

Defaecation disorders among information technology personnel: A cross-sectional study

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ABSTRACT

Background. Individuals working in the information technology (IT) industry are likely to develop lifestyle disorders. We aimed to determine the presence of defaecation-related disorders in IT personnel in Chennai.

Methods. This cross-sectional, questionnaire-based study was done from June to December 2018. We included employees between 18 and 60 years of age and excluded those with < 1 year stay in Chennai, pregnancy and those who sent incomplete responses. The cohort was classified as normal, irritable bowel syndrome (IBS), faecal evacuation disorder (FED) and a combination of the latter two.

Results. The overall response rate was 95.6%. The study included 54.7% of men, and the median age was 31 years. The majority of respondents used an Indian toilet (55.4; 58%). Almost all (96.2%) passed stools daily, and stool consistency was soft in 59%. Based on the study criteria, 180 (18.8%) had FED, 56 (5.9%) had IBS and a small group had a combination of symptoms of IBS and FED (20; 2.1%). Respondents with symptoms of IBS had a higher proportion of comorbid states ($p < 0.0001$), lesser stool frequency ($p < 0.0001$) and required more toilet time ($p < 0.00001$).

Conclusion. Over one-fourth (26.7%) of the respondents had defaecation-related issues, 18.8% had symptoms suggestive of FED and 5.6% that of IBS, often above 30 years of age.

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INTRODUCTION

Lifestyle disorders are being increasingly reported all over the world. According to the WHO, 60% of factors related to individual health and quality of life correlate with lifestyle.¹ Variables that affect lifestyle include diet, exercise, sleep, sexual

behaviour, substance abuse, study, recreation, medication abuse and misuse of technology. Many of these tenets of lifestyle affect bowel movements, especially among those working in the information technology (IT) industry, which has variable shifts of duty and high levels of stress of work.

Several Indian studies have highlighted the impact of lifestyle factors on defaecation disorders, mainly constipation.^{2–5} In a questionnaire-based purposive sampling study on 1402 non-complainant residents of Chennai city, we had reported normal stool form and pattern in an urban south Indian setting.⁶ However, it did not address the defaecatory problems in the select IT population, which we believe is likely to be distinct compared to the non-IT population. We, therefore, undertook a questionnaire-based study in a population working at the IT corridor of Chennai, to determine defaecation pattern and related problems in these individuals. Access to this population was feasible during health talks and talk shows organized by our institutions once a month on a fixed week day. The aim was to study the bowel movement pattern and factors associated with it in this cohort.

METHODS

This cross-sectional study was done between June and December 2018. The questionnaire was designed by three senior authors (MJ, MS and VJ) and included demographic information (age, sex, state of origin, duration of stay in Chennai and comorbid state), details pertaining to act of defaecation in the preceding 6 months that included type of toilet (Indian v. western closet), bowel frequency, characteristics of stools, history of urgency, faecal soiling, digitation, incomplete evacuation, bleeding, application of perianal pressure and straining, if any.

The questionnaire was circulated among 30 IT employees initially to pre-test for ease of comprehension and completion without help. After making few modifications based on the feedback, the final questionnaire was circulated among IT company employees during health talks or by email through their human resource departments. Participation was voluntary and unique identifiers such as name, email id or contact details were not mandatory. The survey questionnaire forms were screened for completion and responses were tabulated in Microsoft Excel (SKG, MJ). Of the 1000 questionnaires circulated, 956 (95.6%) were complete and included for analysis.

We included all IT employees between 18 and 60 years of age and excluded those who had stayed in Chennai for less than a year, were pregnant, unwilling to participate and those who did not complete the questionnaire. The study was approved by the

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Institutional Ethics Committee of Gleneagles Global Health City vide letter no. HR/2018/MS/014.

Based on the responses, the defaecatory pattern of the cohort was broadly classified as irritable bowel syndrome (IBS) and faecal evacuation disorder (FED) using the following criteria:

Irritable bowel syndrome. Abdominal pain relieved with passage of stool for most days in a week in the preceding 6 months (Rome IV criteria).⁷

Faecal evacuation disorder. Presence of at least two of the following symptoms: Bleeding/straining/sense of incomplete evacuation/use of pressure to facilitate defaecation/digitation.^{8,9}

The characteristics of the entire cohort were first compared by age, sex and then between the three bowel pattern groups (normal, IBS and dyssynergic defaecation [DD]) to determine any differences among them.

