

Management of chronic constipation in general practice

M. Bellini · D. Gambaccini · S. Salvadori · C. Tosetti ·
M. T. Urbano · F. Costa · P. Monicelli · M. G. Mumolo ·
A. Ricchiuti · N. De Bortoli · S. Marchi

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Abstract

Background Chronic constipation is often diagnosed and treated by general practitioners (GPs). The aim of the study was to evaluate the management of constipation by a cohort of Italian GPs.

Methods Over the course of 1 month, 41 GPs recorded tests and therapies suggested to patients complaining of chronic constipation. They were classified according to the Rome III criteria as constipated irritable bowel syndrome (C-IBS), functional constipation (FC), or “self-perceived constipation” (SPC) (not consistent with the Rome criteria).

Results The most frequently prescribed tests for the 229 patients (147 FC, 50 C-IBS, 32 SPC) were routine blood tests (59.3 %), abdominal ultrasounds (37.2 %), thyroid function (36.7 %), fecal occult blood tests (36.7 %), and tumor markers (35 %). Patient sex and age, GP age, and whether the diagnosis was new influenced the GP’s request, but FC, C-IBS, or SPC status did not. Dietary suggestions (81.9 %), fiber supplements (59.7 %), reassurance (50.9 %), and laxatives (30.5 %) were the most frequently prescribed treatments. Antispasmodics were

more frequently suggested for C-IBS patients; dietary suggestions, fiber, and enemas were more frequently prescribed in SPC patients. Patient and GP age and whether the diagnosis was new influenced the GP’s choice of treatment.

Conclusions The Rome III criteria do not influence diagnostic strategies and only slightly influence therapeutic strategies of GPs. Other factors (age, gender, new or old diagnosis) have more influence on GPs choice of investigations and treatment.

Keywords Chronic constipation · Functional constipation · Irritable bowel syndrome · General practice

Introduction

Chronic constipation (CC) is the main reason for seeing a physician in 1.2 % of the population of the United States [1], and a significant increase in the proportion of ambulatory care related to CC has been observed in the last decade [2].

The majority of constipated patients are seen in the primary care setting [2, 3]. Therefore, general practitioners (GPs) shoulder the main burden of diagnosis and treatment. Differences in the organization of health care and problems in the coordination of primary and secondary care can lead to significant variations in management between GPs and gastroenterologists [4]. The main recognized clinical presentations of CC are functional constipation (FC) and constipated irritable bowel syndrome (C-IBS), and they are commonly diagnosed on the basis of the Rome III criteria [5].

Because the current guidelines for FC and C-IBS were developed in a specialist setting, many GPs remain

M. Bellini (✉) · D. Gambaccini · M. T. Urbano · F. Costa ·
M. G. Mumolo · A. Ricchiuti · N. De Bortoli · S. Marchi
Gastrointestinal Unit, Department of Gastroenterology,
University of Pisa, Via Paradisa No. 2, 56100 Pisa, Italy
e-mail: mbellini@med.unipi.it

S. Salvadori
CNR, Institute of Clinical Physiology, Via Moruzzi No.1,
56124 Pisa, Italy

C. Tosetti
Porretta Terme, Italy

P. Monicelli
Pisa, Italy

unaware of these guidelines or lack confidence in them and rely on their own criteria and experience to make the diagnosis and to recommend tests and treatments. Unfortunately, this practice leaves many patients dissatisfied [6, 7]. Moreover, many patients requiring help from their physicians for constipation do not match the Rome III criteria [8] and suffer from what can be defined as “self-perceived constipation” (SPC). It is unclear whether FC, C-IBS, and SPC patients receive different management in general practice.

The aim of the present study was to evaluate the approach of diagnosis and treatment of constipated patients in daily practice in a cohort of Italian GPs to detect possible differences in management strategies in C-IBS, FC, and SPC patients.

Materials and methods

The study design included a sampling plan based on stratified clusters, in which the clusters represented GPs working in the province of Pisa (Italy), an area of 291,011 adult inhabitants (153,092 females and 137,919 males) served by 274 GPs [220 males (M) and 54 females (F)]. The variables used in the stratification were (1) the resident population in the GP municipality and (2) the age of the physician as a proxy variable for the length of service.

