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Nutritional Therapy in a Pediatric Hospital: Quality Indicators

Terapia nutricional en un hospital pediátrico: indicadores de calidad

Terapia Nutricional em um Hospital Pediátrico: Indicadores de Qualidade

ABSTRACT

Objective: To evaluate the quality of Enteral Nutritional Therapy in pediatric intensive care units, through the application of quality indicators. **Methods:** This is a prospective cross-sectional study, composed of a convenience sample with patients of both sexes, aged 0 to 18 years incomplete, hospitalized in pediatric intensive care units and in exclusive use of enteral nutritional therapy. Three quality indicators were applied and descriptive evaluation of the data was performed. **Results:** Twenty patients participated in the study, and it was observed that 25% had at least one episode of diarrhea, 45% were on digestive fasting for more than 24 hours and there was no record of tube obstruction. **Conclusions:** Of the results found, only the probe obstruction indicator is within the proposed target. This result corroborates with other studies conducted with adults, but studies in the pediatric area are needed to compare with the data found.

DESCRIPTORS: Quality Indicators in Health Care; Nutritional Therapy; Enteral Nutrition.

RESUMEN

Objetivo: Evaluar la calidad de la Terapia Nutricional Enteral en las unidades de cuidados intensivos pediátricos, mediante la aplicación de indicadores de calidad. **Métodos:** Se trata de un estudio prospectivo transversal, constituido por una muestra de conveniencia con pacientes de ambos sexos, de 0 a 17 años 11 meses y 29 días hospitalizados en unidades de cuidados intensivos pediátricos y en uso exclusivo de terapia. nutrición enteral. Se aplicaron tres indicadores de calidad y se realizó una evaluación descriptiva de los datos. **Resultados:** Tras aplicar los criterios de inclusión y exclusión, 20 pacientes participaron del estudio. Se observó que el 25% tuvo al menos un episodio de diarrea, el 45% había estado en ayuno digestivo por más de 24 horas y no hubo registro de obstrucción de la sonda en el estudio. **Conclusiones:** De los resultados encontrados, solo el indicador de obstrucción de la sonda se encuentra dentro del objetivo propuesto. Este resultado se corrobora con otros estudios realizados con adultos, pero son necesarios estudios en el área pediátrica, ya que esto permitirá comparar los datos encontrados con más deferencia.

DESCRIPTORES: Indicadores de calidad en el cuidado de la salud; Terapia Nutricional; Nutrición Enteral.

RESUMO

Objetivo: Avaliar a qualidade da Terapia Nutricional Enteral em unidades de terapia intensiva pediátrica, através da aplicação de indicadores de qualidade. **Métodos:** Trata-se de um estudo de corte transversal prospectivo, composto por amostra de conveniência com pacientes de ambos os sexos, com idade de 0 até 18 anos incompletos, internados em unidades de terapia intensiva pediátrica e em uso exclusivo de terapia nutricional enteral. Foram aplicados três indicadores de qualidade e realizada a avaliação descritiva dos dados. **Resultados:** Participaram do estudo 20 pacientes, observou-se que 25% apresentaram pelo menos um episódio de diarreia, 45% estiveram em jejum digestório por mais de 24 horas e não houve nenhum registro de obstrução de sonda. **Conclusões:** Dos resultados encontrados, apenas o indicador obstrução de sonda está dentro da meta proposta. Esse resultado corrobora com outros estudos realizados com adultos, porém são necessários estudos na área pediátrica para confrontar com os dados encontrados.

DESCRIPTORIOS: Indicadores de Qualidade em Assistência à Saúde; Terapia Nutricional; Nutrição Enteral.

