REUFPI
Revista de Enfermagem da UFPI
ISSN 2238-7234

Original

Nursing care for maintenance and prevention of enteral probe loss

Cuidados de enfermagem para manutenção e prevenção da perda de sonda entérica

Cuidados de enfermería para el mantenimiento y la prevención de la pérdida del tubo entérico

Elisangela de Lourdes Moreira Araújo[1]
ORCID: 0000-0001-7159-1707
Simone Chaves de Miranda Silvestre[2]
ORCID: 0000-0002-4666-2056
Mark Anthony Beinner[3]
ORCID: 0000-0002-0980-8976
Suelen Rosa de Oliveira[3]
ORCID: 0000-0002-7330-6102

[1]Faculdade de Ensino de Minas Gerais. Belo Horizonte, Minas Gerais, Brasil.
[2]Hospital Felício Rocho. Belo Horizonte, Minas Gerais, Brasil.
[3]Universidade Federal de Minas Gerais. Belo Horizonte, Minas Gerais, Brasil.

Corresponding author:
Elisangela de Lourdes Moreira Araújo
E-mail:
elisangelalmaroberto@gmail.com

Abstract

Objective: To understand the perception and practice of nursing professionals about care related to the maintenance and prevention of enteral probe loss in hospitalization units. **Methods:** Quanti-qualitative and descriptive study carried out in a large general hospital in Belo Horizonte, Minas Gerais, Brazil. It was attended by 40 professionals, 19 nurses and 21 nursing technicians, interviewed in September and October 2018. Secondary data were collected from the medical records of 114 patients who were using an enteral probe from 01/01/2017 to 01/01/2018. **Results:** It was observed that the majority (68.4%) of patients undergoing enteral nutritional therapy were over 60 years of age. Nutritional causes were the main indication for the use of probes, occurring in 51.7% of patients. Most (90.0%) of professionals recognize that washing the probe is the main care in terms of preventing loss of this device and recognize that the biggest complication of its use is bronchoaspiration. **Conclusion:** It was found that nursing professionals have knowledge about care related to maintenance and prevention of probe loss, but the perception of these professionals is different from the information introduced in the medical records, which may highlight a disarticulation between knowledge and care practice.

Descriptors: Nursing Care; Enteral Nutrition; Nutritional Support. Nutrition Therapy

Whats is already known on this?
The nursing team is responsible for caring for patients with enteral probes, but its members deal with challenges in terms of maintenance and loss prevention, thus highlighting the need to improve techniques and care.

What this study adds?
This study made it possible to identify the causes of enteral probe loss, offering support for the design and implementation of continuing education actions aimed at minimizing adverse events.

How to cite this article: Araújo ELM, Silvestre SCM, Beinner MA, Oliveira SR. Nursing care for maintenance and prevention of enteral probe loss. Rev. enferm. UFPI. [internet] 2024 [Cited: ano mês abreviado dia];13:e4360. DOI: 10.26694/reufpi.v13i1.4360

Resumo

Objetivo: *Conhecer a percepção e a prática dos profissionais de enfermagem sobre os cuidados relacionados à manutenção e prevenção de perda de sondas entéricas em unidades de internação.* ***Métodos:*** *Estudo quanti-qualitativo e descritivo realizado em um hospital geral de grande porte de Belo Horizonte, Minas Gerais, Brasil. Participaram 40 profissionais, sendo 19 enfermeiros e 21 técnicos de enfermagem, entrevistados nos meses de setembro e outubro de 2018. Dados secundários foram coletados nos prontuários de 114 pacientes que se encontravam em uso de sonda entérica no período de 01/01/2017 a 01/01/2018.* ***Resultados:*** *observou-se que a maioria (68,4%) dos pacientes em terapia nutricional enteral tinham idade superior a 60 anos. Causas nutricionais foram a principal indicação de uso de sonda, ocorrendo em 51,7% pacientes. Grande parte (90,0%) dos profissionais reconhecem a lavagem da sonda como principal cuidado na prevenção de perda desse dispositivo e reconhecem que a maior complicação de seu uso é a broncoaspiração.* ***Conclusão:*** *verificou-se que os profissionais de enfermagem possuem conhecimento sobre os cuidados para manutenção e prevenção da perda de sonda, contudo a percepção destes profissionais é diferente das informações registradas nos prontuários, o que pode evidenciar uma desarticulação entre o conhecimento e a prática assistencial.*

Descritores: *Cuidados de enfermagem; Nutrição enteral; Apoio nutricional; Terapia nutricional.*