The GPs for each cluster were extracted randomly with a probability that was proportional to the total number of patients under each GP's care. A sample of 50 GPs (10 F/40 M) were selected, whose distribution by the stratification variables reflected their distribution in the overall GP population. A letter was sent to each GP explaining the study's aims and methodology and inviting him or her to participate. Each GP was then phoned by one of the authors (M.B. or D.G.) to verify their willingness to take part in the study, and a representative sample of the GP population, composed of 41 doctors (82 % of the gross sample, 33 M and 8 F, with a mean age of 54.1 ± 4.6 years, range 47–67), was enrolled. None of them was a gastroenterologist or a specialist in digestive surgery, although each had a graduate degree in a medical specialty. A total of 51,574 patients were under the care of these physicians, representing 17.7 % of the adult population living in the area.

The GPs were asked whether they knew and used the Rome III criteria in their clinical practice. Afterward, the GPs received a copy of the Rome III criteria for FC and C-IBS patients [5], which were exhaustively explained to them and discussed. They were then asked to record all the patients they saw during the next 4 consecutive weeks who had symptoms of constipation as chief complaint and reason for their visit. Symptoms were collected so that it was possible (by M.B or D.G.) to separate patients into FC,

C-IBS, and SPC (patients referred for constipation but not matching Rome III criteria) groups [9]. Diagnostic tests, recommended specialist consultations, and prescribed therapies were also recorded. The GPs were also asked to record whether constipation was a new diagnosis made during the visit. Patients with known or suspected organic (neoplastic, inflammatory, or autoimmune diseases) or psychiatric diseases potentially affecting bowel function or those taking potentially constipating drugs were excluded. This study was designed and carried out in accordance with the Declaration of Helsinki (Edinburgh revision, 2000).

Statistical analysis

The data were stored in a database constructed using Epi-info 3.4.3 and analyzed using the statistical package SPSS 13.0. The results are expressed as the mean \pm standard deviation or median (range), as appropriate. Univariate analysis was performed by the χ^2 test. Where appropriate, the data were analyzed using logistic regression models, and the associations were expressed in terms of odds ratios (OR). The GP age (as a proxy of the length of service), the patient group (FC, C-IBS, SPC), the patient age (<50 years and ≥ 50 years), the patient gender, whether he/she was a newly or already diagnosed patient, and the approach to management (prescription of diagnostic tests, specialist consultations, and therapies) were used as the variables in the statistical analyses. The reference values in the analyses were “<50 years”, “FC”, “male”, “previous diagnosis”, and the ORs represent the frequency of an event in older versus younger GPs and patients (<50 and ≥ 50 years), in C-IBS or SPC patients versus FC patients, in females versus males, and in newly diagnosed patients versus previously diagnosed patients.

In addition, the ORs were adjusted based on the effects of the other variables in the model, such that the calculated associations took into account the different distributions of the variables in the patients to better evaluate their net effects.

Results

Sixty-four percent of the GPs declared that they were familiar with the Rome III criteria, and 50.5 % declared that they applied these criteria in their daily practice.

Clinical data were obtained from 229 patients [74 M (32.3 %) and 155 F (67.7 %)]. The mean age was 64 ± 17.2 years (M: 69.8 ± 14.9 years, F: 61.2 ± 17.6 years; $p < 0.05$) with a range of 18–97 years, and 75.8 % of patients were ≥ 50 -year old.

One hundred and forty-seven patients (64.2 %) suffered from FC (91 F, 61.9 %; 56 M, 38.1 %; mean age

Table 1 Frequency of symptoms in constipated patients grouped by FC, C-IBS, and SPC

	FC <i>n</i> = 147 <i>n</i> (%)	C-IBS <i>n</i> = 50 <i>n</i> (%)	SPC <i>n</i> = 32 <i>n</i> (%)
Straining at stool	120 (81.6)	44 (88)	8 (25)
Abdominal bloating	101 (68.7)	44 (88)	15 (46.9)
<3 defecations/week	100 (68)	50 (100)	10 (31.3)
Hard/lumpy stools	91 (61.9)	50 (100)	4 (12.5)
Incomplete defecation	100 (68)	40 (80)	3 (9.4)
Abdominal pain and/or discomfort	38 (25.9)	50 (100)	17 (53.1)
Manual maneuver	15 (10.2)	18 (36)	1 (3.1)
Anorectal blockage	16 (10.9)	15 (30)	0

FC functional constipation, C-IBS constipated irritable bowel syndrome, SPC self-perceived constipation

64.1 ± 17.9) and 50 patients (21.8 %) from C-IBS (40 F, 80 %; 10 M, 20 %; mean age 64.0 ± 17.2 years). Of the 229 patients, 32 (14 %) (24 F, 75 % and 8 M, 25 %; mean age 64.5 ± 13.5 years) were not consistent with the Rome III criteria for C-IBS or FC and were classified as SPC. There were significantly more females in the FC group (χ^2 0.039 $p < 0.05$). The median number of patients evaluated for constipation was 4.5 (range 1–13 patients) per month per 1,000 patients (from 51,574 patients under the care of all doctors).