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INTRODUCTION

Over the past few decades, Nutritional Therapy (NT) has its importance, mainly because it contributes positively to the clinical outcomes of patients in defined states. Enteral Nutritional Therapy (ENT) is an important part for the treatment of children admitted to intensive care units, however, despite its efficiency, it is not exempt from adverse effects.¹

The Quality Indicators in Nutritional Therapy (QINT) appear as an important tool to combat the adverse events that can have consequences: the increase in hospital malnutrition, morbidity and mortality and the reduction of the cost benefit of NT.² QINT is a quantitative method of assessing nutritional assistance in a health service.³

The primary objective of QINT is to ensure patient safety. Health care safety means avoiding, preventing and improving adverse outcomes and damage generated by the health care process. Patient safety includes the reduction and mitigation of unsafe acts within the health care system, as well as the use of good practices to achieve optimal results for the patient.⁴

The International Nutrition Sciences Institute - Brazil (ILSI) Task Force on Clinical Nutrition, aiming at quality control in NT, published 36 indicators that allow to evaluate in practice the quality with which NT, whether ente-

ral or parenteral, is being conducted.⁵ Subsequently, a study was carried out to identify the 10 QINT considered most useful, practical, easy to perform (simplicity) and low cost.³ When choosing indicators, it is necessary to consider that they will be chosen for implementation, they require time for monitoring, the careful collection of data and, subsequently, the critical analysis of these data, with identification of possibilities for improvement.⁴

Patient safety is an issue that has been discussed globally. Hospital institutions recognize the importance of reducing the risk of unnecessary damage associated with health care to obtain the quality certificate to the minimum acceptable level.⁶ However, when it comes to pediatric patients, the safety item needs to be reinforced. In Brazil, studies related to patient safety are recent and conducted largely addressing the topic of drug incidents.⁷ Scientific studies involving assessment of QINT in pediatrics are scarce, and there are few records of the impact of this assessment on the routine of institutions, so as to guarantee the quality of care to the patient.⁸

Thus, it is necessary to know and evaluate the QINT in the pediatric area, in order to know the non-conformities and thus adopt strategies to minimize adverse events that may culminate in greater risks of morbidity and mortality, longer hospital stay and higher costs.

METHODS

This is a prospective cross-sectional study, consisting of a convenience sample, carried out with patients followed at the three pediatric intensive care units of a pediatric hospital in Salvador, after submission and approval by Plataforma Brasil, opinion No. 2.121.360, and the Teaching and Research Evaluation Committee of the institution (CAAE: 64718216.0.0000.5033).

Data collection took place from June 2017 to July 2017 for a period of 30 days. The study included patients of both sexes, aged 0 to 17 years 11 months and 29 days, undergoing enteral nutritional therapy through gastric or enteral route, with gastrostomy or jejunostomy for at least 72 hours and whose legal guardian agreed to participate in the study, research after signing the Free and Informed Consent Form (ICF). The informed consent form was written in accordance with resolution CNS 466/2012, aimed at research involving human beings. The Term of Assent was also prepared for research, which does not dispense with the informed consent form, but there was no application. The following exclusion criteria were also applied: mixed therapy, oral and / or parenteral supplementation and admissions from other hospital units already using nutritional therapy.

Data collection started on the first day of introduction of enteral nutrition, and thereafter the monitoring was daily until

the moment of therapy interruption, death, hospital discharge or completion of the study. Data collection took place over 30 continuous days and was carried out by the main researcher in the patients' medical records, in the nursing team's records and initially with the guardians themselves, through an applied questionnaire.

The applied quality indicators were proposed by the Clinical Nutrition Task Force of the ILSI Brasil Nutrition Committee. The indicators chosen to be evaluated, due to their ease, usefulness and objectivity were: frequency of diarrhea, frequency of obstruction of a feeding tube and frequency of digestive fasting for more than 24 hours in patients in ENT. Diarrhea was considered to be the occurrence of 3 or more liquid or semi-liquid discharges in the 24-hour period.⁹

Descriptive analysis of the data was performed, presenting them in absolute and relative frequencies, with the means and standard deviation. The statistical program used was the Statistical Package for Social Sciences (SPSS), version 12.0.

It is important to mention that the research respected the norms established in the Statute of the Child and Adolescent (ECA - Estatuto da Criança e do Adolescente).

