

Office-Based Physician Visits: A Comparison of Irritable Bowel Syndrome With Other Gastrointestinal Disorders Using National Ambulatory Medical Care Survey Data

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National Ambulatory Medical Care Survey data were used to compare healthcare resource utilization and frequency of physician visits for irritable bowel syndrome (IBS) with other functional and organic gastrointestinal (GI) disorders. IBS accounted for more than four million ambulatory office visits between 1997 and 1999. A substantial proportion of these IBS visits were by female patients, and a high percentage of the visits were to a gastroenterologist. IBS visits frequently included diagnostic or screening tests and mentions of medications. This evidence suggests that patients with IBS require considerable medical attention, which incurs substantial costs. The emergence of effective medications, as well as education of both patients and providers, may reduce resource utilization associated with IBS and facilitate the delivery of quality healthcare to patients.

INTRODUCTION

Irritable bowel syndrome (IBS) is one of the most common gastrointestinal (GI) disorders encountered in clinical practice. A 1997 American Gastroenterology Association (AGA) survey found that functional disorders are the most commonly encoun-

tered (35%) of all GI disorders(1). IBS is the most common diagnosis in gastroenterologists' practices, accounting for an estimated 25% of all gastroenterology patients (2). IBS accounts for 12% of patient visits to primary care physicians (3).

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The etiology of IBS is not completely understood and there are currently no specific diagnostic tests or approved IBS-specific pharmacotherapies in the United States. Diagnosis of IBS is often made by excluding other disorders with similar symptoms. In the latter quarter of the past century, diagnosis was determined primarily on the basis of symptom-based criteria. The difficulty in diagnosing IBS, coupled with a lack of specific treatment, adds considerably to the economic burden of this disorder. Total annual costs (direct and indirect) of IBS in the United States have been estimated to be approximately \$30 billion, excluding prescription and over-the-counter drug costs (4,5). Additionally, the symptoms of IBS, such as abdominal pain, bloating, and alterations in bowel function, wax and wane over time and thus require a prolonged course of treatment with lifestyle modification and pharmacotherapy (6).

The high prevalence of IBS and its associated costs have prompted closer scrutiny of treatment-related utilization of resources. With several new IBS-specific medications in development, updated information on the characteristics of current IBS visits will be valuable to clinicians. This data will make it feasible to deliver quality healthcare through the development of universally accepted disease criteria and the efficient allocation of scarce resources. The purpose of this study is to compare utilization of health care resources and frequency of

ambulatory physician visits for IBS with other GI disorders including gastroesophageal reflux disease (GERD), inflammatory bowel disease (IBD), peptic ulcer disease (PUD), and functional dyspepsia (FD). These GI disorders were selected for comparison because they represent a range of functional and organic GI disorders. Two of the disorders, GERD and PUD, have been subjects of previous studies on economic burden.

METHODS

A retrospective analysis of the data from the 1997 through 1999 National Ambulatory Medical Care Surveys (NAMCS) was conducted. The NAMCS is based on a cross-sectional, annual, nationally representative sample of US office-based physician visits and is conducted by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC) (7). The NAMCS is designed to provide a statistically valid representation of ambulatory office visits in the United States. Visit data is obtained using a three-stage, stratified, probability sample. The first stage is the selection of counties or county equivalents with a probability proportional to the population size. In the second stage, physicians are stratified by specialty type (provided by the physician) with a probability proportional to the number of physicians in that geographical area. Physicians in the federal service and those not in office-based practices are excluded from the sample. In the third stage, office-based visits are sampled from one randomly assigned week for each participating physician. Each selected physician is asked to complete approximately 30 patient record forms. It is important to note that the sampling unit for the NAMCS is a single physician-patient visit in a selected care setting. The NAMCS data set does not provide data at the patient level, therefore it is not possible to determine incidence and prevalence; instead, data captured were the number of physician visits for which a given diagnosis was recorded.