Constipation was a new diagnosis for 40 patients (27.2 %) with FC, 12 patients (24 %) with C-IBS, and 11 patients (34.4 %) with SPC, and there were no significant differences among the three groups.

The symptoms reported by the patients are reported in Table 1. Abdominal pain without the typical features of irritable bowel syndrome (IBS) was reported in 38 (25.9 %) FC patients and in 17 (53.1 %) SPC patients.

No differences were found between females and males in each group (FC, C-IBS, and SPC) apart from abdominal bloating, which was more frequent in FC females than in FC males (71/91 78 % vs. 30/56 53.5 %; $p < 0.05$).

The GPs prescribed further examinations, specialist referrals, and therapies for a large number of patients after the clinical evaluations. The data are reported in Tables 2 and 3.

Diagnostic testing was similar between the three groups. Indeed, GP's appeared to be influenced by factors other than classifying their patients as FC, C-IBS, or SPC: a) the patient sex and age, b) whether the diagnosis was new, and c) GP age. In particular, thyroid function tests were prescribed more for females than for males (OR 2.08; $p < 0.05$); carcinoembryonic antigen (CEA) assays, fecal occult blood tests, and colonoscopies were prescribed more in older patients (≥ 50 years) (OR 2.95 OR 2.80,

Table 2 Diagnostic tests, specialist consultation, and treatment grouped by FC, C-IBS, and SPC

	FC (147 patients) <i>n</i> (%)	C-IBS (50 patients) <i>n</i> (%)	SPC (32 patients) <i>n</i> (%)
<i>Diagnostic tests</i>			
Routine blood tests	81 (55.1)	33 (66)	21 (65.6)
Thyroid function test	50 (34)	22 (44)	12 (37.5)
Carcinoembryonic antigen assay	50 (34)	15 (30)	15 (46.9)
Colonoscopy	43 (29.3)	13 (26)	7 (21.9)
Barium enema	26 (17.7)	8 (16)	6 (18.8)
Fecal occult blood test	51 (34.7)	22 (44)	11 (34.4)
Abdominal ultrasound	55 (37.4)	21 (42)	9 (28.1)
Defecography	5 (3.4)	5 (10)	2 (6.3)
Anorectal manometry	5 (3.4)	3 (6)	1 (3.1)
Colonic transit time	2 (1.4)	1 (2)	0
No test	30 (20.4)	5 (10)	7 (21.9)
<i>Specialist consultation</i>			
Gastroenterologist	45 (30.6)	14 (28)	5 (15.6)
Psychologist/Psychiatrist	17 (11.6)	4 (8)	2 (6.2)
Gynecologist	7 (7.7)	5 (12.5)	2 (8.3)
Urologist	14 (9.5)	7 (14)	3 (9.4)
Neurologist	4 (2.7)	2 (4)	1 (3.1)
Surgeon	21 (14.3)	9 (18)	3 (9.4)
Dietician	8 (5.4)	1 (2)	2 (6.3)
No consultation	62 (42.2)	18 (36)	14 (43.8)
<i>Treatment</i>			
Changes in diet	123 (83.7)	43 (86)	22 (68.8)
Reassurance/recommendations	81 (55.1)	25 (50)	11 (34.4)
Fiber supplements	92 (62.6)	35 (70)	11 (34.4)
Antispasmodics	16 (10.9)	12 (24)	5 (15.6)
Anxiolytics	19 (12.9)	4 (8)	4 (12.5)
Antidepressants	18 (12.2)	11 (22)	2 (6.3)
Laxatives	48 (32.7)	15 (30)	8 (25)
Probiotics	26 (17.7)	7 (14)	5 (15.6)
Intestinal antibiotics	13 (8.8)	3 (6)	2 (6.3)
Suppositories	28 (19)	12 (24)	3 (9.4)
Enemas	32 (21.8)	16 (32)	1 (3.1)
Psychotherapy	10 (6.8)	0	0
Pelvic floor rehabilitation	3 (2)	4 (8)	0
Surgery	2 (1.4)	0	0

FC functional constipation, C-IBS constipated irritable bowel syndrome, SPC self-perceived constipation

respectively; $p < 0.05$); and routine blood tests were more common among patients with a new diagnosis (OR 2.09; $p < 0.05$). Anorectal manometry and defecography were more frequently requested by younger GPs (OR 0.18; $p < 0.05$).

