Short Communication

Patterns of Colorectal Cancer Screening Uptake among Men and Women in the United States

Helen I. Meissner, Nancy Breen, Carrie N. Klabunde, and Sally W. Vernon

Abstract

Objective: The purpose of this report is to examine (a) gender-specific correlates of colorectal cancer test use using recent national data from 2003 and (b) patterns of colorectal cancer screening by gender and test modality over time.

Methods: We analyze data from the 1987, 1992, 1998, 2000, and 2003 National Health Interview Surveys. Our sample consists of men and women ≥50 years never diagnosed with colorectal cancer and who reported a recent fecal occult blood test and/or endoscopy.

Results: In 2003, both men and women reported higher rates of colonoscopy (32.2% and 29.8%, respectively) than use of FOBT (16.1% and 15.3%, respectively) or sigmoidoscopy (7.6% and 5.9%, respectively). Men reported higher use of endoscopy than women if they had a usual source of health care, had talked to a general doctor, and had two to five visits to the doctor in the past year. Men and women 65 years and older had higher rates of any recommended colorectal cancer test (55.8% and 48.5%, respectively) than persons 50 to 64 years (males, 41.0%; females, 31.4%). Use of colorectal cancer tests also was higher among both genders if they were not Hispanic, had higher educational attainment, were former smokers, had health insurance or a usual source of care, or if they talked to a general doctor. Recent use of colorectal cancer tests has increased since 2000 for both women and men largely due to increased use of colonoscopy.

Conclusions: Colorectal cancer testing is increasing for both men and women, although the prevalence of testing remains higher in men. Our data support previous findings documenting socioeconomic disparities in colorectal cancer test use. Access barriers to screening could be particularly difficult to overcome if colonoscopy becomes the preferred colorectal cancer screening modality. (Cancer Epidemiol Biomarkers Prev 2006;15(2):389–94)

Introduction

Despite expert consensus and national guidelines (1) endorsing colorectal cancer screening as an effective strategy for reducing colorectal cancer incidence and mortality, uptake of screening has remained relatively low. In 2000, less than half (42%) of U.S. age-eligible adults reported receiving any of the recommended colorectal cancer screening tests (2). This relatively low rate of use has left many wondering why we have not witnessed the same steep increase in colorectal cancer screening that was observed with mammography after evidence-based recommendations for breast cancer screening were published. All the elements were in place by 2000 for the takeoff. The U.S. Preventive Services Task Force first published guidelines recommending colorectal cancer screening in 1996 (3). Two years later, colorectal screening became a covered Medicare benefit (http://healthservices.cancer.gov/seermedicare/concerns/testing.html). In 2000, most health plans in the United States covered at least one of the recommended colorectal cancer screening modalities (4). Nevertheless, rates of colorectal cancer screening remain low.

Correlates of colorectal cancer test use are similar to those observed for mammography and Papanicolaou tests and include race; ethnicity; age; education; income; and having health insurance coverage, a usual source of health care, a recent physician visit, use of other cancer screening tests, and a recommendation from a physician for screening (2, 5, 6). However, other characteristics of colorectal cancer screening distinguish it from breast and cervical screening, including a range of test modalities from which patients and physicians can choose [fecal occult blood testing (FOBT), sigmoidoscopy, colonoscopy, and double-contrast barium enema], patient responsibility in preparing for or completing the test, and the fact that this preventive service is recommended for both men and women.

Differences in colorectal cancer test use by gender have been documented. In general, studies have shown that men are more likely than women to be tested for colorectal cancer (7, 8) and that patterns of use by gender differ by test modality. For example, Seeff et al. (2) reported greater use of FOBT by women compared with men in 2000, but found that men had endoscopy more often than women. That colorectal cancer test use is higher in men than women is surprising because, in general, men tend to have lower use of medical services than women (9). One also would expect that high rates of breast and cervical cancer screening (5) would translate into greater opportunities for women to learn about and receive recommendations for colorectal cancer screening. Having seen a physician in the past year is strongly associated with colorectal cancer test use and increases with increasing numbers of physician visits (2). Furthermore, men have more colonic adenomas than do women (10) and there is a belief that colorectal cancer is a man’s disease. This belief, coupled with years of publicity focusing women’s attention on breast rather than colon cancer, may have contributed to the slower uptake of colorectal cancer screening among women compared with men (11, 12).

Trends in colorectal cancer test use to date suggest that patterns of use by gender and test modality may be changing.
We analyze data from the 1987, 1992, 1998, 2000, and 2003 National Health Interview Surveys (NHIS). The NHIS is the leading source of health information on the civilian, noninstitutionalized population in the United States (13). It is an in-person household survey that collects demographic and health information on an annual basis. The NHIS survey design oversamples Hispanics and African Americans to improve the precision of estimates for those populations (14, 15).

