

# Understanding the Cost of Chronic Idiopathic Constipation: Evidence From the BURDEN-CIC (Better Understanding and Recognition of the Disconnects, Experiences, and Needs of Patients With Chronic Idiopathic Constipation) Study

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## Introduction

- Chronic idiopathic constipation (CIC) is a common functional gastrointestinal (GI) disorder with prevalence ranging from 2% to 27% in adults, averaging ~14%, and generally increasing with age.<sup>1,2</sup>
- Despite updated Rome IV diagnostic criteria,<sup>3</sup> where functional constipation includes patient-based symptoms, there remain no widely adopted diagnostic criteria.
- The treatment of constipation traditionally begins with exercise, increased dietary fiber and supplementation with bulking agents, and bowel habit training. However, often only partial relief is obtained, with many patients using laxatives on a regular basis without consulting a physician.<sup>4</sup>
- While literature exists on the direct cost of managing patients with CIC, data regarding reduced health-related quality of life (HRQL), productivity impact, and economic burden associated with CIC is limited, which together underscore the unmet treatment needs of patients.

## Objective

- To assess the impact of CIC on HRQL, productivity, personal activities, and healthcare costs in a representative sample of the US population to further define the treatment needs of patients and their healthcare providers (HCPs).

## Materials and Methods

- The BURDEN-CIC Study was designed to better understand the management pathway, overall satisfaction in care, and unmet treatment needs for patients with CIC, from the perspectives of both the patient and the HCP.
- BURDEN-CIC utilized two online surveys, one for patients and another for HCPs, to evaluate satisfaction with traditional, OTC, and current prescription therapies in order to further understand the pathways for care and treatment patterns for patients diagnosed with CIC in the United States.
- The BURDEN-CIC Study gained additional insights into presenting symptomatology, impact of CIC on activities of daily living, and perceptions of current CIC treatments.
  - Survey questions for the patient and HCP questionnaires were independently reviewed and developed by four GI-focused HCPs, and the patient survey was approved by the Western Internal Review Board.

### Patient Survey

- The BURDEN-CIC Study utilized Gfk's Knowledge Networks panel to identify patients suffering with CIC.
- Enrolled panelists completed an online, self-administered, 68-question survey.
  - The answer types included dichotomous, multiple-choice, and open-ended questions, as well as Likert rating scales (1–5 or 1–7).
- The panel sample was normalized (weighted) to correct for any biases in sampling or non-response, as well as to reflect current US Census demographic benchmarks.
  - Statistical weighting adjustments were made to the data to offset any known selection deviations.
  - Sample design weights were calculated based on specific design parameters.

### Inclusion and Exclusion Criteria

- Adult patients were eligible to participate if they:
  - Were diagnosed with constipation (either chronic constipation [CC] or chronic idiopathic constipation [CIC]), or
  - Experienced CIC, as per Rome IV criteria.
- Patients were not eligible to participate in BURDEN-CIC if they had irritable bowel syndrome, inflammatory bowel disease, diverticulitis, diverticulosis, spastic or irritable colon, celiac disease, or cancer of the GI tract or if they had regularly taken an opioid (narcotic) within the past 3 months.

### Healthcare Professional Survey

- The survey was targeted to gastroenterologists (GEs), primary care physicians (PCPs), nurse practitioners (NPs), and physician assistants (PAs) who actively treat patients with CIC.
- To be eligible, each HCP must see ≥50 patients per month and be actively managing ≥15 patients with CIC per month.

### Statistical Analysis

- A standardized statistical analysis approach was undertaken using modeling techniques to characterize the nature and strength of relationships observed between data elements.
- A subanalysis of patients with more severe CIC was conducted in respondents who had: (1) productivity impacted by CIC symptoms (≥1 day in the past month), OR (2) personal activity impacted by CIC symptoms (≥1 day in the past month), OR (3) an emergency room visit for CIC-related symptoms (≥1 visit in the past year), OR (4) a current prescription treatment for CIC (≥1 prescription for linaclotide, lubiprostone, or lactulose).

