Research Square

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Patients Perceive Straining as Burdensome Despite Limited Perceived Benefit in Constipation

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Abstract

Background and aim: Straining during bowel movements (BMs) is a common in constipation but has been relatively understudied as a modifiable therapeutic target. This study aimed to characterize patient perceptions, behaviors, and beliefs surrounding straining.

Methods: Adults with self-reported constipation were recruited nationwide via an online research panel (Cint USA, Inc.). Participants completed a structured survey assessing symptoms, toileting behaviors, attitudes, and beliefs related to straining.

Results: A total of 124 participants with self-reported constipation completed the survey with 54.0% reporting constipation for >1 year, and 8.1% met Rome IV criteria for chronic constipation. Straining in at least 25% of BM was common (49.6%), but only moderately effective (mean helpfulness score 5.3 ± 2.6 on 10-point scale). Despite only 23% expressing concern about long-term consequences of straining, 75.0% would like to reduce straining.

Participants who strained during more than 50% of BMs demonstrated significantly longer toilet sitting times ($p = 0.031$), were more likely to attempt defecation in the absence of urge ($p = 0.026$), and reported more acute physiological symptoms of straining ($p < 0.001$). No differences were observed between frequent and infrequent strainers in perceived helpfulness of straining or concern about long-term effects.

Conclusion: Straining is a common and burdensome symptom, but not very helpful in producing BM. Most participants showed interest in interventions to reduce straining. These findings highlight an important opportunity to advance treatment approaches that address straining as a modifiable component of constipation, informed by both psychological drivers and defecatory mechanics.

Key points

• Straining during bowel movements is common, affecting about half of people who say they have constipation even when they do not meet official diagnostic criteria (Rome IV).

• Even though many people strain, most feel it only helps a little. Those who strain more often experience more negative effects, without finding it any more helpful.

• While only about one in four people worry about long-term harm from straining, three out of four would like to strain less. This highlights an opportunity to help people change habits and behaviors around bowel movements.

Introduction

Constipation affects approximately 10–20% of the global population and is associated with substantial impairment in health-related quality of life and significant healthcare utilization [1], accounting for an

estimated 700,000 emergency department visits annually and remains one of the most common indications for gastroenterology referrals, accounting for 1.8–8 million annual outpatient visits [2]. Despite its high prevalence and societal burden, constipation remains a heterogeneous condition with variable symptom drivers and treatment responses.

Straining during defecation is a common compensatory behavior to initiate stool passage and is included as a core diagnostic criterion in both Rome and clinical definitions of constipation [3]. While occasional straining may be physiologic, frequent or prolonged straining is widely considered maladaptive and has been associated with adverse anorectal outcomes, including hemorrhoids, anal fissures, solitary rectal ulcer syndrome, and rectal prolapse [4]. Beyond structural complications, excessive straining may also reinforce maladaptive defecatory behaviors, disrupt rectoanal coordination, and perpetuate symptom chronicity. However, despite these risks, straining is rarely targeted as a primary therapeutic behavior.

Observational data suggest that straining is highly prevalent among individuals with constipation. In an Asian cohort, over 80% of patients with constipation reported regular straining [5], and similarly high rates have been observed survey-based studies of U.S. adults [6]. Straining is not only common in those with a physician diagnosis of constipation. Straining affects 81% of self-diagnosed patients and is identified as the most bothersome symptom by 32.4% in this group [7]. Self-diagnosed patients also demonstrate high rates of healthcare seeking behavior for their symptoms and experience significant gastrointestinal symptoms and diminished quality of life [8, 9], underscoring the clinical relevance of this population.

Current constipation management paradigms emphasize pharmacologic interventions targeted at stool frequency and consistency, with behavioral interventions largely reserved for patients with clearly defined defecatory disorders [10]. As a result, straining is frequently addressed indirectly rather than explicitly targeted as a modifiable behavior with independent clinical relevance for patients with self-reported constipation.

The aim of the current study is to characterize the burden of straining among the general population with self-identified constipation, including its duration, perceived helpfulness, and impact on daily activities and quality of life. Additionally, this study examines the association between frequent versus infrequent straining and constipation-related behaviors and beliefs.

Methods

Recruitment of Participants

Participants with self-reported constipation from across the US were invited to participate, with participants of 30 states enrolling in the study. Eligible participants were adults (aged 18 or older) residing in the U.S., able to read and write in English, and who self-identified as having constipation.

Exclusion criteria were major gastrointestinal surgery in the past year, cancer, inflammatory bowel disease, and opioid use longer than 3 months.

