



## Original Article

# Children and adolescents ostomized in a reference hospital. Epidemiological profile<sup>☆</sup>



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### ABSTRACT

**Objectives:** To assess the epidemiological profile of children and adolescents with intestinal stoma, assisted at the Presidente Dutra University Hospital (HUPD), São Luís (MA).

**Methods:** Observational, descriptive, retrospective, and individuated study. Data were collected from 110 children and adolescents with elimination intestinal stoma, from January 2006 to February 2013. The following variables were analyzed: age, gender, patient origin, and stomata indication, type, and temporal character. After data collection, descriptive analysis was made by Bioestat 5.0 program.

**Results:** Of 110 patients, 78.2% were male and 21.8% female. The average age was 9.4 years old. 55.5% came from the Maranhão state countryside, and 44.5% from the capital, São Luís. Regarding stoma type, colostomies made up 88.2%, and were 11.8% ileostomies, all temporary stoma. The main cause was trauma (42.7%), with firearm abdominal puncture being the most frequent cause (71.5% of the category); followed by congenital anomalies (38.2%), and obstructive (5.4%) and inflammatory (4.5%) causes.

**Conclusion:** Studied children and adolescents were mostly male, from Maranhão state countryside. The main cause was trauma, and colostomy was the most common stoma type.

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## Perfil epidemiológico de crianças e adolescentes estomizados em hospital de referência

### R E S U M O

#### Palavras-chave:

Estomas cirúrgicos  
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Perfil epidemiológico

**Objetivos:** Avaliar o perfil epidemiológico de crianças e adolescentes portadores de estomas intestinais atendidos no Hospital Universitário Presidente Dutra (HUPD) em São Luís (MA). **Métodos:** Estudo observacional, descritivo, retrospectivo e individuado em que foram coletados dados de 110 crianças e adolescentes com estomas intestinais de eliminação de janeiro de 2006 a fevereiro de 2013. Analisaram-se as variáveis: idade, sexo, procedência dos pacientes, indicação, tipo e caráter temporal dos estomas. Após coleta dos dados, foi feita análise descritiva pelo programa Bioestat 5.0.

**Resultados:** Dos 110 pacientes, 78,2% eram do sexo masculino e 21,8% do sexo feminino. A idade média foi de 9,4 anos. 55,5% era procedente do interior do Estado do Maranhão e 44,5% da capital, São Luís. Com relação ao tipo: 88,2% eram colostomias e 11,8% ileostomias, todos os estomas temporários. A causa principal foi o trauma (42,7%), sendo a perfuração abdominal por arma de fogo a mais frequente (71,5% da categoria); seguido pelas anomalias congênitas (38,2%), causas obstrutivas (5,4%) e inflamatórias (4,5%).

**Conclusão:** As crianças e adolescentes estudados eram, em sua maioria, do sexo masculino, proveniente do interior do Estado do Maranhão, tendo como principal causa a traumática e a colostomia como o tipo de estoma mais comum.

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## Introduction

Ostomies are a provisional or definitive character surgical therapeutic measure for many diseases shown by children and adolescents, such as: congenital malformations, intestinal obstruction, neoplasia, and trauma. Its purpose is to feed or eliminate.<sup>1</sup>

The term comes from the Greek word “stoma”, meaning hole. It corresponds to the construction of a “mouth”, which communicates the hollow viscus to the external medium by creating a new path. Food intake or stool, gases, and urine output, depending on the location and stoma type, are its main uses. Disposal stomata are divided into: ileostomy, which consists of the union of the ileum portion to the abdominal wall; and colostomy, which designates the union of acolon portion to the abdominal wall.<sup>1</sup>

Their physical characteristics regarding type, location, size, shape, surface, contour, and protrusion can vary according to the used surgical technique, the externalized segment, the root cause, and permanence time.<sup>2</sup>

Regarding epidemiology, there are no definitive and timely data on ostomy number in Brazil. Santos reports, based on the 2000 census and with members of the International Ostomy Association, which in Brazil have about 170,000 ostomy. Regarding the estimate based on data from the Brazilian Ostomy Association (ABRASO) of 2005 showed an approximate number of 34,262 people, a figure far below the international estimate.<sup>1</sup>

Each year, 1 million and 400,000 surgical ostomy procedures are conducted, at a cost of 153 million reais (Brazilian currency); from January to August 2009, for example, 18 million were spent only in the purchase of collector, safety, and

security equipment (collecting bags and synthetic skin protective barriers).<sup>3</sup>