## Results

Table 1a. CIC Patient Demographics and Baseline Characteristics

	Diagnosed Patients N=1035	Undiagnosed Patients N=188	Total Patients N=1223
	Normalized Sample N=920	Normalized Sample N=211	Normalized Sample N=1131
<b>Patient Demographics and Baseline Characteristics</b>			
Gender (n, %)			
Female	635 (69.0%)	150 (71.1%)	785 (69.4%)
Age, yrs, mean (SD)	48.2 (18.0)	52.7 (18.0)	49.1 (18.0)
Age at Symptom Onset, yrs, mean (SD)	44.2 (17.5)	52.0 (18.5)	44.9 (17.7)
Race / Ethnicity (n, %)			
White / non-Hispanic	568 (61.7%)	169 (80.1%)	737 (65.2%)
Black / non-Hispanic	131 (14.2%)	16 (7.6%)	147 (13.0%)
Mixed / non-Hispanic	27 (2.9%)	6 (2.8%)	33 (2.9%)
Other / non-Hispanic	36 (3.9%)	1 (0.5%)	37 (3.3%)
Hispanic	158 (17.2%)	19 (9.0%)	177 (15.6%)
Highest Education Level (n, %)			
High School – no graduation	64 (7.0%)	16 (7.6%)	80 (7.1%)
High School – diploma / GED	257 (27.9%)	53 (25.1%)	310 (27.4%)
College – no graduation	240 (26.1%)	55 (26.1%)	295 (26.1%)
College – graduation	257 (27.9%)	57 (27.0%)	313 (27.7%)
College – post-graduate	102 (11.8%)	31 (14.7%)	132 (11.7%)
<b>Current Treatment to Manage Symptoms of CIC</b>			
Lifestyle Changes (n, %)			
General diet changes	295 (34.2%)	42 (23.3%)	337 (32.3%)
Increased activity and exercise	211 (24.5%)	42 (23.3%)	253 (24.3%)
Meditation / yoga / relaxation techniques	55 (6.4%)	10 (5.6%)	65 (6.2%)
Gluten-free diet	42 (4.0%)	6 (3.3%)	48 (4.6%)
FODMAP diet	2 (0.2%)	3 (1.7%)	4 (0.4%)
OTC Treatment Remedies (n, %)			
Fiber	277 (32.1%)	44 (24.4%)	320 (30.7%)
Stool softeners	226 (26.2%)	34 (18.9%)	260 (25.0%)
Non-prescription laxatives	152 (17.6%)	27 (15.0%)	179 (17.2%)
Probiotics / prebiotics	185 (21.5%)	27 (15.0%)	213 (20.4%)
Non-prescription stimulant laxatives	150 (17.4%)	12 (6.7%)	163 (15.6%)
Other	38 (4.4%)	11 (6.1%)	49 (4.7%)
Prescription Therapy (n, %)	163 (18.9%)	2 (1.1%)	165 (15.8%)

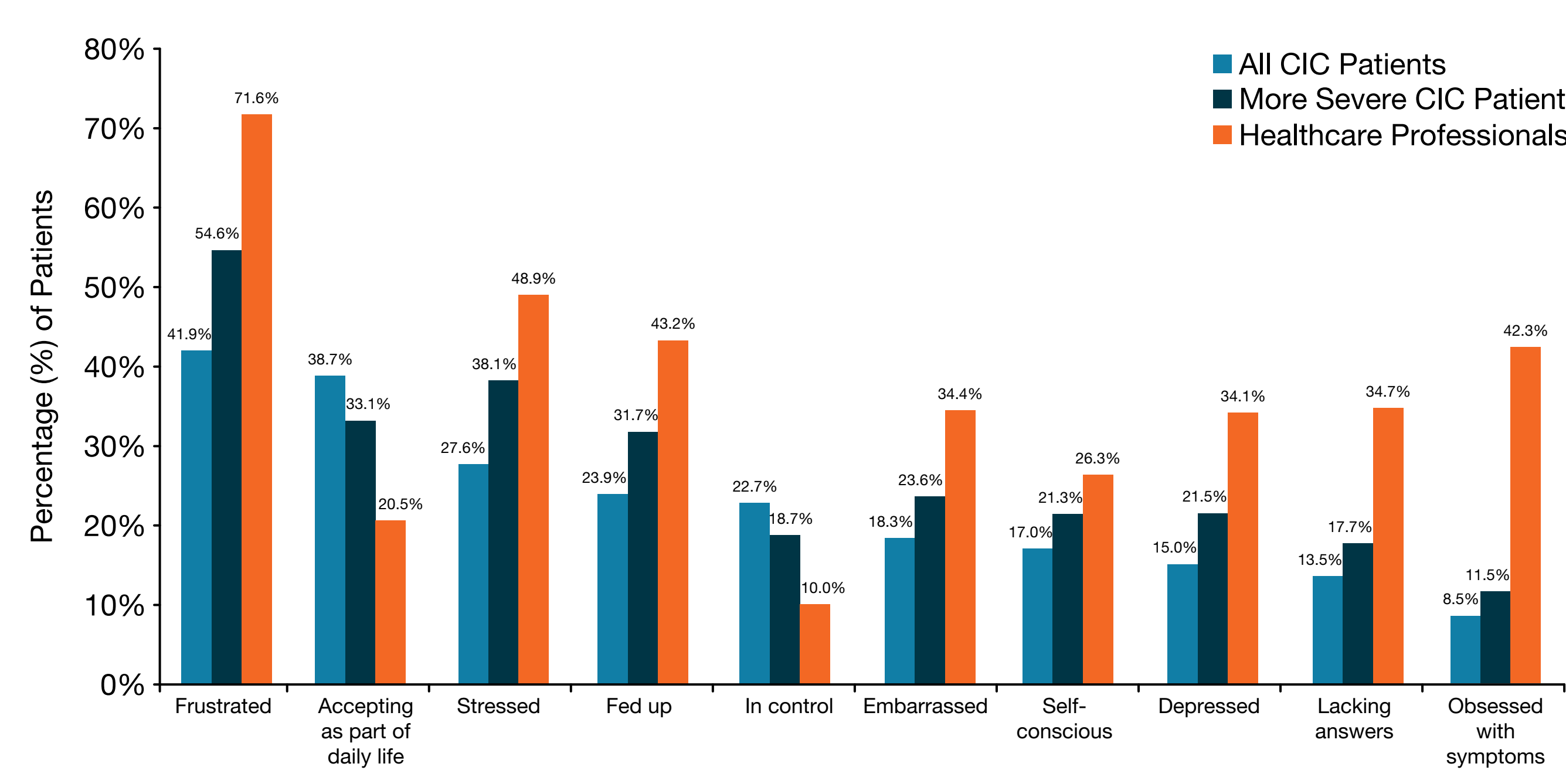
- Table 1a. CIC Patient Demographics and Baseline Characteristics
- A total of 27,709 panelists completed the Knowledge Networks Panel screener with 1223 patient respondents qualifying for and completing the survey, resulting in a normalized sample of 1131 patients with CIC.
  - The majority of patients were female and Caucasian, with a mean age of 49.4 years (Table 1a).
  - Patients had experienced CIC symptoms for a median of 4 years (mean age at symptom onset, 44.9 years).
  - The majority of patients had been diagnosed with CIC; however a small percentage of respondents were not formally diagnosed but rather fit the Rome IV criteria for CIC and were termed the "undiagnosed" population (18.7%).

