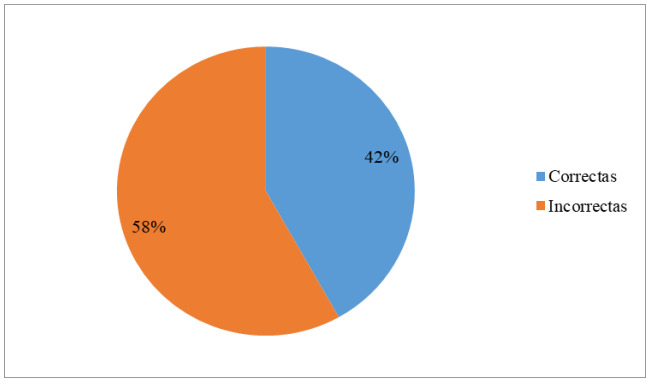
Graph 1: Nurses with education or training in NE.



Source: survey data.

Regarding the level of knowledge in NE administered by SNG on 20 questions and 27 respondents, a total of 226 correct answers (41.85%) were obtained out of a possible 540.

Graph 2: Level of knowledge in NE administered by SNG on 20 questions. Correct and incorrect answers.



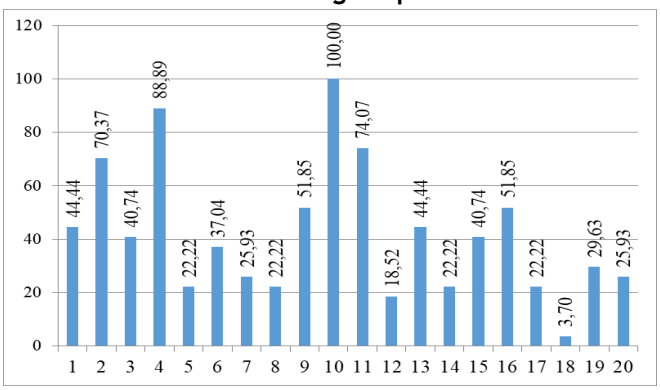
Source: survey data.

Suppose the percentage of correct answers is divided into three parts. In that case, thirds will be obtained that will allow the assessment of knowledge according to each answer obtained and on each technique observed so that a low third (0 to 33%) of knowledge or technique will be manifested, a medium third (34 to 66%) and a superior or high third (67 to 100%).

Questions 10, 4, 11, and 2 were, in descending order, the ones that managed to be placed in the upper third. Therefore, the strengths of the knowledge variable were (in order of the questions) in the recommendations regarding the administration of medications, in the knowledge that the nutritional intervention of hospitalized patients provides economic benefits in terms of savings and cost-effectiveness, the recommendation to prevent incompatibilities between EN and medications, and the knowledge of the benefits of using EN.

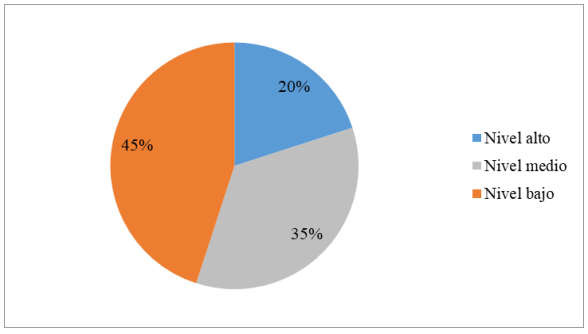
Among the questions that were placed in the middle third of correct answers, we found (in descending order) questions 9 and 16, which represent knowledge about the optimal time to start EN in an inpatient patient who requires nutritional support and recommendations regarding the preparation of the medication to be administered through the EN tube. In this average performance, but with an even lower trend, were questions 1, 13, 15, 3, and 6, which, respectively and always in descending order, represent knowledge of the objectives of EN by GNS, the protocol established in the service, and how the administration of the infusion can be carried out through EN pumps, knowledge of the recommended procedure in the ICU and intestinal complications as the most frequent event.

Graph 3: Level of knowledge of NE administered by SNG on 20 questions. Percentage of correct answers according to question.



Source: survey data.