The patient record form allows physicians to list up to three diagnoses for each visit. The first recorded diagnosis is specified as the primary diagnosis for the visit and the other two fields are for reporting other conditions related to the visit. Diagnostic information is coded using the International Classification of Disease,

Table 1
ICD-9 Codes

| Disease | ICD-9-CM Codes Selected (x represents all possible sub-codes) |
|---------|---|
| IBS | 564.1 |
| PUD | 531.xx, 532.xx, 533.xx, 534.xx, 535.6x |
| FD | 530.0, 530.5, 530.9, 535.0, 535.00, 535.4, 535.40, 535.5, 535.50, 536, 536.8, 536.9, 537, 537.9 |
| GERD | 530.1x, 530.81 |
| IBD | 555.xx, 556.xx |

IBS = irritable bowel syndrome; PUD = peptic ulcer disease; FD = functional dyspepsia; GERD = gastroesophageal reflux disease; IBD = irritable bowel disease

ninth edition, clinical modification codes (ICD-9-CM). This study identified visits for inclusion using the ICD-9 codes (Table 1) from the primary diagnosis field. ICD-9 codes used for a range of functional and organic disorders were identified. The specific codes were reviewed and approved by a GI specialist. In addition to diagnostic information, this study used selected fields from the patient report forms such as age, sex, geographic region, patient complaints/symptoms, physician type, major reason for visit, diagnostic/screening services, prescribing patterns, and medications.

The patient record form permits recording of up to six medications that were either ordered, specified, or continued (ie, medications) at the visit. The NCHS grouped these medications into common drug classes using the ninth edition of the National Drug Code Directory (8). Analyses of medications in this study were performed at this National Drug Code Directory drug class level. The number of office visits was estimated for each disorder and visit frequencies were categorized by several demographic variables. The NAMCS survey defines, and asks physicians to categorize, the reason for the visit as one of the following: acute problem, routine chronic problem, chronic problem flare-up, surgery/injury, and nonillness care. Visits to gastroenterologists were compared with visits to general practice physicians (general practitioners, general surgeon, pediatricians, or internists) or other types of specialists.

Data was then extrapolated to the entire US population using NAMCS guidelines and US census population estimates by adjusting for selection probabilities, physician non-response, proportion of physicians in each specialty, and outliers. The numbers of completed patient record forms and responding physicians for each study year were as follows: 24,715 provided by 1,247 physicians in 1997; 23,339 provided by 1,226 physicians in 1998; and 20,790 provided by 1,087 physicians in 1999. These observations represent over 700 million office-based visits per year reported by more than 400,000 physicians in office-based practices in the United States. Methods for estimating population values are described in detail in the NAMCS documentation. The data and documentation can be downloaded from the Internet, therefore additional information is not provided here (7). NCHS considers estimates from the NAMCS to be reliable only when there are at least

30 sampled records for a specific count, and where the relative standard error (RSE) does not exceed 30%. All RSEs in this study were less than 17% for the estimated number of visits by primary diagnosis. Calculations were performed as recommended by the Ambulatory Care Statistics Branch of the NHCS. Data not meeting the requirements for reliable estimation are identified in the study results. All data were analyzed descriptively using SAS for Windows® (Version 6.12).

RESULTS

IBS was recorded as the primary diagnosis for approximately 14.3% of ambulatory physician visits for the diseases studied. When extrapolated to the entire US population, IBS accounted for more than 4.4 million physician office visits during the period from 1997 through 1999. In contrast to other GI disorders, IBS accounted for a large percentage of physician visits by women compared to men; IBS visits for women were 75.6%. The percentage of physician visits for the other GI disorders were more evenly divided among women (range 52.6%–57.5%) and men (range 42.5%–47.4%) (Figure 1). When stratifying physician visits by age, the percentage of visits in the working-age group (18 to 65 years) was over 60% for each of the GI disorders.