Table 1b. Healthcare Professional Demographics

	Gastroenterologist N=155	Primary Care Physician N=76	Nurse Practitioner N=50	Physician Assistant N=50
<b>Gender (n, %)</b>				
Male	130 (83.8%)	57 (75.0%)	4 (8.0%)	17 (34.0%)
Age, yrs, mean (SD)	48.8 (8.3)	50.7 (5.9)	48.8 (7.6)	44.4 (9.0)
Years in Clinical Practice, yrs, mean (SD)	17.3 (7.4)	20.2 (6.1)	15.0 (5.5)	16.2 (7.2)
Time Spent in Direct Patient Care, %, mean (SD)	96.5 (5.1)	97.6 (4.2)	97.0 (5.6)	96.4 (5.6)
<b>Practice Setting (n, %)</b>				
Community practice	96 (61.9%)	42 (55.3%)	17 (34.0%)	20 (40.0%)
Solo practice	32 (20.6%)	24 (31.6%)	15 (30.0%)	24 (48.0%)
Hospital-based practice	14 (9.0%)	6 (7.9%)	9 (18.0%)	5 (10.0%)
Academic practice	12 (7.7%)	2 (2.6%)	4 (8.0%)	–
<b>Medical Specialty (n, %)</b>				
Primary care / general practice	–	76 (100.0%)	19 (38.0%)	17 (34.0%)
Gastroenterology	155 (100.0%)	–	19 (38.0%)	26 (52.0%)
Internal medicine	–	–	9 (18.0%)	6 (12.0%)
<b>Practice Location (n, %)</b>				
City	52 (33.5%)	17 (77.3%)	17 (34.0%)	18 (36.0%)
Suburban	89 (57.4%)	44 (57.9%)	21 (42.0%)	18 (36.0%)
Rural	14 (9.0%)	15 (19.7%)	12 (24.0%)	17 (34.0%)

- A total of 331 HCPs completed the online survey.
  - The majority of HCPs were male (62.8%), had been in clinical practice for more than 17 years (mean, 17.5 years), and spent over 95% of their time in direct patient care (mean, 96.8%) (Table 1b).