Table 3 Odds ratios for the association of diagnostic tests, specialist consultations, and treatments for FC, C-IBS, and SPC patients

	C-IBS	SPC	Sex	Age	GP age	New diagnosis
<i>Diagnostic tests</i>						
Routine blood tests	1.59	1.37	1.57	1.51	0.75	2.09*
Thyroid function test	1.48	1.05	2.08*	0.75	0.52	1.23
Carcinoembryonic antigen assay	0.93	1.78	0.71	2.95*	0.80	1.19
Colonoscopy	0.87	0.65	0.92	2.80*	0.92	1.09
Barium enema	0.96	1.12	0.91	2.35	0.89	0.81
Fecal occult blood test	1.47	0.92	1.26	2.17*	0.52	0.73
Abdominal ultrasound	1.21	0.59	1.49	1.23	0.50	1.15
Defecography	3.22	1.37	5.45	0.96	0.18*	2.17
No test	0.33	1.28	0.67	0.46	3.54	0.24*
<i>Specialist consultation</i>						
Gastroenterologist	0.83	0.39	1.51	0.94	0.76	0.97
Psychologist/Psychiatrist	0.68	0.32	1.66	1.18	0.60	1.31
Gynecologist	1.82	1.43	9.54*	3.74	0.56	3.42*
Urologist	2.26	1.25	0.21*	1.12	1.03	0.72
Neurologist	1.45	1.02	1.42	2.41	1.31	2.39
Surgeon	1.31	0.56	1.19	1.73	0.47	1.06
Dietician	0.35	1.28	0.86	0.22*	0.41	0.39
No consultation	0.74	1.13	0.95	0.86	1.34	0.76
<i>Treatment</i>						
Changes in diet	1.24	0.34*	0.77	0.84	0.08*	0.74
Reassurance/suggestions	0.82	0.46	0.67	0.91	0.74	0.42*
Fiber supplements	1.46	0.34*	0.67	0.42*	1.47	0.58
Antispasmodics	2.44*	1.41	1.69	1.09	0.74	0.86
Anxiolytics	0.57	0.98	1.07	2.54	1.11	0.46
Antidepressants	1.94	0.47	1.35	1.37	1.42	0.67
Laxatives	0.83	0.61	1.59	2.18*	0.87	1.22
Probiotics	0.77	0.83	1.09	0.81	1.23	1.64
Intestinal antibiotics	0.69	0.72	0.74	1.00	1.04	0.71
Suppositories	1.41	0.38	0.97	1.46	0.22*	0.76
Enemas	1.54	0.10*	2.15	2.66*	0.98	0.93

Multivariate-adjusted ORs for each variable are adjusted based on the effects of the other variables

Comparison groups: FC, male, ≤ 50 years, old diagnosis

FC functional constipation, C-IBS constipated irritable bowel syndrome, SPC self-perceived constipation, GP general practitioner

* $p < 0.05$

No tests were prescribed for 18.3 % of the patients. This GP attitude was significantly associated with a previous diagnosis of constipation (OR 0.24; $p < 0.05$).

GPs referred 47.8 % of their patients to at least one specialist: 27.9 % to a gastroenterologist, 14.4 % to a surgeon, 9.9 % to a psychologist/psychiatrist, 10.4 % to a urologist, 4.8 % to a dietician, and 9 % of the female patients to a gynecologist (Tables 2, 3). The frequency of specialist referral was not different among FC, C-IBS, and SPC patients. The most frequently stated reasons for requesting the specialist consultation were the need for further diagnostic tests (in 28.3 % of patients),

unsuccessful therapy (14.2 %), a specific request by the patient (14.2 %), and difficulties in managing constipated patients (8.8 %). Dieticians were more often requested for younger patients (OR 0.22; $p < 0.05$), urologists for males (OR 0.21; $p < 0.05$), and gynecological consultations for new diagnoses (OR 3.42; $p < 0.05$).