The purpose of this report is to examine (a) gender-specific correlates of colorectal cancer test use using recent national data from 2003 and (b) patterns of colorectal cancer screening by gender and test modality over time. We report national trends for colorectal cancer test use for any purpose and for screening.

### Materials and Methods

We analyze data from the 1987, 1992, 1998, 2000, and 2003 National Health Interview Surveys (NHIS). The NHIS is the leading source of health information on the civilian, noninstitutionalized population in the United States (13). It is an in-person household survey that collects demographic and health information on an annual basis. The NHIS survey design oversamples Hispanics and African Americans to improve the precision of estimates for those populations (14, 15).

The NHIS includes questions on the use of FOBT and colorectal endoscopy, but the questions evolved over time to accommodate new technologies and research. The 2000 NHIS was the first time that questions specifically addressed colorectal cancer screening by gender.
Table 1. Colorectal cancer testing trends by gender (Cont’d)

<table>
<thead>
<tr>
<th></th>
<th>Colorectal cancer</th>
<th>Any recommended test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Females</td>
<td>Males</td>
</tr>
<tr>
<td></td>
<td>n (% (95% CI))</td>
<td>n (% (95% CI))</td>
</tr>
<tr>
<td></td>
<td>4,618 (32.2 (30.6-33.8))</td>
<td>6,760 (29.8 (28.4-31.2))</td>
</tr>
<tr>
<td></td>
<td>3,612 (22.4 (21.0-23.9))</td>
<td>4,706 (27.4 (26.1-28.8))</td>
</tr>
<tr>
<td></td>
<td>2,085 (15.0 (13.9-16.3))</td>
<td>2,156 (12.6 (11.6-13.6))</td>
</tr>
<tr>
<td></td>
<td>1,642 (4.1 (3.6-4.6))</td>
<td>1,658 (6.6 (6.1-7.2))</td>
</tr>
</tbody>
</table>

**Table 1** shows recent use of home FOBT, sigmoidoscopy, colonoscopy, and any recommended colorectal cancer test for men and women by selected sociodemographic variables. In 2003, both men and women reported higher rates of recent colorectal cancer screening compared to the previous year. There were no significant differences in the prevalence of FOBT by gender. To determine the trends in colorectal cancer screening, we compared the use of these tests between men and women who had been screened at least once in the past 10 years. The use of FOBT, sigmoidoscopy, and colonoscopy was higher among women compared to men. The results suggest that women are more likely to use these screening tests than men.
for men overall (7.6% for men versus 5.9% for women) and for non-Hispanic men (7.8% for men versus 6.1% for women). Men ages 65 years and older reported greater use of colonoscopy than women the same age (39.5% versus 33.7%). Having any recent colorectal cancer tests was significantly different for men and women overall (46.5% versus 43.1%) and by non-Hispanic ethnicity, age 65 years or older, married, public health insurance coverage, having a usual source of health care, seen or talked to a general doctor, and having two to five physician visits in the past year.

Men and women 65 years and older had higher rates of any recommended colorectal cancer test than persons 50 to 64 years of age. Use of colorectal cancer tests also was higher among men and women if they were not Hispanic or Latino, had higher educational attainment, were former smokers, had health insurance coverage, a usual source of care, or if they talked to a general doctor (Table 1). For example, 53% of men and 47% of women who saw or talked to a general doctor reported having any recommended colorectal cancer test compared with men and women who did not see or talk to a general doctor (only 24% of men and women in the latter group reported any recommended test). Likewise, women who reported recent mammography or Papanicolaou testing had higher rates of colorectal cancer test use than women who did not report having these other screening tests, as did men who reported having a recent prostate-specific antigen test. Former smokers of both genders (men, 53.9%; women, 52.4%) were more likely to report having any recommended colorectal cancer test than never (men, 43.7%; women, 35.3%) or current smokers (men, 35.3%; women, 33.3%). Colorectal cancer test use also increased for men and women as the number of visits to the doctor in the past year increased.

Figure 1 displays trends in recent use of colorectal cancer tests from 1987 to 2003 for women and men. The broken lines between 1998 and 2000 represent changes in the survey questions that were redesigned to more accurately distinguish between recommended screening tests. As can be seen, colorectal cancer testing rates have increased since 2000 for both women and men, and this increase is largely driven by a steep increase in colonoscopy use. Recent use of sigmoidoscopy has declined since 2000. Likewise, rates of home FOBT use among women (not shown in figure) declined from 17.5% in 2000 to 15.4% in 2003. Among men, rates of home FOBT in the past year were similar in 2000 and 2003 (16.6% and 16.3%, respectively).