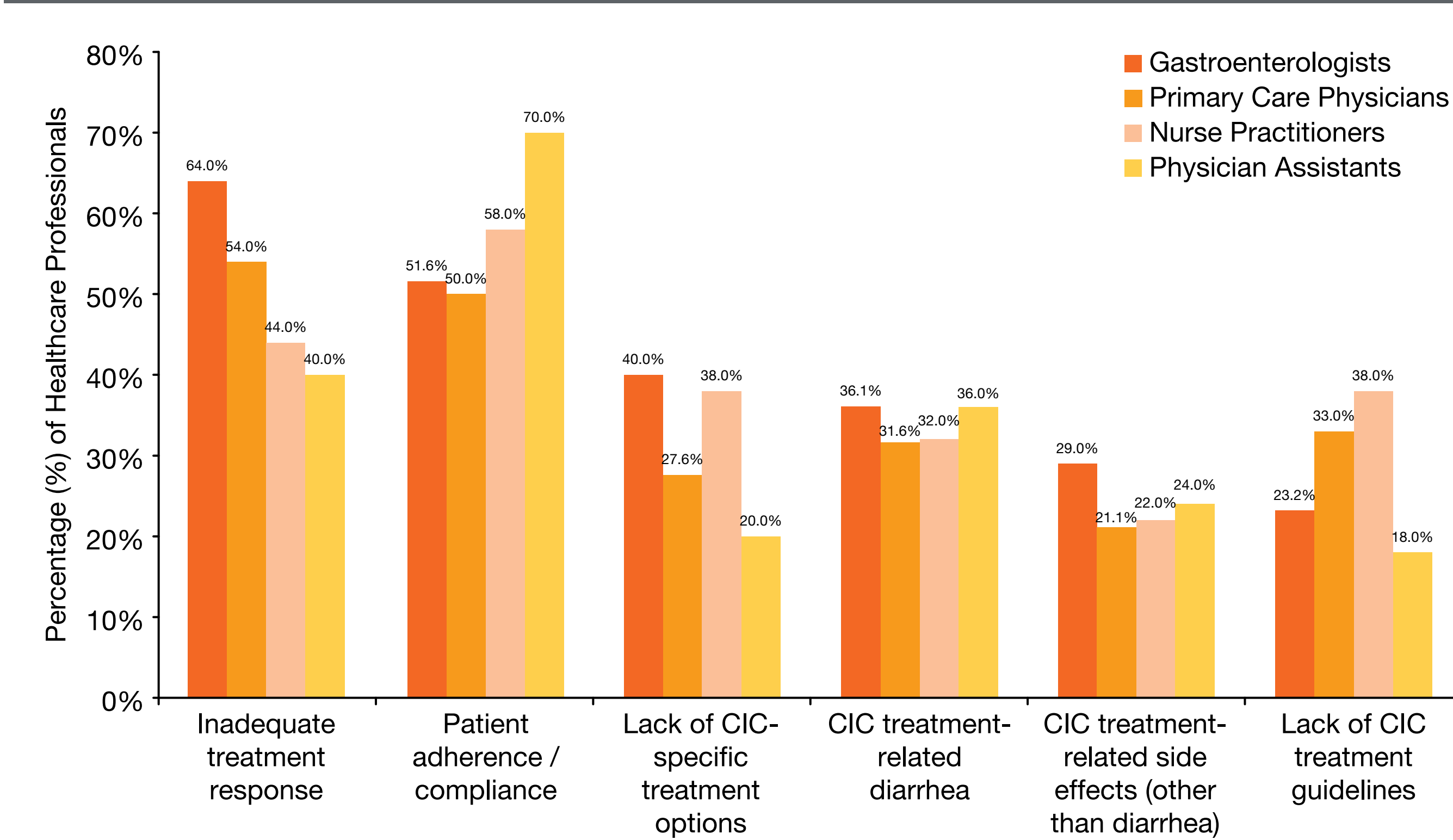
Figure 1. Common Terms Used to Express How Patients With CIC Feel About Their Disorder



Respondents could choose more than one option.

- Patients used many terms to describe how they felt about their CIC, with many indicating negative emotions (Figure 1).
  - The most common terms were "frustrated" (41.9%), "accepting as part of daily life" (38.7%), "stressed" (27.6%), "fed up" (23.9%), and "in control" (22.7%).
- Interestingly, many HCPs believed that their patients were "frustrated" (71.6%), "stressed" (48.9%), and "fed up" (43.2%), and thought their patients were "obsessed with symptoms" (42.3%) and "lacking answers" (34.7%).
  - Only 10.0% of HCPs thought their patients were "in control."
- While patients are frustrated with CIC, they are also accepting of their condition (ie, they have given up), which is not well recognized by HCPs.

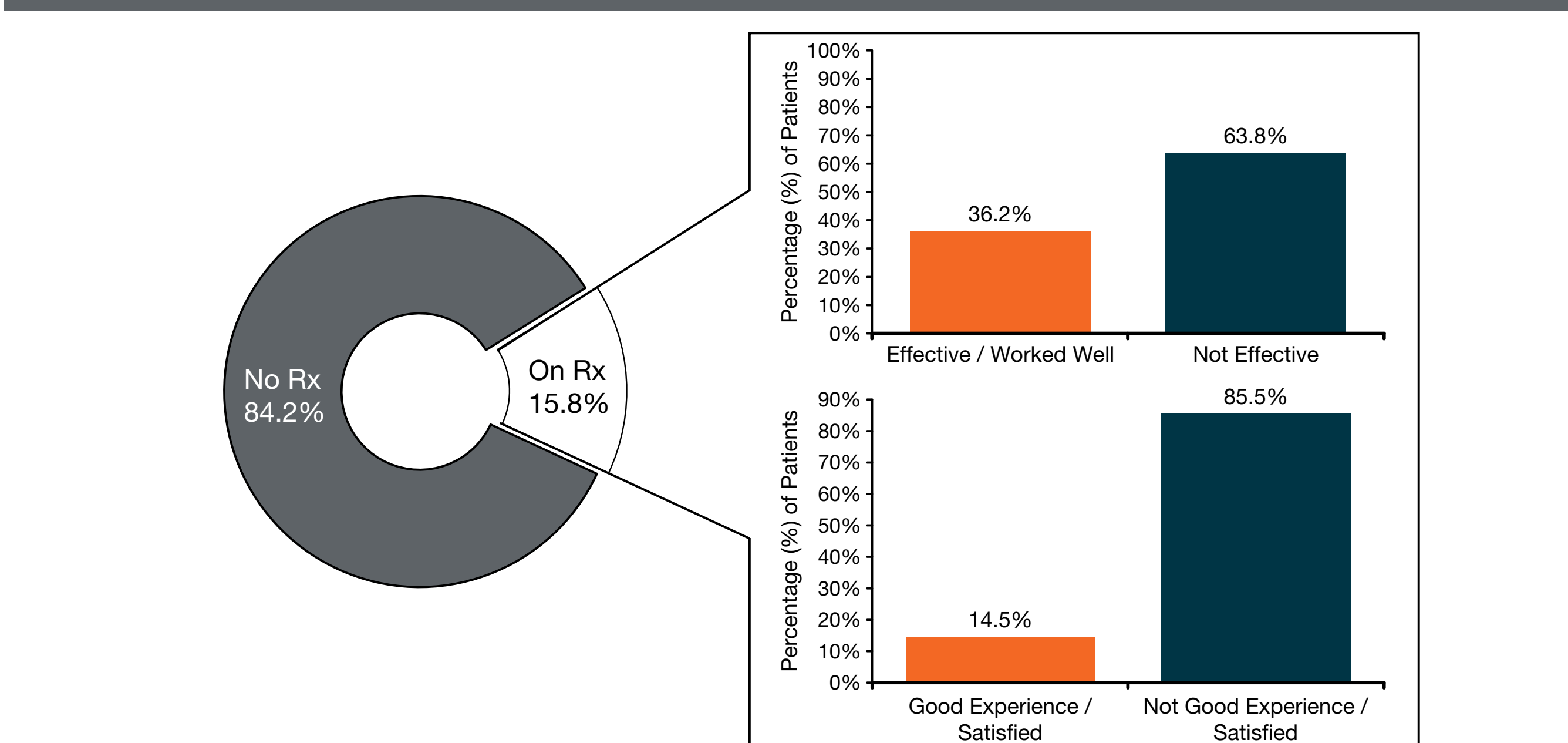
Figure 2. Greatest Perceived Challenges by Healthcare Professionals to the Management of Patients With CIC