Patients with IBS or IBD as a primary diagnosis had a greater percentage of physician visits with gastroenterologists, compared to patients with FD or GERD (Figure 2). More than 66% of IBD visits were to gastroenterologists, followed by 37% of IBS visits, 22.4% of GERD visits, and 15.3% of FD visits. The number of visits to gastroenterologists for PUD was insufficient to extrapolate; therefore, national estimates would not be considered reliable. Visits to gastroenterologists resulting in an IBS diagnosis were 2.4 and 1.7 times more common than those resulting in FD or GERD diagnosis, respectively. IBS, GERD, and IBD were reported most frequently on visits for treatment of a routine chronic problem (38.5%, 41.5%, and 67.1 %, respectively), whereas FD and PUD were reported more often on visits for an acute problem (59.6% and 36.8%).

All selected GI disorders had a high percentage of visits in which screening and diagnostic tests were ordered (between 79.5% for GERD and 90.2% for IBS) (Figure 3). IBS had the highest proportion of visits with

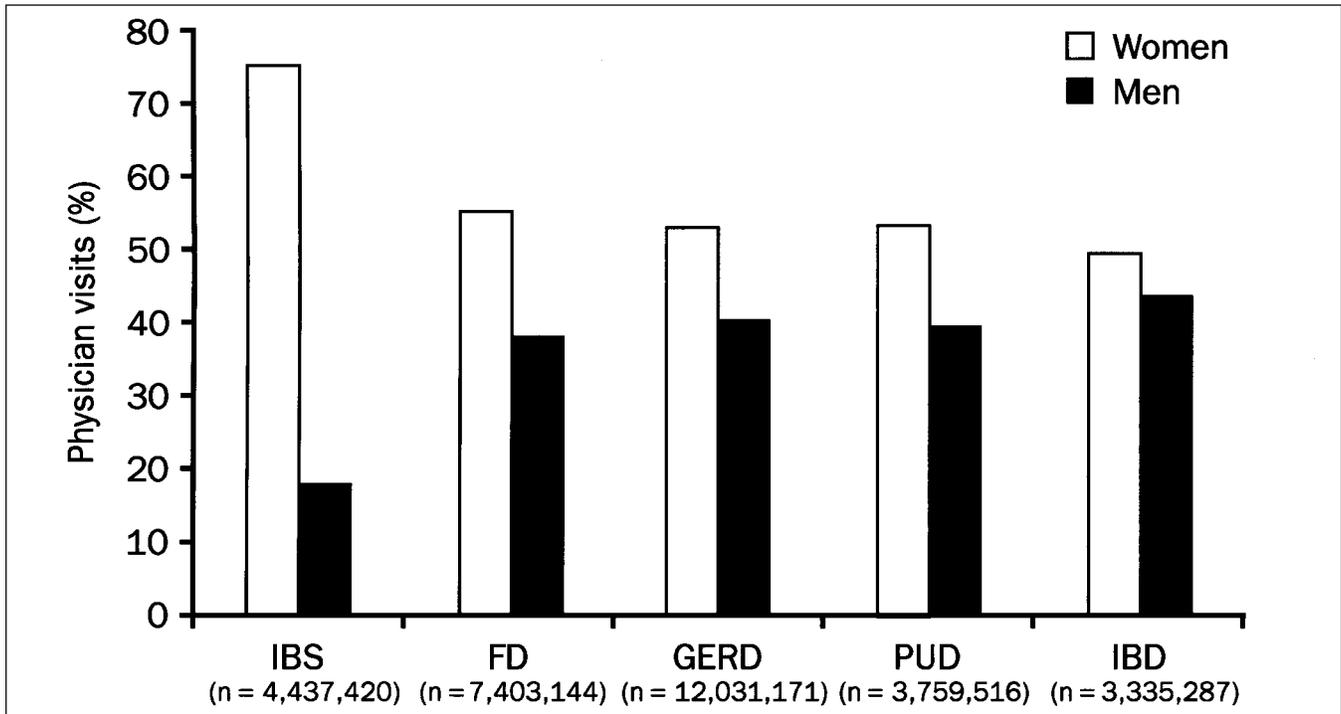


Figure 1. Percentage of Physician Visits by Gender.