Resumén

Objetivo: *Comprender la percepción y práctica de los profesionales de enfermería sobre los cuidados relacionados al mantenimiento y la prevención de la pérdida de tubos entéricos en unidades de internación.* ***Métodos:*** *Estudio cuanti-cualitativo, descriptivo realizado en un gran hospital general de Belo Horizonte, Minas Gerais, Brasil. Participaron 40 profesionales, 19 enfermeros y 21 técnicos de enfermería, entrevistados en septiembre y octubre de 2018. Los datos secundarios se recolectaron de las historias clínicas de 114 pacientes utilizando tubo entérico del 01/01/2017 al 01/01/2018.* ***Resultados:*** *Se observó que la mayoría (68,4%) de los pacientes sometidos a terapia nutricional enteral tenían más de 60 años. Las causas nutricionales fueron la principal indicación para el uso de tubo, ocurriendo en el 51,7% de los pacientes. La mayoría (90,0%) de los profesionales reconocen el lavado del tubo como el principal cuidado para prevenir la pérdida de este dispositivo y reconocen que la mayor complicación de su uso es la broncoaspiración.* ***Conclusión:*** *Se encontró que los profesionales de enfermería tienen conocimientos sobre los cuidados para el mantenimiento y la prevención de la pérdida del tubo, pero la percepción de estos profesionales es diferente a la información introducida en los registros médicos, lo que puede evidenciar una desarticulación entre el conocimiento y la práctica del cuidado.*

Descriptores*: Nursing Care; Enteral Nutrition; Nutritional Support; Nutrition Therapy.*

INTRODUCTION

Enteral Nutritional Therapy (ENT) is indicated for patients whose oral intake of foods is reduced or absent, but who have a functioning gastrointestinal tract. It is frequently indicated in some pathologies, such as hypercatabolism, neurological, oncological and psychiatric diseases and organ or tissue failure. The intake of macronutrients (proteins, carbohydrates, lipids, vitamins and minerals), through enteral nutrition, can provide the patient with the recovery of the nutritional intake required to reestablish his/her health.[1]

Malnutrition is a worrying factor in the hospital environment. Data shows that up to 50% of hospitalized patients in Latin America and 48.1% in Brazil are malnourished. Among these, 12.5% were classified as severely malnourished.[2] An American study with around 10,000 hospitalized adults indicated that 1 in 3 patients is at nutritional risk and that insufficient intake of nutrients increases the risk of mortality.[3]

From this perspective, ENT can offer several benefits, such as prevention and treatment of malnutrition, increased immunological and scar response, modulation of the organic response to clinical and surgical treatment, improvement of the patient's quality of life, reduction of hospital stay and mortality. and, consequently, reduced hospital costs.[4]

One of the most commonly used procedures for providing enteral nutrition is the use of a nasogastric/nasoenteral probe (NGP/NEP). The procedure for installing enteral probes must be carried out by a nursing professional, in a hospital or home environment.[5]

Despite the benefits of enteral nutrition, it can pose risks to the patient if the therapy is not well implemented. National and international studies highlight complications associated with inadequate probe insertion and/or maintenance, such as pneumonia, pneumothorax, esophageal perforation, aspiration, among others.[6, 7]

One way to evaluate ENT complications is through the use of quality indicators.[8] These are management tools used to determine the performance of functions, processes and results of a health institution,[8] allowing to manage care, quantify adverse events and improve the service's daily good practices.[9]

Specifically regarding the use of enteral probes, the corresponding quality indicators concern the number of accidental exits of enteral probes. Several factors are related to the inadvertent exit of enteral

probes. Among the factors related to patients, dementia and delirium,[10] psychomotor agitation, use of sedatives, moving the patient in bed and transport to carry out medical procedures can be highlighted.[11, 12] Regarding factors linked to assistance, there is ineffective fixation of the enteral probe and obstruction due to encrustation of enteral diet or medications in the probe lumen.[10]

Nursing plays a prominent role in the success of therapy with enteral probes, since it is responsible for access to the gastrointestinal tract, maintaining this route, administering the diet and responding to complications associated with this therapy. However, complications related to the use of enteral devices are still common in clinical practice.[13] Although it is a relevant and frequent topic in nursing practice, studies that explore the context of hospitalization units are still incipient, and many studies focus on investigating other setting, such as intensive care units (ICU)[14] and patients undergoing ENT in the home environment.[15] In this context, investigating nursing care practices for hospitalized patients using enteral probes is essential in terms of improving the quality of care, minimizing risks and optimizing clinical results. In view of the above, the objective of this study was to understand the perception and practice of nursing professionals regarding care related to the maintenance and prevention of enteral probe loss in hospitalization units of a large public hospital in Belo Horizonte, Minas Gerais.

