Fecal incontinence in primary care: prevalence, diagnosis, and health care utilization

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OBJECTIVE: We sought to estimate the frequency of self-reported fecal incontinence (FI), identify what proportion of these patients have a diagnosis of FI in their medical record, and compare health care costs and utilization in patients with different severities of FI to those without FI.

STUDY DESIGN: Patients in a health maintenance organization were eligible and 1707 completed a survey. Patients with self-reported FI were assessed for a diagnosis of FI in their medical record for the last 5 years. Health care costs and utilization were obtained from claims data.

RESULTS: FI was reported by 36.2% of primary care patients, but only 2.7% of patients with FI had a medical diagnosis. FI adversely affected quality of life and severe FI was associated with 55% higher health care costs (including 77% higher gastrointestinal-related health care costs) compared to continent patients.

CONCLUSION: Increased screening of FI is needed.

Key words: fecal incontinence, health care costs, health care utilization, screening

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Fecal incontinence (FI), which is defined as the accidental loss of solid or liquid stool, affects a large proportion of the noninstitutionalized population of the United States. Estimates range from 2.2%[1] to as high as 24%,[2] with most estimates in the range of 7–12%.[3,4] It has a significant impact on quality of life (QOL) that may include embarrassment, social stigmatization, depression, and anxiety.[5-7] FI may also contribute to the decision to place older patients into assisted living facilities.[8] However, despite its high prevalence, its deleterious impact on QOL, and the availability of effective medical and surgical treatments,[9,10] surveys suggest that only 10%[7] to 30%[11] of people with FI have discussed this with their physician.

The direct costs associated with providing care for patients with FI are largely unknown. This is due in part to the variety of treatments, ranging from medical and behavioral approaches to surgical repair[9,10] with very different costs, and the failure of most cost analyses to differentiate between FI and urinary incontinence.[5,12]

The aims of this study were to: (1) estimate the prevalence of FI in primary care and its impact on QOL and health care costs; (2) determine what proportion of patients with self-reported FI have a medical diagnosis of FI; (3) identify patient characteristics that increase the likelihood that FI is reported to a physician and diagnosed; and (4) estimate health care costs associated with FI. It was our hypothesis that patients who self-report FI are often undiagnosed and that those who self-report FI utilize more total and more gastrointestinal (GI)-related health care dollars, make more health care visits, and have lower health-related QOL.

MATERIALS AND METHODS

This study represents a secondary analysis of a larger study.[13] Briefly, a large prospective study was performed to assess the impact of chronic constipation on QOL and health care costs at a health maintenance organization (HMO), Group Health Cooperative of Puget Sound (GHC), Seattle, WA, which serves >500,000 residents in the state of Washington. GHC's patient population is similar to the general population of Seattle, WA, except that it underrepresents the high and low extremes of socioeconomic status. When compared to the US census, the study population underrepresents Hispanics and African Americans and overrepresents Asians.

All patients were required to be at least 18 years old; to have made at least 1 clinic visit (index visit) to a primary care provider at GHC from Sept. 1, 2004, through Dec. 31, 2005; and to have been enrolled at GHC for all of the previous 5 years. Gynecology clinics were included with other primary care clinics. Exclusions were a history of GI cancer or resection except for appendectomy or cholecystectomy. Two groups were re-

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cruited: 676 patients with a clinical diagnosis of constipation (564.0X) at their index visit, and a control group of 1031 patients who were matched by stratified sampling to the constipated patients with respect to age and sex but who did not receive a clinical diagnosis of constipation either at their index visit or at any time in the previous 5 years. Controls were matched to constipated patients using a stratified sampling frame to recruit a specified number in each age range of both male and female patients. This control group was unselected except for age and sex and the exclusion of a clinical diagnosis of constipation.

The study received institutional review board approval by both the University of North Carolina at Chapel Hill and GHC. Patients received a full description of the study with all elements of informed consent. Informed consent was inferred from completion and return of the questionnaires.

The survey included questions about the patient's symptoms and history of constipation; the Rome III Diagnostic Questionnaire[14] modules for functional constipation, irritable bowel syndrome (IBS), and bloating; demographic information; and the Short Form Health Survey (SF12). The SF12 is a generic health-related QOL scale whose 12 questions address self-perceptions of both physical and mental health.[15] It is scored by summing items on physical and mental scales and transforming these into T-scores such that a score of 50 corresponds to the mean for the healthy adult population and 1 SD below the mean for healthy controls is equivalent to a T-score of 40. A difference of 5 U is considered the minimally clinically important difference.