The sample was provided by Cint USA, Inc. (www.cint.com), a company that manages large online panels of adults who voluntarily enroll in various types of surveys. Recruitment was conducted by randomly emailing invitations to panel members who then had the option to choose whether to participate in the study. The highest number of participants were from the following states: Pennsylvania (n = 15), California (n = 12), Texas (n = 11) and Florida (n = 10).

Measures

Participants completed an online survey administered through Qualtrics software (Qualtrics, Provo, UT). The survey includes demographic information such as age, gender, race, and ethnicity, as well as the Rome IV Diagnostic Questionnaire items related to functional constipation [11]. In addition, extensive information was collected on symptoms, attitudes, beliefs, and behaviors related to straining and toileting habits. A sample of questions can be seen below: please see Appendix for the full questionnaire.

- Toileting behaviors: Frequency and types of behaviors during toileting (e.g., positioning, time spent on the toilet)
- Symptoms during bowel movements: Symptoms experienced during attempts to defecate (e.g., straining, incomplete evacuation)
- Beliefs and perceived impact: Beliefs regarding constipation and straining, including perceived benefits or harms (e.g., “Reducing straining benefits me”)
- Physician Diagnosis: Self-reported history of a medical diagnosis of constipation

These questions were developed and screened for face validity by the authors, including several experts on disorders of gut brain interaction (YL, LK, MvT). No other psychometric testing was performed as none of these questions included the measurement of a scale in which the validity and reliability of the items to measure an underlying construct needs to be shown.

To ensure response validity, quality control measures included attention (“Please select 'strongly agree' to show you are paying attention to this question”) and consistency checks (request to enter age at the beginning and end of the survey). All participants passed these checks.

Data Analysis

We performed descriptive analysis by generating means and standard deviation (for continuous variables) or frequency and percentages (for categorical variables). For this study, we dichotomized frequent straining as those who reported “straining or pushing very hard” to have a bowel movement for > 50% of their bowel movements. Although Rome IV applies > 25% as the cut off for diagnosis of

constipation, we used a higher cut off to identify those with more problematic straining behaviors. Differences in constipation related behaviors between those with and without straining were tested with independent t-tests for continuous variables and Chi2 tests for non-continuous variables

Ethics approval

The study was approved by the Cape Fear Valley Health IRB on 10/29/2024 and adhered to the 1964 Declaration of Helsinki. All participants provided consent for participation.

Results

Sample Characteristics

A total of 124 participants (60.5% female) completed the survey (see Table 1 for sample characteristics) with ages ranging from 19–74 years. Most participants were white, and of non-Hispanic ethnicity (See Table 1). Only 10 participants (8.1%) met Rome IV criteria for functional constipation and 1 in 4 consulted a primary care provider for their constipation, and 1 in 10 consulted a gastroenterologist, indicating this was largely a non-care seeking but symptomatic sample. The most common way this sample managed their constipation was by increasing water intake (84.7%).

Table 1
Participants Characteristic

Characteristic	Mean(SD) Or Frequency (%)
Age	Mean 40.8 (SD = 13.1)
Gender- Female	75 (60.5%)
Race	97 (78.2%)
White	22 (17.7%)
Black	
Ethnicity	113 (91.1%)
Non-Hispanic	
Rome IV Functional Constipation	10 (8.1%)
Care seeking	31 (25%)
Primary Care	10 (8.1%)
Gastroenterologist	
Constipation management	105 (84.7%)
Increase water intake	47 (37.9%)
Dietary changes	47 (37.9%)
Exercise	46 (37.1%)
Laxatives	

Straining Frequency and Duration

Straining was common, with 61 people (49.2%) reporting straining during at least one out of four bowel movements and 24 people (19.3%) reporting frequent straining (> 50% of bowel movements). The average duration of straining varied widely from 0 to 60 minutes (Mean = 5.70 minutes, SD = 7.31) with frequent strainers reporting an average duration of over 3 minutes longer (see Table 2). On a scale of 1 (not helpful) to 10 (very helpful) of how helpful straining is to have a bowel movement, participants rated a mean score of 5.27 (SD = 2.59) with no difference between frequent and non-frequent strainers (see Table 2). Of note, most participants (n = 98, 79.1%) believed that it is important to have at least one BM a day, with no difference between frequent and non-frequent strainers (78% vs 83.3%, p = 0.420).