Respondents could choose more than one option. \*None of the above" was indicated by 1.3% of gastroenterologists, 2.6% of primary care physicians, 8.0% of nurse practitioners, and 4.0% of physician assistants.

- Despite various OTC and prescription therapies, all HCPs indicated that CIC is a challenging disorder to manage (Figure 2).
- HCPs specifically indicated that managing treatment-related diarrhea was challenging, believing that it "prevents patients from enjoying daily activities" (41.7%), causes patients to "travel less" (40.5%), and results in "embarrassment due to having to use the bathroom frequently" (36.6%).
- Only 29.8% of all CIC patients and 31.8% of more severe CIC patients who experienced treatment-related diarrhea agreed with the statement that "diarrhea is an acceptable outcome of taking my medication."
- In line with patient perceptions, HCPs did not agree that diarrhea was a sign that the prescription treatment was working (62.6%), and did not agree that diarrhea was an acceptable treatment outcome (63.4%).
- The majority of all CIC patients reported their HCP initially recommended general diet changes (56.8%), increasing daily activity/exercise (41.4%), continuing on their current OTC laxative (23.2%), or starting a prescription CIC treatment (22.3%).

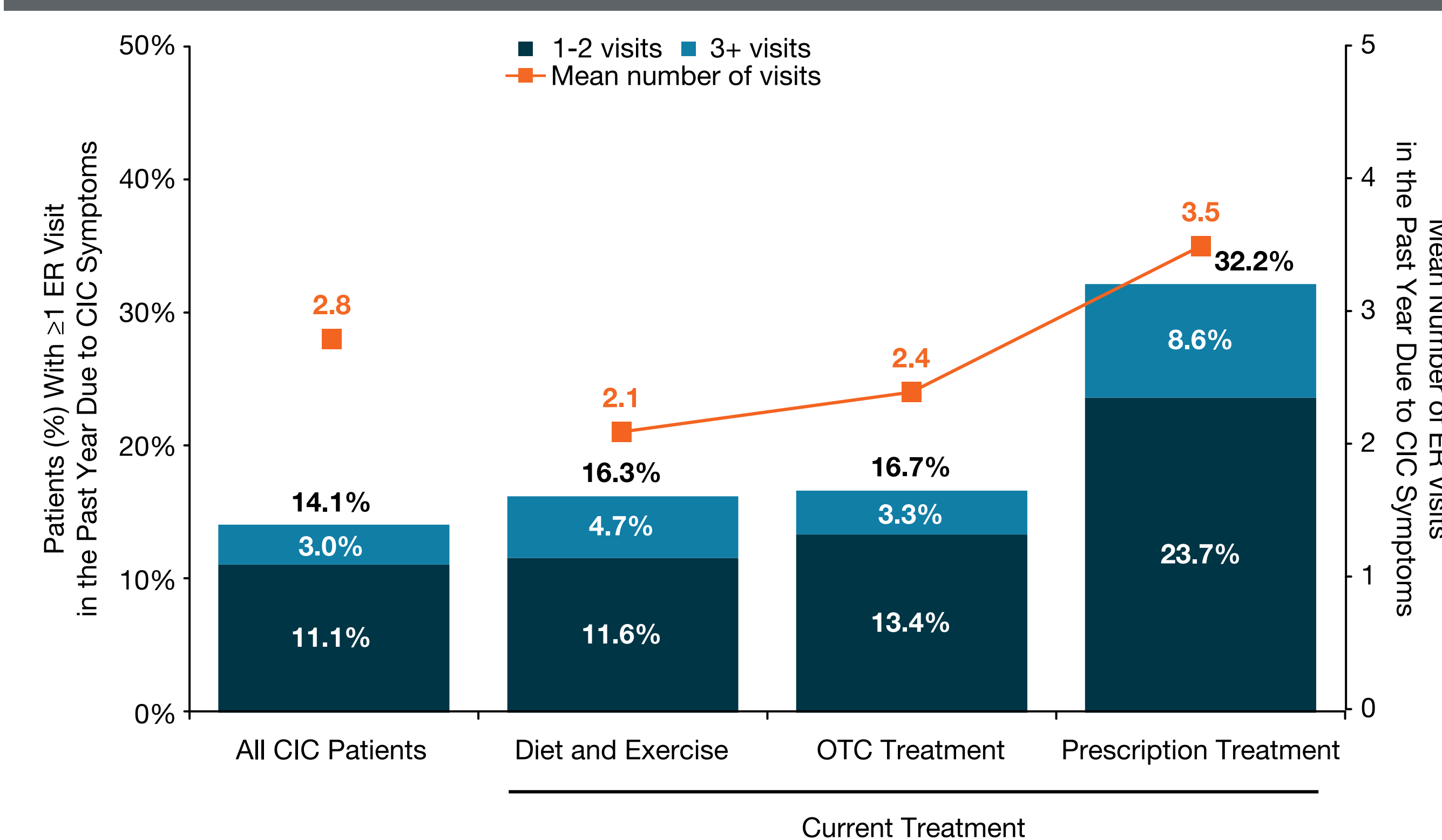
Figure 3. Experience With Current Prescription Therapies for the Treatment of CIC