Patients were classified as fecally continent or incontinent based on their response to the following question in the initial survey: "In the last 3 months, how often have you accidentally leaked liquid or solid stool?" Response options were: never, <1 day a month, 1 day a month, 2-3 days a month, 1 day a week, >1 day a week, or every day. Patients who answered "never" were classified as continent, those who answered "1 day a month" or less often were categorized as infrequent FI, and those who answered "2-3 days a month" or more often were categorized as frequent FI, similar to Bharucha et al.[6]

Health care costs and health care utilization were calculated (for consenting patients) from claims data collected by GHC for the previous 5 years using previously described methods.[16] Outliers were accounted for by averaging cost and utilization data for each patient over a 5-year period; 5-year means were the unit of analysis. Actual costs (not charges) were expressed in 2005 US dollars. The average number of inpatient days for 5 years was obtained from these claim data and used as an index of medical comorbidity. This unvalidated index is conceptually similar to the Charlson comorbidity index, with which it correlates.[17]

Statistical analyses were performed using software (SPSS, Version 16.0, SPSS Inc, Chicago, IL). Fisher's exact test was used for dichotomous data and Student *t* test was used for continuous variables when the comparison groups were of similar size; however, for comparison of the 15 patients with medical diagnosis of FI to the 535 FI patients without a medical diagnosis, Mann-Whitney *U* tests were employed. General linear modeling was used to test for mediation. A *P* value of $< .05$ was considered significant.

RESULTS

The control cohort included 1003 analyzable patients after excluding 28 who had missing data for the FI question. The constipation cohort included 655 patients after excluding 21 with missing data for the FI question. Average age was 66.29 years for controls and 66.02 years for constipated patients; 68% of controls and 69% of constipated patients were female.

Table 1 shows that FI at least once in the past month was reported by 34.1% (342/1003 patients) in the control cohort and by 39.4% (258/655 patients) in the constipated cohort ($P = .074$). The overall prevalence of FI was 36.2%. Frequent (≥2 times/mo) FI was reported by 10.7% of controls and 13.3% of constipated patients. Because there was no significant difference between those with a clinical diagnosis of constipation and those without, the 2 cohorts were pooled in subsequent analyses.

Table 1 also shows that patients meeting the symptom criteria for IBS were significantly more likely to report FI compared to patients without IBS. Having loose stools "often" or "always" was highly predictive of frequent FI, and having hard stools "often" or "always" was weakly predictive of FI. The relationship between IBS diagnosis and FI was not explained by the effects of loose stools because, when analysis was restricted to patients who reported loose stools and hard stools "never" or "sometimes," those with IBS were still more likely to report frequent FI (13.9% compared to 5.8% for non-IBS patients; $\chi^2 = 23.004$; $P < .001$).

Demographic variables that have been reported to influence the development of FI are shown in Table 2. FI was significantly associated with age, marital status, and race but not sex, education, or income.

The physical component of QOL (ie, the ability to engage in daily physical activities, eg, shopping and climbing stairs) was significantly lower in patients with FI, but the mental component was not (Table 3). This association was confirmed by multivariate analysis adjusting for IBS diagnosis, loose stools, hard stools, age, marital status, race, and inpatient bed days.

Average annual health care costs for all causes was significantly associated with FI, with patients who had frequent FI having an average of $2897 per year higher health care costs than patients without FI. This association was confirmed by multivariate analysis adjusting for IBS diagnosis, loose stools, hard stools, inpatient bed days, age, race, and marital status. GI-related health care costs were significantly related to FI in univariate analyses, but this relationship did not survive multivariate testing. Likewise, the frequency of health care visits was significantly higher in patients with frequent FI compared to patients without FI (average difference of 4.21 visits/y). This association was also con-

