Patient Satisfaction With Screening Flexible Sigmoidoscopy

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Background: Screening flexible sigmoidoscopy is an underused cancer prevention procedure. Physicians often cite patient discomfort as a reason for not requesting sigmoidoscopy, but patient experiences and attitudes toward sigmoidoscopy have not been well studied.

Objective: To measure patient satisfaction and the determinants of satisfaction with screening sigmoidoscopy.

Methods: An instrument to assess satisfaction with screening sigmoidoscopy was developed. Responses were evaluated with a factor analysis, tested for reproducibility and internal consistency, and validated against an external standard.

Results: A total of 1221 patients (666 men and 555 women; mean age, 61.8 years) were surveyed after sigmoidoscopy. Examinations were performed by a nurse practitioner (n=668), internist (n=344), or gastrointestinal specialist (n=184). More than 93% of the participants strongly agreed or agreed they would be willing to undergo another examination, and 74.9% would strongly recommend the procedure to their friends. Regarding pain and discomfort, 76.2% strongly agreed or agreed that the examination did not cause a lot of pain, 78.1% stated that it did not cause a lot of discomfort, and 68.5% thought that it was more comfortable than they expected. Fifteen percent to 25% of the patients indicated they had a lot of pain, great discomfort, or more discomfort than expected. Women were more likely to have significant pain or discomfort than men (adjusted odds ratio, 2.9; 95% confidence interval, 1.9-4.3; P<.001).

Conclusions: Approximately 70% of individuals who undergo screening sigmoidoscopy are satisfied and find the procedure more comfortable than expected, whereas only 15% to 25% find the procedure unpleasant. Physicians should not project discomfort onto patients as a reason for not requesting screening sigmoidoscopy.

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C OLORECTAL carcinoma (CRC) is an important public health problem, with more than 138000 new cases and 55000 deaths estimated in the United States in 1999.1 Screening for CRC holds great promise, because CRC develops slowly from an adenomatous polyp to a malignant stage that is endoscopically or surgically curable, and only then to more advanced, incurable disease. Studies suggest that the excision of adenomatous polyps can decrease the subsequent incidence of cancer.2-5

On a population basis, flexible sigmoidoscopy is one of the most promising modalities available for decreasing mortality from CRC. Case-control studies demonstrate a 70% to 90% reduction in the risk of mortality from distal CRC with screening.3,4 The US Preventive Services Task Force, the American Cancer Society, and the Agency for Health Care and Policy Research Task Force have upgraded their recommendations favoring sigmoidoscopy.6-8

Despite past professional endorsements by the American Cancer Society and the American College of Physicians, however, screening sigmoidoscopy is performed in a small number of eligible patients. According to the 1992 National Health Interview Survey, only 5% of individuals older than 50 years underwent a proctoscopy in the previous year, and 9% underwent one in the previous 3 years.9 Furthermore, it is likely that many of those examinations were performed for diagnostic testing and not for screening.

Traditionally, responsibility for arranging or performing screening sigmoidoscopy rests with primary care physicians. Numerous surveys have found that primary care physicians report that they support screening, yet use remains low.10-13

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PARTICIPANTS AND METHODS

We adapted an empirically validated instrument to assess satisfaction with screening mammography for use with flexible sigmoidoscopy. Items from the mammography inventory were reworded, and additions and deletions were made to reflect the sigmoidoscopy experience, but the overall structure and hypothesized domains were preserved. The instrument was pilot tested for item clarity and internal consistency before widespread implementation. Questions about screening centered on the following domains: convenience and accessibility; staff interpersonal skills; physical surroundings; perceived technical competence; pain and discomfort; expectations and beliefs; and general satisfaction. The questions under each of the domains are listed in Table 1. Responses were coded on a 5-point ordinal scale that included the following choices: strongly agree, agree, not sure, disagree, and strongly disagree. Negatively and positively worded statements were included, and questions were carefully ordered to avoid a response bias. The institutional review board of the University of Pittsburgh, Pittsburgh, Pa, approved the protocol.

A research assistant approached the patients shortly after their sigmoidoscopy to complete the inventory. The inventory was completed on site prior to discharge or returned by mail within a few days. To assess the test-retest reliability of the responses, a random sample of individuals were requested to repeat the questionnaire 3 to 4 weeks after the examination. Internal consistency was assessed using the Cronbach α.