With regard to therapy, changes in diet, reassurance regarding the natural course of the illness, coping strategies, and fiber supplements were the most often recommended (Table 2). No differences were found between females and males in any group (FC, C-IBS, or SPC).

Changes in diet (OR 0.34; $p < 0.05$), fiber supplements (OR 0.34; $p < 0.05$), and enemas (OR 0.10; $p < 0.05$) were less frequently suggested for SPC patients, whereas antispasmodics were more frequently suggested for C-IBS patients (OR 2.44 $p < 0.05$) (Table 3).

Laxatives and enemas (OR 2.18 and 2.66, respectively; $p < 0.05$) were more frequently prescribed for older patients, whereas fiber supplements were more frequent for younger patients (OR 0.42; $p < 0.05$). Changes in diet and suppositories were less frequently prescribed by older GPs (OR 0.08 and 0.22, respectively; $p < 0.05$). Reassurance and suggestions were significantly associated with a previous diagnosis (OR 0.42; $p < 0.05$) (Table 3).

Discussion

Chronic constipation is a very frequently made diagnosis; therefore, the median number of patients evaluated for constipation in the present study over a period of 1 month (4.5/1,000 patients) is not surprisingly high. Indeed, when stratified by age, the findings are similar to those for other chronic diseases treated by GPs in Italy [10].

Currently, the majority of published CC studies use the Rome criteria for the diagnosis of FC or C-IBS [5]. These criteria are often criticized because they are considered too complex for clinical practice, especially in primary care. However, our data indicate that most GPs are aware of the Rome criteria. In fact, 64 % of the GPs in the present study declared that they were familiar with the Rome III criteria, and 50.5 % claimed that they applied them in their daily practice. These results mark a change from earlier studies, including a study from the United Kingdom, in which approximately 20 % [11] and 35 % [12] of GPs were aware of the criteria, and our own study on IBS, in which only 35.7 % of GPs had knowledge of them [6]. Our current study is in agreement with a recent survey on IBS conducted in Romania, where the majority of GPs stated that they were familiar with the Rome criteria [13].

However, it is often difficult to perform differential diagnoses between FC and C-IBS in clinical practice using the Rome criteria, particularly for non-gastroenterologists, and the “splitting” of functional gastrointestinal disorders into discrete diagnoses may not be practical [14, 15].

A study carried out by Wong et al. [14] reported that 44.8 % of FC patients seen in primary care also experienced abdominal pain or discomfort within the past 3 months (although they did not meet other symptom criteria for a diagnosis of IBS), suggesting a degree of overlap between the two conditions and a lack of stability in diagnosis during the follow-up. IBS and FC may not be entirely separate conditions, but rather different subgroups within the same disorder.

Abdominal pain, relieved by defecation and strictly linked to a change in the form of stools and bowel frequency [9], is considered a typical distinguishing feature for the diagnosis of C-IBS. However, an association between abdominal pain and FC is encountered in clinical practice [16].

This overlap is also clearly present in our study. Indeed, abdominal pain, even without the typical features of IBS, was frequently observed in our FC (25.9 %) and SPC (53.1 %) patients. This result could be influenced by the fact that patients were enrolled on the basis of considering themselves “constipated”.

Abdominal and anorectal symptoms were more frequently reported in C-IBS patients than in FC patients according to previous studies [14], whereas abdominal bloating and pain seemed to be more relevant for SPC patients.

The question is does a different diagnosis (FC or C-IBS or SPC) based on the Rome criteria directs GPs toward different management? The present data show that different subgroups of constipated patients did not undergo different diagnostic tests. The GP's appeared to be influenced by factors other than classifying patients as C-IBS, FC, or SPC. Indeed, they seemed more influenced by the patient gender (in the prescription of thyroid function tests), patient age (in the prescription of CEA, fecal occult blood tests, and colonoscopy), whether the diagnosis was new (in terms of prescribing routine blood tests or in suggesting no tests), or by the GP age (in the prescription of anorectal manometry and defecography). It is also interesting to note the frequent use of ultrasonography, which is regarded by GPs as a helpful adjunct to the physical examination despite the fact that very few GPs perform this examination in their consulting room. Ultrasonography is not specific for CC, and it is not included in most of the management guidelines for CC [17–22]. Our findings suggest that whereas they are aware of its limitations, GPs rely upon ultrasonography because of the reassurance it can provide to both the doctor and the patient, especially in cases in which abdominal pain is present. These findings are consistent with those provided by our previous study on IBS, in which abdominal ultrasound was recommended in 42.2 % of patients [6].

