



Pediatric gastrostomy: epidemiological clinical aspect

Gastrostomia em pediatria: aspecto clínico epidemiológico

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Objective: to describe the epidemiological clinical profile of children undergoing gastrostomy surgery. **Methods:** cross-sectional, documentary, retrospective study developed at a referral hospital for child health. Data were collected from records and in the surgery book. **Results:** among 39 medical records analyzed, most were female, born vaginally, gestational age at term, with no information on the Apgar index, with some comorbidity, aged 0-3 years. The main indication for gastrostomy was the swallowing disorder of muscular or neurological origin with predominance of the surgical technique, use of latex Foley catheter as a device for enteral nutrition, the first exchange of the device occurred between 21 to 30 days performed by the nurse. **Conclusion:** the prevalence of girls aged zero to three years with some comorbidity was found. Swallowing disorders were the indication of gastrostomy made by surgical technique.

Descriptors: Child; Gastrostomy; Nursing Care; Catheters; Health Profile.

Objetivo: descrever o perfil clínico epidemiológico de crianças submetidas à cirurgia de gastrostomia. **Métodos:** estudo transversal, documental, retrospectivo desenvolvido em um hospital de referência em saúde da criança. Os dados foram coletados em prontuários e no livro de cirurgias. **Resultados:** entre 39 prontuários analisados a maioria é do sexo feminino, nascidos de parto vaginal, idade gestacional a termo, sem informação sobre o índice de APGAR, com alguma comorbidade, idade entre 0-3 anos. A principal indicação para gastrostomia foi o distúrbio de deglutição de origem muscular ou neurológica com predomínio da técnica cirúrgica, uso de cateter de foley em látex como dispositivo para nutrição enteral, a primeira troca do dispositivo ocorreu entre 21 a 30 dias realizada pelo enfermeiro. **Conclusão:** constatou-se a prevalência de meninas, com idade entre zero a três anos com alguma comorbidade. Os distúrbios de deglutição constituíram a indicação de gastrostomia confeccionada por meio de técnica cirúrgica.

Descritores: Criança; Gastrostomia; Cuidados de Enfermagem; Cateteres; Perfil de Saúde.

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Introduction

Gastrostomy consists of an artificial opening of the upper digestive tract (stomach), which communicates with the external environment by attaching a catheter for feeding or gastric decompression, usually located in the upper left quadrant, whose length of stay may be temporary or definitive⁽¹⁻³⁾.

Gastrostomy in newborns (0 to 28 days of age), infants (29 days to 2 years) and children in preschool (2 to 6 years) and school (7 to 12 years incomplete) has been a common practice in pediatrics, indicated after one month of use of the nasogastric catheter, provided that the child has the digestive tract preserved, and percutaneous surgical or endoscopic gastrostomy is performed⁽²⁻⁴⁾. Technological development with interface to the improvement of operative techniques, usually two operative modalities are used in gastrostomy, in this case surgical (laparotomy) and percutaneous (guided by percutaneous endoscopy or fluoroscopy)⁽²⁻⁴⁾.

Children with gastrostomy depend on health technologies⁽⁵⁻⁶⁾ (feeding device) fitted to their bodies to survive, so they are considered to be persons with physical disabilities, as established by legislation⁽²⁾. The strategies of reception by the health team to parents of children with physical disabilities are essential to the inclusion process in face of the needs that emerge each day⁽⁵⁻⁷⁾.

In this context, children with physical disabilities constitute an emerging clientele that demand special health care, due to the complexity of care needed, time, socioeconomic conditions and clinical fragility^(2,5,7-10). These present a diversity of medical diagnoses, and depend on the permanent attention of health service professionals^(2-4,8-9,11).

The care given to children using gastrostomy is performed by the multidisciplinary team, and the nurse is responsible for planning, managing and organizing educational actions involving parents/guardians/family/caregivers in the care process during

the hospitalization period^(2,12). These actions should emphasize daily care (administration of enteral nutrition via gastrostomy and dressing), identification of complications in the ostomy and skin, and incidents related to accidental catheter exit, aiming to provide the family with autonomy and safety in the care of their children when they return home^(2-4,6-9).