Respondents answered in an open-ended format. Rx=prescription.

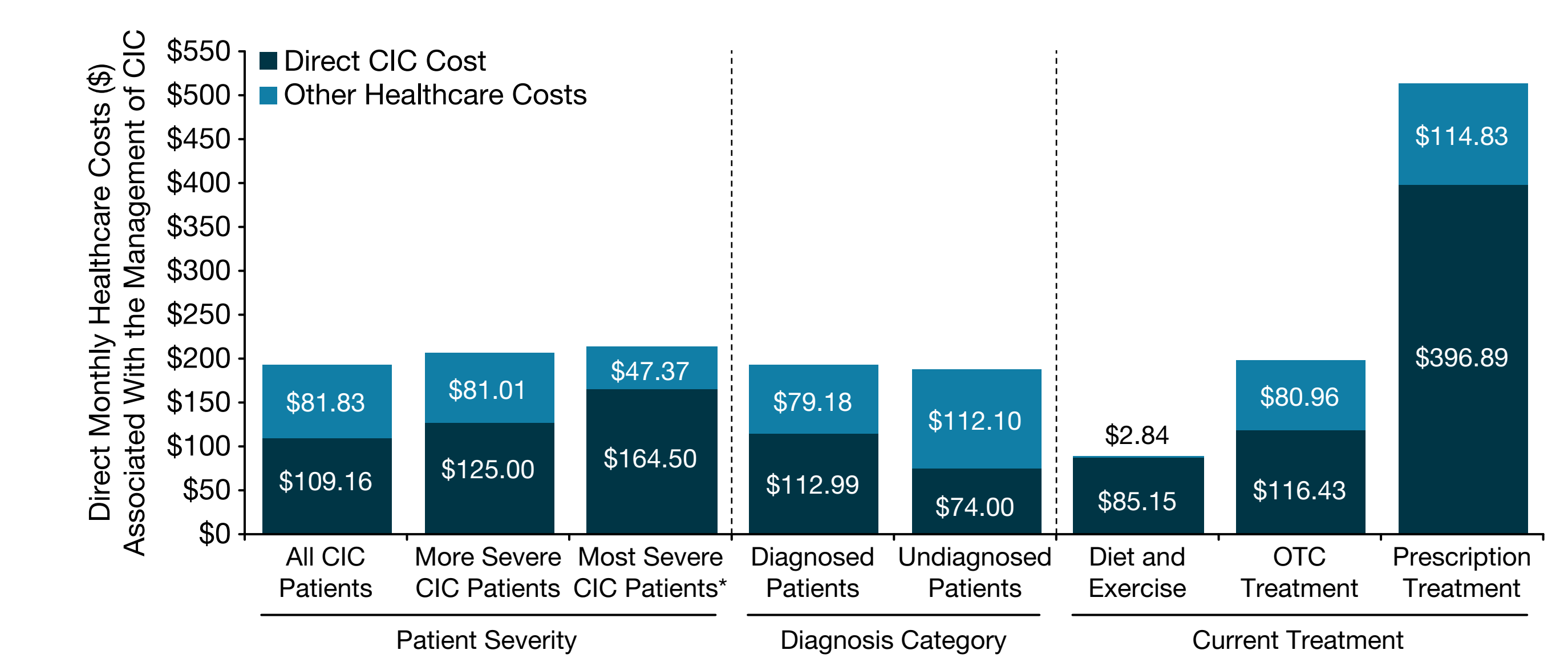
- Only 15.8% of all CIC patients indicated they were currently taking a prescription treatment for their CIC (Figure 3).
- The most common negative experiences reported by patients were "general side effects" (19.7%), "treatment-emergent diarrhea" (8.6%), "poor efficacy" (5.9%), and "loses efficacy" (5.9%).
- The majority of patients with CIC (56.6%) felt that a prescription treatment should work within the first 24 hours after the first dose with 72.5% reporting satisfaction if the prescription treatment worked with 24 hours of the first dose.
- Diarrhea was the most common side effect noted by 26.3% of CIC patients who discontinued their prescription treatment.