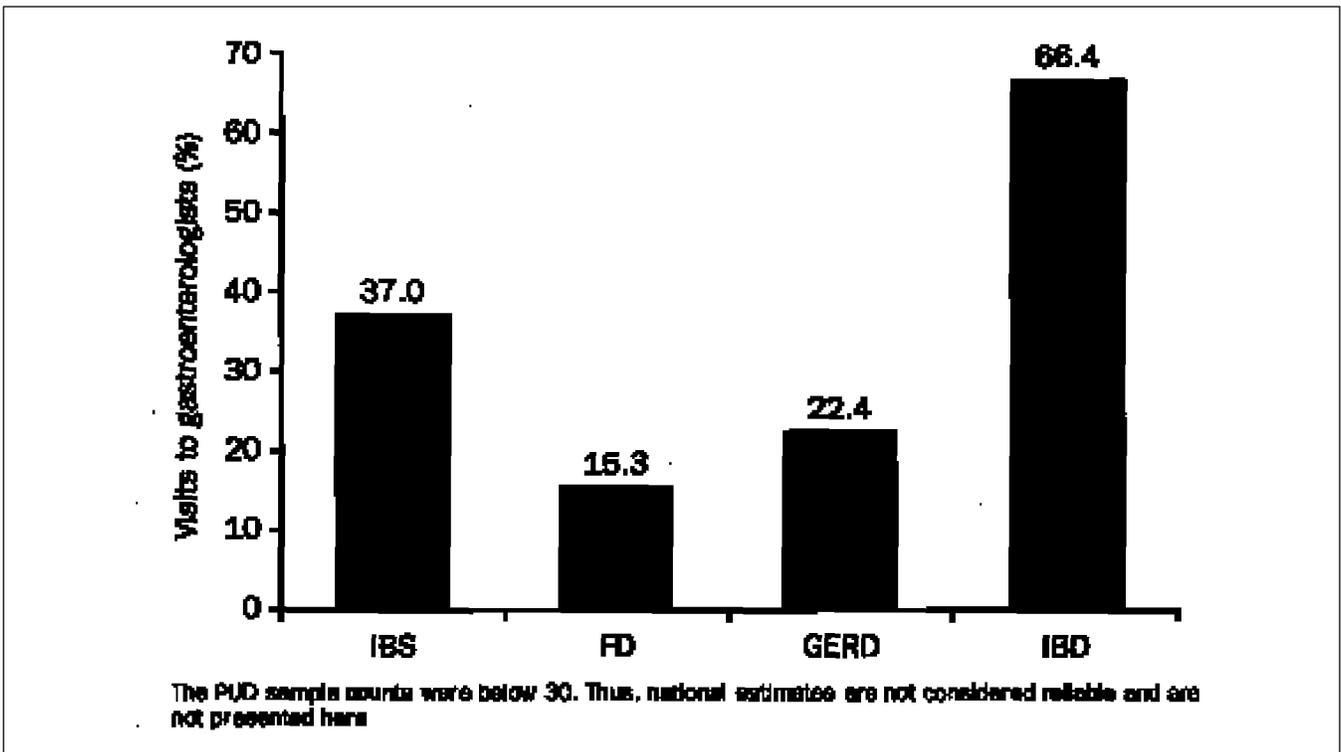


Figure 2. Percentage of Visits to Gastroenterologists

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Table 2
Mean Number of Tests Ordered per Visit by Gender

| Primary Diagnosis | Mean Number of Tests Ordered | | |
|-------------------|------------------------------|-------------------|---------------------|
| | Women Mean (ESE) | Men Mean (ESE) | Total Mean (ESE) |
| IBS | 1.85 (0.39) | 2.25 (0.78) | 1.95 (0.36) |
| FD | 1.88 (0.40) | 1.52 (0.53) | 1.73 (0.32) |
| GERD | 1.69 (0.36) | 1.66 (0.57) | 1.68 (0.31) |
| PUD | 1.81 (0.38) | 1.87 (0.64) | 1.83 (0.34) |
| IBD | 1.56 (0.33) | 1.34 (0.46) | 1.46 (0.27) |