METHODS

This is a study with a quanti-qualitative approach, with a descriptive nature, reported according to the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology checklist (STROBE). [16]

The study was carried out in a large general hospital, located in the center-south region of the city of Belo Horizonte, Minas Gerais. The research participants were nurses and nursing technicians who work in hospitalization units at that hospital. The inclusion criteria related to participants were professionals from the nursing team of adult and pediatric hospitalization units who agreed to formalize their participation in the research by reading and signing the Free and Informed Consent Form (FICF). Nursing professionals who worked in any sectors other than adult and pediatric hospitalization units, nursing professionals who were on vacation or any type of leave during the data collection period and/or eligible professionals, but who do not accept to participate in the research.

In order to investigate the knowledge of nursing professionals about care with enteral probes, individual interviews were carried out, conducted in the months of September and October 2018. In order to obtain this information, a semi-structured script was used containing six questions related to nursing care in terms of maintenance and prevention of NGP/NEP loss.

The investigation about the indicators and factors related to the causes of NGP/NEP loss was carried out through documentary research. To this end, the medical records of patients who were admitted to adult and pediatric hospitalization units and used NGP/NEP from 01/01/2017 to 01/01/2018 were analyzed. In order to analyze the medical records, a structured script was used containing information about gender, age, length of hospitalization, main diagnosis, indication for use of the probe, type of probe (NGP/NEP), sector that carried out the probe passage, replacement number of probes and complications related to their use.

In order to analyze the medical records, a sample calculation was carried out based on the target population of 628 patients using an enteral probe over a period of one year (01/01/2017 to 01/01/2018), with a sampling error of 5% and a confidence interval of 95%, totaling a minimum sample of 114 records, according to Wayne's equation.[17]

The data obtained in this stage were subjected to descriptive statistical analysis (average, deviation, standard; median and interquartile range; and percentage).

In order to analyze the quality indicators related to losses of enteral probes, the following indicators were calculated: I) Frequency of inadvertent exit of enteral nutrition probes and II) Frequency of obstruction of enteral nutrition probes (Chart 1).

Chart 1. Quality indicators used to evaluate enteral probe losses. Belo Horizonte, Minas Gerais, Brazil, 2022.

Indicators	Formula	Parameter (%)
Inadvertent exit frequency of enteral nutrition probe (measures the number of enteral probes accidentally removed)	Calculate the number of inadvertent exits of enteral probes x 100 ÷ total number of patients with enteral probes;	< 10% in wards
Frequency of enteral nutrition probe obstruction. (measures the number of obstructed enteral probes)	Calculate the number of obstructed probes in patients undergoing ENT x 100 ÷ total number of patients subtracted (-) from the days undergoing ENT	< 5% probe obstruction

Source: *International Life Sciences Institute*-Brazil.[8]

The data obtained through interviews with professionals were recorded, listened to and then transcribed into a document in the Microsoft Office Word 2010® program, coding the participants to protect their anonymity.

After this stage, the data was analyzed using the content analysis technique based on frequency, that is, the collected data was categorized through the selection of words or expressions, which were later grouped by similarity in terms of the frequency of their occurrence.[18]

The research project was approved by a research ethics committee under number 2.904.509, CAAE: 90782418.8.0000.5125. All phases of the study were held in accordance with the ethical precepts that govern research involving human beings, thus respecting the Resolution nº 0466, dated December 12, 2012, issued by the Brazilian National Health Council.[19]

RESULTS

Characterization of the use of enteral probes in adult hospitalization units

Table 1 displays data from the quantitative evaluation of 114 medical records that sought to characterize the use of enteral probes in the researched scenario.

Table 1. Characterization of the use of enteral probes in adult and pediatric hospitalization units. Belo Horizonte, Minas Gerais, Brazil, 2022.

Variables		Value
Average age, *years*		67.7 ± 22.5
Gender, male, %		50.9
Average length of hospitalization, days		38.3 ± 47.3
Average probe use time, days		24.0 ± 31.5
Probe use time/hospitalization time, %		62.7
Indication for NGP		%
	Neurological causes	4.5
	Surgical causes	8.7
	Nutritional causes	51.7
	Ventilatory support	35.1
Probe passage site		%
	Intensive care center	48.4
	Nutritional support Center	9.7
	Hospitalization unit	19.3
	Surgical block	3.2
	Other sectors	19.4

Source: Research data (2022).