Statistical analysis

The data were expressed as number and percentage. Age was expressed as median and range. A comparison of proportions and medians was done using Chi-square test and Mann-Whitney U test, respectively. A value of $p < 0.05$ was considered statistically significant.

RESULTS

A total of 1000 questionnaires were circulated. Of these, 656 were circulated during health talks and 344 via email. The overall response rate was 95.6%. The response rate was much higher when questionnaires were circulated during health talks (650; 99%) compared to email (306; 89%).

Characteristics of the entire cohort

The study cohort of 956 consisted of 860 (90%) individuals belonging to Tamil Nadu and 54.7% were men. The median age was 31 years (range 21–58 years). One or more comorbid diseases were noted in 198 (20.7%) individuals. These included diabetes (83; 8.7%), hypertension (95; 9.9%), hypothyroidism (69; 7.2%) and anxiety/depression (23; 2.4%). The majority of respondents used an Indian toilet (554; 58%). Almost all (920; 96.2%) passed stools daily and none reported stool frequency less than once in 3 days. Of those who had a daily bowel movement, the majority did so only once (531/920; 57.7%) and the remaining passed stools up to three times a day. Stool consistency was soft in 59% and the rest reported passing hard stools. Most of them (782; 81.8%) took <10 minutes on average to evacuate their bowels during each visit to the toilet.

Defaecation-related problems

Based on the study criteria, 180 (18.8%) had FED, 56 (5.9%) had IBS and a small group had a combination of symptoms of IBS and FED (20; 2.1%). Thus, 26.7% of the individuals reported defaecation-related issues.

Three-quarters (700/956; 73.2%) of the respondents had a normal defaecatory process with no symptoms of IBS or FED. However, 114 (16.2%) of them occasionally complained of any one defaecation-related issue.

The defaecation-related problems (alone or in combination) reported by the respondents with IBS, FED or overlapping symptoms were straining (208; 21.8%), need for external pressure on the abdomen or buttocks to facilitate stool passage (198; 20.7%), urgency (142; 14.8%), sense of incomplete evacuation (120; 12.5%), defaecation-associated bleeding (80; 8.4%) and

digitation (46; 4.8%). Faecal soiling of undergarments was reported by a few (22; 2.3%). Quality of life was declared to be affected by a third of respondents (348; 33.3%). Self-medication was resorted to by 142: 66 (54%) using ayurvedic/herbal drugs and over-the-counter allopathy drugs by the rest.

Variations in bowel characteristics by age and sex

As the median age of our cohort was 31 years, we classified the study population into two groups: age ≥ 30 years (581) and <30 years (375) to study the effect of age on bowel characteristics. Both the groups had a similar sex distribution. However, there were a few major differences: higher proportion with daily bowel movement in the age group of <30 years (58.7% v. 49.6%; $p=0.03$) but harder stools (9.9% v. 5.5%; $p=0.04$) and more symptoms of FED (40% v. 18.2%; $p < 0.00001$) in the older (≥ 30 years) population.

A comparison by sex revealed significantly more comorbid states (23.5% v. 15.7%; $p=0.01$) in men, and FED was more common among women (23.3% v. 15.1%; $p=0.006$). There was no significant difference in stool frequency, consistency or time spent in the toilet between men and women.

Variations in bowel characteristics by defaecatory types

We further compared the respondents with normal defaecation (700), FED (180) and IBS (56). The characteristics of patients with overlap of symptoms of IBS and DD ($n=20$) are described later. Respondents in the IBS group had a higher proportion with comorbid states ($p < 0.0001$), lower stool frequency ($p < 0.0001$) and required more toilet time ($p < 0.00001$) compared to the others (Table I). Quality of life was affected in those with IBS (100%) and FED (85%).

Characteristics of respondents with IBS and DD overlap ($n=20$)

This small group included 13 men (65%) and had a median age of 32 years (range 23–47 years). Seven (35%) had at least one comorbid state. Ten passed motion daily, 8 (40%) passed soft stools and 13 (65%) required >10-minute toilet time. Eight (40%) reported negative impact on quality of life and 10 (50%) resorted to over-the-counter medications for relief of symptoms.

DISCUSSION

Our study reports the prevalence of defaecation-related issues among IT employees, a population that is often under high work stress and has an erratic lifestyle. Over a quarter (27.6%) of the respondents had defaecation-related issues. Symptoms of FED and IBS were noted in 18.8% and 5.6% of respondents, respectively. FED was more common in women. Respondents ≥ 30 years of age more commonly complained of hard stools and FED. Comorbid states and lower stool frequency were noted in those with symptoms of IBS. Quality of life was affected universally in those with symptoms of IBS and FED.

