



How many “Get Screened” messages does it take? Evidence from colorectal cancer screening promotion in the United States, 2012[☆]



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ABSTRACT

Objective. Colorectal cancer screening has been widely promoted in the United States. We investigated the association between reported exposure to screening information during the past year and screening participation and knowledge.

Method. Data from the 2012 HealthStyles Fall survey of U.S. adults were examined using adjusted logistic regression to examine the frequency of exposure to screening information as a predictor of screening participation and knowledge; analyses were limited to participants aged ≥ 50 years with no history of colorectal cancer or polyps ($N = 1714$).

Results. Nearly half of the participants (44.9%) reported exposure to colorectal cancer screening information during the previous year. The most common sources of screening information were news reports, advertisements, and health care providers. Screening participation and knowledge consistently increased with the reported frequency of exposure to screening information, and these associations generally persisted when demographic variables were controlled. Compared with unexposed participants, significant gains in screening participation were associated with exposure to screening information 2–3 times (Adj. OR = 1.84, $p = 0.001$), 4–9 times (Adj. OR = 2.00, $p = 0.001$), and ≥ 10 times (Adj. OR = 3.03, $p < 0.001$) in the adjusted model.

Conclusions. Increasing public exposure to screening promotion messages may augment screening participation and knowledge.

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Introduction

Colorectal cancer is largely preventable through screening (Lieberman, 2010). The U.S. Preventive Services Task Force (USPSTF) recommends population-based screening for average risk adults aged 50–75 years with colonoscopy every 10 years, high-sensitivity fecal occult blood test (FOBT) annually, or sigmoidoscopy every five years in combination with FOBT every three years (Whitlock et al., 2008). While colorectal cancer screening rates have steadily risen, 36% of adults aged 50–75 years have not been adequately screened (Centers for Disease Control and Prevention, 2011), and an estimated 14,000 to 22,000 deaths could be prevented each year if screening was universally implemented (Maciosek et al., 2006; Stock et al., 2011).

Colorectal cancer screening has been widely promoted in the United States by health care providers (Klabunde et al., 2009), the news media (Cooper et al., 2005; Cram et al., 2003), and public health initiatives

(Church et al., 2004; Cole and Wagner, 1990; Nguyen et al., 2010; Potter et al., 2010; Vernon, 1997), including the Centers for Disease Control and Prevention's (CDC) *Screen for Life: National Colorectal Cancer Action Campaign* (CDC, 2013), the only national colorectal cancer awareness campaign operating continuously and year-round (since 1999).

The present study examined the association between the frequency of exposure to colorectal cancer screening information from any source and screening knowledge and participation among U.S. adults aged 50 and older with no history of colorectal cancer or polyps.

Methods

The HealthStyles Fall survey is an annual survey conducted by Porter Novelli (Washington, D.C.) that explores the health behaviors and attitudes of U.S. adults. The 2012 HealthStyles Fall survey was administered online from September 21 to October 5.

Participants

Participants in the 2012 HealthStyles Fall survey were recruited from the KnowledgePanel®, a 50,000-member, online research panel that is representative of the U.S. population (GfK Knowledge Networks, 2013). Panel members were randomly recruited by probability-based sampling, using both random-digit dial and address-based sampling methods to reach respondents regardless

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of whether they have landline phones or Internet access. If needed, panel members were provided with a laptop computer and Internet access so they could take part in surveys.

The 2012 HealthStyles Fall survey was sent to a random sample of 4371 panel members aged 18 years or older who responded to an earlier linked survey (HealthStyles Spring survey). A total of 3503 participants took part in the survey, for a completion rate of 80.1%. However, the analyses reported here were limited to participants aged 50 years and older with no history of colorectal cancer or polyps ($N = 1714$).

To protect participant confidentiality, no individual identifiers were included in the dataset received by investigators. As a result, analyses of the HealthStyles dataset were declared exempt by the Centers for Disease Control and Prevention's Institutional Review Board.

Measures

Colorectal cancer screening knowledge measures reflected five key messages of CDC's *Screen for Life* campaign. Three knowledge items were statements with true–false–not sure response sets: (1) Screening tests can find colorectal cancer in its early stages (correct response = true); (2) Screening tests can find abnormal growths in the colon and rectum so they can be removed before they become cancerous (correct response = true); and (3) Screening for colorectal cancer is not recommended unless you have symptoms, such as blood in the stool; pain, aches or cramps in the stomach; or unexplained weight loss (correct response = false). The remaining two knowledge items were formatted as questions with multiple-choice response sets: (1) Who can develop colorectal cancer? a. Only men, b. only women, c. both men and women, and d. not sure (correct response = both men and women); (2) At what age is colorectal cancer screening recommended to begin for most people (those at average risk for developing the disease)? a. 45 years, b. 50 years, c. 55 years, d. 60 years, e. none of these, and f. not sure (correct response = 50 years).

Screening participation was evaluated by asking participants whether they ever had: a. colonoscopy (tube inserted into rectum to view the entire colon), b. flexible sigmoidoscopy (tube inserted into the rectum to view the lower third of the colon), and c. stool test/fecal occult blood test (FOBT) using an at-home kit. Multiple responses were accepted. Participants indicating that they had been screened were asked to specify when the most recent test/s were performed.