Because the interval between sigmoidoscopies is usually 3 to 5 years, we could not examine the predictive validity of the inventory or whether patient satisfaction corresponded to compliance with subsequent screening. As an alternative, we pursued additional convergent validity by selecting a separate random sample of subjects to respond to 2 open-ended questions in a narrative format. The subjects were asked to write a few sentences about their sigmoidoscopy experience and about the examination in relation to their expectation. The request for narratives was mailed 3 to 4 weeks after the sigmoidoscopy and completion of the initial inventory. Two observers blinded to the inventory results evaluated the narratives and scored them for (1) overall experience (positive, negative, or no response or unable to determine) and (2) pain and discomfort (no pain or mild or moderate pain, significant pain or discomfort, or no response or unable to determine).

The participants were recruited from patients undergoing screening flexible sigmoidoscopy at the University of Pittsburgh Medical Center and at Magee Women’s Hospital, Pittsburgh. Ninety-seven percent of the patients were undergoing flexible sigmoidoscopy in the context of the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial, a community-based clinical trial of screening for cancer, which includes screening tests for lung, ovarian, and prostate cancer in addition to flexible sigmoidoscopy. Subjects in the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial enrolled voluntarily and were not charged for their cancer screening tests. The remaining 3% of the subjects were participating in a low-cost ($50 for those who could afford it) screening sigmoidoscopy program.

The survey responses were subjected to a principal components factor analysis with orthogonal rotation. The items formed a single cohesive factor or scale, with the exception of the item related to pretest anxiety (Table 1). This item was excluded from the remaining analyses that used the scale. The composite score was used to assess the overall outcome or satisfaction with sigmoidoscopy and to assess the variability in outcome in relation to subject, examiner, and sigmoidoscopy characteristics. Because of the importance of factors related to the pain and discomfort associated with sigmoidoscopy, the 3 items pertaining to pain and discomfort (Table 1) were also examined separately for their relationship to the sigmoidoscopy experience.

For uniformity, responses were recoded so that lower numbers indicated a more favorable response. Differences in variables in comparison to the outcomes were evaluated with the appropriate t test, χ² test, or nonparametric statistic. Multivariable analysis was performed with general linear modeling and with logistic regression. A Bonferroni correction for multiple comparisons was used to compare adjusted means across examiners. All P values were 2-sided and considered statistically significant at <.05.

In a population-based assessment of screening sigmoidoscopy by primary care physicians in Allegheny County, Pennsylvania, we found that more than 88% of physicians agreed completely or partly with recommendations for screening sigmoidoscopy, but only 34% reported that they referred or scheduled more than 5 patients per month for screening. In our study and in others like it, reported screening rates are likely to be overestimates of actual practice. Physicians commonly cite pain and discomfort during sigmoidoscopy as negatively influencing their decision to recommend screening. The attitude of physicians toward screening sigmoidoscopy is a critical factor in use, as several studies have shown that it is primary care physicians who determine whether or not patients receive preventive care. Physician attitude can also have a significant impact on patient adherence with the recommendation to undergo flexible sigmoidoscopy.

Although sigmoidoscopy has been in clinical practice for many years, little is known about patient satisfaction with the procedure. The aim of this investigation was to characterize patients’ experience or satisfaction with screening sigmoidoscopy and to assess the patient, examiner, and sigmoidoscopy factors that affect the experience. To assess satisfaction, we developed and validated a test instrument specifically for use with flexible sigmoidoscopy. A better understanding of the patient’s experience during sigmoidoscopy will improve our insight and assist us in developing ways to increase use.

RESULTS

SAMPLE CHARACTERISTICS

A total of 12,211 patients who underwent screening flexible sigmoidoscopy between May 30, 1996, and August
30, 1997, were surveyed. The characteristics of the sample are displayed in Table 2. Fifty-four percent of the patients were male. The mean age was 61.8 years, and more than 93% were white. By self-report, 11.5% had undergone a prior rigid examination only, 22.6% had undergone a prior flexible examination only, and 51.0% had not undergone a prior proctoscopic examination. In almost all previous examinations, the previous examinations had been performed more than 3 years before the current procedure. The examinations were performed by 1 of 3 experienced examiners. A nurse practitioner performed more than 54% of the examinations, an internal medicine physician performed more than 28%, and a gastrointestinal (GI) specialist performed more than 15%. In 27.4% of the cases, a trainee, usually an internist or an obstetrician-gynecologist resident physician learning to perform sigmoidoscopy, participated in the examination. Trainees worked only with the internist and the GI specialist. An anatomic “polyp” was found in 17.8% of the examinations. No biopsies were performed during screening examinations. In nearly 71% of the examinations, the sigmoidoscope was inserted 50 cm or more into the colon (Table 2).