Table 2
Frequent strainers vs not frequent strainers on straining duration and helpfulness

Duration of straining (minutes)	**Frequent strainers** **Mean (SD)** **or** **N(%)**	**Not frequent Strainers** **Mean(SD)** **or** **N(%)**	**P-value**
	8.29(7.2)	**5.08(7.2)**	**0.026**
Straining is helpful (0–10 scale)	5.67(2.7)	5.18(2.6)	0.205
Concerned about long-term effects of straining? (Yes/No)	8 (33.3%)	21(21.0%)	0.140

Concerns about Long-term Effects of Straining

More frequent strainers were concerned about long term effects of straining than non-frequent strainers [Table 2], but this difference was not statistically significant. More than one in three participants (n = 46; 37.1%) indicated that constipation influenced their daily life. On an open-ended question, 25 (20,16%) participants reported worrying about long-term consequences such as hemorrhoids, stroke or increased blood pressure, prolapse and other bowel injury.

Toileting Behaviors and Straining

Several toileting behaviors associated with constipation were evaluated. The two most common toileting behaviors observed were spending “more than 6 minutes on the toilet” (66.1%), and “avoiding public restrooms to have a BM” (33.9%) (See Table 3). Compared to non-frequent strainers, those who strain frequently were more likely to sit over 6 minutes on the toilet, attempt a BM without an urge, and lean forward on the toilet (see Table 3).

Table 3
Toileting Behaviors in frequent strainers vs not frequent strainers

Behaviors	Frequent strainers N(%)	Non-frequent strainers N(%)	p-value
Attempting BMs without an urge[τ]	6 (25%)	7(7.0%)	0.026
Spending more than 6 min on toilet	21 (87.5%)	61 (25%)	0.031
Avoiding public/work/school restrooms to have BM[τ]	10 (41.6%)	32 (32.0%)	0.400
Leaning forward[δ]	7(29.2%)	18(18.0%)	0.008
Raise legs – squatty potty or footstool[δ]	6 (25.2%)	11(11.0%)	0.208
Squat or hover over the toilet[δ]	2 (8.3%)	5.0 (5.0%)	0.199
Digital disimpaction[δ]	2(8.3%)	4 (4.0%)	0.208
[τ]Number of participants reporting these behaviors "most of the time" or "Always".			
δ Number of participants reporting these behaviors in at least 50% of BM			

Physiological symptoms in response to straining

Although straining was common, fewer than 10% of subjects reported the following physiologic symptoms potentially associated with excessive or prolonged straining "most of the time" or "always": Lightheadedness (n = 10, 8.0%), sweating (n = 11, 8.9%), headache (n = 10, 8.0%), or rectal bleeding (n = 6, 4.8%). Compared to non-frequent strainers, frequent strainers reported these symptoms more often: lightheadedness (20.9% vs 5.0%, $p < 0.001$), sweating (25.0% vs 5.0%, $p < 0.001$), headache (2.05% vs 4.0%, $p < 0.001$), and rectal bleeding (8.4% vs 4%, $p < 0.003$).

Beliefs and Interests in Improving Straining Behavior

Most participants expressed interest in ways to manage constipation (n = 73, 58.9%), with the majority of frequent strainers interested (n = 22, 91.7%) versus half of non-frequent strainers (51, 51.0%; $p = 0.003$). Three quarters of the participants (n = 93) strongly or somewhat agreed that reducing straining would be beneficial to them, with no difference between the two groups (83.3% vs 73%, $p = 0.114$).

Discussion

This study provides an insight into the real-world experiences of individuals with self-reported constipation, with a particular emphasis on straining during bowel movements. Nearly half of participants reported straining during at least one in four bowel movements, underscoring straining as a highly prevalent and burdensome feature of constipation.

Straining is common in non-chronically constipated individuals as well and in healthy samples, straining (for more than 25% of bowel movements) was reported by 4.3–47% of people [12–14]. Similarly, in our current study, only a minority of participants met the Rome IV criteria for functional constipation or visited clinicians for their constipation symptoms. However, they reported significant symptoms and impact on daily life. This aligns with a recent global study of over 54,000 adults with approximately 7.4% reporting constipation symptoms associated with reduced quality of life and increased healthcare utilization, even in the absence of a formal Rome IV criteria [15]. Cumulatively, these findings emphasize the need for targeted interventions for patients whose symptom burden of constipation driven by potentially modifiable behaviors is not fully captured by existing diagnostic frameworks.