A multiple-choice item was used to measure the frequency of exposure to information about colorectal cancer screening: Within the past year, how often have you seen or heard information about screening for colorectal cancer? a. Many times (10 times or more), b. several times (4–9 times), c. a few times (2–3 times), d. once, e. never, and f. not sure. Participants reporting exposure to colorectal cancer screening information at least once during the past year were asked where they saw or heard the information and were provided with a select-all-that-apply response set: a. advertisement (television, radio, magazine, billboard, display in shopping mall, etc.), b. discussion with a doctor or other health care provider, c. discussion with a friend or family member, d. handout or poster in doctor's office, clinic, or hospital, e. news report (television, radio, newspaper, magazine, or Internet), f. website, such as WebMD, Google, iVillage, or other site, g. other, and h. not sure.

Finally, participants reporting exposure to advertisements, websites, and/or patient education materials about colorectal cancer screening were asked to identify the sponsoring organization/s, and they were given a select-all-that-apply response set: a. American Cancer Society, b. Blue Star Campaign, c. Centers for Disease Control and Prevention, d. National Cancer Institute, e. *Screen for Life*: National Colorectal Cancer Action Campaign, f. U.S. Department of Health & Human Services, g. other, and h. not sure.

Analyses

Investigators calculated unweighted and weighted proportions (matched to 2012 U.S. estimates on gender, age, household income, race/ethnicity, educational attainment, and geographic region) for demographic characteristics, exposure to colorectal cancer screening information during the last year, colorectal cancer screening knowledge (correct responses to individual knowledge items and aggregate knowledge, defined as correct responses to all five knowledge items), and screening participation (use of individual screening options and aggregate participation, defined as having undergone one or more screening modalities studied within the specified interval).

Bivariate analyses included Pearson chi-square tests to examine the associations between frequency of exposure to colorectal cancer screening

information and the outcome variables (individual and aggregate measures of knowledge and screening participation). The associations between the demographic characteristics listed in Table 1 and the aggregate outcome variables were also tested using Pearson chi-square tests. Frequency of exposure to colorectal cancer screening information during the last year and the demographic characteristics found to be significantly associated ($p \leq 0.05$) with aggregate outcome variables in the bivariate analyses were included in adjusted logistic regression models.

The variable categorizations shown in Table 1 were used in all analyses. However, the response set of the screening information exposure item was reordered—the “not sure” response was inserted between the “never” and “once” responses because the results consistently rose from “never” to “not sure” to “once.” This hierarchy of exposure seemed logically ordered as it progressed from certainty about having no exposure to lack of certainty of exposure to certainty about exposure. Analyses were performed using IBM SPSS 21.0.

Results

The demographic distribution of the unweighted sample differed slightly from that of the weighted sample (Table 1). The largest discrepancy was found in educational attainment, with the sample including fewer individuals who did not complete high school and more individuals who completed a bachelor's degree than the U.S. adult population.

Most participants (54.9%) reported having had one or more of the screening tests included in the analyses within the specified interval. Colonoscopy was the most commonly used screening option, with 50.2% of participants reporting having had a colonoscopy within the last 10 years.

More than half of the participants (55.1%) did not recall exposure to colorectal cancer screening information during the past year (“never” and “not sure” responses). Among those who reported seeing or hearing such information during the past year, the most common frequency of exposure was 2–3 times (21.3% of all participants, 47.4% of those reporting information exposure). Participants most often reported receiving colorectal cancer screening information from news reports (20.5% of all; 46.5% of exposed), advertisements (17.4% of all; 39.4% of exposed), and health care providers (16.6% of all; 37.6% of exposed).

The majority of participants (52.5%–83.0%) correctly answered each of the knowledge items, and more than a third (37.0%) answered all five knowledge items correctly. However, recall of organizations that distributed colorectal cancer screening information was low, with 63.6% of those who reported exposure to advertisements, websites, and/or patient education materials being unable to specify even one organization that sponsored the information they saw or heard. The American Cancer Society was the most commonly named source (26.5% of those of reporting exposure to advertisements, websites, and/or patient education materials), followed by *Screen for Life* campaign sponsors (11.3%), which included the U.S. Department of Health & Human Services (6.2%), the *Screen for Life* campaign (4.8%), and the Centers for Disease Control and Prevention (4.2%) (*Screen for Life* materials include the logos of all three of these organizations) (results not shown).

In the bivariate analyses, knowledge of the key *Screen for Life* campaign messages and screening participation generally rose as the reported frequency of screening information exposure increased (Table 2). Accordingly, aggregate knowledge and screening participation were positively associated with reported frequency of information exposure (Figs. 1 and 2). Aggregate knowledge and screening participation were also found to be associated with all demographic characteristics examined, with the exception of gender and geographic region (results not shown). Aggregate screening knowledge decreased with age ($p = 0.017$) and increased with better health status ($p < 0.001$). Conversely, aggregate screening participation generally increased with age ($p < 0.001$) and decreased with better health status ($p = 0.002$). Both aggregate knowledge and screening participation increased with

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