### SATISFACTION

Overall, the majority of participants reported a positive experience (Table 3). More than 97% strongly agreed or agreed that they were very satisfied with their care; 93.1% reported that they would be willing to undergo another examination; and 74.9% would strongly recommend the procedure to their friends. For the components of the pain and discomfort scale, more than 76% strongly agreed or agreed that the examination did not cause a lot of pain, 78.1% that it did not cause great discomfort, and 68.5% that it was more comfortable than they expected. However, 15.0% of respondents reported “a lot of pain” and 14.3% reported “great discomfort.” A total of 19.3% (n = 1203) reported a lot of pain or great discomfort, and a total of 24.8% reported a lot of pain or great discomfort or that the examination was less...
comfortable than expected (Table 3). Thus, between 15% and 25% of the participants found the examination unpleasant. The mean ± SD score of the scale (scored 1-5) was 1.76 ± 0.45 for overall satisfaction and 2.2 ± 0.9 for the pain and discomfort items.

The determinants of satisfaction were assessed by examining the relationship between characteristics of the sigmoidoscopy experience and satisfaction. Thus, patient, examiner, and sigmoidoscopy variables were compared with overall satisfaction and with the pain and discomfort items (Table 4).

Overall satisfaction and pain and discomfort were not affected by patient characteristics such as age or race or by the patient having undergone a previous examination (Table 4). Even the most elderly patients tolerated the procedure well. Women were less satisfied (P<.001) and experienced significantly more pain and discomfort than men (P<.001).

Examinations that included a trainee examiner had less overall satisfaction (P<.001) and produced more pain and discomfort (P = .05). Participants for whom a polyp was found did not report any difference in overall satisfaction and tended to have less pain and discomfort (P = .09). Depth of insertion of the sigmoidoscope had an expected relationship to overall satisfaction and pain and discomfort. Individuals with the shortest depth of insertion had the most pain and discomfort (P<.001), which contributed to their limited depth of insertion, and, correspondingly, they had the least overall satisfaction (P<.001).

Pretest anxiety had an inverted-U–shaped relationship to satisfaction. The participants who were least anxious and most anxious had higher overall satisfaction (P<.001) and had lower amounts of pain and discomfort (P<.001).

There were statistically significant differences in overall satisfaction (P<.001) and pain and discomfort (P<.001) across the 3 types of examiners—nurse practitioner, internist, and GI specialist—with the best scores residing with the nurse practitioner. However, these results may have been confounded by the fact that the gender distribution of patients was not equivalent across examiners, and the nurse practitioner did not have trainees working with her. In a multivariable model (number of subjects, 1133) that controlled for factors significant in the univariate analysis, including sex of the patient, pretest anxiety, sigmoidoscopy examiner, presence of a trainee examiner, and depth of insertion, 3 factors remained significantly associated with overall satisfaction. These included pretest anxiety (P<.001), depth of insertion (P<.001), and sigmoidoscopy examiner (P<.001). Adjusted means for overall satisfaction and pain and discomfort for the nurse practitioner, internist, and GI specialist were compared. For satisfaction, the nurse practitioner had the best score (1.8), which was statistically significantly better than the internist's score (1.9) (P<.001 with Bonferroni correction) and the GI specialist's score (2.0) (P<.01 with Bonferroni correction), but there were no differences between the scores of the internist and the GI specialist. For pain and discomfort, the nurse practitioner had the best score (2.2), which was statistically significantly better than the GI specialist's score (2.5) and the internist's score (2.8) (both P<.001 with Bonferroni correction).