From the analyzed data, it was possible to understand the profile of enteral probe users in the researched institution. It was found that these patients are mostly elderly, male, whose indication for the use of the device was mainly due to nutritional reasons (51.7%) or the use of ventilatory support (35.1%).

Regarding the analysis of indicators related to enteral probe loss, Table 2 displays the inadvertent

exit and obstruction rates of these devices.

Table 2. Inadvertent exit and obstruction rates of enteral nutrition probes in patients undergoing nutritional therapy. Belo Horizonte, Minas Gerais, Brazil, 2022.

	Total number of patients with enteral probes	Total number of probes lost due to inadvertent exit	Probe loss rate due to inadvertent exit (%)	Total obstructed probes	Probe loss rate due to obstruction (%)
January	67	07	10.4	0	0
February	41	07	17.1	1	2.43
March	47	18	38.3	8	17.02
April	44	09	20.4	0	0
May	55	05	9.1	0	0
June	62	06	9.7	1	1.61
July	56	12	21.4	1	1.78
August	64	15	23.4	1	1.56
September	51	24	47.1	5	9.80
October	62	18	29.0	2	3.22
November	46	12	26.1	2	4.34
December	28	15	53.8	1	3.6

Source: Research data (2022).

From the data displayed in Table 2, it was possible to verify that the rates for inadvertent probe exit are higher than the rates for device loss due to obstruction. There was also a large variation in these rates over the evaluated months. Furthermore, it was identified that the probe loss rate due to inadvertent exits was higher than the recommended parameter (< 10%) in 10 of the 12 evaluated months.

Perception of nursing professionals about care related to maintenance and prevention enteral probe loss

In order to better understand nursing care related to the maintenance and prevention of enteral probe loss, the results of the analyses of interviews carried out with nursing professionals are introduced below. From a population of 308 eligible professionals (50 nurses and 288 nursing technicians) 40 professionals were interviewed, 19 (47.5%) nurses and 21 (52.5%) nursing technicians. The criterion for ending the interviews was the occurrence of empirical data saturation, which is reached when no new elements are found and the addition of new information is no longer required, as it does not alter the understanding of the studied phenomenon.[20]

Of the interviewed professionals, 35 (87.5%) were females, with an average age of 32.4 (±10.56) years, with the youngest professional being 21 years old and the oldest professional being 78 years old; the average training time in the profession was 7.9 (±6.8) years, the average working time at the institution was 5.2 (±9.9) years and the average working time in the sector was 1.3 (± 2.1) years. The results obtained from the interviews are described in Table 2.

Chart 2. Perception of nursing professionals regarding care in terms of maintaining and preventing enteral probe losses. Belo Horizonte, Minas Gerais, Brazil, 2022.

Factors associated with nursing care for maintenance and prevention of enteral probe loss		Frequency of responses n (%)
Main causes of probe loss	Washing failure	21 (52.5)
	Inadequate probe fixation	20 (50.0)
	Probe obstruction	12 (30.0)
	Patient agitated and pulling out the probe	12 (30.0)
	Inadequate handling by professionals or caregivers	6 (15.0)
	Poor dilution of medications	3 (7.5)
	Failure to provide guidance to the patient and/or caregiver	2 (5.0)
Main complications related to the use of enteral probes	Bronchoaspiration	21 (52.5)
	Aspiration pneumonia	21 (52.5)
	Injuries at the probe insertion site	16 (40.0)
	Upper Airway Infections	4 (10.0)
	Obstruction due to encrustation of diet and/or medications	3 (7.5)
	Vomiting	2 (5.0)
	Esophageal perforation	2 (5.0)
	Infection	2 (5.0)
	Inadequately positioned probe	1 (2.5)
	Administration of medication by the wrong route	1 (2.5)
Main precautions for maintenance of enteral probes	Wash the probe to avoid obstruction	36 (90.0)
	Change fixation according to protocol	26 (65.0)
	Check probe positioning	8 (20.0)
	Check for stasis	2 (5.0)
	Hand hygiene	2 (5.0)
	Provide guidance to patient and caregiver	2 (5.0)
	Check probe integrity	2 (5.0)
	Check if medication can be administered through the probe	2 (5.0)
	Evaluate probe insertion site	1 (2.5)
	Keep the headboard elevated	1 (2.5)
Participation in training on the topic	No	2 (5.0)
	Yes, just once	12 (30.0)
	Yes, a few times (up to 3)	12 (30.0)
	Yes, often (more than 3)	10 (25.0)
	Not remembered	6 (15.0)
Topics covered in training	Probe fixing replacement deadline	20 (50.0)
	Probe washing	18 (45.0)
	Use of standardized materials according to type of diet (set/pump/diet)	11 (27.5)
	Check probe positioning (auscultation)	7 (17.5)
	Not remembered	5 (12.5)
	Identification of materials used	3 (7.5)
	Correct dilution of medications	3 (7.5)
	Positioning of the patient in bed	3 (7.5)
	Report any complications	2 (5.0)

Source: Research data (2022).