TABLE 1

Relationship of bowel symptoms to fecal incontinence

Variable	No FI	FI <2/mo	FI ≥2/mo	Statistical significance
Clinical diagnosis of constipation				
No	65.9% (n = 661)	23.4% (n = 235)	10.7% (n = 107)	$\chi^2 = 5.213$ $P = .074$
Yes	60.6% (n = 397)	26.1% (n = 171)	13.3% (n = 87)	
Rome criteria for IBS				
No	69.7% (n = 739)	22.4% (n = 237)	7.9% (n = 84)	$\chi^2 = 57.793$ $P < .001$
Yes	53.1% (n = 312)	28.6% (n = 168)	18.4% (n = 108)	
Loose stools				
Never or sometimes	67.2% (n = 1006)	23.6% (n = 353)	9.3% (n = 139)	$\chi^2 = 113.906$ $P < .001$
Often or always	31.0% (n = 48)	34.2% (n = 53)	34.8% (n = 54)	
Hard stools				
Never or sometimes	65.5% (n = 791)	23.8% (n = 288)	10.7% (n = 129)	$\chi^2 = 6.151$ $P = .046$
Often or always	59.3% (n = 261)	26.6% (n = 117)	14.1% (n = 62)	

FI, fecal incontinence; *IBS*, irritable bowel syndrome.

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firmed by multivariate testing. Univariate testing showed the number of GI-related outpatient visits to be significantly increased in patients with frequent FI compared to those without FI, but this was no longer significant after multivariate adjustment. The Figure shows the proportion of primary care patients who had a medical diagnosis of FI. Only 15 patients with self-reported FI had a clinical diagnosis of FI in the medical record for the last 5 years (2.7% of those with self-reported FI; 1% of all evaluable patients). This analysis was limited to patients who gave permission for review of their medical records (550 with self-reported FI and 920 without self-reported FI). Ten of the 15 patients with a medical diagnosis of FI came from the control cohort and 5 from the constipated cohort. (Fifty patients who reported FI on questionnaires did not give permission for review of their medical records.)

The next set of analyses investigated factors that may influence which patients with FI receive a medical diagnosis of FI. Nine of 15 patients with a medical diagnosis of FI had ≥2 accidents per month, and this association was significant at $P = .023$. Ten of 15 patients with a medical diagnosis of FI had IBS, but the association of IBS to medical diagnosis of FI was not statistically significant due to the large number of IBS patients with FI who did not receive a medical diagnosis for it. Neither diarrhea nor constipation was predictive of receiving a medical diagnosis for FI.

We also examined whether patients with the greatest impact of FI on their QOL were the most likely to receive a medical diagnosis, but found no evidence for this (Table 4). We did find that patients who received a medical diagnosis of FI had significantly higher GI-related health care costs, increased numbers of outpatient visits overall, and increased numbers of GI-related outpatient visits.

COMMENT

These data show that FI is highly prevalent among older medical patients in the primary care clinics of an HMO–a third are affected–and this problem is usually undiagnosed: only 15 (2.7%) with self-reported FI had a clinical diagnosis of FI in their medical record for the last 5 years. This is important because it shows that health care providers are not actively screening for FI and it suggests that patients may be pessimistic that physicians can help with this problem. Others have also reported that the majority of patients with FI do not report this to their physician.[18] This low rate of screening and care-seeking is unfortunate because there are a variety of treatments that can reduce the severity of FI and in some cases eliminate it altogether.

Others have reported that patients with more frequent symptoms of FI are more likely to consult their physicians[7] and our data confirm this. However, it is important to recognize that not all patients with frequent FI report it to their physician: in this study, 95% of patients with frequent FI had no medical diagnosis of FI.

FI had a significant impact on the physical but not the mental aspects of QOL even in patients who had not discussed their FI with their doctor. The impact on the physical components of QOL was >.5 SD (decreased T-score of 44.9-36.6), which meets the accepted definition of a clinically meaningful effect. The failure to see an impact of FI on the mental component of QOL contrasts with