The fecal occult blood test is widely accepted by both doctors and patients in Italy because it is considered to be the first step in the screening process for the early diagnosis of colorectal cancer in individuals over the age of 50. However, better knowledge of the clinical significance of the results is desirable because the low specificity of the test [23] could mean that it is being prescribed as “defensive medicine” in the evaluation of CC patients. The same holds true for the CEA assay.

As expected, two examinations that were recommended with some frequency were colonoscopy (~25 % of patients) and barium enema (~15 % of patients). This practice is appropriate given the mean age of the patients evaluated.

Tests aimed at detecting dyssynergic defecation (defecography and anorectal manometry) were rarely prescribed. This could reflect the fact that GPs are not very familiar with dyssynergic defecation and that they do not consider dyssynergic defecation to be a frequent cause of constipation. Additionally, colonic transit time was rarely measured in primary care, most likely because many GPs are not familiar with the test, and it is not considered to be a routine examination by X-ray laboratories in Italy. Indeed, this finding is in line with the recent American Gastroenterological Association (AGA) guidelines, which do not recommend this test in the early assessment of CC because up to 50 % of patients with defecatory disorders have slow colonic transit, and a finding of slow transit does not eliminate the need for anorectal testing or exclude the presence of defecatory disorders. Moreover, the initial approach to CC is the same regardless of whether it is due to a slow transit or a defecatory disorder [24].

The fact that approximately 50 % of patients were referred to a specialist by their GP for further diagnostic tests confirms that the management of CC is largely unsatisfactory. The higher number of requests for urological consultations in males is most likely due to the fact that urological disturbances in females are often diagnosed and treated by gynecologists. The most likely reason for more frequent requests for dietician consultations for younger patients is that changes in diet are believed to be more efficacious in these patients, who develop CC from causes other than inappropriate diet less frequently than elderly patients. This study underlines the need for clear guidelines for the management of CC that can be applied by both GPs and specialists.

Changes in diet, reassurance, and fiber supplements were the therapeutic strategies most frequently adopted by GPs. These represent the first steps in the treatment protocol for CC according to most guidelines [17, 20, 21, 25]. In particular, simple suggestions and reassurance were most frequently provided to previously diagnosed patients who most likely had a definitive diagnosis and were already treated for constipation. The reason why diet modifications seem to be less popular among older GPs is difficult to explain. It is possible that they think other tools (apart from suppositories, which they prescribed less frequently than younger colleagues) are quicker and more effective. The more frequent prescription of fiber for younger patients is an attempt to improve dietary habits and is consistent with the more frequent request for dietician consultations.

The less frequent recommendation of changes in diet, fiber supplements, and enemas for SPC patients is most likely due to the heterogeneity of this condition, whereas the more frequent recommendation of antispasmodics for C-IBS patients is explained by the (supposed) antinociceptive action of these drugs.

The fact that pelvic floor rehabilitation was very rarely prescribed (in only 7 women in our study) may confirm that GPs rarely regard dyssynergic defecation as a possible cause of CC and are not sufficiently aware of the benefits of retraining as a treatment for defecatory disorders. However, referral centers offering pelvic floor rehabilitation are scarce, and this may affect both awareness of this therapy and its use.

Conclusions

Our results show that

- GPs see more women than men for CC, and the male patients who present with CC are on average older than the females.
- GPs often suggest tests, primarily routine blood tests, for constipated patients, including those who match the Rome III criteria.
- Abdominal ultrasound, which is not included in the CC guidelines, is often requested.
- Dietary recommendations, reassurance, and fiber supplements are the most frequently prescribed treatments.
- The management of CC by GPs is quite similar for FC, C-IBS, and SPC patients: The Rome III criteria do not influence diagnostic strategies and only slightly influence therapeutic ones. The separation between these three conditions does not seem to be as relevant, at least in general practice. Other factors, such as patient and GP age, patient gender, and whether the diagnosis was new, affect the behavior of GPs to a greater degree.

These findings highlight the need for universally accepted management guidelines that are shared between GPs and gastroenterologists and that are easy to apply. They should help GPs identify patients who could benefit from specialized diagnostic evaluations and treatments, thus saving health care resources.

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Conflict of interest None.

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