Original Article

Knowledge of nurses about nutritional therapy

Conhecimento de enfermeiros acerca da terapia nutricional

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ABSTRACT | OBJECTIVE: To evaluate the knowledge of nurses of a general teaching hospital and high complexity on nutritional therapy and care for patients using it. **METHOD:** Quantitative, descriptive, observational study conducted with 39 nurses. A questionnaire was applied and descriptive statistical analyses were performed. **RESULTS:** The knowledge of aspects considered essential on enteral and parenteral nutritional therapy reached rates of accuracy higher than 60% for most questions raised. However, there were differences regarding the performance of procedures related to this therapy, such as insertion of the nasogastric catheter and evaluation of gastric stasis. The understanding of the gastro and jejunostomy showed to be limited, which can compromise patient care. **CONCLUSION:** The knowledge of nurses about basic aspects of nutritional therapy can be considered, in general, satisfactory, and should be continuously updated and improved in order to contribute to a safe, reflected and standardized practice.

DESCRIPTORS: Nutritional therapy. Nursing care. Knowledge. Enteral nutrition. Parenteral nutrition.

RESUMO | OBJETIVO: Avaliar o conhecimento de enfermeiros de um hospital geral de ensino e alta complexidade sobre a terapia nutricional e os cuidados aos pacientes em uso da mesma. **MÉTODO:** Estudo quantitativo, observacional, descritivo, realizado com 39 enfermeiros. Foi aplicado questionário e realizadas análises estatísticas descritivas. **RESULTADOS:** O conhecimento de aspectos considerados essenciais sobre terapia nutricional enteral e parenteral alcançou taxas de acerto superior a 60% na maioria das questões levantadas. Contudo, identificou-se haver divergências acerca da realização de procedimentos relativos a essa terapêutica, como de inserção do cateter nasogástrico e avaliação da estase gástrica. A compreensão acerca das gastro e jejunostomias mostrou-se limitada, o que pode comprometer os cuidados aos pacientes. **CONCLUSÃO:** O conhecimento dos enfermeiros acerca de aspectos básicos da terapia nutricional pode ser considerado, de forma geral, satisfatório, devendo ser continuadamente atualizado e aprimorado visando contribuir para uma prática refletida, segura e padronizada.

DESCRITORES: Terapia nutricional. Cuidados de enfermagem. Conhecimento. Nutrição enteral. Nutrição parenteral.

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Introduction

Feeding is essential not only for growth but for maintaining the body's functioning throughout life. An adult human being, when healthy, has the ability to ensure his autonomous eating. However, at times, this capacity may be affected, either by the presence of diseases or associated symptoms, such as nausea and vomiting, as well as by treatments that often make food ingestion impossible, such as mechanical ventilation in intensive care unit.

In general hospitals and especially those that provide medium and high complexity care, it is common to see patients with an already compromised nutritional status at the moment of hospitalization. The most important study conducted on the subject in Brazil evaluated 4000 patients in different states and found that 48.1% of the hospitalized patients were malnourished, and that this situation was aggravated with the increase of the length of stay. Malnutrition may affect up to 60% of patients hospitalized for more than 15 days[1].

Studies show that malnourished patients have their immune response affected and are consequently more vulnerable to developing infections and pressure injuries. They also present greater difficulty for healing, reduced respiratory muscle mobility and fatigue, among others, and an impairment leads sequentially to others[2]. Nutritional Therapy (NT), defined as a set of therapeutic procedures to maintain or recover the nutritional status of patients, is available to address this problem.

Nutritional therapy includes oral supplementation, Enteral Nutrition Therapy (ENT) and Parenteral Nutrition Therapy (PNT), or the simultaneous combination of these therapies, and its regulation in Brazil requires that it be performed by a multiprofessional team[3,4]. It is an effective therapy, but not free of risks, which may be serious and even fatal. Although literature on the occurrence of adverse events related to the use of NT is incipient, governmental reports show diet administration failures as the sixth cause of adverse events, with 1713 occurrences[5].

Therefore, it is necessary that the entire health team and especially the nursing team understand the use of this therapy, not only with respect to patient care, but also its purpose, indications and risks involved. Nursing care practices will therefore be executed in a well-thought-out and effective manner. Studies show that health professionals, including physicians, nurses and nursing technicians, have insufficient knowledge about NT. This may favor the occurrence of complications and the achievement of expected results[6-8]. A gap was identified regarding studies of this nature conducted specifically with nurses in Brazil, considering its role in nutritional therapy, which triggered this research.