A multivariate logistic regression was performed to determine which patient factors were associated with scoring in the highest 10% of discomfort on the pain and discomfort scale (n=1251/174). After variables that could be identified before sigmoidoscopy, including age, sex, race, pretest anxiety, and previous examination, were controlled for, women were more likely to have significant discomfort than men (odds ratio, 2.9; 95% confidence interval, 1.9-4.3; P<.001), but no other factor was significantly associated with pain and discomfort. Additional adjustment for sigmoidoscopy examiner did not affect the results.
INVENTORY RELIABILITY

To assess the test-retest reliability of the inventory, we asked a 10% sample (n=121) of individuals to fill out the inventory a second time, 3 to 4 weeks later. The Pearson correlation coefficients between the first and second responses for overall satisfaction were 0.82 (P<.001) and 0.78 (P<.001) for the pain and discomfort scale, demonstrating excellent reliability. The internal reliability, or consistency, of the scale for overall satisfaction was excellent as well, with a Cronbach α of .87. The Cronbach α for the pain and discomfort scale was .84.

VALIDITY

The inventory, as reviewed by a panel of experts, demonstrated face validity for the domains thought to influence satisfaction. To assess construct and convergent validity, the results of the written narrative were compared with the initial inventory response. Fifty requests for narratives were mailed, and 42 (84%) were returned. Forty-one were complete enough for analysis. The agreement among the 2 raters was good, with a κ of 0.72 for the rating of the overall experience and 0.80 for pain and discomfort. Nearly all differences in rating between observers occurred when one observer assigned a score and the other thought that a score could not be assigned. If only 1 rater assigned a score, that score was used in the analysis. Based on the narrative, 31 participants had a positive experience, 7 had a negative experience, and 3 could not be evaluated. Regarding pain and discomfort, 21 did not have significant discomfort, 6 had significant discomfort, and 14 could not be evaluated.

Using the Wilcoxon rank sum test, overall satisfaction and pain and discomfort on the initial inventory were compared with the results on the narrative. The participants who were rated as having a positive experience had an overall satisfaction score of 1.7 ± 0.41 (mean±SD) and a pain and discomfort score of 2.0 ± 0.64 compared with a satisfaction score of 1.7 ± 0.34 (P=.73) and a pain and discomfort score of 2.6 ± 0.59 (P=.02) for those rated as having a negative experience. The participants who were rated as having significant discomfort on the narrative had a mean score of 2.6 ± 0.57 on the pain and discomfort scale in comparison with a score of 2.0 ± 0.59 (P=.05) for those who did not have significant discomfort.

COMMENT

Although patient discomfort is a frequently cited barrier to screening sigmoidoscopy, the majority of participants in our large screening program were highly satisfied with their examination and found that the procedure was more comfortable than expected. Even the patients with the highest preprocedure anxiety tolerated the examination well and had an overall experience that was equivalent to the overall experience of those with the least anxiety. About 70% of patients found the pain and discomfort of the procedure tolerable, and only 15% to 25% experienced significantly bothersome symptoms. These results were achieved despite the insertion of the sigmoidoscope beyond 50 cm in more than 70% of participants. Furthermore, more than 90% of individuals reported willingness to undergo a second procedure, and nearly 75% would strongly recommend the procedure to their friends.

Surveys of physicians10-12,24 and patients21,25-30 have consistently demonstrated high levels of concern about pain and discomfort with screening sigmoidoscopy. The current low rate of screening sigmoidoscopy use9 may in part be attributable to physicians ascribing significant discomfort to the procedure. These attitudes may represent a holdover from the era of rigid sigmoidoscopy. Our data suggest that the discomfort attributed to flexible sigmoidoscopy by physicians is overemphasized and contrary to patients’ experience. Practitioners should not project discomfort onto patients as a reason for not requesting screening, particularly because physician recommendation is an important predictor of compliance with preventive screening measures such as sigmoidoscopy.16-19

However, in 15% to 25% of patients, sigmoidoscopy is significantly uncomfortable. Our results do not point to an effective method of identifying these individuals beforehand, other than that they are more likely to be women. Sigmoidoscopy may not be an appropriate screening technique for everyone, and consideration should be given to stopping the procedure promptly when significant discomfort ensues and offering colonoscopy with sedation as an alternative. Similarly, offering colonoscopy with sedation to patients who are resistant to sigmoidoscopy should also be considered.8

Physician education will be an important part of increasing screening rates. In our population-based survey of primary care physicians in Allegheny County, we found evidence of poor physician understanding about flexible sigmoidoscopy, including a lack of knowledge about the yield and risks of the test.11 National surveys show similar results.10 In addition to informing physicians about the recommendations and mechanics of sigmoidoscopy, informing them about the acceptability to patients will be an important part of overcoming barriers to implementation, as physicians play a key role in the use of CRC screening tests.