DISCUSSION

The results of this research allowed: i) to outline a profile of patients using enteral feeding devices, ii) to characterize nursing care for their maintenance and iii) to understand the perception of nursing professionals about their role in terms of preventing enteral probe loss and other complications associated with the use of these devices. Knowledge about this triad (care profile, professional practice and perception of the actors involved in health care) is an important step towards understanding the gaps that permeate nursing care for patients undergoing ENT, as well as towards designing more effective care strategies.

The care profile identified in this study is mainly made up of elderly patients, with nutritional demands (51.7%) and/or on ventilatory support (35.1%). It is known that, due to the physiological process of aging, a considerable number of elderly patients experience a greater prevalence of difficulties in terms of swallowing foods, thus becoming more susceptible to symptoms related to dysphagia.[21] This condition

is one of the main indications for the implementation of enteral probes in hospitalized patients.[22]

In addition to nutritional demands, patients undergoing ventilatory support, such as those undergoing Orotracheal Intubation (OTI) and Non-Invasive Ventilation (NIV), require ENT, since it is not possible to benefit from oral feeding. Furthermore, patients undergoing OTI are exposed to the risk of developing swallowing disorders, due to decreased sensitivity after extubation, which may prolong the demand for the use of NGP/NEP.[23]

In this study, significant rates of repositioning of enteral probe stood out (47.3%), with the majority (40.0%) due to unintentional removal by the patient himself/herself. Furthermore, it was observed that the enteral probe rates due to accidental exits and obstructions were consistently above recommended levels throughout the analyzed historical series, which is in line with evidence from national and international scientific literature that also report high incidences of loss of feeding probes in hospital environments.[24-26]

One of the consequences of the inadvertent exit of enteral probe is insufficient caloric intake, making it difficult to achieve the nutritional goal proposed for the patient.[25] Interventions promoted by the nursing team manifest themselves as a favorable strategy in terms of mitigating this occurrence. A recent study reported the benefits of implementing an action plan aimed at the nursing team, covering the evaluation of the presence of cognitive disorders, such as dementia and delirium, in addition to providing guidance to teams and families about the importance of non-pharmacological measures and performing mechanical restraint for patients who revealed this condition, until the period of agitation ceased. [27]

Concerning the evaluation of the perception of nursing professionals about care related to the maintenance and prevention of enteral probe loss, it is important to highlight the association between the occurrence of these adverse events and the perception of risk on the part of nursing professionals.[28] Risk perception refers to an individual's understanding of the various risks present in the environment and is based on behavioral theories that suggest that a high risk perception encourages individuals to adopt measures to reduce them.[29] From this perspective, national and international initiatives have been developed, such as the creation and validation of questionnaires about nurses' risk perception during enteral therapy[30] and the development of nursing management systems in nutritional therapy, aimed at improving care for patients using enteral feeding devices and the reduction of adverse events related to ENT.[31]

Recently, the publication of the Guideline of the Brazilian Society of Parenteral and Enteral Nutrition (BRASPEN, as per its Portuguese acronym) about Nursing in Oral, Enteral and Parenteral Nutritional Therapy compiled the best evidence regarding the care provided to patients who require enteral or parenteral nutrition. This document, aimed at nursing professionals, outlines the responsibilities and care involved in all ENT phases. Among the recommendations, the implementation of care protocols for patients undergoing this therapy stands out, covering the different types of feeding probes, as well as procedures for preparing and administering medications and diet. Furthermore, it emphasizes the need for team training to adequately provide this care.[32]

The training of nursing professionals involved in the care of hospitalized patients using NGP/NEP was also addressed in the current study, which showed that the majority of the interviewed professionals (95.0%) received some type of training to care for patients using these devices. Furthermore, interviewees suggested possibilities for improving continuing education strategies, such as carrying out more realistic on-site training; added to the standardization of procedures and materials. Regarding this focus, current literature highlights innovative strategies aimed at promoting spaces for continuing education in the service, such as the use of clinical simulation methodology in the context of caring for patients using enteral feeding devices. This research emphasized the use of simulation as an opportunity to promote critical reflection about the risks of patients using ENT, thus contributing to the qualification of care.[33]

This study advances by identifying divergences between the information introduced in the medical records and that reported by the interviewed professionals. Although interviewees reported that failure to wash the probe (52.5%) and inadequate fixation (50.0%) are the main causes of enteral probe loss, entries in the medical records indicated patient agitation as the main reason for the loss of this device. The originality of these findings makes it difficult to compare the results with other studies that evaluate similar contexts. However, in other care contexts, the literature points to inconsistencies between the practice of health professionals and what is introduced in the medical records.[34] It is important to consider that failures or ineffective recording of this information can lead to different perceptions among professionals in the face of this reality. Another aspect to be questioned is a possible disarticulation between theoretical knowledge and care practice, which needs to be better investigated.