Graph 4: Knowledge of NE administered by SNG. Low, medium and high level of correct answers out of 20 questions.



Source: survey data.

The low level of knowledge of the service protocol reaffirms what Motta (2016) has already stated, that technical expertise is not enough to improve care practices when the development of theoretical skills is neglected.

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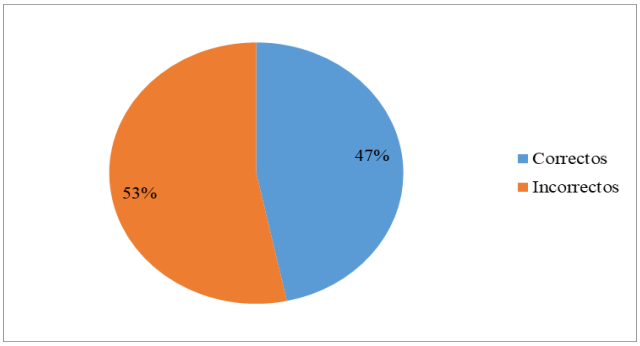
The remaining questions had a result that placed them in the lowest third of knowledge for this population and was represented, in descending order of correct answers, by questions 19, 7, 20, 5, 8, 14, 17, 12, and 18. This means a very low level of knowledge of the factors related to increased intestinal permeability, the preventive actions of bronchoaspirative pneumonia during EN administration, and complications in general. Even lower was the performance in knowledge about the recommendation regarding diarrhea as a gastrointestinal complication in EN by NGS, the location of the distal end of the NGS, the most appropriate measures to optimize the administration of EN in the critical patient, and the established measures for the management of NGS. Finally, the worst knowledge was recorded in the recommendation for ICU patients undergoing immediate postoperative care following scheduled surgery for distal esophagectomy with partial gastrectomy and jejunostomy and knowledge regarding the benefits of EN.

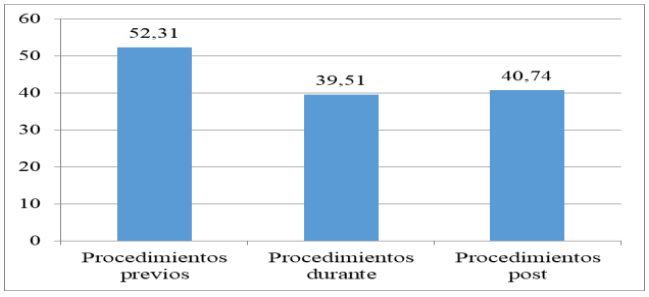
Regarding the observation of the method of administration of EN by GNS, out of 15 procedures observed and 27 nurses, a total of 189 procedures were well executed (46.67%) out of a possible 405. The study by Bertona and Vestilleiro (2009) at the Dr. Cosme Argerich General Hospital for Acute Patients in the Autonomous City of Buenos Aires revealed inadequate procedures in values of 79.10%. The best practical results found in the nursing team studied (about knowledge results) are linked to what Jibaja Bellido (2014) describes as the predominantly technical nature of nursing when describing and analyzing care-related phenomena.

Graph 5: Observation of the mode of administration of NS by NG. Results of 15 procedures observed.



Source: survey data.

Graph 6: Method of administration of the NE by SNG. Comparison of percentages of correct execution according to time of execution.

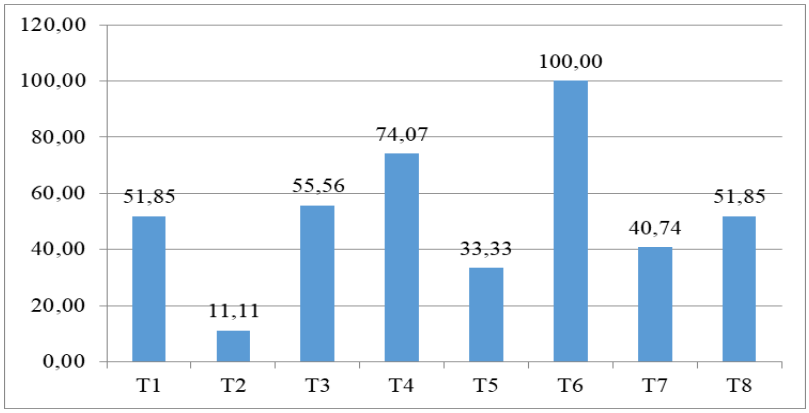


Source: survey data.