Figure 4. Incidence and Mean Number of Emergency Room (ER) Visits Due to CIC Symptoms in the Past Year in Patients With CIC



- Over the total CIC population, 14.1% had ≥1 emergency room (ER) visit in the past year which was directly associated with their CIC symptoms, with an average of 2.8 ER visits in the past year (Figure 4).
- In patients taking a prescription CIC treatment, 32.2% reported that despite their current treatment they had visited an ER in the past year due to CIC symptoms, with an average of 3.5 visits in the past year.

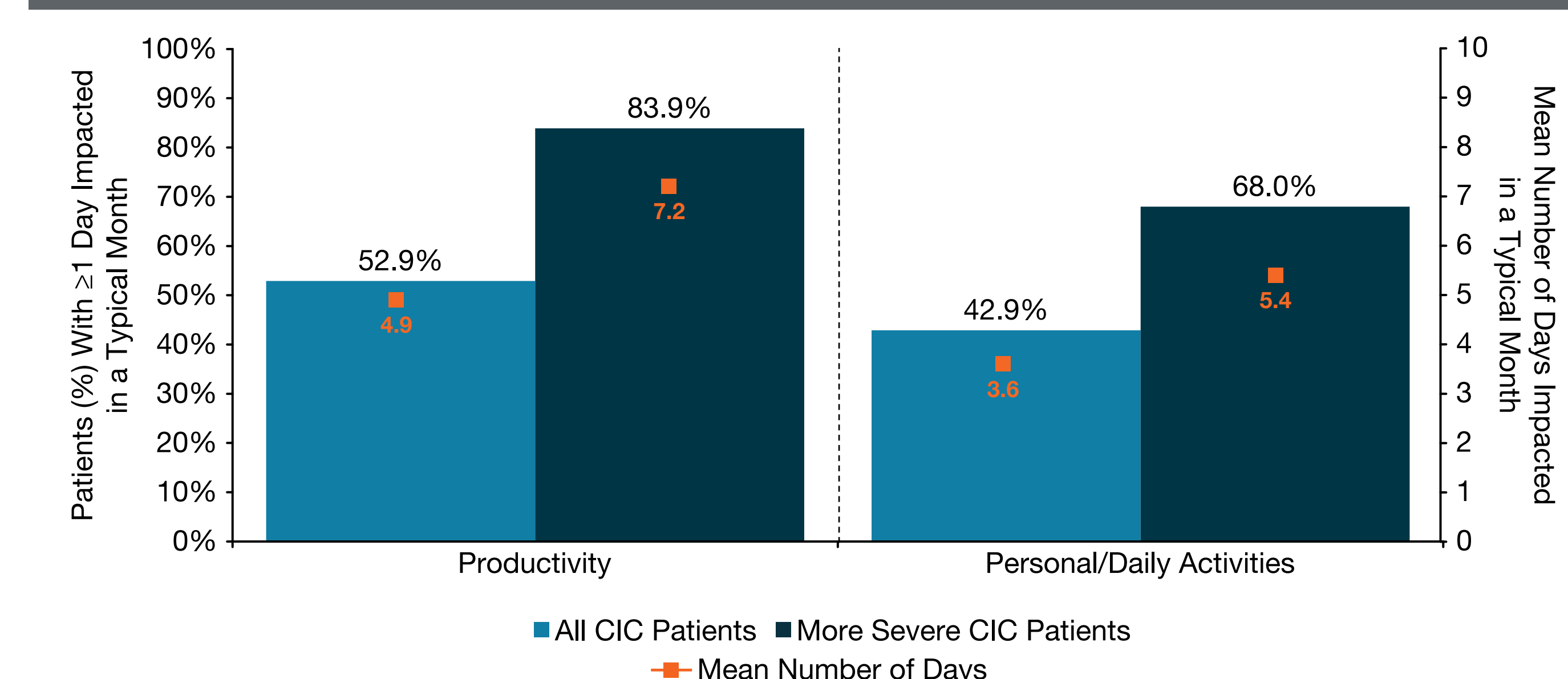
Figure 5. Monthly Healthcare Costs Directly Associated With the Management of CIC Symptoms



\*Includes patients who fulfilled all of the "more severe" CIC criteria.

- Of those who had out-of-pocket healthcare expenditure costs, the majority of average monthly health costs were spent on direct care for CIC (Figure 5).
- Overall healthcare costs increased with the severity of CIC, and patients with most severe CIC spent 77.6% of their health costs on direct CIC care.
- Notably, the average direct CIC cost for patients currently prescribed a medication for CIC was approximately 3–4 times higher than the other subgroups.
  - Of these patients, 71.1% indicated that they were not currently enrolled in a manufacturer-sponsored patient assistance program helping to cover out-of-pocket costs for their CIC medication, and 9.9% indicated that they were "not sure" if they were enrolled in such a program.