The main limitation of this study is its cross-sectional design, which made it possible to analyze the setting only at the studied time, making it impossible to say about changes over time. It is recommended to carry out continuing education strategies, with the evaluation of knowledge and care practices before and after the intervention, in a longitudinal approach, so that it is possible to analyze, in a broader way, behavioral changes and indicators throughout the time, thus reducing bias mistakes. It is also worth highlighting another methodological limitation related to the fact that this study was conducted with a very specific sample of patients (only those admitted to adult and pediatric hospitalization units), excluding other hospital care environments; in addition to the fact that it only includes one hospital service. This limitation gives the study less internal and external validity, respectively, and the applicability of its results must take these weaknesses into account.

Considering the contributions to practice, carrying out this research made it possible to identify the causes of enteral probe loss, which can offer support for the development and implementation of continuing education actions aimed at nursing professionals and the multidisciplinary health team who work in the care of patients using these devices, thus seeking to minimize cases of loss and other adverse events.

It is also hoped that this study will encourage reflections about the importance and responsibilities of the nursing team in terms of offering safe and harm-free care to patients using enteral probes.

CONCLUSION

It was found that nursing professionals have knowledge about the care required for the maintenance and prevention of problems related to enteral probes and know how to identify interventions that can improve patient care. Nevertheless, the perception of these professionals differs from the entries in medical records. Considering that nursing professionals are responsible for patient care and maintenance of these devices, the need for a trained and skilled team to act in an integrated manner and avoid complications in enteral nutritional therapy should be highlighted.

It is suggested that further studies be carried out on the subject, that investments be made in continuing education for nursing professionals and that an action plan be implemented to emphasize the importance of the care provided to patients undergoing enteral nutritional therapy, with the objective of guaranteeing patient safety, improving nutritional outcomes and, consequently, his/her overall health. The importance of accurate nursing records should also be reinforced, capable of faithfully reflecting the reality experienced by professionals and the therapeutic behaviors undertaken, thus meeting care and legal objectives.

CONTRIBUITIONS

Contributed to the conception or design of the study/research: Araújo ELM, Silvestre SCM, Oliveira SR. Contributed to data collection: Araújo ELM. Contributed to the analysis and/or interpretation of data: Araújo ELM, Silvestre SCM, Beinner MA, Oliveira SR. Contributed to article writing or critical review: Araújo ELM, Silvestre SCM, Beinner MA, Oliveira SR. Final approval of the version to be published: Araújo ELM, Silvestre SCM, Beinner MA, Oliveira SR.

REFERENCES

1. Bolognese MA, Souza PM, Néia VJC, Santos OO, Visentainer JV. Home nutrition therapy: a review. Research, Society and Development. 2022; 11(3): e34011326130. Doi: https://doi.org/10.33448/rsd-v11i3.26130

2. Ministério da Saúde (BR). Relatório para sociedade - suplementação nutricional oral para pacientes clínicos ou cirúrgicos desnutridos ou em risco de desnutrição- Ministério da Saúde, 2021 9p.: il.: Available from: http://conitec.gov.br/ Acesso em 21 setembro 2022.

3. Sauer AC, Goates S, Malone A, Mogensen KM, Gewirtz G, Sulz I et al. Prevalence of Malnutrition Risk and the Impact of Nutrition Risk on Hospital Outcomes: Results From nutritionDay in the U.S. JPEN J Parenter Enteral Nutr. 2019 Sep;43(7):918-26. Doi: https://doi.org/10.1002/jpen.1499

4. Silveira GC, Gomes Romeiro F. Difficulties and risks during the introduction and positioning of the Nasoenteric Probe. Nursing (São Paulo). 2020; *23*(266): 4360–73. Doi:

https://doi.org/10.36489/nursing.2020v23i266p4360-4373

5. Couto RC, et al. II Anuário da segurança assistencial hospitalar no Brasil: propondo as prioridades nacionais. Instituto de estudos de saúde suplementar. 2018. Available from: https://www.iess.org.br/cms/rep/Anuario2018.pdf. Acesso em 21 setembro 2022.