TABLE 2
Demographic characteristics related to fecal incontinence

Variable	No FI	FI <2/mo	FI ≥2/mo	Statistical significance
Mean age, y	63.2	69.6	73.6	F = 14.513 $P < .001$
Sex				
Female	53.6% (n = 719)	23.2% (n = 260)	12.7% (n = 142)	$\chi^2 = 4.464$ $P = .107$
Male	63.5% (n = 333)	26.7% (n = 140)	9.7% (n = 51)	
Marital status				
Single, separated, divorced, or widowed	57.8% (n = 312)	26.3% (n = 142)	15.9% (n = 86)	$\chi^2 = 17.965$ $P < .001$
Living with partner or married	66.9% (n = 739)	23.4% (n = 259)	9.7% (n = 107)	
Education				
High school or less	62.7% (n = 235)	24.3% (n = 91)	13.1% (n = 44)	$\chi^2 = 0.998$ $P = .607$
College or professional	64.4% (n = 816)	24.4% (n = 309)	11.2% (n = 142)	
Race				
Caucasian	62.7% (n = 912)	25.3% (n = 368)	12.0% (n = 174)	$\chi^2 = 6.697$ $P = .035$
Other races	71.9% (n = 146)	18.2% (n = 37)	9.9% (n = 20)	
Personal income				
\$0-\$49,999	62.4% (n = 653)	25.0% (n = 262)	12.5% (n = 131)	$\chi^2 = 6.354$ $P = .174$
\$50,000-\$99,000	68.1% (n = 246)	23.5% (n = 85)	8.3% (n = 30)	
≥\$100,000	68.5% (n = 37)	20.4% (n = 11)	11.1% (n = 6)	

FI, fecal incontinence.

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other studies that reported a significant impact on anxiety, depression, and willingness to socialize.[6,19] The most likely explanation for this disparity is that the SF12 is a generic QOL instrument that is not sensitive to the specific impact of FI; those reporting a significant psychosocial impact of FI have used disease-specific instruments.[6] An important observation in our study was that infrequent FI (≤1/mo) had an effect on the physical component of QOL comparable to that of frequent FI, showing the importance of diagnosing and treating even the patient with mild or infrequent FI.

TABLE 3
Impact of having fecal incontinence

Variable	No FI	FI <2/mo	FI ≥2/mo	Univariate *P* value	Multivariate *P* value
SF12 physical composite	44.90	40.75	36.60	< .001	< .001
SF12 mental composite	52.17	50.96	51.05	.072	.278
All-cause health care costs	\$5258	\$6975	\$8155	< .001	.003
GI-related costs	\$285	\$375	\$504	.004	.275
All-cause outpatient visits	8.12	10.01	12.33	< .001	< .001
GI outpatient visits	0.41	0.54	0.70	< .001	.062
Inpatient bed days	0.36	0.51	0.67	< .001	

FI, fecal incontinence; *GI*, gastrointestinal; *SF12*, Short Form Health Survey.

Multivariate testing used general linear modeling and adjusted for the following covariates: irritable bowel syndrome diagnosis, loose stools, hard stools, age, marital status, race, and inpatient bed days.

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Previously, the health care costs for FI have remained largely unknown because the treatment and care of patients with FI is layered and complicated, and divergent approaches have been used to estimate FI-related costs. Several authors have looked at the costs of surgical repair alone,[20,21] some have evaluated the costs associated with obstetrical injuries,[22] while others have evaluated the costs of outpatient care.[23] Surgical costs range from $5054-$17,166. Outpatient costs have been reported at $2944 per patient year with more than half of the total costs of FI made up of indirect costs,[23] however, this study was performed in The Netherlands and may not be applicable to the population of the United States.

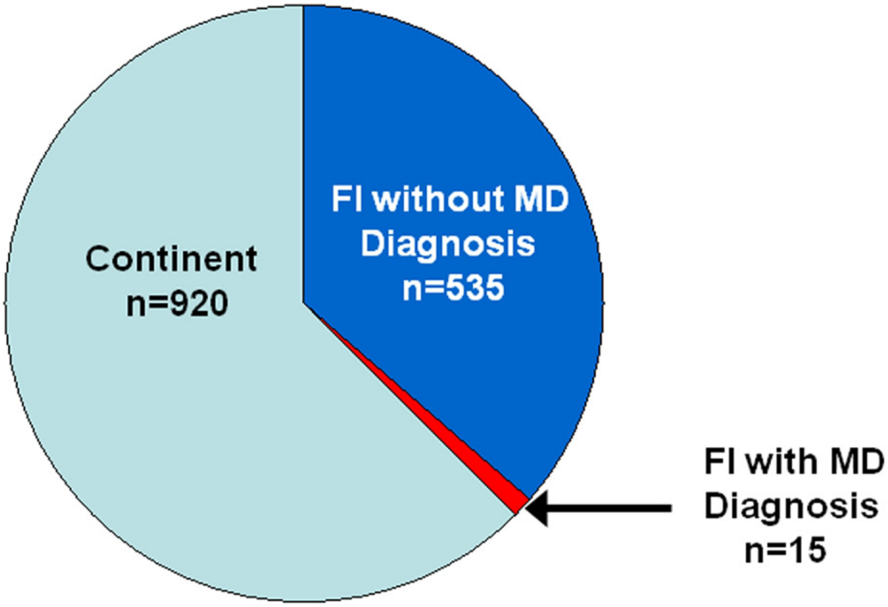
We compared total direct health care costs and GI-related health care costs between patients who reported FI and those who did not. This approach has been used to estimate the economic burden of other diseases, such as Alzheimer disease[24] and rosacea.[25] Patients with frequent FI had 55% higher total health care costs and 77% higher GI-related health care costs, and they also had significantly more total outpatient visits and GI outpatient visits. The difference in total health care cost and utilization remained significant after adjusting for age, IBS diagnosis, medical comorbidity, and other contributors to increased health care.