Exclusive epidemiological data on stomata in children are also scarce. Nevertheless, it is known that in childhood (0–10 incomplete years old, according to the WHO definition) stomata are mostly temporary, performed in the neonatal period, mainly for congenital megacolon (Hirschsprung’s disease), intussusception, intestinal volvulus, agenesis, and anorectal atresia adjuvant treatments. However, this condition residence time may be of months or years, depending on the disease and the operation amount that the individual is subjected lifelong for damaged areas reconstruction.<sup>4</sup>

In adolescents (10 to incomplete 20 years old, WHO), these data are even rarer. However, traumatic etiology, mainly due to automobile or domestic accidents, is highlighted.<sup>5</sup>

In the state of Maranhão, there are few systematic information and scientific publications within the stomized population, making it difficult to characterize their epidemiological and socio-demographic profile. This can hinder hospital and management planning activities, which could allocate resources to improve assistance for this significant population portion.

Thus, the present study assessed children and adolescents with intestinal elimination stomata epidemiological profile. They were treated at the Coloproctology Service Stomized Assistance Program (PAESC), Presidente Dutra University Hospital (HUPD), one of the main public hospitals in the State of Maranhão. The aim of this study was to contribute to Maranhão ostomized population epidemiological profile construction.

From obtained results, it is sought to provide social and public health policies directing subsidies, improving involved

**Table 1 – Distribution of patients according to sex and age group.**

| Sex    | <5 years old | 5–10 years old | 10–15 years | 15–20 years |
|--------|--------------|----------------|-------------|-------------|
| Male   | 33           | 7              | 8           | 38          |
| Female | 15           | 2              | 1           | 6           |

professionals technical and scientific performance, and interventions effectiveness.

## Methods

The study was observational, descriptive, retrospective, and individuated, conducted with stomized children and adolescents from the HUPD Coloproctology Service, located in São Luís, MA. Data were obtained from Social Service computerized databases (“Surgical Clinic – Coloproctology” section) and from the hospital Orthotics and Prosthetics Technical Committee (CTOP).

Patient records with esophageal, stomach, duodenum, jejunum, and urinary tract stoma, patients over 20 years old, and ostomy patients with incomplete data, except for race and color, were excluded from the analysis.

110 patients with intestinal stoma were included, all possessing complete data and being younger than 20 years old (children and adolescents), from January 2006 to February 2013. Analyzed variables were: age, gender, color or race, origin (São Luís or the countryside), stoma type (colostomy or ileostomy), stomata indication, and their temporal nature (permanent or temporary).

Data were organized in Excel spreadsheets and analyzed by Bio Estat 5.0 program. Only descriptive analysis was performed (mean and median for quantitative variables, absolute and relative frequencies for qualitative variables).

The project was approved by the HUPD Research Ethics Committee, with protocol number 003040-2013-30. Thus, it was submitted to Brazil Platform with CAAE: 24297513.6.0000.5086. The issued opinion No. 492,614 approved the research.

## Results

110 stomized children and adolescents’ records were analyzed, attended from January 2006 to February 2013. Of these, 86 (78.2%) were male and 24 (21.8%) female, with average age of 10.5 years old in males (ranging from 1 month to 20 years old, median = 13.5 years old), and of 6 years old in females (ranging from 1 month to 19 years old, median = 2 years old); overall average was of 9.45 years old, with a median of 8 years old (Table 1).

Regarding origin, 49 patients (44.5%) were from São Luís, and 61 (55.5%) were from the state countryside. As for

**Table 2 – Distribution of pediatric patients by type of ostomy stoma (%).**

|           |      |
|-----------|------|
| Colostomy | 88.2 |
| Ileostomy | 11.8 |

**Table 3 – Stomata causes of pediatric (%).**

| Traumatic | Congenital | Obstructive | Inflammatory | Others |
|-----------|------------|-------------|--------------|--------|
| 42.7      | 38.2       | 5.4         | 4.5          | 9.2    |

race/color, 60 patients (54.5%) were brown, 11 (10%) white, 10 (9%) black, and 29 (26.5%) were unidentified.

Of the 110 analyzed stomata, 97 (88.2%) were colostomies, and only 13 (11.8%) were ileostomy (Table 2).