ESE = Estimated Standard Error; IBS = irritable bowel syndrome; PUD = peptic ulcer disease; FD = functional dyspepsia; GERD = gastroesophageal reflux disease; IBD = irritable bowel disease

screening or diagnostic tests. The proportion of visits in which diagnostic tests were ordered for women with IBS was 10.2% more than those with FD, 6.6% more than those with GERD, 7.5% more than those with PUD, and 5.7% more than those with IBD. While women with IBS had more visits in which diagnostic tests were ordered compared to women with other GI diagnoses, the average number of screening tests ordered in men with IBS (2.25 per visit) was even higher than in women (1.85 per visit) (Table 2). Over-

all, the average number of screening and diagnostic tests ordered for IBS was 6.6% greater than PUD and 33.6% higher than IBD.

Except for IBD, the percentage of visits with medications ordered exceeded 80% for each of the GI disorders (Table 3). Furthermore, regardless of diagnosis, women received a higher average number of medications per visit than men (Figure 4). The average number of medications per IBS-related physician visit was 53.1% greater for women than for men (2.19 medications for women and 1.43 medications for men). The findings were similar for the other GI disorders. However, the findings for IBD most

paralleled the findings for IBS. The average number of medications for women's visits exceeded that of men's visits by 37.4% for FD, 37.8% for GERD, 23.6% for PUD, and 47.2% for IBD. Overall, IBS and IBD accounted for the highest average number of medications ordered, specified, or continued (2.00 and 1.98 per visit, respectively).

The most common medications associated with IBS-related physician visits were antidiarrheals (eg, dicyclomine, loperamide), H₂ antagonists/proton

Table 3
Visits where Medications were Prescribed (number and percent)

| Primary Diagnosis | Visits with Medications Ordered, Specified, or Continued | | | | | |
|-------------------|--|------|------------|-------|--------------|------|
| | Women | | Men | | Total Visits | |
| | N | % | N | % | N | % |
| IBS | 2,827,516 | 84.3 | 796,083* | 73.6* | 3,623,599 | 81.7 |
| FD | 3,424,397 | 80.4 | 2,527,830 | 80.4 | 5,952,227 | 80.4 |
| GERD | 5,668,996 | 84.7 | 4,482,510 | 83.9 | 10,151,510 | 84.4 |
| PUD | 1,719,971 | 81.3 | 1,360,372 | 82.7 | 3,080,343 | 81.9 |
| IBD | 1,256,817 | 71.7 | 1,274,674* | 80.6* | 2,531,491 | 75.9 |

*Sample visits were below 30 and are therefore not considered to be reliable estimates.

IBS = irritable bowel syndrome; PUD = peptic ulcer disease; FD = functional dyspepsia; GERD = gastroesophageal reflux disease; IBD = irritable bowel disease