The scarcity of epidemiological data regarding children with gastrostomy in Brazil is an issue that requires investigation. The limited number of national and local studies makes it difficult to elaborate health planning actions. Until the conclusion of this study, no estimates were made regarding the profile of children with gastrostomy in the country.

The relevance of the study is based on the need for research on clinical and epidemiological data of children with gastrostomy; it contributes to the planning and management of nursing care, and serves as a management tool for the implementation of a specialized service in the care of this specific demand.

This study aimed to describe the epidemiological clinical profile of children undergoing gastrostomy surgery.

Methods

Cross-sectional, documentary, retrospective study conducted at a philanthropic and referral hospital for child health, located in Bragança, Pará, Brazil, from January 2013 to December 2017. The following inclusion criteria were adopted: children's records of both sexes, who underwent gastrostomy surgery and were hospitalized during the study period. Medical records with incomplete data and children with intestinal, urinary and respiratory ostomy were excluded.

Data were obtained from the electronic medical record, printed and in the surgery logbook available at the hospital's Medical and Statistical Archives Service, from July to September 2018, and were developed in three stages: manual survey of the surgery logbook, seeking to identify the child's name, electronic regis-

tration number, day, month and year the gastrostomy was performed; followed by reading the medical records (electronic and printed) of each child, in order to avoid duplication of data and later application of the adapted data collection instrument containing sociodemographic data (gender, age, education, family income, origin), perinatal (type of delivery, gestational age at birth, Apgar, comorbidities) and clinical (indication for gastrostomy, surgical technique used for gastrostomy; enteral nutrition device for gastrostomy during surgical procedure; complications related to gastrostomy during hospitalization; change of enteral nutrition device for gastrostomy from confection to first exchange; health professional who performed the first change of enteral nutrition device; child/parents/family received guidance regarding enteral nutrition by gastrostomy during hospital discharge; specialized service), comprising a total of 39 records.

Epidemiological and clinical information was entered into spreadsheets built in Microsoft Office Excel® 2016, which provided the construction of tables and, later, descriptive analysis. The results were grouped in tables and graphs and discussed based on the literature related to the theme in question.

To analyze the relationship between sociodemographic, perinatal and clinical variables, Pearson's chi-square test was used, where a value of $\alpha = 5\%$ ($p \leq 0.05$) was set. This research obtained a favorable opinion from the Ethics Committee in Research with Human Beings, Opinion nº 2,649,832/2018.

Results

Of the 39 charts of children with gastrostomy analyzed, there was a predominance of females, born of vaginal delivery, with gestational age at term, charts without information on the Apgar index, the majority of children had some comorbidity, were between zero to three years old, without education (since they are not old enough to go to school), lived in the municipality of Bragança and had a family income between zero and one minimum wage (Table 1).

Table 1 – Sociodemographic profile of children with gastrostomy (n=39)

Variables	n (%)	p*
Gender		
Female	22(56.4)	0.423
Male	17(43.6)	
Type of delivery		
Vaginal	18(46.1)	0.199
Cesarean	12(30.8)	
No information	9(23.1)	
Gestational age at birth		
To term	20(51.2)	0.000
Preterm	1(2.6)	
Post Term	4(10.3)	
No information	14(35.9)	
Apgar recorded 1st and 5th minute of life		
0 – 3	3(7.7)	0.000
4 – 7	3(7.7)	
8 – 10	3(7.7)	
No information	30(76.9)	
Comorbidities		
Yes	34(87.2)	0.000
No	5(12.8)	
Age range (years)		
0 † 3	23(58.9)	0.003
3 † 6	9(23.1)	
6 † 9	3(7.7)	
≥ 9	4(10.3)	
Schooling		
No schooling as they are not old enough to go to school	24(61.5)	0.150
No education, but old enough to attend school	15(38.5)	
Origin		
Bragança	20(51.3)	0.873
Other municipalities of the state of Pará	19(48.7)	
Family income (minimum wage)		
No income	1(2.6)	0.000
0 † 1	30(76.9)	
No information	8(20.5)	
Total	39(100.0)	

*Chi-square test

Considering the clinical characteristics of children with gastrostomy, it was found that the main indication of gastrostomy were swallowing disorders of neurological or muscular origin, there was a prevalence of surgical technique in the gastrostomy, the most commonly used enteral nutrition device was the latex Foley catheter and most children did not develop complications in the gastrostomy. The nurse was

the professional who performed the first change of the device for enteral nutrition, in most cases. Most family members/caregivers received guidance at hospital discharge on enteral nutrition by gastrostomy, but most children were not referred to a specialized service (Table 2).