RESULTS

Vi Twenty patients met the research eligibility criteria and three were excluded. The average age found was 256,2 days, with a variation between 2 days and 1460 days, with 55% of the participants being male. Regarding the most used route of administration, the nasoenteral tube showed a higher prevalence (55%), followed by the orogastric tube (40%). The duration of length of stay in use of exclusive ENT varied from 3 to 19 days with a mean of $8,1 \pm 4,33$ days. Among the main causes of hospitalization in intensive care units, the postoperative period of cardiac surgery had a higher occurrence (35%), followed by respiratory complications (30%). The characterization of the population and the other variables were presented in table 1.

The results of the application of the indicators are described in table 2. Of the results found, only the probe obstruction indicator is within the proposed target.

DISCUSSION

The prevalence of malnutrition among critically ill patients, especially those with prolonged hospitalization, has remained constant in recent years. The intense metabolic response to trauma and the failure to provide ideal nutritional support during hospitalization in intensive care units (ICUs) are some of the main factors that contribute to malnutrition in this public. Although nutritional support therapy

cannot reverse or prevent this response, if there are deficiencies in the supply of nutrients during this stage, it will result in excess or deficiency of nutrients and probable malnutrition, which will directly affect clinical outcomes.¹⁰

The goal of nutritional support therapies for critically ill children is to increase the short-term benefits of responding to metabolic stress and to minimize long-term consequences on their development. Accurate assessment of energy needs and provision of optimal nutritional support is an important objective of critical pediatric care. The delivery of these nutrients requires careful selection of the appropriate mode of feeding and constant

Tabela 1: Caracterização da população e da Terapia Nutricional Enteral

Características	N=20
Média em dias	256,2 ± 405,2
Gênero	
Masculino	11
Feminino	9
Diagnóstico	
Sepse	2
Respiratório	6
Cirurgia Cardíaca	7
Neoplasia	2
Cirurgia do TGI ^a	3
Vias de administração	
SOG ^b	8
SNE ^c	11
SNG ^d	1
Média de tempo em TNE exclusiva (dias)	8,1 ± 4,33

a= Trato Gastrointestinal; b= sonda orogástrica; c= sonda nasoenteral; d= sonda nasogástrica; TNE= Terapia Nutricional Enteral

Tabela 2: Resultado da aplicação dos indicadores de qualidade aplicados nos pacientes em uso de terapia nutricional enteral

Indicadores de Qualidade em Terapia Nutricional	Valores Encontrados		Meta
	n	%	
Frequência de diarreia em pacientes com TNE^a	5	25	<10%
Frequência de obstrução de sonda de nutrição em pacientes em TNE	0	0	<10%
Frequência de jejum digestório por mais de 24h em pacientes em TNE	9	45	<10%

a= Terapia Nutricional Enteral

monitoring to ensure the success of the feeding strategy.^{11,12}

The application of quality indicators in TNE is a way to promote quality in nutritional assistance, since the indicators express in numbers the nutritional attention and the performance of the Multidisciplinary Team in Nutritional Therapy (MTNT). The steps to be followed would be the identification of the problem, the establishment of the reference standard to be considered, the analysis of quantitative data and the identification of aspects to be controlled to reach the established standard.¹³ Thus, meeting the goal of quality indicators in ENT is related to better nutritional and clinical recovery of patients.

In the present study, the indicator frequency of diarrhea episodes (25%) was higher than the proposed target (<10%), but lower than the values found by Brandão and Rosa (54,5%) in a study with adult patients with critical and using enteral nutritional therapy.¹⁴ This indicator aims to measure the occurrence of diarrhea in those patients who receive enteral nutrition in order to allow preventive and therapeutic measures to be taken to reduce this complication.⁵

In a study conducted by Cartolano et al.¹⁵ through the use of a quality indicator, the frequency of diarrhea episodes was 6,76%, therefore, less than 10%, according to the established goal. In the study by Aranjues et al.¹³, in 2005, 36% of patients had at least 1 episode of diarrhea. Later, in 2006, that number dropped to 17% of patients. The monitoring of the therapy through the indicators, and the intervention of the multidisciplinary team enabled the reduction of the diarrhea index in that study.