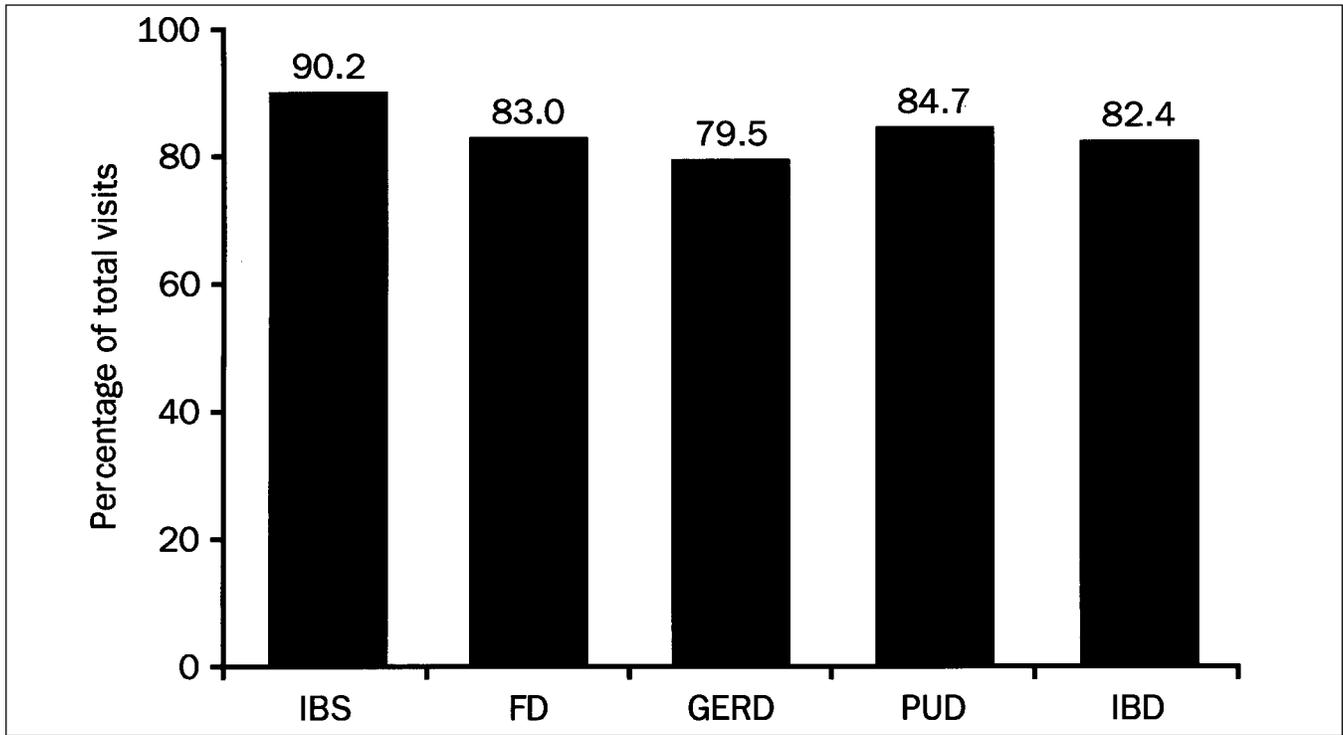


Figure 3. Percentage of Visits Resulting in Screening or Diagnostic Test

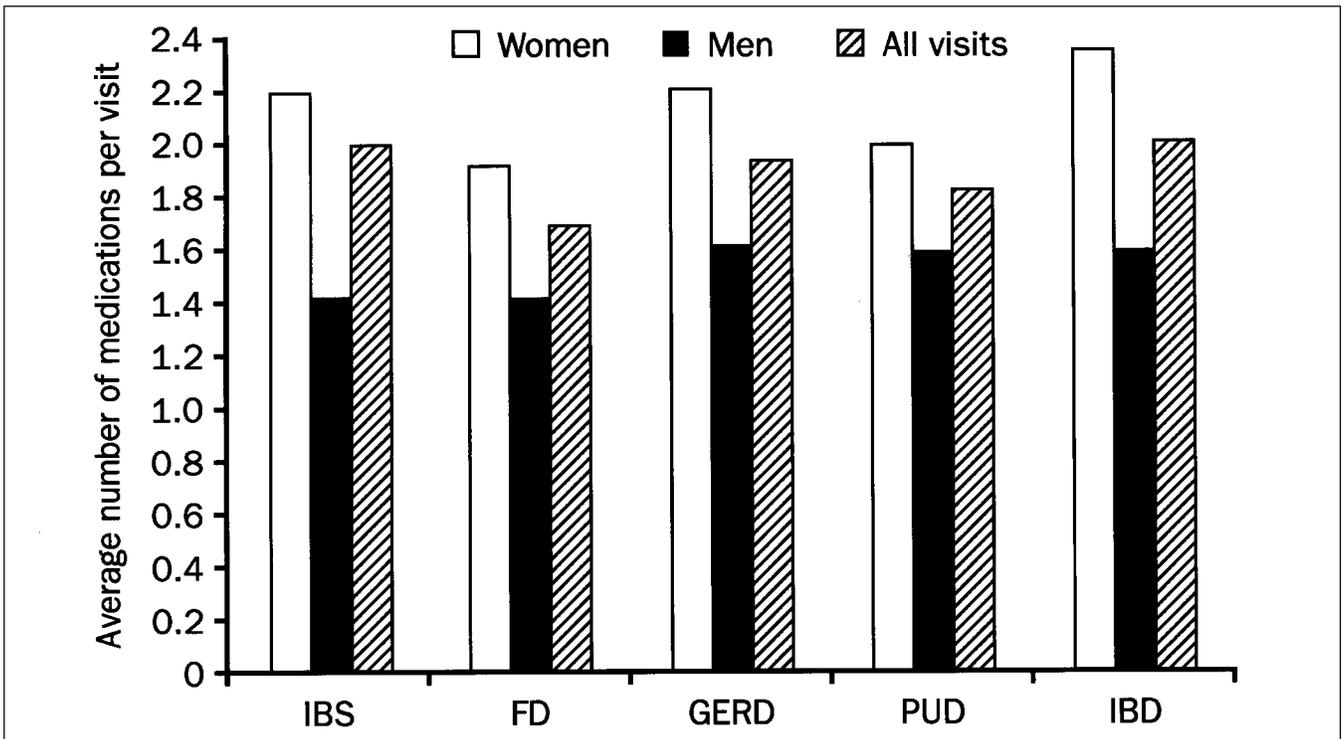


Figure 4. Average Number of Medications Ordered, Specified, or Continued per Visit

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pump inhibitors (eg, ranitidine, omeprazole), antispasmodics/anticholinergics (eg, hyoscyamine), and antidepressants (eg, amitriptyline, sertraline). There was considerable heterogeneity in the types of medications mentioned with IBS visits. Because of the large variance in IBS therapies, no drug classes were of sufficient size to allow reliable estimation. In contrast, 36.6% to 48.4% of medications at visits for GERD, FD, and PUD were for H₂ antagonists/proton pump inhibitors; 24.7% of all medications at visits for IBD were in the miscellaneous GI class.

DISCUSSION

IBS is a genuine and relatively common disorder. The demographic comparisons in this analysis indicated that all of the selected GI disorders occur primarily in working-age persons. IBS was more common in women compared to the other GI disorders evaluated in this study. There are also implications for how patient-oriented disease education programs should be delivered. Of the GI disorders included in this study, management of GERD, FD, and IBS were coded as the top three reasons for physician visits in 38.9%, 23.9% and 14.3% of physician encounters, respectively. Additionally, IBS and IBD visits were made more often to gastroenterologists than were visits for FD, GERD, and PUD. In the latter conditions, visits were made more frequently to general practice physicians or other types of specialists. The higher percentage of gastroenterologist visits for IBS compared with PUD might be related to a paucity of specific diagnostic tests for IBS, the chronic episodic nature of IBS, and the variability in its symptoms.