Table 2 – Clinical profile of children with gastrostomy (n=39)

Variables	n (%)	p*
Gastrostomy indication		
Swallowing disorders of neurological or muscular origin	33(84.6)	0.000
Respiratory problems of neurological origin	5(12.8)	
Congenital disease	1 (2.6)	
Gastrostomy surgery technique		
Surgical	38(97.4)	
No information	1(2.6)	
Device used for enteral nutrition during gastrostomy		
Latex Foley catheter	38(97.4)	
No information	1(2.6)	
Gastrostomy complications during hospitalization		
Uncomplicated	15(38.5)	0.735
Others [†]	11(28.2)	
No information	13(33.3)	
Device change time during hospitalization period (days)		
10 to 20	6(15.4)	0.000
21 to 30	33(84.6)	
Professional who performed the first device change		
Nurse	35(89.7)	0.000
Doctor	4(10.3)	
Family member/caregiver received guidance at hospital discharge on enteral nutrition by gastrostomy		
Yes	35(89.7)	0.000
No	4(10.3)	
Child referred to specialized service		
No	38(97.4)	0.000
Yes	1(2.6)	
Total	339 (100.0)	

*Chi-square test; [†]Other refers to accidental catheter exit, contact dermatitis, leakage through the ostomy orifice and surgical wound infection

Discussion

The methodological design was considered a limitation in the development of the study. Documentary approach studies depend exclusively on daily records and notes on the procedures and care provided to the user by the multidisciplinary team during hospitalization, a fact that limited the obtaining of data on the contribution to nursing care.

The results obtained in this study showed the predominance of female children, however, no theoretical support was found for such prevalence. Studies published in Brazil^(6,8,10-11) showed the majority being male.

In a survey of 17 children and adolescents with gastrostomy, the authors found that most children did not attend school⁽⁶⁾, a similar result was found. On the other hand, it should be noted that 38.4% of children are of school age, but do not attend school, data obtained through data collection. This fact is justified not only because they depend on a device that enables enteral nutrition through gastrostomy, but also because they have comorbidities, with chronic neuropathy being the most evident in the medical records.

The Guidelines and Bases of Brazilian national education establish that children with disabilities are enrolled in the regular school system from the age of four, being extremely important the qualification of educators focused on their attention and integration in the school environment⁽⁷⁾. Health education actions aimed at preschool and primary education professionals regarding basic gastrostomy care are fundamental for the process of adaptation, rehabilitation and development of children in the school environment, besides that, it generates a relation of security among the teacher/student/parents trinomial, and should be performed by the generalist nurse or stoma therapist^(11,13).

The perinatal variables type of delivery, gestational age at birth and Apgar score were not reported in other national and/or international studies focusing on this mathematics. The Apgar Index⁽¹⁴⁾ is a test

used to assess the newborn's adaptation to extrauterine life, born by vaginal or cesarean delivery, is a mandatory data from the child's booklet provided by the Health Department, and should be applied by a qualified healthcare professional still in the delivery room at the 1st and 5th minute of life. This consists of the evaluation of five parameters (color, reflex irritability, respiration, muscle tone, heart rate) and classification in scores ranging from zero to 10, where the lower the Apgar score, the higher the risk of perinatal morbidity and mortality. It is noteworthy that this variable was identified in a few medical records, although it is an indispensable data, as it allows professionals to have prior knowledge about the child's birth conditions.