We also examined trends in the proportion of colorectal cancer test use that could be attributed to uptake of tests for screening purposes. Figure 2 displays colorectal cancer test use for any reason as well as for screening specifically. By 2003, for men and women, almost all (e.g., 90%) home FOBT was done for screening purposes. Not surprisingly, a smaller percentage of all recent endoscopies were done specifically for screening, although the proportion of endoscopies being done for screening purposes seems to be rising in both men and women. In 1998, 68% of men and 54% of women reported that their recent endoscopy was for screening purposes. By 2000, the proportion of endoscopies done for screening rose to 74% in men and 68% in women.

Discussion

Our analysis of NHIS data suggests that 2000 may be the beginning of an increase in colorectal cancer screening similar to the increase in mammography observed between 1987 and 1992. Increases in test use are similar for men and women, although higher rates of sigmoidoscopy and colonoscopy in men who report having a usual source of health care, having seen or talked to a general doctor, and who report two to five doctor visits in the past year might suggest differential referral or acceptance of these tests by gender.
With the exception of age, correlates of colorectal cancer tests are similar to those for use of Papanicolaou tests and mammograms.

Increased use of colonoscopy is driving the increase in colorectal cancer testing. The extension of Medicare coverage for screening colonoscopy to average-risk beneficiaries in 2000 has likely contributed to this increase and is supported by our data. Test use rates among men and women ages 65 years and older are significantly higher than for those ages 50 to 64 years. Uptake of colonoscopy has also been influenced by media attention, professional endorsement of colonoscopy, and reimbursement. Katie Couric’s televised colonoscopy on the Today Show in March 2000 was associated with a temporal increase in use of the test (16). The American College of Gastroenterology recommendation in 2000 of colonoscopy as the preferred colorectal cancer screening test for average-risk patients (17) and the greater profitability of colonoscopy compared with sigmoidoscopy also are probable contributors to the surge in colonoscopy. The current average Medicare reimbursement for both facility and professional fees is over thrice higher for screening colonoscopy than for screening sigmoidoscopy.3 Low-profit margins make it difficult for most primary care physicians to incorporate sigmoidoscopy in practice (18) and many consequently refer their patients for colorectal endoscopy (19).

The menu of colorectal cancer screening tests allows for flexibility, but can render decisions about recommending or choosing a particular test difficult. Each test has tradeoffs in terms of efficacy, complications, discomfort, frequency, time, and cost. Which test is best is a matter of personal preference that should be considered when recommendations for screening are made (20). It is not possible for us to assess with these data whether the increasing trend in colonoscopy use and the concurrent decline in sigmoidoscopy and FOBT reflect patient or provider preferences.

Our study is limited by the fact that NHIS data are cross-sectional and limited to self-reported of selected individual correlates of colorectal test use. Self-reports of screening could lead to overestimates of adherence (21). We are unable to explore the influence of other potentially important correlates of screening, such as provider characteristics and practices, patient-provider communication, health plan policies regarding colorectal cancer tests, and geographic capacity for screening. Furthermore, the redesign of relevant survey questions to ask about endoscopic tests separately after 1998 may exaggerate the rate at which sigmoidoscopy declined and colonoscopy rose since 1998. Nevertheless, the recent national data do indicate that prevalence of colorectal cancer test use is higher than in previous years and that recent colonoscopy accounts for most of colorectal test use.

That the increase in colorectal cancer test use is almost exclusively driven by colonoscopy has implications for public health practice in the United States. Colonoscopy is an expensive, invasive, relatively time-consuming test that currently must be done by a physician. Even assuming that capacity exists to perform screening colonoscopy for every age-eligible person at recommended frequency (18, 22), promotion of colonoscopy as the “preferred” colorectal cancer screening test may widen socioeconomic disparities. Our data support previous findings that there are disparities in the use of screening by educational attainment, household income, health insurance coverage, and having a usual source of health care (2, 23). These barriers to screening could be particularly difficult to overcome if colonoscopy becomes the preferred colorectal cancer screening modality. Clinicians, health advocates, and policy-makers alike need to carefully consider the messages that are communicated to the public about colorectal cancer test options. Reliance on colonoscopy alone may be insufficient for high participation in colorectal cancer screening at a population level, which will be required to effectively reduce morbidity and mortality from colorectal cancer.

**Acknowledgments**

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**References**

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