IBS is a multi-symptom condition whose diagnosis requires extensive testing to exclude the possibility of organic disease. Of the GI disorders examined, IBS had the highest proportion of visits during which screening or diagnostic tests were ordered, as well as the highest average number of tests ordered per visit. Symptom-based diagnostic criteria, such as the Rome II criteria (9), are thus important to aid the clinician in determining the need for diagnostic testing, and in differentiating IBS from other functional disorders.

Historically, the diagnosis of IBS in a GI patient was followed by prolonged symptomatic treatment

with various classes of medications. In this analysis, medications were included in the majority of physician visits for all of the selected GI disorders. For IBS visits, there was a large variance in the drug classes mentioned, reflecting a lack of consensus on the effective treatment of this disorder. It is clear that a treatment option that safely and effectively relieves the spectrum of IBS symptoms currently remains an unmet therapeutic need. Pharmacologic agents that target the 5-HT₃ and 5-HT₄ serotonin receptors are currently in development and have the potential to effectively treat the symptoms of IBS.

SUMMARY

Compared with other GI disorders, IBS has the highest proportion of visits with screening and diagnostic tests. IBS also accounts for one of the highest average number of medications ordered, specified, or continued per visit. Both patients with IBS and their treating physicians might benefit from educational and disease management efforts similar to those undertaken for GERD and PUD. The development of improved diagnostics and the availability of new treatment options may help reduce the utilization of healthcare resources associated with IBS. ■

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