In our study, individuals who reported straining during at least 50% of bowel movements differed from less frequent strainers by demonstrating greater tolerance of prolonged toileting behaviors, including spending longer periods on the toilet, attempting defecation in the absence of urge, and experiencing acute physiological effects consistent with excessive straining, such as lightheadedness and rectal bleeding. Notably, frequent strainers did not perceive straining as more effective, nor did they report greater life impact or concern about long-term consequences. This dissociation between behavior and perceived benefit suggests that frequent straining is not driven by expectations of improved bowel output, but rather by behavioral persistence and habituation to discomfort.

These findings suggest that straining may function as a maladaptive learned behavior, reinforced by urgency to evacuate or intolerance of incomplete evacuation rather than objective benefit. This has important implications for clinical counseling: interventions that draw attention to the immediate adverse effects of straining may be more effective in modifying behavior. Despite evidence that posture modifications such as leaning forward, squatting, and using a footstool have been shown to reduce straining during constipation by improving posture and enhancing bowel movement efficiency [16–18], these strategies were infrequently adopted in this cohort. In contrast, maladaptive toileting behaviors, including prolonged toilet sitting and avoidance of defecation outside the home, were common. Together, these patterns highlight an opportunity to address straining through targeted behavioral education focused on defecatory mechanics, urge responsiveness, and time-limited toileting, perhaps even in the primary care setting given the high prevalence of patients with occasional constipation symptoms who may not seek care from a gastroenterologist.

Importantly, patient receptivity to behavioral intervention was high: over half of participants expressed interest in strategies to reduce straining, and most agreed that minimizing straining would be beneficial. Recently, a randomized controlled trial compared specialist-led habit training alone versus habit training combined with visual biofeedback in adults with chronic constipation and found similar improvements in quality of life across interventions, suggesting structured habit training may be as effective as more complex biofeedback-augmented approaches [19]. These findings underscore the importance of further refining and personalizing habit-based learning strategies so that behavioral training can be more effectively tailored to individual patient patterns. The readiness of our cohort to engage supports the need for the development of targeted, low-risk interventions that emphasize behavioral retraining

targeted at straining, with the potential to improve bowel habits and quality of life even among individuals who do not meet traditional diagnostic criteria for chronic constipation.

This study has a few limitations. We used a national sample, which supports generalizability, but the sample size was still relatively small. The sample included people with self-identified constipation, but few met the Rome IV criteria for constipation, and the majority had not sought care for their constipation. However, this further highlight that occasional constipation and associated straining behavior may be common among those without an official Rome diagnosis as we used a more stringent criteria of straining (> 50% of BMs for frequent strainers) compared to the Rome criteria. Future studies among patients who meet Rome IV criteria are needed to examine if straining is different in this group of patients. Our study also relied on self-reported symptoms, which may not always be accurate. The cross-sectional nature of this study did not allow us to capture any cause and effect between straining, toileting behaviors, outcomes, and impact on patients' lives and restricts the ability to assess long-term trends.

This study demonstrates that straining is a clinically meaningful burden across a broad population of individuals with self-reported constipation, including those who do not meet formal diagnostic criteria. Despite its association with maladaptive toileting behaviors and potential complications, many individuals appear to underestimate the impact of straining on daily functioning and quality of life; yet, most expressed interest in strategies to reduce straining. These findings highlight an important opportunity to advance behavioral and habit-based approaches that address straining as a modifiable component of constipation, informed by both psychological drivers and defecatory mechanics. Future work should focus on refining and explicitly personalizing psychoeducational and behavioral interventions such as posture optimization, urge-responsive toileting, and time-limited defecation attempts in patients with both occasional and undifferentiated chronic constipation.

Declarations

Competing Interests

LK: Consultant to Ardelyx, Abb Vie, Eli Lilly, Pfizer, and Trellus Health, research funding Ardelyx. YL: Research funding Ardelyx. SG: Equity ownership and executive role Coprata Inc. MvT: Consultant Neuraxis

Conflict of Interest:

LK: Consultant to Ardelyx, Abb Vie, Eli Lilly, Pfizer, and Trellus Health, research funding Ardelyx. YL: Research funding Ardelyx. SG: Equity ownership and executive role Coprata Inc. MvT: Consultant Neuraxis

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Author Contribution

All authors contributed to the study conception and design. Material preparation, and data collection were performed by Theo Hutt and Dr van Tilburg. Data analysis were performed by Dr van Tilburg. The first draft of the manuscript was written by Dr Bhatt, Dr Radhakrishnan, and Dr Oo. All authors commented on previous version of the manuscript and read and approved the final manuscript.

Data Availability

Data is available from the authors upon reasonable request.

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