The message about the tolerability of sigmoidoscopy needs to be emphasized to patients as well. Individuals who perceive flexible sigmoidoscopy as painful are less likely to undergo screening,19 and the perceived pain barrier can even negate a clinician’s recommendation for screening.31 Although limited, studies suggest that only about 25% to 30% of individuals who are offered screening actually undergo it.32 Factors that have been associated with the decision to undergo screening include physician recommendation, perceived susceptibility, and family history.10,31,32 For flexible sigmoidoscopy to realize its potential of a reduction of 70% or more in mortality from distal CRC, there must be a vast increase in use. The recent passage of Medicare coverage for the cost of screening and the expansion of coverage by commercial insurers should remove or reduce the cost barrier. Studies testing new methods and models for increasing use are desperately needed, and these new
strategies should emphasize that the procedure is satisfactory to patients.21,30

Regarding our investigation of the determinants of satisfaction, several points should be emphasized. Women do report more pain and discomfort than men and are less satisfied with the procedure. Correspondingly, there was a lower depth of insertion in women compared with men (P < .001) (data not shown). In contrast to an earlier and smaller investigation,21 we found no relationship between age and the subjective experience of sigmoidoscopy. Our data suggest that the experience of sigmoidoscopy in individuals who are older than 70 years is no different from that in younger people.

Recently, to increase availability, many institutions have begun to use nurse endoscopists to perform sigmoidoscopy screening. Observational studies20,33-38 and 1 randomized trial37 show similar polyp detection rates and depth of insertion in screenings performed by nurse endoscopists and physicians. Our data, like others, suggest that nurses have satisfaction profiles that are similar to 20,33 if not slightly better than, those of physicians. It should be noted, though, that the nurse endoscopist in our investigation was highly experienced, having performed 668 examinations during this study. In the univariate analysis, examinations in which trainees participated had lower overall satisfaction rates and increased rates of pain and discomfort. The implication is that skilled examiners perform similarly regardless of training or background, but the sigmoidoscopy experience can be different and more onerous in less experienced hands.

Of interest, the finding of a polyp had no effect on satisfaction. Thus, the awareness of the presence of a polyp of uncertain pathology and of the probable need for further testing did not result in a diminution in satisfaction. It is possible that the patient’s security regarding the detection of an asymptomatic abnormality superseded the anxiety induced by the findings. Surely, a polyp found on sigmoidoscopy does not have the implication of an abnormality found on mammography. An alternative explanation is that our instrument was unable to dissect the complex set of concerns present in individuals with a newly diagnosed colorectal polyp.

The satisfaction instrument developed for this investigation may merit further consideration in outcome research. The inventory demonstrates reproducibility, internal consistency, and validity. Because adverse complications from sigmoidoscopy are rare, assessment of quality needs to go beyond complications, and include alternative end points such as satisfaction. The instrument developed and tested in our study could be used to assess quality across a variety of practitioners in a number of practice settings and can distinguish between a pleasant and an unpleasant sigmoidoscopy experience.

Several limitations of this investigation should be noted. The study was conducted with volunteers who underwent screening examinations. The results do not pertain to individuals who have not come in for testing, and it is possible that those individuals might experience sigmoidoscopy differently. However, the relative uniformity of response in this large sample suggests that our results are a good representation of the screening experience. The major barrier to increasing screening is getting individuals to present for testing. Once they do, it is likely that their experience will not differ from the experiences reported herein. Also, most of the participants in our study were part of a clinical trial that provided a series of free cancer screening tests. Some of the participant satisfaction could have been attributable to those circumstances, and that may have affected our results. However, similar results were seen in a much smaller subset of individuals who paid for screening, albeit at a low cost, outside the context of the trial. Furthermore, now that screening is increasingly coming under insurance coverage, cost may become a less significant factor.

In conclusion, the patients who underwent screening flexible sigmoidoscopy in this study were highly satisfied and found that the examination was more comfortable than was anticipated. Practitioners should not project discomfort onto patients as a reason for not requesting screening and should stress that patients who have undergone the procedure are generally pleased with the experience and willing to undergo a second examination.

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