However, we cannot assume that these differences in health care costs are directly attributable to surgical or medical management of FI. The discrepancy between the incremental cost for all health care in patients with frequent FI ($2897) vs the smaller incremental cost for GI-related health care ($219) suggests that most of the excess health care cost seen in patients with FI is for comorbid illnesses. This conclusion is reinforced in our study by 2 other observations. First, we found that only 2.7% of patients with self-reported FI had received a medical diagnosis for their FI, but the remaining 97.3% of patients whose FI had not been diagnosed also had significantly higher total health care costs and GI-related health care costs. The second observation is that the presence and the severity of FI are both significantly associated with the total number of inpatient bed days–a surrogate marker for overall ill health. Thus, although we were able to show by multivariate regression that FI is independently associated with increased health care costs after adjusting for number of inpatient bed days and other confounders, our estimates of the health care costs associated with FI should be interpreted with caution.

There were other limitations to this study: it involved a large HMO-based population, and costs may differ for patients seen by other types of providers. However, in 1997, one-quarter of the US population was enrolled in HMOs according to the National Center for Health Statistics.[26] We also studied an older population of patients, and because the prevalence of FI increases with age,[1] these data likely overestimate the prevalence of FI in younger adults. A strength of our study is that it involved a large population and included both

FIGURE

Primary care patients reporting FI in past month



Only small fraction (2.7%) of FI patients had medical (MD) diagnosis. Excluded from analysis were 50 with FI and 138 without FI who refused permission to review their medical records.

FI, fecal incontinence.

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TABLE 4

Impact of medical diagnosis of fetal incontinence

Variable	FI but no diagnosis	FI with diagnosis	*P* value[a]
SF12 physical composite	39.32	35.17	.218
SF12 mental composite	51.10	51.14	.670
All-cause health care costs	$7312	$8900	.114
GI-related costs	$412	$635	.043
All-cause outpatient visits	10.60	17.75	.001
GI outpatient visits	0.58	1.09	.003

FI, fecal incontinence; *GI*, gastrointestinal; *SF12*, Short Form Heath Survey.

[a] Significance tested by Mann-Whitney non-parametric test due to small sample size for 1 group.

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sexes, although in comparison to the United States overall, Asians were overrepresented and African Americans were underrepresented. Another limitation is that we were not able to include out-of-pocket health care costs such as the purchase of protective devices and over-the-counter medications, which are believed to be large. Moreover, it is believed that FI increases the likelihood of a patient being referred to a nursing home, and this is a significant additional health care costs that was not captured in this study.[5]

Future directions may include: (1) a more detailed analysis of medical charges to determine what types of health care account for the excess costs seen in patients with FI; (2) questionnaires targeted at capturing over-the-counter costs for pads, containment devices, and medications; (3) methods for capturing indirect costs related to work absenteeism, decreased work productivity, or termination of employment due to FI; and (4) studies of the cost of nursing home referral that may be attributable to having FI.

In conclusion, FI symptoms are prevalent in an HMO setting but are rarely diagnosed. This finding reemphasizes the importance of screening patients for FI as this is a treatable condition that is associated with a deleterious impact on QOL and increased health care costs when left untreated. Overall, the total health care costs are 55% higher and GI-related costs are 77% higher in patients with frequent FI symptoms, but it is unknown how much of the excess health care costs are directly related to FI vs being related to other comorbid medical conditions. ■

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