Its realization is even justified because it is carried out in a teaching hospital, locus of diffusion of know-how, in which care practices must be qualified, since they are observed by students in the training phase, and may be followed by throughout their working life. Thus, this study aimed to identify the knowledge of nurses of a high complexity teaching hospital about nutritional therapy and the care provided to patients there. The results may contribute with information to support the improvement of the care practice in nutritional therapy, including nursing education.

Method

Quantitative, observational and descriptive study. The participants were nurses working in a large, public, high-complexity, teaching hospital. Nurses working in the hospital, regardless of the unit, were included in the study, because they may be assigned to work in different sectors as needed. As nurses work by shift schedules, the study universe included professionals working in the morning shift and who were interested in participating in the survey, thus constituting a convenience sample.

The hospital where data collection took place has around 480 beds, with around 50 beds used for intensive care. The hospital is a reference in cancer treatment, heart surgery and transplantation, and

high risk maternity and nursery. The hospital performs around 1600 surgeries per month. In the institution there is a Multiprofessional Nutrition Therapy Team (MNTT) which standardizes and monitors the use of this therapy and carries out the training of the nursing team. Professionals enter the team by means of public tender.

The study participants were invited to participate in the research after clarification about its purpose and signing of the Informed Consent Form (ICF), as required by Resolution 466/12 of the National Health Counsel (NHC). Data collection took place before an in-service training offered to nurses in a large auditorium where the participants had privacy to answer the questions. The study was carried out in 2018. The study was approved by COEP of the UFMG, under Opinion 2,232,124, CAAE: 72683417.3.0000.5149.

Initially, we searched the literature for a validated instrument on the subject to be applied that met the objectives of the study, but such instrument was not found. Thus, a questionnaire was prepared by a nurse specialized in nutritional therapy, and then reviewed, evaluated and validated by another nurse who is also specialist in the area.

The questionnaire consisted of closed questions addressing the indication and contraindication of the use of enteral and parenteral NT as well as the infusion routes, the main complications, the risks involved in the use of this therapy, and the nursing care needed for its prevention. In two questions, there was a space for a justification for the chosen answer, aiming at a deeper understanding of the subject investigated.

The questionnaire also had two open but objective questions. They were inserted in order to avoid that pre-established answers in closed questions could hide the 'originality' of the answers. They addressed procedures performed by nurses related to the use of nutritional therapy, such as the measure used for insertion of a nasogastric catheter and the parameters adopted in the evaluation of gastric stasis.

Data were also collected that allowed the characterization of the participants' profile, such as sector of activity, postgraduate training, and length of professional practice. Descriptive statistical analyses of the collected data were performed. When there were more than 80% of correct answers, the knowledge of the subject was considered very good; between 60 and 79%, satisfactory; and less than 59%, insufficient.

Results

Thirty-nine nurses participated in the research, most of whom (46.2%) had between 5 and 10 years of time elapsed after graduation; 71.8% were specialists and the majority of these worked in intensive care (28.2%). Other specialties were equally represented, namely, organ transplantation, ostomy therapy, oncology, nephrology, health education, infection control, and health service auditing. The majority (46%) worked in the Intensive Care Unit and 38.7% in inpatient units. No participant had been in the institution for less than one year, which suggests that all already knew the institutional protocols and had the opportunity to participate in training on this therapy (Table 1).

Table 1. Characteristics regarding the participants' education and sector of activity (n = 39). Belo Horizonte, MG, Brazil, 2019

Variables	N (%)
Time elapsed since graduation	
0-5 years	5 (12.8)
6-10	18 (46.2)
Over 11 years	10 (25.7)
No answer	6(15.3)
Training	
Graduate level	11 (28.2)
Postgraduate level	28 (71.8)
Sector of work	
ICU	18 (46.2)
Inpatient unit	15 (38.7)
Emergency care unit	6 (15.3)

Source: Data from the author

When asked about the risks and complications involved in the use of PNT, 89% of the participants pointed out that PNT is a high-risk therapy, justified in the open space by the infusion into the bloodstream, which incurs a risk of infection. Other potential complications in the use of PNT, such as embolism and allergy, were cited by a minority (31%). The need for aseptic manipulation of PN was mentioned by all participants, as well as the need to have an exclusive route for PN infusion.

When asked about the differences between the nutrition solutions infused through peripheral access and central venous access and their indications, the majority (97.4%) showed to know that these solutions present differences in osmolarity. This same percentage of participants was clearly aware that parenteral nutrition administered through the peripheral route has a lower risk of systemic complications when compared to parenteral nutrition through central access.

Regarding the care to patients using PNT, the group agreed that it was necessary to monitor the infusion access of the solution for the presence of phlogistic signs and infiltration, and that it was necessary to change the infusion equipment at each new bottle of parenteral nutrition to be installed. However, only 31% showed to know the need to observe the infused parenteral nutrition solution as to its appearance, paying attention to phase separation.