The procedures prior to the administration of EN by GNS achieved a correct application rate of 52.31%, where procedures 6 and 4, the adequate height of the feeding bottle and the position of the patient stood out (in the third of best results and in descending order). Mesejo Arizmendi et al. (2012) affirm that good

practices in EN reduce hospital costs by avoiding malnutrition in patients with a prolongation of the length of stay and an increase in the resources used for the treatment of associated complications.

Graph 7: Comparison of percentages of correct techniques in 8 procedures prior to the administration of NE by SNG.



Source: survey data.

The third average results were procedures 3, 1, 8, and 7; that is to say, the assessment of the patient's intestinal function and the permeability of the tube, hand washing before and after each procedure, the use of gloves and a mask before handling the EN, checking that the tube is correctly positioned, verifying the total quantity of the diet, and checking the temperature of the formula to be administered. Finally, in the lowest third of results, procedures 5 and 2 were found, representing a very deficient practice regarding verifying the presence of gastric residue and its characteristics and reviewing the clinical history before starting the EN. Sánchez Rebon (2020) reaffirms the need for nurses to highlight their role in assessing needs and detecting complications in the evolution of the EN application. Close contact with the patient makes it possible to adequately record all the factors linked to nutritional treatment and the patient's response; identifying factors that prevent complete nutrition seems to be an appropriate strategy in the care of the health status of the critically ill patient. Arizmendi et al. (2012) confirm that inadequate recording and follow-up are detrimental to applying appropriate dietary protocols.

As for the procedures observed during administration, they achieved an overall rating of 39.51%, where the recommendation was to assess possible complications during diet administration and the constant monitoring of diet intake time, infusion rate, and volume infused occupied values in the middle third. The bottom third included recording on the nursing sheet and balancing the volume infused and/or the reasons why it was not administered.

Graph 8: Comparison of percentages of correct techniques for 3 procedures during the administration of EN by NG.

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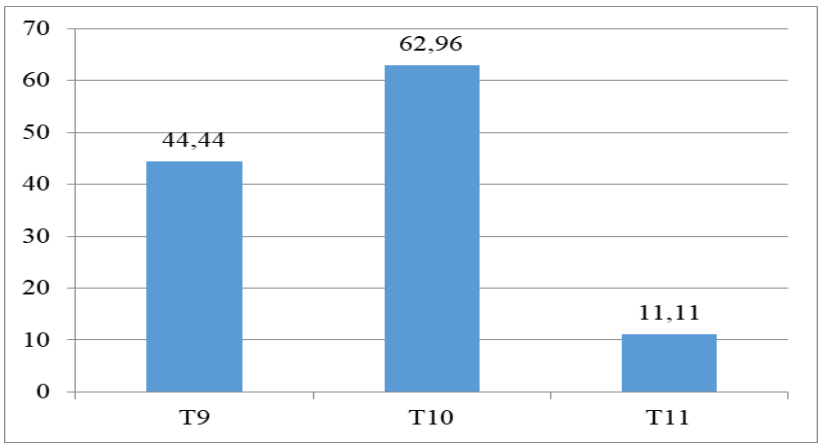
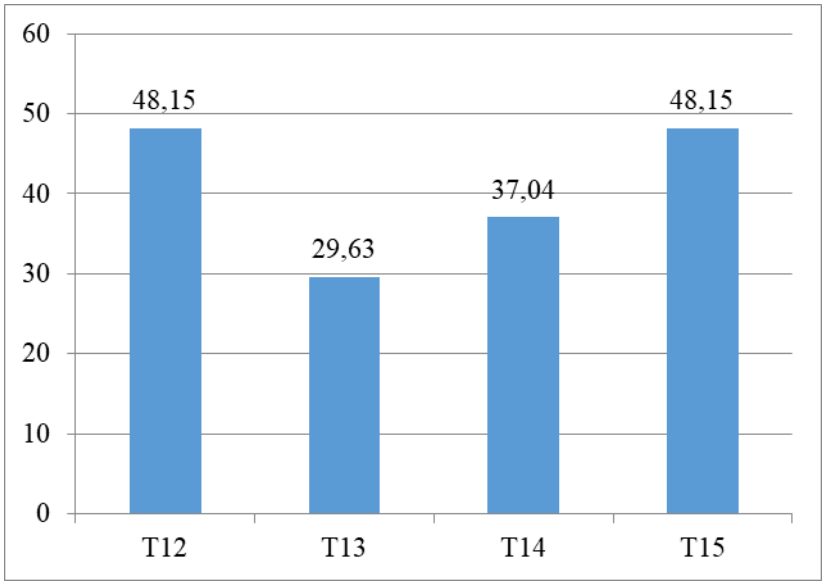