Considering stoma estimated permanence time, 110 (100%) were classified as temporary.

Analyzing stomata indication causes, there was trauma predominance, with 47 cases (42.7% of the causes). Firearm-bullet abdominal puncture (FB) was the predominant type in 24 cases, accounting for 51% of this category, followed by abdominal trauma and other less frequent causes.

The congenital anomalies group was the second most frequent cause, with 42 cases (38.2%). Of these, there was congenital mega colon prevalence, with 24 cases, followed by imperforate anus, with 12 cases (Table 3).

There was higher difference between congenital and traumatic causes in age extremes. Congenital causes predominated in patients under five years of age (92.68%), and trauma accounted for 100% of cases in patients aged from 15 to 20 years old (Table 4).

Obstructive causes, with 6 cases (5.4%), and inflammatory, with 5 cases (4.5%), corresponded to the third and fourth cause in frequency, respectively. The other causes are shown in Table 3. The “other” causes group encompasses a wide variety of less common diagnoses, the main being suppurative (3 cases), recto vaginal fistula (3 cases), necrotizing enterocolitis (2 cases), abdominal neoplasia (1 case), and anal prolapse (1 case).

## Discussion

In the present study, there was male general predominance (78.2%), with these patients mean age being of 10.5 years old. Similar gender distribution was found by Silva on an analysis of 11 stomized children (between 2011 and 2012, in the Brazilian Federal District), where 73% males, 18% females, and 9% ambiguous genitalia cases were found.<sup>6</sup> In a study by Barreira et al., conducted on urinary and intestinal stoma with 20 children from 4 to 12 years old in São Paulo, prevalence between genders was of 50% each.<sup>7</sup> Same proportion found by Barbosa et al., in a study with 30 children under the age of 10 years old,

**Table 4 – Distribution of causes (Traumatic × Congenital) according to age group.**

| Causes     | <5 years old | 5–10 years old | 10–15 years old | 15–20 years old |
|------------|--------------|----------------|-----------------|-----------------|
| Traumatic  | 3            | 5              | 5               | 34              |
| Congenital | 38           | 2              | 2               | 0               |

where 50% was found for both genders, with mean age of 5 years old.<sup>8</sup>

In this study there was no ambiguous genitalia patient presence. All patient records had male or female definition. In addition, gender distribution was similar to that found by Silva (2013). However, it must be considered that the present study included adolescents in the study population, and these were predominantly males, what contributed to the increased prevalence and average male age (10.5 years old), against 6 years old of females.<sup>6</sup>

Regarding patient origin, 55.5% were from Maranhão state countryside, and 44.5% were from the state capital, São Luís. These numbers not only note HUPD importance as reference for stomized children and adolescents care, but also indicate health service centralization in the state capital, showing that Brazilian health care is concentrated in capitals and large cities.<sup>9</sup>

With regard to color, 54.5% of children and adolescents in this study were brown, 10% white, and 9% black. For a significant portion, there was no information (26.5%). In contrast, Barreira et al. (study that included intestinal and urinary stomata) found 55% white and 45% black in their research with 20 patients aged between 4 and 12 years old. However, this study data can be explained by the Brazilian Institute of Geography and Statistics (IBGE) 2010 census. It revealed that 66.5% of Maranhão population was brown, 22% white, and 9% black, that is, these data corroborate the immense mixing of Maranhão people, which is reflected on the studied population.<sup>7</sup>

Analyzing stomata type, this study found 88.2% colostomies and 11.8% ileostomies. Silva et al. found 81% colostomies among intestinal stoma, 9.5% ileostomies, and 9.5% duodeno jejun ostomies. Barbosa et al., in an analysis of 30 patients, obtained 76.7% colostomies and 23.3% ileostomias.<sup>8</sup> Barreira et al. conducted a study involving 20 children with intestinal and urinary stomata, in which 8 had intestinal stoma. Of these, 6 (80%) had colostomies and 2 (20%) ileostomy.<sup>7</sup> The proportion found is consistent with the literature. However, the fact that research was carried out with children only must be considered.<sup>6-8</sup>