Regarding the use of ENT, it was a consensus among participants that this is the most physiological option when NT is required. Regarding the indications for the use of nutritional therapy, 74.3% correctly indicated the alternative that included patients with stroke sequelae and advanced Alzheimer's disease, as well as in hypercatabolism[8].

Regarding the use of feeding ostomies, the majority (76.9%) was clearly aware of their indication for patients with prediction of more than 4 weeks of use of ENT. Among the reasons for choosing gastro-jejunostomies, the participants mentioned lower risk of catheter obstruction and bronchial aspiration when compared to nasogastric catheter, and problems with positioning and loss of access.

As for factors associated with possible complications in the use of gastro-jejunostomies, it was observed that only part of the study participants had knowledge about them. Just over half of the participants (56.4%) were aware that endoscopic gastrostomy and the use of proper tubes offer lower risks of peristomal complications. Furthermore, 20% did not consider that previous malnutrition was a factor that favored the occurrence of complications in feeding ostomies.

Divergences were found regarding the open question about the measure adopted for positioning the nasogastric catheter. Among the participants, 28.1% opted for "Tip of the nose to ear lobe, and from ear lobe to the xiphoid process, with an additional of 15 to 20 cm"; 20.5% opted for "Tip of the nose to ear lobe, and from this to the xiphoid process"; 20.5% chose "Tip

of the nose to ear lobe, and from this to the xiphoid process plus 10 cm"; and 2.5% said they added 5 cm after the xiphoid process. It was noteworthy that 28.3% did not answer the question, which may be due to the fear of choosing a wrong answer.

With regard to care for patients using CNE, 97.4% of the participants indicated the need to maintain the patient with the head elevated and to reassess the fixation daily. In addition, 94% demonstrated understanding the use of equipment of different colors for the administration of enteral nutrition, and the need to change it at every exchange of bottle; in the institution, only the closed system is used in adult patients. This same percentage of participants highlighted the importance of not administering more than one medication concomitantly through the catheter, and the need to periodically irrigate it with water. However, in the opinion of 31% of the participants, checking the positioning of the CNE at a daily basis was not necessary.

In the open question about the volume of gastric stasis that they consider to indicate the need to interrupt enteral nutrition infusion, there were again divergences. Most of participants (53.8%) reported a residual volume greater than 250 ml; 7.6% stated to be over 200ml; 7.6%, over 300 ml; 5.1%, 1/3 of the volume of the diet infused in the last hour; 5.1%, over 100 ml; 5.1%, over 500 ml; 2.5%, over 50 ml; 2.5%, over 150 ml; 2.5% said 50% of the volume administered in the last hour; 2.5% is the volume corresponding to the diet infused in the last hour; and 5% did not answer the question.

Discussion

The findings showed that the participants had, in general, the essential knowledge about the use of ENT and PNT, for there was a percentage of correct answers above 60% for most of the questions, whose contents are within the recommended by the literature and current legislation[3-4,9]. This result may have resulted from the training offered by the MNTT in the Institution, since 46% had between 6 and 10 years of work in the Institution. The stability of the professional staff and the encouragement of postgraduation in the Institution, as 71% of the participants ad postgraduate training, may also explain the finding. In addition, 46% worked in the ICU, the sector in which NT is most frequent.

It should be noted that the nurses should participate in the process of preparation and guidance of patients regarding the use of NT, as well as the choices of implementation, considering that nurses are the professionals who better know the patients and the difficulties that may arise for the maintenance of the therapy not only in the hospital but also at home, in the case of those patients who will need it. To this end, nurses must have expanded and updated knowledge about NT as a whole.

However, gaps in knowledge were identified mainly regarding feeding ostomy and care measures such as the need to confirm the positioning of the nasogastric catheter periodically. Regarding PNT, only a minority was aware of the need to evaluate the infused solution and the existence of risks such as embolism and allergy. In addition, divergences regarding procedures such as insertion of nasogastric catheters and evaluation of gastric stasis need to be discussed so that these therapies are performed safely, consciously and reflectively[3-4,9].

The divergences found show the non-compliance with the institutional protocol, and also reflect divergences in the literature. Regarding the positioning of the feeding tube in the stomach, the literature recommends the distal end in the antrum, which favors the process of nutrient digestion and the possible prevention of gastroesophageal reflux[9]. For this, the measure indicated in a classic work in Nursing is determined by the tip of the nose to the ear lobe, up to the xiphoid process, with additional 15 cm for gastric positioning and 20 to 25 cm for intestinal positioning. However, no studies have confirmed this technique as reliable[9].