Source: survey data.

The procedures observed at the end of administration reached an overall score of 40.74%, where three procedures reached the middle third of the assessment for the procedures of recording the presence of signs of gastric intolerance and the presence of gastrointestinal complications; washing the tube with cold or warm water at the end of nutrition, and checking for gastric residue after the administration of enteral nutrition. On the other hand, washing the tube with warm water every 4 hours (continuous infusion) occupied the lower third of the assessment. The complications classified and developed by Motta (2016) describe gastrointestinal and mechanical complications such as those found in the evaluated practices.

Graph 9: Comparison of percentages of correct techniques for 4 procedures after the administration of NS by NG.



Source: survey data.

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CONCLUSIONS

The 27 nurses in the ICU were characterized by a majority of women at a technical level and an average age of just over 36 years. The average length of professional service was slightly over 10 years, while the average length of service in the ICU was over 6 years. Almost 60% of the nurses had received some kind of education or training in EN, and all the participants expressed a willingness to continue doing activities of this kind.

The level of general knowledge of EN administered by GNS was 42% of correct answers, and the method of EN by GNS reached a general level of 47%. The procedures prior to the administration of EN by GNS were better executed (52.31%) than the procedures observed during the administration (39.51%) and the procedures observed at the end of the administration (40.74%).

Four questions out of 20 were strengths in knowledge: the recommendations regarding the administration of medications, the knowledge that nutritional intervention of hospitalized patients provides economic benefits in terms of savings and cost-effectiveness, the recommendation to prevent incompatibilities between EN and medications, and the knowledge of the benefits of using EN.

Weaknesses in knowledge resulted in very low percentages of correct answers related to increased intestinal permeability, preventive actions for bronchoaspirative pneumonia during EN administration, and complications in general. Even lower was the performance in knowledge about the recommendation regarding diarrhea as a gastrointestinal complication, the location of the distal end of the NGS, the most appropriate measures to optimize the administration of EN in the critical patient, and the established measures for the management of NGS. Finally, the worst knowledge was recorded in the recommendations for ICU patients undergoing immediate postoperative care following scheduled surgery for distal esophagectomy with partial gastrectomy and jejunostomy and knowledge regarding the benefits of enteral nutrition.

The procedures highlighted in the top third of the assessment were prior to the administration of EN by NG and consisted of the correct height at which to place the feeding bottle and the patient's position. Meanwhile, the procedures during administration were best represented by a procedure in the middle third with the recommendation to assess possible complications during diet administration and constant monitoring of the time the diet is administered, the infusion rate, and the volume infused occupied values in the middle third. The best post-administration procedures did not reach half of the correct procedures.

The procedures that represent a very deficient practice were the verification of the presence of gastric residue and its characteristics, the review of the clinical history before starting the EN (pre-procedures), the recording in the nursing sheet and in the balance sheet of the volume infused and/or the reasons why it is not administered (intra-procedure) and the washing of the tube with warm water every 4 hours (post-procedure).

Our colleagues needed to be willing to answer a questionnaire and allow their practice to be observed. The information obtained is beneficial for designing training that aligns with the participant's willingness to participate.

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FINANCING

None.

CONFLICT OF INTEREST

None.