When stoma type analysis extends to adults, the ratio is maintained. In the study published by Luz et al., conducted with 19 patients from the age of 18, they found 84.21% colostomies and 15.79% ileostomies.<sup>10</sup> Santos et al., in the analysis of 178 stomized patients, found 152 colostomies (84.5%) and only 21 ileostomies (11.8%). Valverde et al., in an analysis of 388 patients with intestinal stoma, found colostomy predominance (74.7%) compared to ileostomy (11.3%) and urostomy (7.2%).<sup>11,12</sup> Paula and Paula, in a study on ostomy patients epidemiology profile, found frequencies of 45.9% colostomy and 6% ileostomy. Other consulted studies have confirmed colostomy predominance in relation to ileostomy.<sup>13</sup>

As for temporal character, 100% of cases were temporary. Considering stoma causes, this study found two major etiological groups. They are: trauma, with 42.7%, and congenital anomalies, with 38.2%, being predominant in adolescents and children, respectively. Analyzing the total number of patients, trauma group prevailed, with the principal cause being firearm bullet abdominal perforation (51% of cases). This corroborates

with WHO data, showing 83% of trauma affecting adolescent aged between 10 and 20 years old.<sup>14</sup>

With regard to congenital anomalies, 96% of cases were infants (<2 years old) and preschoolers (2-6 years old), with congenital mega colon being the main representative (57% of the group's causes). Silva et al., with 11 children with intestinal stoma, found that 55% of stomata causes were based on congenital megacolon.<sup>6</sup> Sánchez et al., in surgical patient study, showed nearly half of the sample diagnosed with congenital mega colon (48.3%) as stoma motivator.<sup>15</sup> However, Barbosa et al., in a study with 30 children under 10 years old, found anorectal malformations (53.2%) as the main stoma cause, with mega colon (13.3%) being the second cause in frequency.<sup>8</sup> Carvalho et al. stated that, among ostomy numerous indications, congenital anomalies are pediatrics most frequent causes.<sup>16</sup>

It is observed that, in most studies, congenital mega colon is the most prevalent children stoma cause, what corroborates with this study. However, these studies were conducted with the sample limited to pediatrics. This study included adolescents, and that is why congenital anomalies ranked second, losing the post to trauma, which corresponded to 8 cases in children and 39 cases in adolescents. Thus, the impact caused by trauma in adolescents was fundamental for their significant stoma number.

Obstructive (6%) and inflammatory (5%) causes were observed in lower proportions. The "other" causes group encompassed a wide variety of less common diagnoses, the main being suppuration (3 cases), recto vaginal fistula (3 cases), necrotizing enterocolitis (2 cases), abdominal neoplasia (1 case), and anal prolapse (1 case).

Regarding psychosocial aspects, it is worth mentioning life quality improvements and patient integral care importance, through a multidisciplinary team of doctors, nurses and psychologists. In the 110 records assessed in this study, topics related to this aspect were not found. It is known that ostomy changes caused not only affect patient physical aspect, but also emotional and psychological aspects.<sup>17</sup>

Elimination stoma making leads to physiologic eliminations voluntary control loss, and coexistence with a collecting bag attached to the abdomen, which receives gases and feces, producing noise and odor, and causing social embarrassment. Content leakage fear is predominant, and any quality or safety failure can trigger it. Liberty and leisure activities deprivation, body image negative change, self-esteem loss, isolation, grief and depression are thus generated.<sup>17</sup>

Quality of life is related to the patient satisfaction degree, i.e., the adaptation level to new life with a stoma, and its proper administration. Those variables research and application methods development are necessary to contribute to stomized individuals' epidemiological profile, leading to quality of life maintenance strategies.<sup>18</sup>

In children and adolescents, the impact is even higher, and care by health professionals should involve the child-family or adolescent-family binomial, in order to increase the bond between health professionals and the patient. Needs, expectations, and possibilities involving the family and the child/adolescent will guide care actions, allowing for clinical therapy confrontation and individual healthy growth.<sup>19</sup>

Due to sample complexity, it is necessary to deepen the study on these patients, by addressing of quality of life and socioeconomic status aspects, for a more complete characterization and comprehensive care. Thus, patient filed record improvements are needed, with quality of life variables survey inclusion, regarding population socioeconomic and demographic conditions.

## Conclusion

Children and adolescents population selected in the study assessment pointed to predominance of males, from the Maranhão countryside, with colostomy being the most common stoma type, and trauma being the main cause. Stomized children and adolescents epidemiological profile analysis is relevant to planning, promotion, prevention, and health demands action, being fundamental for strengthening the health care network, with an effective intervention.

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## Conflicts of interest

The authors declare no conflicts of interest.

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