6. Barbosa LMR, Silva WAD, Souza Neto OM, Ribeiro LCS. Nursing care gastrointestinal intubation in adult patients. Rev enferm UFPE *on line*. 2021;15: e246556. Doi: https://doi.org/10.5205/1981-8963.2021.246556

7.Akçay K, Suluhan D, Kesik G, Uzunoğlu K, Kartal E, Şahna A. Nursing Practices in Enteral Nutrition. Clin Sci Nutri. 2020. Doi: https://doi.org/10.5152/ClinSciNutr.2020.984

8. Assunção ES, Reis FVF, Santos OV dos. Quality indicators in enteral nutrition therapy in patients at a university hospital in Pará J. Health NPEPS. 2019; 4(2):58-69. Doi: http://dx.doi.org/10.30681/252610103831

9. Souza KF; Costa MF; Santos RS. Are quality indicators of enteral nutritional therapy a useful tool for monitoring patients with advanced cancer in palliative care? BRASPEN J 2020; 35 (4): 402. Doi: http://dx.doi.org/10.37111/braspenj.2020354012

10. Waitzberg DL. Indicadores de qualidade em terapia nutricional: 10 anos de IQTN no Brasil: resultados, desafios e propostas. International Life Sciences Institute do Brasil (ILSI Brasil). 2018: 264p. Available from: https://ilsibrasil.org/wp-content/uploads/sites/9/2018/06/Fasci%CC%81culo-10-anos-de-IQTN-no-Brasil2-Final.pdf Acesso em: 21 setembro 2022.

11. Bortolotto B, Beccaria LM, Oliveira KA, Faria JIL, Barbosa TP. Accidental loss of nasogastroenteral probe for nutritional support in a hospital institution. CuidArte, Enferm. 2020; 14(1): 18-23. Available from:: http://www.webfipa.net/facfipa/ner/sumarios/cuidarte/2020v1/p.18-23.pdf. Date accessed: 2022 sep 25.

12. Davies N, Barrado-Martín Y, Vickerstaff V, Rait G, Fukui A, Candy B, Smith CH, Manthorpe C, Moore KJ, Sampson EL. Enteral tube feeding for people with severe dementia. Cochrane Database Syst Rev. 2021; 13(8): CD013503. Doi: https://doi.org/10.1002/14651858.CD013503.pub2 .

13. Colaço AD, Nascimento ERP. Bundle de intervenções de enfermagem em nutrição enteral na terapia intensiva: uma construção coletiva. Rev. Esc. Enferm. USP. 2014; 48: 844-50. Doi: https://doi.org/10.1590/S0080-623420140000500010

14. Boeykens KRN. Nutritional Support in the Intensive Care Unit: Implications for Nursing Care From Evidence-Based Guidelines and Supporting Literature. Dimens Crit Care Nurs. 2021; 40(1):14-20. Doi: https://doi.org/10.1097/DCC.0000000000000448

15. Amaratunga H, Bostock K, Cunich M, Steffens, Carey S. Systematic review of service improvements for home enteral tube feeding in adults. Nutr Clin Pract. 2023; *38*(2), 329-39. Doi: https://doi.org/10.1002/ncp.10900

16. STROBE Statement—Checklist of items that should be included in reports of cross-sectional studies. Available from: https://www.strobe-statement.org/checklists/ Date accessed: 2022 sep 20.

17. Weyne GRS. Determinação do tamanho da amostra em pesquisas experimentais na área da saúde. Arq Med. ABC. 2004; 29(2):87-90. Available from: https://www.portalnepas.org.br/amabc/article/view/301 Acesso em: 23 set 2022.

18. Oliveira DC. Theme/category-based content analysis: a proposal for systematization. Rev. enferm.

UERJ, Rio de Janeiro, 2008 out/dez; 16(4):569-76. Available from: http://files.bvs.br/upload/S/0104-3552/2008/v16n4/a569-576.pdf Date accessed: 2022 sep 20.

19. Ministério da Saúde (BR). Conselho Nacional de Saúde. Resolução nº 466, de 12 de dezembro de 2012. Diário Oficial da República Federativa do Brasil, Brasília, DF.

20. Rhiry-Cherques RH. Saturation in qualitative research: empirical sizing estimation. Af-Rev PMKT. 2009; 4(08):20-7. Available from: http://www.revistapmkt.com.br/Portals/9/Edicoes/Revista_PMKT_003_02.pdf Date accessed: 2022 oct 15.