The indicated measure for nasogastric catheter positioning is from the tip of the nose to the ear lobe up to the xiphoid process, plus 10 cm for gastric positioning, and 20 to 30 cm for enteral positioning[10]. It should be noted that catheter positioning for administration of enteral nutrition in the post-pyloric position is indicated only for patients with higher risk of aspiration, and should be inserted endoscopically to ensure its positioning[9].

In a recent randomized clinical trial with 240 participants to evaluate three nasogastric catheter positioning measures for feeding, it was found that the measure from the ear lobe to the xiphoid appendix and from this point to the midpoint of the umbilical scar was considered as the best achieved proper positioning in the gastric body. The measure "tip of the nose to the ear lobe to the xiphoid appendix, and from this to the midpoint of the umbilical scar" was also considered satisfactory, being considered to offer a lower risk of aspiration when compared to the measure "tip of the nose to the ear lobe and from this point to the xiphoid appendix"[11].

The controversies demonstrate the complexity of the procedure that is the responsibility of nurses, stressing the need for further studies on the subject in order to avoid damage due to incorrect catheter positioning. When the measure exceeds what is needed, it may lead to a loop of the catheter inside the stomach, causing complications for its removal, or its return to the esophagus, as in a movement in "U". Less insertion than the necessary, on the other hand, may cause aspiration risk[9,12].

In a study conducted with different healthcare professionals in an ICU, including nurses and nursing technicians (58% of participants), 62% said they felt technically prepared to work in the area of enteral and parenteral nutrition, but 94% stated that it was necessary and important to receive more training in this area[13].

In another study, conducted in ICUs in India, it was found that nurses believe they are aware of the importance of ENT and have knowledge about the care of patients using this therapy. In this study, the volume considered in the evaluation of gastric stasis varied among professionals, corroborating the findings of this study[14].

There is no consensus in the literature as to the gastric residual volume considered as impeditive of the continuity of enteral nutrition infusion. Delayed gastric emptying favors reflux and aspiration; it is necessary therefore to evaluate the patient to avoid these complications. Furthermore, the content must be observed in terms of volume and appearance, being an important datum for interventions of the MNTT[9,10].

Critical patients are more likely to have gastric stasis, often due to the clinical instability that leads to intensive care. It should be noted, however, that gastric residual volume should be assessed along with other clinical data, such as abdominal distension and air-fluid noises. In addition, disregarding gastric waste may cause or aggravate electrolyte and fluid balance disorders, indicating the importance of multiprofessional and interdisciplinary actions in NT[9,10].

Nutrition therapy is a complex treatment and patients using it should therefore deserve attention priority from nurses, but this does not always occur, reflecting the insufficient preparation of nurses on the subject. In a study of 359 respondents working in the ICU in Australia, it was found that nurses considered NT important, but had a significant knowledge deficit about it; it was inferred that this was caused by the low priority given to this therapeutic modality among the care measures provided to patients. In the study, it was concluded that this situation reflected delays in NT infusion, contributing to the worsening of malnutrition[15].

The pharmaceutical industry has made many innovations in the field of NT aimed at preventing errors and harm to patients. However, these innovations do not exempt nurses from training based on the most recent scientific evidence and the monitoring of the quality of care[16-17]. The divergences found in the open questions demonstrate the importance of conducting this type of survey, as it shows more accurately the knowledge of certain topics.

No studies were found with similar questions that could be compared with the findings of the present research, and this hinders the discussion of the results. The limitations of the study are thus the absence of a validated instrument and the convenience sampling. However, the results may help nurses from other institutions to reflect on important aspects to be addressed in in-service training.

Conclusion

The knowledge of nurses about essential aspects of nutritional therapy and nursing care for patients using ENT and PNT was mostly satisfactory. However, some aspects need to be improved in order to ensure effective and harmless NT care, including a broader understanding of feeding ostomies, as they can contribute to decision-making with the multiprofessional team so as to avoid future complications to patients.

In addition, it is necessary to continuously train professionals to follow the institutional protocols, which should be updated based on the most recent evidence. It is believed that the results found in this study may even contribute to undergraduate nursing education, since the weaknesses identified in the knowledge of professionals reflect flaws in professional education.

Authors contributions

Barbosa JAG was responsible for the design, analysis of results and writing of the article. Carlos CM and Costa RF were responsible for the conception, data collection and final writing. Simino GPR was responsible for data interpretation and final writing.

Conflicts of interest

No financial, legal or political conflicts involving third parties (government, companies and private foundations, etc.) is declared for any aspect of the work submitted (including but not limited to grants and funding, participation in advisory board, design of the study, preparation of the manuscript, statistical analysis, etc.).

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