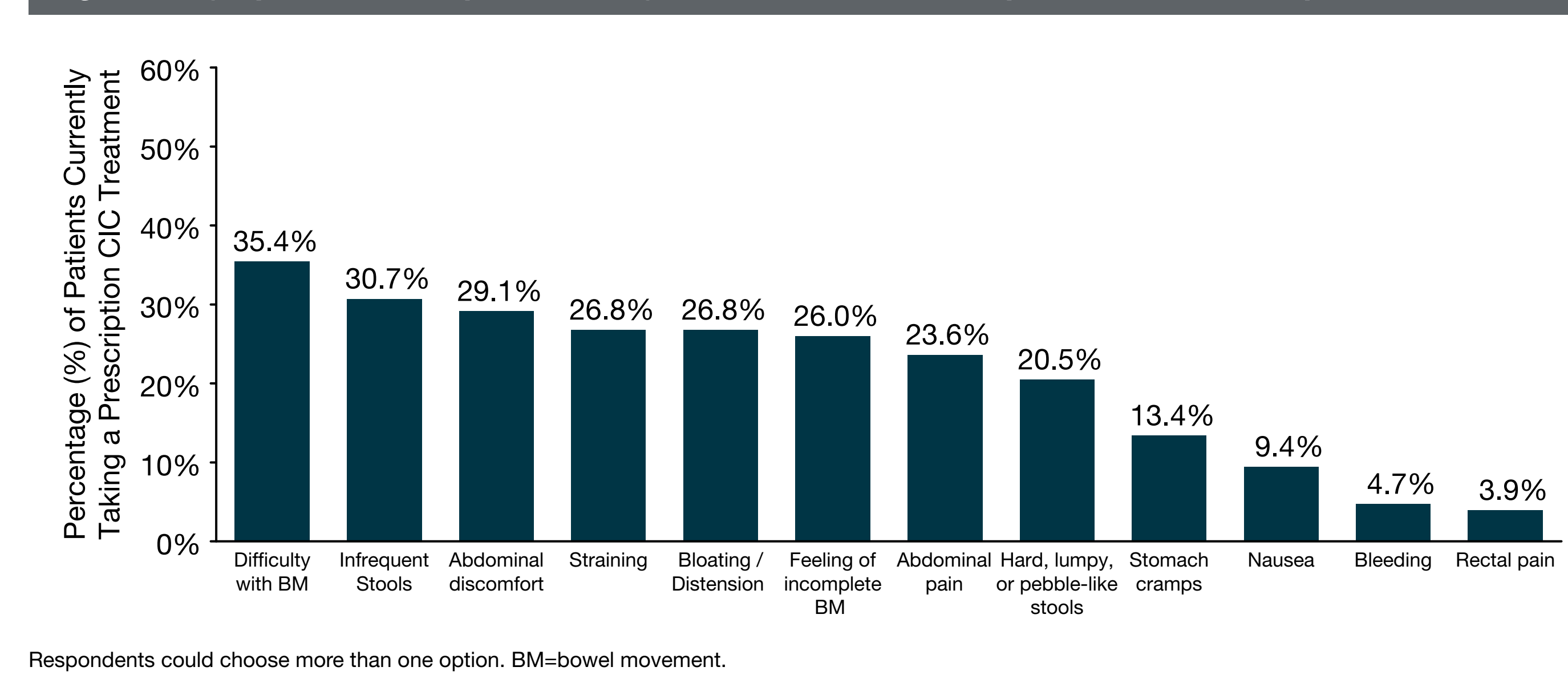
Figure 6. Incidence and Mean Number of Days With Productivity Impacted Due to CIC Symptoms in a Typical Month in Patients With CIC



Productivity includes performing at work/school or doing household chores, etc. Personal/daily activities include participating in a party, sporting event, family activity, or hobby, etc.

- A total of 60.7% of all CIC patients and 76.2% of more severe CIC patients reported that their symptoms were bothersome and impacted QoL.
- A large percentage of CIC patients, including more severe CIC patients, indicated that CIC symptoms interfered with productivity and/or personal activity ≥1 day/month (Figure 6).
- Patients who indicated that their CIC symptoms impacted their productivity lost an average of 2.1 work days/month.

Figure 7. Symptoms Still Experienced by Patients With CIC Despite Current Prescription Treatment



Respondents could choose more than one option. BM=bowel movement.

- Despite using a prescription treatment, 85.5% reported a wide variety of residual CIC symptoms indicating that patients are not being adequately treated (Figure 7).

## Conclusions

- The BURDEN-CIC Study confirmed the significant physical, psychosocial, and medical toll of CIC symptomatology, including stress and embarrassment associated with CIC and CIC-treatment-associated diarrhea.
- Patients with CIC have a reduced overall QoL, with significant impairments in productivity and personal activities.
- Direct and indirect costs associated with the management of patients with CIC are high, imposing an economic burden on both patients and patients' employers (ie, absenteeism and presenteeism).
- CIC patients and HCPs were frustrated and not fully satisfied with currently available treatment options for CIC, primarily because of side effects and lack of efficacy.
- CIC patients were discouraged and felt there was little else that could be done and have become accepting of the limitations of their disorder.
- A substantial unmet need exists for treatments to effectively alleviate and manage CIC symptoms.

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