

## Intestinal Functional among Adolescents in Brazil

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Received date: January 09, 2017; Accepted date: February 01, 2017; Published date: February 04, 2017

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### Abstract

This paper aimed at determining the characteristics of bowel movements among adolescents. A cross-sectional study with all teenagers attended in a Primary Health Care Unit included 215 adolescents. According to the Rome III criteria 11.6% of the adolescents (52% males; 48% females) were considered constipated and 16.2% presented some alterations of intestinal function. Twenty-two (10.2%) reported elimination of dry/fragmented feces and 6.0% increased stool volume. Regarding the perception of bowel movements 39.5% reported a delay in starting evacuation. This result reinforces the importance of to identify the changes in bowel habits to promote interventions for the prevention of intestinal constipation.

**Keywords:** Constipation; Adolescent; Gastrointestinal motility

### Introduction

Intestinal evacuation is a complex sequence of events resulting from the integration of the autonomic and somatic nervous systems and culminating in the elimination of fecal matter contained in the descending colon and rectum [1]. In turn, intestinal habitus is a personal characteristic varying considerably among individuals due to factors such as quality and quantity of ingested food and drink, convenience and a satisfied feeling of well-being, with no discomfort and without the sensation that evacuation was not sufficient [2].

Functional gastrointestinal changes are relatively common disorders in various age ranges and may progress to chronic problems with repercussions on quality of life that lead to anxiety, depression, sexual dissatisfaction, incontinence, hemorrhoids, anal fissures, and somatization of other problems [3-5]. Important among these functional changes is functional constipation, which may reach a rate of up to 40% among children and adolescents and which is related to factors such as eating habits, socioeconomic level, and regional, racial and cultural differences [6-8].

The Rome III criterion should be used to define intestinal constipation. This criterion presumes the presence of at least two of the following parameters: a) evacuator frequency of twice a week or less, c) history of fecal retention behavior, d) history of painful or hardened evacuations, e) presence of a large fecal mass in the rectum, and f) history of feces that obstruct the toilet. Among adolescents, these signs and symptoms should be present for at least two months [9].

Despite the high prevalence of constipation, the symptoms are poorly appreciated by the patients, their relatives and health professionals, a fact that causes a delay in the beginning of treatment, favoring the onset of complications [10]. Most adolescents seldom use routine health services, looking for medical care in punctual or urgency situations. However, this age range is considered a risk to adopt eating habits that prioritize the consumption of industrialized

foods with high energy density and insufficient content of some nutrients such as food fibers [11-13].

Most studies of intestinal constipation have focused on the infant or adult population, with few investigations being available for the adolescent age range [14]. Thus, the objective of the present study was to determine the characteristics of evacuation among adolescents attending an ambulatory program of Hebiatrics (medical care aimed at health promotion and disease prevention to adolescents) at a basic health unit in the city of Ribeirão Preto (Brazil).

### Methods

This was a cross-sectional descriptive study conducted over a period of one year at a basic health unit linked to the Teaching Health Center of the Faculty of Medicine of Ribeirão Preto, University of São Paulo. The authors invited to participate in the study all the adolescents of both sexes aged 10 to 19 years completed who came to the service for scheduled medical care in the Hebiatrics program from 02/01/2014 to 30/12/2014. All subjects who accepted the invitation received explanations about the objective of the study and were asked to give written informed consent. At the end of the medical visit, the adolescents answered a questionnaire containing questions about age, sex and some characteristics of evacuation such as fecal shape, volume, frequency and difficulty of evacuation.

All adolescents who answered the questionnaire and whose parents gave written informed consent were included in the study. Exclusion criteria were restrictive or debilitating chronic diseases that might cause intestinal constipation. The Rome III diagnostic criteria (criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis) were used for the definition of a diagnosis of constipation that must include two or more of the following: a) straining during at least 25 % of defecations, b) lumpy or hard stools in at least 25 % of defecations, c) sensation of incomplete evacuation for at least 25 % of defecations, d) sensation of anorectic obstruction/blockage for at least 25 % of defecations, e) manual maneuvers to facilitate at least 25 % of defecations (e.g., digital evacuation, support of

the pelvic floor), f) fewer than three defecations per week [15,16]. Relative frequencies were described for statistical analysis and data were analyzed by the chi-square test, with the level of significance set at  $p < 0.05$ . The study was approved by the Research Ethics Committee of the University Hospital, Faculty of Medicine of Ribeirão Preto and University of São Paulo.