The appearance of diarrhea during hospitalization is a common event in critically ill patients, with an incidence of 2% to 92%. Some of the causes of diarrhea in the ICU would be the prescribed medications, the use of artificial nutrition, the presence of infections, the presence of ischemia or intestinal fistula, septicemia, hypoalbuminemia, among others. Thus,

the presence of diarrhea in critically ill patients receiving enteral nutrition needs to be carefully investigated.^{14,16}

In this study, we realized that the occurrence of diarrhea is a complication in the ICU that is no longer the cause of interruption in the administration of ENT. It is believed that the great variability of formulas and their specificities contributes to not interrupting the diet therapy treatment.

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In addition, it is important to establish and standardize the definition of diarrhea, preferably through a protocol conducted

by the multiprofessional team, in order to diagnose and treat diarrhea associated with ENT in critically ill patients.¹⁷

Regarding the assessment of the prevalence of nutrition tube obstruction, the indicator's strategic objective is to measure the number of enteral tube obstructions, as well as the number of tubes removed due to obstructions, in those patients undergoing enteral nutritional therapy. In addition, it seeks to identify the possible causes of obstruction, allowing preventive and / or corrective measures to be taken. Ideally, your result should be less than 10%.⁵ In this study, there was no occurrence of obstruction of the enteral tube, fully satisfying the proposed goal.

The administration of enteral nutrition is hampered by factors directly related to intensive care, however, mechanical problems with the nasoenteral tube, such as the obstruction of the tube, can cause damage to nutritional support.⁸

In the present study, 45% of patients were fasted for periods longer than 24 hours, a value much higher than the stipulated target (<10%). The purpose of this indicator is to verify the occurrence of enteral nutrition interruptions for periods greater than 24 hours. The knowledge of this indicator allows the adoption of corrective measures to minimize the risk of malnutrition or the worsening of nutritional status. Ideally, less than or equal to 10% of patients should be fasted for more than 24 hours.⁵

Preparations for surgery, procedures and exams seem to be necessary interruptions and, according to O'Meara et al.¹⁸, approximately 9 hours are spent fasting before surgery and 6,6 hours for radiological procedures without adults. It is worrying that some procedures may not require fasting, or your period may be shortened. The adoption of nutritional therapy protocols, including fasting protocols, can minimize this prolonged fasting.

In another research, after applying nutritional therapy quality indicators, Brandão and Rosa⁹ they also did not meet the recommended goal since the

number of adult patients without fasting for more than 24 hours (18,2%) was higher than that desirable, however, still lower than the value found in the present study.

According to ESPEN recommendations, patients should be fed because fasting in UTIS is associated with increased morbidity and mortality.¹⁹

In this context, Heyland and contributors²⁰ discuss the tendency of hospitalized patients to fast or receive inadequate nutritional therapy with insufficient calories. The authors state that protocols would be useful in order

to reduce the number and duration of periods of fasting or interruptions of enteral nutrition, accelerating the early onset of EN, increasing the volume and reducing obstacles to its supply.

CONCLUSION

The study has some limitations, among them the absence of other studies in the area of pediatrics on quality indicators, which is important for a more specific discussion. The lack of systematic research and clinical trials in various aspects of nutritional support in critically ill pedia-

tric patients is impressive and there is a need to design multicenter trials in this area of clinical practice. Extrapolating data from the adult intensive care literature is not desirable and many of the interventions proposed in adults will have to undergo careful analysis to be applied to critically ill children. The other limitation concerns the sample size, however the results presented here are very similar to those described in the literature. Finally, it is necessary to constantly assess the quality of nutritional therapy, as a way to monitor this important part of health care. ■

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