We were surprised to note that about 58% of respondents used an Indian toilet, a physiologically tailored system for defaecation,¹⁰ despite urban living and economic betterment modifying their lifestyle including attire and dietary choices.

Our large non-complainant general population purposive sampling survey⁶ in the same city that included a third each of professionals, semi-professionals and non-office-goers reported daily bowel movement in 97%, Bristol stool form 1–4 in 88.4% and defaecation-associated abdominal pain in 8.5%. A significant sexual variation occurred in stool type with men passing hard

TABLE I. Comparison between respondents with normal defaecation, irritable bowel syndrome (IBS) and faecal evacuation disorders (FED)

Item	Normal defecation (n=700), n (%)	IBS (n=56), n (%)	FED (n=180), n (%)	p value
Men	403 (57.6)	28 (50)	79 (43.8)	0.003
Women	297 (42.4)	28 (50)	101 (56.2)	
Age group (median, range in years)	31 (21–58)	33 (23–42)	31 (21–52)	0.45
One or more comorbidity	128 (18.2)	24 (42.8)	39 (21.7)	<0.0001
<i>Stool frequency</i>				
Daily	698 (99.7)	34 (60.7)	168 (93.3)	<0.00001
Once in 2–3 days	2 (0.3)	22 (39.3)	12 (6.7)	
<i>Type of toilet</i>				
Indian	413 (59)	30 (53.6)	101 (56.1)	0.67
Western	287 (41)	26 (46.4)	79 (43.9)	
<i>Time taken to pass motions (minutes)</i>				
<10	673 (96.1)	22 (39.3)	80 (44.4)	<0.00001
>10	27 (3.9)	34 (60.7)	100 (55.6)	
Impaired quality of life	101 (14.4)	56 (100)	153 (85)	

and watery stools more often than women. There were no significant differences in stool pattern by occupation. Further, our previous study⁶ was not designed to probe the defaecatory behaviour in great detail, a limitation we have tried to address in the present study. However, to make the questionnaire easy to comprehend and answer for the study population, details of Bristol stool form were not recorded in the present study. The present study reports a higher prevalence of IBS-type symptoms in IT individuals and hardly any one reported loose stools.

The IT employees conformed to the almost universality of daily bowel movement in the general population of Chennai reported by us in the previous study⁶ and almost half opening their bowels more than twice in a day similar to reports from other parts of India.^{3,11,12}

The prevalence of constipation in the general population varies widely between various studies ranging from 2.4% in a rural northern Indian population¹² to 8.6% in urban Chandigarh,⁴ 11.6% from a northern Indian community¹³ and 24.8% in an elderly cohort from Bengaluru.¹⁴ Irrespective of this heterogeneity, our IT cohort had a much higher prevalence of hard stools (41%).

In a large pan-Indian multicentre study, comprising 4500 non-complaining individuals, 846 (18%) strained to pass stool and 1030 (23%) had incomplete stool evacuation.¹¹ These observations confirm that defaecation-related problems are common in the Indian population, and the prevalence seems higher among IT professionals. A small proportion (2.3%) of our respondents had faecal soiling and 14.8% reported urgency, which require further evaluation but were beyond the scope of our study.

More IT sector women had symptoms suggestive of FED. Factors such as slower transit, obstetric trauma, hard stool and over-reporting are possible reasons for this observation.^{3,4,8,15–18}

IBS was common in the age group of ≥ 30 years, with at least one comorbid condition in 42.8%. Defaecation-associated abdominal pain was less frequent, similar to other studies from India.^{5,8,19–21} An overlap between dyssynergia and IBS has been previously reported, and we also had a small proportion (2.1%) with such an overlap.^{22,23} We speculate that factors predisposing IT professionals to defaecation-related issues are sedentary lifestyle, work stress and inadequate fibre/fluid intake.

Strength of the study

A large sample size was drawn exclusively from the IT sector workforce. We validated the survey for ease of understanding and answering as the questionnaire was to be filled by respondents without help from the investigators. For this reason, the language was kept simple without medical terms

Limitations

Details of diet and exercise were not recorded. Details of previous pregnancy, type of delivery and medications used for comorbid states were not recorded. Bleeding reported could be due to other factors such as malignancy or inflammatory bowel disease. However, follow-up investigations were not considered for analysis in the study.

Conflicts of interest. None declared

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