## Results

The study was conducted on 215 adolescents (106 males and 109 females) corresponding to 56.8% of the 378 adolescents attended at the Hebiatrics Program from January to December 2014. The mean and median age was 14 years. According to the Rome III criteria for the diagnosis of functional constipation, 25 (11.6%) adolescents were

considered to be constipated, 13 males (52%) and 12 females (48%), because they presented fewer than three defecations per week, straining and hard stools.

Table 1 show that 22 (10.2%) adolescents reported the elimination of dry/fragmented feces. As can be seen in table 2 thirteen subjects (6.0%) reported that they eliminated an increased fecal volume, and other five (2.6%) stated that the fecal volume was reduced because they did not complete the evacuation. It should be pointed out that no subject reported spontaneously any difficulty in evacuation on the occasion of any visit, so that the characteristics of the feces were identified by means of questions asked by the investigator during the response to questionnaires.

Fecal characteristics	Males		Females		Total	
	n	Percentage	n	Percentage	n	Percentage
Cylindrical pasty	53	50.4	53	50	106	50.2
Cylindrical dry	11	10.4	7	6.6	18	8.5
Fragmented	2	1.9	2	1.8	4	1.8

Table 1: Distribution of fecal characteristics according to sex - Ribeirão Preto 2014.

Fecal volume	Males		Females		Total	
	n	Percentage	n	Percentage	n	Percentage
Normal	88	84	95	90	183	89
Increased	10	9.5	3	2.8	13	6.2
Reduced	4	3.8	1	1.8	5	2.6

Table 2: Distribution of fecal volume according to sex - Ribeirão Preto 2014.

Regarding the perception of the evacuations, 85 (39.5%) adolescents reported a delay in initiating evacuation, 53 females (62.3%) and 32 (37.6%) males that was perceived as straining by interviewees.

## Discussion

The identification of changes in the process of evacuation is fundamental for the adoption of measures aiming at the reduction of discomfort and the facilitation of elimination. The results presented in Tables 1 and 2 indicate that 88 (55.8%) adolescents reported one of the characteristics (hard stools, increased volume, straining) listed in the Rome III criteria for the definition of intestinal constipation. Statistical analysis showed no significant difference between sexes in the characteristics or volume of the feces ( $p > 0.05$ ).

Ziani et al. also detected straining to evacuate (46.7%) and elimination of hard stools (50%) among students in the health area [17]. In a study of intestinal constipation among university students in the state of São Paulo, Trisóglgio et al. reported a 48% rate of complaints related to straining and a 52% rate of evacuation of hard feces [18]. Complaints of elimination of hard feces (55.4%) and with discomfort (58.4%) were also reported among Venezuelan adolescents seen at a specialized gastroenterology service [19].

Although this was not the initial objective of the present investigation, the prevalence of intestinal constipation detected was similar that reported by Medeiros et al. who detected a prevalence of 11% of intestinal constipation among 62 adolescents belonging to a group of patients seen at a university hospital [9]. A higher prevalence was detected by other authors, such as a 22.3% rate among constipated adolescents enrolled in a high school in the city of dos Campos (Brazil) [14], 35% rate in a study conducted by Trisóglgio et al. [18] among students of a faculty of medicine in the interior of the state of São Paulo, and a 40% rate detected by Jamie et al. among university students in the city of Goiânia (Brazil) [6]. In these studies there was a statistically significant predominance of teenage girls, as also observed by Zaslavsky et al. in a study of 48 adolescents with intestinal constipation seen at the

University Hospital of Porto Alegre [20] and by Dehghani et al. [21] among adolescents attended at a gastroenterology service in Iran.

The high prevalence of intestinal constipation and its complications are a public health problem. Thus, it is fundamental to recognize the condition early in order to adopt measures for its control in view of the negative consequences of a delayed diagnosis such as impaired quality of life and a financial burden due to prolonged and expensive treatments [22]. In this respect, the importance of a complete clinical history on the occasion of each visit should be emphasized since

adolescents do not always seek medical care because of difficulty in fecal evacuation. Inappropriate eating habits, a sedentary life style and associated psychosocial factors are some determinants of the day-to-day routine of adolescents. These factors are practically ignored by adolescents in terms of their own health care, especially when they are not associated with an imminent risk, as in the case of functional intestinal disorders [9,23,24].

The fact that the study was conducted at an outpatient clinic where a Hebiatrics program is held with all its health promotion and disease prevention actions, as well as the small number of participants may be considered weak points of the study. However, the present results serve as an alert to the importance of educational programs that will stimulate adolescents to seek guidance for the control of changes in intestinal habits, since an early diagnosis and adequate treatment can reduce the risk of complications and favor a better quality of life.

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