21. Oliveira RAM., Barão YF, Soares MD, Cônsolo FZ. Elderly people using nutricional terapy hospitalized for rehabilitation: profile, evaluation of caloric and protein supply and weaning of enteral diets. Multitemas. 2021; 26(63), 121–34. Doi: http://dx.doi.org/10.20435/multi.v26i63.2996

22. Queiroz MRG, Moura CX de, Marinho J da S, Maggioni L. Medical criteria to indicate and remove alternative feeding routes in hospitalized older adults. Rev CEFAC [Internet]. 2020;22(6):e2120. Available from: https://doi.org/10.1590/1982-0216/20202262120

23. Sassi FC, Medeiros GC, Zambon LS, Zilberstein B, Andrade CRF. Evaluation and classification of post-extubation dysphagia in critically ill patients. Revista do Colégio Brasileiro de Cirurgiões. 2018; 45 (3), e1687. Doi: https://doi.org/10.1590/0100-6991e-20181687

24. Graciano RDM, Ferretti REDL. Enteral nutrition in the elderly in Intensive Care Unit: prevalence and associated factors. Geriatrics, Gerontology and Aging, 2008; 2(4), 151-5. Available from: http://ggaging.com/how-to-cite/322/pt-BR Date accessed: 2022 sep 22.

25. Anziliero F, Silva BA, Dal Soler BE, Corrêa APA, Beghetto MG. Adverse events involving enteral tubes: an integrative review. Rev baiana enferm. 2020; 33: e33850. Doi: https://doi.org/10.18471/rbe.v33.33850

26. Chauhan D, Varma S, Dani M, Fertleman MB, Koizia LJ. Nasogastric Tube Feeding in Older Patients: A Review of Current Practice and Challenges Faced. Current Gerontology and Geriatrics Research. 2021. Doi: https://doi.org/10.1155/2021/6650675.

27. Pereira SRM, Coelho MJ, Mesquita AMF, Teixeira AO, Graciano SA. Causes for the unplanned removal of the feeding tube in intensive care. Acta Paul Enferm. 2013; 26(4):338-44. Doi: https://doi.org/10.1590/S0103-21002013000400007

28. Wen X, Cai C, Wang S. The influence of clinical nurses' risk perception of adverse events and shift quality on patient safety. Chin J Pract Nurs. 2017; 33(22):1735–9. Available from: http://d.wanfangdata.com.cn/periodical/syhlzz201722016

29. Bandura A. Social cognitive theory of self-regulation. Organ Behav Hum Decis Process. 1991;50(2):248–87. Doi: https://doi.org/10.1016/0749-5978(91)90022-l

30. Feng P, Yang HL, Xu L, Ojo O, Lu XY, Zhang HY, Wang XH. Development and psychometric testing of a questionnaire to assess Nurse's perception of risks during enteral nutrition. BMC Nurs. 2021 Jan 5;20(1):6. Doi: https://doi.org/10.1186/s12912-020-00520-z

31. Chu J, Wang X, Liang L, Zhao Y, Han M, Wang W, Jiang C. Construction and Application of Enteral Nutrition Nursing Management System under Medical Alliance Mode. Iran J Public Health. 2023 Mar;52(3):584-92. Doi: https://doi.org/10.18502/ijph.v52i3.12141

32. Matsuba CST, Serpa LF, Pereira SRM, Barbosa JAG, Corrêa APA, Antunes MS, et.al. Diretriz BRASPEN de enfermagem em terapia nutricional oral, enteral e parenteral. BRASPEN J. 2021;36(3 Supl 3):2-62. Doi: http://doi.org/10.37111/braspenj.diretrizENF2021

33. Corrêa APA, Nora CRD, Sousa GP de, Santos VJ dos, Viegas GL, Agea JLD, et al. Risks of enteral nutritional therapy: a clinical simulation. Rev Gaúcha Enferm [Internet]. 2020;41(spe):e20190159. Doi: https://doi.org/10.1590/1983-1447.2020.20190159

34. Silva LCS.; Prado MA; Fernandes SR.; Moraes Filho AV; Souza MC; Costa TAM et al. Nonconformities in medical records: opinion of health workers. Research, Society and Development. 2021; 10 (12): e294101220587. Doi: http://dx.doi.org/10.33448/rsd-v10i12.20587.

Conflicts of interest: No
Submission: 2023/07/18
Revised: 2023/10/23
Accepted: 2024/12/04
Publication: 2024/06/14

Editor in Chief or Scientific: Jose Wicto Pereira Borges
Associate Editor: Guilherme Guarino de Moura Sá