The main indication for gastrostomy was swallowing disorders of muscular or neurological origin. Similar result was obtained in the Northeast of Brazil⁽⁶⁾. Premature children with upper digestive tract abnormalities, central nervous system malformations, and delayed neuropsychomotor development are predisposed to develop dysphagia in the oropharyngeal phase (oral and pharyngeal phase). Dysphagia increases the risk of bronchial aspiration, hydroelectrolytic imbalance, weight loss, which contributes to increased morbidity and mortality among children⁽¹⁵⁾.

As for the operative technique, the one with the highest percentage is the surgical technique; this clinical feature was not evidenced in research with children. There is a consensus in the literature^(1,3,9) that percutaneous endoscopic gastrostomy is less invasive and safer when compared to surgery. The use of the surgical method in the preparation of gastrostomy in children treated at the Bragança philanthropic hospital may be associated with the absence of the pediatric general surgeon in the clinical staff and the unavailability of health products necessary to perform this procedure percutaneously.

About the device for enteral nutrition by gastrostomy, the latex Foley catheter is the most used in surgeries; a similar result has been described in the literature⁽⁶⁾. The use of this catheter in the study popu-

lation may be associated with low household income, probably one of the factors that makes it impossible to acquire and/or access other equipment (such as Pezzer Catheter; Bard Button, Mickey Kimberly Clark, Nutriport and Covidien Entristar). We emphasize that in the hospital where the study was conducted; the surgical team is offered only the latex Foley catheter as a device for enteral nutrition by gastrostomy, as it is less expensive when compared to other devices at the level of the skin surface.

Another aspect investigated corresponds to the fact that most children did not have complications in gastrostomy, different results were reported in the national literature^(6,11). Complications in gastrostomy are classified according to severity as systemic or minor. Minor complications include accidental catheter dislocation or exit, gastric content leakage, dermatitis, granuloma and peristomy infection, which require conservative treatment^(2,16). In the present study, only minor complications were found, evidencing the low complication rate due to the use of gastrostomy in children.

Regarding the guidelines on enteral nutrition by gastrostomy, it is observed that family members/guardians received guidance from the health professional, a similar result was described in the literature⁽⁶⁾. The multiprofessional health team should provide family members of children with gastrostomy^(2,4-6,11) information about self-care actions, preferably in the preoperative period, aiming to involve them in the care actions that contributes to the child's rehabilitation process.

In this study, the first change of the feeding device was performed by the nurse because it is a complex procedure and should only be performed by medical professionals and/or nurses legally qualified to do so, in compliance with the protocols and/or institutional clinical guidelines⁽²⁾.

Regarding the referral of children with gastrostomy to the specialized service, it was found that most were not regulated to this service; this data was not described in other studies. The state of Pará, Brazil,

has a specialized service in the care of people with ostomy⁽¹¹⁾, but it only addresses cases of urinary and intestinal derivation. The lack of knowledge of health professionals regarding the existence of this service is considered as one of the factors that hinder the process of referral and counter-referral of the region's user to the services available in the health care network.

Given the results obtained, some implications for nursing practice can be inferred. There is a need for specialized training for nurses in stoma therapy, so that they are able to guide and accompany the child and parents or guardians, pre and postoperatively, during hospitalization and after hospital discharge. This process includes demarcation of the gastrostomy site, clarification of necessary and available equipment on site, child and gastrostomy care, and provision of information about specialized services in the region.

It is also up to the nurse to perform nursing care for children with gastrostomy and peristomy skin, prevent and treat complications, promote the educational process of children and families, develop clinical guidelines in line with doctors, nutritionists and other health professionals, promote educational actions directed at the nursing staff and elaborate and propose the acquisition pattern for low profile devices by the hospital.

Conclusion

The study identified predominance of female children born vaginally, with gestational age at term, aged between zero and three years old.

The main indication for gastrostomy in children was swallowing disorders of neurological and/or muscular origin and the most used surgical technique was surgery. In addition, the latex Foley catheter was the most commonly used device for gastrostomy nutrition and the replacement of the feeding device was predominantly between 21 and 30 days.

Collaborations

Silva CO and Cunha RR contributed to the project design. Ramos EMLS and Parente AT cooperated in data analysis and interpretation. Lourenço-Costa VV and Fernandes POC assisted in the writing of the manuscript, relevant critical review of the intellectual content and approval of the final version to be published.

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